SUSTAINABLE ENERGY UNITED IN DIVERSITY

Challenges and approaches in energy transition in the EU

Editors
L.Squintani and H.H.B.Vedder
with M.Reese and B.Vanheusden

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SUSTAINABLE ENERGY UNITED IN DIVERSITY – CHALLENGES AND APPROACHES IN ENERGY TRANSITION IN THE EUROPEAN UNION

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Sustainable Energy United in Diversity – Challenges and Approaches in Energy Transition in the European Union
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FOREWORD

REBECCA HARMS

Co-president of the Greens/EFA Group and member of the

European Parliament

This book makes an invaluable contribution to the current, highly topical, debate on the energy transition, arguing the need for a more European approach to law-making in this area. The book's multidisciplinary approach, bringing together environmental and energy law allows for a comprehensive examination of the challenges and varied approaches within the European Union (EU) and its Member States in favour of a more sustainable energy system and hence a more climate-friendly economy.

Given the recent Russia-Ukraine crisis and the subsequent focus on European supply security and energy dependence - as well as the ever-growing urgency of halting climate change, this book's publication comes at a very timely moment. If we want to cap average global warming at 2° C and reduce our substantial dependency on fossil fuels, the significance of progressing towards a sustainable European energy policy becomes more obvious. Yet, currently, EU Member States have - except for a few limited policies - different goals for their individual energy policies, resulting in higher costs, inefficiencies of policies and systems, and so together are weak when it comes to negotiating with energy supplier countries. As the research suggests, a common EU approach on energy transition is Member States' best option for effectively addressing the most pressing challenge of our time.

From a practitioner´s point of view, the interdisciplinary approach of the analysis is interesting as in practice these areas are closely interlinked: environmental legislation is frequently directed at industry while decisions on energy have a major impact on the environment.

The aims of energy sustainability are twofold, firstly limiting the harm to the environment and the climate by our voracious energy appetite, and secondly, decreasing our dependency on limited resources. Accordingly, a large proportion of the world’s fossil fuels must remain in the ground while investments in fossil energy must be re-directed towards renewables, greater energy savings and energy efficiency. Long-term objectives must be fixed, in order to be able to make the specific and sound investments that are needed. Effectively, this can only be achieved at European level – EU Member States need to build a joint pathway towards a climate-friendly economy.

The creation of a Green European Energy Union – based on improved energy efficiency and energy savings, the expansion of renewable energies and a massive reduction of the dirtiest fossil fuels – would set the right framework to achieve this leap. Renewable energy is not only greener and safer, it is also infinite. Furthermore, in combination with improved energy effi-

ciency and energy savings it reduces our import dependency. A further huge benefit is that it has already created half a million new jobs in the EU and could create even more in the future.

Like the European Coal and Steel Community in the formative years of the European Union, indeed - with the right comprehensive sustainable legal framework - a Green European Energy Union has great potential to become the EU´s common future project for the 21st century. We have already mastered these new technologies and also have the support of citizens across the EU.

What has been missing until now is a broad EU-wide political consensus in favour of sustainability. Let’s go for it.

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List of Abbreviations

AEBIOM – *Association européenne pour la biomasse* (European Biomass Association)
AD – Anaerobic Digestion
ADEME – *Agence de l'environnement et de la maîtrise de l'energie* (French Environment and Energy Management Agency)
AFCS – Australian Forestry Certification Standard
AIE – *Agence internationale de l'energie*
AJ – *Actualité juridique*
BBBEE – Broad-Based Black Economic Empowerment
BEE – Black Economic Empowerment
BImSchG – *Bundes-Immissionsschutzgesetz*
BNA – *Bundesnetzagentur*
BRT – Bus Rapid Transit
BSE – *Bovine Spongiform Encefalopathy*
BVerfGE – *Entscheidungen des Bundesverfassungsgerichts*
BVerwGE – *Entscheidungen des Bundesverwaltungsgerichts*
CA-RES – Concerted Action Renewable Energy Sources Directive
CARB – California Air Resources Board
CC – Climate Change
CCS – Carbon Capture and Storage
CELA – Council of Educators in Landscape Architecture
CEN – *Comité européen de normalisation* (European Committee for Standardization)
CHP – Combined Heat and Power Plant
CIRED – International Conference on Electricity Distribution
CITES – Convention on International Trade in Endangered Species of Wild Fauna and Flora
CJEU – Court of Justice of the European Union
CO_2 – Carbon Dioxide
CH_4 – Methane
CRE – *Commission de régulation de l'énergie*
CSA – Canadian Standards Association
CSIH – Canadian Society for International Health
CSOH – Court of Session Outer House
CSP – Concentrated Solar Power
CSPE – *Contribution au service public de l'electricité*
DEA – Data Envelopment Analysis
Dena – *Deutsche Energieagentur*
DG – Directorate-General
DKK – Danish Krone
DLUC – Direct Land Use Change
DMd. – District Court for the District of Maryland
DÖV – *Die Öffentliche Verwaltung*
DS – Dispute Settlement
DSB – Dispute Settlement Body
DVBl – *Deutsche Verwaltungsblatt*
EC – European Community
EC – European Commission
ECB – European Central Bank
ECJ – European Court of Justice
ECR – *European Court Reports*
EDF – Environmental Defense Fund

EDF – *Electricité de France*
EEA – European Environmental Agency
EEA – European Economic Area
EEC – European Economic Community
EEG – *Erneuerbare-Energie-Gesetz*
EELF – European Environmental Law Forum
EESC – European Economic and Social Committee
EFAR – *European Foreign Affairs Review*
EIA – Environmental Impact Assessment
ELF – Extremely Low-Frequency
ELRev – *European Law Review*
EnC – Energy Community
EnERgioN – *Erneuerbare Energien in der Region Nord*
ELNI – Environmental Law Network International
ENTSO-E – European Network of Transmission System Operators for Electricity
EnWG – *Energiewirtschaftsgesetz*
EP – European Parliament
EPA – Environmental Protection Agency
ESMAP – Energy Sector Management Assistance Program
ETS – Emission Trading Scheme
EU – European Union
EUGRZ – *Europäische Grundrechte-Zeitschrift*
EurUP – *Zeitschrift für Europäisches Umwelt- und Planungsrecht*
EWEA – European Wind Energy Association
EWHC – High Court of England and Wales
FAO – Food and Agriculture Organization of the United Nations
FIT – Feed-In Tariff
FLEGT – Forest Law Enforcement, Governance and Trade
FMP – Forest Management Plan
FSC – Forest Stewardship Council
GATT – General Agreement on Tariffs and Trade
GDF – *Gaz de France*
GHG – Greenhouse Gases
GIF – Generation IV International Forum
GN – Government Notice [South Africa]
GNR – Government Notice Regulation [South Africa]
GPA – Agreement on Government Procurement
GW – Gigawatt
Hz – Hertz
HVDC – High-Voltage Direct-Current
IA – Impact Assessment
IAB – Impact Assessment Board
IAEA – International Atomic Energy Agency
IARC – International Agency for Research on Cancer
ICNIRP – International Commission on Non-Ionizing Radiation Protection
ICTSD – International Centre for Trade and Sustainable Development
IEA – International Energy Agency
IEA-RETD – Implementing Agreement on Renewable Energy Technology Deployment
IINAS – International Institute for Sustainability Analysis and Strategy
IISD – International Institute for Sustainable Development

ILM – *International Legal Materials*
ILO – International Labour Organization
ILUC – Indirect Land Use Change
IMF – International Monetary Fund
INCIRP – International Commission on Non-Ionizing Radiation Protection
IPCC – Intergovernmental Panel on Climate Change
IROPI – Imperative Reasons of Overriding Public Interest
IRP – Integrated Resource Plan
ITER – International Thermonuclear Experimental Reactor
JCMS – *Journal of Common Market Studies*
JEEPL – *Journal for European Environmental and Planning Law*
JRC – Joint Research Centre
JZ – *Juristenzeitung*
LCA – Life Cycle Assessment
LCEP – Local Climate Energy Plans
LED – Light-Emitting Diode
LKRZ – *Zeitschrift für Landes- und Kommunalrecht Hessen, Rheinland-Pfalz, Saarland*
MA – Millennium Ecosystem Assessment
MAD – *Miljøretlige Afgørelser og Domme* (Environmental Decisions and Judgments)
MCPFE – Ministerial Conference on the Protection of Forests in Europe
MDG – Millennium Development Goal
MESDE – Ministry of Ecology, Sustainable Development and Energy
MoU – Memorandum of Understanding
MS – Member State
MW – Megawatt
μT – microtesla
N_2O – Nitrous Oxide
NABEG – *Netzausbaubeschleunigungsgesetz*
NGO – Non-Governmental Organisation
NL – The Netherlands
NLBI – Non-legally Binding Instrument
NMKN – *Natur- og Miljøklagenævnet* (Nature and Environment Appeals Board)
NSM – National Solar Mission
NuR – *Natur und Recht*
NVwZ – *Neue Zeitschrift für Verwaltungsrecht*
NZEC – Near-Zero Emission Coal
OECD – Organisation for Economic Co-operation and Development
OJ – *Official Journal of the European Union*
OPA – Ontario Power Authority
OPEC – Organization of the Petroleum Exporting Countries
OPOCE – *Office de Publication du journal officiel des communautés européennes* (Office for Official Publications of the European Communities)
PAFCS – Pan African Forest Certification Scheme
PCET – *Plan climat-énergie territorial*
PEFC – Programme for the Endorsement of Forest Certification
PPA – Power Purchase Agreement
PPI – *Programmation plurianuelle des investissements*
PPP – Public–Private Partnership
PSO – Public Service Obligation
PV – Photovoltaic

QC – Queen's Counsel
RAE-LEA – *Revue des affaires européennes – Law & European Affairs*
RCAEP – Regional Climate Air Energy Plans
RED – Renewable Energy Directive
REFIT – Regulatory Fitness and Performance
REIPPPP – Renewable Energy Independent Power Producer Procurement Programme
RELP – *Journal of Renewable Energy Law and Policy Review*
RES – Renewable Energy Sources
RF – Russian Federation
RFP – Request For Proposal
RIDE – *Revue internationale de droit économique*
RTE – *Réseau de transport d'électricité*
SA – South Africa
SAJELP – *South African Journal of Environmental Law and Policy*
SCIC – *Société coopérative d'intérêt collectif*
SCM – Subsidies and Countervailing Measures
SD – Sustainable Development
SDG – Sustainable Development Goal
SDS – Sustainable Development Strategy
SEA – Strategic Environmental Assessment
SEAP – Sustainable Energy Action Plan
SEM – *Société d'économie mixte*
SFM – Sustainable Forest Management
SPA – Special Protection Area
SPPF-RES – Special Framework for Spatial Planning and Sustainable Development for Renewable Energy Sources
SSK – *Strahlenschutzkommission*
TEN-E – Trans-European Energy Networks
TEU – Treaty on European Union
TFEU – Treaty on the Functioning of the European Union
TRIM – Trade Related Investment Measure
TSO – Transmission System Operator
UK – United Kingdom
UmwR – *Umweltrecht*
UN – United Nations
UNCED – United Nations Conference on Environment and Development
UNECE – United Nations Economic Commission for Europe
UNEP – United Nations Environment Programme
UNESCO – United Nations Educational, Scientific and Cultural Organization
UNFCCC – United Nations Framework Convention on Climate Change
UPR – *Umwelt und Planungsrecht*
USA – United States of America
UVP – *Umweltverträglichkeitsprüfung*
VAT – Value Added Tax
VPA – Voluntary Partnership Agreement
WCED – World Commission on Environment and Development
WEC – World Energy Council
WHO – World Health Organization
WTO – World Trade Organization
ZAR – South African Rand

ZUR – *Zeitschrif für Umweltrecht*

INTRODUCTION

We are all aware of the risks of conventional energy production for the environment and human health. This notwithstanding, as Bryn Cartledge wisely wrote in 1993, '*few governments can give absolute priority to minimizing the adverse environmental impact of energy generation*'. (Energy and the Environment, 1). Focusing on the European Union, the Union itself and each of its Member States have to balance economic welfare, social welfare and environmental welfare, *ie* they have to find '*sustainability*'. In order to promote the legal thinking about energy and sustainability, the University of Groningen hosted from 4 to 6 September 2013 the First European Environmental Law Forum (EELF) Conference, with as central topic "Environmental Law and Energy and Climate Law as instruments to achieve Sustainable Energy". This book offers a selection of the peer reviewed contributions presented at the EELF Conference that center around the notion of sustainability.

Whereas sustainability features prominently in the environmental and energy provisions across the European Union, it is still a vague concept. For one, the definition of sustainable energy has been interpreted in two overlapping but distinct manners. It can be taken as a green concept, where the environmental and social impact of energy production, distribution and consumption is to be reduced. It is also seen as a concept related to the notion of 'ensuring security of supply', a concept that is not per se aimed at a reduction of the environmental and social impact of the energy sector, but will include renewable energy production. There are thus questions relating to the *definition* of sustainability. In **chapter 1** *Sanford E. Gaines* presents an argument that policies and practices for renewable and other non-fossil energy must be designed and implemented with long-term sustainability in mind. The chapter explores the essential elements of three diverse foundational sources of sustainable development theory: the Brundtland Commission definition of sustainable development; the Millennium Ecosystem Assessment Framework for identifying drivers of ecological change and governance patterns for sustainability; and social-ecological resilience theory emphasizing polycentric, adaptive governance of social-ecological systems. From these sources, four sustainability criteria are derived: holistic analysis, equity, adaptability, and multi-level governance. The chapter then applies these criteria to the choices confronting the world in accelerated deployment carbon-free and low-carbon energy production and distribution technologies in different economic and socio-political contexts to install a durable fossil-free energy system worldwide.

Following on from the definition issue, there are questions concerning the *implementation*. The transformation towards a low carbon economy by 2050 will mean an EU wide general overhaul of the energy infrastructure for decades to come. It involves the planning and construction of on- and offshore renewable energy installations and energy efficiency enhancing facilities as well as EU wide interconnecting grids, which may have severe environmental impacts. Moreover, biofuels and biomass production has come under severe critique when competing with agricultural food production as well as for their adverse environmental effects. Finally, one of the central instruments to come to an energy transition, the EU ETS, is

currently being revised in order to increase its effectiveness and the political debates and legal issues arising here evidence the great importance and challenges presented by the implementation of a sustainable energy policy. *Wybe Douma* first and *Yelena M. Gordeeva* later provide a detailed analysis of this issue in the fields of biofuels and biomass, respectively. In **chapter 2**, Douma examines the EU's policy in relation to biofuels and notably the indirect land use changes in third countries that it may bring about (because such indirect effects are not covered by the sustainability criteria in the RED), and the associated risk that imported biofuels are not sustainable and worse than fossil fuels from a climate change point of view. He finds numerous inconsistencies that have their origin in a failure to adequately implement a science based approach compliant with the precautionary principle and with EU policy documents on policy making and on performing regulatory impact assessments. In **chapter 3**, Gordeeva points out that although the RED introduces 'the most comprehensive and advanced binding sustainability scheme of its kind anywhere in the world',[1] wood biomass is not subject to its sustainability requirements. This chapter argues that, under the current regulatory approach, there exist environmental risks associated with the increased wood biomass harvest for energy purposes; there is a need for the further advancement of the current legal framework to ensure wood biomass sustainability.

Of course, in order to make sustainable energy systems work, public planning and steering of private investors' choices and inputs of energy sources is necessary. From a legal perspective, public planning and steering means that the transition to sustainable energy also raises *framing issues*. These issues revolve around the significant of role of the institutional settings, and, in particular, the role of and sound integration of:

- energy and capacity markets, competition and state aid regulations;
- general aims and principles on security, environmental soundness and affordability of energy supply;
- environmental law; and
- land use planning law.

Interestingly, all the above factors play at both the EU and the Member State level and it is here that we observe a great variety of activities in particular at the Member State level. However, approaches differ considerably from state to state and often appear as uncoordinated. This lack of coordination has a temporal dimension, eg when we look at the continuously changing policy and legal settings in the Netherlands and Germany. Moreover, we also see a territorial dimension with insufficient coordination between the Member States. Finally, much of the desired integration is still in an incremental stage. Chapters 3-9 of this book focus on certain national legislative initiatives exemplifying the general trends going on in Europe as regards energy transition and its shortcomings. Chapters 4, 5 and 6 focus on the issue of permitting procedures: chapter 4, as regards RES projects in general, chapter 5 as regards the production of wind energy and in chapter 6 as regards energy smart water utilities. Chapters 7 and 8, instead, focus on the relationship between energy transition and local communities.

[1] European Commission, 'Communication from the Commission on the Voluntary Schemes and Default Values in the EU Biofuels and Bioliquids Sustainability Scheme' [2010] OJ C160/1, 7.

Chapters 9 and 10 focus on the issues of tendering procedures and regulation of the inter-states grid. Finally, chapters 11 and 12 focus on the international dimension of the EU sustainable transition.

As regards the permitting procedures, in **chapter 4**, *Vicky Karageorgou* looks at the legislative initiative undertaken in Greece to speed-up the authorisation of large scale projects, including RES projects. This chapter examines whether the authorization of large-scale RES projects through simplified and accelerated procedures, such as that established by the Greek 'Fast-track' Legislation, can respect the basic guarantees arising from the Environmental and the Planning Legislation. To this end, firstly, the basics of EU and the Greek Legislative Framework concerning RES projects authorization and planning, are examined. Secondly, the characteristics of the Fast-track' Legislation as a specific paradigm of legislation aiming at the simplification and the acceleration of the authorization procedures of large-scale projects, are carefully examined. This enables a detailed conclusion on the compatibility of fast track legislation with EU law. Similarly, in **chapter 5**, *Ralph Frins* and *Hendrik Schoukens* focus on the compatibility of legislative initiatives undertaken in the Netherlands and Belgium to increase flexibility as regards the permitting of wind farms near nature reserves protected under EU law. Despite the massive deployment of wind energy, the lack of reliable data on the adverse environmental effects wind farms may have on wildlife often makes it burdensome to obtain the necessary permits. This has created considerable unease within the wind energy sector. Whilst some actors submit that the Birds and Habitats Directives are no longer in line with modern conservation priorities and should be reformed in order to reflect the EU's renewable energy targets, Frins and Schoukens argue that both directives do grant sufficient leeway to reconcile nature protection with climate change goals. Obviously, the effective application of biodiversity law can stand in the way of wind farm construction in certain instances. However, contrary to popular belief, the application of the Birds and Habitats Directives does not lead to a massive rejection of permit applications for wind farms, let alone that both directives can be regarded as an ultimate obstacle for the achievement of the EU's ambitious renewable energy targets. Additionally, as discussed in this chapter, adaptive management strategies and proactive habitat creation, brought forward in these two Member States might have the necessary potential, depending on future case-law developments, to further facilitate wind energy developments in the context of the Natura 2000 Network. Finally, in **chapter 6**, *Ellen Margrethe Basse* discusses the manner in which the discreationary power left by European Union (EU) to the member states as regards the regulation of energy–smart water utilities has been used by Denemark. After a recognision of the regulatory framework at European Level, Basse analyses the effects of the Danish benchmarking model and price-cap systems on investments in new energy-related technologies. Besides, the Danisch regulatory framework, including rules on mandatory ownership unbundling, concerning water utilities production of renewable energy is examined. This chapter shows a considerable degree of rigidity in the Danish legal design and it discusses the problems that this regidity causes for the water utilities that want to be resource–efficient and have a low–carbon footprint.

As regards the relationship between sustainable energy transition and local communities, chapters 7 and 8 focus on the top-down and bottom-up dimensions of this relationship, respec-

tively. In **chapter 7**, *Birgitte Egelund Olsen* and *Helle Tegner Anker* move from the challenges presented by local opposition to the development of onshore and near-shore wind energy projects to examine the role of the Danish legal framework in relation to planning, environmental assessment and specific policy measures with a particular view to local acceptance. This will in particular include the specific policy measures introduced by the Danish Renewable Energy Act in 2008, ie the so-called compensation scheme, the co-ownership scheme and the community benefit scheme. In **chapter 8**, *Magali Dreyfus* highlights how local governments are taking action to promote energy transition. On the basis of a conceptual framework developed by multilevel governance scholars, this chapter turns on the different modes of governing and on the legal instruments used by local authorities to meet that goal. The analysis is based on 'local climate energy plans' (LCEPs) adopted by urban communities in France. It shows that there is no real bottom-up process of energy transition taking place there and that the phenomenon is still very much in the hands of the central government. Yet in areas where local governments have a high degree of autonomy, they prove to be pro-active and participate largely to incentivize energy transition.

As regards tendering France is the only European Union country to make substantial use of renewables tendering initiatives. Accordingly, in **chapter 9**, *Louise du Toit* approaches this issue in a comparative manner. This chapter outlines first the South Africa's renewables tendering programme, the Renewable Energy Independent Power Producer Procurement Programme, which was introduced in 2011. In second place it also briefly outlines renewables tendering initiatives in France with the object of comparing the two jurisdictions to determine whether any lessons can be learned. As regards inter-state connectivity, in **chapter 10**, *Wolfgang Köck* underlines how the development of electricity transmission lines to facilitate the German energy transition and its new energy structure causes additional radiation from electric and magnetic fields. The German Government has responded to the challenges by revising the 26th Regulation implementing the Federal Immission Control Act (26th Regulation) in August 2013. It is doubtful whether this measure will suffice in view of the now wide range of threshold schemes applied in Europe. Given the need to guarantee trans-European power networks, this chapter analyses whether a uniform European protection standards and thresholds could be one way of reaching better accepted solutions.

As regards the international dimension of the EU sustainable energy transition policy, this book focuses on the linkages between energy transition and WTO law and on the external policies of the European Union. In **chapter 11**, *Hartmut Kahl* underlines how among the variety of trade disputes on renewable energy, those dealing with local-content requirements became especially topical recently. Tying the eligibility for a green energy support scheme to a certain level of domestically sourced power plant components, local-content requirements – like the one of the Canadian province Ontario – became a frequent issue in the dispute settlement mechanism of the WTO. As clarified by the WTO's Appellate Body in its report on the Ontarian provision, local-content requirements do infringe the equal treatment obligations of the GATT and the TRIMs Agreement and might be characterized as a forbidden subsidy under the SCM Agreement. This chapter analyses whether local-content requirements are a sustainable policy tool given that they are deemed illegal under WTO disciplines as soon as they are

challenged by a complaint or, instead, an ambitiously defined share of renewably generated energy combined with a reliable commitment to phase out conventional plants continuously might be a key driver to create a home market which is dynamic enough to attract investments in locally based manufacturing. In **chapter 12**, *Nicolas Pradel* describes the implementation of the European Union external energy policy as an example of the way the law can be used to drive forward and realize concrete energy policy goals. The law constitutes both a basis for the development of the EU energy policy and its main instrument of action. Through a discussion of three examples – the Energy Community with the Balkans and some Eastern European countries, energy cooperation with the People's Republic of China and energy cooperation with the United States of America – this chapter aims to analyse not only the empowering force of the law but also its limits as a means to pursue the objectives of the EU energy policy.

This book therefore highlights the challenges that lie ahead in coming to an energy transition. It moreover shows fundamental optimism and the potential of learning from each other. Comparative legal analysis combined with a structured analysis of the compatibility of the various layers and areas of the laws that apply to energy transition shows that the Member States and the European Union are truly united in diversity in their quest for a sustainable energy system. It is the conclusion of this book that the multi-level system of governance that permeates policy- and law-making in EU sustainability law is the only way forward. The diversity of the Member States and their energy mixes, consumption patterns, potential for renewable energy generation and interconnection is coupled to a similar diversity in legal and policy-making approaches to the problems that are encountered.

At the same time, this diversity comes from a united belief that there must be a transition towards a sustainable energy system. This is a united voice from 28 Member States, but also from the European Union. Being united in diversity is not only the motto of the European Union, it is also a situation that enables a mutual learning experience. The chapters and contributions by the keynotes clearly show that energy transition relies in a very significant part not on the legislators and policy-makers, but on the economic actors involved. More than half a century of European integration has shown that private actors indeed have a major role to play, not only in bringing about an ever closer Union, but also in ensuring that this Union lives up to its pledge of sustainability.

We wish you a pleasant and interesting reading, and we look forward to meeting you at one of the next EELF Conferences.

CHAPTER 1

THE ENERGY REVOLUTION AS SUSTAINABLE DEVELOPMENT

SANFORD E GAINES

1. SUSTAINABILITY AND THE ENERGY CHALLENGE

The three objectives of twenty-first century energy policy for Europe and the world are security of supply, accessibility (affordability), and protection of the environment.[1] Striving to meet these three goals simultaneously presents a fundamental energy trilemma. The first prong is that world demand for energy will increase by one-third in the next 20 years, so more energy production is needed to maintain energy security.[2] The second prong is that energy should be accessible and affordable, particularly for meeting the needs of the 1.3 billion people who today have no access to electricity.[3] The third prong is that present technologies for producing more energy at affordable cost rely heavily on fossil fuels, not only violating the environmental protection goal but threatening catastrophic (if still indeterminate) social and economic disruption from climate change.[4] Hence the trilemma: How can the world produce more energy to meet rising demand, at a cost affordable to all, without causing catastrophic climate change in the process?

Energy analysts who identified this trilemma more than a decade ago called for a technological revolution to overcome it.[5] Climate policy experts have drawn the same conclusion: '[A]ny prospect of meeting the aggregate global emissions target, consistent with developing countries not sacrificing their energy needs, will require massive, revolutionary improvements in the technology margins (production and consumption) […]'.[6] Schellnhuber is equally emphatic: '[T]he quintessential challenges remain, namely bending down the global Kyoto-GHG [greenhouse gas] output curve in the 2015–2020 window […]. This requires an industrial rev-

[1] European Commission, 'A policy framework for climate and energy in the period from 2020 to 2030' COM(2014) 15 final.
[2] *World Energy Outlook 2012. Executive Summary* (International Energy Agency 2012).
[3] Ibid 7. A more detailed analysis is available *World Energy Outlook 2013. Executive Summary* (International Energy Agency 2013), ch 2 extract ('Modern energy for all') available at http://www.worldenergyoutlook.org/media/weowebsite/energydevelopment/WEO2013_EnergyForAll.pdf.
[4] *World Energy Outlook 2013. Executive Summary* (International Energy Agency 2013); 'Summary for Policy Makers' in TF Stocker et al (eds), *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press 2013); 'UN Climate Report Urges Quicker Switch to Low-Carbon Global Economy' *The Guardian* (16 January 2014), reporting on a leaked draft of the IPCC Working Group 3 report detailing the high costs of rapid climate change.
[5] M Hoffert et al, 'Advanced Technology Paths to Global Climate Stability: Energy for a Greenhouse Planet' (2002) 298 *Science* 981.
[6] N Birdsall and A Subramanian, 'Energy Needs and Efficiency, Not Emissions: Re-Framing the Climate Change Narrative' (2009) *Center for Global Development Working Paper* 187, 13.

olution for sustainability starting now'.[7] In his report to the British government, economist Sir Nicholas Stern added his voice: 'Even if emissions or temperatures targets are relaxed somewhat, the scale of change must still be very large: it would be a new energy-industrial revolution, in any language'.[8]

Calls for an 'energy-industrial revolution' or 'revolutionary improvements in the technology margins' reflect the nearly universal expert view that the non-fossil energy technologies available today – a combination of nuclear power, hydropower, and other renewable sources – are not sufficient to meet rising demand and simultaneously displace fossil-fuel energy at reasonable cost. The large fraction of energy supply from traditional biomass (the burning of wood, straw, and cow dung is the major cooking fuel for about one-third of the world's people) only underscores the magnitude of the challenge.[9] Policy analysis and engineering reports alike therefore urge an aggressive international effort in energy technology research, development, and deployment. The International Energy Agency estimates the needed investment at about $150 billion per year.

The urgent need for technological innovation cannot be gainsaid. At this late date, however, to meet climate management targets with the requisite speed means that the world cannot afford to stand still with current energy systems while hunting for breakthrough technologies. Much can and must be done immediately to accelerate the deployment of existing non-fossil energy technologies. This chapter proposes an overarching sustainability framework for energy policy choices to meet the immediate deployment challenge. The same framework also applies to policy choices for steering longer-term energy technology research in directions most likely to yield appropriate and widely useful new technologies, but designing a sustainable technology innovation program is beyond the scope of this chapter.

Part 2 of the chapter lays a theoretical basis for the proposed sustainability framework from three building blocks: the original conception of sustainable development in the work of the Brundtland Commission; an analytical framework for sustainability decision making by the Millennium Ecosystem Assessment; and the elaboration of socio-political considerations in social-ecological resilience scholarship. From those three theoretical strands, Part 2 derives four key sustainability criteria for energy policy. Part 3 then applies the sustainability criteria to key energy production and energy distribution decisions in rapidly accelerating the installation of non-fossil energy sources and corresponding investments in more robust distribution systems. The analysis explores how the sustainability criteria might apply to energy policy trade-offs between accessibility, security of energy supply, and environmental protection. A brief conclusion summarises the main points in the chapter.

[7] HJ Schellnhuber, 'Global Warming: Stop Worrying, Start Panicking?' (2008) 105 *Proceedings of the National Academy of Sciences* 14239, 14240.
[8] N Stern, online invited comment on R Socolow, 'Wedges Reaffirmed' *Bulletin of Atomic Scientists* (27 September 2011) available at http://www.thebulletin.org/wedges-reaffirmed.
[9] O Edenhofer et al (eds), *IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation. Prepared by Working Group III of the Intergovernmental Panel on Climate Change* (Cambridge University Press 2011).

2. A THEORETICAL FRAMEWORK FOR ENERGY SUSTAINABILITY

'Sustainable development' is a standard reference point for policy discourse in the 21st century. Although the phrase has a long historical evolution,[10] *Our Common Future*, the report of the Brundtland Commission, popularised and gave shape to contemporary ideas of sustainable development.[11] The Commission succinctly defined sustainable development as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'.[12] The essence of the energy-climate trilemma is a problem of sustainable development: How can the world meet the energy needs of the present, including the energy needs of the world's poorest people, without compromising the climate for future generations? After elaborating the Brundtland Commission's definition of sustainable development, this part will explore the principles that underlie the traditional definition and develop a richer understanding of it from two other important sources of sustainability thinking, namely the work of the Millennium Ecosystem Assessment and the sustainability governance analysis of social-ecological resilience theorists.

2.1. Sources of sustainable development theory

2.1.1. The Brundtland Commission definition

Since the Brundtland Commission report, many commentators have offered different or more complex definitions of sustainable development as a policy benchmark. In the final analysis, some critics of the Brundtland definition of 'sustainable development' like Donald Wooster do not really question its basic conception but simply distrust the capacity of social institutions to adhere to its requirements.[13] Others offer variations that seem little more than rhetorical embellishments of ideas already in the definition, as with the UNESCO-backed effort to add 'culture' as a 'fourth pillar' of sustainability.[14] In the final analysis, the current writer agrees with Brundtland Commission member Jim MacNeil that these are nothing more than an 'ever-expanding number of self-serving interpretations'.[15] The straightforward elements of the original formulation remain sufficient, valid and instructive.

[10] JA Du Pasani, 'Sustainable Development – Historical Roots of the Concept' (2006) 3 *Environmental Sciences* 83.
[11] World Commission on Environment and Development, *Our Common Future* (Oxford University Press 1987).
[12] Ibid 43.
[13] D Wooster, *The Wealth of Nature: Environmental History and the Ecological Imagination* (Oxford University Press 1993) 154–55.
[14] J Hawke, 'The Fourth Pillar of Sustainability: Culture's Essential Role in Public Planning (Common Ground Publishing 2001); 'UNESCO and China Lead Drive to Include Culture in the Post-2015 Development Agenda' (UNESCO Press Release, 6 May 2013).
[15] J MacNeill, 'Brundtland Revisited' (4 February 2013) available at http://opencanada.org/features/the-think-tank/essays/brundtland-revisited/.

The definition of sustainable development enunciated authoritatively by the Brundtland Commission is built around two core elements: 1) a holistic conception of development and its sustainability, and 2) an ethical compass of 'equity' calling for equitable development opportunity in the present and sustained development opportunity for the future. As elaborated in *Our Common Future*, sustainable development thus defined means weaving together ecological, economic, and social conditions conducive to human well-being.

The holistic conception of sustainable development has three key components. Ecological sustainability is the primary and indispensable requirement for sustainable development to maintain enough capacity and resilience in ecological systems to support large populations of humans for centuries to come. As MacNeill frames it by reference to the text of *Our Common Future*, the first requirement is not to 'endanger the natural systems that support life on earth'. The second component of sustainable development, economic sustainability, derives from the strong linkage between the creation of social wealth and the capacity of societies to provide acceptable environmental conditions of nutrition, housing, clothing, clean water and clean air for all, along with the opportunity for human development in terms of education, recreation, and cultural and spiritual life. In the Brundtland Commission's judgment, even in 1987 'most efforts to maintain human progress [to] meet human needs and [to] realize human ambitions are simply unsustainable in both rich and poor nations'. It was that conclusion that drove the Commission to insist that there must be a 'marriage of economy and ecology'. The social dimension of sustainability, often overlooked, is the necessary third leg of the sustainable development triad. Key social needs must be met for complex societies to thrive and to endure. Social conditions should provide individuals with personal security (such as freedom from violence), the opportunity for personal development, and a fulfilling role in the society. For communities and nations, sustainable opportunity to develop can only be built on a platform of a stable and responsive political order with sufficient administrative capacity to function effectively within the community and in the larger social orders of nations, regions, and the world community of nations. Nonfulfillment of the social criterion would threaten economic dysfunction and breakdown of social and political order, undercutting or nullifying ecological and economic sustainability.

The Brundtland Commission's definition of sustainable development identifies twin conceptions of equity as central to notions of sustainability. The Commission stressed the importance of intragenerational equity, meaning a modicum of equity among the peoples of the world today in their access to natural resources, financial resources, and meaningful opportunity for individual and group betterment. Intragenerational equity is vital to social, economic, and political stability within and between societies. Recent history offers many examples where serious inequities in developmental opportunity threaten world ecological sustainability. Tropical deforestation in developing countries and the overwhelming carbon emissions of the world's richest economies are two manifestations of the ecological impact of developmental imbalances.

The complement to intragenerational equity is intergenerational equity. The ethic of intergenerational equity reminds the present generation that resource uses today must maintain robust

and resilient ecosystems that will enable future generations to pursue their own economic well-being and to fulfil their own aspirations. This means making use of resources in a way that does not foreclose options for future generations to use those or comparable resources. Intergenerational equity is an important consideration for investments today in energy systems that may remain in use for many decades. Moreover, it obligates diligent pursuit of climate mitigation in light of the ecologically disruptive consequences of today's high emissions that will likely become manifest on a wide scale within the lifetimes of our grandchildren.

2.1.2. The Millennium Ecosystem Assessment framework

Even assuming broad agreement on the abstract principles of sustainable development, implementing sustainable development in public and private decisions is vastly more difficult and contentious. As one commentary remarks: 'Sustainable development is about the achievement on a global scale of three principles: economic development, social justice and ecological responsibility. These principles exhibit a dialectical tension. Sustainable development is in practice always likely to be a shifting compromise among them'.[16] The 'Framework for Assessment' of the United Nations Millennium Ecosystem Assessment (MA)[17] offers a useful and sophisticated roadmap to many aspects of these compromises of implementation.

The MA develops its framework through the concept of ecosystem services. Ecosystem services are the many direct and indirect benefits for humans contributed by natural ecosystems.[18] The MA framework classifies ecosystem services into four broad categories: provisioning, regulating, supporting, and cultural. Ecosystems' provisioning services include food, wood products, and fresh water. Regulating services refer to the capacity of ecosystems to influence local and regional conditions such the local climate and to buffer humans from natural risks such as floods and diseases. Supporting services include natural processes such as soil formation, degradation of organic wastes, and recycling of nutrients. Finally, ecosystems shape and enrich cultural life through natural materials, animals, landscapes, and other elements that are fundamental to every society's cultural expression in the arts, religion, foods, clothing, buildings, and lifestyles.

The MA framework connects the capacity of ecosystems to provide these services to human well-being. 'The MA conceptual framework assumes that a dynamic interaction exists between people and ecosystems, with the changing human condition serving to both directly and indirectly drive change in ecosystems and with changes in ecosystems causing changes in human well-being'.[19] It then outlines an approach to the social and political task of identifying and selecting among options for sustainable development through maintenance of

[16] G Gleeson and N Low, 'Cities as Consumers of the World's Environment' in N Low et al (eds), *Consuming Cities: The Urban Environment in the Global Economy after the Rio Declaration* (Routledge 2000) 6.
[17] *Ecosystems and Human Well-Being: A Framework for Assessment. A Report of the Conceptual Framework Working Group of the Millennium Ecosystem Assessment* (Island Press 2003).
[18] G Daily (ed), *Nature's Services: Societal Dependence on Natural Ecosystems* (Island Press 1997).
[19] *Ecosystems and Human Well-Being: A Framework for Assessment*, 7–8.

ecosystem services, taking into account trade-offs among multiple ecosystem values, ecosystem users, and ecosystem beneficiaries that must be negotiated or resolved in making ecosystem management choices.

The MA framework mapping of sustainable development portrays ecosystem governance at three management levels: individuals and small groups (the local community); the nation (both public and private, including municipal administration); and international (again including both public and private actors). The framework for assessment emphasises the need to align the management options for consideration with the appropriate level or levels of governance at which those options can be exercised and implemented. It explicitly acknowledges that the allocation of capacity or responsibility across these levels is often difficult to identify precisely and that more than one level may be involved.

The last key feature of the MA framework is its analysis of the drivers of ecosystem change. Drivers can be direct (such as draining a wetland) or indirect (such as climate change). The framework further explains that the drivers of change can be either endogenous (that is, under the control of the decision maker at a particular governing level) or exogenous (beyond that decision maker's control). Whether a particular driver/effect relationship is endogenous or exogenous depends both on the level of governance and on the time relationship between the driver and the effect. For example, market forces affecting the economic value of a natural resource such as timber, minerals, wind, or sunlight are exogenous to local groups and communities, but are endogenous – subject to adjustment or regulation – at the national or international level. This leads to the governance conundrum that making sustainable development decisions at one governance level can have consequences for sustainable development at another level – local choices can have distant effects, but distant choices can also have local effects. The governance significance of the time relationship is exemplified by climate change: it is an exogenous effect (no longer controllable) in the short term (because whatever climate changes manifest in the next 10 or 20 years will be the result of past emissions), but endogenous (subject to mitigation)) over a span of decades to centuries by decisions to reduce and reverse accumulation of greenhouse gases today and in the future. The MA framework thus advises that multiple levels may need to be engaged in governance depending on the particular decisions to be made. Moreover, multiple governance mechanisms, including market mechanisms, may be appropriate.[20]

2.1.3. Social-ecological resilience theory

Social-ecological resilience theory enriches the Brundtland Commission and MA framework conceptions of sustainable development. Modern ecological science understands that ecosystems are dynamic regimes undergoing continuous change. Scientifically, 'resilience' refers to 'the capacity [of complex adaptive systems] to absorb shocks while maintaining function […].

[20] AP Kinzig et al, 'Paying for Ecosystem Services – Promise and Peril' (2011) 334 *Science* 603.

[It] provides the components for renewal and reorganization'.[21] Pertinent to long-term energy policy, the theorists also posit that, 'Managing for resilience enhances the likelihood of sustaining development in changing environments where the future is unpredictable and surprise is likely'.[22]

Understanding that there is pervasive interaction between humans and natural ecosystems, social-ecological resilience theory blends the original scientific theory of ecological resilience with a socio-political analysis of comparably dynamic social systems for ecosystem management. In this way it provides a frame of reference for thinking about ecosystem management in social terms with a specific connection to sustainable development: 'Resilience in social-ecological systems is the key to sustainable development. To sustain development in a world in transformation, policy must enhance resilience and sustain social ecological systems in the face of surprise, unpredictability and complexity'.[23]

Social-ecological resilience theory identifies essential attributes of resilient social systems for managing resources.[24] The first premise is that ecological systems are dynamic and unpredictable, so the governance regime must be adaptable. Scientifically, adaptive governance requires continuous monitoring of ecological conditions and adjusting the management regime for maintaining ecological resilience based on the changing evidence. The second premise is that the governance system itself must also be resilient. In an approach similar to the MA framework, social-ecological resilience theory stresses that the initial organisation of governance must carefully match the resource 'units' to be managed with the key attributes of the resource itself. Then it is essential to assure that representatives of all the various users of and beneficiaries of the resource participate, directly or indirectly, in the governing body. It is understood that various persons or groups may have different or competing interests or perspectives on sustainable use of the resource, so negotiation and compromise may be necessary. The fundamental principle for 'resilient' governance is that the negotiations and compromises must come through participatory, collaborative decision making. Only an open, participatory system can maintain the social legitimacy of the governance regime.

Adaptive, participatory governance clearly poses challenges for traditional public regulation law and policy. A non-hierarchical, collaborative governance style prefers trial-and-error flexibility and 'clumsy' governance to a static set of objectives or management rules. Because energy system development frequently depends on private sector investments, the guiding principle of adaptability is inherently in tension with investors' desire for predictable returns. One way to resolve that tension is by noting Elinor Ostrom's observation that an important

[21] C Folke et al, 'Resilience and Sustainable Development: Building Adaptive Capacity in a World of Transformation', paper for the Environmental Advisory Council to the Swedish Government (2002) 13, available at http://www.sou.gov.se/content/1/c6/21/35/95/3d5f127a.pdf.
[22] Ibid.
[23] *Resilience and Sustainable Development. A Report for the Swedish Environmental Advisory Council* (2002) point 6, available at http://www.sou.gov.se/content/1/c6/21/35/95/47a915fd.pdf.
[24] C Folke, 'Resilience: The Emergence of a Perspective for Social-Ecological Systems Analyses' (2006) 16 *Global Environmental Change* 253; J Ebbesson, 'The Rule of Law in Governance of Complex Social-Ecological Changes' (2010) 20 *Global Environmental Change* 414; E Ostrom, 'A General Framework for Analyzing Sustainability of Social-Ecological Systems' (2009) 325 *Science* 419.

aspect of polycentric collective action is to build and maintain trust.[25] On the one hand, that implies mechanisms to promote information exchange, coordination and collaboration, so that all participants at all times have some idea of who is doing what research and how their own efforts or investments can contribute to the sustainability. On the other hand, it also suggests that public schemes of financial assurance or compensation to hedge against unpredictable adaptive changes to policy may be appropriate to attract the large private investments that energy systems require.

2.2. Sustainable development criteria

Drawing from and integrating the three theoretical sources of sustainability identified in section 2.1 above, this section identifies four characteristic elements of sustainable development policy making and policy implementation. These elements can be used as criteria for energy technology deployment decisions to help resolve the energy-climate trilemma. The four criteria described here are far from covering all the issues that can and should arise in rapidly scaling-up the deployment of non-carbon energy technologies. They are presented simply to illustrate the role that sustainable development thinking can and should play in energy policy making.

2.2.1. Holistic analysis

Sustainable development theory calls for integrated evaluation of the social, economic, and ecological consequences of policy choices and interventions. This means that every significant policy choice should be subjected to holistic analysis. Any policy that is not attentive to all three factors is unlikely to lead to sustainable development at global scale.

Almost any energy technology option involves trade-offs among economic, ecological, and social factors. The choice between onshore and offshore wind energy development is a simple example. Onshore wind turbines can have ecological consequences and high social costs for host communities, but they are one of the lowest-cost non-carbon energy options. Offshore wind farms avoid most of the effects on communities tend to have fewer immediate environmental effects, but they are significantly more expensive than onshore wind, even after accounting for the higher wind potential offshore. Decisions to scale up deployment of wind power should carefully assess these and other trade-offs at the local, national, and international level before preferring one strategy over another. Obviously, different nations or regions might reasonably reach different conclusions about the relative merits of onshore and offshore wind development depending on their different geographic, economic, social and ecological circumstances.

[25] E Ostrom, 'A Polycentric Approach for Coping with Climate Change' (2009) *World Bank Policy Research Paper* 5095, 10–14.

Holistic analysis also connotes attention to the full life-cycle of energy systems, specifically including the overall energy, mineral and other resource implications of the production, use, and final disposal of the physical components of energy generation, transmission, and end-use systems.

2.2.2. Intragenerational and intergenerational equity

The equity elements of sustainable development have a direct bearing on the energy-climate trilemma. On the one hand, intragenerational equity gives a strong sustainable development justification for the initiative by United Nations Secretary General Ban Ki-moon to bring electricity to the 1.3 billion people in developing countries that do not have access to it today. Failing to provide access to electricity for these people would be an inequitable strategy for finessing the energy security and environmental protection implications of meeting that new energy demand. Intergenerational equity, meanwhile, is the paramount sustainable development consideration behind current efforts to reduce carbon emissions and thus mitigate climate change, and the main argument against the persistent tendency to prioritise the immediate economic benefits of fossil fuel consumption over investments in sustainable energy. The energy-climate trilemma has its roots in physical facts and global social circumstances, so both aspects of equity should be kept as a guide for resolving it. They highlight the challenge of bringing down the costs of renewable energy production to levels that make electricity accessible to all and to develop and deploy energy systems suited to the social and economic circumstances of developed and developing countries alike.

2.2.3. Adaptability and keeping options open

A central goal of sustainable development is to restore and maintain ecological, economic, and social conditions that afford options to individuals and societies, now and in the future, to pursue their goals. The MA framework devotes much of its attention to the goal of maintaining options and exercising choice in managing drivers of change. Likewise, social-ecological resiliency is about maintaining ecosystem and social capacity to adapt to change. If sustainable development is in part about adaptability and the flexibility to change policies and institutions to meet changing conditions, this implies that the energy systems of the future should disfavor heavy commitment to non-resilient technologies or projects with long-tailed economic and ecological consequences. Energy policy should prefer instead systems that are adaptable to changes in technology, changing patterns and levels of energy demand, and new information about ecological and climate conditions.

2.2.4 Multi-level governance

Both the MA framework and social-ecological resilience theory deal directly with issues of governance. They stress that the pursuit of sustainable development calls for engaging the correct level or levels of governance depending on the specific issue at hand. Because energy resources are often exchanged globally and their use can have global and regional as well as local consequences, while energy consumption is inherently local, energy policy is a prime example of an issue for which multiple governance levels play multiple roles, with full awareness that the advantages and disadvantages of deploying a specific technology to meet a specific energy need will vary with national and even local conditions.

3. APPLYING THE SUSTAINABILITY CRITERIA TO ENERGY POLICY

If the world community pays attention to the ever more urgent warnings of the Intergovernmental Panel on Climate Change[26] and other experts,[27] the coming years should see rapid deployment of carbon-free energy worldwide. 'Tackling climate change is a fundamental component of sustainable development […]. We need to change the conversation on climate change and sustainable development to become about how we make this transformation to the way we live life and do business'.[28] Such deployment can happen only with enormous amounts of private and public investment; one estimate is $150 billion per year. This section will use the four sustainability criteria set forth in part 2 in an integrated analysis of certain choices about generation and distribution aspects of energy to illustrate the application of sustainable development criteria to the presumed revolutionary deployment of energy systems to resolve the energy trilemma. The discussion here is necessarily a summary of the argument; hopefully it will inspire others to undertake a deeper analysis of these issues.

This chapter's main thesis is that sustainable development criteria should guide governments and investors in steering their energy investments. Investments in deployment of non-fossil energy have two major dimensions. One, obviously, is choosing among different sources of energy, especially for electricity generation. The other concerns the means of transmission and distribution of electricity, which will vary with the national and regional mix of energy sources. A third core element of sustainable energy policy is to enhance energy efficiency and thereby reduce demand. Improvements in energy efficiency are absolutely essential, but they will be omitted from further analysis here because they inherently meet all the sustainability criteria by reducing the economic, social, and environmental costs of energy generation and transmission.

[26] TF Stocker et al (eds), *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press 2013).
[27] For example, K Annan, 'A United Call for Action on Climate Change' *Washington Post* (22 January 2014).
[28] M Robinson, 'Ignore Climate Change at your Peril' *Huffington Post* (9 January 2014).

3.1 Holistic analysis

A defining characteristic of sustainability thinking is its call for an intergration of ecological, economic, and social considerations. Environmental assessment rules already require a comprehensive analysis of direct and indirect effects of particular actions or decisions, taking into account the life-cycle consequences of particular products or practices. Holistic analysis extends that kind of analysis to the economic and social effects of the same choices among different energy production technologies and different modes of distribution. To use the MA framework terminology, production and transmission of energy are drivers of ecosystem change and need to be managed holistically with sustainable development in mind. Most of the chapter focuses here on the options for generation and transmission of electricity at large scales, but the use of biofuels for transportation also exemplifies the need for holistic analysis.

Holistic analysis brings out that every generation technology comes with its own set of sustainable development trade-offs. Choices between development of onshore wind and offshore wind were discussed briefly in section 2.2.1. above. A similar thought exercise can be made for solar power. Massive expansion of photovoltaic solar (PV solar) entails reliance on scarce natural resources such as rare earths for fabrication of solar panels, higher costs per unit of energy than many alternatives (with knock-on economic effects on end-user businesses and households), the need for long-distance transmission across international boundaries to bring solar power from sun-rich areas to centres of demand, and, in the absence of large-scale electricity storage capability, the need to maintain other power sources for nights and cloudy days. On the positive side, PV technology is simple, adaptable in scale (from single panels to large arrays), can often be situated on rooftops or other unused spaces (thus minimising land use and aesthetic effects), and creates business and employment opportunities for PV system installers. This combination of advantages and disadvantages may make further deployment of PV solar a sustainable choice for China (which has rare earths and an established PV production industry) or sun-rich California, but a more debatable option for Germany, where transmission capacity is under strain and the high costs of solar are engendering social resistance.

More generally, holistic analysis should be applied to choices among different energy system options or different mixes of energy sources, thus revealing the trade-offs that communities or nations need to weigh with respect to the effects of each on land use, natural resource commitments, economic costs and opportunities, and consequences for related systems. The matter of the biofuels mandate in Europe is a vivid example of how shortcomings in holistic analysis may have led to an unsustainable policy. The European renewable energy directive[29] established a biofuels mandate at a time when they seemed to be the only option to reduce greenhouse gas emissions from motor vehicles and shift energy supply away from imported fuels to fuels produced in Europe. The European Commission was alert to the environmental risks in promoting conversion of land to biofuels crop production, and included restrictions to

[29] Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC [2009] OJ L140/16 (RED).

protect ecologically valuable lands. A more holistic analysis, however, could have flagged other sustainable development drawbacks to the biofuels. One is the effect on food and feed production of shifting some agriculture to crops for fuel, potentially reducing food supply and increasing food costs. To the apparent surprise of European officials, it quickly became apparent that European biofuels policy also had significant international land use ramifications as agricultural producers in other countries switched to biofuel crop production to serve the European market. This had two adverse consequences: it reduced international food supplies and may have led to socially destabilizing increases in food prices in developing countries. In other countries, the European demand for biofuels led to conversion of forested land to agricultural uses such as palm plantations. These land use changes are arguable inconsistent with sustainable development priorities for those countries. Finally, the full life-cycle of biofuel cultivation, refining, and fuel distribution was incompletely assessed. Academic researchers have determined that the energy required to produce biofuels--including diesel fuel for farm equipment, energy inputs to fertilizers, refining of maize or oilseeds into fuels, and the transport of the fuels – is almost as high, and in some cases higher, than the energy value of the biofuels themselves. That is, the energy return on the energy invested is very low and sometimes negative, meaning that biofuels did little or nothing to reduce overall greenhouse gas emissions.[30] A more thoroughgoing holistic analysis of biofuels before committing to their use should have anticipated these problems and allowed for more calibrated decisions about whether or under what conditions promotion of biofuels would further sustainable development.

From a technical, regulatory, and engineering point of view, biofuels are a relatively simple, inexpensive, and decentralised option for a non-carbon energy source, and new production technologies such as growth of algae may overcome the problems just mentioned. Another major non-carbon energy alternative, nuclear power, represents a different range of issues when considered holistically. Nuclear power generation is a highly complex technology presenting a risk of catastrophic failure of devastating effect and thus requires, at a minimum, multiple and redundant engineering control systems and safeguards from mining of uranium ore all the way to waste disposal. Nuclear power plants are necessarily large-scale, expensive installations requiring centralized control. Finally, as nuclear accidents have revealed, the possibility of breakdowns of equipment, human operational error, and extreme natural forces cannot be excluded altogether. All of this is not to say that nuclear power should peremptorily be excluded from consideration on sustainable development grounds. After all, nuclear power is the only currently-available means for generation of very large amounts of baseload electricity with very low life-cycle carbon emissions. On this basis alone nuclear power merits serious consideration as one part of the world strategy to mitigate climate change. More than a few countries have made the deliberate decision to continue with or further develop nuclear power. Those nations that have, by circumstance (Japan) or deliberate legislative decision (Germany), curtailed their current or future use of nuclear power in their energy mix have seen their greenhouse gas emissions increase in recent years, an unsustainable result. Never-

[30] *Bioenergy – Limits and Chances* (Leopoldina – Nationale Akademie der Wissenschaften 2012) available at http://www.leopoldina.org/en/publications/detailview/?publication[publication]=434&cHash=9daf8d722e71e30bf2901cf01ee800d1.

theless, if nuclear power is to be an option, governments and businesses should use thorough rigorous holistic analysis to guard against the human inclination to overlook or to play down the significance of extremely low risks of extremely large magnitude events. Some further issues about nuclear power will be raised under the adaptability criterion in section 3.3 below.

Finally, there is the matter of electricity transmission to be considered in holistic analysis of energy systems. One important sustainable development consideration with respect to transmission is the trade-off between widespread renewables generation and the environmental, economic, and social impact of long-distance transmission systems. In Europe especially, environmental advocates [31] as well as electricity sector firms [32] envision long-distance transmission as the necessary means to link geographically diverse generators of wind and solar electricity – from North Africa to the North Sea – in order to reduce variability and enhance reliability of renewable electricity supply throughout Europe. One drawback to long-distance transmission, even efficient transmission through high voltage direct current lines, is the inevitable loss of electricity in the system, which increases with distance. Thus, transmission itself becomes a factor in total energy demand. Moreover, long-distance transmission over land means overhead transmission lines (underground lines would be prohibitively expensive), which intrude on landscapes and communities that do not themselves benefit from the electricity passing through. Given these problems, distributed electricity generation – that is, generation at or very near the point of consumption, such as electricity for a home or commercial building from rooftop solar cells – seems to have an inherent sustainable development advantage. But distributed generation is less efficient than centralised generation, meaning higher costs and more materials for each unit of energy produced, definitely negative factors in sustainable development terms. Moreover, distributed generation is simply unworkable for some promising forms of renewable generation such as offshore wind or large-scale solar arrays, which by their nature must be located in unpopulated or sparsely populated places far away from end users. As with generation system choices, transmission options involve complex trade-offs that should be assessed through holistic analysis of their social, economic, and environmental effects.

Batteries are potentially another way to make highly variable sources like wind and solar usable in producing a stable supply to end users. They can store the electricity generated at times of peak production and then regenerate the electricity when it is needed to maintain supply in the transmission system. Batteries are also the key to ambitious schemes to shift automobiles and other light vehicles from fossil-fueled engines to electric motors. The battery technologies available today are not sufficient to serve these purposes at large scale, but researchers are actively pursuing improved technologies. Because batteries are chemically based, however, important pollution and human exposure considerations are bound to arise with respect to the materials used in their manufacture and in the management of disposal of batteries at the end of their useful life.

[31] *Battle of the Grids. Report 2011* (Greenpeace International 2011) available at http://www.greenpeace.org/international/Global/international/publications/climate/2011/battle%20of%20the%20grids.pdf.

[32] European Network of Transmission System Operators for Electricity, 'ENTSO-E Views on Energy Roadmap 2050' (5 June 2012) available at https://www.entsoe.eu/publications/position-papers/2012-position-papers/.

3.2. Equity in energy

Looking through the lens of equity draws attention to the sharply different energy contexts for developed as compared with developing countries, and corresponding sharp differences in appropriate sustainability responses. Intragenerational equity points not only to the developmental value of increases in energy demand in developing countries, but also the need for that energy to be widely affordable to people with very low income levels. As the International Energy Agency has said, 'energy poverty in the developing world calls for urgent action'.[33] The independent climate policy analysts who wrote the Hartwell Paper made 'ensuring energy access for all' its first 'overarching goal'.[34] Access for all can only be assured if the absolute cost of electricity is manageable for governments and individuals in developing countries. For a negative example, the World Bank funded a project to bring electricity to remote villages in Laos by installing household solar PV systems of low cost (in developed country terms) on the condition that the households pay for the equipment over time (user fees are also a common approach in developed countries). An assessment of this project found that the Laotian villagers who were the intended 'beneficiaries' of this energy access project often had to deplete their own capital (by selling livestock, for example) to raise cash for the required payments to keep the electricity on.[35] Such self-defeating and unsustainable outcomes need to be avoided. But as the Laos example shows, the sustainability paradox is that the lowest cost energy today derives from fossil fuels, so a subsidy or other means to reduce the costs of renewable energy for end users needs to be included in programs to make electricity and other forms of energy truly accessible.

For developed countries, the equity criterion for energy policy, both intragenerational and intergenerational, means above all a concerted and expedited effort to remove fossil fuels from their energy mix to sharply reduce their contribution of greenhouse gases. The rate of deployment of renewable energy systems, while rising, still falls far short of what is needed to meet goals of nearly 100 per cent renewable electricity generation by 2050.[36] Certainly some major developing countries are also equitably obligated to adopt similar policies, but the emissions legacy of developed countries and their larger financial capacity for mitigation puts the greater equitable burden on them.

[33] *World Energy Outlook 2010. Executive Summary* (International Energy Agency 2010) 14.
[34] G Prins et al, 'The Hartwell Paper: A New Direction for Climate Policy after the Crash of 2009' (2010) 12–13, available at http://eprints.lse.ac.uk/27939.
[35] H Kaisti and M Käkönen, 'Sustainability of Solar Power: Objectives and Implementation of World Bank's Off-Grid Program in Laos', paper presented at Trends and Future of Sustainable Development Conference (Tampere, 8–10 June 2011).
[36] O Edenhofer et al (eds), *IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation. Prepared by Working Group III of the Intergovernmental Panel on Climate Change* (Cambridge University Press 2011).

3.3. Adaptability as a criterion for energy systems

Applying sustainable development principles explicitly, an analysis of the German path to 100 per cent renewable energy by 2050 stresses the need for rapid expansion of offshore wind power along with better connections in the North Sea (strengthening access to Norway's hydroelectric capacity for pumped-storage power) and the potential connection of the continental grid to Africa for solar power.[37] Greenpeace[38] and the European Commission[39] come to similar conclusions for Europe as a whole. Thus, if one assumes reliance on large-scale energy generation facilities in geographically appropriate locations often remote from centres of demand, including offshore wind development in the north and solar power in southern Europe and North Africa, to meet Europe's goals of 90–100 per cent non-carbon electricity feasible throughout Europe, long-distance energy transmission is also required. This is technically feasible, of course, but the cost is high. The much-discussed Desertec concept for North African solar has an estimated cost of at least €400 billion, perhaps more. Other systemic analyses also show high costs for transmission and distribution of renewable energy.[40] Making the necessary investments would mean sinking costs in infrastructure with long lifetimes, which would strongly inhibit adaptation of the system to future alternatives for decades or longer.

A lack of resilience and adaptability is even more apparent for the nuclear generation option, especially after Fukushima. Germany's post-Fukushima official move away from reliance on nuclear power has resulted in an energy crisis of sorts within Germany, not to mention a claim for €3.7 billion in compensation from the German government by the Swedish firm Vattenfall for the lost value of its investments in nuclear power plants.[41] The very large scale and high capital costs of nuclear power plants makes them highly unadaptable over their 30–50 year lifetime.

Other factors being equal, adaptability and resilience clearly point in favour of smaller, locally-oriented energy systems even at some cost of reduced efficiency and higher cost. A larger

[37] 'Pathways towards a 100% Renewable Electricity System: Executive Summary and Recommendations' (German Advisory Council on the Environment 2011), available at http://www.umweltrat.de/SharedDocs/Downloads/EN/02_Special_Reports/2011_01__Pathways_Chapter10_ProvisionalTranslation.html.

[38] *Battle of the Grids* (Greenpeace International 2011).

[39] European Commission, 'Energy infrastructure priorities for 2020 and beyond – A Blueprint for an integrated European energy network' COM(2010) 677.

[40] One estimate of system costs for Germany at 80% renewables shows a cost of about 20 billion euros per year of additional investment in and operation of transmission systems, distribution systems and storage systems. *Nuclear Energy and Renewables: System Effects in Low-Carbon Electricity Systems. Executive Summary* (Organisation for Economic Co-operation and Development and Nuclear Energy Agency 2012) 10 (graph). Another study comparing total costs of PV solar in Germany and southern Europe shows that transmission costs, which amount to 40–60% additional cost per unit of energy, make it less costly overall to locate PV for Germany in Germany rather than importing from Spain, Italy, or Greece. F Peter et al, 'Finding a Place for Utility-Scale PV Plants in Europe' *European Energy Review* (21 November 2013) available at http://www.europeanenergyreview.eu/site/pagina.php?id=4210.

[41] N Bernasconi-Osterwalder and RT Hoffmann, 'The German Nuclear Phase-Out Put to the Test in International Investment Arbitration: Background to the New Dispute *Vattenfall v Germany (II)*' *Transnational Institute – Trade and Investment* (8 October 2013) available at http://www.tni.org/briefing/nuclear-phase-out-put-test.

number of smaller generating installations and less elaborate transmission networks would provide more resilient electricity system that could be modified at relatively lower cost as new generation or storage technologies become available. Adaptability is equally important for the sustainable energy path for developing countries, where one of the primary needs is to expand generating capacity. The historic record, for example, suggests caution in making long-term commitments to massive hydroelectric projects, which have disruptive long-term effects downstream on agriculture and ecological systems, especially by impairing the ecosystem support of soil formation. Developing countries, too, should keep resilience and adaptability in mind and work toward an energy system comprising many smaller units using diverse technologies. (The same counsel, of course, applies to energy projects promoted by development banks.) Emergent, adaptable technologies are already showing their value for bringing electricity and other energy services to remote rural areas in the developing world, such as micro rooftop solar collectors that generate enough electricity for a light bulb or a recharger for a cell phone that also serves to access cash or credit.[42] Slightly larger collectors can power a rural health centre or a school. These are promising options for nations where the extension of conventional grids is very expensive ($400 million to bring electricity to 200,000 more homes in Rwanda).

3.4. Multi-level governance

As noted in Part 2, Multi-level governance is not a new issue in environmental policy, but for sustainable development of energy the MA framework and social-ecological resilience theory both explicitly focus attention on the socio-political aspects of governance. In particular, they focus sharply on the need to have all levels and sectors and stakeholders involved and to make allocations of choice and responsibility to the level or levels of governance that are appropriate to each dimension of energy policy. Consider, for example, the challenge of moving energy systems to very high proportions of renewable energy. As many historical cases attest, different interest groups vested in the current status (eg, fishers or shipping firms with respect to offshore wind or other ocean-based power systems) might find themselves or the resources they use as the preferred sites for renewable energy systems, sometimes systems intended to export power to other countries or regions. By the same token, reaching abroad for supplies of energy also raises multi-level governance considerations. For example, if Europe is to undertake large investments in solar and wind energy in North Africa, resilience theory and the social dimension of sustainable development, among others, teach that the local communities where these systems will be located should have as much of a voice in those decisions as the powerbrokers in national capitals and large utility companies. However beneficial they might be at regional or international scale, such energy system choices mean the commitment of local ecosystem resources, and the potential benefits (and costs) to the community of large inflows of outside investment and long-term use of those resources must be carefully assessed. Moreover, the necessary political stability of host country national governments to make large energy investments secure depends on a robust degree of local social acceptance.

[42] (Kristof 2011).

Finally, the investment side of the energy revolution raises its own multi-level governance considerations. If the world community undertakes the massive investment in energy technology research, development that so many experts are calling for, and if analysts and advocates are assuming rapid deployment of promising new technologies, some oversight or guidance of that effort should be provided at the international level.

3.5. Integration of the four criteria

For analytical purposes in this part of the chapter, the four sustainability criteria have been discussed serially. For true sustainable development analysis, of course, they must be integrated. Only through integration can communities, nations, and the world acquire the combination of information, prediction, and analytical perspective essential for governance of a sustainable world energy policy. It is encouraging that the integration of the four criteria already appears in several energy policy analyses.[43] The United States National Research Council has developed a new conceptual term for an effective way for the United States to manage climate and energy policy. They call it 'iterative risk management', which integrates elements of equity, holistic analysis, and governance along with a central emphasis on adaptability and keeping options open.[44] Iterative risk management is fully consistent with the sustainable development criteria advanced in this chapter.

4. CONCLUDING REMARKS

The chapter began by noting the three desiderata of contemporary energy policy: security of supply, accessibility/affordability, and protection of the environment. To a considerable degree, the lessons of sustainable development theory presented in Part 2 of the chapter dovetail with these desiderata. The struggle to advance all three energy goals simultaneously tends to compel holistic analysis. The affordability/accessibility goal in particular engages directly with intragenerational equity considerations as well as with the economic dimension of sustainable development, and the environmental protection goal points to the intergenerational equity obligation of mitigating climate change. Security of supply cannot be achieved without considerable elements of multi-level governance, and the desire for energy security over long time periods points clearly to the value of adaptability in energy policy.

The discussion in Part 3 of some important energy policy choices in terms of the four selected sustainability criteria highlights the continuing importance of careful consideration of a multiplicity of different factors in making energy policy choices today that will set the course for societies in the coming decades. Trade-offs among the economic, social, and environmental components for sustainable development are inescapable, so holistic analysis is essential to

[43] U Steger et al, *Sustainable Development and Innovation in the Energy Sector* (Springer 2005); 'Pathways towards a 100% Renewable Electricity System' (German Advisory Council on the Environment 2011).
[44] National Research Council, *America's Climate Choices* (National Academies Press 2011) 39–50.

reveal those choices. At the same time, the environmental and social dynamism highlighted in social-ecological resilience theory serve as a constant reminder to steer away from long-lasting commitments to individual strategies and strive for development of energy systems that are adaptable to changing technologies and economic and social conditions. In a globalised world economy where climate change is also a global concern of paramount importance, multi-level governance is an inescapable factor for energy policy formulation.

The only appropriate conclusion for this chapter is to come back to our energy-climate trilemma. The world needs energy, and the energy needs of the world's poorest must also be met. These needs must be met with affordable energy, and with today's technologies the most affordable energy sources are fossil fuels. But the analysis in this chapter has focused on noncarbon energy choices because the world simply cannot 'afford', in environmental terms, to continue with a fossil-based energy system. The challenge of resolving this trilemma is daunting, but not impossible. To borrow the words of Kofi Annan: 'But let me conclude on a note of cautious optimism: if science tells us that human activity is the main driver of global warming, then human action can also reverse it. But this must happen before the climate consequences become irreversible. Failing to act will be nothing short of catastrophic'.[45]

[45] K Annan, 'Climate Crisis: Who Will Act?' *New York Times* (25 November 2013).

CHAPTER 2

THE SUSTAINABILITY OF THE EU'S BIOFUELS POLICY

WYBE DOUMA

1. INTRODUCTION

GHG emissions from transport in the EU

The transport sector is responsible for around a quarter of the greenhouse gas emissions (GHG) in the EU, making it the second biggest greenhouse gas emitting sector after energy. Contrary to other sectors that decreased their emissions by 15 per cent in the period 1990–2007, transport emissions increased 36 per cent over the same period – despite improved vehicle efficiency.[1] Technological innovation thus did not outbalance the increased amount of personal and freight transport.

Since the EU has pledged to limit its GHG emissions under the Kyoto Protocol, it had to come up with a variety of measures to curb GHG emissions from transport. One of these measures is stimulating the use of biofuels instead of fossil fuels in transport. If a number of conditions is met, the use of 'good' biofuels causes less GHG emissions than the use of fossil fuels. However, biofuels can also cause more GHG emissions than fossil fuels, and bring about serious damage to people and nature in developing countries. Setting up a regime that ensures that only good biofuels are used in the EU has proven to be quite a challenge.

Biofuels

Biofuels are liquid or gaseous fuels that are produced from biomass, *ie* biological material from living, or recently living organisms. The two most common types of biofuels are ethanol[2] and biodiesel.[3] The first type is predominantly used in Brazil and the USA, the latter more in Europe. A distinction is made between first and second generation biofuels, with the former being made from food-crops and the latter from non-food crops, crops residues and waste. Second generation (novel) biofuels offer greater reductions in GHG emissions than first generation (conventional) biofuels.

The use of biofuels does not release long-stored carbon into the atmosphere, but only releases recently captured carbon dioxide. That does not mean that biofuels are completely carbon-neutral. The process of producing the biofuels often requires the use of fossil fuels, for exam-

[1] European Commission, 'Reducing Emissions from Transport', available at http://ec.europa.eu/clima/policies/transport/index_en.htm.
[2] Produced from sugar cane, sugar beets and cereal crops; used to replace petrol.
[3] Produced from rapeseed or soybean oils, but also from waste vegetable oils, animal fats or algae; used to replace diesel.

ple.[4] Then there are the impacts of land-use change, especially where conventional biofuels are concerned.

If the production of biomass for biofuels is taking place by (directly or indirectly) converting areas like forests or peat lands into cropland – which releases enormous amounts of CO_2 – the net greenhouse gas effect of such biofuels becomes negative rather than positive.[5] When biomass replaces such areas directly, this is called direct land-use change (DLUC). When forests or peat lands are cleared to replace the food crops that were diverted elsewhere to biofuels production, this is called indirect land-use change (ILUC). Also, increased demand for agricultural land because of the rising use of biofuels can lead to rising food prices and 'land grabbing'[6] in developing countries, water scarcity, and threats to biodiversity.

EU biofuels policy

Aware of the potential risk that its biofuels policy could do more bad than good in the fight against climate change, and could negatively affect developing countries in various other ways, the EU went ahead with the development of its biofuels policy. In 2003, an indicative target 5.75 per cent target of renewable transport fuels to be reached by 2010 was introduced.[7]

When this did not bring about the desired result, the current binding target of 10 per cent renewable transport fuels by 2020 was adopted.[8] In practice, the target is predominantly met by conventional biofuels. About one fifth of the domestic use of transport biofuels is imported from outside the EU.[9] Negative effects of direct land-use change (DLUC) are taken care of in the EU legislation, but ILUC are not prevented because of difficulties in quantifying the indirect effects of increased demand for biofuels. Instead, the problem was to be studied further. After a Commission report issued in 2010 advised to adopt a precautionary approach towards

[4] M Morris, E Mangold and D Friedman, 'Biofuels and Greenhouse Gas Reductions' (28 January 2014) available at http://www.extension.org/pages/Biofuels_and_Greenhouse_Gas_Reductions.
[5] J Fargione et al, 'Land Clearing and the Biofuel Carbon Debt' (2008) 319 *Science* 1235; and T Searchinger et al, 'Use of US Croplands for Biofuels Increases Greenhouse Gases through Emissions from Land Use Change' (2008) 319 *Science* 1238. Also see D Carrington, 'Leaked Data: Palm Biodiesel as Dirty as Fuel from Tar Sands' *The Guardian* (27 January 2012).
[6] Land acquisition by companies producing biofuels to the detriment of those that previously used and/or owned the land. See M Locher, B Steimann and B Raj Upreti, 'Land Grabbing, Investment Principles and Plural Legal Orders of Land Use' (2012) 65 *Journal of Legal Pluralism and Unofficial Law* 31; J Franco et al, 'The Global Land Grab. A Primer' *Transnational Institute – Agrarian Justice* (11 October 2012, revised February 2013) available at http://www.tni.org/sites/www.tni.org/files/download/landgrabbingprimer-feb2013.pdf; R Künnemann and S Monsalve Suárez, 'International Human Rights and Governing Land Grabbing: A View from Global Civil Society' (2013) 10 *Globalizations* 123.
[7] Directive 2003/30/EC of the European Parliament and of the Council of 8 May 2013 on the promotion of the use of biofuels or other renewable fuels for transport [2003] OJ L123/42. This directive will briefly be touched upon in order to illustrate the origins of the current EU biofuels policy.
[8] Notably through Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC [2009] OJ L140/16 (RED).
[9] B Flach et al, 'EU Biofuels Annual 2013' (2013) *Global Agricultural Information Network Report* NL3034.

ILUC,[10] it took until 2012 before a 5 per cent cap on first generation biofuels was proposed as a means of tackling ILUC.[11]

Science-based and/or precautionary approach

Opponents of ILUC measures point out that there still is too much scientific uncertainty for a science-based approach and plead for collecting more evidence and the development of more robust methodologies instead. Proponents point at the problems already occurring and call for precautionary action. The ILUC aspects of the EU biofuels policy thus form a classic example of risk governance controversy occurring where potential risks are at hand that cannot be quantified for the time being, in other words where science cannot yet provide (all) concrete answers. Because such 'wicked problems' occur time and again,[12] the EU incorporated the precautionary principle in its primary law[13] and set out in guidelines how this principle is to be used when preparing policy decisions.[14] These guidelines also apply to the development of the EU's biofuels policy.

Sustainable development

Following a precautionary approach forms a key part of realising sustainable development. The EU policy objective of contributing to the sustainable development of third countries, notably developing states, is laid down in Articles 3(3) and 21(3) TEU and is worked out in a variety of policy documents. This objective needs to be taken into account in all other policies areas, hence also where it concerns the development of the EU's biofuels policy.

Research questions and methodology

This contribution will investigate whether the manner in which the ILUC aspects of the EU's biofuels policy were dealt with is consistent with the EU's rules and guidelines regarding policy making, and with the policy objective of contributing to the sustainable development of developing countries.

The Treaty provisions on sustainable development, a science-based approach and the precautionary principle, and the explanation given to them in various EU policy documents – notably where it concerns the manner in which decisions need to be prepared and issues that need to be taken into account – will form the framework against which the manner in which

[10] European Commission, 'Report on indirect land-use change related to biofuels and bioliquids' COM(2010)811 final.
[11] European Commission, 'Proposal for a Directive of the European Parliament and of the Council amending Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Directive 2009/28/EC on the promotion of the use of energy from renewable sources' COM(2012) 595 final.
[12] See 'Late Lessons from Early Warnings: Science, Precaution, Innovation' (2013) *European Environment Agency Report* No 1/2013.
[13] Art 191(2) TFEU.
[14] European Commission, 'Communication from the Commission on the precautionary principle' COM (2000)1 final.

the ILUC aspects of the EU biofuels policy were dealt with will be tested. This framework will be discussed in paragraph 2 of this contribution.

In paragraph 3, the adopted instruments and proposed changes are set out. After a brief description of the former biofuels directive, attention will turn to the present Renewable Energy Directive (RED). In addition, the Commission report on ILUC issued in 2010 and the Commission's 2012 ILUC proposal will briefly be looked at. In order to assess whether the manner in which EU biofuels policy came about is in line with the EU's rules and guidelines, the impact assessments and comments from other bodies like EP and the European Economic and Social Committee (EESC) will be turned to.

In paragraph 4, the consistency of the EU's biofuels policy as laid down in the RED, in the 2010 report and the 2012 ILUC proposal will be tested against the EU's science-based and/or precautionary approach on the one hand, and against the policy objective of contributing to the sustainable development of third countries, notably developing states, on the other hand. In paragraph 5, concluding remarks are presented.

2. THE FRAMEWORK

2.1. Sustainable development

2.1.1. Treaty provisions

The EU strives to contribute to sustainable development inside the EU, but also in third countries. This commitment is not merely made in policy papers, but also in the two treaties that form the foundation for the European Union. Failure to observe such treaty commitments might not easily form an actionable case in itself. It does underline the importance the EU attaches to sustainable development, and can influence the interpretation of other provisions in the EU Treaties and in secondary legislation.[15] What is more, the treaty commitments are worked out in policy documents that explain how policy makers need to take sustainable development into account when new instruments are developed.

The internal aspects are codified in Article 3 para 3 TEU: 'The Union … shall work for the sustainable development in Europe based on balanced economic growth […] and a high level of protection and improvement of the quality of the environment'. Besides these internal ambitions, since the entry into force of the Treaty of Lisbon on 1 December 2009 the EU also pledges that it shall contribute to 'the sustainable development of the Earth, solidarity and mutual respect among peoples' (Article 3 para 5 TEU) and that it will take action aimed at fostering 'the sustainable economic, social and environmental development of developing countries, with the primary aim of eradicating poverty' and 'help develop international

[15] Compare Case C-43/10 *Aitoloakarnanias and others v Perivallontos and others* (ECJ, 11 September 2012), paras 134–39.

measures to preserve the quality of the environment and the sustainable management of global natural resources (Article 21 para 2 sub d and h TEU). It is added that the Union is to respect these principles and pursue the objectives in the development and implementation of the external aspects of its other policies (Article 21 para 3 TEU). Hence, when the EU develops its environmental, energy, internal market and other policies, the EU Treaty demands that these policies also contribute to the sustainable development of third countries. These provisions form a codification of a practice that had developed over time, as will be explained in the following paragraph.

2.1.2. Policy documents

In order to understand what 'contributing to sustainable development in third countries' means, and how the EU has gradually operationalised this concept, the EU Sustainable Development Strategy (EU SDS) is turned to first. In spite of its name – 'A sustainable Europe for a better world' – the first SDS[16] was mostly inward looking. The lack of outward perspective prompted the Göteborg European Council of June 2001 to ask for a communication on that topic.[17]

In the ensuing communication 'Towards a Global Partnership for Sustainable Development'[18] the Commission warned that some of the action included in the EU's internal strategy will be instrumental in diminishing the ecological impact the EU has on the rest of the world,[19] while admitting that the opposite can also be true: '[d]omestic European Union policies may have negative "spill-over" effects on other countries, notably in the developing world'.[20] The Commission explained that the coherency of EU policies needs to be improved, hence it proposed that the objectives of sustainable development were to be progressively integrated into all EU policies, with due respect to both their internal and external dimensions. An impact assessment is to be carried out for all major policy proposals, analysing their economic, social and environmental consequences in accordance with the conclusions of the Göteborg European Council, it was proposed. Furthermore, key policies like energy and transport need to be adapted to the internal and external objectives of sustainable development, and actual or potential problems of coherence need to be tackled whenever EU policies are formulated, reviewed or reformed. In sum, 'a more systematic and far-reaching review of existing and future policies and action is needed to improve coherence and increase the Union's credibility in

[16] European Commission, 'A sustainable Europe for a better world: a European Union strategy for sustainable development' COM(2001) 264 final (Commission proposal to the Gothenburg European Council).
[17] Göteborg European Council (15–16 June 2001). It was stressed there that the EU should promote issues of global environmental governance and ensure that trade and environment policies are mutually supportive. Presidency conclusions available at http://ec.europa.eu/smart-regulation/impact/background/docs/goteborg_concl_en.pdf.
[18] European Commission, 'Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions - Towards a global partnership for sustainable development' COM(2002) 82 final.
[19] Ibid 11.
[20] Ibid 14.

the international debate'.[21] The Commission promised to establish a coherent methodology for impact analysis to assess the economic, social and environmental consequences of all major policy proposals by the end of 2002.

Indeed, the inward looking 2001 EU SDS was complemented with an external dimension by the Barcelona Council of March 2002.[22] It was recalled that sustainable development is a primary objective in both the EU's domestic and external policies and that efforts to further increase the interlinkages between the internal and external dimension of the sustainable development strategy were needed. Integration and coherence of internal and external policies were described as indispensable for the EU to effectively contribute to sustainable development. The call for a sustainability impact assessment for major policy proposals was repeated. The Commission announced its intention to include, before the end of 2002, a sustainability dimension in the impact assessment which will form part of its wider efforts in the field of better regulation.

By mid 2002 the Commission issued its Communication on Impact Assessment,[23] in which two stages are distinguished: identification of relevant impacts (screening) and assessing them (scoping). In the first phase, the impacts are to be identified both where internal and external aspects are concerned; these are to be shown separately. The IA should identify both direct and indirect impacts.[24] Among the possible environmental impacts, land-use change and biodiversity loss are specifically mentioned.[25] In the second phase, the choice of method and the level of detail vary with the nature of the problem and judgments about feasibility. The depth of the analysis is to be proportionate to the significance of the likely impacts. Proposed measures that are likely to have serious negative side effects or particularly affect certain groups in society should be analysed more thoroughly than minor technical changes to regulations, it was explained.[26] The assessment is to take place in qualitative, quantitative and/or monetary terms. The precautionary principle should be applied when appropriate, in accordance with the Commission's guidelines (see paragraph 2.2 below).[27]

The EU SDS was revised in 2006,[28] notably to further strengthen the international dimension. The EU set out to '[a]ctively promote sustainable development worldwide' and to 'ensure that the European Union's internal and external policies are consistent with global sustainable development and its international commitments'. Furthermore, it was underlined that where there is scientific uncertainty, 'evaluation procedures' need to be implemented and 'appropriate preventive action' is to be taken in order to avoid damage to human health or to the

[21] Ibid.
[22] European Council of Barcelona (15–16 March 2002). Presidency conclusions available at http://ec.europa.eu/invest-in-research/pdf/download_en/barcelona_european_council.pdf. The external dimension was also needed in view of the upcoming 2002 World Council on Environment and Development in Johannesburg.
[23] European Commission, 'Communication from the Commission on impact assessment' COM(2002) 276 final.
[24] Ibid 15.
[25] Ibid.
[26] Ibid 8.
[27] Ibid 16.
[28] European Commission, 'Communication from the Commission to the Council and the European Parliament on the review of the Sustainable Development Strategy – A platform for action' COM(2005) 658 final.

environment. At the same time, it needs to be ensured that policies are developed, assessed and implemented on the basis of the best available knowledge and that they are economically sound and cost-effective, and that 'major policy decisions are based on proposals that have undergone high quality Impact Assessment (IA), assessing in a balanced way the social, environmental and economic dimensions of sustainable development and taking into account the external dimension of sustainable development and the costs of inaction'. Other tools for better policy-making that are identified include ex-post-assessment of policy impacts and public and stakeholders participation.

A 2009 progress report on the SDS[29] underlined that the EU has mainstreamed sustainable development into a broad range of its policies where the fight against climate change and the promotion of a low-carbon economy are concerned. At the same time, it noted that unsustainable trends persist in many areas and that the efforts need to be intensified. Where the EU transport policy is concerned, the review stressed that 'it is essential to take account of all aspects of sustainability (such as emissions, noise, land occupancy and biodiversity)'.[30] The review also noted that new challenges were emerging, which were not included or covered only marginally in the EU SDS, notably the external dimension of sustainable development, food security and land use.[31] The Commission therefore advised to focus on strengthening this international dimension.[32]

The Council broadly welcomed the Commission's proposed focus areas at its December 2009 meeting.[33] It explained that the EU SDS constitutes an overarching policy framework providing policy guidance for all EU policies and strategies, including a global dimension, serving as an early warning instrument and policy driver to bring about short-term policy action. Land use change and incentives for reduced deforestation and soil protection, food security, interactions with biodiversity, as well as impacts of population movements are described as new challenges.[34] The need to 'better integrate the global dimension in the other six priority areas in the coming reviews of the present and in a future revised SDS' is underlined.[35] The Council concluded that the EU SDS has to be made more responsive to the complexity and high dynamics of policy-making processes and new challenges from global changes, while

[29] European Commission, 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Mainstreaming sustainable development into EU policies: 2009 Review of the European Union Strategy for Sustainable Development' COM(2009) 400 final. A first progress report had been adopted in October 2007: European Commission, 'Communication from the Commission to the Council and the European Parliament. Progress Report on the Sustainable Development Strategy 2007' COM(2007) 642 final, and European Commission, 'Commission Staff Working Document. Accompaying document to the Communication from the Commission to the Council and the European Parliament. Progress Report on the Sustainable Development Strategy 2007' SEC(2007) 1416.
[30] European Commission, '2009 Review of the European Union Strategy for Sustainable Development' COM(2009) 400 final, 6.
[31] Ibid 14.
[32] Ibid 15.
[33] Council of the European Union (1 December 2009). Presidency report on the 2009 Review of the EU SDS available at http://register.consilium.europa.eu/doc/srv?l=EN&f=ST%2016818%202009%20INIT.
[34] Ibid 11.
[35] Ibid 18.

underlining citizen involvement as a crucial factor in both the development of a revised EU SDS and its implementation.[36]

In the context of Rio+20 follow-up, the European Commission adopted the Communication 'A decent life for all: ending poverty and giving the world a sustainable future'[37] in which it is proposed moving towards a post-2015 overarching framework. The EU should come to a common position on how the Sustainable Development Goals (SDGs) and the Millennium Development Goals (MDGs) review processes should best be converged and integrated into a single process to better deliver such a comprehensive framework.

In sum, the European Union's policies are to be made consistent with global sustainable development by ensuring that all major policy decisions are based on proposals that have undergone high quality IA, assessing in a balanced way the social, environmental and economic dimensions of sustainable development and taking into account the external dimension of sustainable development and the costs of inaction. The IA is to encompass a separate and thorough analysis of measures with serious negative side effects or measures that particularly affect certain groups in society. Direct and indirect land-use change and food security are among the serious issues to be investigated separately in such a manner.

It is admitted that further improvements to the IA system are needed, notably in order to assess complex challenges. The IA is to be based on the best available evidence. Where necessary, a precautionary approach is to be applied. These last two issues are now discussed in more detail.

2.2. Science-based and/or precautionary policy approach

In Article 191 TFEU it is explained that in preparing its environmental policy, the EU shall take account of available scientific and technical data (para 3) and that where necessary, it shall be based on the precautionary principle (para 2).[38] The ECJ has determined that Article 191 'sets a series of objectives, principles and criteria which the Community legislature must respect in implementing environmental policy'.[39] The RED forms a part of the EU's environmental policy and is thus to comply with these obligations.[40]

[36] Ibid 22.
[37] European Commission, 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. A decent life for all: Ending poverty and giving the world a sustainable future' COM(2013) 92 final.
[38] See also Art 114(3) and (5) TFEU.
[39] Case C-284/95 *Safety Hi-Tech Srl v S & T Srl* [1998] ECR I-4301, para 36. The Court did add (in para 37) that in view of the need to strike a balance between certain of the objectives and principles and of the complexity of the implementation of those criteria, review by the Court must necessarily be limited to the question whether the legislator committed a manifest error of appraisal regarding the conditions for the application of the provision.
[40] This is confirmed by its primary legal basis, Art 192 TFEU.

More recently, the general need for an improved science-based approach for EU policies is gaining ground, at times without paying any attention to dealing with uncertainties or 'wicked problems'.[41] The latter trend is not in line with Article 191 TFEU and with the European Commission's Communication on the precautionary principle.[42] Policy decisions always need to be based on science, as far as possible. Where science cannot (yet) produce sufficient evidence, the precautionary principle needs to be observed. The aforementioned Communication sets out in detail how this principle applies in situations where preliminary objective scientific evaluation indicates that there are reasonable grounds for concern that the potentially dangerous effects on the environment, human, animal or plant health may be inconsistent with a high level of protection. In such situations the principle demands that the lack of scientific certainty is not used as an excuse to refrain from taking action, but at the same time it does not mean that action always needs to be taken. What does need to be done is taking a decision based on the best scientific evidence available on the one hand, and remaining uncertainties on the other hand.

Taking what was explained above in para 2.1.1 into account, it can be maintained that an IA is to investigate in detail potential negative effects on the sustainable development of biomass producing countries outside the EU, notably where it concerns direct and indirect land use change and rising food prices. If some of these risks are potentially considerable, but a lack of certainty stands in the way of quantifying the magnitude of the risk or the chances of it becoming reality, the precautionary principle demands that available evidence is gathered, and uncertainties are mapped out. After such an analysis, policy makers can prepare a decision based on these detailed findings. Normally, this decision can encompass precautionary measures, but it can also lead to the decision to carry out further research while taking into account the potential risks from not adopting precautionary measures. Given the importance of the EU objectives of contributing to the sustainable development of developing countries and eradicating poverty, a stricter interpretation of the precautionary principle is to be employed here, in line with the explanation that the ECJ gives to EU law aimed at protecting particularly valuable objectives.[43] This stricter interpretation of the precautionary principle boils down to a duty for the EU to refrain from adopting policy measures when it cannot be ascertained that these measures do not carry the risk of serious negative effects for developing countries. In other words, only when there is sufficient evidence indicating that more positive than negative effects are likely to occur is the EU to adopt biofuels measures. Taking account of the conclusions of the assessment of the implications of policy proposals for developing countries, in the light of the sustainable development objectives of Article 21 TEU, EU policy makers need to be certain that the proposals will not adversely affect the sustainable devel-

[41] European Commission, *Scientific Evidence for Policy-Making* (Office for Official Publications of the European Communities 2008).
[42] European Commission, 'Communication from the Commission on the precautionary principle' COM(2000)1.
[43] Compare Case C-127/02 *Landelijke Vereniging tot Behoud van de Waddenzee en Nederlandse Vereniging tot Bescherming van Vogels v Staatssecretaris van Landbouw, Natuurbeheer en Visserij* [2004] ECR I-7405, in which the ECJ interpreted the legislation on the protection of valuable protected nature sites in such a way that a permit for economic activities (mechanical cockle fishing) could only be issued 'where no reasonable scientific doubt remains' as to the absence of adverse effects to the integrity of the site.

opment of developing countries. That is the case where no reasonable scientific doubt remains as to the absence of such effects.

3. THE EU'S BIOFUELS POLICY

3.1. Directive 2003/30 on the promotion of the use of biofuels for transport

In November 2001, the Commission published a Communication on alternative fuels for road transportation and on measures to promote the use of biofuels.[44] One of the proposed measures required mandatory targets for the market penetration of biofuels. The European Parliament (EP) supported this idea, but the Council opposed it, favouring purely indicative targets instead that would not be legally enforceable. In the end, the Council's views prevailed and Directive 2003/30 on the promotion of the use of biofuels or other renewable fuels for transport[45] was adopted.

It contains non-binding 'reference values' for the market penetration of renewable fuels in road transport in each Member State, that were to rise from 2 per cent at the end of 2005 to 5.75 per cent in 2010.[46] If the Member States would fail to make adequate progress in meeting the indicative targets, the Commission could propose mandatory ones instead at a later date.[47] Instead of introducing conditions at the EU level to deal with the risk of increased use of biofuels, the Member States 'should consider the overall climate and environmental balance of the various types of biofuels and other renewable fuels and may give priority to the promotion of those fuels showing a very good cost-effective environmental balance'.[48]

The targets were not achieved. By 2008, the EU27 had reached a share of 3.5 per cent, and by 2010, the share had risen to 4.7 per cent instead of 5.75 per cent. Hence, the Commission could return to its original plan, namely introducing mandatory targets.

Directive 2003/30 had warned that an increase in the use of biofuels should be accompanied by a 'detailed analysis of the environmental, economic and social impact in order to decide whether it is advisable to increase the proportion of biofuels in relation to conventional fuels'.[49] Whether such an analysis took place, and whether it met the framework requirements set out above in para 2 will be discussed below. First, a short description of the RED, the

[44] European Commission, 'Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions on alternative fuels for road transportation and on a set of measures to promote the use of biofuels' COM(2001) 547 final.
[45] Directive 2003/30/EC of the European Parliament and of the Council of 8 May 2013 on the promotion of the use of biofuels or other renewable fuels for transport [2003] OJ L123/42.
[46] In the Directive's preamble (recital 17), it is noted that the Commission Green Paper 'Towards a European strategy for the security of energy supply' proposed an objective of 20% substitution of conventional fuels by alternative fuels in the road transport sector by the year 2020.
[47] Art 4(2) Directive 2003/30.
[48] Art 3(4) Directive 2003/30.
[49] Recital 25 of the Preamble to Directive 2003/30.

Commission's ILUC report from 2010 and the proposed ILUC amendments of 2012 are presented.

3.2. The Renewable Energy Directive 2009/28

The RED was adopted in 2009 as part of the EU Energy and Climate Package, the '20-20-20 package'. The aims of this package are a 20 per cent reduction in EU greenhouse gas emissions from 1990 levels, raising the share of EU energy consumption produced from renewable resources to 20 per cent and a 20 per cent improvement in the EU's energy efficiency, by the year 2020. The RED formulates individual binding national targets for raising the share of renewable energy in the energy consumption for each of the Member States. These targets, which reflect Member States' different starting points and potential for increasing renewables production, range from 10 per cent in Malta to 49 per cent in Sweden. For biofuels, the RED introduced a uniform target for all Member States. Unlike the non-binding biofuels target from Directive 2003/30, the RED target is binding. Each EU Member State is to ensure that the share of energy from renewable sources in all forms of transport is at least 10 per cent of the final consumption of energy in transport in that state in 2020.[50]

In order to count towards reaching the 10 per cent target, and be eligible for financial support, biofuels need to meet several criteria. Notably, a 35 per cent requirement for GHG emission saving thresholds applies as a starting point, which is increased to 50 per cent and 60 per cent in 2017. Negative GHG effects due to indirect land use change (ILUC) are not taken into account when calculating emissions from biofuels, however. [51]

Another condition requires Member States to ensure that biofuels and bioliquids are not made from raw material obtained from land with high biodiversity value such as primary forest, nature protection areas, wetlands, and peatland.[52] Through these 'sustainability criteria' the EU aims at preventing direct land use change (DLUC): biomass production replacing carbon-rich areas. However, the sustainability criteria contain a giant loophole: ILUC is not covered. Hence, the criteria do not prevent forests, peatlands etc being cleared to replace the food crops that were diverted elsewhere to biofuels production.

Indirect land use change (ILUC) criteria were demanded during the legislative procedures, but did not materialise. Instead, the Commission was asked to develop a concrete methodology to

[50] Art 3(4) RED 2009/28.
[51] Art 17(2) and Art 19 RED 2009/28. For existing installations, the 50% norm applies, for installations that start to produce after 1 January 2017, the 60% norm applies. At the same time, Directive 2009/30/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC [2009] OJ L140/88 (Fuel Quality Directive) introduced a mandatory target to achieve a 6% reduction in the greenhouse gas intensity of fuels used in transport by 2020. It also does not take ILUC into account.
[52] Art 17(3) and (4) RED 2009/28.

minimise greenhouse gas emissions caused by ILUC and that to this end, it should 'analyse, on the basis of best available scientific evidence, in particular, the inclusion of a factor for indirect land-use changes in the calculation of greenhouse gas emissions and the need to incentivise sustainable biofuels which minimise the impacts of land-use change and improve biofuel sustainability with respect to indirect land-use change'.[53] A report to the EP and to the Council was to be submitted by 31 December 2010, 'reviewing the impact of indirect land-use change on greenhouse gas emissions and addressing ways to minimise that impact'. The report should, if appropriate, be accompanied by a proposal, based on the best available scientific evidence, containing a concrete methodology for emissions from carbon stock changes caused by indirect land-use changes.[54]

Sustainable development not only has an environmental component, but also a social one. The RED does not contain specific rules that avoid negative social impacts of biofuels production in developing countries. It only contains reporting requirements. The Commission is to describe the impact of increased demand for biofuel on social sustainability in third countries, on the impact of EU biofuel policy on the 'availability of foodstuffs at affordable prices, in particular for people living in developing countries', and on 'wider development issues'.[55] These reports, to be issued every two year, shall also address the respect of land-use rights. They shall state, both for third countries and Member States that are a significant source of raw material for biofuel consumed within the Community, whether the country has ratified and implemented a wide range of ILO Conventions. For countries that are 'a significant source of raw material for biofuel consumed within the Community', the reports shall also state whether the country has ratified and implemented the Cartagena Protocol on Biosafety and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The Commission can propose 'corrective action', where it holds this to be 'appropriate', but 'in particular if evidence shows that biofuel production has a significant impact on food prices'. What this corrective action can amount to is not explained any further.

While lacking adequate measures against ILUC effects and social effects that could seriously harm developing countries, EU Member States are barred from introducing their own sustainability criteria. They 'shall not refuse to take into account, on other sustainability grounds', biofuels and bioliquids obtained in compliance with Article 17 RED.[56]

3.3. The December 2010 Commission report

As just explained, the RED demands that the Commission reports on and, if appropriate, propose measures to tackle ILUC by the end of 2010. On 22 December 2010 the Commission

[53] Recital 85 of the Preamble to RED 2009/28.
[54] Art 19(6) RED 2009/28.
[55] Art 17(7) RED 2009/28.
[56] Art 17(8) RED 2009/28.

issued a brief and ambiguous report.[57] The report points out that 'a number of deficiencies and uncertainties associated with the modelling, which is required to estimate the impacts remains to be addressed'. That, of course, we knew already and was the reason the Commission was asked to issue this report. The Commission does acknowledge that 'indirect land-use change can have an impact on greenhouse gas emissions savings associated with biofuels, which could reduce their contribution to the policy goals, under certain circumstances in the absence of intervention. As such, the Commission considers that, if action is required, indirect land-use change should be addressed under a precautionary approach'. Again, this was also known already when the directive was being adopted. For the time being, the Commission again opted to continue researching and monitoring instead of proposing measures to actually tackle the ILUC loophole in the RED.

3.4. The October 2012 proposal: max 5 per cent conventional biofuels

On 17 October 2012 the Commission finally came forward with a proposal aimed at tackling the risks of ILUC.[58] It encompasses a 5 per cent cap on the percentage of first generation (conventional) biofuels produced from food crops[59] in order to limit ILUC effects of the EU biofuels policy, and a higher weighing factor (between 2 and 4 times their energy content) for non-food based, second generation biofuels made from algae, waste oil etc that cause less ILUC. Hence, if the 5 per cent cap were to be adopted, the 10 per cent goal could be reached by 5 per cent first generation plus 1.25 per cent second generation biofuels.

4. PUTTING THE EU BIOFUELS POLICY TO THE TEST

4.1. Introduction

This contribution investigates whether the manner in which the ILUC aspects of the EU's biofuels policy were dealt with is consistent with the EU's rules and guidelines regarding science-based and precautionary policy making, and with the EU policy objective of contributing to the sustainable development of developing countries. In order to ensure that external aspects of its biofuels policy contribute to this objective, rather than exacerbating the problems, an Impact Assessment prepared alongside policy proposals with potential serious negative impacts on developing countries is to investigate what these impacts could be. Given that numerous serious negative effects from ILUC as a result of increased demand for biofuels were known at the time when the RED was prepared, the European Commission should deal

[57] European Commission, 'Report from the Commission on indirect land-use change related to biofuels and bioliquids' COM(2010) 811 final.
[58] European Commission, 'Proposal for a Directive of the European Parliament and of the Council amending Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Directive 2009/28/EC on the promotion of the use of energy from renewable sources' COM(2012) 595 final. The proposal is based on Arts 192(1) and 114 TFEU.
[59] Like cereal and other starch rich crops, sugar and oil crops.

with ILUC in detail in the IA that accompanies the proposal to introduce a binding biofuels target in the future RED. In line with the EU's own guidelines on carrying out an IA, such an investigation is to identify relevant actual or potential, direct and indirect, internal and external economic, social and environmental impacts (ie the screening), and assess these in detail (scoping). The assessment is to be proportionate to the significance of the likely impacts: the more serious the potential impacts, the more detailed and thorough the analysis is to be. If it is impossible to quantify risks, a precautionary approach is to be followed in line with the guidelines on the precautionary principle. Available evidence is to be gathered as far as possible, uncertainties are to be mapped out and a decision is to be taken based on these detailed findings. Because of the vulnerable position of developing countries, it was submitted that the precautionary principle *in casu* brings about a duty for the EU to refrain from adopting measures that bring about the risk of serious negative effects for the sustainable development of developing countries.

4.2. The RED

When the 10 per cent target in the future RED was proposed, the potential serious negative impacts of increased demand for biofuels that could occur in developing countries were already known. The Commission itself discussed the need to avoid such impacts in its Renewable Energy Road Map of January 2007.[60] The Impact Assessment accompanying the proposal for the RED that was published about one year later[61] refers to the Renewable Energy Road Map in order to explain why a 10 per cent target was chosen, and thus we will first look at this policy document in more detail – and the IA that accompanies it.

In the Road Map the Commission ascertained that 'the key EU trade policy challenge is to find ways to promote those international exports of biofuels that *unambiguously contribute to greenhouse gas reduction and avoid rain forest destruction*'.[62] This statement indicates two points. First of all, the Commission claims that it would like to follow a precautionary approach where biofuels are concerned: biofuels should only to be imported into the EU if it is sufficiently certain that positive greenhouse gas effects will be achieved, and no rain forests are destroyed. This would imply that in case of uncertainty (ambiguity), a lower target is to be chosen, or stricter sustainability conditions encompassing ILUC are to be introduced. Secondly, the statement shows that the environmental aspects of sustainable development in third

[60] European Commission, 'Communication from the Commission to the Council and the European Parliament. Renewable Energy Road Map. Renewable energies in the 21st century: building a more sustainable future' COM(2006) 848.
[61] European Commission, 'Commission Staff Working Document. Impact Assessment. Document accompanying the Package of Implementation measures for the EU's objectives on climate change and renewable energy for 2020' SEC(2008) 85.
[62] Ibid 8 (emphasis added, WTD). Referring to a 14% rather than a 10% target, the Road Map does set out that domestically grown cereals and tropical sugar cane would be the main ethanol feedstocks, later complemented by cellulosic ethanol from straw and wastes; rapeseed oil, both domestically grown and imported, would remain the main biodiesel feedstock, complemented by smaller quantities of soy and palm oil and later by second-generation biofuels, ie Fischer-Tropsch diesel mostly from farmed wood. Ibid 11.

countries were seen as a factor of concern. As was demonstrated in paragraph 3.2, these insights did not lead to the adoption of proper precautionary measures under the RED that would ensure that EU biofuels unambiguously contribute to a reduction in GHG emissions and do not cause the destruction of rain forest. Why was this the case?

The Road Map states that '[t[he minimum target for biofuels for 2020 should, on the basis of conservative assumptions, related to the availability of sustainably produced feedstocks, car engine and biofuel production technologies, be fixed at 10 per cent of overall consumption of petrol and diesel in transport'.[63] It refers to the accompanying Impact Assessment for an explanation why a 10 per cent share in 2020 is appropriate. The IA of the Road Map[64] did analyse the impact of various biofuel shares, and does discuss biofuels targets, but the explanation offered in 2006 is rather scant. The IA states that by a conservative assumption, 15 per cent of biomass used in the EU will be imported by 2020.[65] Stating the obvious, the IA claims that 'it is possible to avoid production processes which have a negative biodiversity impact: for example […] avoiding felling rain forest to permit the production of palm oil to make biodiesel'. In a footnote, it underlines that while rainforest encroachment for the EU biodiesel market is a 'worrying possibility for the future', it is not something that has yet happened; it was estimated that only 1 per cent of EU biodiesel production in 2005 came from palm oil.[66] Such statements are not very reassuring: with rising demand for biofuels because of the introduction of mandatory targets, more import is likely to occur, and it is also possible that production processes have a negative biodiversity impact – as the Commission admits itself. What is more, contrary to the EU guidelines on ensuring that policy proposals contribute to the sustainable development of developing countries and contrary to the guidelines on the precautionary principle, the IA fails to set out what the basis for its assumptions regarding biodiversity is.[67] When discussing international aspects, the IA only notes that renewable energy sources offer major opportunities for job creation and rural development in developing countries; potential negative effects such as rising food prices are not mentioned. Again, such an IA fails to meet the standards the EU sets itself on proper policy preparation and promotion of sustainable development of developing countries because it fails to analyse potential risks like rising food prices that are serious, especially for developing countries.

[63] European Commission, 'Renewable Energy Road Map. Renewable energies in the 21st century' COM(2006) 848, 10.

[64] European Commission, 'Commission Staff Working Document. Accompanying document to the Communication from the Commission to the Council and the European Parliament. Renewable Energy Road Map. Renewable energies in the 21st century: building a more sustainable future. Impact Assessment' SEC(2006) 1719. The IA accompanying the Renewable Energy Road Map aims at examining the feasibility and the economic, social and environmental implications of renewable energy; it wants to shed light on the question whether the EU should adopt quantified targets for the share of renewable energy in 2020, and if so, for what amounts and in what form (3).

[65] Ibid 14.

[66] Ibid 22.

[67] Between 2006 and 2012, the share of palm oil in the feedstock mix for biodiesel produced in Europe is believed to have already increased from 8 to 20%, from 0.4 million tonnes to 1.9 million tonnes. Source: I Gerasimchuk and P Yam Koh, 'The EU Biofuel Policy and Palm Oil: Cutting Subsidies or Cutting Rainforest?' (2013) *International Institute for Sustainable Development Research Report* September 2013. The 1.9 million tonnes is the amount of palm oil processed into biodiesel in the EU-27; in addition to this, Europe also imports sizeable amounts of palm oil-based biodiesel (Ibid 6, fn 7). Also see W McFerron, 'EU Demand for Palm, Rapeseed Oil Gains on Biodiesel Import Curbs' *Bloomburg* (29 October 2013).

Scenario's for 7 per cent and 14 per cent biofuel shares were investigated in the IA.[68] There was good reason to believe that the optimum share of biofuels in 2020 will be in the region of 14 per cent, but for a number of reasons a lower target was suggested. Achieving a 14 per cent share will require several million tons of imports of vegetable oil for the production of biodiesel. The IA admits that just as in the EU, imported vegetable oil can be produced in compliance with environmental standards, but 'it is also possible to produce it in ways that have negative environmental effects, especially if land harbouring diverse natural ecosystems is converted to crops for biofuel production'. The Commission is aiming to minimise the risk of such environmental damage happening, but since no such system is yet in place 'it makes sense to aim in the minimum target at a level of first-generation biodiesel consumption that would not require the use of significant amounts of imported palm oil' (ie 9.7 Mtoe first-generation biodiesel consumption).[69] The Commission thus was of the opinion that some of the risks could be avoided by introducing at a 10 per cent target rather than a 14 per cent target, but fails to set out in more detail why that percentage is appropriate – rather than for in-instance the 7 per cent target.

At the March 2007 European Council, the 10 per cent target set out in the Road Map was politically endorsed, 'subject to the production being sustainable' (without explaining what that meant here), and 'second-generation biofuels becoming commercially available'.[70]

In spite of the Commission's own assurances that biofuels should unambiguously contribute to greenhouse gas reduction and avoid rain forest destruction, in the end the 10 per cent target was proposed without sustainability criteria that would ensure these things. By looking at the IA issued together with the proposal for the RED,[71] it will be tested how that decision came about. The IA is based on a number of key principles, but external effects of the proposal is not among them.[72] The three general objectives (the 2^{o}C limit, energy security and competitiveness) also fail to look at potential negative effects on sustainable development and the fight against poverty in developing countries. Where the choice for a 10 per cent target is concerned, it is indicated that the appropriateness of this target is not going to be repeated, as the target was already endorsed by the March 2007 European Council and by European Parlia-

[68] In the Commission Staff Working Document accompanying the Biofuels Progress Report, (SEC(2006) 1721), it is noted that growing biofuels demand will likely lead to a small rise in the price of agricultural products, which could be detrimental to the poorer populations, and the risk of displacement of more vulnerable communities due to the rise in the value of land (19). The effect of land use change were not taken into account, although these can be severely negative (for example, if soybean cultivation replaced rain forest). In the absence of a global land use model, it has not been possible to estimate the greenhouse gas effect of the land use changes likely to be associated with the investigated scenarios (20). It is admitted that some land types carry quantities of stored carbon so large that the use of this land to produce raw material even for second-generation biofuels could never be considered to give a positive greenhouse gas balance (24).

[69] European Commission, 'Commission Staff Working Document. Accompanying the Renewable Energy Road Map. Impact Assessment' SEC(2006) 1719, 26.

[70] Brussels European Council (8–9 March 2007), Presidency Conclusions, Annex I, 21, available at http://register.consilium.europa.eu/doc/srv?l=EN&f=ST%207224%202007%20REV%201.

[71] European Commission, 'Impact Assessment. Accompanying the Package of Implementation measures for the EU's objectives on climate change and renewable energy for 2020' SEC(2008) 85.

[72] Namely cost-effectiveness, internal market and fair competition, subsidiarity, fairness, competitiveness and innovation.

ment when it voted on the Thomsen report.[73] The conditions that the European Council had stressed (sustainable production and commercial availability of second-generation biofuels) were omitted.

In this manner, the rationale for the 10 per cent target is not discussed in the IA, in spite of at least one report ordered by the Commission warning that simulations for EU biofuels consumption above 5.6 per cent of road transport fuels show that ILUC emissions can rapidly increase and erode the environmental sustainability of biofuels.[74] Exempting such an essential issue from the IA is at odds with the 'high quality Impact Assessment' that investigates the external aspects of EU policies, as foreseen in the revised EU SDS. By not paying attention to potential severe negative effects, the Commission is also violating its own guidelines on the precautionary principle.

The IA stresses that biofuels provide new opportunities for developing countries, and that as long as the feedstock for biofuels is grown on appropriate land, the environmental impact will be manageable. Growing feedstock on inappropriate land like natural forest will cause substantial environmental damage, it is admitted, but according to the IA '[t]here is no need to use this land to reach a 14 per cent biofuel share'.[75] How that conclusion is reached is not set out. Although it might be true that there are ways to avoid using inappropriate land for the production of biofuels, it is not explained how this would be achieved in practice. It is admitted in the IA that a 14 per cent biofuel share would bring about slightly higher food prices, which would be detrimental to poorer populations. This is at odds with the promise to help fight poverty, but the only 'justification' offered is that '70 per cent of the world's poor are also rural, and hence can also be among the beneficiary group of rising agricultural prices'. Furthermore, it is explained that recent increases in the prices of agricultural commodities 'are attributable only to a small degree to EU biofuel policy'.

The many warnings about ILUC are not refuted, and also in this respect the IA does not live up to the EU's own promise of 'high quality Impact Assessment' that assesses in a balanced way the social, environmental and economic dimensions and takes into account the external dimension of sustainable development.

In the explanatory part attached to the draft directive in January 2008, it is stated that the proposal is consistent with the EU policies of reducing greenhouse gas emissions and achieving sustainable development and that through the EU's external energy policy, third countries 'should be able to benefit from the promotion of renewables in the EU through the supply of biofuels and other bioliquids which meet sustainability requirements'.[76] The explanation does

[73] European Commission, 'Impact Assessment. Accompanying the Package of Implementation measures for the EU's objectives on climate change and renewable energy for 2020' SEC(2008) 85, 31.
[74] P Al-Raffi, B Dimaranan and D Laborde, 'Global Trade and Environmental Impact Study of the EU Biofuels Mandate', study carried out by the International Food Policy Institute (2010) 12, available at http://trade.ec.europa.eu/doclib/docs/2010/march/tradoc_145954.pdf.
[75] European Commission, 'Impact Assessment. Accompanying the Package of Implementation measures for the EU's objectives on climate change and renewable energy for 2020' SEC(2008) 85, Annex Vol II, 125.
[76] European Commission, 'Proposal for a Directive of the European Parliament and of the Council n the promotion of the use of energy from renewable sources' COM(2008) 19 final, 4.

not provide any arguments as to how these conclusions were reached. Notably, it fails to deal with the potential negative effects of too many first generation biofuels that were identified by the Commission in its 2006 Renewable Energy Road Map, and with the condition formulated by the March 2007 European Council demanding that second-generation biofuels become commercially available. In the part on consultation, it is merely mentioned that many proposed further reinforcement of the proposed scheme, but coherent reasons for not taking these suggestions on board are not provided.

The urgent need for improvements to the proposed RED was also stressed by the European Economic and Social Committee (EESC). This advisory body strongly opposed a 10 per cent target for biofuels, or agrofuels as it prefers to call them.[77] It regards the partial substitution of diesel or petrol by such fuels as 'one of the least effective and most expensive climate protection measures' and criticises the fact that 'a huge number of environmental and social questions, let alone economic ones, remain completely unanswered'.[78] The plan to introduce sustainability criteria was welcomed, but the environmental criteria set out in the draft RED were considered to be insufficient. Studies on the subject of agrofuels were quoted which pointed out that biomass is 'a limited resource and will inevitably find itself in competition with foodstuff production or the maintenance of biodiversity'. The EESC admitted that just how massive this competition will be was still a matter of debate, but underlined that 'before policy intervenes there is therefore a need for a very precise strategic analysis of which form of renewable energy can most usefully be deployed, and in which area. This will require very precise impact assessments'.[79] It is explained that with arable land in short supply, large-scale expansion of bioenergy will necessarily mean that land not previously used for arable farming will be brought into use, or that land will be farmed more intensively, and that this will cause increased CO_2 and N_2O emissions, with the result that the expansion of bioenergy production on agricultural land will in the end be detrimental to climate protection.[80]

The EESC opinion also notes that the total exclusion of social issues from the sustainability criteria alone leads to the conclusion that the draft directive does not implement a well thought-out sustainability strategy or sustainability criteria for agrofuels, and in this respect the draft needs to be revised substantively according to the EESC. All in all, the draft directive was labelled 'completely inadequate'.

In line with the EESC's findings, it can be concluded that the proposal for the RED, it accompanying Impact Assessment and the other documents that it builds on do not thoroughly assess in detail the risks that the proposal carries for developing countries. This is all the more

[77] The prefix 'bio' in the term 'biofuels' suggests an environment-friendly product, therefor the EESC prefers using the more neutral term 'agrofuel'.
[78] Opinion of the European Economic and Social Committee on the Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources COM(2008) 19 final [2009] OJ C77/43. The need for environmental ánd social sustainability criteria for agrofuels were also set out in two earlier EESC Opinions on Progress in the use of biofuels, TEN/286 – CESE 1449/2007 [2008] OJ C44/34 and Reducing greenhouse gas emissions/Road transport, NAT/354 – CESE 1454/2007.
[79] Point 5.2.
[80] Point 5.3, referring to a November 2007 recommendation on the use of biomass for energy production by the scientific advisory council of the German Federal Agriculture Ministry.

troublesome when considering the seriousness of the potential environmental and social impacts. The fact that ILUC risks are difficult or impossible to quantify means that a precautionary approach is to be followed in line with the guidelines on the precautionary principle, whereby available evidence was to be gathered as far as possible and uncertainties were to be mapped out. Only after such a detailed and thorough investigation could a decision be reached to forego adopting precautionary ILUC measures. Because of the vulnerable position of developing countries, it was submitted that the precautionary principle *in casu* means that the EU was to refrain from adopting a 10 per cent biofuels target if that brings about the risk of serious negative effects for the sustainable development of developing countries. That would also have been in line with the Commission's self-proclaimed goal of only promoting those international exports of biofuels that unambiguously contribute to greenhouse gas reduction and avoid rain forest destruction.

4.3. The December 2010 report

As explained in paragraph 3.3, the Commission again decided not to introduce precautionary measures by the end of 2010. Since the proposal for RED was issued in 2008, numerous studies had substantiated the risks of ILUC that increased demands for biofuels could bring about. Several studies had been prepared at the request of different Commission services in which the scale of ILUC linked with the EU biofuels target was evaluated. In spite of all these studies, again the decision was taken to study the problem further before actually taking action. The reasoning employed in the December 2010 report does not warrant that decision. The same conclusion was reached by the EP's Committee on Environment, Public Health and Food Safety. In its evaluation of the Commission report,[81] the authors found that not taking action ignores the advancements on ILUC research and the US regulations already including quantitative ILUC values,[82] and qualified this decision as 'clearly counterfactual'.

4.4. The October 2012 proposal

The October 2012 proposal to introduce a 5 per cent cap on first generation biofuels, discussed above in paragraph 3.4, was preceded by a draft IA that was issued by DG ENER and DG CLIMA on 6 May 2011. Such drafts are commented upon by the Impact Assessment Board (IAB). In this case, the IAB issued a highly critical opinion on the draft. It requested

[81] UR Fritsche and K Wiegmann, 'Indirect Land Use Change and Biofuels' (European Parliament 2011).
[82] Notably, the California Air Resources Board (CARB) introduced a low-carbon fuel standard in 2009, requiring fuel suppliers to reduce the carbon intensity of their gasoline and diesel with 10% by the end of 2020. Opponents of the life cycle assessments (LCA) based standard filed lawsuits that initially succeeded in convincing a district court that the standard was discriminating against non-Californian biofuel. On appeal, that decision was overturned. In March 2014, the US Supreme Court was addressed.

that the assessment of impacts should be strengthened significantly, in particular in relation to the impacts on third countries and on biodiversity.[83]

After a draft IA was resubmitted on 27 July 2011, the IAB issued a revised opinion on 24 August 2011.[84] Again, serious shortcomings were found to exist. Notably, the IAB recalled that the December 2010 report already 'indicated that if action is required, indirect land use change should be addressed following a precautionary approach', adding that 'given the wide range of uncertainties, the IA report should present in a clear manner how, and at what cost, each option (and the respective combinations of options) would reduce the risk of undesirable emissions from indirect land use change'. The Commission was also asked to 'clarify why other possible options, for example analysing the impacts of limiting the overall share of first-generation biofuels, have not been considered'. As set out above, that option was included by the Commission in the end. The IAB also asked for several clarifications, notably where the presentation of the impacts of the analysed measures, the flagging up of uncertainties and the contribution of different options to lower the risk of emissions resulting from indirect land use change were concerned.

The EESC adopted its opinion on 17 April 2013.[85] The advisory body does not consider the proposed amendment of the RED to be a promising foundation for a strategy to really minimise use of fossil fuels, reinforce Europe's security of supply and help protect the climate.[86] Overall, the EESC sees a serious lack of consistency between different Commission policies that urgently needs to be addressed, and calls on the Commission to generally rethink its bioenergy policy, especially insofar as it applies to the transport sector. As it was opposed to a 10 per cent target being worried about the effects it would have in the form of ILUC, the EESC does welcome the 5 per cent cap.[87]

5. CONCLUDING REMARKS

The EU aims at contributing to sustainable development in third countries and acting in a precautionary manner where science cannot yet produce answers. The obligations to do so are laid down in the EU treaties, and made more concrete in a number of policy documents. Hence, major policy decisions must be based on proposals that have undergone high quality Impact Assessment, assessing in a balanced way the social, environmental and economic di-

[83] Impact Assessment Board, 'Opinion. Impact Assessment for Indirect Land-Use Change related to Biofuels' (Draft version, 4 April 2011) available at http://ec.europa.eu/smart-regulation/impact/ia_carried_out/docs/ia_2012/iluc.pdf.
[84] Impact Assessment Board, 'Opinion. Impact Asessment for Indirect Land-Use Change related to Biofuels' (Resubmitted draft version, 27 July 2011) SEC(2012)579 available at http://ec.europa.eu/smart-regulation/impact/ia_carried_out/docs/ia_2012/sec_2012_0579_en.pdf.
[85] Opinion of the European Economic and Social Committee on the Proposal for a Directive of the European Parliament and of the Council amending Directive 98/70/EC concerning the quality of petrol and diesel fuels and amending Directive 2009/28/EC concerning the promotion of the use of energy from renewable sources COM(2012) 595 final' [2013] OJ C198/56. The opinion was adopted by 146 votes to 26 with 23 abstentions.
[86] Ibid point 1.8.
[87] Ibid point 3.8.

mensions of sustainable development and taking into account the external dimension of sustainable development and the costs of inaction. In case of scientific uncertainty, appropriate preventive action is to be taken in order to avoid damage to human health or to the environment.

In the light of these obligations, and the Commission's self-proclaimed goal of only promoting those international exports of biofuels that unambiguously contribute to greenhouse gas reduction and avoid rain forest destruction, the manner in which the 2009 RED came about was investigated in this contribution. The conclusion was that the Commission did not sufficiently clarify why the ILUC risk for developing countries did not lead to the adoption of pre-precautionary measures, given the potential serious negative effects. Also, it was set out that the reasoning why a 10 per cent target was chosen lacks a proper explanation in line with the EU's own policy guidelines. It seems that arguments were gathered to support the 10 per cent goal, instead of critically examining arguments pointing at the need for a lower target.

In 2010, an indecisive ILUC report was presented in which it was explained that a precautionary approach was warranted if measures were to be adopted. It was explained that this decision not to act was again not prepared in line with the EU's own policy guidelines, notably with those regarding the use of the precautionary principle.

The October 2012 proposal aimed at introducing a 5 per cent cap on first generation biofuels does seem able of tackling part of the problems. The highly critical attitude of the IAB towards the manner in which impacts on third countries and on biodiversity, and uncertainties were dealt with shows that again, the manner in which this proposal came into being leaves a lot to be desired – in spite of treaty provisions and numerous policy documents on the promotion of sustainable development in developing countries and the use of a science-based and precautionary approach.

The need for making haste with tackling ILUC was confirmed by scientists of the EU's Joint Research Centre (JRC), who warned that the EU's biofuels policy is making a 'significant contribution' to the deforestation of peatlands in Malaysia and Indonesia. They advised to introduce mandatory measures to address such ILUC effects from biofuels production. The JRC scientists also conceded that 'uncertainty is intrinsic in all models so will never be completely avoided' while adding that 'the science has improved significantly, and further investigation of modelling work and sensitivity analysis has allowed uncertainties to be largely reduced' and concluding that '[e]ven with uncertainties, the best estimate of ILUC is not zero'.[88]

The political reality is that it takes quite a while before a cap on first generation biofuels will be adopted. It will probably not be set at 5 per cent, but rather at 7 per cent – without a proper justification that takes the impacts of that higher percentage on developing countries into ac-

[88] A Neslen, 'EU Scientists' Biofuels Warnings Were Ignored' (20 February 2014) available at http://www.euractiv.com/energy/eu-scientists-biofuels-warnings-news-533639. The JRC recommendations also stressed that 'it is important that the principle of full GHG accounting is introduced in the proposed amendment by including ILUC' and called for 'inclusion of the ILUC factors as written, resolving to update them quickly when new data becomes available, before the industry makes investment plans'.

count. The Council of Energy Ministers already endorsed the latter percentage in its meeting of 13 June 2014. This political agreement is to be followed by the formal adoption by the Council of its position at first reading. After this, the newly elected European Parliament will have to position itself on the Council's position. It will be up to these recently elected MEPs to judge whether the compromise text sufficiently tackles the negative climate and indirect land change effects of the EU's biofuels policy, and does justice to the EU promise of promoting sustainable development in developing countries.

CHAPTER 3

WOOD BIOMASS SUSTAINABILITY UNDER THE RENEWABLE ENERGY DIRECTIVE

YELENA M GORDEEVA

1. INTRODUCTION

Preventing dangerous climate change (CC) is a strategic priority for the European Union (EU).[1] Contemporary scientific evidence makes it clear: the recent CC is mainly caused by the persistent increase in anthropogenic greenhouse gases (GHG) concentrations in the atmosphere.[2] Such gases are primarily released by burning of fossil fuels, namely, oil, coal and natural gas. Although they are non-renewable, take millions of years to form and reserves are being depleted much faster than new ones appear, fossil fuels remain the most important energy source worldwide and in the European Union (EU).[3]

In order to cut its GHG emissions, the EU adopted the Climate and Energy Package in 2009.[4] It is a set of mostly binding laws, which aims to ensure the Union meets its climate and energy targets for 2020. These targets include: a 20 per cent reduction in GHG emissions; a 20 per cent improvement in energy efficiency; and a 20 per cent share of energy produced from renewable resources. By achieving the latter objective, the EU will not only substitute fossil fuels with renewable energy, improve the security of the energy supply, and reduce its GHG emissions, but also contribute to the 20 per cent energy efficiency target through technological development and innovation.[5] However, in the long run, policies, promoting greater use of

[1] European Commission, 'EU Action on Climate' available at http://ec.europa.eu/clima/policies/brief/eu/.

[2] 'Summary for Policy Makers' in TF Stocker et al (eds), *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press 2013) 15.

[3] EU-27 primary energy production in 2010 accounted for 19.6% from solid fuels, largely coal, 18.8% from natural gas, and 11.7% from crude oil. These figures are in general comparable with the overall world statistics: in 2011 fossil fuels constituted 81.6% of the total primary energy supply in the world (oil fuel accounted for 315%, coal and peat accounted for 28.8% and natural gas accounted for 21.3%). Globally fossil fuels have been the most important primary energy sources since 1973. For more information see, European Commission, Eurostat, Energy Production and Imports// <http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Energy_production_and_imports>, last viewed 20.11.2013; International Energy Agency (IEA), Key World Energy Statistics, 2013, p. 6.

[4] For more information on the package and on EU Climate Law, see K Kulovesi, E Morega and M Munoz, 'Environmental Integration and Multi-Faceted International Dimensions of EU Law: Unpacking the EU's Climate and Energy Package' (2011) 48 *Common Market Law Review* 829; European Commission, 'The 2020 Climate and Energy Package' available at http://ec.europa.eu/clima/policies/package/.

[5] 'The development of energy from renewable sources should be closely linked to increased energy efficiency'. Thus, the development of energy from renewable sources should contribute to the energy efficiency target through advanced technologies. See recital 5 to Directive 2009/28/EC of the European Parliament and of the

renewable energy, may also result in unintended negative environmental impact causing *inter alia* a rapid growth in the use of wood in the EU and in the third-party countries (non-EU countries).

Current annual world deforestation is already alarmingly high, estimated at 5.2 million hectares a year;[6] roughly equal to the area of Costa Rica.[7] If the world's net forest area continues to decline at the present pace, it will take 775 years to lose all forests on Earth.[8] Nevertheless, as the Food and Agriculture Organization of the United Nations (FAO) predicts, the global demand for wood will continue to increase significantly in the coming years. Demographic changes, economic growth, and environmental policies will be decisive in the long-term demand for wood products. However, the rapid growth in the use of wood as a source of energy is expected to be the most dramatic change.[9] Some estimates expect a nearly six-fold increase in the world demand for fuel wood by 2060.[10] As a result of policies promoting greater use of renewable energy, the growth in the demand for fuel wood will be particularly significant in Europe.[11]

The biggest factor driving renewable energy use in the EU until 2020 is the RED.[12] Whereas in 2002 renewable energy sources provided about 6 per cent of total energy requirements in the 25 countries of the EU,[13] the RED sets a mandatory target for the 27 Member States (MS) to increase their share of renewable energy to 20 per cent of the EU's primary energy consumption by 2020.[14] The RED also obliges MS to increase renewable energy used by the transportation sector to – 'at least' – 10 per cent by 2020.[15] In comparison, the total EU liquid biofuel consumption constituted less than 1 per cent of total EU petrol consumption in 2004.[16]

Thus, the RED 2020 target promotes a tremendous increase in renewable energy consumption in comparison with previous years. While wood (biomass) is the leading renewable energy re-

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Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC [2009] OJ L140/16 (RED).

[6] *Global Forest Resources Assessment, Main Report* (Food and Agriculture Organization of the United Nations (FAO), Forestry Paper 163, 2010) 17.

[7] Ibid.

[8] *State of the World's Forests* (Food and Agriculture Organization of the United Nations 2012) 16.

[9] *State of the World's Forests* (Food and Agriculture Organization of the United Nations 2009) ix.

[10] R Raunikar et al, 'Global Outlook for Wood and Forests with the Bioenergy Demand Implied by Scenarios of the Intergovernmental Panel on Climate Change' (2010) 12 *Forest Policy and Economics* 48.

[11] *State of the World's Forests* (FAO 2009) ix.

[12] There are other examples of regulating renewable energy use in the EU. For instance, biofuels, as a source of renewable energy, are also regulated by Directive 2009/30/EC of the EU Parliament and of the Council of 23 April 2009 of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC [2009] OJ L140/88. The discussion in this article is focused on RED particularly.

[13] European Commission, *Biomass. Green Energy for Europe* (Office for Official Publications of the European Communities 2005) 7.

[14] For the definitions 'biomass', 'bioliquids' and 'biofuels' see Art 2 RES Directive. For the mandatory targets see Art 3.1.

[15] Ibid Art 3.4.

[16] European Commission, *Biomass*, 34.

source in the EU (and also universally),[17] the European Commission highlights, the binding 2020 energy target should be met 'without leading to deforestation, forest degradation or higher GHG emissions'.[18] The challenge is to provide a legal framework for this target.

Firstly, this article studies the role of wood biomass as a source of renewable energy in the EU and the potential sustainability risks associated with the rapid growth in the use of wood stimulated by the RED. Secondly, the article discusses the RED's sustainability criteria and their applicability to wood biomass. Thirdly, the article analizes the current legal framework for forest management that is referred to by the European Commission as 'enough to provide assurances for sustainable production of biomass'.[19] Finally, the article argues that – under the current regulatory approach environmental risks exist, which are associated with the increased use of wood biomass – and calls for further investigation and advancement of the current legal framework in order to ensure wood biomass sustainability.

2. THE RELATIONSHIP BETWEEN FOREST AND BIOFUELS

2.1. Wood biomass as a source of energy

For the purpose of the Renewable Energy Directive it is specified, that energy from renewable sources means energy from non-fossil sources which include biomass, wind, solar, etc.[20] The largest contributor of renewable energy to the EU energy system is biomass.[21] It is also expected to provide a major share (57 per cent) of the renewable energy consumption at the European level in 2020.[22] Under the Renewable Energy Directive, biomass refers to 'biodegradable fraction of products, waste and residues from biological origin from agriculture,

[17] Wood provides over 9% of the global total primary energy supply. World-wide wood energy is as important as all other renewable energy sources altogether (hydro, geothermal, wastes, biogas, solar and liquid biofuels). See http://www.fao.org/forestry/energy/en/.

[18] European Commission, 'Commission Staff Working Document. Impact Assessment. Accompanying document to the Report from the Commission to the Council and the European Parliament on sustainability requirements for the use of solid and gaseous biomass sources in electricity, heating and cooling' SEC(2010) 65 final, 53.

[19] European Commission, 'Report from the Commission to the Council and the European Parliament on sustainability requirements for the use of solid and gaseous biomass sources in electricity, heating and cooling' ('EU Biomass Report') COM(2010) 11 final, 2–3.

[20] Art 2(a) RED.

[21] In 2011 biomass accounted for 68% of the gross inland energy consumption of renewables within the EU-28. Other renewable energy sources included hydro power (15.8%): wind power (9.1%); geothermal energy (3.7%); solar energy (3.6%). For more information see Eurostat, *Agriculture, Forestry and Fishery Statistics, 2013 Edition* (Publications Office of the European Union 2013) 197; C Panoutsou, 'Main Outcomes of Work Package 2 for Policy Makers. Which Market Segments are the Most Promising in the EU 27 for Future Biomass Integration by 2020?' (Biomass Futures 2011) 4.

[22] UR Fritsche et al, 'Outcome Paper, Sustainability Criteria and Indicators for Solid Bioenergy from Forests', based on the Joint Workshop on Extending the RED Sustainability Requirements to Solid Bioenergy (December 2012) 1.

forestry and related industries […] as well as biodegradable fraction of industrial and municipal waste'.[23]

The leading biomass energy resource in the EU is wood. In 2011 wood and wood waste accounted for 4.8 per cent of the total energy consumed within the EU-28;[24] for almost half (47. 8 per cent) of the total renewables for energy purposes consumption; [25] and for over two thirds (70.3 per cent) of the total biomass and waste.[26] The share of wood and wood waste in total gross inland energy consumption ranged from over 20 per cent in Latvia and Finland, down to less than 1 per cent in Luxemburg, Cyprus and Malta.[27] Apart from forest products, biomass resources also originate from agriculture and waste, however, on a much smaller scale.[28]

Each renewable energy resource has specific properties, uses and advantages. In order to produce heat, biomass can be used directly through combustion. Wood, for instance, is most often used directly as a fuel through straightforward combustion.[29] Being a solid biofuel, wood can be used in its various raw material forms: logs, stems, stumps, needles and leaves from forests; bark, sawdust and redundant cuttings from sawmills; chips and slabs from the wood industry; and recycled wood from demolition. Alternatively, the raw material can be processed into forms that allow for easy transport, storage and combustion, such as chips, pellets, briquettes and powder. The most economical way of converting biomass into fuel is wood pellets, made from dried sawdust, shavings or wood powder.[30]

In order to be used for transport, or other energy purposes, including electricity, heating and cooling, biomass can be converted to biofuels or bioliquids, ie liquid or gaseous fuels.[31] At present the share of biofuels in the renewable energy production is very modest; it accounts for only 11, 2 per cent of the total biomass and waste.[32] The major market for liquid biofuels is in the transport sector[33] with biodiesel and bioethanol accounting for 70 per cent and 28 per cent of the market share respectively.[34] Contemporary first generation or conventional liquid biofuels are derived mostly from agricultural resources such as cereals, sugar beets, rapeseed,

[23] Art 2(e) RED.
[24] Eurostat, *Agriculture, Forestry and Fishery Statistics, 2013 Edition*, 198.
[25] Ibid 197.
[26] Ibid.
[27] In 2010 Finland reported that just over two-thirds (77%) of its land area is covered by forests and other wooded land. In the Republic of Latvia forests cover more than half (54%) of the country's land area. Grand Duchy of Luxemburg and Republic of Cyprus have forests and other wooded areas on less than 10 % of their total land areas. Republic of Malta reports zero forests in the country. See ibid 191, 198.
[28] Whereas wood and wood waste account for over two thirds of the total for biomass and waste, the remainder (30%) is split between municipal solid waste (14.1%), biofuels (11.2%) and biogas (7.2 %). Figures are for the year 2008. See, Eurostat, *Forestry in the EU and the World, A Statistical Portrait. 2011 Edition* (Publications Office of the European Union 2011) 94.
[29] Wood biomass is one of the only renewable materials that can be used to produce power, heat, and liquid fuels at the same time. The advanced liquid biofuels, also referred to as second or third generation biofuels are mainly in the research and development or pilot phase.
[30] Eurostat, *Agriculture, Forestry and Fishery Statistics, 2013 Edition*, 199.
[31] Art 2(h) and 2(i) RED.
[32] Eurostat, *Forestry in the EU and the World*, 94.
[33] European Commission, *Biomass*, 34.
[34] Ibid.

etc.[35] Non-food feedstock biofuels of the second and the third generations, including those of the cellulosic origin, have not yet been proven on a commercial scale, and are only envisaged for the future. [36] Thus, as a fuel, wood is mostly used directly (ie wood is not converted into biofuels or bioliquids on a commercial scale).

In contrast with fossil fuels, the leading energy resource at present,[37] biomass resources are renewable. Being of biological origin such resources can be replenished with the passage of time. However, they are not infinite. If the rate at which renewable resources are consumed exceeds their renewal rate, sustainability may no longer be ensured.

The Renewable Energy Directive aims to secure efficient and sustainable use of natural resources for energy purposes, but mostly of those, used for biofuels and bioliquids production. Recital 65 of the Directive clearly states that '[…] biofuel production should be sustainable', [38] Article 17 establishes 'sustainability criteria', a regulatory tool to ensure the sustainable production of biofuels. Traditionally derived from agricultural resources, biofuels comprise a very modest part of the total biomass used for energy purposes in the EU. The renewal rates of raw materials used for the production of biofuels are much shorter than those of the leading renewable energy resource – wood biomass. The sustainability risks associated with the production of biofuels and those of the biomass originating from forestry are different. Ensuring sustainability of wood resources used for energy purposes remains a legal challenge.

2.2. Biomass and forests' sustainability

Wood biomass, the leading renewable energy resource, originates from forestry. Besides energy production, forests are expected to provide a long list of products, including water, wood and non-wood products. People also rely on forest areas for the provision of various services, eg recreation, weather regulation, habitat for wildlife and biodiversity, etc. Forests also sequester carbon and thus help to mitigate climate change. In the light of all these ecosystem

[35] http://ec.europa.eu/energy/renewables/bioenergy/bioenergy_en.htm.
[36] The use of food-based biofuels is proposed to be limited to 5% in the RED for transport target. See, European Commission, 'Proposal for a Directive of the European Parliament and of the Council, amending Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Directive 2009/28/EC on the promotion of the use of energy from renewable sources' COM(2012) 595 final; T Anderson, 'Turning Fossil Residues to Biofuel' (5 July 2013) available at http://www.tgdaily.com/general-sciences-features/72357-turning-forest-residues-to-biofuel.
[37] EU-27 primary energy production in 2010 accounted for 19.6 % from solid fuels, largely coal, 18.8 % from natural gas, and 11.7 %. from crude oil. These figures are in general comparable with the overall world statistics: in 2011 fossil fuels constituted 81.6% of the total primary energy supply in the world (oil fuel accounted for 31.5%, coal and peat accounted for 28.8% and natural gas accounted for 21.3%). Globally fossil fuels have been the most important primary energy sources since 1973. For more information see Eurostat, 'Energy Production and Imports' available at http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Energy_production_and_imports. *Key World Energy Statistics* (International Energy Agency 2013) 6.
[38] Recital 65 to RED.

services[39], wood biomass production for energy purposes puts additional pressure on forests and brings up some quite alarming sustainability concerns. Such concerns relate especially to the future. Then the need for biomass will have multiplied, and the stress caused by the production and harvesting biomass will have more than just a marginal impact on the environment.

One of the major concerns with regard to large-scale biomass for energy purposes production and forests is direct and indirect land-use change.[40] Direct land-use change (DLUC) refers to a situation in which forest is directly converted to land for biomass production. Indirect land-use change (ILUC) takes place when agricultural land previously used for food or animal feed production is converted into land for renewable fuel production. Thus, replacement of 10 per cent of transport fuel with biofuels by 2020 would require the equivalent of 38 per cent of current cropland in the EU.[41] Land use change can lead to reduction of land carbon stock in the soil, if, for instance, after energy cropping too few forest residues are left on the land.

Meeting the 2020 binding renewable energy target means that the demand for wood as the major biomass renewable energy resource will continue to increase. Some estimates predict that, if the 2020 target is achieved, the amount of wood used for energy purposes in the EU would be equivalent to today's total wood harvest.[42] It will lead to intensification and expansion of logging practices,[43] which may have negative environmental impacts: loss of productivity and soil fertility; the risk to forest health and biodiversity; the loss of water quality and other ecosystem values.[44]

The EU cannot produce and supply wood biomass for its 28 Member States up to the amounts that the Renewable Energy Directive is demanding. Wood biomass import is likely to play a

[39] Ecosystem services are the benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services, such as nutrient cycling, that maintain the conditions for life on Earth. For the definition see, Millennium Ecosystem Assessment, 'Ecosystems and Human Well-being: A Framework for Assessment' available at http://www.maweb.org/documents/document.48.aspx.pdf, 3

[40] For more on DLUC and ILUC see European Commission, 'Report from the Commission on indirect land-use change related to biofuels and bioliquids' COM (2010) 811 final, 3–5; D Laborde, 'Assessing the Land Use Change Consequences of EU Biofuel Policies. Final Report' (International Food Policy Institute and European Commission 2011).

[41] *Biofuels for Transport. An International Perspective* (International Energy Agency 2004) 130.

[42] European Commission, 'Communication from the Commission to the European Parliament, the Council, the European and Social Committee and the Committee of the Regions. A new EU Forest Strategy: for forests and the forest-based sector' COM(2013) 659 final, 2.

[43] It is difficult to say how much biomass at present is directly harvested in forests and is used for energy purposes. According to estimations of an ongoing study by the United Nations Economic Commission for Europe (UNECE), around 24% of wood biomass for energy comes from direct removals from forests in Europe. Although the current sustainability risks are considered to be low, the expected increase of demand for domestic and non-EU biomass warrants vigilance. See, European Commission, 'EU Biomass Report' COM(2010) 11 final, 4–5.

[44] The environmental impacts may vary in nature and extent according to scale, intensity and type of wood biomass production and harvesting system used. The impacts can be either positive or negative. Potential benefits include reduced fire risk and lower nutrient leakage on eutrophicated sites. See *Criteria and Indicators for Sustainable Woodfuels* (Food and Agriculture Organization of the United Nations 2010) 15.

significant role in meeting the 2020 target.[45] It may lead to sustainability risks and increased pressure on forests outside the EU. Thus, according to International Energy Agency (IEA), the total annual import of wood pellets into the EU under the business as usual scenario is expected to increase drastically from 2 million tons in 2010 to over 16 million tons in 2020.[46] The Russian Federation (RF) is expected to remain among the most important countries outside the EU for wood biomass imports until 2020.[47] The current rate of illegal logging in Russia is extremely high.[48] Effects of unsustainable logging practices include forest degradation, biodiversity loss and climate change. International trade of illegally harvested timber may only exacerbate the problem.

Increasing demand for biomass and wood biomass, and in particular, its growing import for energy purposes from third-party countries create a certain challenge for EU regulatory activities, which relate specifically to the sustainability of the leading renewable biomass resource in the EU and in the exporting countries. It seems obvious that, legislation is required to regulate where and how wood biomass for energy purposes is produced.

3. RED SUSTAINABILITY SCHEME

3.1. RED sustainability criteria[49]

Although the Renewable Energy Directive introduces 'the most comprehensive and advanced binding sustainability scheme of its kind anywhere in the world', solid biomass and, in particular, wood biomass, is not subject to the sustainability requirements.

The sustainability criteria, laid down in Article 17, apply only to biofuels and bioliquids, irrespective of whether the raw materials were cultivated inside or outside the EU.[50] Compliance with these criteria is not a precondition for placing biofuels on the EU market; biofuels may be produced and imported even if the binding criteria are not met. However, in order to be calculated towards the 10 per cent binding target and be eligible for financial support or state aid, compliance with the sustainability criteria is required.[51]

[45] European Commission, 'Results of the Public Consultation on Additional Sustainability Measures at EU Level for Solid and Gaseous Biomass used in Electricity, Heating and Cooling' (July 2011) 4.
[46] M Cocchi et al, *Global Wood Pellet Industry – Market and Trade Study* (International Energy Agency 2011) 6–13.
[47] European Commission, 'Results of the Public Consultation on Additional Sustainability Measures' (July 2011) 4.
[48] Russian Federal Forestry Agency, 'Annual Report on Forests State and Utilization in 2011' (2013) 65. Author's translation from Russian.
[49] More on sustainability requirements for biofuels see, S Romppanen, 'Regulating Better Biofuels for the European Union' (2013) 21 *European Energy and Environmental Law Review* 123; FX Johnson, 'Regional–Global Linkages in the Energy-Climate Development Policy Nexus: The Case of Biofuels in the EU Renewable Energy Directive' (2011) *Renewable Energy Law and Policy* 91.
[50] Art 17 RED.
[51] Ibid Art 17.1, Annex I.

The Renewable Energy Directive's sustainability criteria are fully harmonized. They were adopted under Article 114 (ex. Article 95) of the Treaty on the Functioning of the European Union (TFEU). Thus, MS are not permitted to set additional criteria for the same purposes as those of the Renewable Energy Directive or exclude biofuels on sustainability grounds other than those set out in the RED.[52]

The RED sustainability scheme may be systemized as follows. According to the 'emissions-related sustainability criteria', the use of the biofuel must result in a greenhouse gas emission saving of at least 35 per cent. From 1 January 2017, that figure rises to a saving of at least 50 per cent. From 1 January 2018, for biofuels the production of which started on or after 1 January 2017, the figure rises to a saving of at least 60 per cent.[53]

According to the 'land-related sustainability criteria', for all biofuels other than those produced from non-biological waste and residues,[54] the biofuel or bioliquid must not have been made from raw material obtained from land with high biodiversity value (as determined in or after January 2008), for instance, primary forest, areas designated for protection purposes and highly biodiverse grassland.[55] Sustainably produced biofuels must not be made from raw materials obtained from land with high carbon stock, for instance, land which was considered wetlands or areas which were continuously forested in January 2008 and no longer have that status.[56] Sustainably produced biofuels must not be produced from raw material obtained from land that was peatland in January 2008, unless evidence is provided that the cultivation did not involve draining previously undrained soil.[57]

In order to indicate how Member States plan to implement sustainability criteria on the national level, Article 4 of the Renewable Energy Directive requires MS to submit National Renewable Energy Action Plans (NREAPs).[58] Such plans provide detailed roadmaps of how the Member States mean to reach their legally binding 2020 target for the share of renewable energy in their final energy consumption.

In order to comply with the high EU standards, biofuel producers all around the world can use any voluntary scheme that is recognized by the European Commission (E.C.) and that has the requisite verification system in place to cover some or all of the sustainability criteria.[59] As of March, 2013 there are 13 such 'voluntary schemes' for certifying sustainable biofuels production.[60] Moreover, the Commission is obliged to report to the European Parliament and the

[52] Ibid Preamble and recital 94.
[53] Ibid Art 17.2.
[54] Ibid Art 17.1. para 2.
[55] Ibid Art 17.3.
[56] Ibid Art 17.4.
[57] Ibid Art 17.5.
[58] Ibid Art 4.
[59] Ibid Art 18; European Commision, 'Communication from the Commission on the voluntary schemes and default values in the EU biofuels and bioliquids sustainability scheme' [2010] OJ C160/1.
[60] European Commission, 'Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Renewable energy progress report' COM (2013) 175 final, 11.

Council every two years on the measures taken to fulfill the sustainability criteria as well as on the impact of the European Union's biofuels policy on a range of concerns both in MS and in third-party countries.[61]

Although the use of solid biomass is much more common in the EU than the use of biofuels, currently the RED sustainability criteria do not apply to solid biomass, such as wood. That has inspired many arguments and calls from environmental organizations and biomass importing countries to establish a common sustainability scheme for solid biomass, and, in particular, biomass, derived from forest products.[62]

3.2. The RED sustainability scheme and wood biomass

At present, with regard to sustainability scheme for energy uses of biomass, other than biofuels and bioliquids, the Renewable Energy Directive simply establishes an obligation for the European Commission to report on the requirements for such a scheme.[63] The Directive calls to take into account the 'need to manage biomass resources in a sustainable manner',[64] and does not define exactly what 'sustainable management' is; nor does the Directive explain the meaning of the term 'sustainable' in its context.

In 2010 the Report on Sustainability Requirements for the Use of Solid and Gaseous Biomass Sources in Electricity, Heating and Cooling (EU Biomass Report)[65] was adopted. In the Report, the Commission acknowledges high sustainability risks associated with the increased demand for domestic and especially non-EU wood biomass production, [66] but argues that it is not necessary to extend the sustainability scheme for biofuels and bioliquids to other energy uses of biomass. For wood biomass produced within the EU, the current legal framework on forest management, including the applicable forest laws of MS and forest management planning at national level as well as policy guidance through the EU Forest Strategy and international processes, such as the Ministerial Conferences for the Protection of Forests in Europe (MCPFE), provides assurances for sustainable production of biomass. The same is declared true for some third-party countries. [67]

At the same time, in order to prevent disruption of the internal market and avoid unwarranted discrimination in the use of raw materials, the Commission recommends that MS, which have developed (or plan to develop) national sustainability rules for biomass, adopted criteria in

[61] Art 17.7. RED.
[62] See, for instance, European Commission, 'EU Biomass Report' COM(2010) 11 final, 3; Bird Life, Greenpeace, European Environmental Bureau, Client Earth and FERN, 'NGO Briefing, Sustainability Issues for Solid Biomass in Electricity, Heating and Cooling' (20 March 2012); European Biomass Association and Eurelectric, 'Press Release: AEBIOM and EURELECTRIC call for EU wide binding sustainability criteria for biomass now' (13 March 2013).
[63] Art 17.9. RED.
[64] Ibid Recital 75.
[65] European Commission, 'EU Biomass Report' COM (2010) 11 final.
[66] Ibid 9–10.
[67] Ibid 2–3.

almost all respects similar to those of the RED, applying to biofuels and bioliquids.[68] Among the few recommended amendments, the Commission proposes not to impose sustainability criteria on wastes.[69] However, most of the wood biomass comes from forest residues (small trees, branches, tops and un-merchantable wood left on the ground after timber-harvesting operations, etc).[70] Their use for energy purposes without sustainability requirements may lead to negative impacts on soil, water retention, and simplification and homogenization of managed forests.[71]

The Commission acknowledges 'large knowledge gaps'[72] with regard to the use of biomass in the EU, its amount and the effects of biomass use on the areas of its origin. In order to improve the quality of available data, MS are recommended to report to the European Commission. The indicator for meeting the EU binding 2020 Renewable Energy objectives is the increasing use of biomass without leading to deforestation, forest degradation or higher GHG emissions.[73] The Report concludes that 'the emergence of wider sustainability regimes affecting forests, or […] forest products will be monitored, to assess whether sustainability requirements for only the energy uses of forest […] biomass help to deliver on sustainable development for the forest sector'.[74]

4. WOOD BIOMASS AND CURRENT LEGAL FRAMEWORK ON FOREST MANAGEMENT

4.1. EU Forest Law and Policy

At present there is no common policy on forests in the EU.[75] There are policies, such as rural development, climate change, energy, etc, which have significant effect on forests, but they have been designed to address particular non-forest issues. The increasing demands put on forests could be taken in to account by a new Forest Strategy, which would respond to all the significant societal and political challenges affecting forests. In September 2013 such a Strategy was adopted by the European Commission.[76] Although the new Forest Strategy highlights the need for a holistic approach towards forests: they are important for rural development, en-

[68] Ibid 8–9.
[69] Ibid 9.
[70] Ibid 3.
[71] EL Linholm, S Berg and PA Hansson, 'Energy Efficiency and the Environmental Impact of Harvesting Stumps and Logging Residues' (2010) 129 *European Journal of Forest Research* 1223–35; Fritsche et al, 'Outcome Paper: Sustainability Criteria and Indicators', 24–46.
[72] European Commission, 'EU Biomass Report' COM(2010) 11 final, 9.
[73] European Commission, 'Commission Staff Working Document on sustainability requirements for the use of solid and gaseous biomass sources in electricity, heating and cooling' SEC(2010) 65 final, 53.
[74] European Commission, 'EU Biomass Report' COM(2010) 11 final, 10.
[75] European Commission, 'Communication from the Commission. A new EU Forest Strategy: for forests and the forest-based sector' COM(2013) 659 final,.
[76] The former EU Forestry Strategy dates back to 1998. For more info see ibid.

vironment, forest-based industries, bioenergy and in the fight against climate change, the document remains strategic in character and represents only a high level ambitious plan.[77]

The development of the binding EU forest law has been largely restricted by the prevailing principle of sovereignty over natural resources.[78] In relation to forests, it means that forests fall under domestic jurisdiction and are regulated in each Member State by a complex set of legal instruments. The choice of regulatory instruments depends largely on the traditions, culture, and history of each country. That explains the variety of forests ownership forms, the variety of national objectives and the variety of the main principles of forest management.[79] The overall national regulatory approach to forest management may also diverge and be a 'protective' one, when forests are primarily viewed as a feature of environment to be preserved, or a 'productive' approach, when, in contrast, forests are viewed as a source of economically valuable timber resource and/or a source of land to aid the expansion of agriculture.[80] However, there is an increasing tendency to manage EU forests in order to appreciate their ecologic, economic and social values.

4.2. Sustainable Forest Management

Sustainable Forest Management (SFM) – is an 'evolving and dynamic'[81] concept that attempts to recognize and incorporate all values associated with all types of forests for the benefit of present and future generations. At present, there is no one authoritative definition of SFM, nor one EU-wide form for implementing SFM. A workable definition of forests' 'sustainable management' was created in 1993 in Helsinki at the Second Ministerial Conference on the Protection of Forests in Europe (MCPFE):[82] 'the stewardship and use of forests and

[77] YM Gordeeva, 'Recent Developments in Environmental Policy and Legislation' (2014) 11 *Journal for European Environmental and Planning Law* 303.

[78] Principle 2 of the Rio Declaration on Environment and Development, which was adopted at the 1992 Earth Summit in Rio de Janeiro, stated that 'States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or areas beyond the limits of national jurisdiction'. This principle was confirmed in Principle 2(a) of the 1992 Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of all Types of Forests (Forest Principles), also adopted in Rio, and also later in the 2007 Non-legally Binding Instrument on All Types of Forests (NLBI). The emphasis on sovereignty over the natural resources in international environmental cooperation has led to the absence of a universal legally binding framework document on forests. M Shaw, *International Law* (Cambridge University Press 2008) 850; A Kiss and D Shelton, *Guide to International Environmental Law* (Martinus Nijhoff 2007) 11–12.

[79] Y Gordeeva and W Hensen, 'International Forest Law and National Forest Law (Case Study of Flemish Region, Kingdom of Belgium)' (2013) *Contemporary Issues in Law* 72. Author's translation from Russian.

[80] *State of the World's Forests* (FAO 2012) 29.

[81] Non–legally Binding Instrument on All Types of Forests, adopted 17 December 2007, Art III, 4.

[82] MCPFE or Forest Europe is the pan-European political process for the sustainable management of the continent's forests. MCPFE develops common strategies for its 46 member countries and the European Union on how to protect and sustainably manage forests. Since 1990, the collaboration of the ministers responsible for forests in Europe has had a great economic, environmental and social impact on the national and international level. FOREST EUROPE has led to achievements such as the guidelines, criteria and indicators for sustainable forest management. See http://www.foresteurope.org/print/3.

forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems'.[83] To further define the elements of SFM, criteria and indicators (C&I) were established.[84] The C&I do not have any normative power; they are designed to be used as a definitional tool, outlining the requirements for SFM. The C&I provide a framework for assessing a progress towards sustainable forest management at the individual state level.

Another way to implement the SFM concept is forest certification. It is a voluntary and market-driven mechanism, which through labelling forest products, enables consumers, retailers and manufacturers to acquire products, derived from environmentally and socially responsible forests operations. Thus, forest certification leads to the better management and use of forest resources. The two most-prevalent certification systems in the EU are the Forest Stewardship Council (FSC) and the Program for the Endorsement of Forest Certification (PEFC).[85]

Other certification initiatives, which are significant for ensuring the sustainability of wood biomass, include the normative work of the European Committee for Standardisation (CEN). Its technical Committee 383 for 'Sustainably Produced Biomass for Energy Applications' is elaborating a European Standard for sustainable biomass for energy applications. Although the standard is strictly bound to the EU Renewable Energy Directive, it doesn't cover indirect effects and requirements specifically related to solid and wood biomass.

All the mentioned certification systems and suggested SFM criteria and indicators were designed for particular purposes and do not have specific standards for wood biomass harvest (Table 1[86]), which limits their ability to address the additional wood biomass harvest risks and show a need for further advancement of the current C&I. In 2009 the MCPFE Working Group on 'sustainability criteria' for forest biomass production examined the tools of the MCPFE with regard to SFM related to sustainable production of wood biomass and proposed further alterations.[87] During the Policy Debate on Wood Energy, held in Geneva in May 2012, a wide group of stakeholders agreed that the production and consumption of wood biomass for energy purposes must be accompanied by the development of certification schemes and criteria

[83] Second Ministerial Conference on the Protection of Forests in Europe, Resolution H1, General Guidelines for the Sustainable Management of Forests in Europe, paragraph D, available at http://www.foresteurope.org/docs/MC/MC_helsinki_resolutionH1.pdf.

[84] A criterion is a category of conditions or processes by which sustainable forest management may be assessed; an indicator is a quantitative or qualitative variable that can be measured or described.

[85] However, globally there are also other forest certification schemes with the objective to achieve SFM. Examples may include Canadian Standards Association (CSA), Pan African Forest Certification Scheme (PAFC), Australian Forestry Certification Standard (AFCS, recognized by PEFC), etc.

[86] International Institute for Sustainability Analysis and Strategy (IINAS), NL Agency Ministry of Economic Affairs, Agriculture and Innovation, European Commission Joint Research Centre, Institute for Energy and Transport, Outcome Paper: Sustainability Criteria and Indicators for Solid Bioenergy from Forests', based on the Joint Workshops on Extending the RED Sustainability Requirements to Solid Bioenergy (2012) 14.

[87] See 'Report of the MCPFE Open-Ended Ad Hoc Working Group on Criteria for forest biomass production, including bioenergy' (2009) available at http://www.foresteurope.org/docs/work_programmes/MCPFEWGsustainabilitycriteriaFinalreport.pdf.

for meeting sustainability requirements while achieving renewable energy and biological diversity targets.[88]

Table 1: Environmental Criteria Considered in various Certification Schemes

Environmental Criteria	Legislative Requirements	Forest Certification Schemes	
	Renewable Energy Directive (Biofuels)	FSC	PEFC
Greenhouse gas balance	=	-	-
Carbon storage in soil	+	=	-
Soil protection	=	+	+
Water management	=	+	+
Ecosystem protection	-	+	+
Waste management	-	+	+
Biodiversity protection	+	+	+
Use of chemicals, pest control, fertilizer	-	+	+
Land use change	-	+	+
Use of GMOs	-	+	+
Emission other tan GHGs (air quality)	-	-	-
Conservation of primary forest	+	+	=
Minimization of deforestation	-	+	+
Sustaining yield of land	-	+	+
Restoration of forests and ecosystems	-	+	+

(+) extensively covered, (=) partially covered, (-) not covered; FSC: Forest Stewardship Council; PEFC: Program for Endorsement of Forest Certification.

Source: International Institute for Sustainability Analysis and Strategy, NL Agency Ministry of Economic Affairs, Agriculture and Innovation, European Commission Joint Research Centre, Institute for Energy and Transport, 'Outcome Paper: Sustainability Criteria and Indicators for Solid Bioenergy from Forests', based on the Joint Workshops on Extending the RED Sustainability Requirements to Solid Bioenergy (2014).

[88] For further information see United Nations Economic Commission for Europe, 'Policy Debate on Woody Energy' (8 May 2012) available at http://www.unece.org/energy-debate-2012.html.

4.3. Forest Management Plans

The European Commission enumerates Forest Management Plans (FMP) as a part of 'the current legal framework on forest management that provide assurance for sustainable biomass production'.[89] Forest management planning is a part of the voluntary processes, such as, the MCFPE process and forest certification standards. The practice of forest management planning differs among MS (ie in Germany the Federal Forest Act includes provisions on the overall forestry planning;[90] in Malta, where forest can hardly be found, 'afforestation projects' take place;[91] in Flanders, Belgium, forest management is planned for the period of 20 years;[92] whereas in the Republic of Poland the planning period lasts 10 years;[93] etc)

In general, FMP – is a tool for guiding and achieving SFM, defined as 'All the information, in the form of the text, maps, tables and graphs, collected during forest inventories and condensed into a written scheme of management aiming at continuity of policy and action and controlling the treatment of a forest'.[94] FMP comprises long-term goals as well as annual plan of operations (operations in the short term) but shows great variability among and within countries.[95] Forest Management Plans, which are written for a period of 10 to 15 years, typically include:

1. An articulation of the objectives of the woodland owner;
2. Forest inventory data;
3. Maps denoting relevant property-specific information (eg, location, boundaries, individual stands, soil types, tree retention areas, key conservation features, and future harvest areas),
4. Detailed descriptions and chronology of silvicultural treatments for each forest stand.[96]

No doubt, a FMP can help to assure that biomass harvesting is ecologically sound and aligned with the long-term productivity and ecosystem services of the stand, but its existence *per se* does not assure that it would be the guide when activities are performed on the stand.

[89] European Commission, 'EU Biomass Report' COM (2010) 11 final.
[90] HW Roering, 'Germany, Forestry at Federal Level' in *Forest and Forestry in European Union Countries* (State Forest Research Institute 2006) 120.
[91] JN Ebejer, 'Malta' in *Forest and Forestry in European Union Countries* (State Forest Research Institute 2006) 333.
[92] Gordeeva and Hensen, 'International Forest Law and National Forest Law', author's translation from Russian.
[93] YM Gordeeva and K Chlebowski, 'Basics of the Forest Policy and Law in the Republic of Poland', Theoretical and Applied Ecology (2013) 101. Author's translation from Russian.
[94] Food and Agriculture Organization, 'Language Resources Project' (2005) available at http://termportal.fao.org/faoterm/searc/pages/termUrl.do?id=63580.
[95] *State of Europe's Forest 2011. Status and Trends in Sustainable Forest Management in Europe* (Foresturope, UNECE and FAO 2011).
[96] B Kittler et al, *Pathways to Sustainability. An Evaluation of Forestry Programs to Meet European Biomass Supply Chain Requirements* (Environmental Defense Fund and Pinchot Institute for Conservation 2012).

4.4. Raw material legitimacy: FLEGT

Legality of wood biomass production is ensured through the Forest Law Enforcement, Governance and Trade (FLEGT). The FLEGT Action Plan[97] specifies a number of measures to exclude illegal timber and timber products from markets, to improve the supply of legal timber and to increase the demand for responsible wood products. The legal framework for the FLEGT Action Plan consists of two Regulations.

The 2005 Regulation[98] establishes a set of rules for the import of certain timber products, which is implemented through Voluntary Partnership Agreements (VPA) with timber producing countries. Such VPAs are bilateral legally binding agreements between the EU and the timber exporting countries, which aim to guarantee that the wood exported to the EU is from legal sources, and to support partner countries in improving their own regulation and governance of the sector.[99] There are currently six countries developing the systems agreed upon a VPA (Cameroon, Central African Republic, Ghana, Indonesia, Liberia, Republic of Congo – Brazzaville), six counties that are negotiating with the EU and around 15 countries have expressed their interest in VPAs.[100]

The 2010 Timber Regulation[101] prohibits placing illegally harvested timber on the EU market and lays down the obligations for operators who place timber and timber products on the EU market for the first time: to exercise due diligence and to evaluate the due diligence system.[102] Moreover, the Regulation *inter alia* applies specifically to fuel wood, wood in chips and particles, etc.[103] According to the Regulation, 'legally harvested means harvested in accordance with the applicable legislation in the country of harvest'.[104] In that context, sustainability of wood biomass may be guaranteed through legality or compliance with the MS' national sustainability rules for biomass.

5. CONCLUDING REMARKS

Climate change law in the European Union is an evolving and dynamic field of law. The broad field encompasses also other fields such as, for instance, energy and natural resources. Combating climate change under the current regulatory approach may result in unintended

[97] European Commission, 'Communication from the Commission to the Council and the European Parliament. Forest Law Enforcement, Governance and Trade (FLEGT). Proposal for an EU Action Plan' COM(2003) 251 final.
[98] Council Regulation No 2173/2005 of 20 December 2005 on the Establishment of a FLEGT licensing scheme for imports of timber into the European Community [2005] OJ L347/1.
[99] European Forest Institute, FLEGT Voluntary Partnership Agreement, Ensuring Legal Timber, Trade and Strengthening Forest Governanc (2014) http://www.euflegt.efi.int/home/.
[100] Ibid.
[101] Regulation (EU) No 995/2010 of the European Parliament and of the Council of 20 October 2010 laying down the obligations of operators who place timber and timber products on the market [2010] OJ L295/23.
[102] Ibid Art 4.
[103] Ibid Annex.
[104] Ibid Art 2.

negative environmental impacts, which create new legal challenges. A vivid example of this is wood biomass sustainability.

The Renewable Energy Directive stimulates a tremendous growth in the use of wood (biomass) as a source of renewable energy. Wood biomass production for energy purposes puts additional pressure on forests and adds to the already alarmingly high global deforestation tendency extra-sustainability concerns (DLUC and ILUC, reduction of land carbon stock in the soil, the loss of water quality, etc). Such concerns relate especially to the future, when the wood biomass harvest will have more than just a marginal impact on the environment. It seems obvious legislation is required to regulate where and how wood biomass for energy purposes is produced. Increasing demand for wood biomass and its growing import for energy purposes from third-party countries create a challenge for EU regulatory activities relating to the sustainability of the leading renewable energy resource in the EU and in the exporting countries.

Although the RED aims to secure efficient and sustainable use of natural resources for energy purposes and has been declared to introduce 'the most comprehensive and advanced binding sustainability scheme of its kind anywhere in the world',[105] wood biomass is not a subject to its sustainability requirements. Whether MS have developed or plan to develop national sustainability rules for wood biomass, and the effectiveness of such criteria requires further investigation. However, as this article has tried to prove, achieving comprehensive sustainability, not only for biofuels and bioliquids, at the EU level, requires greater effort.

The European Commission acknowledges the sustainability risks associated with the increased demand for domestic and especially non-EU wood biomass production, but argues that it is not necessary to extend the sustainability scheme for biofuels and bioliquids to other energy uses of biomass. For wood biomass produced within the EU, the current legal framework on forest management, including the applicable forest laws of the MS and forest management planning at a national level as well as policy guidance through the EU Forest Strategy and international processes such as the Ministerial Conferences for the Protection of Forest in Europe is declared to provide assurances for sustainable production of biomass. The same is viewed true for some third-party countries.

At present there is no common policy on forests in the EU. The fragmented binding laws, which have significant effects on forests, have been designed to address non-forest issues (energy, rural development, climate change, etc). Mostly because of the prevailing principle of state sovereignty over natural resources and high economic value of timber resources MS are unwilling to accept any limitations upon domestic forest use and management policies. The existing EU legal framework, which helps to ensure the most efficient way of using wood bi-

[105] European Commission, 'Commission Staff Working Document. Report on the operation of the mass balance verification method for the biofuels and bioliquids sustainability scheme in accordance with Article 18(2) of Directive 2009/28/EC. Accompanying document to the Communication from the Commission to the European Parliament and the Council. Renewable Energy: Progressing towards the 2020 target' SEC(2011) 129 final, 2.

omass and high environmental values (EU Forest Strategy, MCPFE process, forest management planning, etc), is for the most part soft and/or has a limited ability to address the additional wood biomass harvest for energy purposes risks.

Thus, there is a need for further advancement of the current legal framework to ensure wood biomass sustainability.

CHAPTER 4

THE FAST TRACK AUTHORIZATION OF LARGE-SCALE RES PROJECTS: AN ACCEPTABLE OPTION?

KARAGEORGOU VASILIKI (VICKY)

1. INTRODUCTION

The existing energy systems, which are based mainly on fossil fuels, have caused significant harm to the global environment. The climate change phenomenon constitutes the most characteristic example in this direction. The fundamental transformation of the energy systems to a sustainable path constitutes thus a prerequisite for mitigating the damage that has been caused to the natural life support systems[1]. In this context, the promotion of Renewable Energy Sources (thereafter RES) constitutes an indispensable element of any policy and legal framework that aim not only at contributing to the transition to sustainable energy systems mainly as a means of combating climate change, but also at increasing the security of supply and satisfying the needs for access to energy[2].

Although RES are much less environmentally damaging than conventional energy, they are not entirely environmentally neutral. As they can vary significantly in their technical and economic characteristics, their environmental impact largely depends both on the kind of the Energy Source in question and the specific characteristics of the project. Subsequently, one of the major challenges is to minimize at an acceptable level the environmental impacts caused by the deployment of RES projects[3] and especially the large-scale ones (eg concentrated solar towers or large-scale wind farms)[4], as questions can be raised concerning the overall environmental sustainability of these projects[5]. Moreover, the minimization of the negative side-effects through the use of the appropriate instruments of the Environmental and the Planning Legislation is important not only from an environmental or social point of view, but also from

[1] H Graßl et al, *World in Transition-Towards Sustainable Energy Systems* (German Advisory Council on Global Change 2004) 109ff.
[2] DN Zillmann et al, *Beyond the Carbon Economy, Energy Law in Transition* (Cambridge University Press 2008) 6, citing two other reasons (increasing demand for energy and investments needed for maintenance) for which the shift towards RES is needed.
[3] N Dhondt, *Integration of Environmental Protection into other EC Policies: Legal Theory and Practice* (Europa Law Publishing 2003) 383–84.
[4] A Athanas and N McCormick, 'Clean Energy that Safeguards Ecosystems and Livelihoods: Integrated Assessments to Unleash Full Sustainable Potential for Renewable Energy' (2013) 49 *Renewable Energy* 25.
[5] K de Graaf, 'Balancing Exploitation and Protection of the Dutch North Sea – The Dutch Struggle with the Need for Wind Energy at Sea and a Legal Framework for the Protection of the Marine Environment' in HC Bugge and C Voigt (eds), *Sustainable Development in International and National Law* (Europa Law Publishing 2008) 575; Dhondt, *Integration of Environmental Protection*, 384.

an economic perspective, in the sense that it is closely related to the acceptability of the project by the local society and to the creation of legal certainty for the investor.

In this context, the main aim of the paper is to examine whether the authorization of large-scale RES projects through simplified and accelerated procedures, such as that established by the so-called 'Fast-track' Legislation, can respect the basic guarantees arising from the Environmental and the Planning Legislation as regards the consideration of the environmental impacts of the designed RES projects. Except for the specific characteristics of this topic that relate mainly to the impact of the deep economic crisis on the Greek Environmental Legislation, the results of the analysis can be useful in terms of drawing lessons as regards the emerging regulatory trend both at the EU and the national level for the acceleration of the authorization procedures of large-scale mainly infrastructure projects. The structure of the paper aims to serve the purposes of the analysis of its central topic. In this context, the second section of the paper (2) provides a brief overview of the relevant provisions of the EU Regulatory Framework, mainly as regards the simplification of the relevant authorization procedures. The basic features of the Greek Legislation as regards the authorization of RES projects, including the relevant planning requirements, are also briefly examined. The core subject of the paper is, though, in the third and fourth section. In the third section (3), the Fast-track Legislation is at first analyzed as a specific paradigm of legislation aiming at the simplification and the acceleration of the authorization procedures of large-scale projects. Then, the emphasis is shifted on the compatibility issues arising from the perspective of the Environmental and the Planning Legislation in the case of the authorization of large-scale RES projects through the fast-track procedure. In the fourth section (4), the authorization of three large-scale RES projects though the 'fast-track' procedure in the island of Crete is examined, not only in terms of its legal dimensions, but also from the perspective of its 'suitability' to facilitate the acceptance of the projects by the local societies. Finally, the main message of the paper, illustrated in the conclusions (5), is that the authorization of large-scale RES projects through the 'fast-track' procedure is hardly compatible with the basic guarantees arising from the Planning and Environmental Legislation. Moreover, it can also have negative effects on the acceptability of the RES projects by the local communities and by society in general.

2. THE BASIC FEATURES OF THE EU AND THE GREEK REGULATORY FRAMEWORK FOR RES

2.1. The basic features of the EU regulatory framework

EU Legislation on RES was introduced in the late 70s as a response to the oil crisis and was mainly considered in the context of energy liberalization[6]. The elevation, though, of the climate change as a priority in the EU sustainable development agenda in the aftermath of the adoption of the UNFCCC provided significant impetus for the introduction of relevant legislation that, despite its fragmented approach, promoted the renewable electricity and fuels[7]. The new RES Directive,[8] which was introduced as a part of the EU Energy and Climate Package, reflects the integrated approach that also characterizes the Package[9] in the sense that it regulates all forms of renewables within a single legal instrument.

Among the basic features of the RES Directive,[10] the most relevant for the present analysis is the one that relates to the obligation for removing the non-cost barriers and in particular the administrative barriers to the increased deployment of RES (Article 13), as the lack of transparent rules and coordination among competent authorities is recognized as one of the major obstacles for the deployment of RES projects at national level (Recital 41 of the Preamble to the RES Directive). More specifically, the systematic interpretation of Article 13 with the Recitals 40, 41 and 42 to the Preamble of the Directive leads to the conclusion that the relevant national rules concerning the licensing and certification procedures, including planning procedures, for renewable energy installations should respect the principles of objectivity, transparency, non-discrimination and proportionality, so that unjustified administrative barri-

[6] K Kulovesi, E Morgera and M Munoz, 'The EU's Climate and Energy Package: Environmental Integration and International Dimensions' (2010) *Edinburgh Europa Paper Series* 2010/07, 29.

[7] Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal market [2001] OJ L283/33; Directive 2003/30/EC of the European Parliament and of the Council of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport [2003] OJ L123/42.

[8] Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC [2009] OJ L140/16 (RES).

[9] The EU Climate and Energy Package constitutes a comprehensive set of legal acts that aim to respond to the climate change phenomenon and the energy challenges in an integrated way, by taking sufficiently into account the inter-relationships between energy and climate policy. See T Howes, 'The EU's New Renewable Energy Directive' in S Oberthür and M Pallemaerts (eds), *The New Climate Policies of the European Union: Internal Legislation and Climate Diplomacy* (Brussels University Press 2010) 117, 125. Moreover, the integrated approach as regards the regulation of the energy and the environmental issues pervades the new legal basis for the EU policy on energy (Art 194(1) TFEU). See M Ballasteros, 'The Impact of the Lisbon Treaty on Energy and Environment Policy – An Environmental Perspective', Client Earth Legal Briefing (January 2010) available at: http://www.clientearth.org/reports/clientearth-briefing-lisbon-treaty-impact-on-climate-and-energy-policy.pdf, 12.

[10] As significant features of the Directive can also be regarded the introduction of obligatory national targets for the electricity produced by RES, the obligation for the establishment of National Renewable Energy Plans, the introduction of Flexible Mechanisms to allow the cross-financing of the Member States, so that their targets can be achieved and the introduction of sustainability criteria for the biofuels. The latter is regarded as one of the most innovative elements of the Directive, as it aims to create synergies with the other environmental-related policy fields, such as the biodiversity protection (Kulovesi, Morgera and Munoz, 'The EU's Climate and Energy Package', 31).

ers can be gradually removed[11]. Furthermore, while the Community Legislator has respected the Principle of the Procedural Autonomy of the Member States by not requiring specific administrative structures (e.g one stop shop[12]) to be established, at the same time Member States are required to coordinate their regulatory approaches in a series of issues ranging from the arrangement of the planning procedures to certification and educational issues with the aim of achieving the target set in the Directive[13].

In this context, it is also worth noting that the relevant provisions of the Directive provide clear guidance as regards the extent and the circumstances under which the simplification and acceleration of the relevant procedures should be achieved, in the sense that, despite their recognition as legitimate and desirable objectives, they cannot be achieved in any case and at any cost, but only where appropriate[14]. Moreover, the systematic interpretation of the provisions of Article 13 with those of Article 14 of the Directive, which introduce rules on access to information as regards RES projects, leads to the conclusion that any efforts to achieve simplification or acceleration of the administrative authorization procedures should not be at the expense of public access to relevant information[15]. Finally, the RES Directive respects the Integration Principle also in the sense of the so-called internal environmental integration[16] by stating that coherence between its objectives and those of other EU Environmental Legislation should be ensured[17] (Recital 42).

[11] This means that relevant national rules should, inter alia, define in an unambiguous way the responsibilities of the national, regional and local authorities involved in the process and ensure their coordination, set transparent timetables to determine planning and building applications and ensure that comprehensive information is given and made available at the appropriate administrative level (A Epiney, *Umweltrecht der Europäischen Union* (Nomos 2013) 498).

[12] JM Jankowski, 'A European Legal Perspective on Wind Energy' (2010) 28 *Journal of Energy and Natural Resources Law* 279, 288, that considers as one of the failures of the Directive that it does not require the establishment of a single administrative body that would coordinate all the authorization procedures.

[13] Howes, 'The EU's New Renewable Energy Directive', 137.

[14] Art 13 of the RES Directive provides that Member States shall, in particular, take the appropriate steps to ensure that administrative procedures are streamlined and expedited at the appropriate administrative level (lit. c) and that simplified and less burdensome procedures are established for smaller projects and for decentralized devices for producing energy from renewable resources, where appropriate (lit.f).

[15] In the new TEN-E Regulation it is very clearly recognized that the effort of streamlining and accelerating the relevant administrative permitting procedures should be accompanied by increased public participation and transparency requirements as a means to avoid potential controversies. See M Nettesheim, 'Transeuropäische Energieinfrastruktur and EU-Binnemarkt – Die Neuregulung der TEN-E' in T Giegerich (ed), *Herausforderungen und Perspektiven der EU* (Duncker & Humblot 2012) 77, 92ff.

[16] For the regulative context of the Integration Principle as a basic Principle of the European Environmental Law in the sense of requiring at least the consideration of the EU environmental objectives, principles and criteria in the design and implementation of the sectoral policies ("external environmental integration") see Dhondt, *Integration of Environmental Protection*, 86ff; JH Jans and HHB Vedder, *European Environmental Law* (Europa Law Publishing 2012) 22. Moreover, as it is persuasively argued, internal environmental integration requires the adoption of a holistic approach by the introduction of the EU environmental legislation by taking into consideration all relevant objectives, principles and criteria. See E Morgera, 'Introduction to European Environmental Law from an International Environmental Law Perspective' (2010) *Edinburgh School of Law Working Paper Series* No 2010/37, 29.

[17] The competent authorities of the Member States, during the relevant planning and authorization procedures for renewable energy installations, should take into account both the contribution of renewables towards meeting environmental and climate objectives and the satisfaction of the relevant requirements set in other pieces of the Environmental Legislation.

In conclusion, the EU Legislator has introduced a common framework for the promotion of RES providing the ground for the coordination of the regulatory approaches or even the harmonization of the Legislative Frameworks on a wide range of relevant issues. At the same time, some important legal instruments that set procedural guarantees for the consideration of the environmental impacts of the RES projects are already in place[18], leaving though enough room as to how to weigh the environmental benefits of the promotion of RES in relation to the achievement of other environmental objectives, such as the biodiversity protection[19]. Subsequently, one of the main challenges for national legislators is to introduce legislative frameworks that, while aiming at the streamlining, the acceleration and the simplification of the relevant authorization procedures for RES projects, also provide room for a holistic consideration of their various environmental and social impacts.

2.2. The basic features of the Greek regulatory framework for RES projects

The emerging trend for the promotion of RES in the early nineties was at first regarded as an endeavor to boost local development through the utilization of the abundant renewable sources and the decentralization of the electricity production[20]. The lack of Spatial Planning Regulations and of a Forest Registry in conjunction with the lengthy administrative procedures and the often existing prejudices of the local societies have posed, though, significant difficulties, especially at the first phases, for both the authorization and the implementation of RES projects[21]. The consecutive legislative interventions attempted to address those problems by simplifying the administrative procedures[22] and by providing strong financial incentives in

[18] The most important Legal Instrument that can substantially contribute to the examination of the environmental consequences of the various RES projects in advance is the Environmental Impact Assessment introduced through the relevant Directive (Directive 2011/92/EC is the codified version of the initial EIA Directive and its amendments Directive 2011/92/EU, as amended by Directive 2014/52/EU). See J Holder and M Lee, *Environmental Law and Policy: Texts and Policy* (Cambridge University Press 2007) 572–90. Furthermore, the Directive on Strategic Environmental Assessment (Directive 2001/42/EC) is relevant to the extent that it requires that Spatial Plans, including those for the deployment of RES projects, should be subjected to a Strategic Assessment as regards their environmental impacts. Finally, the Directives for nature conservation and birds protection can also be relevant in terms of setting requirements for the deployment of RES projects in the case that the latter are going to be implemented in the designated protected areas (N de Sadeleer, 'The Appropriate Impact Assessment and Authorization Requirements of Plans and Programmes Likely to have Significant Impacts on Natura 2000 Sites' (2013/2) elni Review 7ff)

[19] J Knudsen, 'Renewable Energy and Environmental Policy Integration: Renewable Fuel for European Energy Policy?' in F Morata and I Solorio Sandoval (eds), *European Energy Policy – An Environmental Approach* (Edward Elgar 2012) 48, 59. See also European Commission, *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (European Union 2013) 31–32 as regards the impacts of RES projects on biodiversity.

[20] The Greek energy system was centrally organized, as the state-owned Public Power Corporation was until the liberalization efforts for the alignment with the relevant EU Directive, the largest vertically integrated monopoly in the country (K Nikolaou, 'The Liberalization Process and Third Party Access in the Electricity Network in Greece and the UK' (2009) 18 *European Energy and Environmental Law Review* 230, 232).

[21] E Maria, 'EU and National Regulations for RES: Challenges and Dilemmas' in G Giannakourou, G Kremlis and G Siouti (eds), *The Implementation of European Community Environmental Law in Greece, 1981–2006* (Ant N Sakkoulas Publishers 2007) 305, 314ff.

[22] The main procedural steps for the authorization of RES projects that are still foreseen by the current legislation, include the *production* license, *the installation* license that presupposes the environmental license and the *operation* license (M Papantoni, *Energy Law, European Perspective and Greek Implementation* (2003) 234ff).As

the form of differentiated feed in tariffs for the various types of Renewables[23] and investment subsidies, while also ensuring preferential connection of RES projects to the grid. The most recent comprehensive effort that aimed at aligning with the provisions of the new RES Directive and at overcoming the observed barriers realized through the introduction of the Law 3851/2010 (Hellenic Government Gazette Issue A/85/4.06.2010). One of its most significant features lies in the further simplification of the licensing procedures both by setting shorter deadlines for the issuance of all relevant permits and by accelerating the environmental licensing procedure through the establishment of a single licensing process (Article 3 of the Law 3851/2010)[24].

Furthermore, the introduction of the Special Framework for Spatial Planning and Sustainable Development for RES (thereafter SPPF-RES) attempted to cope with problems that relate to the sitting of RES installations and can be mainly attributed to the long lasting lack of planning regulations[25]. Subsequently, one of its central directions lies in the prioritization of the utilization of RES over other land uses, mainly by setting criteria for the location of the different kinds of RES projects[26]. It is also worth noting that the introduction of the new

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characteristic examples of the simplification efforts can be regarded the categorization of the RES projects and the accompanying works (eg road connections) as public benefit infrastructure works, so that the land expropriation and authorization procedures for the accompanying works could be facilitated (Art 2 of the Law 2491/2001), and the exclusion of the small-scale RES projects from the obligation to obtain the relevant licenses (article 4 of the Law 3468/2006). See A Mouratian and X Synodinos, *Simplification of the Authorization Procedures for Energy Projects: EU obligation and Precondition for the Realization of the Relevant Investments, Energy and Law* (2005) 18ff.

[23] The first legislative framework for the promotion of RES (Law 2244/1994) was inspired by the relevant German Law (*Stromeinspeisungsgesetz*) and therefore introduced feed-in tariffs (FITs), while subsequent legislation (Laws 2773/1999 and 3468/2006 respectively) moved along the same principles and instruments (FITs) as regards support schemes, also by giving priority to certain types of renewables (For example, Law 3468/2006, by means of which the Directive 2001/77/EC was incorporated into the national legal system, provided high FITs for photovoltaic installations). For a comprehensive overview of the legislative framework see T Fortsakis, *Energy Law in Greece* (Sakkoulas Ant N Publishers 2009) 154ff.

[24] The rationalization of the feed in tariff system with a view to promoting RES investments except for wind and solar energy (eg geothermal energy and biogas) and the redirection of half of the renewable energy special levy to the local community where the RES project is implemented, can also be regarded as some of its basic elements. Furthermore, Law 3851/2010 (Art 8 para 3) modified to a significant extent the relevant legislative framework for spatial planning (Law 2742/1999) towards ensuring the maximum allowable utilization of RES potential by requiring that regional land management and development plans need to be in concert with the Special Framework for Spatial Planning and Sustainable Development for RES. See HD Kambetzidis, B Kasselouri and P Konidari, 'Evaluating Policy Options for increasing the RES-E Penetration in Greece' (2011) 39 *Energy Policy* 5388, 5391ff; A Metaxas and M Tsinisizelis, 'The Development of Renewable Energy Governance in Greece. Examples of a Failed (?) Policy' (2013) in E.Michalaina and J.M.Hills (Eds*), Renewable Energy Governance* (Springer Verlag 2013).

[25] The jurisprudence of the Greek Council of State was the driving force for its adoption, as it held constantly that the introduction of Spatial Planning Regulations, including those that relate to the sitting of RES projects, is an obligation arising from Art 24 para 2 of the Constitution (Decision 2569/2004 and Decision 3596/2007 of the Greek Council of State as regards the constitutional obligation for the introduction of Spatial Planning Regulations for the sitting of RES installations). For the consideration of the lack of Planning Regulations as an aspect of the so-called "Mediterranean Syndrome of Governance" see G Giannakourou, *The Spatial Planning in the European Union. National Policies and European Governance* (Papazisis Publications 2008) 78.

[26] The basic features of the SPPF-RES are, inter alia, the following: a) the setting of a methodology for the calculation of the carrying capacity of each prefecture (administrative unit) as regards wind power b) the setting of wind priority areas and of landscape criteria for wind installations and c) the introduction of rules for the calculation of the hydropower reserve capacity and the sitting of hydropower projects. The Special Framework did not

Planning Regulations is accompanied by the re-consideration of the stance of the Council of State as regards the high level of protection of certain eco-systems (eg forests) and the adoption a pro-RES approach, which is characterized by the prioritization of the RES projects and their associated environmental benefits over other environmental objectives. The main justification for such a revisiting of the previous positions lies in the recognition of the significant contribution of RES for combating climate change, as it is stipulated in the relevant International and European legal instruments that set concrete climate and energy-related targets to be achieved in certain timeframes.[27]

In conclusion, it should be underlined that the Greek Legislator has undertaken significant efforts to streamline and simplify the relevant authorization procedures for the deployment of RES projects, although this did not happen in a systematic and coherent, but in a rather fragmented way. Subsequently, the most significant administrative barriers have already been removed, while other barriers relating to the lack of legal certainty due to the frequent changes of the guaranteed prices[28] and the expansion of the grid still remain. Moreover, it is of relevance for the present analysis that no sufficient guarantees are in place for effectively ensuring that the achieved simplification and acceleration of the relevant administrative procedures, including also the environmental licensing ones, is not at the expense of the sufficient consideration of the environmental impacts of the RES projects and especially the large-scale ones.

Taking all this into consideration, the next section of the paper will focus on approaching the central issue of the paper that relates to examining whether the authorization of large-scale RES projects through a simplified ('fast-track') procedure can be regarded as an acceptable option for promoting RES from the perspective of the Planning and the Environmental Law. To this end, it seems crucial to analyze at first the 'Fast-track' Legislation as a specific para-

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introduce, though, any specific rules as regards the carrying capacity of each prefecture for photovoltaic installations. See Fortsakis, *Energy Law in Greece*, 218–19.

[27] The Decision 2499/2012 of the Council of State (Plenary) constitutes the most characteristic example in this direction, as the Court ruled that the installation of wind farms in areas designated for re-forestration, even before such re-forestration is completed, does not come in contradiction with the relevant constitutional provisions (Art 24 para 1 and Art 117 para 3 respectively), if it is ensured that the intervention in this area takes place only to the extent that it is necessary for the installation of the wind farms and the accompanying works (T Prousanidis, 'Comment on the Decision 2499/2012 of the Council of State' (2012/10) *Theory and Praxis of Administrative Law* 901–03). Moreover, the pro-RES approach of the Council of State was re-affirmed by the Decision 1421/2013, where it was held, inter alia, that the methodology, which was applied in the Special Framework for the Spatial Planning and the Sustainable Development of RES is in conformity with the Environmental Legislation (paras 9, 10, 11) and that the relevant Study on Strategic Environmental Assessment that accompanied the Special Framework as a condition for its approval, enabled the sufficient consideration of the environmental impacts caused by the deployment of RES projects in a general way, also through the use of sustainability indicators (paras 12,13). See A Sakellaropoulou, 'Spatial Planning and Renewable Energy Sources' (2013/8–9) *Theory and Praxis of Administrative Law* 97. analyzing the arguments for the pro-RES stance of the Council of State mainly in view to the above-mentioned Decision on Special Framework for the Spatial Planning and the Sustainable Development of RES.

[28] A characteristic example in this direction constitutes the introduction of a tax levy ('Special Solidarity Levy') by Law 4093/2012, which is imposed on RES producers' s turn-over for the period 2012–2014 and subsequently results in a de facto retroactive reduction of the applicable feed in tariffs (A Metaxas, 'Asymmetric Tax Measures and EU State Aid Law: The "Special Solidarity Levy" on Greek Producers of Electricity from Renewable Energy Sources (Legal Opinion)' (2013/5) *Efimerida Dioikitikoy Dikaioy* 727 ff).

digm for simplified and accelerated authorization procedures for large-scale projects (3.2.) also under the prism of the regulatory trend emerged after the economic crisis in the field of Planning and Environmental Legislation (3.1).

3. THE AUTHORIZATION OF LARGE-SCALE RES PROJECTS THROUGH THE FAST TRACK PROCEDURE

3.1. The impact of the economic crisis on the environmental and planning legislation

Almost two years after the global economic and financial crisis emerged in autumn 2008, Greece has had to deal with a sharp economic crisis, which was mainly characterized by the difficulties in financing sovereign public debt.[29] The acute chosen response to the immense public deficit was mainly focused on the decision of the then Greek government to sign a first Memorandum of Understanding (MoU)[30] with the so-called Troika (composing of representatives from EC, the IMF and ECB) that required both substantial changes in the fiscal policies (eg austerity measures) and structural reforms in certain fields of the economy and which was a prerequisite for the financial support in the form of bail-out loans. One of the basic regulatory directions underpinning the relevant Legislative Framework as regards the ratification of the subsequent MoUs and the introduction of the Medium-Terms Fiscal Strategies (Laws 3985/2011 and 4093/2012 respectively) lies in the simplification and acceleration of the relevant procedures for granting environmental, building and operation licenses that have to be accompanied by a reform of the current system for Spatial Planning towards ensuring more flexibility in land development**,** as they are both regarded as growth enhancing reforms.[31] This regulatory direction has exerted significant influence on the most pieces of the Environmental and Planning Legislation that were introduced after the emergence of the economic crisis and the signing of the relevant MoUs, as the emphasis is placed on the simplification and acceleration of the relevant authorization procedures,[32] the introduction of more flexible or special

[29] For the Greek debt crisis viewed also from the perspective of the Eurozone deficiencies see E Avgouleas and DW Arner, 'The Eurozone Crisis and the European Banking Union-A Cautionary Tale of Failure and Reform' (2013) *University of Hong Kong, Faculty of Law Research Paper* 2013/037, 22–23. The deep debt crisis resulted in the creation of a vicious circle in the sense that some structural and long-lasting problems relating both to the Greek economy (lack of competitiveness) and the organization of the state (deficiencies of the public sector) came to fore with increased intensity after the emergence of the crisis (G Pagoulatos, 'Public Administration, Political System, Economy: The Structural Constraints' in T Giannitsis (ed), *Greek Economy: Crucial Issues of Economic Policy* (Alpha Bank Historical Achives 2008) 211ff)

[30] The first MoU was ratified by the Greek Parliament through the introduction of Law 3845/2010, while the second one was ratified through the introduction of Law 4046/2012.

[31] See MoU attached to Law 3845/2010, under the title 'Structural policies' (III. Economic Policies, C. Structural Policies), second MoU attached to Law 4046/2012, Attachment V 'Structural Reforms', para.31. See also MoU on Specific Economic Policy Conditionality, 3rd update (23 February 2011), which provides that government adopts legislation to simplify and shorten procedures to complete studies on environmental impact assessment.

[32] This regulatory trend is reflected to a significant extent in the provisions of Law 4014/2011(Hellenic Government Gazette Issue A/209/21.09.2011) for the environmental authorization procedures, as it provides for the reduction of the categories of the projects subject to environmental impact assessment from 4 to 3 (Art 1) and for the shortening of the deadlines for both the expression of the opinions by the authorities involved (Art 3 par

spatial planning regulations[33] and the provision of exemptions from the ordinary administrative procedures for certain categories of projects.[34]

From a general point of view, it should be noted that although certain reforms in the Greek Environmental and Planning Law should take place with the aim to increase the coherence[35] among the various legislative pieces and thereof to enhance compliance, the so-called 'forced' reforms, are, despite few exceptional provisions for the integration of certain licenses[36] in the environmental license, mainly 'one-dimensional', as the achieved simplification and acceleration is not accompanied by the necessary guarantees for ensuring that the relevant instruments can fulfill their basic functions. Therefore, it can be persuasively argued that the quite recent paradigm of the Environmental and Planning Legislation can result in the violation of the newly emerged Non-Regression Principle,[37] as it can create the conditions for unsustainable interventions in the natural and urban environment with long lasting or even irreversible effects. Finally, it should be mentioned that the chosen recipe to promote growth also through the introduction of growth-enhancing reforms, including those that relate to the simplification of the environmental and planning procedures, does not seem to be compatible with the Principle of Sustainable Development in its dominant three pillar version,[38] as it prioritizes the

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a2 for the projects of the A1 category, namely the projects with the most significant environmental effects) and for the issuance of the relevant environmental permit which has to be issued within 25 working days after the collection and the assessment of the opinions expressed by the authorities involved and the public (Art 3 para 2 lit.f). Furthermore, Law 4014/2011 simplified and 'relaxed' to a significant extent the eia procedure for the projects classified in the Category B, namely projects that are expected to have significant local effects on the environment, as it provides (Art 8) that the applicants for authorization do not have to submit an Environmental Impact Assessment Study. Instead of that, 'Standard Environmental Commitments', which constitute an integral part of the other licenses necessary for the realization of the project, have to be issued by the competent authority issuing the operation permit following a statement by the Engineer or the owner of the facility. The specific characteristics that Standard Environmental Commitments need to have are defined for each group of projects in a Ministerial Decision.

[33] Law 3986/2011 (Hellenic Government Gazette Issue A/152/1.07.2011) provides for the development of Special Planning Regimes that have to be elaborated for each public property under privatization (Arts 10–16). Such Plans should define the specific land uses that are allowed in the public property, the specific building terms and restrictions and the environmental terms to be followed during the development of the relevant process.

[34] An exceptional simplified procedure for the environmental authorization of the construction works and the projects that are going to be implemented within the territory of any Port Authority in the form of "Societe Anonyme" is introduced through the Arts 44–46 of Law 4153/2013 (Hellenic Government Gazette Issue A/102/29.04.2013).

[35] The existing legislative framework in the field of Environmental Law consisting of a 'mosaic' of rules contained in Laws, Joint Ministerial Decisions and Presidential Decrees is characterized by lack of a systematic and coherent approach (V Karageorgou, 'The Greek Experience with the Use of Market-Based Instruments in Climate Policy' in M Rodi and A Mehling (eds), *Bridging the Divide in Global Climate Policy: Strategies for Enhanced Participation* (Lexxion 2009) 177, 191.

[36] Art 12 of the Law 4014/2011 stipulates that the licenses for both wastewater treatment and solid waste treatment provided under the previous regimes have to be integrated in the environmental license.

[37] M Prieur and G Sozzo, *La non régression en droit de l'environnement* (Bruylant 2012). It is to note that the Non-Regression Principle was since long recognized as a basic feature of the environmental jurisprudence of the Greek Council of State in the form of the so-called 'Acquit Environmental' (Decisions 10/1988, 3618/1995, 1528/2003 and 3144/2004 respectively). In accordance with the above-mentioned jurisprudential Principle, both the legislator and the administration should take measures that either enhance the existing level of protection of the natural and the urban environment or at least do not result in its deterioration in comparison to the existing situation (E Koutoupa-Rengakou, *Environmental Law* (2007) 61).

[38] MC Cordonier Segger and A Khalfan, *Sustainable Development Law. Principles, Practices and Prospects* (Oxford University Press 2004) 15–50.

economic pillar in a quite unbalanced way. This is illustrated to a significant extent in the Fast-track Legislation, as presented below.

3.2. The 'Fast-track' Legislation for the authorization of large-scale projects-a specific paradigm for the acceleration of the relevant procedures

The so called 'Fast-track' Legislation[39] reflects the above described regulatory trend, which places emphasis on the creation of a business friendly environment, mainly by introducing special rules for a certain category of projects (large-scale ones). More specifically, the simplification and acceleration of the relevant licensing procedures, the introduction of special regulations, and the deviations from the existing rules and regulations can be regarded as the basic characteristics of the so-called 'Fast-track Legislation' that aim to facilitate the operationalization of the project proposals that are characterized as 'Strategic Investments'.[40] In this context, the significant acceleration of all relevant permitting procedures is mainly achieved by shortening the relevant deadlines for issuance of the relevant permits to 45 days after the submission of the relevant application from the Agency responsible for the procedures (Invest in Greece S.A.) to the competent authority of the Ministry for Development (Ar-(Article 22 para 1 of the Law 3894/2010, as it is in force). Furthermore, the simplification of the authorization procedures is achieved mainly through the provided deviation from the relevant existing legislation and the thereby exceptional designation of the competence for issuing the relevant permits to the Ministers that have the general competence in the field to which the permit relates, although the deviation can go even further under certain circumstances.[41] Moreover, the simplification extends also to the authorization procedures for the auxiliary and accompanying infrastructure works that are necessary for the operationalization of the Strate-

[39] It was first introduced by Law 3894/2010 (Hellenic Government Gazette Issue A/ 204/2.12.2010) which was modified two subsequent times by Laws 4072/2012 and 4146/2013 respectively.

[40] Large scale private or public project proposals can be characterized as 'Strategic Investments', only when they relate to the construction, reconstruction or expansion of infrastructure or networks in certain key sectors of the economy, such as industry, energy, tourism and transport and meet the quantitative or quality criteria set in Art 1 of the Law 3894/2010, as it is in force. In particular, the quantitative criteria relate mainly to the height of the investment (for example €100,000,000 total investment cost irrespective of the sector), while the qualitative criteria relate to the specific sector on the development of which is placed emphasis (manufacturing). Finally, the decision for the characterization of a 'project proposal' as 'Strategic Investment' is taken by the 'Interministerial Committee' for Strategic Investments (Art 3 of the Law 3894/2010, as it is in force), which is composed of at least 5 Ministers that have competence in the relevant field. In addition, 'Invest in Greece S. A' is the designated authority for the evaluation of the project proposals and the support of the procedures (Art 4 of the 3894/2010, as it is in force).

[41] Art 22 para 5 of the Law 3894/2010, as it is in force, provides that the operation and installation licenses for the 'Strategic Investments' are issued by the Minister for Development and Competitiveness, while the Minister for Environment, Energy and Climate Change is responsible for granting the environmental permit (Art 6 para 1). Moreover, Art 22 para 6 provides that in the case of the non-issuance of the relevant permits, including the environmental permit, within 45 days after the submission of the file to the competent Ministry, the Minister for Development and Competitiveness is then responsible for making a reasoned decision as to whether to grant the permit or not.

gic Investments[42] and to the procedures for the concession of the use of certain natural resources, such as the foreshore, the backshore and the seabed.[43] In this context, it is also worth noting that the procedures for the expropriation of properties for the realization of both the Strategic Investments and the accompanying works are simplified and accelerated to a significant extent.[44] Finally, the Fast-track Legislation provides the possibility for the introduction of Special Planning Regimes (Special Integrated Plans) that set specific location sites for the reception of Strategic Investments and introduce land use regulations and building conditions for these specific areas[45], while also deviation from the applicable building terms and restrictions is foreseen in the cases where the Strategic Investment will take place in an area of an approved City Plan (Article 7).

3.3. The 'fast-track' authorization of large-scale RES projects from the Planning and the Environmental Law perspective

Certain projects that have been approved as Strategic Investments are large-scale RES projects that are going to be implemented both in the Greek islands and in mainland Greece. Moreover, their implementation requires both new grid connections mainly through submarine cables and significant pieces of land for the realization of the auxiliary and the accompanying works. Therefore, the central question of the paper as to whether the authorization of large-scale RES projects through simplified and accelerated procedures can contribute

[42] In accordance with Art 22 para 1, besides the permits for the Strategic Investments, the permits for the auxiliary and accompanying works should also be issued within 45 days.

[43] As set in Art 8 of the Law 3894/2010 in its current version, the specific provisions for the concession of the use of the above-described natural resources should be identified in a Presidential Decree that has not yet been issued. Moreover, the interpretation of the regulative content of Art 8 leads to the conclusion that the character of the relevant natural resources as "common goods" is not taken sufficiently into account, as it provides the possibility for their exclusive use, while it is underpinned by the emphasis on their utilization in economic terms. Subsequently, it does not seem to be compatible with both the directions set at EU level as regards the management and protection of the coastal zones (European Commission, 'Proposal for a Directive of the European Parliament and of the Council establishing a framework for Maritime Spatial Planning and Integrated Coastal Zone Management' COM(2013) 133 final) and with the relevant provisions of the Protocol for the Integrated Coastal Zone Management to the Barcelona Convention that are characterized by the adoption of an integrated approach as regards the protection and management of the coastal eco-systems.

[44] In deviation from the existing legislation (Law 2882/2001), simplified procedures for the expropriation of land or the establishment of rights in rem in properties are set in Art 10 of the Law 3894/2010 in its current form. For example the declaratory act of the expropriation is publicized only to a limited extent (para 6) in the sense that only if the number of alleged owners and in rem rights holders is greater than fifty (50), a summary of the relevant decision is published in two large-scale circulation newspapers. Moreover, other relevant requirements set out in Law 2882/2001, such as the drowning of the land registry chart and the diagram that accompany the expropriation act, are not observed within the framework of this simplified procedure (para 7). Finally, the right of access to justice for those affected by the declaratory act of expropriation faces significant limitations not only due to the already mentioned insufficient notification procedures, but also because Art 11 sets shortened deadlines for challenging the relevant act before the Council of State. In particular, in contrast to the sixty days deadline provided for the submission of a petition for annulment against administrative acts (Art 46 para 1 of the Presidential Decree 18/1989), the deadline for submitting a petition for annulment against the expropriation act is 30 days starting either with the publication in a newspaper or the notification to the mayor.

[45] Such Special Planning Regimes, which are underpinned by the same regulatory 'philosophy' as the Special Planning Regimes for public land under privatization, can amend approved Regulatory Plans, General Town Plans and other Land Use Plans (Art 24 para 2).

to the increase of renewable electricity in an acceptable manner from the perspective of the Environmental and Planning Law arises. To answer this question, it is thus crucial to examine whether the authorization of large-scale RES projects through the above-described procedures within the framework of the 'fast-track' legislation respects the basic guarantees of the Planning and the Environmental Legislation, so that their overall environmental sustainability cannot be seriously questioned.

3.3.1. Compatibility issues from the perspective of the Planning Law

A starting point for the analysis should be that the choice of the location site for the deployment of RES projects and especially for the large-scale ones constitutes a delicate and complex decision[46] that should be based on planning rules and regulations, which set quite clear criteria and guidelines for balancing the conflicting mainly environmental-related interests at individual case level. Under this prism, it should be assessed whether the relevant procedures established under the 'Fast-track' Legislation entail the necessary guarantees for facilitating balanced choices as regards the location sites.

A first point for approaching this issue relates to the fact that the Special Planning Regimes (Special Plans for the Spatial Development of the Strategic Investments) for the reception of RES projects are underpinned by the derogation from the current planning rules for each relevant region, which are amended and substituted by Specific Land-Use Regulations for the chosen location area. Furthermore, these Special Planning Instruments can be introduced also in cases where the relevant Regional Spatial Frameworks have either not yet been adopted or are in a process of revision, so that future planning instruments can be put in jeopardy due to the creation of de facto situations. Moreover, because of the orientation of these Specific Planning Instruments in the realization of concrete projects, their approval does not presuppose the examination of alternatives,[47] but instead their whole regulatory concept contradicts the establishment of such an obligation. Subsequently, it becomes obvious that these Planning Regimes are underpinned by a fragmented approach in the sense that they do not provide the appropriate framework for a holistic consideration of the various conflicting interests and their balancing at an abstract level, as required by the Planning Law.[48] In addition there are serious considerations that such Planning Regimes can provide the basis for 'one-dimensional' decisions in the sense that they mainly reflect the needs of the potential investor.

[46] W Köck and N Salzborn, 'Handlungsfelder zur Fortentwicklung des Umweltschutzes im Raumbezogenen Fachplanungsrecht – Eine Skizze' (2012/4) *Zeitschrift für Umweltrecht* 203, 204.
[47] R Steinberg, 'Die Bewältigung von Infrastrukturvorhaben durch Verwaltungsverfahren-eine Bilanz' (2011/7–8) *Zeitschrift für Umweltrecht* 340, 342 as regards the obligation for the examination of alternatives.
[48] W Köck, 'Pläne' in W Hoffmann-Riem, E Schmidt-Aßmann and A Voßkuhle (eds), *Grundlage des Verwaltungsrechts* (CH Beck 2008) 37, para 112. It is also worth noting that the main Greek law for spatial planning (Law 2742/1999, as it is in force) aims at protecting and restoring the environment and promoting sustainable development.

In this context, two other parameters as regards the 'quality' of these Specific Spatial Plans should be taken into consideration. The first one is that these Plans are elaborated by a non-competent authority on planning issues, namely the Directorate General for Strategic Investments[49] (Article 24 para 1 of the Law 3894/2010, as it is in force). The second one relates to the fact that the only public consultation procedures that take place during the elaboration of these Specific Planning Instruments are those that have to take place before the approval of the Study on Strategic Environmental Assessment (environmental report) under the relevant Directive (SEA Directive), which constitutes a prerequisite for the issuance of the relevant Plans.[50] Those procedures, though, can be regarded as insufficient because they have to take place in very short deadlines[51] in comparison to the deadlines set for the ordinary planning procedures,[52] so that those likely to be affected cannot probably get sufficiently informed and participate in a constructive dialogue in order to have substantial influence on the final decision.[53] In this context, it is also questionable whether the Study on Strategic Environmental Assessment elaborated also within a shortened deadline and without significant input from other relevant authorities,[54] can enable the sufficient consideration of the environmental impacts of the Special Planning Regime in question.

The central conclusion arising from the current analysis is, thus, that the relevant legal framework and the procedures established for the elaboration of these Specific Planning Instruments do not fulfill the basic requirements of the Planning Legislation as regards the optimal spatial coordination of the different human activities, with the aim to achieve certain objectives (economic, social and environmental) within the context of sustainable development. Moreover, the application of these Specific Planning Instruments for the identification

[49] This administrative unit is established as a Department of the Agency responsible for Strategic Investments (Invest in Greece SA).

[50] The relevant provisions of the Arts 12, 13, 14 and 15 of the Law 3986/2011 which has introduced the Special Planning Regimes for Public Land under Privatization, are also applied for the Special Plans for the Spatial Development of the Strategic Investments. In particular, Art 12 para 2 of the above-mentioned Law stipulates that the elaboration of a Study on Strategic Environmental Assessment is a pre-condition for the approval of the designed Special Spatial Plan.

[51] In deviation from the provisions of the Joint Ministerial Decision 107017/2006 for SEA (Hellenic Government Gazette Issue B/1225/5.09.2006) as regards the deadlines for public consultation, Art 12 para 2 lit b' of the Law 3986/2011 provides significantly shortened deadlines for public consultation in the case of the elaboration of a Study on Strategic Environmental Assessment as a precondition for the approval of the Specific Planning Regimes in the sense that the ordinary foreseen deadlines ranging from five (5) to fifteen (15) days are shortened to five (5) days, while all other deadlines are shortened to ten (10) days.

[52] From a general point of view, it is worth noting that the Greek Legislative Framework for Spatial Planning (Law 2742/1999) does not provide extensive public consultation procedures. For example, there is no provision for public consultation procedures in the case of the Special Frameworks for Spatial Planning, while only Art 8 para 3 lit b' and c' of the above-mentioned Law provides that both the Regional Council and all the relevant authorities involved have to express their opinion as regards the Draft Regional Framework for Spatial Planning to the Ministry of Environment within three months after its submission. Subsequently, despite the deficiencies of the relevant legislative framework that result in divergences as regards the modalities of the relevant public consultation procedures, their organization before the approval of the various Planning Instruments should be seen as a consequence of the influence of the Aarhus Convention and the EU Legislation on the national Spatial Planning Legislation.

[53] Steinberg, 'Die Bewältigung von Infrastrukturvorhaben', 343ff.

[54] Art 12 para 2 lit b' of the Law 3896/2011 stipulates that the opinions of the authorities involved (relevant Departments of the Ministry of Environment and other Ministries as appropriate) required under Art 7 para 4 lit 1 of the Joint Ministerial Decision on Strategic Environmental Assessment are substituted only by the Opinion of the relevant Regional Council.

of the location site of the large-scale RES projects seems to be inappropriate also for an additional reason, which lies in the fact that their content does not provide a sound basis for complex and delicate decisions that 'regulate' the emerging intra-environmental conflict (protection of climate though the promotion of RES from the one side and protection of the other natural ecosystems from the other side) in a balanced way. Therefore, serious doubts can be raised on whether the established procedure and the provided content of these Specific Planning Instruments are compatible with the guarantees arising from the constitutionally established regulatory and control authority of the State as regards the Spatial and Urban Planning Procedures (Article 24 para 2). Finally, the provisions for the arrangement of the public consultation procedures within the framework of the relevant Planning Process, which, as already mentioned, take place only during the approval process of the Study on Strategic Environmental Assessment and seem to be more or less 'typical' in the sense of ratifying an already taken decision, do not seem to be compatible both with the Article 7 of the Aarhus Convention that provides for sufficient public participation in the elaboration of Plans and Programmes[55] and with the relevant provisions of the SEA Directive as regards public participation.[56]

3.3.2. Compatibility issues from the Perspective of the Environmental Law

The central issue of this section is to examine whether the environmental authorization procedure, as modified within the framework of the fast-track legislation, incorporates the necessary procedural elements for the sufficient consideration of the expected environmental impacts both of the large-scale RES projects themselves and of the associated accompanying works. As a starting point of the analysis it should be taken into consideration that the very short deadlines set for the expression of the opinions by the authorities involved and for the issuance of the relevant environmental permit do not provide the necessary guarantees for a comprehensive assessment of the direct and indirect effects of the large-scale RES projects, as

[55] The Aarhus Convention was ratified in the Greek legal order by the enactment of the Law 3422/2005 (Hellenic Government Gazette Issue A/313/13.12.2005). For the regulative content of Art 7 of the Aarhus Convention see J Jendrośka, 'Public Participation in the Preparation of Plans and Programs: Some Reflections on the Scope of Obligations under Art 7 of the Aarhus Convention' (2009) 6 *Journal for European Environmental and Planning Law* 495, 512–15.

[56] Art 6 of the SEA Directive stipulates that both the draft plan or programme and the environmental report shall be made available to the "public", as identified by the Member States (paras 1 and 4) and that an early and effective opportunity within appropriate timeframes shall be given to the public to express its opinion (para 2). It is thus obvious that Member States enjoy a wide margin of discretion as regards the organization of the public consultation procedures within the framework of the elaboration and adoption of the designed plan or programme and the accompanying environmental report (K Meßerschmidt, *Europäisches Umweltrecht* (CH Beck 201) 563). This discretion, though, is subject to certain limitations as regards the definition of the public and the organization of the procedures (Epiney, *Umweltrecht der Europäischen Union*, 324, fn 407). The arrangement of the public consultation procedures before the approval of the SEA Study under the 'fast track legislation' seems, though, to exceed the above limits of discretion, because the 'suffocating' deadlines set for the information and the expression of the opinion of the public do not provide the framework for effective public consultation in the sense of excerpting any influence as regards the final decision.

required by the EIA Directive.[57] Moreover, the provided possibility for the transfer of the competence for the issuance of the environmental permit to a non-competent authority, namely to the Minister for the Development in the case of the non-issuance of the permit by the Minister for the Environment within 45 days contravenes Article 3 of the EIA Directive interpreted in the light of its objective (Article 2 par.1), which presupposes that only administrative authorities with appropriate expertise and institutional competence can assess the impacts of the project in an appropriate manner[58] and make the final decision as regards the environmental license.

Another issue, which is critical for assessing the appropriateness of the environmental authorization process established under the 'Fast-track'' Legislation for the examination of the impacts of the large-scale RES projects, relates to the simplified and accelerated character of the relevant procedures that are applied also for their accompanying infrastructure works. Furthermore, the relevant licensing procedures are underpinned by the adoption of a splitting approach[59] as regards the consideration of the impacts of the main project and those of the accompanying and auxiliary works. Subsequently, the relevant licensing procedures[60] for the accompanying infrastructure works cannot enable the sufficient examination and assessment of both their direct and indirect impacts on the environment and their cumulative effects with the relevant large-scale RES project and the other projects in the area as well. Under this prism, they cannot satisfy the requirement for a comprehensive assessment[61] (Article 3) interpreted also in the light of the spirit and the objective of the EIA Directive.

Furthermore, another aspect of the environmental authorization procedure that raises serious concerns regarding its compatibility with the relevant provisions of both the Aarhus Convention (Article 6) and the EIA Directive (Article 6), relates to the provisions for public participation within the framework of the 'fast-track' legislation. In particular, the most significant modification in comparison to the public participation procedures within the framework of the 'ordinary' environmental authorization procedure[62] (established under Law

[57] Art 3 of the EIA Directive, as interpreted by the Court of Justice of the European Union (CJEU), requires that 'the competent environmental authority may not confine itself to identifying and describing a project's direct and indirect effects on certain factors, but must also assess them in an appropriate manner, in the light of each individual case' (Case C-50/09 *European Commission v Ireland* [2011] ECR I-873, para 37). In this direction Case C-403/09 *European Commission v Spain* [2011] ECR I-11853, para 80.

[58] The CJEU stressed in its Judgment in Case C-50/09 *European Commission v Ireland* [2011] ECR I-873, paras 37–41 that the assessment of the environmental impacts is a task of the competent authorities (E Rehbinder, 'Environmental Impact Assessment and Environmental Quality Standards' (2013/1– 2) *elni Review* 23).

[59] The CJEU has constantly ruled that splitting practices are incompatible with the EIA Directive (Case C-392/96 *European Commission v Ireland* [1999] ECR I-5901, paras 76; Case C-142/07 *Ecologistas en Accion-Coda v Ayuntamnetio de Madrid* [2008] ECR I-6097, para 44).

[60] The analyzed deficiencies of the licensing procedure have to be viewed in association both with the accelerated procedures for the definition of certain projects as accompanying infrastructure works and with the emphasis placed by the legislator on the estimated financial cost, which is regarded as the most significant factor for the final decision as regards their authorization and realization (Art 9 para 1 of the Law 3894/2010, as it is in force).

[61] In view of the comprehensiveness of the assessment of the effects that is required by the EIA Directive see Case C-2/07 *Abraham and others v Région wallonne and others* [2008] ECR I-1197, paras 42 and 43; Case C-142/07 *Ecologistas* [2008] ECR I-6097, para 39.

[62] The relevant deadlines for the expression of the opinions of the authorities involved and of the public as regards the Environmental Impact Assessment Study are significantly longer in the ordinary environmental authorization procedure in comparison to the relevant procedures under the 'fast-track' legislation. In particular,

4014/2011) lies in the significant shortening of the relevant deadlines, as the whole procedure has to be concluded within 45 days. Therefore, it becomes obvious that the suffocating deadlines set for the whole environmental licensing procedure, including the organization of the public participation procedures, do not satisfy the relevant requirement of both the Aarhus Convention (Article 6 para 3) and the EIA Directive (Article 6 paras 3 and 6) for setting reasonable time-frames for the public participation procedures,[63] taking also the scale and the complexity of the relevant projects into consideration. Moreover, the 'early and effective participation' of those affected by the project, namely the 'public concerned' (Article 6 para 4 of the EIA Directive) is also jeopardized by the restrictions posed by the competent authorities as regards access to the relevant documents.[64] Such restrictions are mainly based on a wide application of the relevant exception aiming at the protection of the business interests and therefore contradict the relevant provisions of the Aarhus Convention (Article 4 para 4) and the 2003/04/EC Directive (Article 4 para 2), both of which require that the grounds for refusal of access to environmental information must be interpreted in a restrictive way.[65] Subsequently, despite the margin left to the national legislators for the arrangement of the public participation procedures (Article 6 of the EIA Directive), public participation, as arranged within the framework of the 'fast-track' procedure, does not satisfy even the relevant minimum requirements of the Directive. The risk of depriving this crucial procedural mechanism of any substance, mainly through the weakening of the stringency of its various elements, is not without any consequences as regards both the' rationality' of the final decision, which is

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Art 3 para 2 lit dd of the Law 4014/2011 stipulates that the opinions of the authorities involved, the relevant Regional Council and the public as regards the Environmental Impact Assessment Study for projects belonging to the category A1, namely those that are expected to have the most significant environmental impacts, have to be submitted to the competent authority within 45 working days after the notification of the Study, while Art 4 para 3 lit dd stipulates that the deadline for the submission of the opinions as regards the Environmental Impact Assessment Study for projects belonging to the category A2 is 35 working days starting with the notification of the Study. Furthermore, the Joint Ministerial Decision 1649/45/2014 (Hellenic Government Gazette Issue B/45/15.01.2014) that specifies the modalities of public participation within the framework of the environmental authorization procedures, foresees that also the local Councils have to express their opinions as regards the Environmental Impact Assessment Study of the designed projects (Art 5 para 5 lit c) and that both the public and the 'public concerned' should get sufficiently informed by having access to any available environmental information, so that mainly the latter can express a written opinion.

[63] J Jendrośka, 'Public Participation in Environmental Decision-Making. Interactions between the Convention and EU Law and Other Key Legal Issues in its Implementation in the Light of the Opinions of the Aarhus Convention Compliance Committee' in M Pallemaerts (ed), *The Aarhus Convention at Ten. Interactions and Tensions between Conventional International Law and EU Environmental Law* (Europa Law Publishing 2011) 93, 138–41.

[64] This is illustrated in a characteristic way in the case of a large-scale touristic investment project (toplou investment) in the northeastern part of Crete, where the competent authorities rejected the request of the residents and NGOs for access to the relevant documents by claiming the protection of the interest for business confidentiality. It is also worth noting that a then Member of the European Parliament asked the European Commission whether the denial for granting access to the relevant documents is compatible with both the Aarhus Convention and the 2003/04 Directive (Question for a written answer to the Commission submitted by EP Member Criton Arsenis on 13 March 2013, available at http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+WQ+P-2013-02915+0+DOC+XML+V0//EN). Finally, it is worth noting that although the residents and the environmental NGOs submitted a petition for annulment of the decision for the inclusion of the project in the 'fast-track' procedure before the Council of State, shortly before its discussion they withdrew the petition.

[65] Case C-266/09 *Stichting Natuur en Milieu v College voor de toelating van gewasbeschermingsmiddelen en biociden* [2010] ECR I-13119, para 52.

facilitated through the inclusion of information from the public as well as its legitimacy and acceptability.

In conclusion, the accelerated and simplified environmental authorization procedures established within the framework of the 'fast-track' legislation can hardly ensure the comprehensive assessment of the environmental effects of both the large-scale RES projects themselves and the associated accompanying infrastructure works, raising thereby serious compatibility issues with the EIA Directive. In this context, the authorization of three large-scale RES projects in the Greek island of Crete was chosen as a case-study for examining the extent to which the above remarks concerning the compatibility of the 'fast-track' authorization procedures with the basic requirements of the Planning and Environmental Legislation is justified by the relevant practical experience, being viewed also from the perspective that relates to the acceptance of the projects by the local society.

4. CASE-STUDY: THE 'FAST-TRACK' AUTHORIZATION OF THREE LARGE-SCALE RES PROJECTS

Three large-scale RES projects, which are characterized as "Strategic Investments", and are thus subject to the provisions of the fast-track legislation, were to be implemented in Crete. In particular, two of them relate to the construction and the installation of a large number of wind parks with increased installed capacity in certain areas of the island, while the third relates to the construction of a solar power plant with increased capacity.[66] Since the time that the relevant decisions were made publicly known, there has not been a positive response by the vast majority of the local communities that are going to be affected by their implementation. Instead of that, several informal groups of residents formed thereof in conjunction with certain professional, cultural and environmental associations across the island coordinated their actions against the implementation of the projects.[67] As main reasons for the lack of acceptability expressed by local societies can be regarded the scale of the relevant projects[68] and

[66] The first project 'Crete Green Island' (approved by the Decision 13/28.05.2012 of the Inter-Ministerial Committee for Strategic Investments (Hellenic Government Gazette Issue B/1787/6.06.2013)), includes the installation of 36 wind parks with a total capacity of 1005.10 MW, while the second project 'Wind Power Generation System' (approved by the Decision 10/28.05.2013 of the Inter-Ministerial Committee for Strategic Investments (Hellenic Government Gazette Issue B/1787/6.06.2013)) includes the construction of 33 wind parks in the four prefectures of Crete with a total capacity of 1077 MW. The third project 'Construction of solar thermal power plant of 70 MW total capacity' (approved by the Decision 12/28.05.2012 of the Inter-Ministerial Committee for Strategic Investments (Hellenic Government Gazette Issue B/1787/6.06.2013)) is going to be implemented in the area Fournia in the Municipality of Sitia. Furthermore, the implementation of the two first projects presupposes their inter-connection with the National Interconnected System for electricity transmission via submarine cables.

[67] It is worth noting that the various local initiatives and certain cultural, environmental and professional associations across the island formed the pan-Cretan network against industrial RES, which can be regarded as the most significant and organized movement opposing the implementation of the projects (More information is available on the webpage of the network: https://sites.google.com/site/pancretannetagainstindustrrse).

[68] Their implementation requires both significant hectares of land even in the designated protected areas of the Nature 2000 network (except for the zones of absolute protection) and the installation of wind turbines even on 69 mountaintops.

the associated fears that their implementation can result in substantial alterations of the natural environment of the island and can thereby influence also the various productive activities relating to it. Moreover, the applied procedures for the characterization of the concrete projects as 'Strategic Investments' did not provide the necessary framework for giving the opportunity to the local communities to express their views as regards both the necessity and the 'suitability' of the proposed projects with the local development model.

The 'quite' massive opposition of the local communities to the implementation of the projects is reflected to a significant extent in the submission of three petitions for annulment of the relevant Decisions for the inclusion of the projects in the fast-track procedure before the Council of State. In this context, it is worth noting that the above petitions were signed by an unprecedented number of individual persons, municipalities, scientific organizations and professional, environmental and cultural associations across the island.[69]

The reasons put forward by the petitioners for the annulment of the relevant decisions can be classified into three main categories:[70] those that relate to the fragmentation and the inconsistency of the relevant provisions as regards the connection of the projects with the continental grid system and are mainly relevant for the first two projects,[71] those that relate to the compatibility issues of certain provisions of the relevant decisions with the European and National Environmental Legislation, and those that relate to the compatibility of the provisions relating to the chosen location site with the relevant Planning Instruments.[72] As significant for demonstrating the issues of compatibility with the EU Environmental Legislation and those of Transparency that can arise by the application of the 'fast-track' legislation can be regarded the two following reasons claimed by the petitioners: the one that is based on the assumption that due to the lack of the necessary level of specificity, the approved projects

[69] The relevant petitions were signed by a large number of individual citizens, 10 municipalities, 78 professional, cultural and environmental associations across the island and 2 national organizations (https://sites.google.com/site/pancretannetagainstindustrrse/news/theannulmentactionsagainstthe3ind-resprojectsincretethatareintegratedintothe%E2%80%9Cfasttrack%E2%80%9Dprocedure).

[70] It is worth noting that all the relevant information as regards the reasons claimed by the petitioners for the annulment of the relevant Decisions is mainly retrieved from the webpage of the pan-Cretan network against industrial RES (https://sites.google.com/site/pancretannetagainstindustrrse) and relevant articles in the Greek press.

[71] In particular, it is claimed by the petitioners that the foreseen connections of the projects with the continental grid system do not satisfy the requirements of the legislation, as they were not based on any approved Strategic Plan for the Interconnection of the islands with the continental grid system, while there was neither a specific provision for the Interconnection of Crete with the continental grid System in the relevant Study for the Development of the infrastructure network for electricity transfer nor an approved Plan for the development of the electricity production in Crete, at the time that the decisions were taken. Moreover, it is claimed that due to the lack of Strategic Planning, as that required by the relevant legislative framework for the development of the network infrastructure, the relevant decisions provided exclusively the construction of infrastructure for the connection of the approved projects with the continental grid system and not the construction of interconnection infrastructure with the island's grid.

[72] The main reason claimed by the petitioners for the annulment of the relevant Decision for the characterization of the construction of a solar power plant as 'Strategic Investment' lies in the fact that the defined location area is incompatible with the provisions of the Regional Framework for Spatial Planning of Crete, as in accordance with the above Planning Instrument only certain touristic activities that do not pose significant threats to the specific characteristics of region, are allowed in this certain area ('area of low intensity tourism development').

that provided for the construction of 36 and 33 wind parks respectively cannot be classified as 'projects' in the meaning of the EIA Directive, but as 'Plans' in the meaning of the SEA Directive, so that they cannot also be approved within the framework of the 'fast-track legislation'; the other reason relates to the 'vagueness' of the relevant decisions as to what exactly is approved, as they do not define the exact location of the wind farms but only the total installed capacity, so that questions can be raised as regards to which concrete wind parks planned by each company in Crete are authorized within the framework of the 'fast-track' legislation. Finally, it is worth noting that, while the cases are still pending before the Court, a significant development has taken place. In particular, the first two projects that related to the installation of a large number of wind parks across the island, were de-classified from their characterization as "Strategic Investments" on the grounds that the investors did not come up with their financial obligations provided in Art 15 and 16 of the fast-track legislation as precondition for the application of its beneficial provisions (Decisions 24/29.01.2014 and 26/29.01.2014 of the Inter-Ministerial Committee for Strategic Investments as regards the project " Wind Power Generation System" and "Crete Green Island" respectively, Hellenic Government Gazette Issue 275/B/ 10.02.2014). The de-classification of the above projects from their characterization as "Strategic Investments", will eventually result both in the abolition of the relevant judicial review procedures on the grounds that the subject of these cases does not exist and in their cancelation mainly due to legal and bureaucratic hurdles.

Despite this development and its consequences, the opposition of the local communities to the third project and other relevant projects authorized in the meantime, remains vivid. This is demonstrated by the fact that petitions for annulment against the Decision of the Minister for the Environment, Energy and Climate Change (no 170037/2014), by which an environmental permit for the third project (eg solar power plant) was granted, were submitted by both individual citizens and various associations and by the Region of Crete. The Council of State will have, thus, the opportunity to rule on the compatibility of the provisions of the fast track legislation with the Environmental and the Planning Legislation.

5. CONCLUDING REMARKS

The promotion of RES does not only relate to the achievement of the obligatory target set in the RES Directive, but also constitutes a very significant element for the transition to a low carbon economy and the re-structuring of the Greek production model. In this context, significant legislative efforts, initiated mainly by the EU Legislation, have been undertaken both to overcome certain administrative barriers for the deployment of RES projects and to create relatively strong financial incentives. The relevant Legislative Framework, though, is still underpinned by fragmentation and lack of long-term commitment. The frequent legislative changes as regards the applicable feed in tariffs or even the retroactively imposed taxation on the revenues from renewable energy production can be viewed as characteristic examples in this direction.

Reforms of the Greek Legislative Framework aiming at creating a reliable investment environment for RES projects in conjunction with careful and inclusive planning for the development of the infrastructure network are more than necessary. Furthermore, the sufficient consideration of the environmental impacts of the RES projects has to be ensured through the effective application of the relevant legal instruments (EIA Legislation) or even their revision, where necessary.

Under this prism, the authorization of large-scale RES projects within the framework of the Fast-track Legislation does not seem to be an acceptable option in terms of contributing to the transition to a more sustainable energy model for two significant reasons. The first one relates to the fact that the relevant procedures do not entail the basic guarantees arising from the Planning and the Environmental Legislation, so that, also due to the scale of the approved projects, significant alterations of the natural environment can be caused and conditions for the unsustainable use of the natural resources can be created. The second reason relates to the acceleration of the licensing procedures and its significant impact on the arrangement of the public participation procedures in the sense that the latter cannot provide the framework for an extensive dialogue with the local communities as regards the designed projects. Such a deficiency is, though, not without consequences on both the legitimacy and the acceptability of the final decision. Subsequently, the authorization of large-scale RES projects through the fast-track procedure may be counter-productive as regards the acceptability of the Renewable Energy Sources by the Greek society.

CHAPTER 5

BALANCING WIND ENERGY AND NATURE PROTECTION: FROM POLICY CONFLICTS TOWARDS GENUINE SUSTAINABLE DEVELOPMENT?

'Those over there are not giants but windmills. Those things that seem to be their arms are sails which, when they are whirled around by the wind, turn the millstone'.

Miguel de Cervantes, *Don Quixote*

RALPH FRINS

HENDRIK SCHOUKENS

1. INTRODUCTION

Windmills appeared for the first time some 3000 years ago. First demonstrations of producing electricity from windmills took place during the 1880s. Despite these early advances, the enthusiasm remained relatively low up until the end of the 1980s. However, throughout the past decades, the positive impacts that go along with wind energy developments, alongside the increasing query for national energy independence, have pushed many countries around the world to prioritize the construction of wind farms as one of the major targets of their energy policy. For instance, within the European Union (EU) it is assumed that wind energy development will play a pivotal role in achieving the ambitious 20-20-20 target included in the 2008 Climate Change and Energy Package.[1]

Yet, whilst at the outset wind energy was believed to be totally 'clean', that perception slowly altered. The rapid increase of the number of wind turbines is spurring additional concerns about its adverse environmental impacts. One of the most worrisome disadvantages is related to potential wildlife effects that wind farms are liable to create.[2] The majority of wind farm proposals have been located in upland areas due to the high wind speeds occurring there and their isolation from centres of human population. Mostly such areas also happen to host avifauna of high conservation importance.[3] Although the mortality rates of birds and bats vary considerable depending on the specific location of a wind farm, the specific articulation be-

[1] More information about the Climate Change and Energy Package is available at http://ec.europa.eu/clima/policies/package/index_en.htm.

[2] See recently Tabassum-Abbasi et al, 'Wind Energy: Increasing Developments, Rising Environmental Concerns' (2014) 31 *Renewable and Sustainable Energy Reviews* 270.

[3] JW Pearce-Higgins et al, 'International Importance and Drivers of Change of Upland Bird Populations' in A Bonn et al (eds), *Drivers of Environmental Change in Uplands* (Routledge 2009) 209.

tween biodiversity law and wind energy development has undeniable come more to the forefront in recent years. It raises questions as to the compatibility of the green energy pledges with nature protection.

Within the European context, the Birds[4] and Habitats Directives[5] spell out the specific rules as to nature conservation. Not only is the establishment of an EU-wide Natura 2000 Network envisaged, both directives urge the Member States also to enact strict protection rules for threatened species.[6] Not surprisingly, EU biodiversity law increasingly clashed with wind energy developments which, in turn, spurred the debate forward on the alleged rigidity of the Birds and Habitats Directive. In recent legal literature, some argue that the *rationale* underpinning both directives comes down to 'deathbed conservation' or 'nature gardening', not capable of supporting sustainable land uses.[7] By contrast, others have submitted that the legal issues that accompany the application of EU biodiversity law should not be regarded as insurmountable problems, nor as a trigger for relaxation of the Birds and Habitats Directives.[8]

That said, the stark rise in the number of legal challenges against the construction of new wind farms seems to underscore the aforementioned concerns and demonstrates the additional constraints that biodiversity law may pose for wind farm developments.[9] Although these legal proceedings mostly do not succeed in definitively blocking the construction and operation of wind farms, they create a lot of frustration amongst wind developers because of the increased business risks. In light of the existing lacunae as regards the potential negative impacts of wind farms on wildlife, especially the rigid application of the precautionary principle in the applicable permitting procedures might lead to additional constraints from permit and consultation conditions. In some cases, wind developers will see their proposals rejected. In order to overcome such obstacles, wind energy business is claiming to obtain a 'green pass' under the applicable biodiversity rules.[10] Massive wind farm development will, at the end of the day, also help to mitigate the effects of climate change, which is in the interests of all species. So why stick to the biodiversity rules for 'green projects' that are helping to reduce the harmful impacts linked to global warming? Are the potential negative effects that go along with wind farm developments not outweighed by the overall environmental benefits of wind power?

[4] Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds [1979] OJ L103/1 (Birds Directive). The initial Birds Directive has been codified in Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds [2010] OJ L20/7.
[5] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora [1992] OJ L206/7 (Habitats Directive).
[6] Art 12(1) Habitats Directive; Art 5(1) Birds Directive.
[7] FH Kistenkas, 'Rethinking European Nature Conservation Legislation: Towards Sustainable Development' (2013) 10 *Journal for European Environmental and Planning Law* 72.
[8] ALR Jackson, 'Renewable Energy vs Biodiversity: Policy Conflicts and the Future of Nature Conservation' (2011) 21 *Global Environmental Change* 1195.
[9] See for instance: H Schoukens, A Cliquet and F Maes, 'Wind Farm Development in the Belgian Part of the North Sea: A Policy Odyssey without Precedent' (2012) 10 *Zeitschrift für Europäisches Umwelt- und Planungsrecht* 304.
[10] See, more extensively on the articulation between wind farm development and the US Endangered Species Act: JB Ruhl, 'Harmonizing Commercial Wind Power and the Endangered Species Act Through Administrative Reform' (2012) 65 *Vanderbilt Law Review* 1769.

This article will address the leeway that EU biodiversity law leaves for wind power development. After having treated the 'green vs. green' paradox more in depth (section 2), the articulation between Article 6 of the Habitats Directive, which lays down the basic protection scheme for the sites that are included in the Natura 2000 Network, and wind power development will be explored (section 3). In this paper, it will be argued that, whilst the Court of Justice of the European Union (hereafter: the Court) has definitely opted for a high threshold when applying the protection rules for spatial projects, there still remains sufficient margin to harmonize wind energy developments with the precautionary approach that is present in existing EU biodiversity law. In addition, it will be submitted that mechanisms such as adaptive licensing, possibly combined with additional mitigation or compensatory measures, might allow to better balance the urgent need for addressing climate change with the protection of the EU's most endangered habitats and species (section 4).

2. THE DILEMMA: COMBATTING GLOBAL WARMING VS. NATURE CONSERVATION?

2.1. Wind energy production on the rise…

It is widely known that the EU has promulgated some ambitious targets in the field of environment and energy policy. Directive 2009/28/EC on the promotion of the use of energy from renewable sources,[11] more in particular, has set national targets corresponding to a 20 per cent share of renewable energies in overall EU energy consumption by 2020 and a mandatory 10 per cent minimum target to be achieved by all Member States for the share of renewable energy in transport consumption by 2020. Obviously, wind energy will play a key-role in the achievement of these objectives.

Overall, wind energy, which is widely seen as one of the most environmentally friendly energy resources,[12] has witnessed a rapid growth during the past two decades. At the end of 2008, there were 65 GW of wind power capacity installed within the EU, meeting in total 4.2 per cent of the EU electricity demand.[13] A 2009 report issued by the European Environmental Agency (EEA) concluded that wind energy could power Europe many times over. It was held that wind power's potential in 2020 will be three times greater than Europe's expected electricity demand, rising to a factor of seven by 2030,[14] At present, the EU is a front-runner in wind energy and a lead player on the global market. In 2007 more than half of the global installed wind capacity was located in the EU and European wind turbine manufacturers

[11] Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC [2009] OJ L140/16 (RES Directive).

[12] R Saidur et al, 'Environmental Impact of Wind Energy' (2011) 15 Renewable and Sustainable Energy Reviews 2423, 2424.

[13] A Zervos and C Kjaer, *Pure Power. Wind Energy Scenarios up to 2030* (European Wind Energy Association 2008).

[14] European Environmental Agency, *Europe's Onshore and Offshore Wind Energy Potential, An Assessment of Environmental and Economic Constraints* (Office for Official Publications of the European Communities 2009).

accounted in 2006 for around 75 per cent of the global market.[15] Nevertheless, the EU is still lagging by 1.6 GW (-1.5 per cent) behind its 27 National Renewable Energy Action Plan forecasts.[16] According to European Commission's figures, more than two thirds of total EU wind capacity is installed in the three pioneering countries Germany, Spain and Denmark.[17] As of today, Denmark satisfies more than 20 per cent and Spain more than 10 per cent of its electricity demand by wind energy. The figures are far less impressive for many other Member States, underlining the stark need for additional efforts towards renewable energy. As a consequence, it is clear that many Member States will probably opt for massive investments in wind energy projects in the years to come.

2.2. Rising biodiversity concerns

Despite offering concrete environmental benefits, biodiversity concerns place additional constraints on wind farm projects. Whilst wind farms might serve as refuges, at least if no fisheries or hunting are allowed within the wind farm area or, in the specific case of offshore wind farm constructions, as artificial reefs, their possible negative effects gained increased attention throughout the past decade.[18]

In 2006, a German study on the impacts on biodiversity of exploitation of renewable energy sources, drafted by the German Nature Conservation Office, concluded that 'the main potential hazards to birds and bats from wind farms are disturbance leading to displacement or exclusion and collision mortality'.[19] At the same time, it was noted that there was no evidence that birds generally became habituated to wind farms in the years after construction.[20] Likewise, other research has revealed that, taking into account the sharp rise in the number of turbines in some regions, even low mortality rates per turbine could give rise to significant effects on some bird species, especially those with low reproductive rates.

In 2009 the EEA, whilst acknowledging that the majority of studies of collisions caused by wind turbines revealed relatively low levels of mortality, held that, so far, there only had been conducted one sufficiently comprehensive study as regards the long term effects of wind farms on bird populations.[21] The study referred to an analysis of the impact of a Californian wind farm project, which began in the 1970s and encompassed more than 7,300 operational windmills in 1993. Here, an estimated 35,000 – 100,000 birds, 1,500 – 2,300 of them being

[15] European Commission, 'Technical Background to Wind Energy'available at http://ec.europa.eu/research/energy/eu/index_en.cfm?pg=research-wind-background.
[16] J Wilkes and J Moccia, *Wind in Power. 2012 European Statistics* (European Wind Energy Association 2013).
[17] European Commission, 'Technical Background'.
[18] For a recent overview, see, amongst others, Tabassum-Abbasi et al, 'Wind Energy'.
[19] H Hötker, K-M Thomsen and H Jeromin, *Impact on Biodiversity of Exploitation of Renewable Energy Sources: The Example of Birds and Bats. Facts, Gaps in Knowledge, Demands for Further Research and Ornithological Guidelines for the Development of Renewable Energy Exploitation* (Michael-Otto-Institut im NABU 2006) 6.
[20] Ibid.
[21] European Environmental Agency, *Europe's Onshore and Offshore Wind Energy Potential*, 73.

golden eagles, had been killed by collision during the past two decades.[22] Population modelling demonstrated that the declining trend of the local golden eagle population could, at least partly, be ascribed to wind farm mortality.[23]

In recent years, also European studies pointed to similar outcomes. Norwegian surveys recorded reduced breeding success in White-tailed eagle linked to wind farms,[24] whilst Spanish studies showed that Spanish wind farms are causing many casualties amongst the Griffon vulture.[25]

On a general note, we can conclude that the risk of significant effects is greater on or near areas regularly used by large numbers of feeding or roosting birds, or on migratory flyways or local flight paths.[26] Especially, when rare, endangered and slow-to-reproduce birds are involved, the impact of poorly sited and/or designed wind turbines can be decisive particularly in situations where cumulative mortality takes place as a result of multiple installations.[27] Ironically, the only certainty upon which all scientists seem to agree as regards the impact on biodiversity of wind farms, is the lack of sufficient ecological surveys and studies.[28]

3. SITE PROTECTION UNDER ARTICLE 6(3) AND (4) OF THE HABITATS DIRECTIVE: A STRICT APPLICATION OF THE PRECAUTIONARY PRINCIPLE?

Whereas the precautionary principle is often quoted as one of the main grounds for taking climate mitigation actions, it is also increasingly invoked by opponents of renewable energy projects. The strict implementation of the latter principle in the context of the site protection rules attached to the Natura 2000 Network partly helps to explain this alleged paradox. As of 2013, this ecological network approximately covers 18 per cent of the Member States' territory. Hence wind farm developers, in their quest for windy places, are increasingly confronted with the protection rules enshrined in the Habitats Directive. In light of the above featured uncertainty as to the exact effects of wind farms on biodiversity, it becomes apparent that the concrete application of the precautionary principle within the context of aforementioned protection rules might present an important bottleneck for wind farm developments in the vicinity of a Natura 2000 site.

[22] CG Thelander and KS Smallwood, 'The Altamont Pass Wind Resources Area's Effects on Birds: A Case History' in M de Lucas, GFE Janss and M Ferrer (eds), *Birds and Wind Farms. Risk Assessment and Mitigation* (Quercus 2007) 25.
[23] G Hunt, 'Golden Eagles in a Perilous Landscape: Predicting the Effects of Mitigation for Wind Turbine Bladestrike Mortality, consultant report to the California Energy Commission (July 2002).
[24] EL Dahl et al, 'Reduced Breeding Success of White-Tailed Eagles at Smøla Windfarm, Western Norway, is caused by Mortality and Displacement' (2012) 145 *Biological Conservation* 79.
[25] M de Lucas et al, 'Griffon Vulture Mortality at Wind Farms in Southern Spain, Distribution of Fatalities and Active Mitigation Measures' (2012) 147 *Biological Conservation* 184.
[26] See, in general, Tabassum-Abbasi et al, 'Wind Energy', 277.
[27] Ibid.
[28] Ibid, but also European Environmental Agency, *Europe's Onshore and Offshore Wind Energy Potential*, 73.

3.1. The precautionary principle as cornerstone of international and EU environmental law

In order to grasp the essence of the current debate, it is appropriate to step back and succinctly address the background and origins of the precautionary principle. Since the beginning of the nineties, the precautionary principle, arguably one of the most renowned environmental principles, has found its way through numerous international agreements and conventions, such as the 1992 Framework Convention on Climate Change.[29] At the European level, it was first inserted into the European treaties in 1992 at Maastricht.[30] Currently, the precautionary principles is one of the most debated concepts of current environmental law, which is further underscored by the many definitions it has.[31] Generally, it is held that the precautionary principle is comprised of three common elements, being (1) a threat of harm, (2) uncertainty, and (3) action.[32] Authors, like *Stewart*,[33] make a difference between 'weak' formulations of the precautionary principle, according to which activities should be limited below a margin of safety, and 'strong' formulations, according to which an uncertain potential for significant harm should be prohibited unless the proponent of the activity shows that it presents no appreciable risk of harm. The latter is often qualified as the 'prohibitive' version of the precautionary principle and critized for creating 'paralysis by precaution'.[34] In that regard, it is interesting to note that the European Commission states in its 2000 Communication that 'where there is scientific uncertainty' Member States should implement evaluation procedures and take appropriate preventive action in order to avoid damage to the environment.[35] Pertaining to the uncertainty-requirement, it is generally held that, while not a single category of uncertainty seems to fall outside of the scope of the precautionary principle, at least reasonable grounds for concerns need to be present in order to apply the precautionary principle.[36] At the same time, it should also be stressed that mere speculation is not a realistic and workable option and that risk reduction measures do not have to aim at zero risk.[37]

3.2. Article 6(3) and 6(4) of the Habitats Directive: in dubio pro natura!

Let us now turn to the implementation of the precautionary principle in the context of the Natura 2000 Network. In general, Article 6 of the Habitats Directive is seen as the most semi-

[29] Framework Convention on Climate Change (9 May 1992) 31 ILM 849 (1992).
[30] V Heyvaert, 'Facing the Consequences of the Precautionary Principle in European Community Law' (2006) 31 *European Law Review* 185.
[31] See more extensively: A Trouwborst, *Precautionary Rights and Duties of States* (Brill 2006) 21–35.
[32] Ibid 30.
[33] RB Stewart, 'Environmental Regulatory Decision Making under Uncertainty' (2002) 20 *Research in Law and Economics* 71, 76.
[34] R Cooney, 'A Long and Winding Road? Precaution from Principle to Practice in Biodiversity Conservation' in E Fisher, J Jones and R von Schomberg (eds), *Implementing the Precautionary Principle: Perspectives and Prospects* (Edward Elgar 2006) 238.
[35] European Commission, 'Communication from the Commission on the precautionary principle' COM(2000) 1 final.
[36] Trouwborst, *Precautionary Rights*, 115.
[37] European Commission, 'Communication on the precautionary principle' COM(2000) 1 final, 9 and 18.

nal provision as to determining the relationship between nature conservation and land use.[38] By setting out strict substantive and procedural requirements to be followed in respect of a plan or project which is not directly connected with or necessary to the management of a Natura 2000 site but which is likely to have a significant effect thereon, Article 6(3) and (4) seeks to pre-empt damage being done to the site or to minimise that damage. This begs the question to what extent this statutory framework minimizes an insurmountable burden for the construction of wind farms. Is the lack of scientific consensus on the collision risks that go along with wind farms sufficient to reject a permit application? Does the precautionary principle only come into play when the threatened harm is to be considered significant, excluding minor or trivial risks? And, ultimately, is there some margin for the competent authorities to balance environmental, social and economic interests, under the general umbrella of the proportionality principle?

3.2.1. No general ban but strict assessment rules!

Contrary to popular belief, Article 6(3) of the Habitats Directive does not put a general ban on the construction of wind farms within or in the vicinity of a Natura 2000 site. It merely lays down a specific assessment-procedure that needs to be observed by authorities when, amongst others, issuing planning permits to projects and plans. Such was also the view of the Court in its first-ever decision in a legal challenge concerning the articulation between wind farm development and Natura 2000. In *Azienda Agro-Zootenica Franchini Sarl* the Court held that Italian legislation which outright prohibits the construction of new wind turbines not intended for self-consumption in Natura 2000 sites, is more stringent than the protection rules established by the Birds and Habitats Directives.[39] Thus, it cannot be submitted from beforehand that every single wind farm that is sited in (the vicinity of) a Natura 2000 site will face an outright refusal. In fact, this will only be the case whenever an individual assessment in accordance with Article 6(3) of the Habitats Directive, concludes that the given wind turbines are liable to put into jeopardy the integrity of a Natura 2000 site. This raises the question as to what activities can be deemed prone of 'adversely affecting the integrity of a site', as meant by Article 6(3).

In order to understand the exact scope of the assessment rules laid down by Article 6(3), we first need to turn to the landmark ruling of the Court in *Waddenzee*.[40] In this landmark ruling, the Court clearly tightened down the margin of discretion for the competent authorities when issuing permits for activities which might entail potential harmful effects for Natura 2000 sites. As to the so-called 'screening-stage', the Court held that the requirement for an appropriate assessment of the implications of a plan or project is conditional on it being likely to

[38] European Commission, *Managing Natura 2000 Sites. The provisions of Art 6 of the 'Habitats' Directive 92/43/ECC* (Office for Official Publications of the European Communities 2000) 8.
[39] Case C-2/10 *Azienda Agro-Zootecnica Franchini Sarl v Regione Puglia* [2011] ECR I-6561, para 46.
[40] Case C-127/02 *Landelijke Vereniging tot Behoud van de Waddenzee en Nederlandse Vereniging tot Bescherming van Vogels v Staatssecretaris van Landbouw, Natuurbeheer en Visserij* [2004] ECR I-7405.

have a significant effect on the site.[41] The Court concluded that a project or plan needs to be submitted to an appropriate assessment if it cannot be excluded, on the basis of objective information, that it will have a significant effect on that site, either individually or in combination with other projects or plans.[42] By reaffirming the precautionary approach throughout the screening process, the Court underscored the need for a precise and meticulous assessment of the potential effects of plans and projects.

Arguably, the Court's ruling in *Waddenzee* is most renowned for underscoring the application of the precautionary principle in the decision-making stage under Article 6(3) of the Habitats Directive. In this respect, the Court reasserted the seminal Opinion of Advocate General Kokott[43] by firmly holding that the authorisation criterion laid down in the second sentence of Article 6(3) of the Habitats Directive integrates the precautionary principle. Hence competent national authorities are only permitted to allow projects or plans if they have made certain, in light of the appropriate assessment and the applicable conservation objectives, that they will not adversely affect the integrity of that site. That is the case where no reasonable scientific doubt remains as to the absence of such effects.[44] Thus, it becomes clear that the Court, at first glance, has opted for a rather rigid interpretation of the precautionary principle, which was subsequently reasserted in its more recent case-law.[45] By placing the burden of proof on the proponent of the potentially harmful activity, it opted for the 'prohibitive' formulation of the precautionary principle in the context of Natura 2000. In the end, it will be for the proponent of an activity to put forward the necessary conclusive evidence as regards the absence of potential significant effects in order to enable the permitting authority to ascertain that the plan or project would not give rise to significant effects on a Natura 2000 site.

In its seminal ruling in *Sweetman*, the Court further clarified that the integrity of a site is adversely affected if the project is liable to prevent the lasting preservation of the constitutive characteristics of the site concerned that are connected to the presence of a natural habitat type whose preservation was the objective justifying the designation of the site.[46] If after an appropriate assessment the authority concludes that the plan or project could lead to the lasting and irreparable loss of the whole or part of a priority natural habitat type, the view should be taken that such a plan or project will adversely affect the integrity of that site.[47] In lay man's terms: the simple fact that, for instance, a wind farm is only liable to produce negative effects in one specific part of a Natura 2000 site, will not automatically entail that it is not prone to affect its integrity.

[41] Ibid para 40.
[42] Ibid para 44.
[43] Case C-127/02 *Waddenzee* [2004] ECR I-7405, Opinion of Advocate General Kokott.
[44] Case C-127/02 *Waddenzee* [2004] ECR I-7405, para 59.
[45] See, for instance, Case C-239/04 *European Commission v Portugal* [2006] ECR I-10183, paras 19 and 20; Case C-418/04 *European Commission v Ireland* [2007] ECR I-10947, paras 226, 228 and 258.
[46] Case C-258/11 *Peter Sweetman and others v An Bord Pleanála* (ECJ, 11 April 2013). See more extensively H Schoukens, 'The Ruling of the Court of Justice in Sweetman: How to Avoid a Death by a Thousand Cuts?' (2014) *elni Review* 2.
[47] Case C-258/11 *Sweetman* (ECJ, 11 April 2013), para 46.

3.2.2. Article 6(4) derogation clause: a workable option?

So far, it has become apparent that Article 6(3) of the Habitats Directive, if applied in a proper manner, will urge the proponents of wind farms to substantiate that there exists no reasonable risk of significant effects on Natura 2000 sites. However, Article 6(4) of the Habitats Directive still leaves the competent authorities the possibility to authorize such a project which has been subject to a 'negative appropriate assessment for the implications of the site', albeit under very strict conditions. Under Article 6(4) of the Habitats Directive, plans or projects may be authorized, by way of derogation, in spite of a negative assessment of the implications for the site, where there are imperative reasons of overriding public interest (IROPI), there are no alternative solutions and all compensatory measures necessary to ensure the overall coherence of Natura 2000 have been taken. A closer analysis of the 2007/2012 Guidance document produced by the European Commission as to Article 6(4)[48] seems to indicate that the derogation conditions need to be interpreted in a restrictive manner, which also appears to be reaffirmed in the Court's more recent jurisprudence.[49]

The first stage under Article 6(4) requires the competent authorities to examine the possibility of resorting to alternative solutions which better respect the integrity of the site. Admittedly, the search for alternatives can be quite broad and might involve, in the case of wind farm development, alternative locations for the wind farm or an alteration of the size of the farm, but also alternative ways of producing energy whether renewable or not. Furthermore, the zero option has to be considered as well, as recently highlighted by the European Commission in its specific Guidance document on wind energy developments and Natura 2000.[50] Additionally, the European Commission stresses that during this stage other assessment criteria, such as economic criteria, cannot overrule ecological criteria. The priority that needs to be given to ecological criteria might urge wind farm developers, who aim for the construction of wind farms in the vicinity of a Natura 2000 site, to look for other, more appropriate locations.

Once it is satisfied that no alternative solutions exist, the authority should consider whether there are IROPI which may justify the wind farm development. As highlighted by the European Commission in its Guidance documents, not every kind of public interest of a social or economic nature will be sufficient.[51] In *Solvay* the Court held that an interest capable of justifying the implementation of such a plan or project, must be both 'public' and 'overriding', which means that it must be of such an importance that it can be weighed up against the Habitats Directive objective of the conservation of natural habitats and wild fauna and flora. In principle, works intended for the location or expansion of an undertaking satisfy those conditions only in exceptional circumstances.[52] In the aforementioned Guidance document on wind

[48] European Commission, 'Guidance Document on Article 6(4) of the "Habitats Directive" 92/43/EEC. Clarification of the Concepts of: Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory measures, Overall Coherence, Opinion of the Commission, 2007/2012' available at http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/new_guidance_art6_4_en.pdf.
[49] See for instance Case C-239/04 *European Commission v Portugal* [2006] ECR I-10183.
[50] European Commission, *EU Guidance on Wind Energy Development in Accordance with the EU Nature Legislation* (Publications Office of the European Union 2011) 85–86.
[51] Ibid 6 and 33.
[52] Case C-182/10 *Marie-Noëlle Solvay and others v Région Wallonne* (16 February 2012), paras 75 and 76.

farm developments and Natura 2000, the European Commission underlined that 'it is also reasonable to assume that the public interest can only be overriding if it is a long-term interest; short term economic interests or other interests which would only yield short-term benefits for the society would not appear to be sufficient to outweigh the long-term conservation interests protected by the Habitats Directive. Overriding interests, as long-term, fundamental social interests, may be properly identified beforehand by published policies, and land-use and other plans. Besides, in case the Natura 2000 site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the European Commission, to other IROPI.[53]

Although the European Commission did not go that far in quoting 'wind farm developments' as a prime example of an IROPI, it is nevertheless clear that the positive climate mitigation benefits that are attached to wind farms, might help it to qualify as such. This will be especially the case for large scale and, possibly, trans-boundary energy infrastructure projects. Interestingly, in the recently adopted trans-European energy infrastructure Regulation (TEN-E Regulation No 347/2013[54]) it was stressed that so-called energy infrastructure projects of common interest[55] should be considered by competent authorities as being in the public interest. Pursuant to Article 7(8) of the latter Regulation, projects of common interest shall be considered as being of public interest from an energy policy perspective, and may be considered as being of overriding public interest, provided that all the conditions set out in the Habitats Directive are fulfilled. Also at the national level, increasingly efforts are put into stressing out that development projects that stimulate wind energy qualify as an IROPI.[56]

That said, before being able to deviate from Article 6(3) of the Habitats Directive, wind project developers are also required to take appropriate compensatory measures to ensure that the overall coherence of the Natura 2000 Network is protected. The European Commission pointed out that compensatory measures are independent of the plan or project (as opposed to mitigation measures), should go beyond the normal/standard measures required for protection

[53] European Commission, *EU Guidance on Wind Energy Development*, 89. See more extensively in this regard: L Krämer, 'The European Commission's Opinions under Article 6(4) of the Habitats Directive' (2009) 21 *Journal of Environmental Law* 59. See also, extensively, D McGillivray, 'Compensating Biodiversity Loss: The EU Commission's Approach to Compensation under Art 6 of the Habitats Directive' (2012) 24 *Journal of Environmental Law* 417.

[54] Regulation (EU) No 347/2013 of the European Parliament and of the Council of 17 April 2013 on guidelines for trans-European energy infrastructure and repealing Decision No 1364/2006/EC and amending Regulations (EC) No 713/2009, (EC) No 714/2009 and (EC) No 715/2009' [2013] OJ L115/39 (TEN-E Regulation).

[55] According to Art 2(4) of the TEN-E Regulation 'project of common interest' should be understood as a project necessary to implement the energy infrastructure priority corridors and areas set out in Annex I and which is part of the Union list of projects of common interest referred to in Art 3 of the latter Regulation.

[56] See, for instance, the pending Dutch legislative proposal on Wind energy development at sea (*Wet windenergie op zee*). In the preparatory works it is underscored that wind energy project should, if necessary, be considered as an IROPI. More information on the pending legislative proposal, which project is subject to consultation, is available at http://www.internetconsultatie.nl/wetwindenergieopzee.

and management of Natura 2000 sites, and can be considered only after having ascertained a negative impact on the integrity of a Natura 2000 site.[57]

3.3. A critical interim assessment: a bridge too far or merely a case of perception?

From the above presented research, it can be inferred that Article 6(3) and (4) of the Habitats Directive, whilst not laying down a general prohibition on the construction of wind farms within or in the vicinity of Natura 2000, still require additional scrutiny when considering application for planning permits in this respect. The question now arises to what extent this should be seen as an insurmountable and unjustifiable obstacle for future wind farm developments.

3.3.1. No green pass for wind farms (and rightly so?)

Despite the overall benefits for all species that would be the result of an increase in wind energy, the case-law of the Court displays a great deal of reluctance in taking into account the general advantages that can be attached to wind farm developments. Accordingly, Member States are barred from exempting wind farm developments from the individual assessment procedure included in Article 6(3) of the Habitats Directive.[58] At the same time, referral to the climate mitigation benefits created by an increase of wind energy, seems, as such, incapable of shifting the balance in an appropriate assessment in favour of a wind farm. In the end, such an approach would require a quantification of the positive effects that the given wind turbines might create for each specific species or habitat.[59]

At first sight, one might submit that the strict stance of the Habitats Directive in this regard provides a striking example of its inability to adapt to modern day conservation strategies in light of the growing concerns on climate change. However, that criticism needs to be nuanced. In our view, a general exemption for wind farm developments would, in the first place, give rise to a great deal of practical difficulties. It can hardly be substantiated in terms of measurable benefits. For instance, how to quantify the concrete trade-off that is created by wind farms in the long run for each specific bird species that would be present in a Special Protection Area (SPA)? How to trade off the general benefits wind farms might produce for the local harm it can cause to bird populations?

[57] European Commission, *EU Guidance on Wind Energy Development,* 15.
[58] See, to that effect: Case C-241/08 *Commission v France* [2010] ECR I-1697, paras 51–56.
[59] See, by analogy, as regards the protection regime included in Section 7 and 9 of the US Endangered Species Act: Ruhl, 'Harmonizing Commercial Wind Power', 1791.

Moreover, the deplorable state of the EU's biodiversity (only a small margin of the EU protected habitats and species are, at present, at a favourable conservation status[60]) does not justify a reform of the Habitats Directive that would give wind farm developers a free pass to construct wind farms in the vicinity of areas which, for instance, host vulnerable bird populations. Or, in other words, the general benefits that might go along with wind energy are, as such, incapable of effectively underpinning the need for a relaxation of the site protection rules enshrined in the Habitats Directive. A similar line of thinking was also displayed by the Court in its afore-mentioned decision in *Azienda Agro-Zootenica Franchini Sarl*. Here, the Court held that, even in light of the EU Directive on Renewable Energy, which urges Member States to streamline and reduce administrative barriers applicable to plants for the production of renewable energy,[61] Article 6(3) of the Habitats Directive nor more stringent national provisions, should not be seen as a major and insurmountable obstacle course for the pursuit of the EU energy policy's targets.[62] Also the European Commission, in its turn, does not seem to believe that there is an apparent antagonism between the quest for renewable energy and the EU biodiversity goals as exemplified in its aforementioned 2010 Guidance document on wind energy developments and Natura 2000.

3.3.2. The insurmountable burden of proof (a matter of belief or reality?)

Still, it cannot be denied that Article 6(3) of the Habitats Directive appears to be capable of giving rise to substantial additional delays and barriers in permitting procedures for wind farms. If correctly applied, the latter provision leaves little wiggle room for potentially harmful projects. Taking into account the existing lacunae in relation to the effects of wind turbines on endangered species, it will indeed, in some instances, be cumbersome for wind farm developers to exclude the likelihood of significant effects. Also in recent literature it has been highlighted that the strict application of Article 6(3) and (4) may lead to additional delays, legal issues and difficulties when applied strictly in the context of massive renewable energy projects, such as dam building and the construction of tidal barrages.[63] However, arguably more fundamental are the allegations that a strict interpretation of the precautionary principle in the context of site protection seems to negate that ignorance and system unpredictability are inherent to the ecological and social system and cannot be eliminated through science.[64]

Yet, whilst the above featured comments might be well-founded in general, they need to be somehow nuanced in light of the following considerations. First and foremost, it must be re-

[60] European Commission, 'Report from the Commission to the Council and the European Parliament Composite. Report on the Conservation Status of Habitat Types and Species as required under Article 17 of the Habitats Directive' COM(2009) 358 final.
[61] See, for instance, Art 13(1) of the RES Directive which, amongst others, urges Member States to streamline administrative procedures in order to make them less burdensome for renewable energy projects.
[62] Case C-2/10 *Azienda Agro-Zootecnica Franchini Sarl* [2011] ECR I-6561, paras 63 and 75.
[63] Jackson, 'Renewable Energy vs Biodiversity', 1198. This author treats the examples of the construction of the Sabor Dam (Portugal) and the Severn barrage (UK).
[64] PFM Opdam, MEA Broekmeyer and FH Kistenkas, 'Identifying Uncertainties in Judging the Significance of Human Impacts on Natura 2000 Sites' (2009) 12 *Environmental Science & Policy* 912, 917.

called that the Habitats Directive, as such, grants some, albeit limited, room for leverage in the context of wind farm development. The application of the precautionary principle does not require from the competent authority to refuse a permit whenever an assessment has indicated that only minor effects might be linked to a wind farm. For instance, in general, a wind farm project will not likely produce significant effects if the nearby Natura 2000 site has not been designated for birds, nor for bats. Ultimately, reviewing whether a wind farm may significantly hamper the integrity of a Natura 2000 site remains, to a large extent, an ad hoc-matter. Hence it remains hard to draw general conclusions in this regard. Moreover, whilst it is often submitted that the strict application of the precautionary principle may lead to a complete paralysis, the practice on the ground does not seem to confirm this conclusion. The reliance on these 'hard cases' in the media and legal literature often blurs the fact that, besides cases of non-compliance, considerable numbers of spatial projects, including wind farms, are smoothly aligned with the rules on site protection for Natura 2000 sites. A recent analysis of the application of the Habitats Directive in the UK has revealed that almost all port developments have passed the tests of the Habitats Directive. And, even for the projects that did not proceed, mostly economic and technical complications are to blame.[65] In Flanders, the highly contested construction of a new tidal dock in the Port of Antwerp could, despite initial concerns on its compatibility with the Habitats Directive and a myriad of legal proceedings, still go along, albeit with some considerable delay.[66] Even in the Netherlands, a country renowned for its relatively high number of law suits by which the Habitats Directive was enforced before courts, only a few plans and projects have been cancelled due to biodiversity legislation. However, still the prevailing idea among many Dutch actors is that European directives frustrate almost every development in the Netherlands.[67]

That said, when assessing the alleged rigidity of the assessment rules included in Article 6(3) and (4), due regard should be given to the exact causes and nature of the resistance that is caused by the application of EU biodiversity law in the context of spatial projects, such as wind farms. Evidently, some of the troubles that were encountered can be linked to the poor compliance with the procedural requirements spelled out by Article 6(3) of the Habitats Directive.[68] Only just recently, a research revealed that unsatisfactory compliance with the assessment rules throughout the decision-making process, limited participation and fait accompli-scenarios seriously jeopardize the effectiveness of the Habitats Directive on the

[65] RKA Morris, 'The Application of the Habitats Directive in the UK: Compliance or Gold Plating?' (2011) 28 *Land Use Policy* 361.
[66] See more on this: H Schoukens, P De Smedt and A Cliquet, 'The Implementation of the Habitats Directive in Belgium (Flanders)' (2007) 4 *Journal for European Environmental and Planning Law* 127, 134.
[67] See more extensively: R Beunen and M Duineveld, 'Divergence and Convergence in Policy Meanings of European Environmental Policies: The Case of the Birds and Habitats Directive' (2010) 15 *International Planning Studies* 321.
[68] See, for instance: B Laffan and J O'Mahony, '"Bringing Politics Back In". Domestic Conflict and the Negotiated Implementation of EU Nature Conservation Law in Ireland' (2008) 10 *Environmental Policy Planning* 175; F Ferranti, R Beunen and M Speranza, 'Natura 2000 Network: A Comparison of the Italian and Dutch Implementation Experiences' (2010) 12 *Environmental Policy Planning* 293; G Kûtting, 'Nature Conservation Law in Context: The Limited Influence of European Union and Greek Designations on the Future of Cavo Sidero, Crete' (2012) 15 *Journal International Wildlfe Law & Policy* 60.

ground in many Member States.[69] However, at the end of the day, project developers are, just as most humans, not eager to 'take no for an answer', even in cases where there are valid grounds to let biodiversity concerns prevail over economic concerns. Not surprisingly, project developers tried to gain political awareness for 'their problem' and, often in the absence of clear guidance on the interpretation of some of the key notions of the Habitats Directive, urged for relaxation of biodiversity law.[70]

As a matter of fact, also in relation to wind farm development, cases quoted as prime examples of the alleged rigidity of biodiversity law, often merely point out the delays that might be incurred whenever wind farm developers refuse to abide by the basic rules set out by biodiversity law. A succinct tour through the most notable 'nature protection vs. wind farms' jurisprudence seems to reassert this view. For instance, in the first federal lawsuit challenging an industrial wind energy project on environmental ground in the U.S., the competent court went to hold that, whilst wind development exemplifies a conflict between two environmentally minded policies, such a conflict would not have arisen in the case at hand, if the wind developer had utilized existing procedures under the U.S. biodiversity law.[71] Likewise, in a recent ruling, the Scottish Court of Appeal noted that Scottish Ministers were entitled to refuse a planning permission for a 14 wind turbine development *within* a SPA, since there was a risk of adverse effects on the site designated for golden eagles. In that respect, the court based its ruling, to a large extent, on the lack of an appropriate assessment of the potential collision and disturbance effects of the wind farm on the conservation objectives for the eagle population.[72]

Lastly, it is important to note that the precautionary approach of the Court in the context of Article 6(3) does not amount to excluding all potential risks. Advocate General Kokott herself noted in her seminal Opinion in *Waddenzee* that the necessary certitude cannot be construed as meaning absolute certainty since that is almost impossible to attain.[73] Moreover, there is an increasing tendency in national courts to apply the precautionary principle in a reasonable manner. Whilst, for example, in the aforementioned case the Scottish Court of Appeal found that a small (1 per cent) collision risk and a risk of the eagle displacement could reasonably amount to a risk of an 'adverse effect on the site's integrity', such cases cannot be regarded as the ultimate proof of the inappropriateness of the Habitats Directive to deal with renewable energy projects. Indeed, there is considerable case-law which exhibits a more reasonable approach to the precautionary principle. For instance, in 2008 a Scottish court dismissed a claim against a wind farm located on Skye, nearby a SPA harbouring a breeding population of golden eagles. Despite assuming that the evidence presented revealed considerable uncertainty as

[69] See to that effect N de Sadeleer, C-H Born and M Prieur, 'National Legislation and Practices Regarding the Implementation of Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora, in particular Art 6' (European Parliament 2009) available at http://www.europarl.europa.eu/document/activities/cont/200910/20091013ATT62399/20091013ATT62399EN.pdf.

[70] Beunen and M Duineveld, 'Divergence and Convergence'.

[71] *Animal Welfare Inst v Beech Rigde Energy LLC* 675 F Supp 2d 540, 581 (D.Md 2009).

[72] *Bagmoor Wind Ltd v Scottish Ministers* [2012] CSIH 93.

[73] Case C-127/02 *Waddenzee* [2004] ECR I-7405, Opinion of Advocate General Kokott, para 107.

to the future trends of the population of golden eagles, the court finally concluded that the contested permit had sufficiently established that there existed 'no reasonable scientific doubt' as regards the impact of the wind farm.[74] In a 2005 Belgian case relating to the construction of a massive offshore wind farm, the Council of State was of the opinion that the alleged gaps in knowledge as to the adverse effects on the bird populations present in the area were not sufficient to quash the permit.[75] Although there will be certainly examples that point to more rigidity, especially in the hypothesis where the affected protected nature finds itself already at an unfavourable conservation status, it cannot simply be maintained that the precautionary principle is, in itself, blocking the construction of the majority of wind farms throughout the EU.

3.3.3. The exception which appears to be no exception at all (Article 6(4) derogation as a scapegoat?)

Ultimately, the perceived rigidity of Article 6(3) of the Habitats Directive would matter little if, for wind farm developments, also application could be made of the derogation regime included in Article 6(4). Originally, the inclusion of Article 6(4) was the immediate reaction of the Member States to the decision of the Court in *Leybucht*, where it had held that, under Article 4 of the Birds Directive, economic considerations could not be regarded as exceptional circumstances justifying the reduction in size of a designated SPA.[76] At the time of the final negotiations, the inclusion of Article 6(4) was seen by many Member States as a safeguard for avoiding the 'draconian consequences' of a strict protection scheme.[77] In fact, Article 6(4), which applies both to SACs and SPAs, overrules the earlier case-law of the Court on site protection.[78]

Interestingly, Article 6(4) is often invoked to justify the rigorous approach as regards the protection regime enshrined in Article 6(3). For example, in its Opinion in *Waddenzee*, Advocate General Kokott explicitly underlined that the disproportionate results that might be caused by the application of the precautionary principle are mitigated in connection with the derogating authorisation provided for in Article 6(4).[79] In a similar vein, Advocate General Sharpston held in *Sweetman* that 'whilst the requirements laid down in Article 6(4) are intentionally rigorous, it is important to point out that they are not insuperable obstacles to authorisation. The Commission indicated at the hearing that, of the 15 to 20 requests so far made to it for deliv-

[74] See *Skye Windfarm Action Group Ltd v Highland Council* [2008] CSOH 19. In legal literature the latter decision is critized for applying a too lax standard of judicial review, see: C Edwards, 'Judicial Review and the Precautionary Principle' in G Jones (ed), *The Habitats Directive. A Developer's Obstacle Course* (Hart 2012) 226.
[75] Belgian Council of State, 30 June 2005 (Application No 147.047). See more extensively: Schoukens, Cliquet and Maes, 'Wind Farm Development in the Belgian Part of the North Sea', 307.
[76] Case C-57/89 *European Commission v Germany* [1991] ECR I-883, para 20. See more extensively: Krämer, 'The European Commission's Opinions'.
[77] See more extensively: D Baldock, 'The Status of Special Protection Areas for the Protection of Wild Birds' (1993) 4 *Journal of Environmental Law* 139.
[78] Jackson, 'Renewable Energy vs Biodiversity', 1197.
[79] Case C-127/02 *Waddenzee* [2004] ECR I-7405, Opinion of Advocate General Kokott, para 106.

ery of an opinion under that provision, only one has received a negative response'.[80] In recent legal literature, in which the opinions, issued by the European Commission under the second subparagraph of Article 6(4) of the Habitats Directive were examined, it was even highlighted that economic factors are too often superseding a strict assessment of the intended compensatory measures.[81]

In spite of the clear *rationale* that was underpinning the inclusion of Article 6(4) and the lenient (some might even call it 'lax') application of the latter provision in the opinions issued by the European Commission, it is only rarely being invoked by Member States. In our view, this reluctance at the Member States' level is in a certain way understandable, especially since Article 6(4) represents a last resort-option for projects or plans, that still must be carried out for reasons of overriding public interest. Considering the restrictive case-law by the Court and the strict Guidance documents issued by the European Commission in this regard, the scarce reliance on Article 6(4) could hardly be seen as a surprise. By way of example, referral could be made to a 2009 ruling by the Dutch Council of State, where a permit was quashed that allowed the construction of 17 wind turbines in the seaport of Eemshaven.[82] Whereas, according to the Council of State, the production of sustainable energy in general can be seen as a reason of overriding public interest, this also needed to be substantiated for the project at hand. Ultimately, the Council of State was not convinced that a reason of overriding public interest was served by the construction of these particular wind turbines. Seeing that, in general, private projects do not qualify as 'IROPI', private wind farm developers will need to substantiate why they present an overriding public interest. In some scenarios, they will probably fail to meet that criterion. Additionally, it is being pointed out that, especially in the context of large scale renewable projects, such as dams and barrages, the requirement of 'like for like' compensation appears challenging.[83] In general, the implementation of compensatory measures is often compounded or constrained by the lack of suitable sites which can be purchased in a short term in order to offset the damage caused by spatial projects.

However, despite all the possible hurdles that the derogation clause might pose, it is our belief that, especially for large scale public wind farms, more application of it should be made. As illustrated above, also the European legislator seems to adopt a similar stance in its recent TEN-E Regulation. At first glance, this might seem contradictory, since the application of a derogation clause will also be prone to giving rise to pitfalls and bottlenecks. However, in what follows, it will be established that such outcome might, at the end of the day, granting more legitimacy to public wind farm developments. First and foremost, issuing planning permits for large scale public wind farms through Article 6(4) still remains a workable option considering the obvious climate benefits that go along with it and which could qualify as 'IROPI'. To some extent, this might also be the case for large scale private wind farms.

[80] Case C-258/11 *Sweetman* (ECJ, 11 April 2013), Opinion of Advocate General Sharpston, para 65.
[81] N de Sadeleer, 'Habitats Conservation in EC Law. From Nature Sanctuaries to Ecological Networks' (2005) 5 *Yearbook of European Environmental Law* 215; McGillivray, 'Compensating Biodiversity Loss', 449–50.
[82] Dutch Council of State, 25 February 2009 (Application No 200709030/1).
[83] Jackson, 'Renewable Energy vs Biodiversity', 1204.

What is more, the very fact that the competent national authorities are required to consider other alternatives should be welcomed as an additional moment of deliberation before giving up ecological valuable tracts of lands to future massive scale wind farms. In that regard, we support the suggestions voiced by other authors, such as Jackson, to even broaden the scope of the alternative examination, to also include investing in end-use generation, energy conservation initiatives and overall reduction in national consumption levels.[84] More scrutiny on this level will enhance the sustainability character of large scale wind farm developments, which, in turn, will downplay possible legitimacy issues. Moreover, the fact that compensation is obligatory in such scenarios, will also enhance the sustainability claims attached to wind farm developments, since its possible negative outcome for local biodiversity is offset through restoration efforts that help to ensure the overall coherence of the Natura 2000 Network. Thus, the observance of the strict criteria spelled out by Article 6(4) of the Habitats Directive, might in the end be an appropriate way to reinforce the environmental claims attached to green energy projects.

4. TOWARDS A MORE PROGRESSIVE READING OF ARTICLE 6 OF THE HABITATS DIRECTIVE: THE ROAD TO NOWHERE OR A VIABLE ALTERNATIVE FOR WIND FARM DEVELOPMENTS?

In the preceding sections it has been argued that, given the worrisome state of the EU's protected habitats and sites, an outright relaxation of the rules of site protection would most certainly be a disproportionate answer to the recent demands for deregulation. Still, as noted, the restrictive interpretation of the precautionary principle might pose additional constraints, especially for private wind farm developments, which will probably not always meet the requirements of Article 6(4) of the Habitats Directive. Thus in recent years attention has shifted towards the inclusion of mitigation measures into the plan or project, to eliminate the potential negative effects on the integrity of a Natura 2000 site, or, at least, to reduce them to a level where they will no longer affect the integrity of the site. In its 2011 Guidance document on wind energy developments and Natura 2000 the European Commission already provided us with some examples of mitigation measures in the context of wind farms, such as an alteration of the design of a wind turbine or the concrete siting of the turbines.[85] In addition, the Commission pointed to the (obvious) perks of strategic planning in the context of wind farm development. Such strategic planning should not only help to identify the most appropriate location and scale for wind farm development, but also helps to avoid and reduce the impacts on the environment at a very early stage in the planning process.[86]

Recently, a more progressive reading of mitigation has emerged in the context of wind farm development, which should allow to better align wind farm development with the high precautionary standard, laid down by Article 6(3) of the Habitats Directive. This more

[84] Ibid 1205.
[85] European Commission, *EU Guidance on Wind Energy Development*, 84–85.
[86] Ibid 47.

progressive reading of Article 6(3) encompasses the implementation of risk management strategies at permit level and additional enhancement and restoration measures, aimed at strengthening the resilience of the affected nature.[87] In the below part, it will be put forward that, whilst both approaches might grant permitting instances additional leeway for, amongst others, wind farm developments, it must be safeguarded that such practices do not undermine the mitigation hierarchy, which is underpinning EU biodiversity law.

4.1. Adaptive management at permit-level: a more sensible implementation of the precautionary principle?

In recent literature, it has been argued that ignorance, system unpredictability and ambiguity in the science-policy interface, may cause difficulties in all steps of which the assessment procedure is comprised (setting of the sites objectives and conservation status; predicting the impact; assessing the significance of the effects). If one adds to that the current lack of scientific consensus about the exact impacts of wind farms on biodiversity, which has been succinctly addressed earlier on, one ends up with a very explosive cocktail for decision-making processes. Although, as argued above, the Court does not require a zero risk when applying the precautionary principle in the context of Article 6(3), it does still set a high standard by requiring that the competent authority must have ascertained that no reasonable scientific doubt remains as to the absence of effects on the integrity of a site. Whilst we have put forward that large scale wind farm developments still might avoid a rejection of a permit application through Article 6(4), this way out seems less straightforward for more small-scale private wind farm developments.

So what other options are left? A more appropriate way to overcome the alleged static black-and-white approach to the precautionary principle would consist in accepting that uncertainty is an inherent factor in the assessment process. Henceforth, permitting authorities are urged to focus more on the proper implementation of risk assessment tools and control measures in order to further reduce residual effects linked to the operation of a wind farm.[88] Such a strategy bears close resemblance to the adaptive management approach, which is generally described as a structured, iterative process of robust decision making in the face of uncertainty, with an aim to reducing uncertainty over time via system monitoring.[89] It is defined as a flexible decision making process that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood.[90] To that end, careful monitoring of the outcome of these actions and the implementation of strict control measures is deemed necessary, not only to advance scientific understanding, but also to adjust potential

[87] Opdam, Broekmeyer and Kistenkas, 'Identifying Uncertainties', 919.
[88] Ibid 920. See also: P Scott, 'Appropriate Assessment: A Paper Tiger' in G Jones (eds), *The Habitats Directive – A Developer's Obstacle Course* (Hart 2012) 112.
[89] See, amongst others: CS Holling, *Adaptive Environmental Assessment and Management* (John Wiley & Sons 1978).
[90] See http://www.resalliance.org/index.php/adaptive_management.

harmful operation as part of an iterative learning process.[91] In that sense, it is often tagged as 'learning while doing' instead of the common 'trial and error'-process which is still predominantly used.[92]

In the context of the Habitats Directive an adaptive licensing approach might entail that, notwithstanding lasting uncertainties, a project or plan could still be able to obtain a permit under Article 6(3) of the Habitats Directive, whenever the permit conditions impose strict monitoring and, added to that, it is made obligatory to stop the operation of the activity whenever significant effects are detected. In its 2011 Guidance document on the implementation of the EU nature legislation in estuaries and coastal zones, the European Commission underlined that 'adaptive management […] helps to address situations when, because of science limits or uncertainty about the functioning of complex and dynamic ecosystems, it is not possible for the competent authorities to fully ascertain the absence of adverse effects'.[93] It went on stating that 'an adaptive approach for the implementation of a plan or project or a compensation scheme may be particularly useful to address cases where, due to uncertainty associated with different contributory factors (location, confidence, unexpected delays), it is impossible to define all the effects of the plan or project or of a compensation scheme in sufficient details and if such uncertainty cannot be factored in through increased ratios. In such a situation, a rigorous monitoring scheme and a pre-defined validated package of appropriate corrective measures must be foreseen.[94]

It is clear that the European Commission has not, as such, adopted a clear-cut position on the use of adaptive management measures as a way to scale down the rigid application of the precautionary principle. Still, it seems to be willing to allow some leeway for implementing an adaptive management approach in the context of Article 6(3) of the Habitats Directive. Turning to the recent administrative practice in the Netherlands and Flanders, we may note an increased application of this approach in the context of plans or projects where, in principle, no absolute certainty had been reached as to the absence of significant effects. The legal proceedings surrounding a large scale gass-drilling project in the Waddensea served as an eye-opener. In spite of the fact that no absolute certainty as to the absence of significant effects had been reached during the appropriate assessment, the project still was granted a permit by referral to adaptive management conditions that had to be observed throughout the operation of the project. Interestingly, the Dutch Council of State accepted the legality of the latter approach in its seminal 2007 ruling.[95] Under the Council's view, the mere existence of some uncertainty as regards the expected effects of the project, does not necessarily warrant an outright refusal of the permit, especially taken into account the compulsory monitoring and the strict operation conditions that applied in that case. In the permit, it had been provided that,

[91] Taken from the definition of 'adaptive' management that is used by the US Department of the Interior (BK Williams, CS Szaro and CD Shapiro, *Adaptive Management: The US Department of the Interior Technical Guide* (Adaptive Management Working Group, US Department of the Interior 2007).
[92] H Doremus, 'Precaution, Science and Learning While Doing in Natural Resource Management' (2007) 82 *Washington Law Review* 547, 550.
[93] European Commission, Guidance Document. The Implementation of the Birds and Habitats Directives in Estuaries and Coastal Zones with particular Attention to Port Development and Dredging' (2011) 33–34.
[94] Ibid.
[95] Dutch Council of State, 29 August 2007 (Application No 200606028/1).

whenever soil subsidence or other effects might occur, entailing significant risks to the Natura 2000 site, the gas exploration had to be temporarily halted, or, if deemed necessary, completely stopped. As to Flanders, a 2011 Guidance document on wind farm development and nature protection, promulgated by the Flemish Institute for Forest and Nature Research, promoted the adaptive licensing approach as an effective means to minimize the negative effects that might go along with wind farm developments. Not much later, the principle also emerged in the context of a highly contested permit application for the construction of 3 wind turbines in the Port of Antwerp, which were localized close to a SPA. Reiterating the above presented rationale, the Antwerp Provincial Authority gave green light to the operation of the wind turbines, amongst others, with reference to active monitoring obligations of possible residual negative effects which were included in the permit.[96]

We believe that the latter approach might offer competent authorities more leverage when considering wind farm developments. Seeing that the operation of wind farms can relatively easily be submitted to a monitoring protocol, adaptive licensing may rightly be regarded as a reasonable middle ground between unfettered development and nature protection. Recent Spanish research moreover held that an active monitoring approach, if linked to selective stopping techniques as regards turbines with the highest mortality, can effectively help to mitigate the impacts of wind farms on birds with a minimal effect on energy production.[97] On the legal side, whilst the Court has not pronounced itself on the legality of an adaptive management approach in light of Article 6(3), the *rationale* underpinning adaptive licensing does not, as such, seems to run counter to the Habitats Directive. Not only did the European Commission herself refers to adaptive management in the context of Article 6(3) of the Habitats Directive in its 2011 Guidance document on the implementation of EU nature legislation in estuaries and coastal zones, it did also point to the obvious link between mitigation and monitoring in its aforementioned 2010 Guidance document on wind energy developments and Natura 2000.[98] Advocate General Kokott herself seemed to reaffirm the underlying rationale of adaptive management by stating that mitigation measures can also be of relevance in order to avoid an all too harsh application of the precautionary principle.[99] Precisely where scientific uncertainty remains, it is possible to gain further knowledge of the adverse effects by means of associated scientific observation and implementation of the plan or project accordingly.[100]

However, at the same time, a wide-spread use of the adaptive licensing approach might also entail certain significant risks, which, in our view, should lead the competent authorities to a certain reluctance in this regard. The technique should not be used to justify the siting of massive wind farms next to protected areas that support population of species that are highly sensitive for fragmentation and disturbance. Submitting that adaptive licensing is no 'one-

[96] Provincial Authority of Antwerp, Decision of 13 January 2010. However, since an administrative appeal has been launched against the latter permit, it still remains unsettled whether the Flemish government is also willing to adopt the latter approach on a more general scale.
[97] de Lucas et al, 'Griffon Vulture Mortality', 188.
[98] European Commission, *EU Guidance on Wind Energy Development*, 83.
[99] Case C-127/02 *Waddenzee* [2004] ECR I-7405, Opinion of Advocate General Kokott, para 106.
[100] Ibid para 108.

size-fits-all' solution, in the end, merely amounts to stating the obvious. Indeed, in some cases, it will be tempting for the competent authorities to pass on the exact determination of effects to a later stage, whilst, in the meantime, allowing the construction of wind energy projects on poorly sited locations. In order to avoid such fait accompli-scenarios, the approach should, in our opinion, stay confined to situations where residual non-permanent effects of a project can clearly be singled out, the monitoring is able of tackling them and there is no other option to exclude such risks.[101] In other words, there is no point in using adaptive management as a solution for the construction of wind farms within highly vulnerable SPAs. Added to that, it must be safeguarded that the operation conditions are drafted in a sufficient precise and strict way, in order to allow a strict surveillance by the competent national authorities.

The latter also seems to be the viewpoint of the European Commission which, in its 2011 Guidance document on the implementation of the EU nature legislation in estuaries and coastal zones, pointed out that the monitoring scheme and the package of corrective measures, 'must allow to adjust mitigation and/or compensatory measures to the reality of the impact and by that way, make sure that the initially unforeseen adverse effects are being neutralized'.[102] Accordingly, a full disclosure of the results of the monitoring results towards the wider public and environmental NGOs should be ensured. Ultimately, what our analysis suggests is that adaptive management will only be able to achieve its environmental objectives, which include the reduction of the biodiversity effects linked to wind farms, if implemented and observed in a proper and sufficiently strict way. To that end, it must be ensured that adaptive management measures are not to be misused as a cover-up for granting permits for unsustainable renewable energy projects that merely focus on short term gains. If that were to be the case and the matter would ever end up before the Court, it can be expected that the use of the adaptive management-approach would be debunked by the Court.

4.2 Habitat enhancement measures as mitigation measure: towards more resilience?

Whilst adaptive licensing might present itself as a possible go-between for some wind energy projects, it will certainly not serve as a solution in cases where long-term significant, possibly permanent, adverse effects can be expected for a Natura 2000 site. In situations where wind farms might give rise to collision risks for raptors, such as the White-tailed eagle or the Griffon vulture, enhancement measures might be envisaged to avoid a wind farm of putting into jeopardy the integrity of a Nature 2000 site. For instance, one might propose the creation of additional foraging areas for affected birds on another location in a Natura 2000 site in order to reduce disturbance and collision risks.

In general, such measures are being increasingly used in order to manage the hurdle of Article 6(3) of the Habitats Directive, without requiring the application of Article 6(4). Especially in

[101] See also in this respect: Dutch Council of State, 27 February 2008 (Application No 20060755); Dutch Council of State, 24 August 2011 (Application No 200900425/1/R2).
[102] European Commission, 'Guidance Document. The Implementation of the Birds and Habitats Directives in Estuaries and Coastal Zones', 34.

the Netherlands, recent administrative practice has shifted towards the inclusion of the positive effects linked to proactive habitat enhancement and restoration measures in the appropriate assessment for spatial projects that entailed negative effects on some parts of a Natura 2000 site.[103] Even more so, the Dutch Council of State rendered a seminal ruling, back in 2010, in which it held that the creation of no less than 132 hectares of new mussel beds, needed for the conservation of the affected birds, could qualify as a mitigation measure for the construction of a housing zone in the IJmeer.[104] In 2012, the Dutch Council of State reasserted this stance again by accepting the construction of 22 hectares of foraging and resting area as a mitigation measure in the context of Article 6(3).[105] Also in the United Kingdom, rulings have been handed down in which it was accepted that a habitat enhancement scheme could be taken into account in the screening stage under Article 6(3), thereby even rendering the carrying out of a full fletched appropriate assessment superfluous.[106] This begs the question: to what extent can enhancement measures help to offer additional leeway for wind farm developments in light of the Habitats Directive?

At first sight, the progressive reading of Article 6(3), under which habitat enhancement measures qualify as mitigation rather than compensation, might offer additional leeway for wind farm projects, especially when located close to sites that are harboring vulnerable bird populations. It is believed that such measures might indeed strengthen the resilience of the affected Natura 2000 site and, additionally, also lower the mortality rate by providing alternative foraging opportunities for vulnerable birds species, which are located at a greater distance from the projected wind farm.

Here, however, it is submitted that such approach, whilst arguably encouraging the proponents of plans and projects to incorporate mitigation measures at the earliest possible stage in the evolution of their plan or project, will probably not offer the deregulatory advantages craved for in the context of wind farm developments. In our view, the main reason for this is that, under such approach, one is required to take for granted the positive outcome linked to the proposed enhancement or restoration measures. However, in reality, such measures are dependent on many factors and often do not achieve the results that were hoped for. In line with the Commission's point of view,[107] recent Dutch and Belgian case-law rightly held that the effectiveness of proposed enhancement measures should, at any rate, further be assessed throughout the appropriate assessment.[108] Indeed, the lack of sufficient knowledge on the ad-

[103] See more extensively: J Zijlmans and H Woldendorp, 'Compensation and Mitigation: Tinkering with Natura 2000 Protection law' (2014) 10 *Utrecht Law Review* 172.
[104] Dutch Council of State, 21 July 2010 (Application No 200902644/1/R2). See in this regard also the provisional judgment in this case, to the same effect: Chairman of the Administrative Jurisdiction Division of the Dutch Council of State, 31 August 2009 (Application No 200902644/2/R2).
[105] Dutch Council of State, 8 February 2012 (Application No 201100875/1/R2).
[106] *Hart District Council v Secretary of State for Communities and Local Government, Luckmore Ltd. and Barratt Homes Ltd* [2008] EHWC 1204. More extensively on this case: D McGillivray, 'Mitigation, Compensation and Conservation: Screening for Appropriate Assessment under the EU Habitats Directive' (2011) 8 *Journal for European Environmental and Planning Law* 336.
[107] European Commission, *EU Guidance on Wind Energy Development*, 64.
[108] See, for instance, Dutch Council of State, 7 May 2008 (Application No 200604924/1) and Belgian Council of State, 21 December 2010 (Application No 209.330).

equacy of the enhancement measures seems to rule out its use as a bypass for the duty to carry out an appropriate assessment, as also evidenced by the aforementioned decision of the Scottish Court of Appeal on the legality of the refusal of a planning permit for a 14 wind turbine development *within* a SPA.[109] It is no coincidence, that in that case one of the major issues was the alleged adequacy of the enhancement measures, which were not deemed sufficient in providing alternative foraging area for an affected pair of eagles.

Yet, the precautionary principle also represents one of the major hurdles for accepting the inclusion of enhancement measures as mitigation measures within the context of an appropriate assessment for wind farms. As indicated above, the precautionary principle also plays a key-role in determining whether or not a plan or project may hamper the integrity of a site. Already in its 2000 Guidance document on Article 6 of the Habitats Directive, the European Commission drew a clear distinction between so-called mitigation measures, on the one hand, and compensatory measures *sensu strictu*, on the other hand. There it was noted that while mitigation measures are an integral part of the specifications of a plan or project, compensatory measures *sensu strictu* are independent of the plan or project (including any associated mitigation measures). Under the Commission's view, the latter measures are intended to offset the negative effects of the plan or project so that the overall ecological coherence of the Natura 2000 Network is maintained.[110]

In recent years, national case-law emerged in which the creation of new habitats in one part of a Natura 2000 area were tagged as compensatory measures. This was for instance the case in the Flemish Region, were proactive habitat management measures in order to offset the impact of a new by-pass cutting through a Natura 2000 site, were ruled out as mitigation under Article 6(3).[111] Also in *Sweetman*, the Court hinted to a strict precautionary approach when interpreting the second part of Article 6(3), thereby excluding the view according to which significant local effects could still be deemed not relevant in view of the wider integrity of a Natura 2000 site.[112]

The reluctance echoing from these elements can also be retrieved in the recent Opinion of Advocate General Sharpston, delivered on 27 February 2014, in the Dutch case concerning the broadening of a part of the Dutch motorway A2 between the cities of Eindhoven and Den Bosch, which would affect an area of molinia meadows in one part of the nearby Natura 2000 site.[113] Here, the Court was asked to indicate whether measures with a view to ensuring the creation of new meadows elsewhere in the same site, to replace or augment those affected, could qualify as mitigation under Article 6(3). In her Opinion, the Advocate General aligned

[109] *Animal Welfare Inst v Beech Rigde Energy LLC* 675 F Supp 2d 540, 581 (D.Md 2009).
[110] European Commission, 'Communication on the precautionary principle' COM(2000) 1 final, 37. See also, more recently, European Commission, 'Guidance Document on Article 6(4) of the "Habitats Directive" 92/43/EEC' point 1.4.1.
[111] Belgian Council of State, 29 March 2013 (Application No 223.083). See more extensively: H Schoukens, 'Mitigation and Compensation under EU Nature Conservation Law in the Flemish Region: Beyond the Deadlock for Development Projects?' (2014) 10 *Utrecht Law Review* 207.
[112] Case C-258/11 *Sweetman* (ECJ, 11 April 2013).
[113] Case C-521/12 *TC Briels and others v Minister van Infrastructuur en Milieu* (ECJ, 15 May 2014), Opinion of Advocate General Sharpston.

herself with the stricter stance of the Belgian Council of State, in appraising the scope of the expression 'adversely affecting the integrity of a Natura 2000 site'. Whilst accepting that measures which form part of a plan or project and which effectively minimize its impact may be taken into account when assessing whether that plan or project adversely affects the integrity of a site, the Advocate General refused to qualify the creation of new meadows as mitigation measures because they do not lead to an adequate reduction of the pollution.[114] Instead, such measures basically seek to counterbalance the unavoidable negative impacts that go along with the project.

Given the absence of the expression 'mitigation' and 'compensation' in Article 6(3), the Advocate General did not stop her analysis at the semantic difference between 'mitigation' and 'compensation', but further elaborated on the exact scope of the notion of 'integrity of a site'. However, only to conclude that the same strict precautionary approach, as spelled out in *Waddenzee*, should be applied to predictions of success for planned new areas of created 'natural' habitat. The simple fact that there cannot be no guarantee of success for the new artificially created habitat, turned out to be the true obstacle for allowing a more progressive reading of Article 6(3).[115] Still, the Advocate General did acknowledge that the creation of new habitats may well be regarded as a compensatory measure, provided that it is specifically linked to the project in question and would not otherwise be implemented in the context of the ordinary management of a site, as required by Article 6(1) or (2).[116]

Again, it might be contended that the strict stance of the Advocate General, if reasserted by the Court, serves as yet another illustration of the inability of the Habitats Directive to support more progressive approaches towards biodiversity offsetting. Still, the Advocate General's approach does make sense. Indeed, there are no easy fixes for nature. In comparison with the adaptive licensing-approach, under which, at the end of the day, the operation of a wind farm can still be halted if entailing severe collision risks, a progressive approach to enhancement schemes under Article 6(3) lacks such clear-cut guarantees. That is not to say that enhancement measures are completely useless in the context of Article 6(3). If the enhancement measures have been already carried out before the project is constructed and, subsequently, proved to be effective in, for instance, keeping raptors away from their previous foraging areas, there indeed seems to be some leeway. Yet, such approach would presuppose a more long-term strategic planning approach towards wind farm development.

Arguably, allowing (future) habitat creation as mitigation also risks to undermine the mitigation hierarchy that is underpinning Article 6 of the Habitats Directive (prevent, mitigate, compensate). The creation of new habitats should indeed be seen as a last resort, in order to offset unavoidable damages. Hence it should be reviewed under Article 6(4) of the Habitats Directive. However, whilst the creation of new habitats and other enhancement measures cannot be invoked in the context of Article 6(3), it might in the long run lead to more resilient Natura 2000 sites which, in its turn, might create more leverage for future spatial projects,

[114] Ibid paras 36 and 37.
[115] Ibid paras 42 and 43.
[116] Ibid para 46.

such as wind farms. Arguably, spatial projects will be easier to reconcile with more resilient Natura 2000 sites, in which most of the natural habitats and species are at a favourable conservation status. At present, most legal issues surrounding the articulation between Natura 2000 and spatial projects stem from the unfavourable conservation status of many of the affected natural habitats and species. In such a scenario, every additional impact might give rise to significant effects ('death by a thousand cuts'), as was displayed by the above addressed Dutch case. Hence the allegedly strict view of Advocate General Sharpston on mitigation should, in our view, not be seen as another proof of the alleged rigidity of Article 6(3), but more as an encouragement for taking more robust proactive habitat management measures, also outside the context of concrete spatial development projects.[117]

5. CONCLUDING REMARKS

The EU is currently witnessing a major shift in policy towards renewable energy, which urges the Member States, amongst others, to opt for massive investments in wind farms and the associated infrastructure. By requiring the same amount of scrutiny for 'green' projects as for 'brown' projects, EU biodiversity law appears unwilling to take into account the global beneficial effects for biodiversity tied to wind farms. Whilst not effectively prohibiting wind farm developments in the vicinity of Natura 2000 sites, it does put forward a strict scrutiny approach. In the US, the impediments spurred by the stringent application of the Endangered Species Act in the context of wind energy, have recently prompted the Obama administration to allow some companies to kill or injure bald and golden eagles for up to 30 years without penalty, in an effort to spur development and investment in green energy while balancing its environmental consequences.[118]

In the EU, both the Court and the European Commission are more reluctant in deviating from the strict assessment rules enshrined in the Birds and Habitats Directives in order to boost wind energy initiatives. In this paper, it has be submitted that, in spite of the strict examination requirement which is laid down by Article 6(3) of the Habitats Directive, wind farms are, in principle, compatible with the precautionary approach which is underpinning EU biodiversity law. There is no total deadlock on the ground. Moreover, even in the current time-frame, where the push towards renewable energy has become part of the dominant policy discourse, it would be unwise to let wind power take precedence over protecting endangered bird and bat species. Despite all good intentions, such an approach could do away with many of the conservation efforts that have been put into the recovery of protected species during the past decades. At the same time, it would also significantly hamper the sustainability credentials of wind energy. After all, how 'green' is a wind farm that is decimating a local population of endangered griffons? Whilst it remains sensible to consider the long-term benefits that will be created by wind farm developments for many species and think about ways of quantifying

[117] See also in this direction: Opdam, Broekmeyer and Kistenkas, 'Identifying Uncertainties', 920.
[118] See http://www.theguardian.com/world/2013/dec/06/obama-administration-will-let-some-wind-companies-kill-or-injure-eagles.

those benefits, such argumentation does not, as such, imply that wind power should take precedence over more short-termish protection efforts for imperiled species.

Yet it cannot be neglected that the ever-more ambitious renewable energy targets are putting more pressure on the European Commission to take further initiatives to facilitate wind projects in the context of EU biodiversity law. The inclusion of the Birds and Habitats Directives in the recently published REFIT programme of the European Commission, might be seen as a token for future regulatory burden relief.[119] However, in our opinion, a relaxation of the existing protection rules, even in the specific context of wind farm developments, would, in itself, not be desirable, especially given the predicament of many European habitats and species. This article has amply illustrated that emerging administrative practices at Member States level, such as the inclusion of selective stopping protocols and control measures in permits, might already considerably ease the administrative burden for wind project developers whilst also enabling an effective reduction of the possible biodiversity risks attached to wind farm developments. Unfortunately, as witnessed by the reluctance of some national courts and the Advocate General towards the use of habitat creation as mitigation, there are no 'one-size-fits-all' solutions. Still, at the end of the day, there are no quick wins for nature protection, also not in the renewable energy-context. Genuine sustainable development requires deliberation and caution, for instance, in order to find out the better options, both for biodiversity and renewable energy purposes. By urging the Member States to take a step back when opting for massive scale wind farm developments, Article 6 allows for that additional moment of reflection. It is our belief that, in the long run, the Habitats Directive will be praised for that.

[119] European Commission, 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions; Regulatory Fitness and Performance (REFIT): Results and Next Steps' COM(2013) 685 final.

CHAPTER 6

THE EXISTING REGULATORY CONDITIONS FOR 'ENERGY SMART WATER UTILITIES': PROMOTION OF SUSTAINABLE ENERGY TRANSITION

ELLEN MARGRETHE BASSE

1. INTRODUCTION

This chapter is focused on the legal conditions that exist for the energy–smart water utilities in the European Union (EU). In section 2 the interdependencies of water and energy services and the growing interest in solving these problems that may arise from this interdependence by regulatory initiatives are shortly described. One of the solutions needed is a reduction of energy use in the water utilities by their utilisation of renewable sources – acting as energy–smart water utilities. Such utilities are described in section 3. The policy and law regulating the water utilities are important conditions. Based on these facts, the resource efficiency and low–carbon policy of the EU as well as the EU's rules of relevance for the utilities are highlighted in section 4. It is concluded that the current EU legislation makes it possible for the Member States to promote energy–smart water utilities. As the competences related to energy–smart water utilities are shared between the EU and its Member States, and as the relevant EU legislation is of a minimum harmonising nature, the Member States have an important role to play in the design of the legal conditions for the utilities in the EU. The importance of the national regulatory design and the problems related to legal barriers are illustrated in section 5 with examples from Danish legislation. The Danish regulatory style is more inflexible than necessary. The benchmarking model and price-cap systems – established as mandatory legal conditions together with the 'full-cost-recovery principle' – are discouraging investments in new energy–related technologies. There are also restrictions on the water utilities production of renewable energy – including rules on mandatory ownership unbundling. In section 6 of this chapter there is a short conclusion on the current legal design and the problems that it causes for the water utilities that want to be resource–efficient and have a low–carbon footprint.

2. THE INTERDEPENDENCIES AND DIFFERENT LEGAL APPROACHES

The traditional water utilities are often the biggest consumers of electricity in the cities. As a consequence they are important actors in the implementation of a policy aimed at an efficient

and sustainable use of the energy resources.[1] In 2009 the World Economic Forum published a report discussing concerns about water demand for energy and the potential global impact that this could have on the long–term energy availability and security.[2] In its report 'Water for Energy'[3] the World Energy Council (WEC) has examined the critical linkages between water and energy. The WEC states that coordinated solutions and policies should be developed for the water and energy sectors in terms of governance, as both sectors need to address a rising demand while tackling the issues of climate change, energy and water poverty. The sectors also share similar opportunities in the resources and technologies available to address these challenges, for example by development of energy–smart water utilities taking part in Smart Grids.[4] The WEC is now cooperating with the World Water Council on common efforts to raise awareness of the strong linkages between water and energy. The InterAction Council of Former Heads of State and Government[5] also explains the negative consequences of the lack of focus on the interdependencies, stressing that the competition for water resources will impact the future development in the energy sector and could have a significant impact on energy reliability and energy security globally, if the general policy is not changed.[6]

The interdependencies between water and energy services can be illustrated with the following facts: Water is an integral part of electric-power generation; it is used directly in hydroelectric generation, and it is also used extensively for cooling and emissions scrubbing in thermoelectric generation.[7] Energy is also an integrated part of water services, as energy sources are required in order to satisfy the water needs in connection with water supply, purification, distribution, and treatment of wastewater.[8] However, the conditions for water and energy services are currently regulated without the required focus on the interdependency de-

[1] Concerning the need for resource efficient water services, see M García Quesada, 'Water and Sanitation Services in Europe. Do Legal Frameworks provide for "Good Governance"?' (May 2011) 20.
[2] *Energy Vision Update 2009. Thirsty Energy: Water and Energy in the 21st Century* (World Economic Forum 2008) 4.
[3] *Water for Energy 2010* (World Energy Council 2010).
[4] 'WEC Inside' – a WEC interview published at the internet on 1 April 2012. Smart grid refers to an electricity grid that uses communication and information technologies to connect consumers and producers to a common infrastructure system based on energy efficient and renewable energy production.
[5] The Council has as its objective to address long-term, global issues facing humankind.
[6] Concerning this interdependency as one of the important aspects of the water crisis, see H Bigas et al, 'The Global Water Crisis: Addressing an Urgent Security Issue', papers for the InterAction Council 2011–2012, 19–24.
[7] US Department of Energy, 'Energy Demands on Water Resources. Report to Congress on the Interdependency of Energy and Water' (December 2006) 17–20; and European Water Platform, 'Water and Energy. Strategic Vision and Research Needs' (September 2011) 8–9. US Department of Energy, 'Energy Demands on Water Resources
[8] See European Water Platform, 'Water and Energy', 7–8. The US Department of Energy estimates that the electricity used for moving and treating water represents nearly 4% of the total electricity consumption in the US, and when looking at the end uses of water, approximately 13% of the total primary energy consumption in the US comes from water use, concerning this see the US Department of Energy, 'US Energy Sector Vulnerabilities to Climate Change and Extreme Weather' (July 2013) 5; and US Department of Energy, 'Energy Demands on Water Resources', 25–27. In a global context the costs of energy use in water utilities are estimated to represent between 5–50% of the total operating costs, see the technical report of the World Band's Energy Sector Management Assistance Program (ESMAP), 'A Primer on Energy Efficiency for Municipal Water and Wastewater Utilities' (February 2012). It also concludes that the share is usually higher in developing countries.

scribed above.[9] In relation to the climate change challenges, traditional climate related energy law is focused on mitigation obligations (actions taken to reduce climate change effects),[10] and climate related water law is focused on adaptation (efforts to adjust to climate change in order to cope with its consequences).[11] The mentioned preconditions are problematic, as the energy sector is not immune to the physical impact of climate change. The sector must therefore adapt to the changes.[12] Neither are the services of the water sector without greenhouse gases (GHGs) emissions. [13]

The European Water Platform[14] has recommended that the objectives on climate mitigation measured by renewable energy and energy efficiency etc. should be matched by the water industry, and that the interdependencies of the services are taken into account in the legal design.[15] It states that:[16]

> […] the existing political frameworks, energy and water policies are developed largely in isolation from one another – a fragmentation that is resulting in unsustainable developments in both sectors, and sometimes with conflicting objectives […]

Several changes to the current policy and legislation are needed. One change of relevance is a change to a policy and legislation that support the energy–smart water utilities by a more integrated approach to resource efficiency in legislation. Concerning the EU policy and legislation of relevance, see below in section 4.

Already in 2005, the US Congress funded an energy–water report to the Congress prepared by the Department of Energy in order to identify and qualify emerging energy and water challenges and interdependencies. Recommendations on energy–smart water utilities can now be found in the strategy document entitled 'The Water Resources Utility of the Future: A Blue-

[9] A Jordan, A Schout and A Zito, 'Coordinating European Union Environmental policy: Shifting from Passive to Active Coordination?' (2004) *Centre for Social and Economic Research on the Global Environment Working Paper* EDM 04–05.

[10] The energy sector is by far the largest source of GHG emissions, accounting for more than two-thirds of the total GHG emissions in 2010, around 90% of energy-related GHG emissions are CO_2, and around 9% are CH_4. See the *Redrawing the Energy-Climate Map. World Energy Outlook Special Report* (International Energy Agency 2013) 11.

[11] T Sommer, *Can Law Make Life (Too) Simple? From Gene Patents to the Patenting of Environmentally Sound Technologies* (DJOEF 2013) 50–51.

[12] *Redrawing the Energy-Climate Map*, 11.

[13] The GHGs of particular relevance to waste management are carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). See the Governing Council of the UNEP, which has directed its International Environmental Technology Centre (IETC) branch to take action in the area of waste management, as there are substantial co-benefits of waste management in the context of climate change, cf *Waste and Climate Change. Global Trends and Strategy Framework* (United Nations Environmental Programme 2010).

[14] M Cave, 'Independent Review of Competition and Innovation in Water Markets: Final Report' (April 2009) 17, with references to UK Water Industry Research: 'A review of treatment technologies and the impact on climate change' (2002). Further increases in GHG emissions are likely, due to pollution displacement from water bodies to the atmosphere. The Water Platform has indicated that the consequences of the quality standards of the EU's water legislation – such as, for example, the mandatory advanced water treatment of sewage effluent – results in energy use and GHG emissions quadrupling in the European Union by 2030.

[15] European Water Platform, 'Water and Energy', 10–11.

[16] Ibid 15.

print for Action' (February 2013), adopted by three major American clean water groups. It calls for transformational thinking in policy and legislation, and states that 'none will be more important than the regulatory environment' for better resource efficiency in the water sector.[17] The US Department of Energy agrees with this. In July 2013 it published a report on 'US Energy Sector Vulnerabilities to Climate Change and Extreme Weather'. The conclusion is that the solutions of the future have to be based on collaboration across government agencies and the public and the private sectors.

3. WATER SERVICES AND ENERGY–SMART WATER UTILITIES

Water services are defined as public goods that have a social and economic value in all their competing uses.[18] The water utilities provide water supply and wastewater management for households, public institutions or any economic activity.[19]

Modern water utilities have capacity not only to ensure the conventional categories of water services, but also to take part in the production of renewable energy services. Energy-smart water utilities are for example reusing their sewage sludge, when they are producing biogas (biofuels),[20] and these renewable energy sources can be used by the general energy supply system. The processed biogas can also be used by the utilities themselves to reduce their consumption of conventional energy. The reuse of sewage sludge as energy source in the water utilities reduces the waste management needed in traditional water utilities and replaces conventional fossil–fuel energy sources – avoiding the release of some of the GHGs into the atmosphere.[21] The utilities are also producing renewable energy using hydropower, solar and wind power facilities etc, and they ensure renewable energy storage capacity in their facilities.

The renewable energy sources in the water utilities´ sludge waste can be used in the transport sector, and the bio–methane generated from the sludge waste can be used as second-generation bio–liquids[22] in heating and electricity – for example in energy-efficient combined

[17] 'The Water Resources Utility of the Future: A Blueprint for Action' (National Association of Clean Water Agencies, Water Environment Research Foundation and the Water Environment Federation).
[18] See Art 4 of the 'Dublin Principles of Water'. These principles were accepted at the International Conference on Water and Environment in Dublin in 1992
[19] Art 2(38) of the Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy [2000] OJ L327/1 (Water Framework Directive). This Water Framework Directive defines the services as: (a) abstraction, impoundment, storage, treatment and distribution of surface water or groundwater, and (b) waste-water collection and treatment facilities which subsequently discharge into surface water.
[20] Biogas is a mix of CO_2 and the inflammable gas methane (CH_4), which is produced by bacterial conversion of organic matter under anaerobic (oxygen-free) conditions. Treatment of the sewage sludge by means of anaerobic digestion (AD) generates biogas. AD is a treatment process that breaks down the biodegradable material in the absence of oxygen and produces a methane-rich (CH_4-rich) biogas. CH_4 is a GHG with a global warming potential of 21 –1 tonne of CH_4 emission, which corresponds to 21 tonnes of carbon dioxide (CO_2).
[21] Combustion of fuels in stationary installations contributes significantly to emissions of CO_2.
[22] Second-generation bio-liquids are made from lingo-cellulosic materials (non-food crops and waste). In comparison, first generation is made from the sugar and vegetable oils found in arable crops that can also be used for food.

heat and power plants (CHP).[23] Technological developments also make it possible to inject bio-methane produced in the water utilities into the natural gas grid,[24] and the utilities can then act in future 'Smart Grids' as producers of renewable energy and storage facility, as well as smart final consumers (known as 'smart prosumers').

If the water utilities are selling their renewable energy resources, this will impact their role and the applicable legal conditions. In that case they are not only reducing their own energy and carbon footprint – they are also acting in the energy market and are consequently covered by both water legislation and energy legislation.

4. THE EU POLICY AND LEGAL FRAMEWORK

The general EU policy, 'Europe 2020: Smart, Sustainable and Inclusive Growth',[25] offers a vision of Europe's social market economy for the 21st century based on a common concern in resource management, biodiversity and climate change. Some of the important priorities presented in the policy are to achieve the targets set by the 'EU Climate and Energy Package' on mitigation of GHGs, to shift from conventional to renewable energy, and to ensure a higher level of energy efficiency.[26] The promotion of such technologies and innovations providing opportunities for employment and regional development (green growth) as well as resource–efficiency are also parts of the overall Europe 2020-policy.

The resource-efficiency policy is formulated in the general 'Resource-efficiency Europe – Flagship under the Europe 2020 Strategy',[27] and in the 'Roadmap to a Resource Efficient Eu-

[23] Combined heat and power (CHP) is an efficient and lean approach to generation of energy for heating and electricity from a single plant.

[24] Natural gas is the only fossil fuel to increase its share of fuel consumption under the future sustainable energy policies. Substitution of coal and oil with gas in the short to medium term is regarded as a help to reduce CO_2 emissions using existing technologies by at least 2030 or 2035. Gas-fired power stations are also relatively flexible in use.

[25] European Commission, 'Communication from the Commission. Europe 2020: A strategy for smart, sustainable and inclusive growth' COM(2010) 2020 final. The strategy has been designed as the successor to the former Lisbon Strategy, which has been the EU's reform strategy for the last decade. The European Council agreed to the proposal on 26 March 2010.

[26] In March 2007 EU leaders endorsed an integrated approach to a climate and energy policy that aims at combating climate change and increase the use of renewable energy in the EU. The package was presented by the Commission on 23 January 2008 its 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. 20 20 by 2020. Europe's climate change opportunity' COM(2008) 30 final. It was adopted in December 2008. The package includes several instruments of importance for the promotion of renewable energy, including an amendment of the Emissions Trading Directive (Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community [2009] OJ L140/63); the European Commission's 'Community Guidelines on state aid for environmental protection [2008] OJ C82/1; and the new Burden-sharing Decision (Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020 [2009] OJ L140/136).

[27] European Commission, 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. A resource-efficient Europe –

rope' [28] that follows up on the flagship. The roadmap states that European societies may need to rethink the way in which energy is produced and consumed, and that waste (based on the EU waste policy) is to become a resource to be fed back into the economy as a raw material (including as a renewable energy resource) by a combination of several policies creating a full recycling economy.[29] The same ambitions are now stated in EU's 7th Environment Action Programme (2016–2020) 'Living well, within the limits of our planet'.[30] It is part of the EU ambition to review the current policy in the context of worldwide efforts to achieve a transition towards a green economy – for example by promoting energy–smart behaviour in the water sector.

As energy–related initiatives are of importance for the future of energy–smart water utilities in the EU, the Commission adopted in 2011 the communication entitled 'Renewable Energy: Progressing towards the 2020 target',[31] the 'Roadmap for moving to a competitive low–carbon economy in 2050'[32] and the 'Energy Roadmap 2050'.[33] Initiatives more directly promoting the resource efficiency in the water utilities are also taken by the EU. The strategy paper 'Water Blueprint'[34] outlines actions that concentrate on more resource efficiency, better implementation of current EU legislation, increased integration of water policy objectives into other policies, such as the policies on renewable energy,[35] and filling out gaps. A report published in June 2012 by the Committee on the Environment, Public Health and Food Safety of the European Parliament – with the title 'the implementation of EU water legislation, ahead of a necessary overall approach to European water challenges' – underlines that an environmentally and economically sound water sanitation and wastewater management policy should encourage the use of wastewater and the by-products of end-of-pipe treatment as a new resource on the basis of stringent quality requirements. The Committee:[36]

Flagship initiative under the Europe 2020 Strategy' COM(2011) 21. The strategy is one of seven flagship initiatives as part of the Europe 2020 strategy.

[28] European Commission, 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Roadmap to a Resource Efficient Europe' COM(2011) 571 final.

[29] Ibid 8.

[30] Decision No 1386/2013/EU of the European Parliament and of the Council of 20 November 2013 on a General Union Environment Action Programme to 2020 'Living well, within the limits of our planet' [2013] OJ L354/171.

[31] European Commission, 'Communication from the Commission to the European Parliament and the Council. Renewable Energy: Progressing towards the 2020 target' COM(2011) 31 final.

[32] European Commission, 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. A Roadmap for moving to a competitive low carbon economy in 2050' COM(2011) 112 final.

[33] European Commission, 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Energy Roadmap 2050' COM(2011) 885/2.

[34] European Commission, 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. A Blueprint to Safeguard Europe's Water Resources' COM(2012) 673 final.

[35] Ibid 4.

[36] Committee on the Environment, Public Health and Food Safety, 'Report of 6 June 2012 on the implementation of EU water legislation, ahead of a necessary overall approach to European water challenges' (2011/2297(INI)) 7.

> […] notes that wastewater can be used as a source of energy by recovering the heat or energy from the organic matter it carries, and that this opportunity should be exploited.

So the interest in energy-smart water utilities is gaining ground in EU policy. As it will be illustrated in the following subsections of part III, it is possible to establish a national legal framework that promotes energy–smart water utilities under the current EU legislation.

4.1. Water legislation

The Water Framework Directive[37] is the overall regulatory framework applicable to water. It states that:[38]

> […] water is not a commercial product like any other but, rather, a heritage which must be protected, defended and treated as such.

The supply of water is characterized by the Directive as a 'service of general interest' as defined in the rules on services of general interest in Europe.[39] The characteristics of 'services of general economic interest' subject to EU legislation are described by the European Commission as *economic activities which deliver outcomes in the general overall public good that would not be supplied – or would be supplied under different conditions in terms of quality, safety, affordability, equal treatment or universal access – by the market without public intervention*.[40]

[37] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy [2000] OJ L327/1 (Water Framework Directive).
[38] Recital 1 to the Water Framework Directive.
[39] Recital 15 to the Water Framework Directive. The term 'services of general interest' is not defined in the Treaty, but Art 14 in the Treaty on the Functioning of the European Union (TFEU) places such services among the shared values of the Union and underlines their role in promoting social and territorial cohesion. Protocol No 26 on Services of General Interest and Art 36 of the Charter of Fundamental Rights underline the importance of such services.
[40] The European Commission has developed its practice concerning what it considers to be 'services of general interest' and what it considers to be 'services of general economic interest'. In December 2011 the Commission published the 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. A Quality Framework for Services of General Interest in Europe' (COM(2011) 900 final, with the ambition to reinforce the social dimension of the single market to take better account of the specific nature of these services, and to meet the challenge of delivering them in a way which incorporates the values of safety and affordability, equal treatment, universal access and user's rights recognised in the Protocol. See the definition of the services of general (economic) interest at page 3 of the mentioned communication. The Commission has sought to achieve further consistency between the 'services of general economic interest', the State aid policy, and public procurement policy and has therefore created a more coherent framework. The 20 December 2011 it published the 'Services of General Economic Interest' package clarifying the basic concepts of the services in order to define the conditions under which State aid in the form of public service compensation can be considered compatible with the EU rules. The European Commission has clarified the conditions in respect to services of general economic interest by its 'Staff Working Document. Guide to the application of the European Union rules on state aid, public procurement and the internal market to services of general economic interest, and in particular to social services of general interest' SWD(2013) 53 final/2.

The Water Framework Directive underlines that it is necessary to develop an integrated approach to ensure resource efficiency. As a means to protect the water resources against 'over utilization' the Directive requires an implementation of water pricing policies in the Member States based on the cost-recovery principle.[41] The calculation of the prices has to include environmental and resource costs for water services, taking into account the polluter pays principle.[42] The 'Water Blueprint' published by the European Commission explains that the requirement on the pricing policies:[43]

> […] combines environment with economic benefits, while stimulating innovation.

This pricing policy is clearly neither demanding the use of a very restrictive 'full-cost recovery principle', nor is it promoting a price calculation based only on narrow economic benchmarking, as these schemes are used by Denmark.[44]

In their calculation of the water service prices the Member States may have regard to the social, environmental and economic effects of the recovery of costs, the geographic and climate conditions, as well as the possibility of promoting green innovative behaviour in the water utilities. However, the environmental [45] and resource costs[46] call for complex and site-specific analyses, and the national implementation shows difficulties in respect to the inclusion of such costs. [47]

Several daughter directives – including the Drinking Water Directive [48] and the Urban Wastewater Directive[49] that regulate the services of the water utilities – have to be implemented with respect for the rules and principles of the Framework Directive, including the promotion of resource efficiency and the compliance with the 'full cost-recovery principle'.

[41] Art 9 Water Framework Directive introduces the principle of cost recovery for water services that is achieved through the prices that the consumers have to pay to the provider directly and through any tax, charge or levy that is imposed on the service.
[42] Recital 9 and Art 9 Water Framework Directive.
[43] European Commission, 'A Blueprint to Safeguard Europe's Water Resources' COM(2012) 673 final, 10.
[44] See concerning the Danish pricing system based on a narrow economic approach below in part IV, section 4.2.
[45] Environmental costs consist of the environmental damage of aquatic ecosystem degradation and depletion by particular water use, see the European Environmental Agency, *Assessment of Cost Recovery through Water Pricing*, EEA Technical Report No 16/2013 (Publications Office of the European Union 213) 18.
[46] The resource costs are defined as the opportunity costs of using water as a scarce resource in a particular way in time and space, see ibid 18.
[47] Ibid 9.
[48] Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption [1998] OJ L330/32.
[49] Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment [1991] OJ L135/40.

4.2. Waste legislation

The Waste Framework Directive[50] sets the basic concepts and definitions that have to be implemented by the Member States in relation to waste management.

The Framework Directive has established the concept of waste to encourage a life-cycle approach, and it lays down the waste hierarchy as a priority order that supports a resource–efficiency approach of relevance to all sectors.[51] This hierarchy calls on the Member States to take the necessary measures to ensure that waste is prevented, re–used, recycled or utilized as renewable energy sources or, as the last resort, disposed of without environmental or health risks. Member States may only deviate from the waste hierarchy, if it is justified by life-cycle thinking.[52] The burning of sewage sludge from the water utilities in the waste incineration plants as an alternative to the production of biogas is *not* justified by life-cycle thinking.

The Framework Directive clarifies the distinction between wastes and 'by-products'.[53] After the European Commission and the Member States have agreed on the methodology, the European Commission can prepare a set of end–of–waste criteria for priority waste streams. The Commission – using the procedure described in the Directive – develops the specific criteria for each category of materials in line with certain legal conditions.[54] The special waste shall crease to be waste, when it has undergone a recovery (including recycling) operation and complies with the criteria developed in accordance with certain legal conditions. These are, in particular: (a) the substance or object is commonly used for specific purposes; (b) a market or demand exists for such a substance or object; (c) the substance or object fulfils the technical requirements for the specific purpose and meets the existing legislation and standards applicable to such a product; and (d) the use of the substance or object will not lead to overall adverse environmental or human health impacts. As part of the above–described competence the Commission develops the 'end–of–waste' criteria relevant for biodegradable waste which is subject to biological treatment (including biogas).[55] By introducing 'end–of–waste criteria' [56] the Commission clarifies that special categories of waste shall cease to be a 'by–product', when they have undergone recovery, including recycling, operations and comply with the specific criteria for the relevant category of by-products. The Council has the competence to decide that the criteria are binding regulations at the national level.[57]

[50] Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives [2008] OJ L312/3 (Waste Framework Directive).
[51] Art 4 Waste Framework Directive.
[52] The basic element in life-cycle thinking is the recognition that all raw materials used for production and all consumption goods finally end up in the environment and are therefore potential pollution sources.
[53] Art 5 Waste Framework Directive.
[54] Art 39(2) Waste Framework Directive.
[55] Arts 6 and 39(2) Waste Framework Directive set the overall criteria. The Renewable Energy Association has put together a table to compare the established criteria with the special conditions for biogas. There is also a study report from IPTS on such criteria from July 2013.
[56] Art 6 Waste Framework Directive.
[57] See as an example Council Regulation (EU) No 333/2001 of 31 March 2011 establishing criteria determining when certain types of scrap metal cease to be waste under Directive 2008/98/EC of the European Parliament and of the Council [2011] L94/2.

The reuse of sludge waste is also possible without such 'end-of-waste' criteria. When the sewage sludge in the water utilities has undergone a recovery operation and complies with the criteria for natural gas – transformed to bio-methane (processed biogas) and injected into the natural gas grid as a 'natural gas substitute' – these renewable resources from the water utilities do not have the character of waste any longer. The consequence of the change from waste to secondary raw material (products) that can be used as alternatives to the conventional energy sources is that the water utilities have the right to sell these secondary renewable energy resources (hereinafter RES) without an obligation to respect the restrictions laid down in the waste legislation. The new RES are not covered by the waste legislation. *If* the Member States do not put restrictions on the water utilities´ rights to take part in RES-production, these utilities can help the EU in fulfilling the targets of 20 per cent VE in 2020.[58]

The utilisation of sewage sludge in agricultural production as fertilizer is an alternative to the use for renewable energy production. Consequently, there are competing interests between the use of the sludge in the renewable energy production and in the agriculture. The Sewage Sludge Directive[59] that aims at regulating the use of sewage sludge in agriculture in order to prevent harmful effects on soil, [60] and to encourage the correct use of sewage sludge prohibits the use of untreated sludge on agricultural land and sets standards for sludge that has undergone biological, chemical or heat treatment, long-term storage or any other appropriate process. The new initiative on compost standards based on end–of–waste criteria and quality standards for applying compost through a revision of the Directive[61] could constitute a step forward for energy–smart water utilities. New higher quality standards can reduce the amount of sewage sludge that can be used by the agricultural sector. If the environmental standards are raised in the Directive, the consequence of this will be that more sludge becomes available for renewable energy production by energy smart water utilities.

4.3. Renewable energy legislation

The EU has set itself the target that at least 20 per cent of the total energy used in 2020 should come from RES. This target is laid down in the Directive on Promotion of Renewable Energy (the RES Directive), [62] which sets individual, binding targets for all Member States in order to

[58] There are some restrictions on the water utilities´ rights to take part in VE-production, see below in Part IV, subsection 4.3.
[59] Council Directive 86/278/EEC of 12 June 1986 on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture [1986] OJ L181/6 (Sewage Sludge Directive).
[60] Due to the physical-chemical processes in the treatment of wastewater, the sludge tends to concentrate heavy metals and poorly bio-degradable trace organic components as well as pathogenic organisms.
[61] Sewage Sludge Directive.
[62] Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC [2009] OJ L140/16 (RED) is part of the above-mentioned 'Climate and Energy Package'.

achieve this overall target.[63] At least 10 per cent of propellants in transport in every Member State must be RES.

The idea of common concern in resource management, biodiversity and climate change has led to the use of the sustainability criteria on biofuels (biogas) in the RES Directive. The mandatory sustainability criteria are used, where biofuels are to be taken into account by Member States' fulfillment of EU obligations. It is important for Member States to respect the sustainability criteria for the following purposes and mandatory obligations:

- They are only allowed to count their biofuels towards the compliance with the renewable energy targets set in the RES Directive (related to the qualitative obligated in respect to 'gross final consumption of energy') if they respect the sustainability criteria;[64]
- Compliance with the qualitative RES obligations laid down in the RES Directive, the Fuel Quality Directive,[65] and the Regulations on Performance Standard for New Passenger Cars and Light Commercial Vehicles[66] can only be ensured if the sustainability criteria are met; and
- The Member States are only allowed to financially support producers of biofuels if the biofuels meet the sustainability criteria. [67]

The use of these criteria in connection with the purposes mentioned above is promoting the use of biofuels in the transport sector as alternatives to conventional fuels,[68] as well as the use

[63] Arts 1(3) and 3 RES Directive sets out binding targets for all Member States in order to achieve the overall RES-target for the EU. The individual, quantitative commitments on the total energy use are based on economic, social and environmental criteria and set out in Annex I, Part A, of the Directive.

[64] The EU's calculation is based on 'gross final energy consumption' as the expression of energy consumption by end users, exclusive of cross-border trade, and consumption for non-energy purposes. Distribution losses and own use in the production of electricity and district heating are added to this gross final energy consumption figure. The '*gross final consumption of energy'* is defined in Art 2(f) of the RES Directive as '*the energy commodities delivered for energy purposes to industry, transport, households, services including public services, agriculture, forestry and fisheries, including the consumption of electricity and heat by the energy branch for electricity and heat production and including losses of electricity and heat in distribution and transmission*'.

[65] Directive 2009/30/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC [2009] OJ L140/88 (Fuel Quality Directive).

[66] Regulation (EC) No 443/2009 of the European Parliament and of the Council of 23 April 2009 setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO 2 emissions from light-duty vehicles [2009] OJ L140/1; and Regulation (EU) No 510/2011 of the European Parliament and of the Council of 11 May 2011 setting emission performance standards for new light commercial vehicles as part of the Union's integrated approach to reduce CO 2 emissions from light-duty vehicles [2011] OJ L145/1 (Regulations on Performance Standards).

[67] Art 17(1)(c) of the RES Directive and European Commission's 'Community Guidelines on state aid for environmental protection [2008] OJ C82/1. Concerning this see EM Basse, 'The Legal Design of Sustainability Criteria on Biofuels used by the European Union' (2013) 15 *Environmental Practice* 50.

[68] Concerning the sustainability criteria of relevance for the quality of fuels, see Art 7 b Fuel Quality Directive; and Art 6 of the Regulations on Performance Standards.

of biofuels in other sectors. The Directive states that the Member States must offer access to their market and support schemes for biofuels that meet the sustainability criteria.

There are three elements in the sustainability criteria: the mitigation of GHG emissions, the land-use aspects, and the agricultural-environmental aspects. They aim at avoiding or minimising GHG emissions and biodiversity losses. Based on the land use-related criteria, raw materials (biomass) for biofuels and bioliquids cannot be produced on land with high carbon stock or on wetlands, forests and areas with other wooded land of native species – neither in the EU nor outside the EU, if the Member States want to regard the imported products as renewable resources under the RES Directive.

Concerning the agricultural-environmental aspects, the vertical as well as the horizontal coordination through the sustainability criteria is reflected in the Directive incorporating the cross-compliance requirements that are mandatory in the allocation of financial support for agriculture under the Common Agricultural Policy.

Consequently, the criteria are used across multiple sectors; all Member States; and the Non-Member States[69] that want to export biofuels or biomass to the Member States of the EU.

These sustainability criteria are developed on several regulatory levels. The EU regulates the criteria and to demonstrate that biofuel has fewer negative environmental effects than petroleum–based products, the Member States have to ask economic operators for three co-regulatory remedies: (a) information on the operator's compliance with the criteria; (b) an adequate standard of independent auditing; and (c) 'chain of custody' calculations based on mass balance systems.[70] The Member States are responsible for establishing verification systems. The RES Directive also includes the possibility of voluntary schemes developed by private actors.[71]

The RES Directive promotes the reuse of waste by water utilities by giving a special priority to waste (including sludge from sewage plants) as the raw material utilized in the production of biogas.[72] The use of such second–generation raw materials is counted by a factor of 2 in the Member States' above–mentioned mandatory calculation of their fulfilment of the quantitative amounts of RES.[73]

[69] With one modification: The agricultural-environmental criteria described in the RES Directive apply only to biofuel produced from raw materials originating in the EU. The reason behind this jurisdictional limitation of the effects of these criteria is the obligation of the EU and its Member States to comply with World Trade Organization (WTO) provisions. Biofuel is subject to tariff cuts and discussion of trade and trade and the environment under the Doha Round (WTO, 2012) followed by negotiations on agricultural market access.
[70] See concerning the last-mentioned system Art 18(1)–(3) of the RES Directive.
[71] Under Art 18(4)–(6) the European Commission may decide that voluntary national or international schemes setting standards can be recognized by the Commission for five years. Such schemes are made available in the RES transparency platform.
[72] Recital 79 RES Directive.
[73] See Art 21(2) RES Directive that is stating: '*For the purposes of demonstrating compliance with national renewable energy obligations placed on operators and the target for the use of energy from renewable sources in all forms of transport referred to in Article 3(4), the contribution made by biofuels produced from wastes, resi-*

The mandatory requirements on guarantees of origin for renewable energy that is sold and transported in the grids are stated in the Directive,[74] and the prioritized/guaranteed access for renewables to the electricity grids ensured by the Directive[75] are other mandatory instruments that promote energy–smart water utilities. Also the use of a 'technology neutral' approach[76] in the Directive is an important aspect that promotes the interest in energy-smart water utilities and supports the innovation by legal State aid.

With regard to the quantitative result to be achieved in respect to the percentage amount of renewable energy sources (as described above), the requirements in the RES Directive are binding upon each Member State, although to some extent it is left to the Member States to choose form, methods, and instruments.[77] The Directive affords the Member States a wide discretion with regard to the specific policies to be implemented and measures to be taken in accordance with their national circumstances. It includes a range of market–based and economic instruments (green tradable certificates, feed in tariffs, taxes, and subsidies) that the Member States may use in order to meet the established quantitative targets laid down in the Directive. This flexibility for the Member States in their design of national policies is laid down in the following principles and restrictions in the Treaties. The Treaties clarify the continuing existence and limiting function of national sovereignty over energy sources that has to be respected by the EU institutions. This is done by:[78]

- The general principles on the principles of conferral,[79] subsidiarity[80] and proportionality[81] as well as the shared competences between the EU and its Member States in the fields of environmental law and energy law, have to be respected by the EU institutions.[82]
- The Article 192(2) TFEU which states that the Council only can make decisions by unanimity concerning measures significantly affecting the Member State's choice between energy sources and the general structure of their energy supply, and Article 194(2)(2) TFEU states that EU legislation cannot contradict the rights of the Member States to determine the conditions on which their energy resources are exploited, their

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dues, non-food cellulosic material, and ligno-cellulosic material shall be considered to be twice that made by other biofuels'.

[74] Art 15 RES Directive.

[75] Art 16 RES Directive.

[76] The approach to RES is technology neutral, as it is not promoting any RES-technology more than other RES-technologies. This EU approach is different from the Danish approach, where the wind-turbines traditionally have received more subsidies compared to other technologies.

[77] Art 288 of the Treaty on the Functioning of the European Union (TFEU).

[78] H Sydow, 'The Dancing Procession of Lisbon: Legal Basis for European Policy' (2011) 1 *European Energy Journal* 33, 35.

[79] Art 5(1) of the Treaty on the European Union (TEU)

[80] The subsidiarity principle stated in Art 5 TEU means that the EU institutions' activities must satisfy two tests: when they are regulating they have to demonstrate that the objectives of the initiatives cannot be sufficiently achieved by the Member States themselves, and secondly they should also demonstrate that the actual initiative by reason of its scale or its effects can be better achieved at the EU level – eg more effective, more democratic, more consistent with the internal market, more consistent with international obligations, more environmentally friendly etc.

[81] Art 5(4) TEU on the principle of proportionality as well as the principle of necessity.

[82] See Art 5(2) TEU and Art 191(4) TFEU.

choice between different energy sources, and the general structure of their energy supply.

Another reason behind the design of the RES Directive is that the initiatives to be taken on the promotion of RES are not only in the hands of the Member States, but also a matter of initiatives from business and other private actors.

4.4. Energy–efficiency legislation

The Energy Efficiency Directive[83] is also relevant with regard to the purchase of services in the water utilities.[84] It puts forward legally binding measures to step up Member States' efforts to use energy more efficiently at all stages of the energy chain. One of the most important of the state obligations under this Directive is the mandatory energy efficiency obligation schemes. The Member States have to implement such schemes to achieve the energy saving targets amongst final consumers.[85]

Recognising the significant energy saving potential in enterprises of all categories and types, the Directive obliges Member States to develop programmes to encourage small and medium sized enterprises – including water utilities[86] – to improve their energy efficiency by implementing energy audits and the recommendations that follow from these audits.[87] Based on the Directive the Member States should also ensure that national energy regulatory authorities take an integrated approach encompassing potential savings in the energy supply and end–use sector.

As water utilities are end-users of energy, the Member States have to promote their energy production and saving.[88] The Directive also allows the establishment of support schemes for such utilities[89], and it calls for a highlighting of concrete examples of how energy management systems could help their businesses. One solution is to highlight the benefits of energy–smart behaviour in the water utilities.

[83] Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC [2012] OJ L315/1 (Energy Efficiency Directive).
[84] Preamble statement No 19 of the Energy Efficiency Directive.
[85] Arts 7 and 9 Energy Efficiency Directive.
[86] Concerning water supply and electricity services as small and medium sized companies covered by the Energy Efficiency Directive, see M Bröckl et al, *Energy Efficiency in Small and Medium Sized Enterprises* (Norden 2014) 14, and the European Commission's 'Communication from the Commission to the European Parliament and the Council. Implementing the Energy Efficiency Directive – Commission Guidance' COM (2013) 762 final, 7.
[87] Art 8(2) Energy Efficiency Directive and European Commission, 'Implementing the Energy Efficiency Directive – Commission Guidance' COM (2013) 762 final, 4 and 7–8.
[88] Preamble statement No 45 of the Energy Efficiency Directive.
[89] In harmony with the European Commission's 'Community Guidelines on state aid for environmental protection [2008] OJ C82/1.

4.5. Conditions for targets on usage of resources in public procurement

Water utilities have to respect the Utilities Directive,[90] when they conclude contracts on a public–private partnership (PPP)[91] for pecuniary interest – including contracts on services of general economic interests.[92] This Directive sets the framework on procurement and aims at ensuring principles such as fair competition and getting best value for the consumer's money. It leaves it up to specific EU legislation to formulate *any definition of what has to be purchased* for example in respect to renewable energy, energy efficiency and utilisation of waste as the sources of renewable energy. It allows the Member States to define targets for the usage of resources and negative environmental externalities in water utilities, as, with reference to sustainability, it specifically addresses issues such as environmental management, energy and water consumption, and waste generation. Therefore, it is possible for the Member States to promote energy–smart water utilities in their contracts with companies concerning water services as part of their fulfilment of the obligations under the Energy Efficiency Directive.

There are no specific Treaty rules or secondary EU law on the use of PPPs in the water and energy sectors, but such constructions have to respect the Utilities Directive.[93] The Directive allows water utilities (as public undertakings) to define targets for the usage of resources and negative environmental externalities, as, with reference to sustainability, it specifically addresses issues such as environmental management, energy and water consumption, and waste generation. Thus, the Directive makes it possible for the water utilities to promote energy–smart behaviour by use of their procurement competences, when they involve private partners in their services. However, the Danish legislation described below will not make it possible to cover higher costs related to the energy–related targets in the pricing of the services, see part section 5, subsection 5.2.

5. THE CONDITIONS UNDER DANISH LEGISLATION

Denmark has several rules on water and energy services. Some of these rules regulating the water utilities are based on national traditions and political compromises and agreements[94]

[90] Directive 2004/17/EC of the European Parliament and of the Council of 31 March 2004 coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors [2004] OJ L134/1.
[91] European Commission, 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on Public-Private Partnerships and Community Law on Public Procurement and Concessions' COM(2005) 569 final, 10. A PPP is a cooperation between the public sector and one or more private suppliers with the aim of funding and operating a joint venture.
[92] Concerning the new initiatives of the Commission see above in note 40.
[93] The Commission adopted a 'Green Paper on Public–Private Partnerships and Community Law on Public Contracts and Concessions' COM(2004) 327 final, launching a debate on the need for legislative initiatives designed to regulate the procedure for awarding concessions.
[94] EM Basse, *Environmental Law in Denmark* (DJOEF and Wolters Kluwer Law 2013) 35, 88, 116, 135, 172, 262 and 274.

without any relation to the above–mentioned directives, other rules are the result of the implementation of EU rules.

In Denmark it is common to establish municipally owned enterprises as well as joint municipal companies to take care of water, waste and heating supply services, thereby separating the administrative power – which has to remain within the municipality authority – from the services. Such municipally owned companies are not allowed to make any economic profit or loss. They have to respect a special economic principle on the total balance of income and expenses in each service (in Danish *Hvile-i-sig-selv-princippet*). It means that municipally owned companies' income and expenditure must be in balance, and that there are limits on the profit – where possible the result should be 0. At the same time, the national traditions for thinking about strict limitation of municipality participation in business activities have a very strong impact on the legal design of the relevant acts. As will be illustrated in the following subsections, there are several national traditions and conditions that are very problematic for the Danish water utilities that want to act as energy–smart utilities.

The Ministry of the Environment is the main responsible state authority with the competence to protect the water and to regulate traditional water utility services, but the competences of this ministry are limited in respect to the case–by–case regulation of the water utilities' economic conditions. In relation to accepting any energy production activities in the water utilities, there is both a competence in the Ministry of the Environment (under the Water Sector Act) [95] and a competence in the Ministry for Climate, Energy and Buildings (under the Electricity Act[96] and the Heating Act[97]), which competences are not coordinated.

The Danish Competition and Consumer Authority – which is independent of both the Ministry of the Environment and the Ministry for Climate, Energy and Buildings' legislative approaches – is responsible for ensuring that water services respect the 'full–cost recovery principle', centralized pricing levels, and the state driven performance benchmarking mentioned below. This Authority is part of the Ministry of Business and Growth. Its control of the water services´ prices is without focus on environmental resources. It is only focused on the interest of the consumers, especially the Danish companies, ie getting the services at the lowest possible prices.

The separation of competences between the three ministries has consequences, as the administrative implementation of the rules is based on a strong public law principle of specialization between these ministries' competences that encourages 'silo-thinking'.[98] Without a clear legal

[95] Act No 469 of 12 June 2009 on the Organization of and the Economic Conditions for the Water Sector.
[96] Section 4(1) of the Promulgation Act No 1329 of 25 November 2013 on Electricity. Concerning this see EM Basse, *Renewable Energy. The Legal Framework* (in Danish), 248ff.
[97] Promulgation Order No 1184 of 14 December 20011 on Heating.
[98] Cf. C Brölmann, 'Deterritorialization in International Law: Moving Away from the Divide Between National and International Law' in J Nijman and A Nollkaemper (eds), *New Perspectives on the Divide Between National & International Law* (Oxford University Press 2007) 91 with reference to M Koskenniemi et al, 'Fragmentation of International Law: Difficulties arising from Diversification and Expansion of International Law: Report of the Study Group of the International Law Commission' (13 April 2006) 11 and 244–248.

basis in the relevant legislation, this principle of specialization puts barriers on coordination between the water regulations versus the energy regulation of these interdependent sectors.

5.1. The municipality owned water utilities

Under the Water Sector Act, the Environmental Protection Act[99] and the Water Supply Act,[100] and several other environmental acts of relevance to water utilities, the main responsibility for public power and administration of environmental protection rests with the 98 municipal councils and their companies. The Water Sector Act regulates the organization of the large publicly owned and privately owned water utilities. The municipalities own most of the large utilities.

The restrictions on the activities of the water utilities under the Water Sector Act are explained in subsections 5.2. and 5.3. There are, however, several other restrictions on the municipalities and the municipality owned utilities.

5.2. Economic regulation of the water utilities in the Water Sector Act

As already mentioned, the Competition and Consumer Authority has the competence to calculate a yearly 'prize cap' for the individual water utilities, partly on an individual result-oriented benchmarking basis, partly on a calculation of the traditional costs of water services.[101]

The Competition and Consumer Authority uses Data Envelopment Analysis (DEA) to determine which water utilities are the most effective and to indicate the efficiency potential of each utility. It is a relatively simple technique, which has been widely applied in academic literature and typically together with other benchmarking models also in regulatory practices of energy regulators in the industrial countries.[102] DEA is a set of assumptions about how observed input-output combinations from the real-world business can provide information about the set of possible input-output combinations available to water utilities.[103] The selection of input and output variables is of fundamental importance, and so is the approach for incorporating environmental variables into the standard DEA analysis.[104] The strength of the DEA is that it requires relatively little detailed knowledge of the shape of the underlying cost func-

[99] The Promulgation Order No 879 of 26 June 2010 on Environmental Protection with several amendments.
[100] The Promulgation Order No 1199 of 30 September 2013 on Water Supply with several amendments.
[101] Sections 6–8 in the Water Sector Act.
[102] Australian Competition & Consumer Commission, 'Benchmarking Opex and Capex in Energy Networks' (May 2012) *ACCC/AER Working Paper* No 6, 7ff and 113.
[103] Ibid 107.
[104] Ibid 110.

tion. What is required is the knowledge regarding: (a) the key cost drivers,[105] and (b) the basic shape of the technology. One of the big problems with the use of this method on the water utilities is, however, that the water utilities do not agree on the cost drivers used by the Authority. This problem with the legitimacy of the use of the DEA was clearly illustrated by the evaluation of the Water Section Act made by Deloitte and published in November 2013. More than 60 per cent of the water utilities were stating that the cost drivers were not the relevant ones.[106] The cost drivers that are included in the Authorities´ prize calculation are without figures relating to the cost of the energy supply, and the Authority does not accept the relevance of environmental and energy resource efficiency. It was indicated in the political agreement on the water reform from 1 February 2007 – the political basis for the Water Section Act – that it was relevant for the Authority to focus on the promotion of innovative technologies in the water utilities in the benchmarking. This ambition on innovation is not included in the DEA model used by the Authority.

The consequence of the DEA-based benchmarking of the Danish water utilities is also that some of the most effective 'frontier' utilities – as described by the Authority in its '*Result-Oriented Benchmarking of water companies. The determination of individual efficiency demand for the year 2013*'[107]– are the most conservative ones, and consequently cannot be used by the Authority in its benchmarking.[108] Based on the DEA criteria one of the Danish 2013 top performers was a utility with more than 90 per cent of its operating expenses based on the cost of purchasing services from other water utilities.[109] Mixed results and inconsistency between different models – including the results of the DEA – in identifying the top and bottom performers, have been found when testing the correlation in the ranking between pairs of benchmarking methods in the assessment of the methods used to regulate the energy networks. The recommendations have been to use a mix of methods or only to use a mild form of benchmarking for price regulation.[110] Still it is *only* DEA that is used by the Authority in its benchmarking of the water utilities – and it is not used in a mild form.

A special statutory order on price calculation lays down very detailed rules on the calculation of costs as well as the accepted investments.[111] The calculated prices have to be corrected with a reduction for the target of general and concrete effectiveness in the sector.[112] The Agency takes account of the water utilities´ cost drivers and investments, but it applies only to investments that are closely related to the very traditional water services. The narrow economic efficiency assessment by the Authority leads to a price cap, which determines the maximum

[105] The cost drivers are the factors that can legitimately affect the volume of outputs produced from a given set of inputs, see ibid 113.
[106] Deloitte, 'Evaluering af vandsektorloven' (November 2013), 67ff.
[107] It is a Danish publication that is titled 'Resultatorienteret benchmarking af vand- og spildevandsforsyninger. Fastsættelse af individuelle effektivitetskrav for prislofter 2013' (February 2013) 24.
[108] Ibid 25–26.
[109] Ibid 28.
[110] See Australian Competition & Consumer Commission, 'Benchmarking Opex and Capex in Energy Networks', 14 and 93.
[111] The Statutory Order No 122 of 8 February 2013 on the Calculation of the Prices that can be charged by Water Utilities.
[112] Section 5(1) of the Statutory Order on the Calculation of the Prices.

price that a water utility may charge by the hour to cover the costs of installation, operation, maintenance, administration and payments for the loans. The water utilities are not allowed to charge prices that are higher than the price cap established for them[113] – with prices related to each water or wastewater service.

The general calculation of the cost of operation does not include investments by the water utilities that are made to fulfil 'environmental and service goals'. Such investments have to be accepted on an individual case–by–case assessment carried out by the Authority – under very strict conditions. Environmental goals are only accepted as an addition to the price calculation, if they are related to the traditional water services. It is clearly stated in the explanation notes to the Water Sector Act, as the Act was amended in 2012, that resource–efficiency is not accepted as part of the 'environmental goals'.[114] It is, however, possible to have energy–saving goals accepted as part of the 'service goals'. The administrative praxis of the Authority with respect to such goals is very restrictive.

The conditions in relation to investments that can be calculated as part of their operational expenditure are also very restrictive in other respects. This is problematic as the change from traditional water utilities to energy–smart water utilities demands that the utilities can invest in financially attractive on-site energy generation, which is not easy under the current conditions.

The Authority corrects for over– and under–compensation in the calculation of the price cap for the individual water company's services. Over– and under–compensation is defined as the difference between the ordinary operational expenditure and the factual cost of the production and services, the accepted environmental– and service goals, and ordinary financial costs.

The above-mentioned benchmarking and price caps are not the only regulation of the consumer charges, which the water utilities can get as their income. The calculation of prices is also based on the above-mentioned general 'Hvile–i–sig–selv'-principle. The relevance of this principle for water services is established by two acts, the Water Supply Act[115] (regulating the prices on water services) and the Act on Payment[116] (regulating the prices for wastewater services). On the basis of this principle the water utilities have to use all the revenue from user charges as the basis for covering the costs associated with infrastructure facilities and services etc. in each of the two categories of services. The money is earned by the wastewater services and must remain in each of the two services of the water utilities.

On the basis on these three economic restrictions – the benchmarking, the price cap and the above-mentioned municipal law 'Hvile–i–sig–selv'-principle – the water utilities are not able to use the surplus from their charges for the technological–facilities needed for renewable energy production – or to invest in other non-traditional technologies. All these restrictions on

[113] Section 13 of the Water Sector Act.
[114] Proposal on an amendment of the Water Sector Act L149 of 29 March 2012.
[115] Section 52a of the Promulgation Order No 1199 of 30 September 2013 on Water Supply.
[116] Section 1(6) of the Promulgation Order No 633 of 7 June 2010 on the Payment Rules for Waste Water Treatment Plants.

investment in innovative technologies of importance for energy–smart behaviour in the water utilities are national barriers. They are neither a consequence of the Water Framework Directive´s principle of 'full cost recovery' (that includes environmental and resource costs as mentioned above), nor a consequence of EU law on 'services of general economic interest'. The general EU criteria on state aid must be applied to ensure that the utilities are not over–subsidized and work in accordance with efficient principles, but that is not the same as the above described restrictive conditions for Danish water utilities.

However, Denmark is not the only Member State that does not follow the principle on cost-recovery promoted by the Water Framework Directive. In the assessment made in 2013 by the European Environmental Agency of several Member States´ water pricing it was concluded that[117]

> there is a lack of harmonised ad operational concepts of cost and recovery, and environmental and resource cost including incentives.

5.3. Unbundling and other Restrictions on energy-smart water utilities

Under the Water Sector Act the Danish water utilities are only allowed to take part in activities other than the traditional water services, if such activities are closely related to water supply and wastewater treatment activities.

The traditional water services cannot be integrated with RES–production in the same company – as an integrated smart–energy water utility's activities can – but water utilities can be the owner or co-owner of such an energy–producing facility. If the water utilities want to sell their renewable energy sources, they cannot do this as part of the ordinary performance of the companies. Based on the Water Section Act they have to set up separate service companies that are 'limited liability companies' independent of the water utilities. The service companies established to take care of the RES–supply have to be commercially subject to capital market competition, with modification of very small benefits as mentioned below.

The Water Sector Act contains several restrictions on the establishment of such energy–producing service companies as well as strict rules on the trading between the water utilities and the energy producing service-companies. The establishment of the service–company has to be in the interest of the water utility and the agreements between the water utility and the service company have to be based on 'cost prices'.[118] All other relations that the service-company has to the energy markets have to be based on commercial conditions. Under this Act, it is only possible to produce RES in the water utility without making a special service company, if the energy is used by the water utility itself, or if the distribution and trading of

[117] European Environmental Agency, *Assessment of Cost Recovery*, 9.
[118] This is stated in the explanation notes connected to the Act, and it is stated in the Statutory Order No 298 of 25 March 2010 on the Programme for the Internal Accounting.

energy services is under a cap between 2.5–10 billion DKK yearly, depending on the utilities' yearly sales.[119] These conditions are problematic for the water sector´s transformation to energy–smart behaviour.

The Electricity Act and the Heating Act have also an impact on the conditions for energy–smart water utilities,[120] as these acts state that municipality owned water utilities may only participate in other activities associated with the energy producing activities, if an independent, 'limited liability company' carries out such activities on commercial terms.[121] As the RES–production activities in water utilities have to be independent from the municipally owned water company, it implies the creation of a separate company, which owns and operates the facilities relevant for the RES–production. This mandatory independence *is neither* a consequence of nor in conflict with the EU's rules laid down in the 'Third Energy Package'.[122]

The Danish Energy Agency – an agency in the Ministry for Climate, Energy and Buildings – is allowed to give dispensations to the water utilities from the above-mentioned mandatory creation of an independent RES–supply company, if the facilities used by the water utilities as the basis for the RES–production are already an integrated part of the water utility and do not result in a high RES–production. An administrative order[123] establishes that the Energy Agency can only accept such energy-supply activities in the water utilities, if the activity is characterized by having a significantly smaller scale than the traditional water services.

Such RES–producing activities based on the waste generated in the water utilities are therefore based on the Water Sector Act, on the Electricity Act and on the Heating Act typically separated from traditional water services by means of the organizational set–up and trading system. The basic rationale behind this separation is to ensure that the consumers of the water services and the energy services respectively are only paying for the conventional services in the water and the energy sectors respectively. But the legal conditions reduce the possibilities of the energy–smart production in the municipality owned water utilities.

There are also some inconsistencies between the legal conditions established by the Water Sector Act and the two energy–related acts. Based on the explanatory notes to the Water Sector Act there is an obligation for both the water utilities and for their independent energy–producing service–companies to use 'cost prices', when the water utility is receiving services from the service–companies. This is not consistent with the conditions that the same parties

[119] This is a consequence of both Section 18 of the Water Sector Act and the Statutory Order No 1195 of 14 October 2010, as amended by Statutory Order No 1386 of 13 December 2010.
[120] Sections 2(1) and 4(2)-(4) of the Electricity Act.
[121] Section 37a(4) of the Electricity Act and Section 23m(4) of the Heating Act.
[122] The Package includes several directives and regulations – including Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC [2009] OJ L211/55; and Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC [2009] OJ L211/94.
[123] Statutory Order No 1133 of 27 November 2008 on Municipalities and Energinet.dk's participation in other activities.

have to accept under the Electricity Act and the Heating Act.[124] The RES–production facility accepted by the Energy Agency under the Energy Act and the Heating Act will have to act on commercial conditions.

5.4 Economic restrictions on transfer of benefits

If there are any economic profits from this RES–production activities that are transformed to the water utility or to the municipality, the municipality and the water utility have to notify this to the Danish Energy Regulatory Authority (another agency in the Ministry for Climate, Energy and Buildings) as well as to the Competition and Consumer Authority under the Water Sector Act. In accordance with the so called 'Stop–Act', all economic benefits that a municipality receives from its water company as the owner of that company have to be 'paid back' to the State. It is done in the form of a quantitative reduction of the financial support (the 'block grant') that the municipality would have received from the State if there had been no transfer of profits from the company to the municipality.[125] The consequence of the transfer of money from the energy producing company to the municipality or the municipality owned water utility is a reduction of 40–60 per cent of the money that the municipality will receive from the state as block grants.[126] If the income from the RES-producing activities is used in the water utility to reduce the charges that the consumers have to pay for their water services, this transfer of money will also have the consequence that the block grants received from the state will be reduced by 40–60 per cent.[127]

The municipalities are therefore not interested in receiving economic benefits from their water utilities or the services companies producing RES, and they are not in a situation in which they are allowed to invest in the RES–production. These rules are not in conflict with or results of EU legislation, as the EU is not regulating the economic transfer of money between the Member State and its municipalities insofar as no state aid is involved.

5.5. Public-private partnerships

The RES-activities related to the water utilities are not covered by the criteria for '*in-house relations*' in the Utilities Directive, so any cooperation between the private and public sectors will have to be based on the procedures established by this Directive.

[124] Section 23 m(4) of the Promulgation Act No 1184 of 14 December 2011 on Heating.
[125] The Promulgation Act No 634 of 7 June 2010 on Municipalities Transforming of Water Utilities in to Public Owned Companies (the Stop-Act).
[126] Statutory Order No 1297 of 15 December 2008 on municipality notification under the Electricity Act and the Heating Act. Block grants are grants from the State, which are an important source of revenue for the municipalities, complementing their income from their own taxes revenues which include revenues from direct and indirect taxation and non-tax revenues (fees, rents, interest, etc).
[127] It was stated in a decision from the Danish Energy Regulatory Authority made on 20 April 2012.

On the basis of the above–mentioned legal conditions, it is not easy for water utilities to transform to energy smart water utilities without working together with private companies. But the interest in such cooperation does not exist under the current conditions. As mentioned above, the general conditions on municipality loans and taxes are not making such cooperation very attractive for the private sector.[128] The rules regulating the municipality's economic management can be found in the Local Government Act.[129] The municipality's investments and the investments of the municipally owned water utilities are regulated by a 'pay–as–you–go' financial system, under which each year's expenditure must be financed out of the current revrevenue. Investment in water utilities by taking on debt is also restricted. As regards loans for projects, the municipality is obligated to deposit funds equal to the full project investment costs in unusual water services activities – such as energy-related activities – upfront under the Statutory Order on Municipality Loans.[130]

The rules require the full project value to be reserved upfront, when a municipality is commencing a PPP project. Another challenge is that the municipal reserves must include value added tax (VAT) of 25 per cent.[131] A further important barrier to PPP as a solution for the water utilities is that there is not a general set of rules for the tax treatment of PPP projects, which creates insecurity in the PPP market for projects with certain characteristics.[132] The restrictions on municipalities in respect to access to private lending and leasing have made it less attractive for private parties to take part in a PPP.[133] None of these problems are results of the implementation of EU legislation.

Deloitte's 2013-evaluation of the Water Sector Act is very critical. It states several negative consequences for the water sector and the Danish society as a result of the current economic regulation. The evaluation is especially focusing on the negative consequences of the 'Hvile–i–sig–selv'-princip described above. This principle makes it impossible for the water utilities to be innovative in respect to technologies as well as in respect to environmental and service issues. The principle is also an important barrier to a necessary consolidation in the sector, and it is making it very complicated to cooperate with private partners.[134]

[128] The CJEU has established that the position may only be otherwise, where the local authority exercises a control over the person concerned similar to that which it exercises over its own departments and, at the same time, that the person carries out the essential part of its activities with the controlling local authority or authorities, cf Case C-107/98 *Teckal Srl v Comune di Viano and Azienda Gas-Acqua Consorziale (AGAC) di Reggio Emilia* [1999] ECR I-8121; and C-26/03 *Stadt Halle and RPL Recyclingpark Lochau GmbH v Arbeitsgemeinschaft Thermische Restabfall- und Energieverwertungsanlage TREA Leuna* [2005] ECR I-1.
[129] Promulgation Order No 971 of 25 July 2013 on Local Government.
[130] Statutory Order No 68 of 1 January 2013 on the Municipality Loans.
[131] OH Petersen, 'Regulation of Public–Private Partnerships: The Danish Case' (2010) 30 *Public Money and Management* 175.
[132] A Eldrup and P Schütze, 'Organisering og finansiering af offentlige infrastrukturprojekter. En vej til Økonomisk Vækst og udvikling af den danske velfærdsstat' (2013) *Offentligt-privat partnerskab* 63.
[133] Ibid.
[134] Deloitte, 'Evaluering af vandsektorloven', 15 and 105ff.

6. CONCLUDING REMARKS

The transformation of water utilities from their traditional resource non–efficiency and their high carbon footprint from energy utilization is an important part of the future low carbon society. Taking account of the above-mentioned interdependencies between water and energy together with the development of the new technologies could ensure this. A success in this respect for the EU is very much a matter of the legal design used by the Member States, including the national traditions that exist, and the national authorities that are implementing the legislation.

The EU has not yet adopted a special policy on an integrated energy and water policy addressing all possible policy areas of relevance for the energy-smart water utilities, but as described above the resource and energy efficiency and renewable energy policies of the EU support coordination. As this chapter shows, EU policy and legislation focusing on low-carbon and resource–efficiency will make it possible to ensure an integration of the legal conditions for water and energy services. The Members States have to make use of this possibility, but the Danish legislator fails to do so.

For reasons that have nothing to do with the overall political ambition on a strong low–carbon policy and resource efficiency presented by the Danish Government in its 'Climate Policy Plan. Towards a low carbon society', August 2013 – and agreed by most of the political parties in the Parliament – the Danish regulation of water utilities described above is not focusing on the resource efficiency and the promotion of RES–production. The Danish regulation of the water utilities and their possibilities to use the energy resources is characterised as a near–exclusive reliance on direct regulatory prescription of mandatory rules of pricing, and several restrictions on non–sector related activities. The complex and uncoordinated rules – lacking in flexibility – may be the cause of a major bottleneck for the future of energy–smart water utilities and the shift from a brown to a green economy.[135] There is a need for a new generation of measures that is more flexible. The functionally defined normative systems – with their respective specialized authorities – make it necessary to develop integrative arrangements, which do not currently form part of the legislation and administration of the legislation that are relevant for the Danish water utilities.

In the near future the Danish Parliament will decide whether a revision of the legislation is needed, as it has received the above mentioned rather critical evaluation of the Water Sector Act made by Deloitte based on a mandate from the responsible ministries.[136] It is my recommendation that the criticism in Deloitte's evaluation report is taken seriously and acted upon to ensure better conditions for the development of technologies and the cooperation between

[135] *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication* (United Nations Environmental Programme 2011) 16 outlines its definition and approach to the green economy. The UNEP explains the concept of a green economy as '*one whose growth in income and employment is driven by public and private investments that reduce carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services. These investments need to be catalyzed and supported by targeted public expenditure, policy reforms and regulation changes*'.
[136] Deloitte, 'Evaluering af vandsektorloven'.

the public and the private sectors on innovative water services. The current rules give the Authority a very strong power that has resulted in too narrow short-term economic benchmarking models and a price cap policy with no rooms for investment in RES-technologies, energy efficiency, and environmental improvement. In addition, it is recommended that the future rules will be focused on the promotion of energy–smart water utilities. Such an energy-smart reform is relevant both in respect to the organisational structure and in respect to the rules on water services. The Authority is not the right body to support energy smart production conditions, and the rules on the mandatory separation of the RES–production from the water utilities´ general services are also a barrier to energy-smart water services. The restrictive practice in relation to environmental and energy–related services from the water utilities is neither necessary for the protection of the energy market, nor in the consumers´ interest in affordable prices.

CHAPTER 7

LOCAL ACCEPTANCE AND THE LEGAL FRAMEWORK – THE DANISH WIND ENERGY CASE

BIRGITTE EGELUND OLSEN

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1. INTRODUCTION[1]

A crucial challenge to the development of wind power as well as other renewable energy installations is how to ensure or at least promote local acceptance. The achievement of political targets on the increased share of renewable energy – and in particular wind energy – is facing serious impediments when it comes to local decision-making on wind energy projects due to local opposition. Local acceptance is in this context used to signify that the focus will be on local attitudes towards wind energy projects as opposed to public attitudes towards wind energy in general.[2] Several empirical studies have through case studies identified the main factors influencing local acceptance of wind energy projects. Among such factors are not only the visual interference, but also factors such as decision-making processes, including trust in decision-makers, as well as ownership of a project.[3] Thus, it must be acknowledged that local acceptance is a complex and multifaceted issue that also calls for a careful consideration and design of public decision-making processes as well as other policy instruments or measures. With a wind energy production covering close to 30 per cent of the total electricity consumption Denmark is a country with a very strong record as regards wind power generation. The political ambition is to reach a 50 per cent wind energy share of electricity consumption by 2020 installing further capacity onshore, offshore and near-shore.[4] However, in particular on-

[1] The work of Birgitte Egelund Olsen is linked to the research project 'EnERgioN – Erzeugung, Speicherung und Vermarktung von Erneuerbaren Energien in der Region Nord', funded by the Innovation Incubator Lüneburg. Parts of this chapter build forward on a contribution to the book "Renewable Energy Law in the EU – Legal Perspectives on Bottom Up Approaches" by Peeters, M. and Schomerus, T. (Eds.), Edward Elgar Publishing (forthcoming). The work of Helle Tegner Anker is linked to the research project 'Wind2050 - Multidisciplinary study on local acceptance and development of wind power projects' funded by the Danish Strategic Research Council (2014-2017).

[2] Wüstenhagen et al use the concept of community acceptance referring to the specific acceptance of siting decisions by local stakeholders. Community acceptance together with market acceptance and socio-political acceptance forms a triangle of social acceptance, R Wüstenhagen, M Wolsink and MJ Bürer, 'Social Acceptance of Renewable Energy Innovation. An Introduction to the Concept' (2007) 35 *Energy Policy* 2683.

[3] Haggett identifies five factors as: 1) visual interference/landscape values, 2) social, political, historical context/place attachment, 3) local-global disjuncture, 4) ownership and 5) decision-making processes, see C Haggett, 'Understanding Public Responses to Offshore Windpower' (2011) 39 *Energy Policy* 503.

[4] According to the 2012 Energy Agreement onshore wind energy capacity should be increased by 1800 MW (net 500 MW), offshore with 1000 MW and near-shore with 500 MW.

shore and near-shore wind power projects are facing increasing local opposition, delaying and in some cases even blocking their implementation. Addressing public participation and local involvement in, eg, planning and environmental assessment procedures, has traditionally been seen as an important part of the legal framework. More recently, specific policy measures aimed at promoting local acceptance has emerged in Denmark as well as in other countries.[5] This includes compensation schemes, community benefit schemes and co-ownership schemes. The design of such measures and the interaction with the legal framework is crucial if the ambitious political targets for wind energy capacity are to be met.

This chapter aims to analyse the role of law in addressing local opposition towards wind energy projects based on the Danish wind energy experiences. The objective is to point at relevant characteristics – and potential pitfalls – of the legal and regulatory framework in addressing the issue of local acceptance. The legal aspects are analysed on the basis of the legal framework as well as relevant court rulings and administrative decisions. Furthermore, general observations stemming from public debate and insights into specific wind energy projects form the basis for our analysis and conclusions.[6] How the legal framework and the specific regulatory measures actually affect local acceptance, however, falls outside the scope of this chapter as it would require in-depth empirical studies drawing on a broader range of social science methods.[7]

The chapter starts out with an analysis of the legal framework regarding planning, environmental assessment and public participation focusing on onshore and offshore turbines. Then, we devote attention to specific policy measures aimed at increasing local acceptance, including the compensation, co-ownership and community benefit schemes that have been introduced in Denmark. In a Danish context it is important to distinguish between onshore, near-shore and offshore wind turbines as different rules may apply.[8] Traditionally, there has been a regulatory divide in the coastline where onshore activities have been subject to local decision-making and land use (or spatial) planning, whereas offshore activities have generally been subject to a more sector-based regulation by different state authorities.[9] Such a regulatory divide may in particular create problems in relation to offshore or near-shore turbines that require land-based installations as part of the project.

[5] In for example Germany, since 2009 there has been a been a specific *Gewerbesteuer* scheme, where the relevant trade tax is distributed so that 70 per cent of the trade tax remains with the municipality where the wind farm is located, whereas the municipality where the operator is based receives only 30 per cent of the trade tax, cf Bundesverbandes WindEnergie, Windenergie in Bürgerhand – Energie aus der Region für die Region (2013) available at www.wind-energie.de.

[6] One of the authors of this chapter – Birgitte Egelund Olsen – has since 1 January 2009 been the Chairman of the Valuation Authority of the Region Midtjylland, see more about the Compensation scheme in section 3.1.

[7] Such empirical studies will be carried out under the research project 'Wind2050. A multidisciplinary study on local acceptance and development of wind power projects' funded by the Danish Strategic Research Council (2014–2017).

[8] Local opposition might also be an issue for offshore projects, see Haggett, 'Understanding Public Responses'. See also M Wolsink, 'Near-Shore Wind Power – Protected Seascapes, Environmentalists' Attitudes, and the Technocratic Planning Perspective' (2010) 27 *Land Use Policy* 195.

[9] HT Anker, V Nellemann and S Sverdrup-Jensen, 'Coastal Zone Management in Denmark: Ways and Means for Further Integration' (2004) 47 *Ocean & Coastal Management* 429; and HT Anker, B Egelund Olsen and A Rønne (eds), *Legal Systems and Wind Energy: A Comparative Perspective* (Kluwer Law International 2009) 97–98

2. PLANNING, ENVIRONMENTAL ASSESSMENT AND PUBLIC PARTICIPATION

Planning and environmental assessment procedures are well-known regulatory measures that ensure public participation in decision-making – not only for the purpose of improving the decision-making basis, but also for the purpose of ensuring local legitimacy and acceptance. It has in particular in relation to wind energy projects been put forward that the success depends on the 'degree to which planning regimes stimulate or impede collaborative approaches'.[10] While planning law and planning procedures may differ widely from one country to another, environmental assessment procedures have been subject to legislative initiatives at EU as well as international level. Public participation is a core element in environmental assessment procedures as reflected in both the EIA and SEA Directives[11] as well as in the Aarhus Convention.[12] The implementation of public participation and environmental assessment procedures – and their application in relation to wind energy projects – may however also vary from one country to another.[13] Furthermore, environmental assessment procedures and public participation may often be seen as obstacles from a developer perspective. Thus, there might be tensions around the use of such procedures in general as well as in individual cases. The legal design as well as the actual practices of planning and environmental assessment procedures can be quite important in relation to how well they contribute to reducing conflicts and increasing local acceptance. This may also include issues such as the access to administrative appeals or judicial review – yet such issues will not be analysed in this chapter.

2.1 Spatial planning

An important distinction as regards spatial or physical planning for wind energy development in a Danish context is between the more strategic planning, eg, a positive designation of potential wind energy areas, as opposed to the project planning for individual wind energy projects. Strategic spatial planning is generally well suited for making an overall balancing of different (land use) interests, including landscape characteristics and nature protection as well as the prevalence of wind resources. In particular the latter is important for ensuring effective wind power projects. Strategic planning for potential wind energy areas is – at least from the outset – likely to be less controversial with respect to local acceptance than project planning for individual wind energy projects. Whether strategic planning is also able to reduce local opposition in the subsequent project planning for individual wind energy projects is probably

[10] Wolsink, 'Near-Shore Wind Power'.
[11] Directive 2011/92/EU of the European Parliament and the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment [2012] OJ L26/1 and Directive 2001/42/EC of the European Parliament and the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment [2001] OJ L197/30.
[12] Convention on access to information, public participation in decision-making and access to justice in environmental matters (Aarhus 25 June 1998).
[13] For a comparative study see, eg, HT Anker, BE Olsen and A Rønne, *Legal Systems and Wind Energy. A Comparative Perspective* (Kluwer Law International 2008).

more debatable. Yet, a strategic plan may provide a strong platform for local authorities seeking to justify individual wind energy projects in accordance with the strategic plan – and perhaps to some extent counterbalance local opposition in individual projects.

2.1.1. Onshore wind energy projects

In Denmark planning law and strategic planning has played an important role in the development of wind energy projects onshore. Since, 1994 a specific national planning circular has laid down specific requirements on planning for wind energy projects both at strategic level and at project level.[14] The Circular stipulates that the (strategic) designation as a potential wind energy area is a prerequisite for the adoption of local project plans for individual wind energy projects or for granting a permit to a wind energy project. Thus, the Circular forms the basis for a strategic planning in the form of a positive designation of potential wind energy areas. Most wind energy projects also require the adoption of a local plan (development plan) according to the Danish Planning Act.[15]

Prior to the 2007 local government reform the strategic designation of potential wind energy areas was part of the regional plans adopted by the 13 county councils. The county councils were, however, abolished by the 2007 local government reform, and the designation of potential wind energy areas is now a part of the municipal plans adopted by the now 98 municipalities. This means that the municipalities in general control strategic as well as project planning for onshore wind energy in Denmark. Apparently, the municipalities are facing increasing difficulties with not only the adoption of local project plans for individual wind energy projects, but also with the strategic designation of wind energy areas. It appears that the municipalities – as local authorities – are sensitive towards local opposition.[16] Furthermore, the strategic designation of potential wind energy areas risks being undermined by a project by project approach when it is possible for the municipality to amend the strategic plans on an ad-hoc basis allowing for individual projects that have not been foreseen in the strategic plans.

Thus, the Danish experience is that while strategic planning can be an important element in addressing local opposition, the 'structure' of the planning system and in particular the assignment of competence for strategic planning to higher level authorities is likely to be decisive.[17] It must be noted that Denmark does not have a specific policy that aims to cluster wind energy in large scale areas, rather most wind energy projects are relatively small. This means that there are a relatively high number of small-scale individual wind turbine projects

[14] Now Circular No 9295/2009 on planning and rural zone permit for wind turbines.
[15] Consolidated Act 587/2013 on Planning.
[16] In Denmark, local opposition has put a stop to several wind energy projects that have survived the initial planning phases. Recently, several municipal councils have either withdrawn or significantly reduced their proposed strategic designation of potential wind turbine areas, e.g. the municipalities of Aarhus, Roskilde, Slagelse and Holbaek. This has in some cases coincided with the general local elections in November 2013; see, eg, the news item in the Danish energy newsletter *Nyhedsbladet Dansk Energi* No 11 (2013) 20.
[17] HT Anker, BE Olsen and A Rønne, 'Wind Energy and the Law. A Comparative Analysis' (2009) 27 *Journal of Energy & Natural Resources Law* 145, 163.

which may become a challenge to strategic planning while it at the same time underlines the need for strategic planning.

Another important feature of the Danish national planning circular for wind turbines is the stipulation of a minimum distance requirement to neighbouring dwellings of 4 times the total height of a wind turbine. This means that it is not possible to adopt a plan (strategic or local) or issue a permit for wind energy projects that do not comply with the minimum distance requirement. The distance requirement is specifically aimed at safeguarding neighbour interests.[18] The Circular lays down requirements with the purpose to minimise landscape interference, ie by recommending grouping turbines in an easily comprehensible geometric pattern as well as requiring a specific assessment of cumulative landscape impacts when establishing wind turbines within 28 times the total height from existing or planned turbines. Such measures could be viewed as a type of strategic planning guidelines that are aimed at reducing local conflicts. Yet, there is no doubt that such measures do not in themselves mean that local opposition can be avoided.

2.1.2. Offshore and near-shore wind energy projects

The Danish Planning Act only applies to land areas. There is no similar spatial planning legislation or system for marine areas. Marine spatial planning has only more recently been discussed in Denmark as a response to the newly adopted EU Directive establishing a framework for maritime spatial planning.[19] The EU Directive specifically addresses the achievement of the EU renewable energy targets and consideration of renewable energy production is among the minimum requirements for maritime spatial plans. Furthermore, the EU proposal calls for the early involvement of all relevant stakeholders, including the public concerned.

The current status on planning for offshore wind energy projects in Denmark is based on the 2008 Renewable Energy Act.[20] There are, however, no formal planning requirements in the Act. According to Sec 22 of the Act, the Minister for Climate, Energy and Buildings may designate areas for large-scale offshore wind energy as well as for near-shore wind energy projects. The designation primarily serves the purpose of initiating tender procedures for projects within the designated areas. It is, however, also possible to apply for a permit for projects outside the designated areas. This means that a plan is not a mandatory prerequisite

[18] There are no binding thresholds as regards cast shadow, but it is recommended that the planning should ensure that cast shadow does not exceed 10 hours/year in a guidance note (*Vejledning nr 9296/2009 om planlægning for og landzonetilladelse til opstilling af vindmøller*). Noise standards are laid down in Statutory Order 1284/2011 (*om støj fra vindmøller*) which includes rules also on low frequency noise.

[19] European Parliament and Council Directive 2014/89/EC of 28. August 2012 [2014] OJ L257/135. For a detailed analysis of the legal framework for offshore wind farms, see K Van Hende, *Towards an Integrated Legal Framework for Offshore Wind Farms and Grid Interconnections in the EU Marine Waters* (PhD thesis, Aarhus University 2014).

[20] The 2008 Renewable Energy Act, Act No 1392 of 27 December 2008, has been replaced by Consolidated Act No 1074 of 8 November 2011 on Renewable Energy.

for offshore wind energy projects in Denmark. Nevertheless, the designation of off- and near-shore wind energy areas must be categorised as a kind of plan and it is likely also to determine the location of offshore wind turbines in the future.

As part of the 2012 Danish Energy Agreement it was decided to increase the share of near-shore wind energy with 500 MW.[21] This led to a process headed by the Danish Energy Agency where 15 potential sites were selected for examination. The selection had been based on a number of criteria, including a minimum distance to the coast ranging from 0 to 4 km depending upon the 'sensitivity' of the coastline. For turbines taller than 150 m more strict distance requirements should be applied. Of the 15 sites, the eight most 'cost-efficient' sites were selected for consultation with the municipalities involved. On the basis of this 'consultation' six near-shore sites were selected for tender procedures.[22] However, since there is no formal planning requirement in the Renewable Energy Act there are no formal procedural requirements apart from those associated with the environmental assessment procedures.

From a legal point of view this creates some uncertainty as the practice of the relevant authorities may vary from one case to another. So, despite the fact that public consultation has been carried out as part of the strategic environmental assessment when 'designating' offshore wind energy areas – and more detailed EIA's of individual projects are foreseen – the lack of a formal offshore planning process appears problematic from a legal point of view. While the existing practices of the Danish Energy Agency provides a strategic offshore planning through the designation of potential wind farm areas, there are no requirements as regards project planning offshore. The establishment of offshore (and near-shore) wind farms is subject to a permit process and an associated environmental assessment procedure governed by the Danish Energy Agency. This will in accordance with the EIA Directive (and the Aarhus Convention) involve a public consultation and participation process, see below.

2.2 Environmental assessment procedures

Environmental assessment procedures are generally aimed at improving the decision-making basis, eg by ensuring public participation, and may in different ways influence local acceptance. Generally, a distinction is drawn between strategic environmental assessment (SEA) linked to the adoption of plans/programmes and environmental impact assessment (EIA) linked to the adoption of specific projects. Such requirements are stipulated in the EU SEA and EIA Directives[23] as well as in the Espoo Convention[24] and the Aarhus Convention.[25] An-

[21] The Danish Energy Agreement, Accelerating green energy towards 2020, March 2012.
[22] The six near-shore sites are located more than 4 km from the coast.
[23] Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment [2012] OJ L26/1 (EIA Directive) does not include wind power installations as a mandatory EIA project in Annex I of the Directive, whereas wind power installations are included in Annex II requiring an EIA if the project on the basis of either an individual screening or thresholds is likely to have a significant effect on the environment. Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment [2001] OJ L197/30 (SEA Directive) requires an environmental assessment of plans and pro-

other important environmental assessment requirement follows from Article 6(3) in the Habitats Directive applying to both plans and projects that may have a significant effect on a Natura 2000-site[26] – these rules will not be elaborated upon in this chapter.

2.2.1. Strategic environmental assessment (SEA)

In Denmark a strategic environmental assessment must be carried out for municipal plans, including the strategic designation of wind turbine areas, as well as for local plans in most cases. The EU SEA Directive has been implemented into a separate Act on Environmental Assessment of Plans and Programmes[27] that applies across different sectors and pieces of legislation. This means that the Act applies to plans and programmes adopted according to the Planning Act as well as the Renewable Energy Act and any other piece of legislation. Furthermore, the SEA requirements apply not only to plans and programmes that are formally required by law, but also to (informal) plans and programmes that are drawn up by authorities with the purpose of serving as a basis for administration. This potentially wide scope of the Danish SEA rules were incorporated into the Act as the result of an opening statement from the EU Commission noting that the term of 'administrative provisions' in the SEA Directive was wider than just formal provisions in legislation.[28] The designation of potential wind energy areas both onshore and offshore will thus normally be subject to SEA procedures. As most onshore individual wind energy projects require the adoption of a local (development) plan, SEA procedures also apply for the individual wind energy projects unless the project is in accordance with the strategic plan and the herewith associated strategic environmental assessment. Thus, the distinction between SEA and EIA is not quite clear in Danish legislation and this may cause some confusion in practice – also among the public.[29]

In general, however, there appears to be relatively few controversies associated with the SEA procedure as such. Yet, there has been a few administrative appeal cases in the Nature and Environment Appeals Board challenging SEA of the strategic designation of potential wind

grammes that provide the framework for subsequent project permits, including plans for wind power installations.

[24] The Espoo Convention addresses EIA and SEA in a transboundary context, see Convention on Environmental Impact Assessment in a Transboundary Context (Espoo, 1991). The Convention stipulates mandatory EIA for Annex I projects, including (since 2004) 'major installations for the harnessing of wind power for energy production (wind farms)'. Furthermore, an SEA Protocol on strategic environmental assessment (entered into force in 2010) sets out a requirement for SEA of certain plans and programmes that are likely to have a significant effect on the environment.

[25] The Aarhus Convention indirectly address EIA through requirements of public participation in permit procedures regarding Annex I-projects and other projects (as determined in national law) that may have a significant effect on the environment (Art 6). Public participation as regards plans and programmes are formulated as less strict obligations to make 'appropriate practical and/or other provisions' (Art 7).

[26] Natura 2000-sites are areas designated under the Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora [1992] OJ L206/7 (Habitats Directive) and Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds [1979] OJ L103/1 (Birds Directive).

[27] Consolidated Act No 939/2013 (*om miljøvurdering af planer og programmer*).

[28] Opening statement European Commission 2007/2481, SG-Greffe (2008)D/200845.

[29] The Nature and Environment Appeals Board has accepted that an SEA and an EIA can be carried out simultaneously as long as both sets of rules are complied with, see, eg, MAD2008.435.

turbine areas. The disputes have related to the level of detail in strategic environmental assessment – and the conclusions of the Appeals Board appear to be that it very much depends upon the level of detail in the plans in question.[30] Appeals regarding SEA of offshore designations to the Energy Appeals Board have not yet been seen, possibly due to the lack of formal planning procedures under the Renewable Energy Act.

2.2.2. Environmental impact assessment (EIA)

The Danish EIA rules are somewhat more complicated with one system for onshore projects and another system (or in fact several systems) for offshore projects. For onshore projects the Danish EIA rules are incorporated into the Planning Act[31] and the municipal planning system. This means that in most cases the municipality will be the relevant authority. For certain large scale projects, including wind turbines above 150 m the Danish Nature Agency is, however, the relevant authority. Almost all onshore wind energy projects are subject to a mandatory EIA as the Annex I threshold is turbines above 80 metres or more than three turbines. Smaller projects will be subject to a screening, cf. Annex II of the Statutory Order. Formally the municipality is responsible for carrying out an EIA based on the information supplied by the developer. This means that it is not always possible to distinguish clearly between the information provided (by the developer) and the assessment carried out by the authority, which in some cases might also provide additional information, eg on alternatives. This may give rise to some difficulties in separating views of the developer from views of the authority. From the point of view of promoting local acceptance this approach might be controversial as there is a risk that the authority is not regarded as neutral, but rather as an active proponent of the wind energy project.

For offshore wind energy projects the EIA system is rather different as the rules are incorporated into the relevant sector legislation, ie, the Renewable Energy Act for wind energy projects.[32] There is – as in the EIA Directive – no mandatory EIA requirement for offshore wind energy projects. A screening will be carried out for each project to determine whether the project may significantly affect the environment. It is normally the developer that shall produce an environmental impact statement, but in some cases the Danish transmission system operator, Energinet.dk, will carry out the preliminary investigations and also the associated EIA. This will be the case for the six near-shore projects. Thus, there might also in relation to at least near-shore projects be similar difficulties in separating information provid-

[30] The Nature and Environment Appeals Board in one of the cases rejected claims that more a more detailed assessment was required at the strategic planning level (MAD2011.1761, Decision of 7 July, j.nr. NMK-41-00023, available at www.nmkn.dk), whereas the Appeals Board in a subsequent case on the designation of four potential wind turbine areas found that the assessment of the effects on nature and cultural heritage as regards one of the proposed areas was insufficient (MAD2012.3200, Decision of 16 November, j.nr. NMK-41-00063, available at www.nmkn.dk).

[31] Consolidated Act No 587/2013 and Statutory Order 1654/2013 on EIA (replacing the former Statutory Order 1015/2010 with effect from 1 January 2014).

[32] Statutory Order 68/2012 on EIA of offshore electricity production installations.

ed by the developer from the assessment carried out by the authorities – and consequently the views of the public authorities (or companies) and the private developers.

2.3. Public participation

Both planning and environmental assessment procedures are characterised by a strong element of public participation – most notably reflected in the requirements of the Aarhus Convention as well as in the EIA and SEA Directives.[33] In general, early involvement is considered important to increase local acceptance.[34] Yet, exactly how a potential wind energy project is presented to the public and how participation is carried out is likely to be decisive in each individual case.

In Denmark public participation procedures differ from onshore to offshore projects. Onshore projects are as mentioned above governed by the Danish Planning Act and the municipal planning procedures. This includes an early involvement of the general public in the form of a pre-consultation phase prior to the drawing up of a municipal plan or an environmental assessment as well as a regular consultation period of minimum eight weeks before the adoption of the final plan. In the pre-consultation phase a public call shall be made by the authorities for suggestions based on a short announcement of the proposed plan or development. Local (development) plans are generally not subject to this type of pre-consultation. Yet, individual wind energy projects will nevertheless be subject to a pre-consultation phase before an EIA is prepared. While such an early involvement at least in theory might increase local acceptance, it appears that the municipalities are facing increasing problems with local opposition regarding wind energy projects despite fairly extensive participation procedures. This underlines the multifaceted character of local acceptance and suggests that even fairly extensive public participation procedures may not in themselves reduce local opposition. In this context it might also be noted that in particular local authorities, ie the municipalities, are likely to be more sensitive to responding to local opposition than higher level authorities as pointed out above.

For offshore wind energy projects the only formal public participation procedures are linked to the SEA and EIA procedures. This does not include a pre-consultation phase, but only a consultation after the environmental assessment has been prepared, ie complying with the minimum requirements of the directives. The consultation is carried out by the Danish Energy Agency according to the EIA procedures laid down in a Statutory Order (68/2012). The con-

[33] Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC [2003] OJ L156/17 was adopted with the purpose of implementing primarily the public participation requirements of the Aarhus Convention.

[34] Eg N Hall, P Ashworth and P Devine-Wright, 'Social Acceptance of Wind Farms: Analysis of Four Common Themes across Australian Case Studies' (2013) 58 *Energy Policy* 200; M Wolsink, 'Wind Power Implementation: The Nature of Public Attitudes: Equity and Fairness Instead of "Backyard Motives"' (2007) 11 *Renewable and Sustainable Energy Reviews* 1188; and J Loring, 'Wind Energy Planning in England, Wales and Denmark: Factors Influencing Project Success' (2007) 35 *Energy Policy* 2648.

sultation will be announced in relevant newspapers and on the website of the Energy Agency. A minimum consultation period of eight weeks is stipulated. Although such a system might not appear as accessible from a local citizen perspective it appears that at least the consultation on potential near-shore wind turbine areas did attract comments from local citizens and organisations.[35] Yet, it is not clear to what extent such comments actually influenced the final selection of near-shore wind areas. As mentioned above out of the initial 15 sites, the eight most 'cost-efficient' sites were identified and six of these were then selected after a consultation with the relevant municipalities. For each of the six near-shore areas public participation procedures have now been initiated as part of the EIA procedure. The EIA procedure for the near-shore projects will be carried out in a co-operation between the Danish Energy Agency and the Nature Agency covering both the turbines and ancillary installations on land. As a consequence it has been decided to apply the more detailed EIA (and public participation) procedures of the Planning Act and a pre-consultation phase has now been initiated. Yet, the formal rules underpinning the 'transfer' of procedural requirements outside the scope of the Planning Act do not appear to be in place.

3. SPECIFIC POLICY MEASURES AIMED AT ENHANCING LOCAL ACCEPTANCE

Despite the existence of a wide range of measures which aim, directly or indirectly, to protect the neighbours to wind energy projects from their adverse effects, the fact is that in many countries wind energy projects are increasingly confronted with local opposition which delays and sometimes even wholly prevents their implementation. In a number of countries, initiatives have evolved for local ownership, financial participation in projects or specific local benefits. This has also been the case in Denmark. To ensure more widespread acceptance of wind turbines on land and in near-shore areas, the Danish Renewable Energy Act has introduced specific measures to enhance local support for the establishment of new wind farms or the replacement of older, less efficient ones.[36]

The Act, which entered into force on 1 January 2009, introduces three regulatory measures to promote public acceptance. The first is a compensation scheme, which gives property owners a right to full compensation for the loss of value of their real property due to the siting of wind turbines in their vicinity. The second measure – the co-ownership scheme – imposes an obligation on wind energy developers to offer a minimum of 20 per cent ownership of projects to local citizens. The last measure is a community benefit scheme, which provides funding for

[35] All comments received during the consultation are available at the website of the Danish Energy Agency, see http://www.ens.dk/undergrund-forsyning/vedvarende-energi/vindkraft-vindmoller/havvindmoller/planlaegning-fremtidens.

[36] The first Renewable Energy Act, Act No 1392 of 27 December 2008, has been replaced by Consolidated Act No 1074 of 8 November 2011 on Renewable Energy, with later amendments. An unofficial English translation of parts of the original Act can be found on the website of the Danish Energy Agency, http://www.ens.dk/sites/ens.dk/files/supply/renewable-energy/Renewable%20Energy%20Act%20_VE%20loven.pdf.

projects that enhance local scenic and recreational values. It thus promotes local nature restoration projects or the installation of renewable energy sources in public buildings.[37] The funding derives from the PSO-tariff, which is imposed upon the electricity distributors and paid by every electricity consumer.[38]

The measures all have the same overall objective, which is to promote the development of onshore and near-shore wind energy, but otherwise they represent very different approaches. One approach encourages the financial involvement of local citizens, whereas the others redress the economic injustice which occurs when the common good is served by inflicting some form of a renewable energy facility on a neighbourhood. The compensation scheme implies a direct and individual compensation, while the community benefit scheme entails a more indirect and subsequent compensation of the local community as such.

3.1. The compensation scheme

The aim of the compensation scheme for loss of value to real property is to gain acceptance of wind energy projects from owners of affected dwellings close to a wind turbine site. The reasoning behind the measure is that the neighbours to a wind turbine will supposedly be more ready to accept it if they are compensated for the loss of value of their property. From a wider perspective the reasoning is that economic justice will generate more general acceptance of wind energy projects in local communities. However, there is a very delicate balance between compensation and 'bribery', and local opposition to a specific project may be intensified if compensation is perceived to be bribery.

The Danish scheme takes the view that wind turbines in the vicinity of a property will inflict a loss on the property in question. However, in the USA, recent research has demonstrated that operating wind turbines have not had any measureable impact on home sales prices.[39] There have not been conducted any similar studies in a Danish context, neither before nor after the enactment of the compensation scheme.

[37] See further on the measures to enhance local in the Danish Renewable Energy Act, BE Olsen, 'Wind Energy and Local Acceptance: How to get Beyond the NIMBY Effect' (2010) 19 *European Energy and Environmental Law Review* 239; and BE Olsen and HT Anker, 'Erstatningsordningen for naboer til vindmøller: Erfaringer og fremtidsperspektiver' (2011) 93 *Juristen* 223. See also BE Olsen, 'Regulatory Financial Obligations for Promoting Local Acceptance of Renewable Energy' in M Peeters and T Schomerus (eds), *Renewable Energy Law in the EU: Legal Perspectives on Bottom Up Approaches* (Edward Elgar 2014).

[38] The PSO tariff covers the Danish TSO's costs relating to public service obligations as laid down in the Danish Electricity Supply Act, see Consolidated Act No 1329 of 25 November 2013. The settlement basis for the tariff is the gross electricity consumption.

[39] B Hoen et al, 'A Spatial Hedonic Analysis of the Effects of Wind Energy Facilities on Surrounding Property Values in the United States' (Ernest Orlando Lawrence Berkeley National Laboratory, August 2013). In the study, data from more than 50,000 home sales among 27 counties in nine US states were collected. The homes were within 10 miles of 67 different wind facilities, and 1198 sales were within 1 mile of a turbine. Regardless of model specification, the study showed no statistical evidence that home values near turbines were affected in the post-construction or post-announcement/pre-construction periods.

The compensation scheme obliges wind energy developers to fully compensate the financial loss of any owner of a property who faces more than a 1 per cent decrease of the property value because of the establishment of new wind turbines.[40] The scheme covers all wind turbines except those less than 25 meters in height and offshore wind turbines established following a tender procedure and located in areas for large offshore turbines designated by the Minister.[41] Near-shore wind turbines were, however, included in the scheme in 2013. The scheme has not been applied to any near-shore projects yet.

According to the Renewable Energy Act, owners of dwellings who claim that the erection of a wind turbine will cause a loss of property value must submit claims for compensation to the authorities within 8 weeks of a public meeting held by the wind developer.[42] There is no fee for submitting such a claim. However, owners of dwellings located further than six-times the total height of a planned wind turbine must pay a small fee for the cost of processing a claim for compensation. This fee will be returned if payment for loss of value is granted or agreed.[43]

According to the Act, in principle the amount of the loss of value is determined by agreement between the developer and the owner of the property. If there is no agreement, the decision on the loss of value is referred to the Valuation Authority, which has been established pursuant to the Act to deal with neighbours' claims for compensation.[44] In practice, the decisions are made by the Valuation Authority. So far, very few claims have been settled voluntarily by agreement between wind developers and property owners.

Originally, a major concern of wind developers was the expected increase of the costs of wind development. Prior to the enactment of the scheme, the wind industry estimated that the costs of a wind project would be increased by up to 16 per cent, and a consultancy report commissioned by the Danish Energy Agency predicted estimated losses of value of €80,600 or more per property.[45] However, the level of compensation has been significantly lower than predicted. During the period 2010–2012, the average level of compensation for properties where payment for loss of value was granted was quite consistent, corresponding to approximately €13,500.

Nevertheless, the compensation scheme is still questionable from a local acceptance perspective. First, wind turbines are treated differently from all other large or intrusive infrastructure

[40] Renewable Energy Act, s 6(1) and (3). If the owner of a dwelling has contributed to the loss of value of their property, compensation may be reduced or not payable at all; see Renewable Energy Act, s 6(1). This is the case if, for example, the owner of the dwelling is also the owner of the land on which the windmill is constructed.
[41] Renewable Energy Act, s 6(3). In contrast to the co-ownership scheme, see below in section 3.2., it also covers turbine testing.
[42] Owners of dwellings within a distance of six-times the total height of a planned wind turbine must be given individual notice by the developer. Otherwise, the public meeting must be announced in local newspapers; see Renewable Energy Act, s 9(2).
[43] Renewable Energy Act, s 9(5). The fee is approximately €535.
[44] There is one Valuation Authority per region. Each Valuation Authority consists of a chairperson who satisfies the conditions for appointment as a judge and an expert in valuing real property, in practice a real estate agent; see the Renewable Energy Act, s 7(3).
[45] Orbicon, 'Pilotprojekt til vurdering af muligt værditab for naboer til vindmøller' (Danish Energy Agency, 2008) 20.

projects such as highways, biogas installations and landfill sites. These only give rise to compensation if the activity results in an unreasonable interference which exceeds the 'tolerance limit' (*tålegrænsen*) under nuisance law. This in itself seems to indicate that wind turbines cause a great deal of disturbance even if the public law assessments and the distance requirements for the construction of wind turbines are adhered to, see above section 2.1.1. The scheme thus emphasises the negative local impacts of wind projects and does not focus on the overall societal benefits of the carbon free energy source.

Second, the design of the scheme is not transparent and it gives rise to great difficulties or confused expectations. Experience shows that affected property owners have difficulty in comprehending that it is not the nuisance of the wind turbines as such that is compensated; it is the impact of the wind turbines on property values that is compensated. Furthermore, a neighbour to a wind turbine who does not receive the compensation anticipated will feel being treated unfairly, and may be dissatisfied not only with the decision of the Valuation Authority, the wind farm project and the wind developer, but also with the local authorities and perhaps even with other neighbours. These reactions will not increase local acceptance of wind projects, or lead to greater acceptance of wind energy or renewable energy projects in general, and the disappointment may even lead to legal proceedings.

So far, the case law has not contributed to the transparency of the scheme. With the latest cases rather the opposite. As per January 2014, only nine decisions of the close to 800 decisions of the valuation authorities have been reviewed by the District Courts.[46] Two of the cases have been appealed and assessed by the High Court.[47]

In most of the cases the courts have upheld the decisions and the level of compensation given. However, in four cases the District Courts raised the compensation sum significantly.[48] In two cases, the courts found that the actual nuisance was greater than expected and they decided to increase the level of compensation by approximately 150 per cent. In the other two cases, the court decided to raise the compensation even though the actual impact of the turbines was not greater than the estimated impact. In the first case the compensation was raised by 50 per cent. The members of the Court had inspected the property themselves after the erection of the wind park, and based their decision on their own impression and the opinion of an independent surveyor and a real estate agent representing the neighbour. The decision of the District Court was upheld on appeal to the High Court. In the latest case, the District Court raised the compensation sum from €20,000 in the decision of the Valuation Authority to €266,667. The members of the District Court held that the Valuation Authority had not suffi-

[46] Case No BS 7-368/2010 of 9 March 2012 (District Court Holstebro); Case No BS 7-351/2010 of 9 March 2012 (District Court Holstebro); Case No BS 7-350/2010 of 9 March 2012 (District Court Holstebro); Case No BS 6-242/2011 of 2 April 2012 (District Court Herning); Case No BS 7-1006/2011 of 13 February 2013 (District Court Holstebro); Case No BS 7-465/2012 of 18 September 2013 (District Court Holbæk); Case No BS 7-466/2012 of 18 September 2013 (District Court Holbæk); Case No BS 7-467/2012 of 18 September 2013 (District Court Holbæk) and Case No BS 5-1590/2011 (District Court Randers).

[47] Case of Appeal VL B-0797-12 of 10 September 2013 (High Court West); and Case of Appeal VL B-0798-12 of 10 September 2013 (High Court West).

[48] Case No BS 7-368/2010 of 9 March 2012 (District Court Holstebro); Case No BS 7-351/2010 of 9 March 2012 (District Court Holstebro); and Case No BS 6-242/2011 of 2 April 2012 (District Court Herning).

ciently considered the characteristics of the property. The decision was furthermore based on the opinion of an independent surveyor and a real estate agent representing the neighbour, and the fact that the real estate tax had been reduced by the tax authorities by €200,000 after the erection of the wind farm, which indicated that the wind farm project had caused a significant loss of property value.

The judgments have given rise to a debate about the grounds on which a court can overturn the decision of a Valuation Authority, including whether the opinion of an independent surveyor can outweigh the opinion of an expert member of the Valuation Authority who is also a real estate agent. Based on the existing case law, there is also a debate about whether the courts sufficiently recognize that the assessments of valuation authorities are, by law, based on estimates and that by their nature such decisions will be less accurate than decisions based on assessments made after wind turbines have been erected. In the most recent case, where the level of compensation was raised from €20,000 to €266,667 another problem was revealed. Under the co-ownership scheme the wind project developer had offered the required 20 per cent of the shares in the project to the local citizens and additional shares had been sold to other investors, however all prices had been calculated on the basis of the costs inter alia determined in the decision by the Valuation Authority on compensation for loss of property value and not the subsequent decision in court. The wind energy developer alone will thus be responsible for the down payment of the raised compensation sum.

3.2. The co-ownership scheme

To further promote the local support for wind energy projects, the Danish Renewable Energy Act imposes an obligation on all new wind energy developers to offer a minimum of 20 per cent ownership of each project to local citizens.[49] Developers thus invite members of the local community to participate financially in the project. It is assumed that financial involvement through local ownership can have a positive effect on local attitudes to wind farms. The argument is based on the assumption that a shareholder will focus more on the financial benefits of a wind turbine than on its negative local effects. Local ownership may also promote local dialogue with different interest groups and generate wider understanding of the chosen location and design of the wind energy project. Experience of Danish wind energy projects has shown that there are often more complaints when external investors or large energy companies install wind turbines than when members of the local community do so.[50]

The co-ownership scheme covers all wind turbines that are at least 25 meters in height, including series 0 wind turbines which are the first, small production series of a new type of wind turbine.[51] Offshore wind turbines, which are located more than 16 km from the shore or

[49] Renewable Energy Act, s 13(1).
[50] P Christensen and H Lund, 'Conflicting Views of Sustainability: The Case of Wind Power and Nature Conservation in Denmark' (1998) 8 *European Environment* 1.
[51] New non-series-produced prototype wind turbines and household turbines are outside the scope of the scheme; see Renewable Energy Act, s 13(2).

which are established following a tender procedure and are located in areas designated for large offshore turbines by the Minister for Climate, Energy and Building, are excluded from the scheme. This means that near-shore turbines are subject to the scheme.

The option to buy wind turbine shares is exercised by a tender procedure conducted by the developer in accordance with the detailed framework laid down in the Renewable Energy Act. The shares are only offered to local citizens. The tender procedure must be conducted in the period following project approval and prior to grid connection. The tender is open to citizens who are permanently resident in the municipality where the wind farm is located or, in case of near-shore wind parks, resident in municipalities that have a shoreline within 16 km of the nearest wind turbine. Citizens who live within 4.5 km of the installation site have preferential rights to purchase a maximum of 50 shares.[52] If not all the shares are taken up by residents in the vicinity of the turbine, they are offered to citizens who are permanently resident in the relevant municipality or municipalities.[53]

In order for potential shareholders to have an adequate basis for deciding whether to exercise the co-ownership option, the wind turbine developer must prepare information on the nature and financial conditions of the project or a prospectus in accordance with the specific requirements of the Renewable Energy Act.[54] The sales material must be approved by the competent authority, the Danish TSO, Energinet.dk, as a condition for the wind turbine developer obtaining subsidies for renewable energy generation, including the feed-in premium.[55] The wind turbine developer must explain the sales material at public meetings which must be convened with a reasonable period of notice and announced in local newspapers. Following the public meeting, the shares must be offered for sale for a period of at least 8 weeks.

To promote local ownership, an additional incentive has been introduced specifically for near-shore projects.[56] Developers who can document that at least 30 per cent of a project is locally owned (by enterprises and by citizens) will receive an extra price supplement (DKK 0.01/kWh) during the subsidy period.[57] In calculating the 30 per cent local ownership, developers can include both the shares sold to local citizens (the mandatory co-ownership scheme) and shares otherwise acquired by local citizens or local enterprises. In order to ensure broad ownership, no enterprise or individual may account for more than 5 per cent of the 30 per cent. Companies in the same corporate group count as a single enterprise. Evidence of the 30

[52] Renewable Energy Act, s 15(1).
[53] In the event of an oversubscription for shares, the allocation is made by a draw carried out by Energinet.dk; see Renewable Energy Act, s 16(2).
[54] Renewable Energy Act, s 14. The Act also refers to the Danish implementation of the Directive 2010/73/EU of the European Parliament and of the Council of 24 November 2010 amending Directives 2003/71/EC on the prospectus to be published when securities are offered to the public or admitted to trading and 2004/109/EC on the harmonisation of transparency requirements in relation to information about issuers whose securities are admitted to trading on a regulated market [2010] OJ L327/1 (Prospectus Directive).
[55] Renewable Energy Act, s 13(4).
[56] Renewable Energy Act, s 37a.
[57] This means that a project with at least 30% local ownership can make a lower bid in the public tender. In the Danish Energy Agreement, it has been decided to put out to tender 450 MW of near-shore wind generating capacity before 2020; see The Danish Energy Agreement of 22 March 2012. Another 50 MW has been earmarked for testing turbines.

per cent local ownership must be given once a year in order to retain the extra price supplement.

In general, the co-ownership scheme is not highly valued by wind energy developers. From their perspective it is a bothersome process and it diminishes their profit performance. Nevertheless, the aim of promoting public acceptance is recognised and the scheme has become more widely accepted. The aim of the co-ownership scheme is to involve the local public in projects as co-owners, and it seems that the scheme has stimulated the local citizens' engagement in a number of projects.[58] Of course, one obvious explanation is that wind energy projects are generally good business. Wind energy investments can be very profitable, and experience shows that there is often less opposition when a large number of locals take advantage of the co-ownership option.[59] However, from a local community perspective the scheme has not been a success in all cases.[60]

In some wind energy projects very few shares have been sold, usually because the local community has been very strongly opposed to the specific project. In other cases, the co-ownership option has attracted large investments from a few big investors. By an amendment to the Act, it has been ensured that no investor with a preferential right to buy shares (because they live within 4.5 km from the wind turbine site) may buy more than 50 shares. Another problem has been 'wind energy nomads', meaning investors who buy up neighbouring properties to become neighbours and thus eligible to take part in the co-ownership scheme. However, they terminate their residence when their aim is accomplished. The current framework also contains an in-built conflict of interest for developers since shares that are not sold return to the developer, which weakens the incentive for the developers to sell the shares.

3.3. Community benefit scheme

Similar to the other schemes, it is also the aim of the community benefit scheme to promote local acceptance of the installation of new wind turbines by granting subsidies to local initiatives such as the enhancement of local scenic and recreational values. The reasoning behind the measure is that neighbours to a wind turbine will be more accepting of it if they are compensated for the degradation of their surroundings caused by the turbine.

[58] The Danish Energy Agency's report of 28 October 2011, assessing the first 15 wind energy projects under the co-ownership scheme, showed that in 8 out of the 15 projects all wind turbine shares in the schemes had been sold. The number of shareholders in each project ranged from 5 to 60, with an average of 22 (http://www.ft.dk/samling/20111/almdel/keb/bilag/68/1040227.pdf). In many cases the interest in investing in wind turbine shares has grown significantly since the first projects; see, eg, the news item by AN Bang, 'Naboer investerer i vindmøller i baghaven' ['Neighbours invest in wind turbines in their own backyards'] *Berlingske Business* (16 November 2013).

[59] This can be illustrated by the Nørhede-Hjortmose project, which entails the erection of 22 large wind turbines by a local group of owners. 44,000 shares were offered for sale but more than twice as many could have been sold; see Bang, 'Naboer investerer i vindmøller i baghaven'.

[60] See the *travaux préparatoires*, Comments to the Proposal for an Amendment of the Renewable Energy Act, L 135 (2013).

The scheme is accessible for municipalities that have completed wind energy projects, but subsidies may also be granted to initiatives of local groups provided that the activities are of a more general local public interest.[61] It has to be new activities that have not been launched yet. The subsidies are payable when the wind turbine in question is connected to the grid. However, it is also possible prior to the instalment of the turbine, to make reservations for the funding of activities under the scheme. The subsidy corresponds to 0.05 cent per kWh for 22,000 peak-load hours for each wind turbine. Consequently, one turbine of 3 MW entails an amount of approximately €36,000 under the scheme.

At first hand, the application process seems a bit bureaucratic. Only a municipal council may apply for a subsidy. Thus, the municipal council forwards an application from the municipality or a local group in the municipality to Energinet.dk – the Danish TSO – for a commitment for a subsidy. The application for a subsidy may be submitted in connection with the application for approval to install a wind turbine pursuant to the Planning Act, or at a later stage. Based on the application, Energinet.dk may give a commitment for a subsidy for expenses paid by the municipal council. The subsidy is confined to two types of initiatives, that is:

'construction work to enhance scenic or recreational values in the municipality, and cultural and information activities in local associations etc, in order to promote acceptance of the use of renewable energy sources in the municipality'.

These requirements could be interpreted strictly, not allowing many initiatives to be funded. However, a study of the projects that have been accepted so far clearly proves that this is not the case.[62] Energinet.dk has been rather open towards the support of various projects. Examples of projects that have received a subsidy are bicycle paths, nature restoration projects, renovation of sporting facilities, instalment of renewables (i.a. solar panels or geothermal energy) in public buildings etc. Due to an uncertainty about the scope of application of the community benefit scheme – and probably also a certain lack of information about this funding possibility, especially among the local citizens – the scheme came off to a very slow start. However, it has recently become more widely known and used, and in several local papers, the community benefit scheme has been identified as an important gain of the local wind energy projects. In the municipality that has initiated the largest number of wind energy developments, Ringkøbing-Skjern, approximately €3.9 million have been reserved for future initiatives under the scheme. However, so far only about €375,000 have been allocated to activities under the scheme.

Despite the current lack of success, the community benefit scheme may in time lead to an increased local acceptance of wind energy projects, although it will probably never have any significant influence on the public opinion in the initial phases of planning. Nevertheless, the community benefit scheme has the potential to increase the level of acceptance when the wind turbines have been installed as it may support local initiatives and development provided that

[61] Renewable Energy Act, s. 18.
[62] See (in Danish) the homepage of Energinet.dk, cf www.energinet.dk/DA/El/Vindmoeller/For-kommuner/Sider/default.aspx.

the subsidies under the scheme are earmarked for the affected community and not municipal projects more broadly.

4. CONCLUDING REMARKS

As it appears from the analysis in this chapter Denmark has a fairly detailed legal and regulatory framework aimed at addressing issues of local acceptance in different ways. This includes not only the specific policy measures analysed in section 3, but also the general legal framework as regards planning, EIA/SEA and public participation with some variations as regards onshore, offshore and near-shore wind energy development. Nevertheless, there appears to be an increasing local opposition towards wind energy projects in Denmark and in particular local authorities show increasing reluctance as regards wind energy – in some cases even withdrawing from proposed plans.

In the analysis we have attempted to identify important elements in the legal and regulatory framework that may in it-self influence local acceptance. While the legal design can provide possible explanations it must be kept in mind that local practices eg regarding planning and public participation are likely to be even more important. Thus there is a need for better and more open decisions that take into account the diversity of the stakeholders involved or affected by proposed renewable energy projects. If local concerns are brushed aside or not sufficiently taken into consideration, there will be a risk that opposition and conflicts between the stakeholders involved will intensify, and that the general support for renewable energy projects will fade immensely. In this chapter we have, however, focused on important elements in the legal and regulatory framework on the basis of the Danish experiences.

As regards spatial planning we point at the need to distinguish between strategic planning, eg in the form of designating potential wind turbine areas, and project planning. It appears that strategic planning has been an important element in the development of onshore wind energy in Denmark in the form of positive designation of potential wind turbine areas that may provide a firm standpoint in subsequent planning for individual projects. However, after the local government reform the local authorities (municipalities) are now responsible for both strategic as well as project planning – and the local councils appear to be much more sensitive towards local opposition. Thus both the structure of the planning system and the level of authority may play an important role in relation to addressing local acceptance. Furthermore, the way planning and environmental assessment procedures are integrated may play out differently and also affect local acceptance. In Denmark the legal framework as regards EIA and SEA has been criticised for a lack of logic and for being too complicated. In particular, there is no clear distinction between SEA and EIA and more importantly for EIA's between the information provided (by the developer) and the assessment (by the authorities) of that information. This is in particular the case as regards onshore projects where it may be difficult to separate the views of the authority from the views of the developer, which means that the (local) authority may be perceived as a promoter of the project rather than as a more neutral public decision-

maker. A similar situation may occur as regards near-shore wind energy projects when the EIA is carried out by the Danish TSO, Energinet.dk.[63] Public participation procedures are likely to affect the way local citizens react to wind energy projects. In Denmark fairly extensive public participation requirements, including early 'pre-consultation', are linked to planning and EIA procedures for onshore projects, whereas offshore projects are subject to less extensive – and less formalised – public participation procedures mainly linked to SEA and EIA procedures. However, it appears that the onshore procedures, including a pre-consultation phase, will be used also for near-shore projects despite a lack of formal requirements. This may create some confusion both among the public and the authorities. Yet, it could also be argued that public participation practices are likely to be more important in relation to local acceptance than the formal rules and procedures.

Despite possible adjustments of planning procedures, EIA/SEA and public participation requirements it must be kept in mind that even a well-planned project and extensive public participation is no guarantee for either the acceptance or successful implementation of renewable energy projects. Thus, there might be a need for additional instruments to address local acceptance.

In Denmark, there has been a distinct need to implement further incentives to achieve the planned development in wind energy capacity. The different schemes of the Danish Renewable Energy Act have been in operation for more than four years allowing some conclusions to be drawn concerning the effectiveness of the schemes. From a legal perspective it appears that in particular the compensation scheme is more complex than anticipated. While there has been some minor adjustments of the legal framework the basic construction with a public regulation of compensation from developers to neighbours appears problematic. This is clearly illustrated in the recent court cases where the courts appear to apply different criteria for determining the level of compensation. This may undermine the compensation scheme and it is quite unlikely that the uncertainty will promote confidence in the scheme and thereby local acceptance. The co-ownership scheme appears less problematic from a legal point of view although it is quite clear from the Danish experiences that the legal design of such a scheme is crucial, eg defining the group of potential co-owners. A similar observation can be made as regards the community benefit scheme that the legal framework should contribute to establishing certainty and transparency in such schemes.

From a political perspective the schemes have, however, been regarded as successful. Since the Renewable Energy Act and the specific schemes to promote public acceptance came into force in 2008, the onshore wind power capacity has – taking the size of Denmark into consideration – grown significantly every year.[64] It is however difficult to assess whether the growth

[63] Energinet.dk has been instructed by the Minister for Climate, Energy and Building to carry out the EIA, see Ministerial Order of 4 February 2013.

[64] The onshore wind power capacity was 2821 MW in 2009 as opposed to 3081 MW in 2011 and 3241 MW in 2012, see *Energy Statistics 2009* (Danish Energy Agency 2010) 9; *Energy Statistics 2011* (Danish Energy Agency 2012) 9 and *Energy Statistics 2012* (Danish Energy Agengy 2013) 9. At the same time the total number of wind turbines has decreased, underlining the trend of fewer but larger turbines. Thus, there were 1240 fewer turbines in 2012 than in 2000. see *Energy Statistics 2012* (Danish Energy Agency 2013) 10.

in wind power generation from 21.9 per cent of the domestic electricity supply in 2010 to 33.2 per cent in 2013 is linked to the schemes or whether the development has been spurred by attractive support schemes. There have so far been no comprehensive studies of this and the objection could be made that there is no documentation that the schemes actually have an effect on local acceptance. What can be seen – when leaving out of account the positive numbers – is that the local opposition, also in Denmark, continues to rise despite the special schemes that are in place and the interest groups opposing the development of wind energy have not only increased in number, they have also become stronger and adopted a more professional attitude. Consequently, there is a persistent need to make evaluations of the current schemes, and on this basis consider further adjustments or even new instruments. Such instruments could perhaps involve new ownership designs, such as local partnerships, citizen or consumer driven wind energy projects or wind farms owned by the municipalities.

CHAPTER 8

A BOTTOM-UP APPROACH TO ENERGY TRANSITION IN EUROPE: THE CASE OF 'LOCAL CLIMATE ENERGY PLANS' IN FRANCE

MAGALI DREYFUS

1. INTRODUCTION

The promotion of sustainable energy sources, infrastructures, policies and/or practices requires important systemic changes and consequently the involvement of the entire society. Incentivizing a sustainable energy transition is therefore also a question of governance.

In that regard, the position of local governments[1] is worth considering. In fact, although most of the energy policies are defined at the international and national levels to respond to challenges such as oil shocks or climate change, the actual majority of energy use and its related emissions are decentralized and happen at the local level.[2]

Moreover, local governments have competences in a number of sectors, which are relevant to the energy field, such as land-use planning, transports or the built environment. They are also the knot between different stakeholders. In fact, they interact and cooperate with private actors representative of different types of interests (businesses, non-governmental organisations (NGO), citizens) as well as with public authorities. Thus, they connect the upper levels of governments with their democratic basis, the citizens, and benefit from a strategic position, close to the final energy users. Their mandate is both to implement national, or supra-national legislation, and to define local policies.[3] In sum, local governments often hold important powers in the energy sector and their action can be significant on the supply side as much as on the demand side.

This chapter aims at highlighting whether energy transition can be triggered from the bottom of the policy scale. As a case study, it introduces Local Climate Energy Plans (LCEP), a planning tool created by the French Legislator in order to foster action at the local level, in the climate and energy sectors. LCEPs are instrumental elements of the national environmental strategy. Thus they are also tools doomed to contribute to meet the EU 20-20-20 policy targets and to foster energy transition.

[1] By local governments I refer mostly to the municipal level. But it may be also relevant to other subnational levels of government.
[2] N Eyre, 'Decentralization of Governance in the Low-Carbon Transition' in R Fouquet (ed), *Handbook on Energy and Climate Change* (Edward Elgar 2013) 581.
[3] Here their autonomy varies functions of the level of decentralization in the state and the number of tiers vested with legislative powers.

Through the observation of LCEPs, I argue that there is no real bottom-up process-taking place now, as local practices are not scaled up and still very much depend on national incentives. But polycentric and multilevel governance approaches allow understanding the actions and influence that local governments might have. In particular, they help identifying some modes of governing where local governments have found opportunities to take action in the energy field. On this basis, the observation of LCEPs reveals that local governments take action first and foremost within their own services and assets, or stand as advisors for local stakeholders, from businesses to individuals. This then contributes to incentivizing actions towards energy transition.

This chapter introduces LCEP as an example of local legal tool to foster energy transition. Section 2 sets the conceptual framework while section 3 presents the normative framework. Then section 4 is an analysis of LCEPs and section 5 highlights some results. Against this background, section 6 discusses value of LCEPs and section 7 is a short conclusion.

2. CONCEPTUAL BACKGROUND

Most of the current attention paid to energy issues originates in the discourse on climate change and mitigation. It is also through that sector that scholars have highlighted the role of local governments in environment and energy. They show that local governments have various interests to take action (a) and analyse their position respect to other actors (b).

2.1. Local Governments and Climate Change

As global warming is a worldwide phenomenon, it is often thought that it has to be dealt with at the international level. Yet it is acknowledged that local stakeholders have also a role to play. Early in 1987, the Brundtland Report on 'our common future' included a chapter on cities, underlying their importance to design solutions to promote sustainable development.[4] Then in 1992 during the United Nations Conference on Environment and Development (UNCED) held in Rio, the role of local authorities in meeting global environmental goals was fully recognized and included in Agenda 21, the United Nations (UN) voluntary action plan to promote sustainable development.[5] Lately scholars have slowly turned their attention to climate change and highlighted the importance of the topic for local governments. These are in fact vulnerable to climate change and have to define strategies to cope with its impacts. But they are also heavy greenhouse gases (GHG) emitters, especially urban areas, and there is

[4] *Report of the World Commission on Environment and Development: Our common future* (1987); M Betsill and H Bulkeley, 'Cities and the Multilevel Governance of Global Climate Change' (2006) 12 *Global Governance* 141.

[5] H Bulkeley and M Betsill, 'Cities and Climate Change. Urban Sustainability and Global Environmental Governance' (2003) 35 *Annual Review of Environmental Resources* 229.

therefore a significant potential of reduction if they take action. In particular, energy use is a major source of GHG emissions, themselves source of climate change. Yet many institutions dealing with its management, are located at the local level. Finally, local governments gather resources (economic, human, natural) and hold some powers, which enable them to intervene in relevant activities such as transport, buildings, land-use, waste and water management.

2.2. Multilevel and polycentric approaches to climate change governance

Two important theoretical frameworks highlight the need to consider non-state actors in global environmental governance and the connection between the various stakeholders, in order to tackle the problem at multiple levels. It includes local governments and cities, but also higher levels of governments, individuals and businesses, multinational companies or civil society organisations for instance.

The polycentric systems approach was developed in the sixties by US scholars under the leadership of Elinor Ostrom. It analyses collective action problems involved in the provision of diverse public goods and services. Ostrom sees in climate change a global collective action problem and makes the stand that the polycentric systems approach could be applied to climate change.[6] The author highlights the complexity of finding a global solution to this issue as negotiations on a future treaty show. Instead, she urges to consider the action which can be taken at multiple levels and the benefits it entails. In fact polycentric governance prompts a positive circle of competition between the various actors, which fosters experimentation and mutual learning. This strengthens the trust that others are actually taking action, and not freeriding over the benefits of someone else's commitment. In particular, this appears to be better achieved at small- to medium-scale governance levels where information networks and monitoring are strong.

The polycentric systems approach points out at the benefits, which can be gained from the experience of different stakeholders. Local governments stand as a place of experimentation where the costs and benefits of policies are often carefully assessed. Local planning tools such as LCEPs are therefore an important field of study to identify drivers and barriers of action.

Multilevel governance studies provide another conceptual framework to observe how local governments, in particular cities, contribute to climate change governance. It originates in European studies[7] and emphasises the connections between vertical tiers of government and horizontally organized forms of governance.[8] Yet scholars tend to focus on the role of local

[6] E Ostrom, 'Polycentric Systems for Coping with Collective Action and Global Environmental Change' (2010) 20 *Global Environmental Change* 550; E Ostrom, 'A Polycentric Approach for Coping with Climate Change' (2014) 15 *Annals of Economics and Finance* 71.

[7] A Jordan et al, 'Understanding the Paradoxes of Multi-Level Governing: Climate Change Policy in the European Union' (2012) 12 *Global Environmental Politics* 4366.

[8] Notes 4 and 5 above, and MA Schreurs, 'From the Bottom Up: Local and Subnational Climate Change Politics' (2008) 17 *Journal of Environment Development* 343; J Corfee-Morlot et al, 'Cities, Climate Change and Multi-Level Governance' (2009) *OECD Environmental Working Papers* No 14.

governments while polycentric system approach has a more general perspective and look at a wider spectrum of actors.

Again authors underscore the insufficiency of global solutions to address a problem, which originates in specific locations as a consequence of local political, economical and social processes. So the multilevel governance lens highlights the complexity of the state and also the limit that a mere nationally focused approach may have in understanding limits and drivers, for energy transition in Europe.

3. NORMATIVE FRAMEWORK

To introduce the normative framework within which local governments take action, it is worth adopting the classic top down approach, starting with the supranational level context that is the EU's policies on energy and climate (a), and then the national context of the state here studied, France (b).

3.1. The European normative context

Climate change and energy are two issues, which were specifically addressed for the first time in the 2007 Lisbon Treaty. This Treaty added a reference to the fight against climate change among the objectives of the European environmental policy (Article 191(1) Treaty on the Functioning of the EU (TFEU)). It also created a new title on energy policy (Title XXI, Article 194 TFEU). Article 194(1) provides that among the four objectives of the energy policy lies the promotion of energy efficiency and energy saving as well as the development of new and renewable forms of energy. The environmental and energy policies are both shared competences to which apply the ordinary legislative procedure within some limits defined by the Treaty (Article 192(2)), in particular for fiscal measures (Article194 (3) TFEU). In addition, the subsidiarity principle applies but its scope is limited to the relations between the EU and the Member States, not their decentralized units. In fact, as in traditional international law, in European Law, the principle of national institutional autonomy prevails.[9] Only central governments are held responsible for the implementation, and therefore the violation of European Law. Moreover, the Lisbon Treaty also introduced a provision, which enshrines in the Treaty the principle of institutional autonomy.[10] It is therefore the central authorities, which make sure that European Law is implemented by local authorities.

[9] M Verhoeven, 'The "Costanzo Obligation" and the Principle of National Institutional Autonomy: Supervision as a Bridge to Close the Gap?' (2010) 3 *Review of European Administrative Law* 23.
[10] Art 4(2) TEU, which provides: 'The Union shall respect the equality of Member States before the Treaties as well as their national identities, inherent in their fundamental structures, political and constitutional, inclusive of regional and local self-government.'

Against this background, the 2030 European framework for climate and energy policies does not mention the role of local governments in its strategy. Yet in some sectoral norms, the EU institutions have recommended the Member States to cooperate with their local and regional authorities. For instance, Directive 2009/28/CE on the promotion of the use of energy from renewable sources highlights the different opportunities that a decentralised energy system can create at the local level such as '*local security of energy supply, shorter transport distances and reduced energy transmission losses. Such decentralisation also fosters community development and cohesion by providing income sources and creating jobs locally*'.

Moreover parallel to that, the EU commission has encouraged voluntary actions by mayors. In fact after the adoption of the EU Climate and Energy Package in 2009, the European Commission launched the Covenant of Mayors to endorse and support the efforts made by local authorities in the implementation of sustainable energy policies. These authorities report their targets and action plans in 'Sustainable Energy Action Plans' (SEAP).

In addition to this political support, the EU provides financial support to regional and local governments. Indeed an important number of EU programmes create funding opportunities for subnational governments in their action towards energy conservation (see Table in Annex).

So although the EU is not mentioning formally local governments in its policy framework, it does support their action at the political and financial levels, and acknowledges their role. Yet it is the national level context, which really determines the mission and scope of action of local governments.

3.2. The French normative context

As the national energy policy developed (i), it became apparent that local strategies were necessary. The legislator thus created an obligation to adopt Local Climate Energy Plans (ii).

3.2.1. Climate-Energy National Framework

In France, energy policy falls under the remit of the Ministry of Ecology, Sustainable Development and Energy (MESDE). It is therefore an integrated policy, which tackles environmental and energy issues, as in the EU Climate-Energy Package. It embeds the '20-20-20' EU targets.[11]

There are three major national strategies framing the energy transition policy:

[11] A 20% reduction in EU greenhouse gas emissions from 1990 levels; raising the share of EU energy consumption produced from renewable resources to 20%; a 20% improvement in the EU's energy efficiency.

- The National Plan to Combat Climate Change ('Plan National de Lutte contre le Changement Climatique') adopted in 2000, and amended in 2004 and 2006;
- The National Plan to Improve Energy Efficiency ('Plan National d'Amélioration de l'Efficacité Energétique') adopted in 2000 too;
- And the National Plan for Housing, Built Environment and Sustainable Development ('Plan National Habitat Construction et Développement Durable') of 2002.

Their ultimate objective is to meet the targets set in international agreements such as the United Nations Framework Convention Climate Change (UNFCCC) and the Kyoto Protocol.

Within this framework, the legislator has chosen to involve local governments through the adoption of their own local climate plans, transposing national strategies. Thus since 2004, the first local energy climate plans were drafted, on a voluntary basis at that time.

Then in 2007 an important national participatory process on environmental issues took place. The legislation adopted as a follow up of this national environment round table ('Grenelle de l'Environnement') largely define today's legal framework. Five groups gathered to discuss environmental issues: the State, local governments, NGOs, businesses and trade unions. There were also two months of public consultations (accounting 30 000 participants). The first law adopted within this framework was voted almost unanimously in Parliament on the 23 July 2009, 'Grenelle 1', the second one, 'Grenelle 2', which provided more concrete measures, was voted in 2010.[12]

Since then, the fight against climate change is a 'national priority' (Article L.229-1 Environmental Code). It is also the first objective of the sustainable development national policy (Article L.110-1, III, 1 Environmental Code). The 'Grenelle 2' Act made the adoption of climate plans mandatory for regional and local governments.

Finally 2013 was declared 'Year of Energy Transition' by the then Minister of Ecology, Sustainable Development and Energy, Ms Delphine Batho. This event is mostly inspired by energy sufficiency reasons as the objective is to reduce dependence on nuclear and fossil fuel energies.[13] A framework piece of legislation should be adopted in Spring 2014 to define concrete actions.

3.2.2. Local Climate Energy Plans (LCEPs)

As mentioned above, LCEPs (in French, 'Plans Climat Energie Territoriaux') are a planning tool foreseen by the national legislator (Article L 229-26 Environmental Code). Their adoption is compulsory since 2010 for various levels of governments: *Régions* (first subnational level), *départements* (second subnational level), and *communes* (last tier and lower local gov-

[12] Law of 3 August 2009, 'Grenelle 1'; Law of 10 July 2010, 'Grenelle 2'.
[13] The target is to reduce nuclear in the French electricity production from 75% to 50 % by 2025.

ernments) of more than 50,000 inhabitants. This should lead to the adoption of about 446 plans in total.[14]

Regional and local authorities are free to define the process of adoption of the plans. However the legislator favours public participation and states that people concerned with the implementation of the plan should be heard. The deadline for the adoption of the plan was 31 December 2012. LCEPs are public documents open to consultation by all the citizens, and revised every 5 years. Once adopted the plans must be notified to the central authority represented by regional 'préfets'.

To design their plans, local governments may rely on their GHG Emissions Assessments, another compulsory measure for local governments (L 229-25 Environmental Code).

LCEPs include 3 sections: first, the objectives related to adaptation and mitigation; second, their action plan with a focus on energy issues, and third, a method for the assessment of results. Regarding the action plan, local governments shall adopt measures, which improve energy efficiency and increase renewable energy production. Later, further decrees specified that objectives must be quantified (R 229-51 Environmental Code) in tons of CO_2 saved, energy saving in tons of oil equivalent (toe) or for renewable energies, in power installed or expected production share.

4. ANALYSIS OF LCEPS

This section focuses on the role of law and analyse the LCEPs of urban communities according to a typology of different modes of governing observed in urban climate governance literature: self-governing (ii), Regulating and planning (iii), Providing (iv) and Enabling (v).

4.1. Methodology

To date, 394 LCEPs have been reported to the Observatory of LCEPs.[15] Out of these 394 plans, 14 are in the preliminary study stage, 69 are establishing the assessment of the territory characteristics and stakeholders, 120 are defining the action plan and 161 are in the implementation stage.

In this section, I focus on actions taken in urban communities ('communautés urbaines'). This is one particular kind of local governments established by law in France. There are 16 of

[14] L Thézé, 'Des difficultés pour les collectivités engager à un PCET' (2013) *AJ Collectivités territoriales* 133.
[15] This observatory is managed by the ADEME (French Environment and Energy Management Agency), a public agency under the joint authority of the Ministry for Ecology, Sustainable Development and Energy and the Ministry for Higher Education and Research. It assists public authorities and other stakeholders in encouraging, supervising, coordinating, facilitating and undertaking operations with the aim of protecting the environment and managing energy.

them. They gather more than 450,000 inhabitants.[16] It is the most integrated form of group of communes meaning that urban communities are invested with important tax powers and competences (economic development, land use, social housing, environment protection, water and waste management, transport, energy (gas and electricity) and heating/cooling provision).[17] 11 urban communities have reported their plans to the Observatory.

My analysis of LCEPs focuses on the role of law and the legal tools, which are used by local governments, in order to achieve energy transition.

To do so, I base my reasoning on a typology of different expressions of law developed by scholars applying multilevel governance approach to urban climate policies.[18] These scholars have identified 4 modes of governing where law plays a more or less important role. The first mode is called 'self-governing' and refers to local governments when they take action autonomously on their own activities and assets. The second mode, named 'regulating and planning', deals with the local governments' measures standing within the scope of their legal mandate and which are mandatory for third parties. The third mode, 'providing', focuses on the participation of local governments to the supply or/and provision of services and infrastructures. Finally, the fourth mode is 'enabling' that is activities of information, advice and incentives, undertaken by local authorities, and aiming at raising awareness and changing the behaviours of citizens.

This typology is helpful to observe the local plans. However some activities may overlap over two categories. Moreover from one state to another, depending on the level of decentralisation, local governments may use, to a greater or lesser extent, one of these categories.

The following sub-sections compare actions taken by urban communities in their LCEPs with the modes of governing presented above.

4.2. Self-governing

Self-governing refers to voluntary actions of local governments, over their own activities and assets. These actions may be the result of some national or international incentives, as for instance the participation to networks of local governments aiming at sharing experience on their climate strategies.[19]

[16] Yet they do not have a constitutional status as *communes* or *départements* (Art 72 French Constitution).
[17] However 8 urban communities are smaller as they were formed before the 2010 legal of 450,000 inhabitants threshold.
[18] H Schroeder and H Bulkeley, 'Global Cities and the Governance of Climate Change: What is the Role of Law in Cities?' (2009) 36 *Fordham Urban Law Journal* 313; H Bulkeley and K Kern, 'Local Climate Change Policy in the United Kingdom and Germany' (2004) *Wissenschaftszentrum Berlin für Sozialforschung Discussion Paper* SP IV 2004-103.
[19] Note 5 above.

The LCEPs of the 11 urban communities studied here, have taken numerous measures of that kind. There are three major areas of actions: the built environment, public lightening and mobility. Most of the actions are directed towards reducing the energy use, improving energy efficiency and, as a side effect, to reduce GHG emissions.

To start with, while acting as a consumer, several urban communities have greened their public procurement procedures selecting for their purchase of material and services, companies which could guarantee a certain level of energy efficiency, green technologies and/or the local origin of products. In the public lightening sector, this has led several cities to use LED bulbs or monitoring systems adjusting the lightening to daylight. Other strategies have been more radical such as switching off some districts at night.

They also drafted mobility plans for the staff. Some local governments have established shuttle pick-up services and car-sharing systems to commute to work. Other cities have opted for purchasing clean vehicles for the staff. One city, Lille, pays for the GHG emissions associated to its public agents journeys. These are calculated and then compensated by a public fund, which offsets the emissions through aid to development projects abroad.

Recycling and reducing waste within the offices of administrative services is another frequent strategy.

Most of the measures implemented entail raising awareness and the training of staff for more energy efficient working behaviours (switching lights off, using less paper, recycling waste, avoiding the use of private car to commute).

In their self-governing actions, local governments sometimes stand as role models. This somehow contributes to the fourth form of governing that is ‘enabling’, since it acknowledges the problem as a local priority and thus raises awareness on potential actions to reduce energy use.

4.3. Regulating and planning

This governing mode refers to the most traditional form of law where legal measures set rights and obligations. They are rooted in the authority vested in the local government. Courts may sanction the violation of these measures. Land use zoning, building codes, construction authorizations are the most common tools in this category.

Through regulations and planning, local governments can control the development of the city in space but also economically. This indirectly but significantly affect energy use and GHG emissions. In fact, compact cities appear to be highly energy efficient with lower per capita

GHG emissions.[20] Yet emissions profiles vary from one city to another depending on their activities as well as on their design and governance. A dense built environment and the use of public transport in a big city may result in lower emissions than in a smaller city where the use of private vehicles is more important because of the urban sprawl. Even within one urban area, the household's socio-demographic characteristics influence energy use.[21] Planning and regulation are therefore two key powers for decision-makers.[22] So for instance, Marseille opted in its LCEP for the densification of some urban areas. To do so, it reduced the establishment of private parking spaces on important public transport routes. It also required including life cycle assessment in development planning.

The scope of these powers is very much determined by the administrative structure of a state and its decentralisation level. France can be described as a centralised country although important reforms have been undertaken since the 1980s to empower regional and local governments with wider powers.

Most significantly, recently, the legislator has taken into account the need for greater leeway in the legal tools available to tackle climate change and energy use by local governments. For instance, the new Energy Efficiency Regulation provides that from the beginning of 2012, all new constructions must have a primary energy consumption of less than an average of 50kWh per square meter per year. Moreover, groups of communes are officially responsible for action on the demand side. In fact since 2005, the Energy Policy Framework Act entitles them with the competence of 'support to actions on the demand-side management' (this is yet a mandatory responsibility for urban communities under their environmental protection mandate). Since then, the national legislator allows communes to go beyond the limit of floor area ratio by maximum 20 per cent for buildings (that is up to 30 per cent) demonstrating higher energy performances or having renewable energy tools.[23] The Lyon and Toulouse urban communities have made use of these possibilities and authorized the construction of buildings of a higher floor ratio because of the energy performance of these constructions. In the transport sector, though land-use, action consists in part in converting the roads to softer and/or collective modes of transport. Most of the urban communities have set up bicycles reserved ways. Others have opted for Bus Rapid Transit systems (BRT) dedicating part of the roads to buses. Finally in 2010, the 'Grenelle 2' Act provided that communes, when drafting their mandatory Local Urban Plan, could impose to new and old constructions, works, installations and equipment, some environmental and energy performance standards, higher than the national ones (Article L123-1-5 para 14, Urban Code). This departs from the traditional centralised approach in regulation. It provides local governments with a significant margin of autonomy. For instance, urban plans could require some buildings to have limited yearly energy consumption standards lower than the national one (50 kWhep/sq.m/yearly for new buildings,

[20] M Jenks, 'The Appropriateness of Compact City Concepts to Developing Countries' in M Jenks and R Burgess (eds), *Compact Cities: Sustainable Urban Forms for Developing Countries* (Spon Press 2000) 343.
[21] H Estiri, 'Residential Energy Use and the City-Suburb Dichotomy' (15 August 2012) available at http://ssrn.com/abstract=2226806.
[22] M Dreyfus, 'Climate Change Adaptation in the Cities' in W Leal (ed), *Handbook of Climate Change Adaptation* (Springer 2014).
[23] Act n°2005-781 of 13 July 2005 on the Energy Policy Framework; art L 128-1 to 128-2 Urban Code.

Article 4 Grenelle 1 Act). Yet it is not clear how and when this will be implemented. In fact local urban plans first have to be revised in order to include this new measure; second, they must comply with other local planning tools, which might not be revised at the same time.

4.4. Providing

The provision of infrastructures and services is another way to influence over the cities' development and the practices of energy consumption.[24] For instant a municipal owned company may produce and provide the users with renewable energies.

In many Member States, a lot of public services such as water and waste management, energy provision, transports, housing have been traditionally provided for by local governments. The situation changed with the liberalisation of markets, which allowed new entrants to undertake the same activities. Thus local governments lost a bit of the control they had over these utilities companies and their capacity to direct their activities towards more energy savings and GHG emissions reductions. Yet here again that depends very much on the administrative structure of the state and the level of openness of the energy markets. For instance Germany has traditionally had an important number of multi-utility municipal companies (*stadtwerke*). This is less common in France, where gas and electricity provision have largely by delegated to state owned companies such as former EDF ('Electricité de France') and GDF ('Gaz de France'). But in other sectors such as transport or waste management, local markets are more open.

Moreover in France, there is a tradition of public services delegation at the local level. So a first way to green local governments is to use in their public procurement, environmental selection criteria or technical provisions to foster private initiatives. For instance, Bordeaux introduced in its public procurement, a provision on GHG assessments of products and services purchased.

But local governments can also provide the service directly through their own services, in a private or public status agency. In the urban communities' LCEPs, this mode of governing is most common in the energy sector, although it represents only a small number of local governments at the national scale. For instance, Nantes built up biomass heating plants to provide heating to the city. It also arranged connection to networks, which supply renewable energies.

Urban communities are also working on building new social housing, which are energy efficient, or retrofit old buildings according to energy efficiency standards.

It is worth noticing the variety of legal shapes for public private partnerships, used by local governments to provide their services. Each of them has its benefits. Important ones for environmental services are expertise and technology support as well as financial support.

[24] Note 18 above.

First, in compliance with Directive 2006/32/EC,[25] national and local authorities are encouraged to use energy performance contracting. This is a contract that enables getting financing support to invest into energy saving projects for new or renovated buildings. Performance can be searched over the built environment itself or in the heating, air conditioning, heating water or lightening systems.

Second, several kinds of French public-private partnership help local governments finding technical and financial support from other private stakeholders. A popular form of these public private partnerships are 'SEMs', that is semi public company. They are private entities where the local government remains the major shareholder. This allows combining public and private interests.

In Lille, several cooperative companies have been set up: 'Lilas' manages a car-sharing system; SOLIS aims at spreading solar panels and the use of photovoltaic energy in collective buildings such as schools.

4.5. Enabling

Finally the fourth mode of governing is named enabling. In that context, local authorities act as promoters and advisors to their citizens and local stakeholders. They circulate information on best practices to save energy or use renewable energy. This is an important role because in the end, local governments on their own have a limited share in the ecological footprint of their territory. In addition, although they have competences in a wide variety of relevant sectors, they have limited resources and budget. It is therefore key to act on the demand side, ie final energy users, to promote a transition towards a sustainable energy system.

This enabling mode of governing can take several forms: raising awareness (including acting as a role model) and advising; financial incentives; enhancing participation.

To raise awareness, most of the urban communities set up a local energy bureau which advice individuals who are searching, on a voluntary basis, to reduce their energy consumption. An important aspect of this activity is to demonstrate to the citizens the benefits, mostly economical, associated to energy savings. To that end, almost all the urban communities have made a thermo-mapping of their territory in order to highlight buildings, which are not energy efficient, and offer solutions. Raising-awareness is also achieved through training and education. As in Nantes, many urban communities have trained their staff and created permanent position of local energy counsellors. Schools have engaged into environmental programs to teach children how to save energy (Le Creusot, Dunkerque). Some urban communities have engaged into technological support. For instance one urban community gave some households

[25] Directive 2006/32/EC of the European Parliament and of the Council of 5 April 2006 on energy end-use efficiency and energy services and repealing Council Directive 93/76/EEC [2006] OJ L114/64.

an electricity assessment monitoring system, which allows verifying energy savings, on a daily basis.

In addition, local governments can be a window of good practices for their citizens. They sometimes choose to have self-assigned targets higher than national standards as for instance, Nantes, which aims at a reduction of 30 per cent in GHG emissions per capita by 2025. Some urban communities display public buildings energy consumption to demonstrate potential energy savings through simple practices. Directive 2006/32 supports this role model strategy. It fosters public authorities to take measures on energy consumption in their public procurement procedures and thus ensure the exemplary role of the public sector (Annex VI). The Directive even provides a list of requirements (eg energy performance contracting) that should be included in public procurements and urges Member States to make sure that at least two of them are taken into account.

The energy agencies and bureaux provide technical assistance but also some financial advice. In fact various financial aids are available. In Marseille, the municipality subsidizes the public transports tickets to encourage people to use them. In Nantes financial bonus are given to households, which install renewable energy systems. Moreover, as in all Europe, regions can offer subsidized loans. They act as a warrantor towards the European Investment Bank, for business and individuals in their projects related to energy renovation or renewable energy production.

Finally as the legislator recommended, local stakeholders are to be involved in the decision-making process. This is another way to raise awareness and enhance the legitimacy of the rules adopted. This has proved to be an efficient step for a better implementation of the norms.[26] Local governments have organised workshops and public consultations to invite the people to participate to the decision making process regarding the development of local policies (eg Nantes, Lille).

5. RESULTS

From the observation of LCEPs in urban communities, it appears that some modes of governing are more widespread (a) than others (b). This can be related to the availability of legal instruments observed in each modes of governing (c).

[26] S Godinot, 'Les plans climat énergie territoriaux: voies d'appropriation du facteur 4 par les collectivités et les acteurs locaux?' (2011) 2 *Développement durable et territoires* 2.

5.1. Self-governing and enabling activities are the most common approaches used by local governments.

As authors demonstrated before in different contexts,[27] local governments largely engage in self-governing and enabling activities. This is where they have the widest autonomy, and actions require fewer resources.

In fact, consumption patterns are not only economically driven but also socially and culturally determined. Exemplification and raising-awareness are therefore important aspects of learning and changing behaviours.[28]

Local governments prove to be innovative in these areas and best practices seem to spread quickly from one city to another. In fact some practices are shared among almost all urban communities: setting up a local energy agency or bureau, car and bicycle sharing, thermo-mapping, self-assigned targets higher than national standards, etc.

5.2. Provision as well as regulating and planning are limited by administrative structures.

The provision mode of governing is limited by the structure of the market and regulation and planning by the level of decentralisation. In fact in France, although the market is officially liberalised, and although local governments are the owner of the local network of energy distribution (gas and electricity), local governments are bound by law to delegate the management of distribution to the national company Electricité Reseau de France (ERdF). Only 5 per cent of them can actually manage the network as they wish and thus favour renewable energies. Against this background the scope of action of local governments in energy provision is limited.

Moreover they are conflict of laws. Market rules might hamper environmental protection. For instance, GHG assessments require the gathering of data from the activities of various stakeholders. Yet some private businesses do not wish to reveal them and can find protection under competition law.

However these issues have been tackled last year, during one of the workshop organised for the 'Energy Transition Year' and focused on local governments.[29] The legislator is willing to facilitate the communication of information between energy providers and local governments in the future energy transition law. Moreover to foster innovation, the legislator is planning to create a right to experimentation for local governments in the field of energy. Under the supervision of state authorities local governments could thus be authorized to test innovative measures and enhanced objectives respect to national legislation.

[27] Note 18 above.
[28] Note 2 above.
[29] 14èmes Assises Nationales de l'Energie, 'Les territoires au cœur de la transition énergétique' (Grenoble, 29–31 January 2013).

5.3. Legal instruments and modes of governing

Last, Table 1 shows, functions of the mode of governing, what kind of legal instruments local governments favour.

Table 1: Modes of governing and forms of law

Self-governing	Local governments take action autonomously on their own activities and assets	Green public procurements (green technologies) Ex. Led, regulating system, clean vehicles Internal behavioural policies Ex. Switch of electric devices, car-sharing, selecting waste Financial offsets ex. GHG emissions are co pensated Creation of new service Ex. Shuttle pick up Suppression of service Ex. Switch off the lightening of a district at night
Regulating and planning	Local governments enact measures within the scope of their legal mandate which are mandatory for third parties	Plans and regulations, mandatory and enforceable by the judges
Providing	Local governments participation to the supply or/and provision of services and infrastructures	Contracts and partnerships
Enabling	Local governments promote and advise citizens on a certain policy	Soft measures (campaigning, advertising, institutional agency) Role-model / leadership Self-assigned targets higher than national standards

Source: author, based on Schroeder and Bulkeley, 'Global Cities and the Governance of Climate Change' and Bulkeley and Kern, 'Local Climate Change Policy in the United Kingdom and Germany' (note 18 above).

The table shows that self-governing and enabling allows using softer legal instruments, which implementation is mostly voluntary and has an important learning aspect. On the contrary, regulation, planning and provision are made through harder legal measures, which demand compliance. There is a higher negotiation cost though, given the proximity with a wide variety of private interests. In particular businesses may be reluctant to take action in a very regulated sector. In the end, the harder measures remain therefore in the hand of the national legislator, who controls the leeway awarded to local governments for innovative measures. These results may differ in a different state function of the level of decentralisation.

6. DISCUSSION: WHAT IS THE VALUE OF LCEPS, THE NEW PLANNING TOOL, FOR ENERGY TRANSITION?

This question arises from the fact that LCEPs appear as a new additional tool, to a set of existing local plans, which create an already complex legal context. As a result, there is still a lot of uncertainty regarding the legal force of the LCEPs and local energy transition seems to rely on the voluntarism of local public authorities.

First, there has been no case brought to the administrative courts regarding the non adoption of LCEPs, although they have not all been adopted yet. (Since the deadline of 31 December 2012, 394 were reported to ADEME, out of 446 expected).

Second, LCEPs are part of a set of different planning tools established at the local and regional level, with which they should be compatible (National Climate Plans, RCAEP, and regional/department/local LCEPs). At the same time, at the local level, LCEPs must be combined with existing urban planning tools. Yet there is no clear hierarchy between these instruments, as the law forbids any kind of administrative supervision by a local government over another. To address this issue the future energy transition law is expected to recall the hierarchy set by Grenelle 1 Act (Articles 68 to 70): LCEPs must be coherent with the national objectives and the Regional Climate Air Energy Plans (RCAEP); then urban plans must be coherent with RCAEPs and LCEPs.

Nevertheless the timing issue remains. In fact, these different planning tools are all established at different time. Therefore cohesion cannot be reached at once and it is sometimes necessary to wait for about three years before a planning document is revised and thus put in conformity with LCEP.

The value of LCEPs is also questioned by the observation that urban communities started taking action even before the obligation was enshrined in law. It shows that they are other reasons for local governments to intervene in that field.

One of them is that within the framework of the sustainable development strategy, local governments have already adopted environmental policies, which are relevant in some aspects to mitigation or adaptation, and thus energy. In particular, many local governments have implemented a Local Agenda 21, which is inspiring in the process for the adoption of the new LCEP.

There are also other drivers of actions. For instance, the urban communities of Nantes decided to develop a strategy to reduce its GHG reduction through the promotion of renewable energies in order to respond to energy security concerns. This phenomenon has been observed among local governments already in the 1970s at the time of oil shocks, as well as as later in the 1990s, when the oil prices rose and local governments looked for new ways to reduce their expenses.[30] Moreover, social and economical interests can motivate energy policies. In sever-

[30] Note 26 above.

al urban communities, such as Lille or Nantes the energy transition is also meant to reduce energy poverty and guarantee moderated prices to the poorest part of the population. Finally, energy efficiency and savings can be a method to realise financial savings and thus be able to make new investments, as the urban community of Lille did.

Therefore there are many drivers moving local governments towards energy transition. These other priorities may be strongly felt at the local level, especially the decision makers who have a short political mandate.

However the obligation of adoption of a plan, created by the legislator, seems beneficial to other extents. First, it raises awareness among decisions-makers and lead local authorities to take action when nothing has been done yet. This is probably where LCEPs find their greater 'raison d'être'. It is especially true for the smallest local governments, which lack resources. This was even perceptible among urban communities, where the LCEPs of the biggest cities were most advanced and had concrete actions, while the smallest urban communities seemed to do mostly 'declarations of intention'. Second, it promotes a transversal approach. Energy and environmental issues are cross-sectoral and cannot be devolved to one administrative department only. LCEPs constrain local governments to have a comprehensive, systemic strategy towards these issues. This appears positive also to foster the cooperation of different stakeholders.

7. CONCLUDING REMARKS

LCEPs are still the outcome of a top-down process where there is no real bottom-up process, as local practices are not penetrating upper levels of policies. National policy makers and major private energy providers remain the main actors in the energy transition debate. This is unfortunate given the proximity of local governments with citizens and the need to reach end-users and individuals, which is one of the key elements for the energy transition process. LCEPs appear therefore to be a timid step forward for energy transition in France, but they are a step and an important one in the learning process of the various energy actors.

ANNEX

Table: Community funding for the local development of renewable energies

Activity ***Programme g***	***Budget*** ***Type of Aid***	***Scope of Support***
ALTENER ***Intelligent Energy Europe****	*€16m for 2011 Grants*	*Measures to raise awareness*
Integrated initiatives ***Intelligent Energy Europe***	*€27m for 2011 Grants*	*Measures to organize local participants, provide training and help mobilise local investments to promote energy-independent buildings.*
ELENA Intelligent Energy Europe	*€30m for 2010–2011 Grants*	*Technical assistance and financing of programmes investing in renewable energies and energy efficiency*
FEADER ***Structural funds****	*€5.4bn for 2011 Grants*	*Adding value to agricultural resources on farms through use of renewable energies and energy savings.*
FEDER ***Structural funds***	*€23.3bn for 2011 Grants*	*Technical assistance with renewable energy analysis provided to project owners and managers as well as professional training.*
FSE Structural Funds	*€7.9bn for 2011 Grants*	*Addition to FEDER for training in sustainable development, eg for builders.*

JESSICA Structural Funds	*€1.6bn for 2011* *Stakes, loans, guarantees*	*Support for investment programmes concerning urban development, particularly relating to energy efficiency (communal transport, renovation of social housing, public lighting, etc). Incentives to develop public-private partnerships.*
FEEE* ***LIFE+*****	*€265m pour 2011–2014* *Stakes, loans, guarantees, grants*	*Funding for small-scale urban investment programmes linked to controlling energy demand, energy efficiency and renewable energies.*
NER300 ***Directive 2003/87/EC*****	*€4.5bn to €15/tCO2 for 2013–2020 Grants*	*To subsidise innovative renewable energy projects (eg smart grids in rural or urban environments).*
COOPERATION 7th FPRTD***	*€2.3bn for the theme Energy for 2007–2013 Grants*	*Research*

Source: Jeulin and Delbosc, 2011[31].

[31] M Jeulin and A Delbosc, 'The Role of Sub-National Authorities in Public Support for Renewable Energies – Examples in Europe and France' (2011) *CDC Climate Report* No 30.

CHAPTER 9

INCENTIVISING RENEWABLE ENERGY IN SOUTH AFRICA WITH PARTICULAR REFERENCE TO THE RENEWABLE ENERGY INDEPENDENT POWER PRODUCER PROCUREMENT PROGRAMME

LOUISE DU TOIT[1]

1. INTRODUCTION

Energy generation has played a significant role in South Africa's socioeconomic development and

> has lent prosperity and security to the country by providing heat and power for industry, transportation, and household use. The sector has been largely driven by economic and political forces, which have had a profound impact on energy policies.[2]

Coal has traditionally been abundant and very cheap in South Africa, which has 'encouraged the development of many energy-intensive industries'.[3] Thus, South Africa relies primarily on coal to meet its energy needs, and coal accounts for about 70 per cent of energy supply and more than 90 per cent of electricity generation (as reflected in Figures 1 and 2 below). Therefore, South Africa has a very carbon-intensive economy. However, about 20 per cent of the population does not have access to electricity, and energy demand is continuously increasing.

In response to electricity shortages that were experienced in the country in 2007/2008, the Government published the Integrated Resource Plan for Electricity 2010–2030[4] (IRP 2010–2030) in 2011, which sees electricity capacity almost doubling by 2030.

The IRP 2010–2030 also sees an increased role for renewable energy, which is in contrast to the position a decade ago when renewable energy did not assume much importance. In addition, a number of financial incentives (and disincentives) have been introduced relatively

[1] This paper expands on a forthcoming publication (by the same author) – L du Toit, 'Promoting Renewable Energy in South Africa: An Overview of Recent Legal and Policy Developments' (2014) *South African Journal of Environmental Law and Policy*. This chapter discusses relevant developments until July 2014.
[2] O Davidson, 'Energy Policy' in H Winkler (ed), *Energy Policies for Sustainable Development in South Africa: Options for the Future* (Energy Research Centre 2006) 5.
[3] JN Blignaut and NA King, 'The Externality Cost of Coal Combustion in South Africa', paper presented at the first annual conference of the Forum for Economics and Environment (Cape Town 2002) 4, available at http://www.elaw.org/system/files/Economic%20costs%20of%20coal%20combustion%20in%20RSA.pdf.
[4] Department of Energy, 'Electricity Regulation Act No 4 of 2006: Electricity Regulations on the Integrated Resource Plan 2010–2030' GNR 400 in *Government Gazette* No 34263 (6 May 2011).

recently to encourage a move to a more sustainable energy supply. In particular, the South African government introduced a large-scale tendering programme for renewable energy, the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), to assist in achieving the roll-out of renewable energy in accordance with the IRP 2010–2030. A lot of interest has been expressed in this programme by the private sector (including European Union companies).

This chapter will first provide a brief overview of South Africa's energy sector and energy profile as well as the legislative and policy background. It will then set out incentives that have been introduced to promote renewable energy in South Africa with a focus on the REIPPP Programme and will discuss the progress made thus far in implementing this programme. The chapter will also briefly outline the renewables tendering initiatives that have been implemented in France, which is currently the only European Union (EU) country that makes substantial use of tendering. In the discussion section, the chapter will consider the differences between the two programmes and whether there are any lessons that could be learnt by South Africa as it embarks upon its renewables tendering programme.

2. SOUTH AFRICA

2.1. Overview of South Africa's energy sector

During apartheid, and based on the policy of separate development, the government was concerned with providing 'modern energy services to the "white" population group, which formed 11 per cent of the population, and limited or no services at all to the rest of the population. High priority was given to the needs of the industrial sector because of its role in economic and political security. In general, this meant concentrating on electricity and liquid fuels, as these were crucial to economic and political interests. Security, secrecy and control characterised most of the policies that prevailed'.[5]

State-owned Eskom supplies 95 per cent of South Africa's electricity[6] (while the remaining 5 per cent is generated by independent power producers) and owns the entire transmission infrastructure and half of the distribution network.[7] It therefore holds a monopoly with regard to the generation, transmission and distribution of electricity in South Africa; and the South Af-

[5] Davidson, 'Energy Policy', 6.
[6] P O' Flaherty, 'Presentation to Portfolio Committee on Energy: Update of Eskom's Capital Expansion Programme' (2011) 4.
[7] Municipalities own the other half of the distribution network. J Krupa and S Burch, 'A New Energy Future for South Africa: The Political Ecology of South African Renewable Energy' (2011) 39 *Energy Policy* 6254, 6256.

rican government has acknowledged the 'lack of non-discriminatory open access to key energy infrastructure such as the national electricity grid'.[8]

Towards the end of apartheid, in the late 1980s, Eskom embarked on a programme of 'low-income electrification'.[9] There was overbuilding by Eskom in the 1980s, which resulted in excess capacity and a 55 per cent reserve margin by 1990.[10] It is important to note that electricity prices have remained cheap while no further capacity was required.

In 1994 the new democratically elected African National Congress government embarked upon an intense electrification programme. This was important since soon after the end of apartheid (in 1996) only 58 per cent of South Africa's population had access to electricity, and the statistics were skewed along racial lines, with only 25 per cent of non-urban black households being electrified compared to 97 per cent of non-urban white households.[11] The electrification programme was assisted by the fact that at the end of apartheid, South Africa's 'world-class' electricity supply industry faced few of the barriers usually experienced by developing countries with regard to electrification, including a lack of funding, skills and infrastructure.[12]

The result of the electrification programme was that between 1994 and 2009, 4.9 million households were electrified, and by 2009, 75 per cent of households had access to electricity.[13] By 2013, 84 per cent of households had been connected to the grid.[14] Despite this electrification, many households cannot actually afford the electricity and therefore continue to rely on coal and paraffin.[15]

In 2007/2008 there were electricity shortages and 'load shedding' took place throughout South Africa. This was despite the fact that already in 1998 it was projected by government that 'growth in electricity demand [… would] exceed generation capacity by approximately the year 2007'.[16] This led to the preparation of the Integrated Resource Plan 2010–2030,[17]

[8] Department of Minerals and Energy, 'White Paper on the Renewable Energy Policy of the Republic of South Africa' GN 513 in *Government Gazette* No 26169 (14 May 2004) 26.
[9] B Bekker et al, 'South Africa's Rapid Electrification Programme: Policy, Institutional, Planning, Financing and Technical Innovations' (2008) 36 *Energy Policy* 3125, 3128.
[10] Ibid 3126.
[11] Ibid 3125.
[12] Ibid 3126 and 3128.
[13] Department of Energy, 'Electrification Statistics, 2009', 10–11, available at http://www.energy.gov.za/files/media/explained/statistics_electrification_2009.pdf.
[14] Department of Energy, 'Annual Report 2012/2013', 17 and 21, available at http://www.energy.gov.za/files/Annual%20Reports/DoE-Annual-Report-2012-13.pdf.
[15] *Energy Outlook for South Africa: 2000* (Department of Minerals and Energy, Eskom and Energy Research Institute 2002) xi. See also H Winkler, 'Energy Demand' in H Winkler (ed), *Energy Policies for Sustainable Development in South Africa: Options for the Future* (Energy Research Centre 2006) 29.
[16] Department of Minerals and Energy, 'White Paper on the Energy Policy of the Republic of South Africa' GN 3007 in *Government Gazette* No 19606 (17 December 1998) 41.
[17] Department of Energy, 'Electricity Regulations on the Integrated Resource Plan 2010-2030'. The final Integrated Resource Plan 2010–2030 was preceded by the IRP 1 and the draft Integrated Resource Plan. See Department of Energy, 'Electricity Regulation Act, 2006: Determination regarding the Integrated Resource Plan and New Generation Capacity' GN 25 in *Government Gazette* No 32898 (29 January 2010) and 'Draft Integrated Resource Plan for Electricity', revision 2 (8 October 2010) respectively.

which sets out South Africa's planned electricity expansion programme until 2030, and is discussed further in 2.3 below. As noted in the introduction, the IRP 2010–2030 sees an increased role for renewable energy.

Eskom still holds a monopoly with regard to the generation, transmission and distribution of electricity. However, there have been moves to change this situation, including through the introduction of the Independent System and Market Operator Bill.[18] This is also being achieved through the introduction of the Renewable Energy Independent Power Producer Procurement Programme, in which only independent power producers (IPPs) may participate.

2.2. South Africa's energy profile

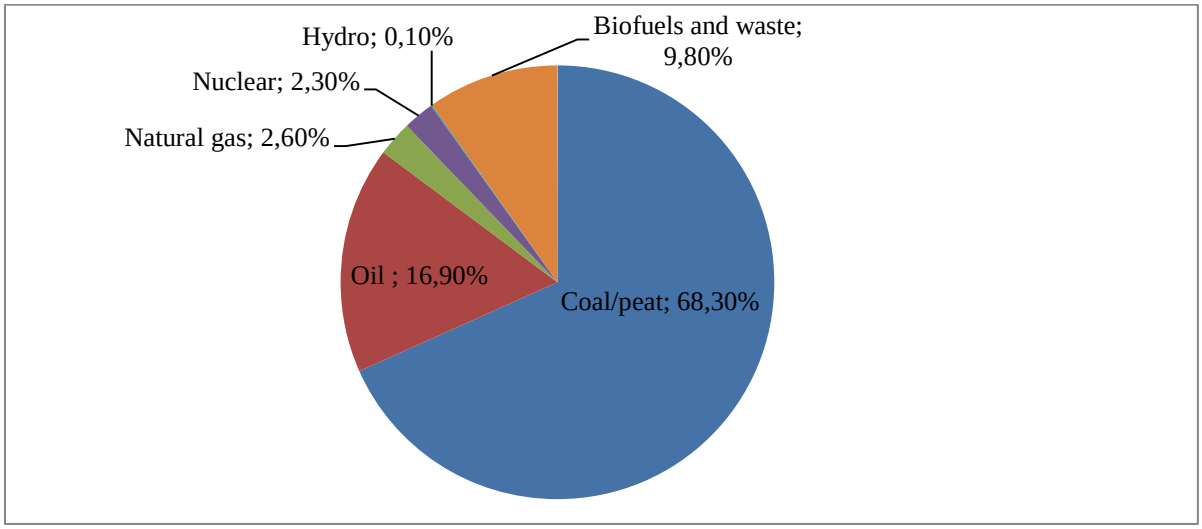
As noted above, South Africa's energy supply is dominated by coal. In 2009, 68.3 per cent of South Africa's total primary energy supply was supplied by coal, while less than 10 per cent was provided by renewable sources. However, the 'biofuels and waste' category (referred to in Figure 1 below) consists primarily of fuelwood used in households, which is harvested unsustainably[19] and so cannot actually be considered 'renewable'. Further adverse impacts of South Africa's energy mix include negative impacts on human health, air pollution, environmental deterioration and long-term unsustainability.[20] South Africa's energy supply is reflected in Figure 1.

[18] In terms of GN 290 in *Government Gazette* No 34289 (13 May 2011). When this Bill comes into effect it will establish the Independent System and Market Operator, which will be a separate entity inter alia responsible for the buying and selling of electricity, which is currently undertaken (primarily) by Eskom. See E Steyn, 'Dawn of a Competitive Electricity Sector for South Africa: The Independent System and Market Operator Bill B 9-2012 – Context, Content and Comment' (2013) 46 *De Jure* 539, 547.

[19] Department of Minerals and Energy, 'White Paper on Renewable Energy Policy', 20. See also Davidson, 'Energy Policy', 5.

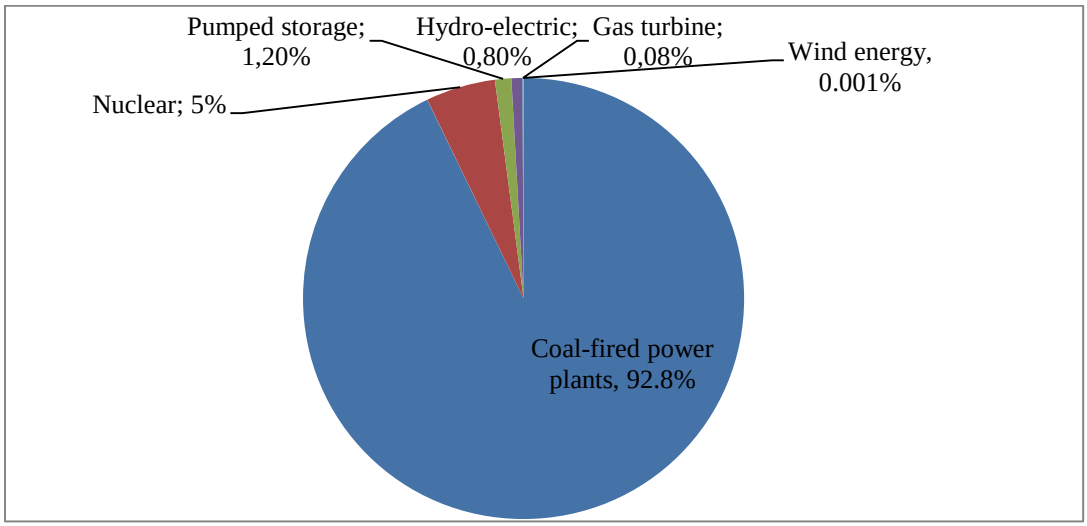
[20] R Spalding-Fecher, W Williams and C van Horen, 'Energy and Environment in South Africa: Charting a Course to Sustainability' (2000) 4 *Energy for Sustainable Development* 8, 10–11.

Figure 1: Total primary energy supply in South Africa[21]



With regard to electricity supply, out of a total of 248 terawatt hours (TWh) of electricity supplied in 2011, only about 0.001 per cent of electricity was supplied by wind energy and 0.8 per cent was supplied by hydropower. On the other hand, 92.8 per cent of electricity was supplied by coal.[22] This is reflected in Figure 2 below.

Figure 2: Electricity supply in South Africa[23]



[21] Statistics obtained from International Energy Agency, 'Share of Total Primary Energy Supply in 2009' available at http://www.iea.org/stats/pdf_graphs/ZATPESPI.pdf.
[22] Eskom, 'Integrated Report 2011', 13.
[23] Figures obtained from ibid.

The energy sector accounts for more than 80 per cent of South Africa's greenhouse gas emissions,[24] and there is thus a strong link in South Africa between energy generation and the emission of carbon emissions. This has made South Africa a relatively significant contributor to climate change, especially in light of its developing country status.

2.3. Overview of legislative and policy background

All law in South Africa must be consistent with the Constitution of the Republic of South Africa, 1996 (the Constitution), which is the 'supreme law' of South Africa.[25] South Africa's Constitution includes a Bill of Rights, which enshrines a number of basic rights such as the right to life and right to equality.[26] The Bill of Rights also enshrines various socioeconomic rights including the right of access to adequate housing,[27] the right of access to health care services and sufficient food and water.[28] It also includes an environmental right (the constitutional environmental right) which inter alia provides that everyone has the right to a healthy environment and 'to have the environment protected, for the benefit of present and future generations'.[29] The Constitution does not provide for a right of access to energy or electricity, which is significant in light of the low levels of electrification at the end of apartheid.

A number of environmental laws have been passed in pursuit of the constitutional environmental right, including the National Environmental Management Act[30] (South Africa's framework environmental legislation), the National Environmental Management: Protected Areas Act,[31] the National Environmental Management: Air Quality Act[32] and the National Environmental Management: Waste Act.[33] None of these is directly concerned with energy or renewable energy.

However, there are a number of statutes that are directly concerned with energy or electricity. South Africa's framework law regulating energy is the National Energy Act.[34] Other legislation and policies relevant to energy and electricity include the White Paper on the Energy Policy of the Republic of South Africa,[35] the White Paper on the Renewable Energy Policy of the Republic of South Africa,[36] the Electricity Regulation Act[37] and the IRP 2010–2030.[38]

[24] Department of Environmental Affairs, 'National Climate Change Response Green Paper 2010' GN 1083 in *Government Gazette* No 33801 (25 November 2010) 13.
[25] Constitution of the Republic of South Africa, 1996, Section 2.
[26] Ibid Sections 11 and 9 respectively.
[27] Ibid Section 26.
[28] Ibid Section 27.
[29] Ibid Section 24(a) and (b).
[30] Act 107 of 1998.
[31] Act 57 of 2003.
[32] Act 39 of 2004.
[33] Act 59 of 2008.
[34] Act 34 of 2008.
[35] Department of Minerals and Energy, 'White Paper on Energy Policy'.
[36] Department of Minerals and Energy, 'White Paper on Renewable Energy Policy'.

Furthermore, due to the close link between energy generation and climate change in South Africa, policy papers dealing with climate change will also have a bearing on decisions regarding energy and renewable energy and vice versa. Such climate change policy papers include the National Climate Change Response Strategy, [39] the Long Term Mitigation Scenarios: Strategic Options for South Africa, [40] the National Climate Change Response White Paper[41] and the Second National Communication under the United Nations Framework Convention on Climate Change.[42]

While these cannot all be discussed fully,[43] the (2004) White Paper on the Renewable Energy Policy of the Republic of South Africa[44] was significant in that it established a target of

> 10,000 [gigawatt hours] GWh (0.8 Mtoe) renewable energy contribution to final energy consumption by 2013, to be produced mainly from biomass, wind, solar and small-scale hydro. The renewable energy is to be utilised for power generation and non-electric technologies such as solar water heating and bio-fuels.[45]

Nevertheless, this target was relatively unambitious since it amounted to only about four per cent of projected electricity demand by 2013.[46]

As noted above, following electricity shortages and load-shedding in 2007/2008, the IRP 2010–2030[47] was published. The IRP 2010–2030 envisages that electricity capacity will almost double from the 2010 level of 44 535 megawatts (MW) to 89 532 MW by 2030.[48] Figure 3 below shows the envisaged contributions of different electricity technologies to electricity supply by 2030.

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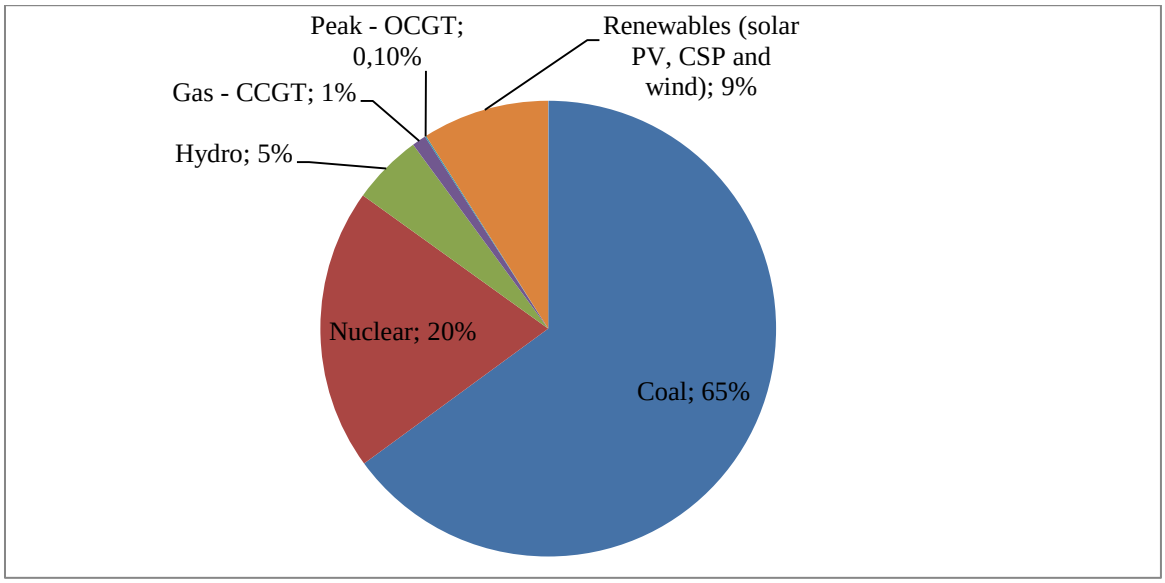
[37] Act 4 of 2006.
[38] Department of Energy, 'Electricity Regulations on the Integrated Resource Plan 2010-2030'.
[39] 'A National Climate Change Response Strategy for South Africa' (Department of Environmental Affairs and Tourism, September 2004).
[40] Scenario Building Team, 'Long Term Mitigation Scenarios: Strategic Options for South Africa', Technical Summary (Department of Environmental Affairs and Tourism, October 2007).
[41] Department of Environmental Affairs, 'National Climate Change Response White Paper' GN 757 in *Government Gazette* No 34695 (19 October 2011).
[42] *South Africa's Second National Communication under the United Nations Framework Convention on Climate Change* (Department of Environmental Affairs 2011).
[43] Policy documents and legislation that are relevant to energy generally are discussed more fully in L du Toit and J Glazewski, 'Energy Law and the Environment' in J Glazewski and L du Toit (eds), *Environmental Law in South Africa*, loose-leaf edition (LexisNexis 2013).
[44] Department of Minerals and Energy, 'White Paper on Renewable Energy Policy'.
[45] Ibid 13.
[46] Ibid.
[47] Department of Energy, 'Electricity Regulations on the Integrated Resource Plan 2010-2030'. It should be noted that the publication of the IRP 2010–2030 was preceded by the publication of various other Integrated Resource Plans, namely Department of Energy, 'Electricity Regulation Act, 2006: Determination regarding the Integrated Resource Plan and New Generation Capacity' GN 1243 in *Government Gazette* No 32837 (31 December 2009); Department of Energy, 'Electricity Regulation Act, 2006: Determination regarding the Integrated Resource Plan and New Generation Capacity' GN 25 in *Government Gazette* No 32898 (29 January 2010) and the 'Draft Integrated Resource Plan for Electricity, revision 2 (8 October 2010).
[48] Figures obtained from Table 3 in Department of Energy, 'Electricity Regulations on the Integrated Resource Plan 2010-2030', 17.

Figure 3: Electricity supply by 2030[49]



It appears from Figure 3 that the contribution of renewable energy technologies (RETs) to electricity supply will increase from less than one per cent currently (as illustrated in Figure 2 further above) to 9 per cent in 2030. While not binding, it could be argued that this establishes an unofficial 'target' of 9 per cent renewable energy. The contribution of coal energy will decrease from about 93 per cent currently to 65 per cent in 2030, while the contribution of nuclear energy will increase from 5 per cent currently to 20 per cent in 2030.[50]

While the legislative and policy background has only been discussed briefly, the promotion of renewable energy in South Africa has moved higher up on the government's agenda as evidenced primarily by the increased role for renewable energy in terms of the IRP 2010–2030. This is also evidenced by the introduction of a number of incentives for renewable energy, which are outlined in the next section. The increased importance of renewable energy is due to a number of reasons including the government's recognition of South Africa's contribution to climate change and due to the recognition of the country's considerable renewable energy resources, which 'have remained largely untapped'.[51]

Unfortunately however, the promotion of renewable energy is not compulsory. The National Energy Act empowers the Minister of Energy to establish 'minimum contributions to national

[49] Figures obtained from Figure 3 in ibid 18.
[50] A draft update to the IRP 2010–2030 was recently published. Department of Energy, 'Integrated Resource Plan for Electricity (IRP) 2010–2030: Update Report 2013' (2013). It is expected that a final update to the IRP 2010–2030 will be finalised during 2014. Until this time the present iteration of the IRP 2010–2030 'remains the official government plan for new generation capacity until replaced by a full iteration' (10).
[51] Department of Minerals and Energy, 'White Paper on Renewable Energy Policy', 11.

energy supply from renewable energy sources',[52] which would arguably act as binding targets. However, the Minister of Energy has not established such minimum contributions and it appears that South Africa's renewable energy aspirations are currently driven by the unofficial 'target' established in the IRP 2010–2030.[53]

2.4. Incentives for renewable energy in South Africa

2.4.1. Introduction

A number of incentives for renewable energy have been introduced relatively recently to promote renewable energy either directly or indirectly, including a tax on the carbon dioxide emissions of new passenger vehicles,[54] levies on the sale of incandescent (non-energy efficient) lightbulbs,[55] rebates for the installation of solar water heaters,[56] special tax treatment for the sale of certified emission reductions obtained from clean development mechanism projects (under the United Nations Framework Convention on Climate Change),[57] a levy on electricity generated from non-renewable sources,[58] lower fuel levies on biodiesel compared to petrol and diesel[59] and the Renewable Energy Feed-in Tariff (REFIT) programme, which was introduced in 2009 but for a number of reasons was never fully implemented.[60] The REFIT was eventually replaced by the Renewable Energy Independent Power Producer Procurement Programme (the REIPPPP) in 2011.

[52] National Energy Act 34 of 2008, Section 19(1)(d).
[53] It has emerged from a number of studies this target is not especially ambitious. See for example M Edkins, A Marquard and H Winkler, 'South Africa's Renewable Energy Policy Roadmaps', Final Report for the United Nations Environment Programme Research Programme: Enhancing information for renewable energy technology deployment in Brazil, China and South Africa (June 2010) 25, which found that achieving 15% RES-E by 2030 'is possible with hardly any change in public and private investments'. In contrast, under the IRP 2010–2030 RES-E will contribute only 9% to electricity supply by 2030.
[54] See GN R770 in *Government Gazette* No 33514 (31 August 2010).
[55] South African Revenue Service, 'Budget Tax Proposals 2009/10', 9, available at http://www.treasury.gov.za/documents/national%20budget/2009/guides/Budget%20Proposals%202009.pdf.
[56] See Eskom, 'Solar water heating supplier list' available at http://www.eskomidm.co.za/residential/residential-technologies/solar-water-heating-supplier-list.
[57] South African Revenue Service, 'Budget Tax Proposals 2009/10', 10. Section 12K(2) of the Income Tax Act 58 of 1962.
[58] See South African Revenue Service, 'Budget Tax Proposals 2008/9', 10, available at http://www.treasury.gov.za/documents/national%20budget/2008/guides/Budget%20Proposals%202008.pdf; and P Gordhan, 'Budget Speech 2011' (23 February 2011) 32, available at http://www.info.gov.za/speeches/budget/speech2011.pdf.
[59] See further GNR 322 in *Government Gazette* No 32014 (20 March 2009), which amended Part 5A of Schedule 1 of the Customs and Excise Act 91 of 1964.
[60] The events surrounding the introduction of the REFIT as well as its eventual replacement by the REIPPPP are discussed in the forthcoming publication – du Toit, 'Promoting Renewable Energy in South Africa'. Environmental fiscal reform in South Africa generally and specific environmentally-related economic instruments are discussed in A Paterson, 'Environmental Fiscal Reform in South Africa: Considering Recent Developments' (2009) 16 *South African Journal of Environmental Law and Policy* 23.

2.4.2. Renewable Energy Independent Power Producer Procurement Programme

The REIPPPP, a renewables tendering programme, was implemented in 2011. It was initially decided that the REIPPPP would apply in respect of 3725 MW of renewable energy.[61] The generation capacity has *inter alia* been allocated to onshore wind energy, concentrated solar power (CSP), solar photovoltaic (PV), biomass and small hydro power projects, as indicated in Table 1.

Table 1: Allocation of generation capacity amongst renewable energy technologies

Technology	**Capacity allocated (MW)**
Onshore wind	1850
Concentrated solar thermal	200
Solar photovoltaic	1450
Biomass	12.5
Biogas	12.5
Landfill gas	25
Small hydro	75
Small projects	100
Total	3725

Source**:** Information in Table 6 obtained from http://www.ipp-renewables.co.za/

The tendering process is quite onerous and involves two stages. In the first stage, bidders are required to meet 'minimum threshold requirements in six areas', namely environment, land, economic development, financial, technical, price and capacity.[62]

With regard to 'economic development' alone bidders for wind energy projects are required to meet minimum thresholds in respect of 17 different criteria, including that at least 12 per cent of South Africa-based employees must be citizens from local communities, and that at least 12 per cent of the shares in the project company must be held by 'black people'[63] (being a broad term used in South African legislation to refer to people of African, Coloured and Indian descent).[64] Furthermore, project developers must contribute at least one per cent of project

[61] This is 'broadly in accordance with the capacity allocated to Renewable Energy generation in IRP 2010–2030'. See L Prinsloo, 'Nersa Concurs with Renewable Bidding Process' *Engineering News* (10 August 2011); T Creamer, 'Glitches and Pleasant Surprises as Renewables Tender Gets under Way' *Engineering News Online* (3 August 2011). Of the total amount of 3725 MW, 100 MW has been reserved for small projects.

[62] Department of Energy, 'Preferred Bidders – Window 2' available at http://www.ipprenewables.co.za/#page/1209; and A Eberhard, 'Feed-In Tariffs or Auctions?' (2013) *ViewPoint* Note No 338, 2.

[63] Eberhard, 'Feed-In Tariffs or Auctions?', 2–3. See also L Tait, HL Wlokas and B Garside, *Making Communities Count: Maximising Local Benefit Potential in South Africa's Renewable Energy Independent Power Producer Procurement Programme (REIPPPP)* (International Institute for Environment and Development 2013) 11, table 1.

[64] Broad-Based Black Economic Empowerment Act 53 of 2003, Section 1.

revenue to communities.[65] Bidders are only considered in the second stage if these requirements have been met.

These economic development criteria highlight the importance of social upliftment and 'broad-based black economic empowerment' (BBBEE). The latter is a programme that is concerned with increasing 'broad-based and effective participation of black people in the economy'.[66] These are strong government priorities due to South Africa's history of apartheid and its developing country status.

In the second stage, bidders are evaluated on their bid prices and economic development objectives, which include factors such as job creation potential, local content and socioeconomic development.[67] The bid prices and economic development objectives are weighted 70 per cent and 30 per cent respectively.[68] Government has indicated that the bid price will only be considered if a bidder demonstrates that economic development objectives will be met.[69]

Bidders are required to pay a non-refundable amount of R15,000 (approximately €1028),[70] to have access to the request for proposal (RFP) documents. Thereafter, bidders are required to provide a 'bid guarantee' of R100,000 (approximately €6854) in respect of each megawatt of (proposed) installed capacity.[71]

Five bidding periods were established and were originally scheduled for November 2011, March 2012, August 2012, March 2013 and August 2013.[72] However, there have been delays and all of the bidding windows have been pushed back. For instance, the deadline for the third round of bidding occurred in August 2013 instead of in August 2012.[73]

The bid prices for the first round of bidding were capped at R1150 per megawatt hour (/MWh) (€78.66/MWh) for wind energy, R2850/MWh (€194.93/MWh) for solar PV, R2850/MWh (€194.93/MWh) for CSP, R1070/MWh (€73.19/MWh) for biomass, R800/MWh (€54.72/MWh) for biogas, R840/MWh (€57.46/MWh) for landfill gas, and R1030/MWh for

[65] Tait, Wlokas and Garside, *Making Communities Count*, 12.
[66] Broad-Based Black Economic Empowerment Act 53 of 2003, Preamble.
[67] Department of Energy, 'Preferred Bidders – Window 2'. See also T Creamer, 'Renewables Project Developers Pore over Tender Documents' *Engineering News* (4 August 2011).
[68] Department of Energy, 'Preferred Bidders – Window 2'. See also L Steyn, 'A Renewed Focus on Green Energy' *Mail & Guardian Online* (12 August 2011). It should be noted that under the Preferential Procurement Policy Framework Act 5 of 2000, price is weighted at 80 or 90%. See section 2(1).
[69] T Creamer, 'Renewables Bidders Conference Reflects High Levels of Interest in SA Roll-out' *Engineering News* (14 September 2011).
[70] At the time of writing (late April 2014) the exchange rate was €1:ZAR14.60.
[71] Creamer, 'Renewables Project Developers Pore over Tender Documents'.
[72] Steyn, 'A Renewed Focus on Green Energy'.
[73] Capacity has also been allocated separately to small projects as seen in Table 1 above and Table 3 below. The REIPPPP for small projects is running separately and has recently commenced. See Department of Energy, 'Small Projects Renewable Energy Independent Power Producer Procurement Programme' available at http://www.ipp-smallprojects.co.za/.

small hydro (€70.46/MWh).[74] These capped prices were similar to the tariffs that were approved under the REFIT programme in 2009.[75]

In addition to entering into a power purchase agreement (PPA) with Eskom and an implementation agreement with the Department of Energy, bidders are also required to apply to Eskom to be connected to the grid.[76] Bid prices are guaranteed for 20 years.

In the first three rounds of bidding, capacity has been allocated to preferred bidders in respect of wind energy, small hydro, solar PV, CSP, landfill gas, and biomass projects.[77] The approved projects represent 3916 MW of renewable energy capacity.[78] The REIPPPP has also resulted in price reductions with regard to a number of RETs, as illustrated in Table 2. Prices have decreased significantly in respect of solar energy and wind energy.

Table 2: Average bidding prices under Windows 1, 2 and 3 of the REIPPPP

Renewable energy technology	**Price (per kilowatt hour)**		
	Bidding window 1	Bidding window 2	Bidding window 3
Solar photovoltaic	R2.758	R1.645	R0.881
Wind	R1.143	R0.897	R0.656
Small hydro	n/a	R1.030	n/a
Concentrated solar power	R2.686	R2.512	R1.460[79]
Landfill gas	n/a	n/a	R0.84
Biomass	n/a	n/a	R1.246

Source: Data obtained from Department of Energy, 'Renewable Energy IPP Procurement Programme: Window two Preferred Bidders' (21 May 2012) and Department of Energy, '(Renewable Energy IPP Procurement Programme) Bid Window 3: Preferred Bidders' Announcement' (2013).

In 2012 the Minister of Energy, in consultation with the National Energy Regulator of South Africa, determined that an additional 3200 MW of renewable energy capacity should be procured.[80] This RES-E (electricity generated from renewable energy sources) capacity will also be procured through the REIPPP Programme[81] and has been allocated to different renewable

[74] See for example J Nganga et al, *Powering Africa through Feed-in Tariffs: Advancing Renewable Energy to Meet the Continent's Electricity Needs* (World Future Council, Heinrich Böll Stiftung and Friends of the Earth England, Wales & Northern Ireland 2013) 56, Table 1.
[75] Eberhard, 'Feed-In Tariffs or Auctions?', 2.
[76] Creamer, 'Renewables Bidders Conference'.
[77] See Department of Energy, '(Renewable Energy IPP Procurement Programme) Bid Window 3: Preferred Bidders' Announcement' (2013).
[78] Ibid.
[79] It is noted however that '[t]his pricing basis is not comparable with Bid Windows 1 and 2', ibid.
[80] In order to 'contribute towards energy security and to facilitate [the] achievement of the renewable energy targets of the Republic of South Africa'. See Department of Energy, 'IPP Procurement Programme 2012: Determination under section 34(1) of the Electricity Regulation Act 4 of 2006' GN 1074 in *Government Gazette* No 36005 (19 December 2012) Part A, Regulation 1.
[81] Ibid Regulation 3.

energy technologies, including onshore wind, concentrated solar power and solar photovoltaic, as indicated in Table 3.

Table 3: Additional renewable energy capacity to be procured through tendering

Technology	**MW**
Onshore wind	1470
Concentrated solar power	400
Solar PV	1075
Small hydro (≤ 40MW)	60
Biomass	47.5
Biogas	47.5
Small projects	100
Total	3200

Source**:** Data obtained from Department of Energy, 'IPP Procurement Programme 2012: Determination under section 34(1) of the Electricity Regulation Act 4 of 2006' GN 1074 in *Government Gazette* No 36005 (19 December 2012) Part A, Regulation 5.

It should be noted that this is in accordance with the renewable energy capacity that has already been allocated under the IRP 2010–2030,[82] and the 'additional' renewable energy capacity allocated simply relates to the fact that more renewable energy is to be procured under the tendering programme.[83] The procurer is the Department of Energy, which is charged with conducting the procurement programme and the electricity is to be purchased from IPPs by Eskom.[84]

2.4.3. Comments on the implementation of the REIPPP Programme thus far

Bidding for the first three windows of the REIPPPP has been finalised and financial closure has been reached for the first two windows of the programme. The deadline for financial closure for the third window was in July 2014. It is thus still relatively early in the programme and so far only a couple of projects that were approved in the first window (for which bidding closed in November 2011) have been connected to the grid.[85] As appears from Table 2, the tariffs awarded in the first window are generous compared to the tariffs that have emerged in subsequent bidding windows. The submission of bids for the fourth round of bidding is due to take place in August 2014.[86]

[82] Ibid Part A, Regulation 1.
[83] Ibid Part A, Regulation 3.
[84] Ibid Part A, Regulations 7–10.
[85] See for example N Odendaal, 'REIPPPP First-Window Project Connected to the Grid' *Engineering News Online* (16 September 2013).
[86] Department of Energy, 'Renewable Energy Independent Power Producer Procurement Programme' available at http://www.ipprenewables.co.za/#index.php.

The REIPPP Programme has stimulated significant interest. For instance, while only 1473 MW of capacity was available for allocation in the third bidding round, bids received amounted to 6023 MW of capacity.[87] It has thus been argued that the REIPPPP 'can be considered a success',[88] which can be attributed to several reasons including that the programme was 'well designed',[89] '[h]igh standards were set',[90] thresholds and targets for local content objectives have been strengthened in subsequent bidding rounds,[91] there has been a positive response from the local capital market[92] and furthermore, '[p]roject bidders are required to incorporate a tax of 1 percent of project revenues that will go into a government renewable energy fund to support subsequent procurement programmes'.[93]

While transaction costs were initially high, they have decreased in the second round and were expected to decrease even more in further rounds.[94]

The percentage of local content has increased significantly from the first to the third rounds of bidding[95] and it has been reported that there has been 'progress in the establishment of local manufacturing nodes that produce some of the components for solar and wind farms' in South Africa.[96]

On the other hand, it has been noted that (with regard to the first bidding window) 'cumbersome programme administration has led to serious delays exceeding the timelines initially set, forcing investors to extend financial guarantees for the project at additional cost, and thus undermining the economic forecasts on which the bid succeeded'.[97] It has also been reported that the 'size and complexity of the REIPPP program stretched available legal and financial advisory services to the limit'.[98] Furthermore, transaction costs under the REIPPPP have been high for government and bidders.[99]

It has been reported that the onerous requirements of the REIPPPP would tend to favour larger IPPs, which are able to 'absorb the extra costs', rather than 'smaller, community-led projects'.[100] Indeed, prospective IPPs under the REIPPPP are required to put up a significant

[87] Department of Energy, '(Renewable Energy IPP Procurement Programme) Bid Window 3'. In addition in the second round of bidding, for 1044 MW renewable energy capacity procured, bids were submitted to the value of 3233 MW. See Department of Energy, 'Preferred Bidders – Window 2'.
[88] Eberhard, 'Feed-In Tariffs or Auctions?', 4.
[89] Ibid 5.
[90] Ibid.
[91] Ibid.
[92] Ibid 5–6.
[93] Ibid 6.
[94] Ibid 4.
[95] Department of Energy, '(Renewable Energy IPP Procurement Programme) Bid Window 3'.
[96] M Gosling, 'Go-ahead for 19 New Energy Projects' *Cape Times* (13 May 2013).
[97] Nganga et al, *Powering Africa through Feed-in Tariffs*, 57.
[98] Eberhard, 'Feed-In Tariffs or Auctions?', 6.
[99] Ibid.
[100] Nganga et al, *Powering Africa through Feed-in Tariffs*, 57. See also B Msimanga and AB Sebitosi, 'South Africa's Non-Policy Driven Options for Renewable Energy Development' (2014) 69 *Renewable Energy* 420, 423.

amount of money before a tender is even awarded. Furthermore, most projects are likely to have international support and it has been reported that 'the 'added value' (high-tech materials and skilled labour) is taking place outside of South Africa through international firms'.[101]

Furthermore, with regard to BEE requirements, it has been reported that due to the lack of qualified firms, 'some specialised renewable energy BBBEE companies are being set up by elite South Africans to take advantage of the thresholds and therefore benefit from involvement in a number of projects'.[102] This would arguably not lead to the benefits of the programme reaching the intended beneficiaries.

It was noted that prices in the first two rounds of bidding were high compared to other countries and that a balance should 'be struck between the promotion of economic development and prices'.[103] However, as can be seen in Table 2, prices have decreased significantly in the third round, so this concern may no longer be valid. It does remain to be seen whether projects approved in the third and later rounds will be viable in light of the significantly reduced tariffs.

The next section will consider renewables tendering in the European Union context.

3. RENEWABLES TENDERING IN THE EUROPEAN UNION

3.1. Introduction

At the outset it can be noted that renewables tendering is not prevalent in the EU. The dominant financial support schemes for renewable energy are the feed-in tariff and the renewable obligation, the latter often combined with the option to trade renewable energy certificates.[104] While renewables tendering was previously the dominant financial support scheme in the United Kingdom and in Ireland it was replaced in both of these countries.[105] No country in the EU relies solely on renewables tendering, and where renewables tendering is employed, it operates in conjunction with other financial support schemes.

Since France is the only EU that makes 'substantial' use of tendering (though combined with the use of feed-in tariffs),[106] renewables tendering in France is considered as a comparative

[101] Nganga et al, *Powering Africa through Feed-in Tariffs*, 58.
[102] Ibid.
[103] Eberhard, 'Feed-In Tariffs or Auctions?', 4.
[104] M Ragwitz et al, *OPTRES: Assessment and Optimisation of Renewable Energy Support Schemes in the European Electricity Market. Final Report* (Intelligent Energy Europe 2007) 17. See also V Lauber, 'The European Experience with Renewable Energy Support Schemes and their Adoption: Potential Lessons for Other Countries' (2011) 2 *Renewable Energy Law & Policy Review* 120.
[105] The unsuccessful experience of the United Kingdom with regard to renewables tendering, under the Non-Fossil Fuel Obligation, is described inter alia in C Mitchell and P Connor, 'Renewable Energy Policy in the UK 1990–2003' (2004) 32 *Energy Policy* 1935 and J Lipp, 'Lessons for Effective Renewable Electricity Policy from Denmark, Germany and the United Kingdom' (2007) 35 *Energy Policy* 5481.
[106] Ragwitz et al, *OPTRES*.

example. The discussion of France is unfortunately limited to some extent by the availability of relevant documents and reports in English.

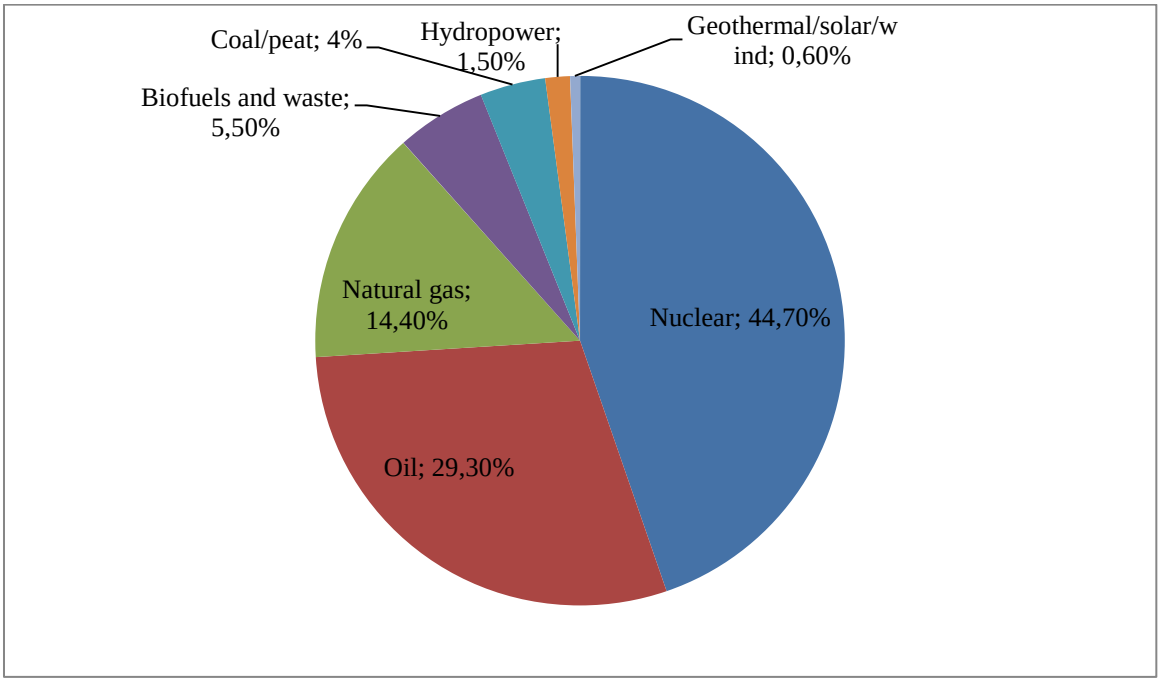
The following section will first set out energy and electricity supply in France. It will go on to briefly outline the legislative and policy background in France and thereafter describe renewables tendering initiatives in France.

3.2. France

3.2.1. Energy supply

Energy supply in France is dominated by nuclear energy. However, oil and natural gas also contribute meaningfully to the energy supply, as reflected in Figure 4 below.

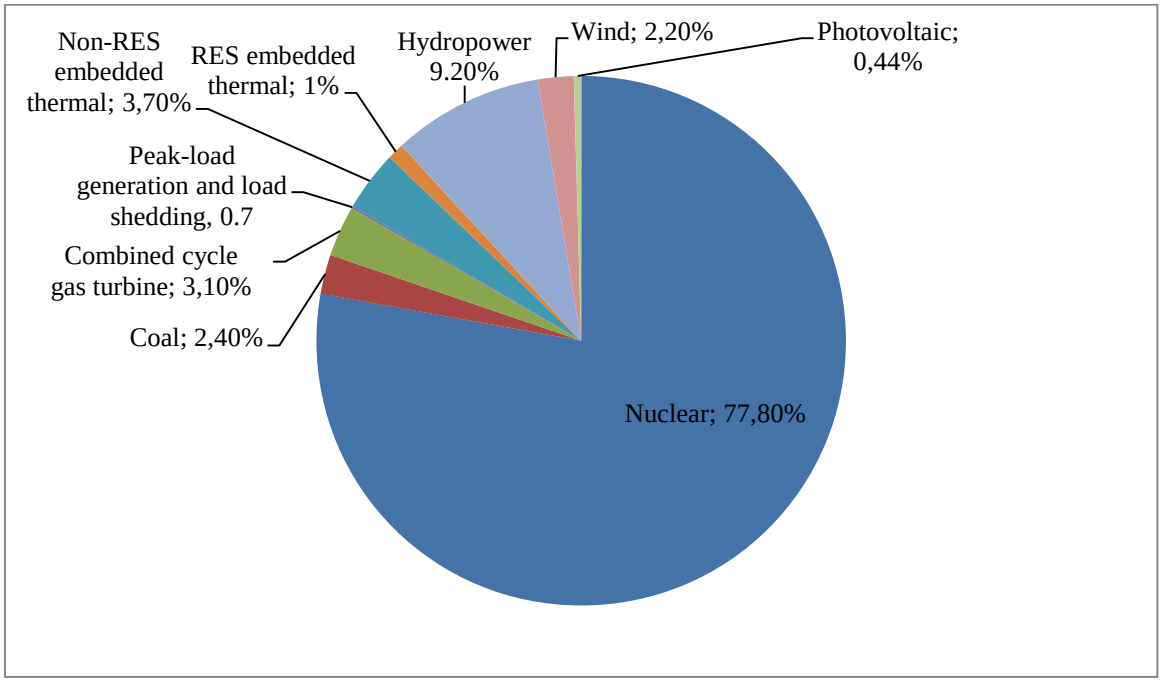
Figure 4: Total primary energy supply in France[107]



Nuclear energy accounts for the bulk of France's electricity supply as reflected in Figure 5 below. However, renewable energy technologies also make a small contribution.

[107] International Energy Agency, 'Share of Total Primary Energy Supply in 2011' available at http://www.iea.org/stats/WebGraphs/FRANCE4.pdf.

Figure 5: Total electricity supply in 2011[108]



The energy and electricity supplies of South Africa and France thus differ quite markedly. In South Africa, the dominant source of energy and electricity is coal, which makes a very minor contribution to the energy and electricity supplies of France. On the other hand, nuclear energy is dominant in France. However, other energy technologies, including renewable energy technologies, make a meaningful contribution.

3.2.2. Overview of legislative and policy background

There are a number of relevant environmental and renewable energy policies in France. While it is not possible to discuss these fully, some of these are briefly outlined.

France's obligations with regard to renewable energy (and climate change) are guided by policies at the international and regional levels. At the international level, France has committed to reducing its emissions by 20 per cent below 1990 levels by the end of 2020 in terms of the Kyoto Protocol to the United Nations Framework Convention on Climate Change.[109] Furthermore, in terms of the European Directive 2009/28/EC France is required to achieve a

[108] Figures obtained from *Generation Adequacy Report on the Electricity Supply–Demand Balance in France* (Réseau de Transport d'Electricité 2012) 85.
[109] See United Nations Framework Convention on Climate Change, Doha amendment to the Kyoto Protocol, Art 1: Amendment A.

share of 23 per cent of renewable energy sources in final energy consumption by 2020.[110] This Directive is implemented primarily through the national 'Grenelle laws on national commitment to the environment', namely 'Grenelle I law' and 'Grenelle II law'.[111]

The Energy Law of 2005 set a target of 10 per cent renewable energy (in total primary energy supply) and 21 per cent of RES-E by 2010.[112] By 2007 France had achieved 12 per cent of RES-E consumption.[113] However, this target has been overtaken by the EU target (of 23 per cent renewable energy by 2020).

The EU target has been confirmed in the multi-annual investment plan (the Programmation Pluriannuelle des Investissesments or PPI).[114] The multi-annual investment plan also sets targets for the development of renewable energy capacity in France. The following targets for 2020 have been set: 19 gigawatts (GW) of onshore wind, 6 GW of offshore wind, 5.4 GW of solar energy, 2.3 GW of biomass and 3 GW of hydropower.[115] If the targets set out in the multi-annual investment plan are not attained, the Minister of Energy may invite tenders in order to meet these targets.[116] Tenders for renewable energy are launched by the Ministry of Energy and overseen by the Energy Regulatory Commission (Commission de Régulation de L'énergie or CRE) 'within the framework of the multiannual investment plan (PPI) for electricity generation'.[117]

Other relevant laws and policy documents include Law No 2000-108 (Act on the modernisation and development of public electricity supply), Décret No 2002-1434 (Decree regulating the tendering procedure for the construction of renewable energy plants)[118] and the National Renewable Energy Action Plan.[119]

[110] Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC [2009] OJ L140/16 (RED) Annex I.
[111] Law No 2009-967 of 3 August 2009 is known as Grenelle I law and Law No 2010-788 of 12 July 2010 is known as Grenelle II law. See CA-RES Concerted Action Renewable Energy Sources Directive, *National Summary Reports* (2013) 1, available at http://www.ca-res.eu/fileadmin/cares/public/Reports/National_Summaries/France_CA-RES_2nd_National_Summary_2013.pdf.
[112] Law No 2005-781 of 13 July 2005. See *Energy Policies of IEA Countries: France 2009 Review* (International Energy Agency 2010) 93.
[113] Ibid.
[114] Ibid 98.
[115] See Commission de Régulation de L'énergie, 'Programmation plurianuelle des investissements (PPI)' available at http://www.cre.fr/glossaire/programmation-pluriannuelle-des-investissements-ppi, Ministère de l'Écologie, de l'Énergie, du Développement durable et de la Mer, 'National Action Plan for the Promotion of Renewable Energies 2009–2020: In accordance with Art 4 of European Union Directive 2009/28/EC (2010) 100, Table 10b; and *Energy Policies of IEA Countries: France 2009 Review*, 94.
[116] C Najdawi, 'Promotion in France (Legal Sources on Renewable Energy)' (16 July 2014).
[117] D Laffaille et al, 'The Regulator's Role in the Integration of Renewable Power in Distribution Grids', CIRED Workshop, (Lisbon, 29–30 May 2012) 1.
[118] See Najdawi, 'Promotion in France' for a list of relevant laws and decrees.
[119] Ministère de l'Écologie, de l'Énergie, du Développement durable et de la Mer, 'National Action Plan'.

3.2.3. Renewables tendering

As noted above, renewables tendering operates in conjunction with a feed-in tariff programme. There are also a number of other financial support mechanisms for renewable energy in France.[120] It appears that there has not been a consistent approach to tendering and a number of different tenders (and tender programmes) have been launched over the years. These have arguably had limited effectiveness.

In 1996 the French government launched a tender programme, 'Eole 2005', which was intended to lead to the construction of between 250 and 500 MW of wind energy by 2005.[121] However, the programme resulted in the development of only 70 MW, despite the submission of tenders for the amount of 324MW.[122] The Eole programme was replaced in 2001 by a feed-in tariff programme.[123]

Further tenders were launched in 2004 in order to encourage investment in large-scale renewable energy projects. Tenders were launched in respect of 200 MW of solid biomass, 50 MW of biogas, 500 MW of offshore wind energy and two separate tenders for 500 MW (each) of onshore wind energy. By mid-2009 'only one offshore wind park had obtained a permit (near Veulettes-sur-Mer on the Normandy coast)'.[124]

At the end of 2008 a tender was launched for solar PV, with the object of developing 300 MW of solar PV before 2011. In late 2011 tenders were announced for solar energy projects of more than 100 kW.[125] It appears that a new tender programme for large-scale solar energy projects was launched towards the end of 2013 (for a total of 120MW per year), as the previous tender programme was considered to be 'unsatisfactory'.[126] Furthermore, tenders have been launched each year since 2008 in respect of large renewable heating systems.[127] A tender programme also applies in respect of ten existing large-scale hydropower projects with a total capacity of 5300 MW. Tenders for the modernisation of these power plants were to be announced in 2012 and awarded by 2015.[128]

The most significant tenders have been launched relatively recently in respect of large-scale offshore wind energy projects. In July 2011 the government announced a tender for three gigawatts of offshore wind energy. The government identified the relevant sites where

[120] Examples of other renewable energy-related laws and policies in France can be accessed at http://www.iea.org/policiesandmeasures/renewableenergy/?country=France.
[121] The Eole 2005 programme is discussed in A-R Laali and M Benard, 'French Wind Power Generation Programme EOLE 2005: Results of the First Call for Tenders' (1999) 16 *Renewable Energy* 805.
[122] A Nadaï, '"Planning", "Siting" and the Local Acceptance of Wind Power: Some Lessons from the French Case' (2007) 35 *Energy Policy* 2715, 2717.
[123] A Jobert, P Laborgne and S Mimler, 'Local Acceptance of Wind: Factors of Success Identified in French and Germany Case Studies' (2007) 35 *Energy Policy* 2751, 2753.
[124] *Energy Policies of IEA Countries: France 2009 Review*, 95.
[125] See A Lapierre and A Bélisaire, 'European Renewable Energy Incentive Guide – France' (January 2013) available at http://www.nortonrosefulbright.com/knowledge/publications/66831/european-renewable-energy-incentive-guide-france.
[126] N Choudhury, 'France Announces 138 Winners of National Solar Tender' *PV Tech* (5 June 2013).
[127] *Energy Policies of IEA Countries: France 2009 Review*, 95.
[128] Lapierre and A Bélisaire, 'European Renewable Energy Incentive Guide'.

construction would take place, namely Saint-Nazaire, Saint-Brieuc, Courseulles-sur-Mer, Fécamp and Le Tréport.[129]

Bidders had to meet various minimum eligibility criteria, such as strong technical expertise.[130] Significant financial guarantees were required, namely €10,000 per megawatt of installed capacity with regard to 'the studies and preliminary construction works' and €50,000 per megawatt of installed capacity in respect of 'the studies and works leading to the commissioning'. These guarantees are released following development milestones and on final commissioning.[131] A financial guarantee of at least €50,000 per megawatt of installed capacity was also required in respect of decommissioning and site rehabilitation costs.[132] The tenders were evaluated on specific criteria, namely price (40 per cent), industrial aspects (40 per cent) and environmental impacts and impacts on existing activities such as fishing and transport (20 per cent).[133]

Two gigawatts of offshore wind energy were awarded in April 2012. The remaining one gigawatt was not awarded due to insufficient competition.[134] The winning bidders were two consortia made up of on the one hand Électricité de France (EDF), Dong Energy and Alstom and on the other, Iberdrola, Eole RES and Areva. The tenders have a value of €7 billion.[135]

Successful bidders entered into power purchase agreements with the government-owned electricity provider, the EDF, for a period of 20 years.[136] The transmission system operator (TSO) is responsible for connecting the installations to the grid, while the successful bidders are responsible for the costs of connection, which will be included in the relevant tariffs.[137] The offshore wind turbines will be constructed between 2015 and 2018.

In March 2013 the French government announced a tender for 1 GW of capacity. The deadline for the submission of bids was in November 2013 and the results were announced in May 2014.[138] The entire bid was won by a consortium made up of GDF Suez, EDP Renewables, Neoen Marine and Areva. Similarly to in the first round, factors considered in the selection process were the price of electricity generated, industrial and social aspects, environmental

[129] See J Thomas, 'Renewables Development in France' (14 November 2012) available at www.irena.org/DocumentDownloads/events/2012/November/Tariff/2_Julien_Thomas.pdf.
[130] Ibid.
[131] J Buhart and N Lafont, 'France's First Offshore Wind Tender' *Global Energy Review* (31 August 2011).
[132] Ibid.
[133] Thomas, 'Renewables Development in France'. The relevant documents (in French) are available at http://www.cre.fr/documents/appels-d-offres/appel-d-offres-portant-sur-des-installations-eoliennes-de-production-d-electricite-en-mer-en-france-metropolitaine.
[134] See Lapierre and A Bélisaire, 'European Renewable Energy Incentive Guide'.
[135] See Thomas, 'Renewables Development in France'.
[136] Buhart and Lafont, 'France's First Offshore Wind Tender'.
[137] IEA – Renewable Energy Technology Deployment, 'Offshore Wind Support Policies: France. Capitalising on Renewables' (27 September 2012) available at http://iea-retd.org/wp-content/uploads/2012/10/14-Grenon-France-offshore-wind.pdf.
[138] G De Clercq, 'UPDATE 2 – France Awards $5.6 bln Offshore Wind Tender to GDF-Led Consortium' *Reuters* (7 May 2014).

aspects, as well as the potential impacts of such plants on fishing activities.[139] The electricity price for the new wind farms was capped at €220/MWh.[140]

In general, there is no standard contract duration, and this is specified in the invitation to tender.[141] Electricity suppliers are obliged to enter into power purchase agreements with the successful bidders and to pay the prices specified in the successful tenders.[142] These costs are ultimately borne by end consumers who pay a levy – the Contribution au Service Public de l'Electricité (CSPE) – four times per year.[143] Grid operators are required to apply to the relevant distributor to be connected to the grid and must conclude several agreements with the distributor including a grid connection contract.[144]

3.2.4. Comments on renewables tendering in France

Since renewables tendering operates alongside the feed-in tariff programme and various other financial incentives, it is not possible to clearly isolate the impacts due to renewables tendering.

Nevertheless, it appears that there has generally not been a very coordinated approach to renewable energy tendering initiatives in France. Tenders have been launched relatively sporadically and most programmes have been relatively small-scale. Furthermore, tendering programmes that were launched a decade ago were not very effective in that they did not achieve the desired capacity installations. For instance, development under the Eole 2005 has been described as 'trifling',[145] and this programme was followed by the adoption of feed-in tariffs.[146]

A more coordinated approach seems to have been introduced with regard to the recent tendering programme for offshore wind energy. It has been noted that despite the constraints, especially the financial guarantees and the uncertainty regarding the purchase price, there has been a positive response from both French and international companies.[147] It has also been noted that [t]he success of the new regime […] and its effects on the landscape of the French offshore wind energy industry should appear more clearly by the beginning of 2012'.[148] How-

[139] KPMG, 'Taxes and Incentives for Renewable Energy: France' available at http://www.kpmg.com/global/en/issuesandinsights/articlespublications/taxes-and-incentives-for-renewable-energy/pages/france.aspx.
[140] Ibid.
[141] In terms of Art 1 of Decree N° 2002-1434 'Decree regulating the tendering procedure for the construction of renewable energy plants'. See C Najdawi, 'Tenders (Appels d'offres)' (16 July 2014) available at http://176.9.160.135/search-by-country/france/single/s/res-e/t/promotion/aid/tenders-appels-doffres/lastp/131/.
[142] In terms of Art 1 of Act N° 2000-108 'Act on the modernisation and development of public electricity supply'. See Najdawi, 'Tenders (Appels d'offres)'.
[143] In terms of Arts 5 and 15 of Act N° 2000-108. See ibid.
[144] KPMG, 'Taxes and Incentives'.
[145] Nadaï, '"Planning", "Siting" and the Local Acceptance of Wind Power', 2715.
[146] Ibid 2718.
[147] Buhart and N Lafont, 'France's First Offshore Wind Tender'.
[148] Ibid.

ever, the offshore wind projects will only start to be commissioned from 2015. It thus remains to be seen how effective this programme will be in achieving its targets.

4. DISCUSSION

The two country examples discussed above differ substantially in various regards, including in terms of their levels of socioeconomic development and national priorities, which have implications for their energy profiles and energy policies.

In South Africa, a developing country that is overcoming the legacy of apartheid, important priorities are socioeconomic development and social upliftment. Electrification is key to achieving these objects. Increasing levels of electrification have also resulted in the need for increased capacity. It was seen that South Africa relies primarily on coal to meet its energy needs, which has resulted in an extremely energy- and carbon-intensive economy. Since there was previously an oversupply of electricity capacity (due to overbuilding in the 1980s), electricity has traditionally been extremely cheap. This has made it difficult to move away from conventional (coal-generated) energy.[149] However, following the capacity expansion programme, electricity prices have been increasing significantly. For instance, tariffs have increased from 18 cents per kilowatt hour (approximately 1.24€cents/kWh) in 2007 to 65c/kWh (approximately 4.46 €cents/kWh) in 2013.[150]

In France, a developed country, there are no urgent electricity expansion needs. The primary source of energy and electricity is nuclear energy, which is relatively expensive. However, nuclear energy is considered a relatively 'clean' source of energy, and therefore France has a 'cleaner' energy profile than South Africa.[151] Drivers for developing renewable energy in France include the fact that France has binding international and regional obligations with regard to reducing its greenhouse gas emissions and developing renewable energy capacity. A further driver is the desire of the French government to boost wind energy, especially offshore wind energy, due to the fact that it lags behind other countries in this regard.[152]

In comparison, South Africa is moving from a base of (traditionally) cheap and plentiful coal. Thus, renewable energy is seen to be comparatively expensive. However, the situation is changing as the costs of coal are increasing, while the costs of renewable energy are decreasing (as evidenced by the decreasing tender prices, reflected in Table 2). As noted above, drivers for increasing renewable energy in South Africa include the acknowledgment of South

[149] See J van Heerden et al, 'Searching for Triple Dividends in South Africa: Fighting CO2 Pollution and Poverty while Promoting Growth' (2006) 27 *Energy Journal* 113, 115, who note that one concern with regard to reducing emissions in South Africa is that it will negatively impact economic growth.
[150] See Eskom, 'Integrated Report 2011', 15 and Eskom, 'Interim Integrated Report 2012', 13.
[151] For instance, France's level of per capita emissions is 5.04 tonnes of carbon dioxide per capita (tCO_2/capita) compared to 7.27 tCO_2/capita in South Africa. *Key World Energy Statistics 2013* (International Energy Agency 2013) 51 and 57.
[152] Buhart and N Lafont, 'France's First Offshore Wind Tender'.

Africa's relatively high level of carbon emissions and the fact that South Africa has significant renewable energy resources, which have not yet been exploited.[153] However, South Africa has no binding renewable energy obligations.

With regard specifically to the tendering programmes of France and South Africa, it is important to note that in South Africa the tendering programme is the primary driver of renewable energy development, while in France the tendering programme is only one aspect of France's renewable energy development efforts. Furthermore, in France tendering is only invoked if the targets set out in the multi-annual investment plan are not being achieved. Even though direct comparison is not possible, it is nevertheless interesting to consider the differences between the two programmes.

In South Africa it is required as part of the tendering procedure, and before a decision is made regarding the successful bidders, that bidders carry out studies including feasibility studies and environmental impact assessments. In France feasibility studies and environmental impact studies are only carried out after the successful bidders have been announced.[154] Therefore, these studies are only carried out once payment is guaranteed. However, as noted above, large financial guarantees are required under the French offshore wind tendering programme in respect of studies and preliminary works. Therefore, bidders in France are also required to make significant financial commitments before the awarding of tenders.

While in South Africa feasible sites are identified by prospective bidders, in France (at least in respect of the offshore wind tendering programme), the government has identified the appropriate sites. This could save costs for prospective bidders. The financial guarantees required in France are much larger than those required in South Africa. However, in light of the different circumstances of the two countries, this is arguably appropriate. It is also significant that in France large guarantees are required in respect of decommissioning and site rehabilitation. Such guarantees are not required under South Africa's REIPPPP, which could have implications for the environment. The provision of such financial guarantees could perhaps be considered in the South African context, possibly only in regard to projects of a certain size.

In France it also appears that utilities may compete in the tendering programme, which is evidenced by the fact that the French (part government-owned) utility, the EDF, has won tenders under the offshore wind energy programme. This is not the case in South Africa. Due to the monopoly of government-owned Eskom with regard to the generation, transmission and distribution of electricity, an important priority in South Africa is increasing competition and increasing the penetration of IPPs. The exclusion of (government-owned) utilities is thus appropriate in the South African context at least at present.

In France, large consortia have been the successful bidders thus far under the offshore wind tendering programme. Due to the fact that individual projects under the REIPPP Programme are smaller than the large-scale projects in France, this does allow smaller players to partici-

[153] Department of Minerals and Energy, 'White Paper on Renewable Energy Policy', 11.
[154] See for example Thomas, 'Renewables Development in France'.

pate in South Africa. It has been noted that smaller projects are 'more likely to be domestically owned and financed'.[155] Nevertheless, it was noted above that successful bidders under the REIPPPP have been 'elite South Africans',[156] which is arguably less appropriate in the developing country context.

Under both the REIPPPP in South Africa and the offshore wind tendering programme in France (in the first window), winning bidders are entitled to the tariffs for 20 years, which appears to be usual practice.

It appears that the REIPPP Programme has been effective thus far, especially when compared against France's early attempts to introduce renewables tendering programmes, such as Eole 2005. While the REIPPPP (currently) only applies in respect of a total of 7 GW of renewable energy capacity, South Africa was recently ranked in the top 10 countries internationally in respect of new renewable energy investment.[157] Renewable energy development under the REIPPPP therefore seems promising. Depending on future developments, it is possible that the South African REIPPP Programme could perhaps provide a model for other countries wishing to implement broad-based renewables tendering programmes.[158]

5. CONCLUDING REMARKS

This chapter has considered incentives for renewable energy in South Africa, with particular reference to the REIPPPP, which is the key driver of renewable energy development and investment in South Africa. The REIPPPP was considered against the background of South Africa's energy supply and legislative and policy background. This chapter also briefly outlined renewables tendering in France, which is the only EU country that makes 'substantial' use of tendering, and focused on the tendering programme for offshore wind energy.

The object of the chapter was to compare renewables tendering in South Africa and in France and to see whether any meaningful conclusions could be drawn or whether there are any lessons that can be learned by South Africa as it embarks upon its renewables tendering programme. However, it was seen that it is difficult to draw direct comparisons between the two countries, including due to the vast differences between the two countries generally and also between their tendering programmes specifically.

While it is not possible to draw clear lessons, it has been interesting to explore the differences between the two countries. It is arguable that the differences in the tendering programmes are

[155] W Rickerson et al, *Feed-in Tariffs as a Policy Instrument for Promoting Renewable Energies and Green Economies in Developing Countries* (United Nations Environment Programme 2012) 32.
[156] Nganga et al, *Powering Africa through Feed-in Tariffs*, 58.
[157] *Global Trends in Renewable Energy Investment* (Frankfurt School and United Nations Environment Programme 2013) 22.
[158] See for example A Eberhard, J Kolker and J Leigland, *South Africa's Renewable Energy IPP Procurement Program: Success Factors and Lessons* (Public–Private Infrastructure Advisory Facility 2014) 38.

in part due to the differing national circumstances and priorities of the two countries as well as the differing levels of maturity of their renewable energy markets.

While it is still relatively early in the implementation of the REIPPPP, the REIPPPP does appear to represent a promising start in incentivising renewable energy development in South Africa.

CHAPTER 10

DEVELOPMENT OF ELECTRICITY TRANSMISSION LINES IN GERMANY AND PROTECTION OF RESIDENTIAL AREAS AGAINST THE RISKS OF ELECTRIC AND MAGNETIC FIELDS – REVISION OF THE GERMAN REGULATION ON ELECTRO-MAGNETIC FIELDS

WOLFGANG KÖCK

1. INTRODUCTION: IMPACT OF THE ENERGY TRANSITION ON RADIATION PROTECTION

The term 'energy transition' is used in Germany as shorthand to describe a series of political aims, many of which have already been cast in legislation. The German Government's 2010 energy plan envisages a 40 per cent reduction in greenhouse gas emissions by 2020.[1] A crucial factor in achieving this goal is greater use of renewable energy.[2] The Renewable Energies Act (*Erneuerbare-Energien-Gesetz* – 'EEG') provides that a share of at least 35 per cent of the electricity supply is to come from renewable energy sources by 2020 (section 1(2) EEG). Also by 2020, 14 per cent of heating and cooling power (section 1(2) of the Act promoting renewable energy in the heating sector – *Erneuerbare-Energien-Wärmegesetz*) and 10 per cent of fuel/transport is to be provided by renewables.[3] An especially difficult challenge in achieving the climate-protection and renewable-energy targets arises from the legislative decision to accelerate the phase-out of nuclear energy and gradually disconnect all nuclear reactors from the power grid by the end of 2022.[4]

These aims mean, among other things, that action must be taken to ensure that the electricity transmission networks are developed to meet the needs of renewable energy: the more decentralised generation of renewable energy, as compared to conventional energy production and supply,[5] makes network expansion unavoidable. New, large-scale transmission lines are essential to guarantee the transport of energy from the northerly locations offering the most favourable conditions for wind energy to the south of the country, where the green energy is needed but currently cannot be generated in sufficient amounts at a regional level.

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[1] *Energiekonzept für eine umweltschonende, zuverlässige und bezahlbare Energieversorgung* (Federal Ministry of Economic Affairs/Federal Ministry of the Environment September, 28 2010) 5.

[2] Ibid 7 ff.

[3] Section 37a(3a) of the Federal Emissions Protection Act requires fuel producers to start selling by 2020, as a minimum, a share of biofuel sufficient to reduce the contribution to greenhouse gases by 7%. This renewable energy quota is suitable to ensure that the 10% target laid down in Art 3(4) of Directive 2009/28/EC on renewable energy will safely be achieved.

[4] Section 7(1a) of the Nuclear Energy Act (*Atomgesetz*).

[5] In Germany, energy is currently produced by 1.2m installations. By far the largest share is produced by solar power installations (1.1m). In addition, there are approx. 23 000 wind power installations and 7 500 biogas installations. By contrast, the old system – consisting of large regional power stations and small local power stations to cover peak periods – coped with just a few thousand installations.

In terms of radiation protection, the development of the electricity transmission network must guarantee, above all, protection against and prevention of the effects of low-frequency electric and magnetic fields.[6] The Forum for the Integration of Renewable Energy ('Forum Netzintegration'), a platform providing 'a place of communication for everyone involved in upgrading the grids to facilitate the uptake of renewable energy',[7] considered, in its April 2012 review, 'protection of the residential environment' – to be understood here as the protection of residential areas against interference caused by power cables – as a central area of conflict requiring 'most urgent action'.[8] The Federal Ministry of the Environment reached a similar conclusion: in a ten-point programme entitled 'Moving forward with renewed energy', presented on 16 August 2012, the then Federal Environment Minister Altmaier promised to improve protection against electro-magnetic fields and announced a revision of the 26th Regulation implementing the Federal Immission Control Act and relating to electro-magnetic fields (*26. Verordnung zur Durchführung des Bundes-Immissionsschutzgesetzes* – '26th Regulation'). This revision would entail, more specifically, the adoption of protection thresholds for high-voltage direct-current (HVDC) transmission lines, which are especially vital to the success of the energy transition.[9] The promised reform was then promptly implemented. A regulation of 14 August 2013 amending the provisions on electro-magnetic fields and the detection method under telecommunications law,[10] the core element of which was revision of 26th Regulation, entered into force on 22 August 2013.

This paper analyses and evaluates the substantial amendments to the 26th Regulation (see B.III. below). It also addresses the protection schemes applied in other European countries (B.III.3.) and looks instruments which could supplement threshold schemes (B.IV.). First, however, there follows an outline of the need for expansion and alteration of the transmission lines (B.I.) and of the emissions protection requirements to be met in planning and constructing these lines (B.II.).

[6] See F Fellenberg and G Schiller, 'Die Zulas-sung von Energieanlagen: Windenergieanlagen (onshore und offshore), Wasserkraftanlagen, Photovoltaikanlagen, Biomasseanlagen, Geothermieanlagen und Energieleitungen (Freileitungen und Erdkabel) – Genehmigungsvoraussetzungen und Genehmigungsverfahren' in S Gerstner (ed), *Grundzüge des Rechts der erneuerbaren Energien* (De Gruyter 2012) 214; the thorough analysis in K Faßbender and A-C Gläß, 'Planrechtfertigung und Planungsleitsätze' in K Posser and K Faßbender (eds), *Praxishandbuch Netzplanung und Netzausbau* (De Gruyter 2013) 425, 487–493. For an overview of all the environmental standards for construction and operation of power lines, see J Schiller, 'Praxisprobleme bei der Planfeststellung von Energiefreileitungen' (2009) 29 *Umwelt und Planungsrecht* 245Kaltenborn, 'Umweltschutzrechtliche Anforderungen an die Zulassung von Energieversorgungsleitungen nach § 43 EnWG' (2010) 9 *Zeitschrift für Landes- und Kommunalrecht Hessen* 321; and G Schiller, 'Praxisprobleme bei der Planfeststellung von Energiefreileitungen' (2009) 29 *Umwelt und Planungsrecht* 245.

[7] www.forum-netzintegration.de/ueber-uns/

[8] *Forum Netzintegration Erneuerbare Energien – Plan N 2010 – Handlungsempfehlungen an die Politik: Bilanz April 2012*, (Deutsche Umwelthilfe 2012) 10.

[9] *Mit neuer Energie. 10-Punkte-Programm für eine Energie- und Umweltpolitik mit Ambition und Augenmaß*, (Federal Minister for the Environment Altmaier 2012) 24.

[10] Federal Gazette I 3259.

2. RADIATION PROTECTION PROBLEMS CAUSED BY EXPANSION AND UPGRADING OF ELECTRICITY TRANSMISSION LINES

2.1. The current plans to develop and reinforce electricity transmission lines

The existing electricity transmission network is not designed to cater for the requirements of the energy structure. Its current configuration and capacity reflect the monopoly held by the established energy suppliers and the dominance of large-scale power stations.[11]

In addition to new local connecting lines to guarantee the feed-in of electricity to the grid and new distribution networks capable of meeting regional and local-authority targets for a sustainable energy supply, expanding the production of renewable energy requires new transmission lines[12] because wind-energy development in particular is currently concentrated in the especially windy areas of northern Germany, so that the power generated needs to be transported over a long distance to reach the southern and south-western parts of the country, which are more densely populated, economically stronger and so consume significantly more energy. Given the individual states' renewable energy plans[13] and the current framework conditions for EEG subsidies for feeding in renewable energy, this situation is unlikely to change in the foreseeable future.[14]

Accordingly, the transmission network operators' 2012 network development plan for the next ten years, as endorsed by the Federal Network Agency (*Bundesnetzagentur* – 'BNA') on 25 November 2012, [15] comprises 9 new construction projects, 13 expansion projects and 31 grid reinforcement projects.[16] The BNA has estimated an overall need for 2 800 km of new lines and 2 900 km of expanded and reinforced lines over this ten-year period,[17] and the Federal legislature has now planned for this need in legislation .[18]

[11] On this point, see G Hermes, 'Planung von Erzeugungsanlagen und Transportnetzen' in JP Schneider and C Theobald (eds), *Recht der Energiewirtschaft* (CH Beck 2011) section 7, point 2; see also *dena-Netzstudie I (Zusammenfassung)* (Deutsche Energieagentur (dena) 2005) 4.

[12] Transmission lines are lines for transporting electricity over an extra-high and high-voltage grid, including transnational connecting lines, for supply to end consumers or distributors (Section 3.32 of the Energy Supply Act (*Energiewirtschaftsgesetz* – "EnWG").

[13] For more detail, see *Bundesländer mit neuer Energie. Jahresreport Föderal-Erneuerbar* (Renewable Energy Agency 2013).

[14] It can be inferred from the coalition agreement signed by the CDU/CSU and the SPD that the EEG reform planned for summer 2014 will not entail any readjustment of wind-power generation between north and south; see Coalition Agreement "Working together for Germany" between CDU, CSU and SPD, 18th parliamentary term, 54.

[15] The network development plan is based on Art 22 of Directive 2009/72/EC of 13 July 2009 concerning common rules for the internal market in electricity, implemented in national law in section 12a ff. EnWG.

[16] *Bestätigung Netzentwicklungsplan Strom* (Federal Network Agency 2012) 3-5.

[17] See http://www.netzausbau.de/DE/BundesweitePlaene/Alfa/NEP-UB_Alfa/NEP-UB_Alfa-node.html

[18] See the Federal Needs Planning Act of 23 July 2013 (Federal Law Gazette I, p. 2543). The statutory specification of the need for new transmission lines is intended to give the authorities responsible for planning development the requisite planning certainty for their planning procedures.

While the plans may yet have to be adapted in the light of more accurate future prognoses,[19] it is clear even from need so far ascertained that new transmission lines will have to be built on a large scale and that this will give rise to a series of (environmental) conflicts[20] and, owing to low-frequency electro-magnetic fields, a variety of radiation protection problems. Especially where the expansion and reinforcement of existing lines is concerned, and this kind of work accounts for more than 50 per cent of the overall need for development, it is often necessary to deal with situations in which new housing has since encroached on the envisaged site, making it difficult to guarantee an adequate distance between the conflicting land uses between power transmission and residential housing (see 3 below).

2.2. Radiation protection requirements applicable to the construction and operation of transmission lines

2.2.1. Inclusion of radiation protection requirements in network planning

The construction and operation of extra-high and high voltage lines is subject to project approval (section 43 of the Energy Supply Act (Energiewirtschaftsgesetz – 'EnWG') and section 18 of the Act on accelerating network development (Netzausbaubeschleunigungsgesetz – 'NABEG')), a special legal scheme for authorising large-scale public infrastructure developments which is generally prescribed for projects such as roads, airports, railways, waste disposal sites or certain power lines. While the approval decision is usually to be taken after weighing up fairly all interests affected by the project, which leaves the relevant authority wide scope for discretion (third sentence of section 43 EnWG; section 18(3) NABEG), the authority is nevertheless obliged to comply with any requirements under the specific legislation applicable to the type of project in question and cannot water them down as part of its weighing-up exercise.[21] Mandatory requirements include those imposed on installations under immission control law,[22] such as certain radiation protection standards.[23] Power lines are installations within the meaning of section 3(5).1 of the Federal Immission Control Act (Bundes-Immissionsschutzgesetz – 'BImSchG') but are not subject to the approval procedure under immission control law and must therefore meet the standard imposed under section 22 f. BImSchG.

[19] The EnWG prescribes – in line with the requirements under Directive 2009/72/EC – an annual update of the network development plans.
[20] From a sociological perspective: Neukirch, 'Netzausbau und Energiewende – Protestkonstellation unter Höchstspannung', unpublished manuscript 2013.
[21] See, as just one example, R Steinberg, M Wickel and H Müller, *Fachplanung* (Nomos 2012) section 3, points 14, 19 ff.
[22] Ibid section 3, point 23 ff.
[23] In German environmental legislation radiation protection is divided in the sector of nuclear law (nuclear radiation) and immission control law (all other kinds of radiation).

2.2.2. The protection and precaution standard under section 22 BImSchG and the implementing secondary legislation

Section 22 BImSchG requires that installations not subject to approval must be built and operated in such a way that they prevent harmful environmental effects avoidable by using state-of-the-art technology. Harmful effects which cannot be avoided by using such technology must be minimised.

Section 3(1) BImSchG defines harmful environmental effects as 'any immissions which, because of their nature, extent or duration, are likely to cause hazards, significant disadvantages or significant nuisances to the general public or the neighbourhood'. The legislative definition of 'immissions' includes '…radiation and similar effects on the environment which affect human beings …' and so covers electro-magnetic fields.[24]

Under German law, electro-magnetic fields generated by an installation must always be classed as a hazard to be averted if it is 'sufficiently probable' that they will cause harm, ie considerably impair a legally protected object. The probability of harm is not considered 'sufficient' only where it is virtually certain that harm will be caused. Rather, the degree of probability required for classification as a hazard depends on how deserving and in need of protection the object in question is, as well as on the seriousness of the potential harm (known as 'the more, the more test'), so that, in the event of potential impairments to health, even a distant possibility of harm suffices.[25] In dispute is whether even a suspicion, ie where it has not yet been possible adequately to establish whether an emission (radiation) is apt to cause harm, can lead to classification as a risk.[26] In a leading judgment of 11 December 2003, the Federal Administrative Court ruled that it could not[27] and made a clear distinction between protection against hazards and precautionary measures against risks which have not yet become hazards. Whilst this decision is understandable in view of the obligation to take precautions imposed in section 5(1).2 BImSchG, it leads to problems in applying the precautionary principle. Even where there are merely indications, but no clear evidence, that harm may be caused by particular emissions generated by an installation, it should still be possible to class this risk as a hazard, since the precautionary principle is intended to ensure effective protection by requiring that action be taken even against uncertain risks of harm.[28] A statutory obligation to take precaution according to the best available techniques (German understand-

[24] See, as just one example, HD Jarass, *Bundes-Immissionsschutzgesetz, BImSchG-Kommentar* (CH Beck 10th edn. 2013) section 3, point 6, and sources cited there.
[25] Ibid section 3, point 43
[26] Ibid section 3, point 44.
[27] See BVerwGE 93, 329, 332 (Nanopulver).
[28] See Federal Constitutional Court decision of 29.11.1995, EUGRZ 1996, 120 (Ozongesetz). For more detail: W Köck, 'Die Entwicklung des Vorsorgeprinzips im Recht', in: B Hansjürgens and R Nordbeck (eds), *Chemikalienregulierung und Innovationen zum nachhaltigen Wirtschaften* (Physica-Verlag HD 2005) 85, 88. See also W Köck, 'Mobilfunksendeanlagen und grundrechtliche Schutzpflichten des Staates', (2002) 13 *Zeitschrift für Umweltrecht* 350.

ing of precaution under the Federal Immission Control Act) , which in any event applies only to installations requiring approval, is not sufficient to achieve this.[29]

However, not every indication of a risk of harm or every uncertainty as to such risks automatically triggers a need for precaution. Rather, it always depends on the relevant authorities' assessment of the available knowledge of the risk.[30] The executive must, above all, be considered competent to assess risk where the Federal Government has exercised its power to adopt a regulation under section 23 BImSchG to fix a risk limit in the form of thresholds, as it has done in the 26th Regulation for the risks posed by electro-magnetic fields. The thresholds laid down there are designed to show the authority applying the law whether a risk is to be feared. Provided the thresholds have not been rendered obsolete by clearly more accurate knowledge or provided no manifestly wrong assessment can be established,[31] the thresholds are also binding on the courts. The 26th Regulation will be dealt with in detail below (see III.1. and 2. below). For now, it need only be observed in relation to the decision-making criterion under section 22 BImSchG that an electricity transmission line whose operation is apt to be harmful to health cannot be authorised, because such a project would breach mandatory law.[32]

Section 22 BImSchG requires not only protection against harm but also against significant impairments of interests because adverse environmental effects within the meaning of section 3(1) BImSchG are not only emissions (radiation) apt to give rise to *hazards* but also emissions (radiation) apt to have *significant adverse effects* or cause *considerable nuisance*. In the context of electricity transmission lines, this means, above all, significant adverse effects on adjoining properties. 'Adverse effects' within the meaning of section 3(1) BImschG are all negative effects caused by emissions which do not cause harm and are not a nuisance. A significant adverse effect is likely to be given where properties in the vicinity of transmission lines suffer a considerable loss in value as a result of emissions.[33] However, a finding of a significant adverse effect does not automatically give rise to a right to prevent an installation and so to a legally insuperable obstacle to the construction of transmission lines since section

[29] On the old dispute as to interpretation of the precautionary principle in immission control law, see G Feldhaus, 'Der Vorsorgegrundsatz des Bundes-Immissionsschutzgesetzes' (1980) *Deutsches Verwaltungsblatt* 133, in particular 136.

[30] This was already addressed in Federal Constitutional Court, Decision of 8 August 1978, BVerfGE 49, 89, 131 (Kalkar); Federal Constitutional Court, Decision of 27 November 1990, BVerfGE 83, 130, 140 (Josefine Mutzenbacher (Jugendschutz)); Federal Constitutional Court, Decision of 14 January 1981, BVerfGE 56, 54, 80 (Fluglärm). More clearly: Higher Administrative Court Münster decision of 18 May 1993, UPR 1993, 355, 356 (Elektrosmog); for more detail on all these points, see: Köck, 'Mobilfunksendeanlagen und grundrechtliche Schutzpflichten des Staates'; Köck, 'Die Entwicklung des Vorsorgeprinzips im Recht', 91 and the sources cited there.

[31] On these checks, see: R Hendler, 'Umweltrechtliche Grenzwerte in der Gerichts- und Verwaltungspraxis' (1998) 51 *Die öffentliche Verwaltung* 481.

[32] The wording of section 22 BImSchG does not express this very well, but the courts and writers agree that potential damage to health always constitutes a breach of the requirement to limit risks to a minimum (section 22(1).2 BImSchG); see, as just one example, Jarass, *Bundes-Immissionsschutzgesetz (BImSchG) – Kommentar* (CH Beck 1993) section 22, point 38, and the sources cited there.

[33] See Jarass, *BImSchG – Kommentar*, section 3, point 29: 'It is likely that a loss in property value itself will usually be regarded as harm or a significant impairment of rights but, if not, it will constitute an adverse effect'

22 BImSchG is designed to prevent only harmful environmental effects which can be avoided by state-of-the-art technology (section 22(1).1 BImSchG), whereas harmful environmental effects which cannot be avoided by such technology need only be minimised (section 22(1).2 BImSchG). (The minimisation requirement leads to an absolute right to protection only where the highest-ranking rights such as life and health are affected.[34]) Determining the minimum requires a comprehensive weighing-up of all the factors.[35] The factors include the burden associated with a limitation of risks beyond that achieved by state-of-the-art technology and the project's benefits for society,[36] ie the contribution of the transmission lines to a successful energy transition in Germany. The commentaries in the literature rightly point out that the need to weigh up all factors also allows for 'consideration of circumstances already relevant for the threshold of significance'.[37] Thus, where property owners have been offered financial compensation for losses in value resulting from the construction of power lines, this will generally mean that the adverse effect cannot be regarded as significant. In any event, when it comes to an impairment of interests (adverse effect/nuisance), it is possible (for a neighbour) to dispense with emissions protection and this can also be contractually agreed.[38]

2.2.3. The section 50 BImSchG planning instruction

The BImSchG not only imposes requirements on installations but also sets out requirements for spatial planning. Under section 50 BImSchG, 'spatial planning decisions and measures must ensure zoning of areas designated for a particular use in such a way as to avoid harmful environmental effects … as far as possible'. Project approval for electricity transmission lines and the preceding stage of specialist planning at Federal level (section 4 ff. NABEG) are spatial planning procedures within the meaning of 50 BImSchG. In the literature and in practice, this planning instruction is understood as an optimisation requirement which must, as far as possible, be reflected in the outcome of the weighing-up exercise and cannot be entirely outweighed by other interests (ie an 'especially important interest for consideration').[39] In practice, the section 50 BImSchG planning instruction will always be relevant in planning new transmission lines because the corridor available for lines (specialist Federal planning) and the specific route (project approval) can still be decided on by the planning authority and – unless mandatory European conservation law precludes relocation to an open space – it will generally be possible to ensure sufficient distance between residential and power supply uses. The situation is different where existing lines are to be reinforced and the planned work falls

[34] See footnote 31.
[35] According to the case law of the Federal Administrative Court, all interests must already be fully weighed up when determining the degree of significance (see BVerwGE 79, 254 (Feueralarm-Sirene)). I share in the dogmatic construction the view expressed by HD Jarass, 'Zum Kampf um Kirchturmuhren und nächtens betriebene Tankstellen' (1993) 12 *JuristenZeitung* 601; and H-J Koch and CA Maaß, 'Die rechtlichen Grundlagen zur Bewältigung von Freizeitlärmkonflikten' (2000) *Natur und Recht* 69.
[36] See Jarass, *BImSchG – Kommentar*, section 22, point 39.
[37] Ibid section 22, point 39.
[38] Ibid section 3, point 62 (referring to noise in particular).
[39] See BVerwGE 71, 163, 165; BVerwGE 123, 37, 43; Jarass, *BImSchG-Kommentar* section 50, point 23, and the sources cited there.

within a mixed-use area in which there is no more scope for a planning decision ensuring distance between uses. In such cases, only the mandatory installation-related emissions protection remains (see 2. above)

2.3. Risks of low-frequency electric and magnetic fields and the protection scheme under the 26th Regulation

2.3.1 The threshold scheme under the 26th Regulation and the assessment of risk knowledge

In 1996, the Federal Government adopted an implementing regulation laying down, with a view to protecting human health, thresholds for low-frequency installations, which include high-voltage lines[40] (section 3 in conjunction with Annex 2 to the 26th Regulation).[41] Since then, low-frequency installations in the range of 50 Hz fields are subject to a threshold for electric field strength of 5 kilovolts per metre (kV/m) and for magnetic flux density of 100 microtesla (µT). This has given the relevant authorities clearly quantified values for assessing health-related obligations under immission control law.[42] In setting the thresholds, the legislature largely relied on recommendations of the International Commission on Non-Ionizing Radiation Protection (ICNIRP) endorsed by the national Radiation Protection Commission (SSK). These thresholds were based on established scientific results. Both commissions also considered less robust results but these were not reflected in the threshold recommendations which they eventually issued and which were adopted by the legislature.

According to the German courts, the 1996 thresholds have still not been rendered obsolete by more accurate new research. Accordingly, they generally presume, for the time being, that no risks to life or health are likely if there is compliance with the thresholds.[43] The Federal Administrative Court largely bases this view on opinions issued since by the SSK and by the ICNIRP, which continuously monitor risk development. In its recommendation of 21/22 February 2008, the SSK concluded that, 'even after analysis of the more recent scientific literature, we can find no scientific evidence pointing to potential impairment of health by low-frequency electric and magnetic fields which is robust enough to justify changing the existing thresholds in the 26th Regulation'.[44]

When drawing up its recommendations, the SSK also looked at the available epidemiological studies showing, in cases of 'chronic exposure to magnetic fields exceeding 0.3-0.4 µT', indi-

[40] On the term "low-frequency installation", see section 1(2).2 of the 26th Regulation.
[41] 26th Regulation also sets (now highly controversial) thresholds for high-frequency installations (mobile phone base stations). This debate is beyond the scope of this paper.
[42] Regulation on electro-magnetic fields (26th Regulation) of 16.12.1996, Federal Law Gazette I, p. 1966.
[43] See BVerwG [Federal Administration Court], Decision of 22 July 2010, NVwZ 2010, 1486 (Hochspannungsfreileitung), point 24.
[44] See SSK, 'Schutz vor elektrischen und magnetischen Feldern der elektrischen Energieversorgung und –anwendung', adopted at 221st meeting on 21–22 February 2008, 3ff.

cations of a 'moderate connection between magnetic fields and the leukaemia risk in children'.[45] In 2002, the International Agency for Research on Cancer (IARC), an expert WHO agency, found '*limited evidence* in humans for the carcinogenicity of extremely low-frequency magnetic fields in relation to childhood leukaemia', and it now classes low-frequency magnetic fields in the category 'possibly carcinogenic'.[46]

The SSK too recognises the epidemiological studies as at least 'limited evidence'.[47] However, in view of its evaluation of meta-studies and the fact that laboratory studies do not support the epidemiological ones, so that, for the time being at least, a causal connection between exposure and leukaemia cannot be identified, it ultimately concluded that it was unnecessary to set stricter thresholds. Nevertheless, it also found – again in line with international assessments, eg by the WHO – that the results show there is a potential concern and can justify precautionary measures.[48] However, in its view, precautions should not take the form of stricter thresholds because these would necessarily be arbitrary values undermining the scientific basis for the existing thresholds.[49] It therefore recommends taking measures to avoid or at least minimise any unnecessary exposure. It also recommends measures to improve protection against other risks, identifying, for example, a need for action in relation to people with electronic implants excluded from the scope of the 1996 regulation (third sentence of section 1(1) of 26th Regulation as in force before revision).[50] It has also identified a need for action on direct-current power installations,[51] which are a cornerstone of the plans to develop the transmission network. The 26th Regulation did not then set thresholds for such installations,[52] with the result that specific requirements for a core element of the new transmission lines had thus far been lacking.

Some experts find that the SSK recommendations do not go far enough. They call for a fundamental adaptation of the threshold scheme, arguing that the thresholds should be based on the evidence provided by the epidemiological studies (0.2 µT) to ensure effective prevention of potential risks of child cancer. They contend that even greater safety margins should be guaranteed as a precaution and, in some cases, the demand is for a threshold of 0.01 µT, ie a ten-thousandth of the current threshold.[53]

These demands have since found support in as much as some countries have already begun to set much stricter thresholds in view of the newer scientific indications of cancer risks outlined

[45] Ibid 18 ff.
[46] See *Non-Ionizing Radiation, Part 1:Static and Extremely Low-Frequency (ELF) Electric and Magnetic Fields* (International Agency for Research on Cancer 2002) 338.
[47] See SSK, 'Vergleichende Bewertung der Evidenz von Krebsrisiken durch elektromagnetische Felder und Strahlungen', opinion of 14–15 April 2011, 54. On the various grades of evidence, see the explanations on page 4 of the SSK opinion.
[48] SSK, 'Schutz vor elektrischen und magnetischen Feldern', 19ff.
[49] Ibid 19. Here, the SSK merely restates the WHO view, but it later endorses it (p. 5).
[50] Ibid 5.
[51] Ibid.
[52] On this point, see also M Spieler, 'Die Genehmigung von Hochspannungs-Gleichstromanlagen' (2012) *Neue Zeitschrift für Verwaltungsrecht* 1139, 1142.
[53] See W Kühling, 'Konkretisierung der Vorsorge vor magnetischen Wechselfeldern bei der UVP für Hochspannungsfreileitungen und Erdkabel' (2011) *UVP Report* 25, 270ff.

above,[54] although these stricter thresholds are not strictly binding everywhere (more details in 3. below). In view of the heterogeneous threshold landscape in Europe, those affected by high-voltage lines in Germany are now extremely unsettled and wonder whether health protection is less important in their country than elsewhere.[55] A purely specialist debate on the risks of low-frequency magnetic fields has thus become a matter for discussion in society at large[56] and requiring political answers, which were finally given by the legislature when it revised the 26th Regulation in summer 2013.

2.3.2. Revision of the 26th Regulation of 14 August 2013

Since in a constitutional democracy the evaluation of risks is not a matter for the SSK but for the Federal Government as the body responsible for adopting secondary legislation,[57] the basis for the threshold scheme could readily have been changed from scientific evidence to limited evidence. The precautionary principle would have provided the necessary legitimacy for such a move. At any rate, contrary to the SSK position, a precaution-oriented threshold scheme based on the values identified in epidemiological studies is not arbitrary in a legal sense since an element of political evaluation is inherent in any adoption of thresholds, especially where this entails the assessment of cancer risks because such an evaluation necessarily includes a decision on more or fewer statistical deaths.[58]

However, the legislature could not see its way to changing the threshold scheme and, when revising the 26th Regulation, basically stuck to the SSK and ICNIRP position.[59] Consequently, the thresholds continue to be derived exclusively from established scientific results and not from still uncertain risk knowledge. Accordingly, the legislature retained the existing thresholds for 50 Hz low-frequency installations: 5 kV/m for electric field and 100 µT for magnetic flux density (section 3.I in conjunction with Annex 1a to 26th Regulation). The revised 26th

[54] Ibid 273; See also *Internationale Grenzwerte im Vergleich* (Ecolog-Institut 2000); most recently: R Stam, 'Comparison of international policies on electromagnetic fields' (May 2011).
[55] The fact that the current planning procedure focuses more on examining species-protection aspects than on health-related aspects has also given rise to the impression among protesting citizens that frogs (or other strictly protected species) enjoy better legal protection than humans. (This impression is deceptive but nonetheless highlights the explosive nature of communications with the general public).
[56] See, by way of illustration, the EU Commission's Eurobarometer "Electromagnetic Fields Report", issued in 2010 and recording the results of a survey in the 27 Member States.
[57] See, most recently, the Federal Constitutional Court, decision of 24 January 2007, NVwZ 2007, 805 (Mobilfunksendeanlage): 'It is a matter for the legislature to monitor and evaluate by all suitable means progress in scientific research so as to be able to take, where appropriate, more extensive protective measures'
[58] See E Franßen, 'Krebsrisiko und Luftverunreinigung. Risikoermittlung und rechtliche Bewertung' in *Dokumentation zur 16. wissenschaftlichen Fachtagung der Gesellschaft für Umweltrecht* (Berlin 1992) 22; See also W Köck, 'Krebsrisiken durch Luftverunreinigungen' (2001) 12 *Zeitschrift für Umweltrecht* 201.
[59] The INCIRP had in the meantime even recommended raising the threshold for low-frequency installations in the 50 Hz range to 200 µT; the Federal Government did not follow this recommendation but left the previous regulation intact; on this point, see also A Pütz, 'Novellierung der Verordnung über elektromagnetische Felder' (2013/2) *EMF-Spektrum/Risikomanagement* 5.

Regulation also remains true to the previous approach in that it is still directed exclusively to protecting health and continues to exclude significant adverse effects (see II.2. above).

The revised 26th Regulation nevertheless makes a series of improvements to protection. These include:

- **new rules on direct-current installations** (section 1(1) and (2).3) and the setting of a threshold for their magnetic flux density at 200 µT (section 3a in conjunction with Annex 1a);
- **ban on lines above buildings intended for permanent residential use.** This, however, applies only to low-frequency installations transmitting electricity of 50 Hz and a nominal voltage of 220 kV and more which are erected in a new route. It does not apply to existing planning permission and project approval decisions or to project approval and planning permission procedures applied for by 22 August 2013. (section 4(3));
- **minimisation requirement for low-frequency and direct-current installations**: 'Where low-frequency and direct-current installations are erected or fundamentally altered, all potential for minimising through the use of state-of-the art technology the electric, magnetic and electro-magnetic fields generated by the installation must be exhausted, regard being had to the circumstances in the area affected'. (section 4(2)). The details of what this means are to be set out in administrative rules within the meaning of section 48 BImSchG but these have yet to be enacted.

Although the effect cannot yet be entirely predicted, the minimisation requirement is likely to be especially significant. In its current wording, it was only introduced into the legislative procedure by a resolution of the Bundesrat (the parliamentary chamber composed of representatives of the states) dated 3 May 2013.[60] The Government's bill provided for a duty to reduce emissions by using state-of-the-art technology.[61] Minimisation within the meaning of German emissions and radiation protection law is much more extensive than mere reduction by state-of-the-art technology, as is shown by, for example, the emissions minimisation requirement in the Technical Guidelines on Air Purity (point 5.2.7) [62] and the minimisation requirement under the Radiation Protection Regulation (section 6). The Bundesrat initiative was based on a desire to limit emissions as far as possible and not settle for a mere reduction. Indeed, the reasons given for the initiative expressly refer to the model under nuclear protection law (ionizing radiation).[63] Nevertheless, the minimisation requirement is not very clear, because section 4(2) of 26th Regulation still refers to the 'best available techniques-standard and precisely does not make use of the regulatory technique underlying the equivalent requirements in the Technical Guidelines on Air Purity and section 6 of the Radiation Protection Regulation. It remains to be seen whether the reasons given by the Bundesrat will suffice to overcome the limitation inherent in the wording. However, since the Government

[60] See Bundesrat-Drucksache 209/13, resolution of. 3.5.2013, p. 2.
[61] Ibid.
[62] On this point, see Landmann/Rohmer, *Umweltrecht* (CH Beck 2014) on item 5.2.7 of the Technical Guidelines on Air Purity, point 11. These Technical Guidelines are special administrative rules adopted by the Federal Government providing the authorities in the individual states with substantive guidance on implementing the BImSchG in relation to large-scale industrial installations (subject to approval).
[63] See Bundesrat-Drucksache 209/13, resolution of 3 May 2013, 2.

has scope to adopt more specific administrative provisions under section 48 BImSchG, there is some hope that justice can be done to the Bondservant's intentions.

To sum up, the legislature lacked the courage to convert the basis for its threshold scheme to the precautionary principle. That the legislature could have acted differently is shown by the recommendations issued by the joint working group of the Federal Government and the states on emissions protection ('Bund-Länder Arbeitsgemeinschaft Immissionsschutz'), which advocated a precautionary scheme based on the natural level of background radiation (0.1 µT).[64] The 'compensation' offered by the Regulation in the form of a minimisation requirement is, for the time being, unsatisfactory in two ways: its wording is reminiscent of a standard state-of-the-art reduction, while the more specific implementing administrative rules referred to in the regulation have not yet been adopted. Since not all too long ago rulings by the highest courts indicated that the scheme based on 'scientific evidence' was legally valid,[65] the Government apparently felt that the risk of falling short of the protection standard was small. Moreover, the idea behind the revision was to strike a balance between the enormous interests in prompt network development and the interest in protecting health.[66] The opportunity to make revision of the 26th Regulation, all in all, an important step towards greater acceptance of network development[67] was thus taken only half-heartedly, and it will inevitably meet with a damagingly agitated response.

2.3.3. Protection schemes in other European countries – do we need European thresholds?

As mentioned above, the thresholds in some other European countries are no longer based on the ICNIRP recommendations but on precautionary considerations. For example, Switzerland has set the threshold for magnetic flux density at 1 µT, Italy at 3 µT and Slovenia at 10 µT.[68] While the threshold in the Netherlands is not binding, it serves as a recommendation for local authorities and is intended to ensure that an average value of 0.4 µT is not exceeded in areas where children are permanently resident (see table).

[64] See the minutes relating to agenda item 23 of the 78th environment ministers' conference (Schleswig 22 June 2012) (http://www.umweltministerkonferenz.de/documents/Endgueltiges_Protokoll_UMK_Schleswig1.pdf).
[65] See Federal Constitutional Court, decision of 24 January 2007, NVwZ 2007, 805 (Mobilfunksendeanlage); BVerwG [Federal Administration Court], Decision of 22 July 2010, NVwZ 2010, 1486 (Hochspannungsfreileitung). Endorsed by eg Faßbender and Gläß, 'Planrechtfertigung und Planungsleitsätze', 489, and sources cited there.
[66] Clearly expressed by Pütz, 'Novellierung der Verordnung über elektromagnetische Felder', 5.
[67] As expected by Faßbender and Gläß, 'Planrechtfertigung und Planungsleitsätze', 490.
[68] Stam, 'Comparison of international policies on electromagnetic fields'.

Threshold schemes in other EU countries

Country	Electric field strength (V/m)	Magnetic flux density (μT)
Recommendation 1999/519/EC	**5000**	**100**
Latvia, Spain, United Kingdom	—	—
Bulgaria	—	—
Belgium (Flanders)	—	10
Switzerland	—	1
Denmark	—	—
Italy	—	3
Netherlands	— (1	— (1
Sweden	—	—
Austria, Cyprus, Finland, Ireland, Malta	[5000]	[100]
Czech Republic, Estonia, Germany, Greece, Hungary, Portugal, Romania, Slovakia	5000	100
France	5000	100
Luxembourg	5000	100
Poland	1000	75
Lithuania	500	—
Slovenia	500	10

All thresholds are given as a root mean square (rms) value. Their application is mandatory except where the value is in square brackets.

1) Recommendation for local authorities: create no new situations of permanent residence of children in areas around power lines with a magnetic flux density greater than 0.4 μT

Source: National Institute for Public Health and the Environment of the Netherlands 2011

Table: Cornelius Tronicke, based on Stam (2011)

Although it is difficult to compare the various threshold schemes, since sometimes an effective maximum and sometimes only an average is meant, the very existence of different schemes changes the nature of the debate as to what is acceptable. Germany had its own painful experience of such a situation when, following the Chernobyl reactor disaster in spring 1986, each of the individual states announced its own thresholds for contaminated food and only the Federal Government's adoption of a uniform law on precautionary protection against radiation restored order. There appears to be a similar situation today in the changed circumstances of an integrating Europe: the wide range of different thresholds puts an increasing strain on the ICNIRP scheme still applied by most EU states and calls for a uniform political answer which perhaps only the EU itself can provide. Particularly against the backdrop of EU efforts to create a trans-European electricity network to guarantee an internal European electricity market,[69] adopting EU-wide thresholds would seem to make sense since, even applying the subsidiarity principle, such a network would require uniform schemes of protection.

The EC Council addressed the problem of magnetic fields of low-frequency installations once before, issuing, in 1999, a recommendation on limiting the exposure of the population to electro-magnetic fields but failing to adopt its own rules.[70] Back then, the Council very much followed the ICNIRP approach, expressly stating in the preamble to the 1999 recommendation: 'only established effects have been used as the basis for the recommended limitation of

[69] See Regulation (EU) No 347/2013 of the European Parliament and of the Council of 17 April 2013 on guidelines for trans-European energy infrastructure [2013] OJ L115/39.
[70] See Council Recommendation of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz) [1999] OJ L199/59.

exposure; advice on this matter has been given by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) and has been endorsed by the Commission's Scientific Steering Committee'.[71] Just a few months later, in 2000, the Commission, prompted by the then current BSE crisis, issued its communication on applicability of the precautionary principle.[72] Since then, decisions concerning risks to life and health are no longer taken solely on the basis of established scientific evidence and account is likewise taken of scientific indications offering more limited evidence. It therefore seems at least possible that the EU would evaluate the available evidence of risks differently from the German Government and incorporate the different results in any threshold scheme.

2.4. Instruments supplementing threshold schemes: distances – underground cables – compensation – shares in investment

It remains to be seen whether the EU will devise a European threshold scheme for high-voltage transmission lines and, if so, whether it will differ significantly from the German solution, which is essentially based on the recommendations of international experts.

Adopting thresholds can in any event be only one instrument in dealing with conflicts under immission control law. This is already clear from the revised 26th Regulation, which has supplemented the threshold scheme with a minimisation requirement (see III.2. above). Other additions may prove necessary because both the threshold scheme and the minimisation requirement are directed only to the protection of life and health but not to other interests in emissions protection (radiation protection), including, above all, the management of significant adverse effects. In this connection, it has been shown that electricity transmission lines can give rise to significant adverse effects where their construction and operation appreciably reduce the value of adjoining residential properties (see B.II.2. above). This is unlikely to be limited to cases where lines cross residential properties overhead but will also occur where the lines cannot be located at a sufficient distance, which may often be the case where existing lines are altered (grid reinforcement). Where it is impossible to ensure an appropriate distance, the environmental impact could, above all, be brought to a reasonably acceptable level by laying underground cables. Alternatively, financial compensation to offset the significant adverse effects could be considered if the underground-cable solution makes little economic sense, for example because only a small number of properties are affected.

The Energy Network Expansion Act (*Energieleitungsausbaugesetz* – 'EnLAG') contains the first nationwide provisions on laying underground cables (section 2), which are designed to ensure that, at the relevant authority's request, underground cables must be laid if overhead

[71] Ibid recital (10).
[72] See European Commission, 'Communication from the Commission on the precautionary principle' COM (2000) 1 final.

lines cannot be located at a minimum distance of 400 m from residential areas, whilst enabling the network operator to have the resulting extra costs distributed among all operators. Lower Saxony is the first of the states to adopt a state-level law on underground cables,[73] but equivalent legislation is being considered in other states (North Rhine-Westphalia, Brandenburg and Hesse).

Financial compensation could be considered if laying underground cables does not make economic sense. The law governing installations not subject to approval does not make express provision for a right to financial compensation for significant adverse effects but concentrates – aside from achievement of the prevention standard set by state-of-the-art technology – on (other) measures to limit installation emissions after weighing-up of all factors (minimum requirement). The general law on project approval, by contrast, does provide for compensation for impairments of third party rights (second and third sentences of section 74(2) of the Administrative Procedure Act): '[The project approval authority] must require that the project manager take precautions … necessary for the common good or to avoid impairing other parties' rights. If such precautions are … not feasible or incompatible with the project, the person affected may claim reasonable financial compensation'. It remains to be seen whether this can provide a suitable basis for contractual solutions. If necessary, consideration should be given to inserting special provisions into the legislation applicable to network development.

Experience with the development of wind-energy installations, however, shows that reasonability and acceptance can be better achieved by offering the community an opportunity to acquire shares in the investment (community wind parks) than by applying comparably complex and bureaucratic compensation schemes. The Danish experience is particularly valuable and informative in this respect.[74] However, such investment opportunities can rarely be considered in the context of power transmission lines, if only because of the lack of identification with individual routes, so that this solution is scarcely practicable at present.

3. CONCLUDING REMARKS

The reform of 26th Regulation has improved protection by adding a minimisation requirement to the threshold scheme. However, a scheme to implement this requirement has yet to be adopted. At present, the legislative conditions for developing such scheme are less than satisfactory because the legislature was unable to take a decision clearly favouring a more extensive minimisation requirement over the traditional duty to reduce emissions by using state-of-the-art technology.

In view of the now heterogeneous threshold landscape in Europe, it remains a live issue to consider ways of achieving a more precaution-oriented approach to the threshold scheme re-

[73] See Lower Saxon Underground Cable Act of 13 December 2007 (Lower Saxon Law Gazette No 40/2007, 709).

[74] See BE Olsen and HT Anker, Local Acceptance and the Legal Framework - The Danish Wind Energy Case, in this book, chapter 7, p. 134, 150 ff.

main current. It would make sense, especially in view of the EU measures to build and guarantee a trans-European infrastructure, for the EU to adopt a high standard of minimum protection.

The possibility of offsetting the adverse effects of developing electricity transmission networks on residential properties has as yet been given little consideration. Solutions have begun to emerge, for example laying underground cables where overhead lines cannot be located at an adequate distance, while financial compensation could be offered if underground cabling does not make economic sense. There are already legal bases for offering compensation in the general law on project approval, but these may have to be supplemented by specific provisions. Adverse effects could also be offset by offers of shares in the project. Positive experience has been gathered with such offers, particularly in the wind energy sector, but it is questionable whether such a solution would also lend itself to power transmission lines.

CHAPTER 11

LOCAL-CONTENT REQUIREMENTS IN RENEWABLE ENERGY SUPPORT SCHEMES FROM A TRADE LAW PERSPECTIVE

HARTMUT KAHL

1. INTRODUCTION

In the last five years we observed how the formerly rather regional markets for renewable energies turned into a highly competitive global playing field. Governments acknowledged that renewable energies do no longer stand for a green niche but strong national industrial interests. By now the mere objective of mitigating greenhouse gas emissions is often superposed by the policy goal of gaining a relevant market share by establishing own manufacturing lines for renewable energy installations and thereby creating secure domestic jobs along the value chain. The key to achieve these goals seems to be the respective design of the support scheme in effect. Thus, policymakers look for instruments which guarantee a high roll-out of renewables but do avoid at the same time that the national support scheme supports foreign production thereby frustrating domestic employment in the long term.

Not astonishingly, renewable energies became more and more an issue of international trade law in the last years. The docket of the dispute settlement mechanism of the World Trade Organization (WTO) is full of cases dealing with alleged infringements of trade obligations by various national policies in the renewable energy sector. Among these cases one can carve out two sets of problematic issues. The first one is characterized by the imposition of anti-dumping and countervailing duties on foreign production pursuing the claims of domestic competitors that foreign production is inadmissibly supported by governmental programs in the respective country of origin. The second one deals with so called local-content provisions as a proactive way to ensure that the power plant installations which are financed by the respective national green energy support scheme mainly originate from domestic manufacturing.

This chapter picks out just one of these two controversial issues and focusses solely on local-content provisions due to their recent renaissance in the sector of renewable energy.[1] Local-content requirements in support schemes for renewably produced electricity are widespread and occur all over the world. We find them in EU-members like Italy, France, Greece and Croatia, in other OECD-Countries like Canada (in respect of Ontario and Quebec) and Turkey

[1] This chapter deepens and explores further the second part of the author`s chapter 'Trade law constraints to regional renewable energy support schemes' in M Peeters and T Schomerus (eds), *Renewable Energy Law in the EU – Legal Perspectives on Bottom Up Approaches* (Edward Elgar 2014, expected).

as well as in emerging economies like Brazil, India, China and South Africa.[2] Recently, also the Russian Federation established local-content requirements as a prequalification for bidders participating in its auction model supporting renewable energy projects.[3]

Therefore, in this chapter firstly the phenomenon of local-content requirements is described in general and in the context of renewable energy in special, the reasons to impose such requirements are introduced and evaluated briefly and the pending cases are introduced. Secondly, this chapter addresses local content requirements under the specific disciplines of world trade law. In this respect it analyzes the obligations of WTO members governing the principle of non-discrimination under the General Agreement on Tariffs and Trade (GATT), the Agreement on Trade Related Investment Measures (TRIMs Agreement) and the Agreement on Subsidies and Countervailing Measures (SCM Agreement) as well as possible exemptions from these obligations which might be invoked to justify differential treatment of imported goods. Thirdly, the chapter describes and analyzes the first WTO settled local-content case dealing with the 'Minimum Required Domestic Content Level' in the Feed-In Tariff programs of the Canadian Province Ontario as the relevant reference case which might serve as a blueprint for further cases to decide. In its final conclusion the chapter addresses the questions if local-content requirements might serve to incentivize a sustainable energy transition, if there are less trade distorting alternatives and if the WTO can provide a concise set of rules governing national support policies for green energy technologies.

2. LOCAL-CONTENT PROVISIONS AND RENEWABLE ENERGIES

Generally one can say that a local content requirement is a policy measure typically requiring 'a certain percentage of intermediate goods used in the production processes to be sourced from domestic manufacturers'.[4] By their nature domestic-content provisions can refer to state, regional or local levels; also, they might not only benefit long-established domestic companies but also foreign owned enterprises investing in newly erected manufacturing capacities.[5]

Local-content provisions are no recent phenomenon. Historically, they have been imposed especially after commercial crises associated with government procurement and publicly funded projects as a means to foster prosperity, if one considers eg the 'Buy American Act'[6] of 1933. Now, in the aftermath of the recession following the latest financial crisis, we see a renaissance of such provisions. The 'Buy American Provision'[7] of 2009 may be the most prominent but not the only one. Since local-content requirements – opposed to tariffs or quotas – are

[2] JC Kuntze and T Moerenhout, 'Local Content Requirements and the Renewable Energy Industry – A Good Match?' (International Centre for Trade and Sustainable Development 2013) 21–30.
[3] J Heup, 'Russisch Roulette' (2014/1) *Neue Energie* 79, 80.
[4] S Stephenson, 'Addressing Local Content Requirements in a Sustainable Energy Trade Agreement' (International Centre for Trade and Sustainable Development 2013) 2.
[5] Kuntze and Moerenhout, 'Local Content Requirements and the Renewable Energy Industry', 5.
[6] Buy American Act of 1933, originally 41 U.S.C. §§ 10a–10d, now 41 U.S.C. §§ 8301–8305.
[7] The 'Buy American provision' can be found in section 1605 of Title XVI of the American Recovery and Reinvestment Act of 2009, Public Law 111-5, 123 Stat. 115-521.

non-tariff barriers which implement their effect hidden behind the borders and since they are often characterized by a rather opaque nature in their normative design[8] there are no reliable statistics on them. However, a recently conducted snapshot survey addressing various industry sectors lists 117 local-content requirements which have been actually implemented or which were at least proposed since 2008 worldwide.[9]

Also, local content requirements are not limited to the energy sector even though they have been typical in the oil and gas sector[10] for decades. In fact, they can be found in branches which are labor-intensive and of an important strategic industrial interest for the respective country like the automobile[11] and healthcare[12] industry. However, as stated above, local content requirements became especially popular in the field of manufacturing wind turbines and solar cells and modules recently and therefore drew the attention of trade observers mainly to the field of renewables.

2.1. How are local-content requirements embedded in support schemes for renewably produced electricity?

Thus, if local content requirements became so increasingly popular in the last few years in the renewable sector we have to address how they are embedded in support schemes for renewably produced electricity.

As a common pattern in their normative design, local-content requirements tie public support for renewably produced electricity to two conditions that have to be met cumulatively: Firstly and not astonishingly so far, the energy has to be generated domestically; ie the energy has to be produced in power plants situated in the respective country/region. Secondly and crucially, these power plants (eg wind mills or solar panels) or their equipment have to be manufactured domestically in a certain percentage, ie the power plants used to generate the electricity have to be made – at least partly – in the specific country/region. Often the required percentage of content which has to be sourced domestically increases gradually over the years.[13]

Local-content requirements can be embedded in all kinds of support systems one could imagine for renewably produced electricity. Thus, eg the granting of a feed-in tariff (FIT), the accountability of a certificate for a quota, the prequalification of participants in bidding pro-

[8] GC Hufbauer et al, *Local Content Requirements: A global Problem* (Peterson Institute for International Economics 2013) xi.
[9] Ibid 155.
[10] See S Tordo et al, *Local Content Policies in the Oil and Gas Sector* (The World Bank2013).
[11] See F Veloso, *Local Content Requirements and Industrial Development – Economic Analysis and Cost Modeling of the Automotive Supply Chain* (PhD Thesis, Massachusetts Institute of Technology 2001).
[12] See Hufbauer et al, *Local Content Requirements*, 41.
[13] Ibid.

cedures or the eligibility for governmental procured projects mandating green energy can be made conditional on a local-content requirement.[14]

2.2. Why are they especially topical in the context of renewable energies?

Having looked at the core design of local-content requirements there still remains the question why they are frequently imposed in the context of renewable energies. Many answers can be given to this question:

First of all, the mere objective of mitigating greenhouse gases seems not convincing enough to ensure the acceptance of the extra costs of renewables which in the end are funded by the consumers or tax payers. Thus, the environmental purpose has to be accompanied by the economic argument that green energy support schemes create secure domestic jobs. However, this narration of success works only as long as the national support schemes do not mainly support foreign production thereby destroying domestic employment in the long run. One way of avoiding such unwanted effects is the imposition of antidumping duties and countervailing measures that some countries imposed to lessen the flow of low priced imports entering their domestic markets. Another way is the imposition of local-content requirements which also might serve policymakers as an unconventional trade defense measure.

Another political reason to introduce local-content requirements might be that they can serve to protect infant green industries until they become competitive internationally – an argument which is usually used in the context of developing countries.[15]

Finally, proponents of local-content requirements claim that they lead to an increase in the number of manufacturers followed by a higher capacity building that in turn lowers the costs in the long run and fosters the spread of new technology.[16] However, all these reasons do not *per se* implicate the effectiveness of local-content provisions. On the contrary, there are a lot of arguments opposing such a policy: Not only are local-content requirements potentially highly trade distorting, but they are also risky in terms of causing higher costs and leading to a wrong allocation of resources. Especially, such requirements are 'not always able to choose the highest quality equipment and services globally available at the most competitive price'.[17] Additionally, they seem to neglect the potentials of the service sector in the downstream value chain (eg planning, construction, maintenance) by focusing primarily on upstream manufacturing.[18]

The so far most comprehensive study on local-content requirements in the renewables sector points out that 'local economic or employment benefits on the one hand and renewable energy

[14] See Kuntze and Moerenhout, 'Local Content Requirements and the Renewable Energy Industry', 5.
[15] Ibid 6.
[16] Ibid.
[17] Ibid vi.
[18] Ibid 1.

innovation on the other should not necessarily be seen as a contradiction'.[19] Even though there is a tendency that local-content provisions lead to higher costs in short term the authors of the study underline that there is still research to be done to assess how these requirements work in the long run and how they should be designed to work efficiently.[20]

2.3. Selected examples and current trade disputes

Among the above mentioned 117 newly identified local-content requirements since 2008 are about 20 affecting the renewable energy sector.[21] However, there might be older and still undiscovered ones. In fact, the most controversial of the yet revealed cases are the ones that made their way to the WTO and therefore gained attention of the global trade community. As to date no less than four cases were or still are discussed in the realm of the WTO.

The first case dealt with wind power programs set up by China which required certain domestic content levels[22] and therefore were challenged by the USA.[23] This case was the first occasion to clarify WTO rules on local-content provisions in the renewable sector. However, the dispute was settled amicably by the parties in the consultations agreeing on the termination of the questioned measures[24] which – according to observers – had served their purpose widely given that China could built up 'three of the global top ten manufacturers in only six years' time'[25]. Nonetheless, the trade conflict between China and the US relating to renewable energy was not ceased by this settlement. Rather, it turned out to be the starting point of a whole series of disputes coming up in the meantime especially in respect to anti-dumping and countervailing measures on Chinese solar equipment imposed by the US. Looking for further claims accompanying its WTO complaint[26] against these US trade defense measures, China identified local-content provisions in the US on state-level concerning regulations in California, Massachusetts, New Jersey, Ohio and Washington.[27] Though there has not yet been a formal WTO dispute concerning these provisions, it is not unlikely that they will be the subject of a new case in the trade conflict between China and the US.

The second case regarding the complaints of Japan[28] and the EU[29] against the 'Minimum Required Domestic Content Level' in the Feed-In Tariff programs of the Canadian Province

[19] Ibid 2.
[20] Ibid 3.
[21] Stephenson, 'Addressing Local Content Requirements in a Sustainable Energy Trade Agreement', Annex, Table 1.
[22] Described in detail by Kuntze and Moerenhout, 'Local Content Requirements and the Renewable Energy Industry' 13 -18.
[23] US v China, Measures concerning wind power equipment, DS 419.
[24] A Cosbey, 'Renewable Energy Subsidies and the WTO: The Wrong US v China, Measures concerning wind power equipment, DS 419. Law and the Wrong Venue' (2011) 44 *Subsidy Watch* 1.
[25] Kuntze and Moerenhout, 'Local Content Requirements and the Renewable Energy Industry', 13.
[26] China v US, Countervailing and Antidumping Measures on Certain Products from China, DS 449.
[27] Kuntze and Moerenhout, 'Local Content Requirements and the Renewable Energy Industry', 25.
[28] Japan v Canada, Certain Measures Affecting the Renewable Energy Generation Sector, DS 416.
[29] EU v Canada, Measures Relating to the Feed-in Tariff Program, DS 426.

Ontario went through the complete WTO dispute settlement mechanism with the final report of the WTO Appellate Body being issued in May 2013. This case is introduced later on in depth as it can be considered as the relevant reference case dealing specifically with our topic.

The third case was initiated by China requesting for consultations with the EU in regard of local-content requirements in Italy and Greece.[30] This move of China is often seen as an reaction on EU`s antidumping policy against Chinese imports of solar equipment by commentaries, though the parties found an amicable solution on the dumping issue in the meantime.[31] Whether the case will be reviewed by a WTO dispute panel is open so far and rather unlikely since the European Commission apparently pushes the respective Member States informally to remove their local-content clauses due to the consultations with China.[32]

Finally, the forth case was brought up by the US and concerns the domestic content requirements under the 'Jawaharial Nehru National Solar Mission' (NSM)[33] of India for solar cells and solar modules.[34] The consultations are still going on even though the Indian government on its part considers preparing a complaint regarding various local-content provisions in the US to spur a debate on their general acceptance and to push the US to drop its case.[35] Should the case ever be decided on its merits, an interesting question will be whether developing countries like India might invoke special treatment as advocated by policymakers.[36]

Having had a look at the cases and their background, one might get the impression that not all of the complaints are motivated by genuine trade and investments interests in the respective sector. Rather it seems that they are used as a political message among trade rivals expressing the readiness to shoot sharply in a trade conflict that is looming continually anyhow. However, the legal scrutiny of the cases does not depend on the intentions of the complainant but on the plain rules of the governing law.

3. LOCAL-CONTENT PROVISIONS AND WORLD TRADE LAW

So, what is the legal framework governing local-content provisions under WTO disciplines? To shed light on this question the following subchapter gives an introduction on the relevant provisions of the respective trade agreements under the WTO umbrella. By nature this legal

[30] China v EU and Certain Member States, Certain Measures Affecting the Renewable Energy Generation Sector, DS 452.
[31] European Commission, 'Commission Decision of 2 August 2013 accepting an undertaking offered in connection with the anti-dumping proceeding concerning imports of crystalline silicon photovoltaic modules and key components (ie cells and wafers) originating in or consigned from the People's Republic of China' [2013] OJ L209/26.
[32] http://www.e21.info/news/133245/EU-Kommission-geht-auch-gegen-Local-Content-vor.
[33] Detailed described by Stephenson, 'Addressing Local Content Requirements in a Sustainable Energy Trade Agreement', 11.
[34] US v India, Certain Measures Relating to Solar Cells and Solar Modules, DS 456.
[35] http://www.thehindubusinessline.com/industry-and-economy/india-says-us-cannot-point-fingers-on-local-input-norm/article4677364.ece
[36] Stephenson, 'Addressing Local Content Requirements in a Sustainable Energy Trade Agreement', 13.

analysis is done in an abstract way since local-content provisions differ both in their normative design and actual environment. Nonetheless, one can easily carve out the core trade principles that local-content requirements do very likely conflict with.

3.1. The obligations of the GATT

Governing the rules on the trade on goods the GATT is not only the oldest but also legally the most important agreement in the legal framework of the WTO. Other more recent WTO agreements do often refer to GATT provisions. The GATT enshrines basic free trade principles such as the ban of quantitative restrictions and the obligation to treat like products of for-foreign origin equally. Thus, most important Article III:4 GATT states that imported products shall be accorded treatment no less favorable than that accorded to like products of national origin in respect of all laws, regulations and requirements affecting their internal sale, offering for sale, purchase, transportation, distribution or use.

What does this mean for local-content requirements? Power plant components manufactured abroad can be easily seen as like products to domestically manufactured ones. Further, local-content requirements affect the internal sale. They lessen the demand for foreign sourced products by giving an incentive to buy domestic ones since they give preferential treatment only to domestic goods. Thus, it seems quite evident that foreign products thereby are treated less favorable. Therefore, without prejudice to possible exemptions discussed later on, the equal treatment obligation of Article III:4 GATT normally renders local-content requirements illegal.

Additionally, Article III:5 GATT obliges the parties not to obtain any internal quantitative regulation which requires, directly or indirectly, that any specified amount or proportion of any product must be supplied from domestic sources. Whether a local-content requirement falls under this provision in the end might depend mainly on its normative design even though the broad wording of the article covers also indirect ways (eg incentives) of requiring domestic supply.[37] However, one has to know that dispute settlement panels frequently apply judicial economy and refrain from assessing Article III:5 GATT when already having found a breach of Article III:4 GATT.[38] Thus, Article III:5 GATT is of rather subsidiary relevance.

3.2. The obligations of the TRIMs Agreement

Usually local-content requirements are designed to attract new investments in locally based manufacturing lines for renewable energy components. Policy instruments like this are addressed by the WTO's TRIMs Agreement setting the rules for trade related investment

[37] Kuntze and Moerenhout, 'Local Content Requirements and the Renewable Energy Industry', 36.
[38] China-Measures Affecting Imports of Automobile Parts, Panel Report of 18 July 2008, WT/DS342/R, paras. 7.275 and 7.276.

measures. One of the core obligations of the TRIMs Agreement is imposed by Article 2.1 stating that no member shall apply any measure that is inconsistent with the provisions of Article III of the GATT saying thereby amongst others that there shall be no treatment less favorable of foreign like products (referring to Article III:4 GATT) and no quantitative regulations requiring domestically sourced products (referring to Article III:5 GATT). Thus, once a trade measure is characterized as having a 'significant impact on investment'[39] one has to analyze the GATT issues mentioned just above also for the sake of the TRIMs Agreement. However, guidance is here given by the so-called Illustrative List in the Annex to the TRIMs Agreement which is an integral part of it via its Article 2.2. If a measure is covered by the Illustrative List it automatically infringes Article III:4 GATT. In this respect the Illustrative List states in its first paragraph that investment measures are inconsistent with the equal treatment obligation of Article III:4 GATT 'which are mandatory or enforceable under domestic law or under administrative rulings, or compliance with which is necessary to obtain an advantage, and which require: (a) the purchase or use by an enterprise of products of domestic origin or from any domestic source, whether specified in terms of particular products, in terms of volume or value of products, or in terms of a proportion of volume or value of its local production […]'. So, constituting a trade related investment measure a local-content requirement fulfills both of the two criteria: First, it would not be hard to identify it to be mandatory (eg if a certain energy mix sourcing from domestically manufactured plants is legally required) or to be necessary to obtain an advantage (eg a feed-in tariff or a tradable certificate). Second, it requires clearly the purchase or use of products of domestic origin considering that they do impose certain rates of domestically manufactured goods by their very nature.

Hence, as already seen in respect to the GATT provisions, local-content requirements also very likely constitute a breach of Articles 2.1 and 2.2 of the TRIMS without prejudice to exemptions which might be possibly invoked.

3.3. The obligations of the SCM Agreement

Governmental subsidies are a long-established and widespread measure to pursue strategic industrial objectives. Considering their potentially trade distorting effects subsidies are addressed by the SCM Agreement of the WTO. By the definition of Article 1 of the SCM Agreement a subsidy is – in short – a financial contribution by a government or any public body which confers a benefit. Restricting possible loopholes of WTO members to grant preferential treatment to domestic production Article 3.1(b) of the SCM Agreement wholly prohibits subsidies contingent upon the use of domestic over imported goods. Thus, assessing whether a local-content provision constitutes a forbidden subsidy it seems easy to argue that the gained contribution is contingent upon the use of domestic over imported production since this is the very idea of local-content provisions. However, the legally more challenging question is whether there is actually a subsidy. According to the description given by Article 1.1

[39] Indonesia-Certain Measures Affecting the Automobile Industry, Panel Report of 2 July 1998; WT/DS54/R, para. 14.73.

(a) (1) (iv) of the SCM Agreement there is a financial contribution ie where 'a government makes payments to a funding mechanism, or entrusts or directs a private body to carry out functions […] which would normally be vested in the government and the practice, in no real sense, differs from practices normally followed by governments'. Functions illustrated above in (i) to (iii) are eg direct transfer of funds, tax credits or the purchase of goods. This shows that the understanding of a contribution is quite broad. Thus, it covers various support schemes for renewable energy ranging from direct transfer of funds granted by governmental agencies or private run grid operators (like the FIT in Germany) to the mere purchase of energy. However, to be a formal subsidy the contribution must confer also a benefit. That is, the one who receives the benefit must be better off compared to a situation without the contribution.[40] Thus, the assessment of the benefit relies crucially on the respective benchmark which is applied in such a comparison. Usually 'the prevailing market conditions for the good […] in question in the country of provision or purchase'[41] are used as the relevant benchmark which requires an assessment of the actual local market conditions. But what does this mean for the renewable energy sector? Is the benchmark set by the price for electricity at wholesale level involving conventionally generated energy? Or is there a separate market for green energy to which one might refer? The Appellate Body gave a surprisingly distinct answer on that question that will be introduced and analyzed shortly after in the subchapter dealing with the Ontario case.

Addressing local-content requirements from a subsidy perspective, one learns that the issues are relatively complex here involving multiple legal criteria. Further, the issue is highly depending on the market conditions which do set the benchmark for the benefit comparison.

3.4. Possible exceptions from trade law obligations

As mentioned above repeatedly, there are possible exceptions to the trade obligations disciplining local-content requirements which might be invoked to uphold them legally. The first one is the so-called public procurement exception of Article III:8 GATT, the second one the provision on general exception in Article XX GATT.

As to the first one Article III:8 (a) GATT states that the provisions of Article III 'shall not apply to laws, regulations or requirements governing the procurement by governmental agencies of products purchased for governmental purposes and not with a view to commercial resale or with a view to use in the production of goods for commercial sale'. Thus, if a government purchases electricity for its own demand purposes, it is exempted from the obligations of Article III GATT and might establish local-content requirements lawfully. As the Appellate Body clarified recently, this exception is also applicable to Articles 2.1 and 2.2 of the TRIMs

[40] Canada-Measures Affecting the Export of Civilian Aircraft, Appellate Body Report of 2 August 1999, WT/DS70/AB/R, para. 157.
[41] Art 14(d) 2nd sentence of the SCM Agreement.

Agreement,[42] whereas the obligations of the SCM Agreement are not exempted by Article III:8 (a) GATT since Article 1.1 (a) (1) (iii) mentions the purchase of goods explicitly as a possible financial contribution. However, even though most countries defend their local-content requirements by invoking the public procurement exception, the restriction clause of Article III:8 (a) GATT limits the exemption's scope significantly foreclosing commercial re-sale. Thus, the government cannot sell the product previously bought on arm's-length. Instead, it must either consume the product or provide it to recipients when carrying out public functions.[43] Only in this limited set of cases the government is free to require domestic content. Nonetheless– in derogation of the WTO's usual single package approach – 43[44] out of 159[45] WTO members are signatories to the plurilateral Agreement on Government Procurement (GPA) which partially opens their procurement markets.[46] Thus, there might apply stricter rules for the signatories of the GPA depending on the respective scope of market opening.

The second of the above mentioned possibilities to exempt local-content requirements from trade disciplines arises from Article XX GATT enshrining the so-called general exceptions which do allow WTO members to deviate from their obligations under certain strictly handled criteria. However, going through these exceptions, one might hardly figure out relevant justification grounds backing preferential treatment of domestically sourced power plant components. Not even the two environment related exceptions listed under lit. b) (protection of human, animal or plant life or health) and lit. g) (conservation of exhaustible natural resources) of Article XX can be invoked. It is clear that the restrictions on foreign production do – as pointed out rightly by Kuntze/Moerenhout – 'not benefit the achievement of either of the two objectives. Instead, [a Panel] could even find that [local-content requirements] impede the achievement of these two objectives, as they worsen investment conditions for foreign manufacturing firms (due to the restricted availability and choice of inputs for renewable electricity generation plants) and therefore potentially reduce their commitment to [renewable energy] projects'.[47] Considering this verdict, it would also be of limited use to address the disputed question whether Article XX GATT might be invoked also for breaches of the SCM Agreement as an amicus brief did in the Ontario case.[48] Significantly enough, Canada did not even try to invoke Article XX to defend the Ontarian local-content requirement when it was pending in the WTO's dispute settlement mechanism.

[42] Canada-Certain Measures Affecting the Renewable Energy Generation Sector, Appellate Body Report of 6 May 2013; WT/DS412/AB/R, para. 5.26.
[43] Ibid para. 5.74.
[44] As of 1 July 2013.
[45] As of 2 March 2013.
[46] Due to the scope of the entities listed by the respective host state in the Annexes to GPA's Appendix I.
[47] Kuntze and Moerenhout, 'Local Content Requirements and the Renewable Energy Industry', 39 referring to the First Written Submission of 14 February 2012 by the European Union on Canada – Measures Relating to the Feed-in Tariff Program, WT/DS426, para. 5. 14.
[48] Amicus Curiae Submission 10 May 2012 by IISD, CELA and Ecojustice on Canada – Certain Measures Affecting the Renewable Energy Generation Sector, WT/DS412.

4. THE ONTARIO CASE

The following subchapter addresses the Ontario case which became prominent as it was the first case decided finally by the Appellate Body and which is therefore frequently regarded as the reference case for our topic. Studying it does not only clarify an entire set of legal questions concerning local-content requirements but also offers the possibility to review a real world local-content provision instead of abstract ones. Therefore, this subchapter presents the facts and the proceedings of the case, the findings of the Appellate Body's report and stresses the question what they mean for the development of a consistent case law concerning renewable energy in the WTO.

4.1. The facts of the case and the proceedings

In 2009 the Canadian Province Ontario established both a FIT-Programme and a MicroFIT-Programme which each imposed a 'Minimum Required Domestic Content Level' for wind and solar PV power plants solely. Whereas the FIT-Programme covered installations without size restrictions except for solar PV (no more than 10 MW) and waterpower (no more than 50 MW), the MicroFIT-Programme was mainly designed for solar PV installations up to 10 kW in households, farms and small businesses. As required by the minimum domestic content level, a certain percentage of the components, varying from 25 per cent up to 60 per cent, had to originate from Ontario, if the operator selling the electricity to the Ontario Power Authority (OPA) wanted his plant to be eligible for the feed-in tariff by 20-year or 40-year contracts. Apparently, this policy aimed at attracting manufacturers to invest in domestic production lines for renewable power plants. It is remarkable that the domestic content level was not even referring to Canadian but exclusively to Ontario sourced components. However, since Ontario itself is no member of the WTO Japan and the EU each filed a complaint against Canada in regard of the Ontarian local-content provision. Having gone through the proceedings of the dispute settlement with the intermediate step of the panel reports in December 2012,[49] the Appellate Body issued its joint report covering both complaints in early May 2013[50] with the final legal review of the case. In the meantime the Dispute Settlement Body (DSB) of the WTO adopted the Appellate Body`s report and requested Canada to bring its measures found inconsistent by the Appellate Body into conformity with its WTO obligations entered into. Shortly after, Canada informed the DSB about its intention to implement the ruling and required a reasonable period of time to do so. Here upon, Canada and Japan informed the DSB having had agreed on a reasonable period of time for the implementation of 10 months expir-

[49] Canada-Certain Measures Affecting the Renewable Energy Generation Sector, Panel Report of 19 December 2012, WT/DS412/R (complainant Japan) and Canada-Measures Relating to the Feed-in Tariff Program, Panel Report of 19 December 2012, WT/DS426/R (complainant EU).

[50] Canada – Certain Measures Affecting the Renewable Energy Generation Sector, Appellate Body Report of 6 May 2013, WT/DS412/AB/R and Canada – Measures Relating to the Feed-in Tariff Program, Appellate Body Report of 6 May 2013, WT/DS426/AB/R.

ing on 24 March 2014.[51] It remains to be seen how Canada will handle the required changes in Ontario's FIT-Programmes in this respect.

4.2. The findings of the Appellate Body

The findings of the Appellate Body can be summoned as follows: Firstly, the Ontarian FIT-Programmes are not covered by the government procurement exception of Article III:8 (a) GATT. Secondly, the 'Minimum Required Domestic Content Level' is inconsistent with Article 2.1 of the TRIMs Agreement and at the same time with Article III:4 of GATT. Thirdly, the questions whether Ontario's local-content requirement is conferring a benefit in the meaning of the SCM Agreement and qualifies as a forbidden subsidy must remain open for lack of sufficient fact-finding by the first instance.

Assessing the government procurement exception the Appellate Body held that the government (that is the OPA as a governmental agency) actually purchased the electricity. However, the Appellate Body carved out a distinction between the product being purchased by the government (= electricity) and the product which is covered by the 'Minimum Required Domestic Content Level' (= generation equipment). The 'close relationship' between the two products as yet invoked by the Panel's report[52] is therefore rejected: '[T]he scope of the terms 'products purchased' in Article III:8(a) is informed by the scope of 'products' referred to in the obligations set out in other paragraphs of Article III. Article III:8(a) thus concerns […] the product that is subject to the discrimination'.[53] The Appellate Body continues saying 'that the product of foreign origin […] must be in a competitive relationship with the product purchased. In the case before us, the product being procured is electricity, whereas the product discriminated against for reason of its origin is generation equipment'.[54] Thus, the Appellate Body concludes that the 'Minimum Required Domestic Content Level' cannot be referred to as laws, regulations or requirements governing the procurement of electricity within the meaning of Article III:8(a) GATT.[55] This change in legal interpretation, however, did not change the result of the case since the Panel in its report had held that the OPA was purchasing the electricity with a view to commercial resale and therefore could not rely on the public procurement exception.[56] As it premised its finding on different grounds, the Appellate Body saw no reason to clarify legally the Panel's view that

[51] For more detailed information see http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds412_e.htm.
[52] Canada-Certain Measures Affecting the Renewable Energy Generation Sector, Panel Report of 19 December 2012, WT/DS412/R (complainant Japan) and Canada-Measures Relating to the Feed-in Tariff Program, Panel Report of 19 December 2012, WT/DS426/R para 7.127.
[53] Canada – Certain Measures Affecting the Renewable Energy Generation Sector, Appellate Body Report of 6 May 2013, WT/DS412/AB/R and Canada – Measures Relating to the Feed-in Tariff Program, Appellate Body Report of 6 May 2013, WT/DS426/AB/R para 5.63.
[54] Ibid para. 5.79.
[55] Ibid para 5.79.
[56] Canada – Certain Measures Affecting the Renewable Energy Generation Sector, Panel Report of 19 December 2012, WT/DS412/R (complainant Japan); and Canada – Measures Relating to the Feed-in Tariff Program, Panel Report of 19 December 2012, WT/DS426/R (complainant EU), para 7.152.

OPA was purchasing the electricity with a view to commercial resale.[57] Staying abstract, the Appellate Body though clarified that the use 'for governmental purposes' and the restriction not to purchase 'with a view to commercial resale' are cumulative requirements.[58] Thus, even if the government does not purchase with a view to commercial resale this does not mean automatically that the purchased product is used for governmental purposes.

Having ruled that the exception of Article III:8(a) GATT does not apply, the Appellate Body was free to analyze whether the 'Minimum Required Domestic Content Level' infringes the equal-treatment obligations of Article III:4 GATT and Article 2.1 of the TRIMs Agreement. Still, compared to the actual significance of this question for the outcome of the case, the remarks of the Appellate Body on this specific issue are relatively short. Indeed it just confirms the Panel's verdict that the challenged measures are a trade related investment measure 'falling under the scope of the Paragraph 1(a) of the Illustrative List and that […] the challenged measures are inconsistent with both Article 2.1 of the TRIMs Agreement and Article III:4 of the GATT'.[59] The fact that the Appellate Body stated this core issue of the case in such shortness does not only show that the Panel worked well on this issue but also shows that there is almost no room for discussion that local-content requirements like the Ontarian one discriminate foreign production instead of treating it equally. Most likely any other local content clause designed like the Ontarian one – eg the one of India – would share this fate.

Finally, the result of the case is solely based on the GATT and TRIMs Agreement inconsistencies since the Appellate Body in the very end of its analysis was unable to fully review the measure under the SCM Agreement for lack of sufficient fact-findings in the first instance.[60] Notwithstanding, the Appellate Body outlined abstractly how one has to determine whether a support system for renewables is conferring a benefit: '[T]he benefit comparison under Article 1.1(b) should not be conducted within the competitive wholesale electricity market as a whole, but within competitive markets for wind- and solar PV-generated electricity, which are created by the government definition of the energy supply-mix'.[61] In addition, the Appellate Body acknowledges affirmatively the role of government intervention by reducing reliance on fossil energy**:** '[T]he government definition of the energy supply-mix may reflect the fact that consumers are ready to purchase electricity that results from the combination of different generation technologies, even if this is more expensive than electricity that is produced exclusively from conventional generation sources'. [62] Thus, deciding on a controversial point among trade law scholars dealing with this question,[63] the

[57] Canada – Certain Measures Affecting the Renewable Energy Generation Sector, Appellate Body Report of 6 May 2013, WT/DS412/AB/R and Canada – Measures Relating to the Feed-in Tariff Program, Appellate Body Report of 6 May 2013, WT/DS426/AB/R para. 5.84.
[58] Ibid para. 5.69.
[59] Ibid para. 5.91.
[60] Ibid para 5.234.
[61] Ibid para 5.178.
[62] Ibid para 5.177.
[63] See for example R Howse, 'World Trade Law and Renewable Energy: the Case of Non-tariff Measures' (2006) 6 *Journal for Environmental and Planning Law* 500, 511; C Buchmüller, *Strom aus erneuerbaren Ener-*

Appellate Body ruled that in determining whether a support system is conferring a benefit, one cannot use the market conditions of conventional 'grey' energy as the relevant benchmark for renewable 'green' energy.[64] Even though they had no influence on its actual outcome, these remarks are certainly unexpected and have a good potential to impact strongly the discussion on the assessment of the remuneration granted by renewable energy support schemes in general. The Appellate Body indicated that a competitive bidding process 'will ensure that the price paid by the government is the lowest possible price offered by a willing supply contractor', whereas 'market-based price discovery is not necessarily tied to a competitive bidding process'.[65] Thus, 'the methodology adopted to determine government-administered prices may also show that these do not provide more than adequate remuneration and thus reflect what a market would yield'.[66] By giving governments the discretion to show that methods other than bidding processes might also lead to results that do not exceed prices determined competitively, the Appellate Body sustains the reliableness of feed-in tariffs. Indeed, there are good reasons for governments to refrain from a bidding procedure when determining the remuneration granted by a support scheme. For example, in bidding processes investors tend to underbid with too low prices since that seems to give them the guarantee to get the acceptance of the bid thereby eliminating competitors.[67] This leads potentially to high default rates in the realizations of the projects. Alternatively, there might occur collusive tendering or special arrangements among competitors leading to a reduced number of just a few major bidders.[68] Thus, instead of guaranteeing the most efficient formation of prices, bidding processes might in the end even lead to a less efficient allocation of the employed funds than a governmental administered cost-based feed-in tariff.

4.3. Pathing the way to a consistent case law?

So, what are the merits of the Appellate Body's report on the Ontario case? Does it path the way to a consistent case law governing renewable energy support schemes under the WTO umbrella?

As already mentioned, it is the very first case conclusively decided in the realm of the WTO on local-content requirements in support schemes for renewable energy. It shows that the government procurement exception of Article III:8 GATT is no roundly suitable loophole for

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gien im WTO-Recht (Nomos 2013) 408 and I Zlatanov, *Die Vereinbarkeit von Strompreisbindungen zugunsten erneuerbarer Energien mit WTO-Recht*, (Peter Lang, European Universitites Studies 2009) 64.

[64] From a more economically point of view methodically criticized by A Breckenridge and D Foster, 'A Matter of Definition – Commentary of Aspects of the Appellate Body's Ruling on the Canada-Renewable Energy Case in the WTO', (Frontier Economics Europe, Client Briefing 2013) 3.

[65] Canada – Certain Measures Affecting the Renewable Energy Generation Sector, Appellate Body Report of 6 May 2013, WT/DS412/AB/R and Canada – Measures Relating to the Feed-in Tariff Program, Appellate Body Report of 6 May 2013, WT/DS426/AB/R para 5.233.

[66] Ibid.

[67] P Bofinger, 'Förderung fluktuierender erneuerbarer Energien: Gibt es einen dritten Weg?', (Institut für Zukunftsenergiesysteme 2013) 38.

[68] Ibid.

local-content clauses. Also it shows that local-content requirements can be characterized without further ado as trade related investment measures. Therefore, local-content provisions are disciplined by both the equal treatment clauses of the GATT and the TRIMs Agreement with which they conflict evidently. The question if a local-content requirement also constitutes a forbidden subsidy contingent upon domestic production apparently depends solely on the fact whether the respective financial contribution confers a benefit to its receiver and thus can be formally considered to be a subsidy. Since the suitable benchmark for the benefit analysis is the market price for electricity generated in wind and PV installations instead of the wholesale electricity market, a governmental contribution for green energy which does not exceed this newly defined green market price would very likely not be a subsidy. And where there is no subsidy, there can be by definition no forbidden subsidy. However, even if a support scheme would be based on the market price of green energy, it would still be problematic to discriminate in respect to the origin of the power plant. This is just another lesson of the Ontario case. Due to the fact that the sheer variety of WTO agreements covers almost all trade related issues, any local-content requirement would have to be consistent with all these agreements for being upheld in a dispute. Frankly speaking, from a mere trade law perspective policymakers are well advised to refrain from local-content requirements when designing their future support scheme. Unless there are no amendments to the agreements, there is almost no chance to create such a provision in a way that is trade law proof.

These conclusions of the Ontario case might yet serve as a kind of blueprint for further cases in the docket. However, a coherent multilateral approach of trade law governing the conditions under which support schemes for renewable energy comply with WTO disciplines is not disclosed by the Appellate Body's report. Maybe it will be clarified by a synopsis of Appellate Body and Panel reports in related cases including the highly disputed anti-dumping issues. Having in mind the pressing need to decarbonize our economies by fostering green technologies, trade law and policy observers doubt, however, that such a case-by- case approach is appropriate.[69] Therefore, a growing number of them is advocating a separate agreement tailored to renewable energy technology.[70] Such an approach is not new – having in mind the WTO's Information Technology Agreement of 1996 – and was already proposed on other issues[71] as well. However, the likelihood that major trade rivals involved in pending or looming disputes on renewables might agree on such an agreement within the next years seems very little. Also, one has to consider the toughness and duration of multi- and plurilateral trade negotiations and the recent tendency among nations rather to create precedents by entering into bilateral or regional trade agreements. Thus, a separate trade agreement on renewable energy technology would be most likely no gain of time in the race against climate change and global warming.

[69] Cosbey, 'Renewable energy subsidies and the WTO', 3 therefore calls for a separate Agreement on Renewables.
[70] Ibid; see also Stephenson, 'Addressing Local Content Requirements in a Sustainable Energy Trade Agreement', 17; Kuntze and Moerenhout, 'Local Content Requirements and the Renewable Energy Industry', 40.
[71] R Howse et al, WTO Disciplines and Biofuels: Opportunities and Constraints in the Creation of a Global Marketplace (International Food & Agricultural Trade Policy Council 2006) 12.

5 CONCLUDING REMARKS

So, where does the outcome of the Ontario case and its verdict on local-content requirements leave us? Is there really no possibility to attract investments in domestically manufactured renewable energy installations that is consistent with trade law?

To shed light on this question, one has to keep in mind that the effect on employment that is intended by local-content requirements is nonspecific in regard of its causality. Of course, one can observe that most countries having local-content requirements in their support schemes could create a significant number of jobs.[72] However, it is frequently not clear how many jobs would have been created anyway under a support scheme without a local-content requirement.[73]

Also, a mere local-content policy without further attractive surroundings for investments might even hinder the domestic development of renewables in the end, especially when the required amount of locally produced power plant equipment is set too high in a too early stage. For example, in Russia the result of the first round of the auction for wind energy projects was quite disappointing since the local-content requirement of 35 percent of domestically manufactured power plant equipment in 2014 is – despite the question of its legality – considered much too high compared to the actual locally based manufacturing capacities.[74] Indeed, the crucial point seems to be that the demand for renewable power equipment in the respective target market is actually high enough to attract investors who build up production capacities on-site. Thus, the governmental definition of the energy supply-mix should not be underestimated when creating attractive regional markets for renewable energy even without requiring local content. An ambitiously defined share of renewably generated energy combined with a reliable commitment to phase out conventional plants continuously might be a key driver to create a home market which is dynamic enough to attract investments in locally based manufacturing. Thus, governments refraining from local-content provisions but still willing to build up domestic manufacturing capacities for renewable energy components are not reduced to inaction. Interestingly, beside its local-content policy Ontario will shut down its last coal power plant in the end of 2014, whereas just ten years ago coal-fired generation accounted for 25 per cent of its electricity supply.[75]

Furthermore, one has to consider the technology-specific characteristics of renewable energy plant equipment and the cost structure of its production. Whereas solar cells and modules are

[72] Kuntze and Moerenhout, 'Local Content Requirements and the Renewable Energy Industry', 8.
[73] See on the doubtfulness of job creation through local-content requirements Stephenson, 'Addressing Local Content Requirements in a Sustainable Energy Trade Agreement', 6.
[74] Heup, 'Russisch Roulette', 81.
[75] *Achieving Balance – Ontario's Long Term Energy Plan* (Ontario Ministry of Energy 2013) 9. See also as an example from Europe the ambitious commitment of Denmark to achieve its complete independence from coal, oil and gas in 2050 eg by a taxation of fossil fuels due to the polluter-pays principle, Danish Government, 'Energy Strategy 2050 – From Coal, Oil and Gas to Green Energy' (February 2011) 7.

quite simple to transport and therefore are a particular easily tradable good, wind power equipment does not fit into shipping containers very well and has to be manufactured more or less in the region of its usage site anyhow. Nonetheless, also the production patterns of the solar sector might change a few years ahead since the further decline of production costs will automatically increase the proportion of the shipping costs. This leads presumably to manufacturing lines located closer to the respective target markets as it yet happened in the automotive sector.[76] Though not each single country can and will be a major producer of renewable power equipment then, these remarks show how crucially the distribution of manu-manufacturing sites depends on technology-specific cost factors which cannot be influenced by governmental intervention much – not even with local-content requirements.

[76] J Ball and J Meckling, 'Avoiding Sunstroke – Assessing National Competitiveness in the Global Solar Race', (Standford Unversity, Steyer-Taylor Center for Energy Policy and Finance 2013) 4, 8 and 15.

CHAPTER 12

THE EU EXTERNAL ENERGY POLICY AND THE LAW: DOES THE EU REALLY MATTER?

NICOLAS PRADEL

1. INTRODUCTION

Energy has always been at the centre of the European Community integration process. Both the Treaty establishing the European Coal and Steel Community in 1951 and the Treaty establishing the European Atomic Energy Community (also called the 'Euratom Treaty') in 1957, specifically dealt with the most important energy sources of those times: coal and nuclear energy.[1] However, coal and nuclear energy very quickly had to compete against the use of oil and natural gas for electricity generation, industry and transportation.

As European domestic energy resources were limited, the need to import energy was at first managed by the Member States. However, the multiplication of energy supply crises,[2] the increased environmental threats due to energy consumption[3] and the development of a liberalised EU internal energy market[4] led to a greater involvement of the European Union in the field of external energy policy.

With the entry into force of the Lisbon Treaty on 1 December 2009, the EU acquired explicit and effective competence in the field of energy policy.[5] Article 194 of the TFEU sets out ambitious objectives for this policy. In substance, the Union policy on energy aims to ensure the security of the energy supply in the EU and to contribute to a more sustainable production and use of energy in Europe but also implicitly around the world.

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[1] On the history of the EU energy policy, see FAM Alting von Geusau (ed), *Energy in the European Communities* (AW Sijthoff 1975) 213; G de Carmoy and G Brondel, *L'Europe de l'énergie. Objectif 1992 et perspectives 2010* (Office for Official Publications of the European Communities 1991) 171; WG Jensen, *Energy in Europe: 1945–1980* (GT Foulis 1967) 203, and NJD Lucas, *Energy and the European Communities* (Europa Publications 1977) 175.

[2] From the Suez crisis in 1956 to the energy transit disputes between the Russian Federation, Ukraine and Belarus in 2006 and 2009.

[3] Namely, climate change and air pollution.

[4] On the history of the three liberalisation packages of the EU energy internal market (1996–1998, 2003, 2009) see D Buchan, *Energy and Climate Change: Europe at the Crossroads* (Oxford University Press 2009) 218.

[5] Prior to the entry into force of the Lisbon Treaty, general EU energy policy was based on indirect legal bases (especially the provisions in the Treaty relating to the internal market, competition rules, common commercial policy, trans-European networks, the environment and the flexibility clause). See C Blumann, 'Les compétences de l'Union européenne dans le domaine de l'énergie' 4 (2009–2010) *Revue des Affaires Européenes – Law and European Affairs* 738. We will not examine the EU's external energy policy before the entry into force of the Lisbon Treaty in this article.

While Article 194 TFEU does not explicitly mention any external action in the field of energy, the application of the theory of '*implicit powers*', now codified in Articles 216(1) TFEU and 3 (2) TFEU, enables the EU to develop a real external energy policy.[6]

What is striking about the EU external energy policy is that it principally resorts to the law in order to achieve its objectives. This policy, which may be described as a '*legal external policy*' according to the expression invented by Guy de Lacharrière,[7] was designed to allow the EU to influence the framing process, the interpretation and revision procedures, not only of international energy law but also of the national legislation related to energy in third countries.[8]

As Guy de Lacharrière has pointed out, by focusing on the legal aspects of the international relationships of the States and international organisations, '*legal external policies*' constitute one of the basic building blocks of any foreign policy. They intend to act upon the law at the international level in order to influence its contents and its interpretation consistently to the interests of the governments that initiate them and may have important concrete and symbolic consequences.[9]

By doing so, the EU therefore seeks to influence the way in which third countries address both the rules governing the functioning of their energy market and the protection of the environment.

However, whether and how far such a policy might be effective should be assessed. Can the law really bring about the fulfilment of the objectives of the EU's energy policy? Can the EU vision and its endeavours play a role in bringing about common and legitimate solutions to current global energy challenges?

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[6] According to the Court of Justice case law first developed in Case 22/70 *Commission / Council* (ERTA/AETR) [1971] ECR 263, the EU derives implicit powers from explicit internal competences. This case law is now codified by Art 216 TFEU which sets out that the Union has competence to conclude an agreement where: the Treaties so provide (explicit competence); the conclusion of an agreement is necessary in order to achieve one of the objectives referred to in the Treaties; the conclusion of an agreement is provided for in a legally binding act; the conclusion of an agreement is likely to affect common rules or alter their scope.
See SS Haghighi, 'Energy Security and the Division of Competences between the European Community and its Member States' (2008) 14 *European Law Journal* 461, and E Neframi, 'Panorama des relations extérieures de l'Union européenne en matière énergétique' in C Blumann (ed), *Vers une politique européenne de l'énergie*, (Bruylant 2012) 155.

[7] See G de Lacharrière, *La politique juridique extérieure* (Institut Français des Relations Internationales 1983) 236.

[8] See N Pradel, 'La politique juridique extérieure de l'Union européenne dans le domaine de l'énergie' in A Bugada (ed), *Énergies, environnement et développement durable* (Presses Universitaires d'Aix-Marseille 2013) 267.

[9] See de Lacharrière, *La politique juridique extérieure*, 5, 188 and 195. On the similar concept of '*normative power/policy*' in the English language literature see: T Diez, 'Constructing the Self and Changing Others: Reconsidering "Normative Power Europe"' (2005) 33 *Millennium – Journal of International Studies* 615; A Hyde-Price, '"Normative" Power Europe: a Realist Critique' (2006) 13 *Journal of European Public Policy* 217; I Manners, 'Normative Power Europe: A Contradiction in Terms?' (2002) 40 *Journal of Common Market Studies* 235; I Manners, 'Normative Power Europe Reconsidered', paper presented to CIDEL Workshop: From Civilian to Military Power: the European Union at a Crossroads? (Oslo, 22–23 October 2004) 25; S Scheipers and D Sicurelli, 'Normative Power Europe: A Credible Utopia?' (2007) 45 *Journal of Common Market Studies* 435; S, Wood, 'The European Union: A Normative or Normal Power' (2009) 14 *European Foreign Affairs Review* 113.

In reality, the external energy policy of the EU could not function without the law. On the one hand, the law forms both the basis and a constraint for the development of an EU external policy in the field of energy. Indeed, as an international organisation of integration, the EU must comply with the principle of conferral. In addition, the law is the only vehicle that can define a clear allocation of competences between the EU and the Member States in such a politically sensitive area. On the other hand, the law constitutes the policy's main instrument of action because it has the potential to impulse durable changes in third countries. Indeed, it is through its influence on how third countries adopt rules governing the functioning of energy markets and environmental protection in their territories, that the EU seeks both to guarantee the security of its energy supply and to promote the sustainable use of energy all around the world.

2. THE LAW AS A BASIS FOR THE DEVELOPMENT OF THE EU EXTERNAL ENERGY POLICY: THE EU EXTERNAL COMPETENCES IN THE FIELD OF ENERGY

The first role of the law in the field of the EU external energy policy is linked to its role in the division of competences between the Union and the Member States. Indeed, as a regional international integration organisation, the EU complies with the principle of conferral, which provides that competences not conferred upon the Union in the Treaties remain with the Member States.[10] In addition, if EU Member States agree to develop an EU energy policy, that policy is not intended to replace the existing national energy policies (either internal and/or external). A clear definition of the scope of the EU energy policy with regard to the Member State energy policies was consequently required in order to enable the conduct of *parallel* but *complementary* policies of the 28 Member States and that of the Union.

Under the Lisbon Treaty the so-called 'general' energy policy[11] is clearly a competence that is shared between the EU and the Member States in accordance with the provisions of Articles 4(2)(i) TFEU and 194 TFEU. However, this shared competence is specific as the second subparagraph of Article 194(2) TFEU specifies that, without prejudice to Article 192(2)(c), the measures necessary to achieve the objectives of the EU energy policy shall not affect a Member State's right to determine the conditions for exploiting its energy resources, its choice between different energy sources and the general structure of its energy supply.

In fact, Article 194 TFEU establishes three sub-categories of competences in the field of energy.

[10] See Art 4(1) TEU.

[11] ie the policy devoted to all the aspects of energy with the exception of the specific missions under the Euratom Treaty. This distinction between 'special' and 'general' EU energy policies was recently retained by the ECJ in a judgment of September 2012, see Case C-490/10 *Parliament v Council* (ECJ, 6 September 2012), paras 82 and 84. The external energy policy pursuant to the Euratom Treaty will not be discussed in the limited scope of this article.

Firstly, Article 194(1) TFEU defines four areas of *competing competences* shared out between the Member States and the Union concerning the adoption of measures aimed at ensuring the functioning of energy markets, the security of energy supply in the Union together with the promotion of energy efficiency, energy saving, the development of new and renewable forms of energy, and the promotion of the interconnection of energy networks.

In addition, the second subparagraph of Article 194(2) TFEU establishes two areas of *provisionally reserved competence* for Member States with respect to their choice between different energy sources and the general structure of their energy supplies.

These competences are provisionally reserved for Member States because of the reference made in Article 194 TFEU to the procedure of Article 192(2)(c) TFEU. Indeed, to enable the pursuit of the objectives of the EU environmental policy, Article 192(2)(c) TFEU allows the Union to adopt measures significantly affecting Member States choices between different energy sources and the general structure of their energy supplies.[12] It should be noted however that the adoption of measures under Article 192(2)(c) TFEU does not necessarily lead to the complete removal of the Member State competences because Article 193 TFEU stipulates that Member States may maintain protective measures, or introduce more stringent measures, in the field of the environmental policy.[13]

Finally, the issue of the definition of the conditions for exploiting Member States energy resources constitutes a *retained competence* by Member States because the specific procedure provided in Article 192(2)(c) TFEU does not refer to it. This retained competence stems from the principle of neutrality regarding the rules in Member States governing the system of property ownership laid down in Article 345 TFEU.[14] It should be noted, however, that while EU law does not question the Member States' right to regulate the system of property ownership, the exercise of this competence remains subject to the fundamental principles of EU law.[15]

Similarly, the reading of Article 347 TFEU to which reference is made in the Declaration 35 ad article 194 TFEU, highlights a second *retained competence* by Member States in respect of the right to take measures in certain situations affecting national security or involving international commitments contracted for the purpose of maintaining peace and international

[12] In this matter the European Parliament and the Council shall act in accordance with the ordinary legislative procedure and after having consulted the Economic and Social Committee and the Committee of the Regions. However, the Council, acting unanimously on a proposal from the Commission and after consulting the European Parliament, the Economic and Social Committee and the Committee of the Regions, may make the ordinary legislative procedure applicable to these matters.

[13] Such measures must be compatible with the Treaties. They shall be notified to the Commission, which will verify whether they constitute a means of arbitrary discrimination or a disguised restriction on trade between Member States, in which case the Commission may initiate infringement proceedings against a Member State that fails to comply with EU law principles.

[14] See Blumann, 'Les compétences de l'Union européenne', 744.

[15] See, eg, Joined Cases C-105/12 to C-107/12 *Staat der Nederlanden v Essent NV (C-105/12), Essent Nederland BV (C-105/12), Eneco Holding NV (C-106/12) and Delta NV (C-107/12)* (ECJ, 22 October 2013), paras 36–38.

security.[16] However, the exercise of this retained competence by Member States must comply with the conditions set out in Articles 347 and 348 TFEU.

Finally, it should be noted that although Article 194 TFEU remains silent on any external action of the EU in the field of energy policy, the Union may undertake, either alone or jointly with Member States ('*mixed agreements*'), the negotiation and the conclusion of international agreements related to energy issues by virtue of the theory of implicit competences now codified in Articles 216(1) TFEU and 3(2) TFEU. Indeed, in view of the EU's energy dependence on imports from third countries, it is clear that, in some cases, the security of supply in the Union or the functioning of the energy market will implicitly require an external policy. The European Commission has been negotiating with Azerbaijan and Turkmenistan since 2011 a legally binding Treaty to build a Trans-Caspian Pipeline System on this basis.[17] Similarly, based on a mandate from all Member States, since 2012 the European Commission has been negotiating an agreement with Russia and Belarus to establish rules for the operation of Baltic electricity networks as long as synchronous operation persists.[18] These two international agreements will be the first, since the signing of the Treaty establishing the Energy Community in 2005,[19] to be concluded by the Union without the participation of the Member States.

It therefore follows from an interpretation of the provisions of Article 194 TFEU that the law provides a clear division of competences, and consequently a sharing out of 'specialities', between the Union and the Member States in the field of external energy policy. On the one hand, the Union has competence to define a general framework in the field of energy in the EU but also in the context of EU's external relations. On the other hand, Member States retain their right to decide on the operating conditions of their energy resources, their choice of energy sources and the general structure of their energy supplies.

However, this use of the law as a basis to enable the development of an EU energy policy is not its only role. The law also serves to focus attention on the EU vision of international energy challenges and in effect constitutes its main tool of action and of influence at the world level.

3. THE LAW AS AN INSTRUMENT OF EU EXTERNAL ENERGY POLICY

In order to implement its external energy policy, the EU uses several instruments. In addition to a political dialogue with the main energy producing and consumer countries,[20] scientific

[16] According to Art 4(2) TEU, national security remains indeed 'the sole responsibility of each Member State'.
[17] See European Commission, 'EU Starts Negotiations on Caspian Pipeline to Bring Gas to Europe' (Press Release, 12 September 2011, IP/11/1023).
[18] See G Oettinger, 'Integration of the EU and CIS Electric Power Systems and Markets – A Way of Increasing Security of Supply', speech at Eurelectric – CIS Power Council Conference (Brussels, 31 October 2012).
[19] See below.
[20] Eg in the framework of the International Energy Forum, the EU–OPEC energy dialogue, the energy dialogue with China, Russia and the United States of America.

cooperation[21] and economic and financial supports,[22] EU external energy policy resorts principally to the law in order to ensure the security of energy supply in the EU and to contribute to more sustainable use of energy around the world.

The EU preference for the law can be explained by the very nature of the European integration process but also by the advantage of the EU in the normative field. Indeed, the EU seeks to use the economic weight of its internal market to influence the definition of global preferences and values.[23] In addition, it is clear that only legal rules can durably influence the behaviour of energy producers and consumers in the world.

In this respect, the EU conducts a broad range of multilateral initiatives within the framework of the International Atomic Energy Agency, the United Nations Framework Convention on Climate Change, the Kyoto Protocol and the World Trade Organization.[24]

These initiatives have had their train of success and failures, however it is interesting to focus in this paper on three less widely known EU actions, namely the Energy Community Treaty concluded by the EU with the Balkans and some Eastern European countries (3.1.), the EU–China energy dialogue (3.2.), and the EU–US energy cooperation (3.3.). These initiatives illustrate the EU endeavours to project its influence beyond its borders but also its attempts to launch proactive dynamics at the universal level. They highlight both the potential and the shortcomings of the EU's legal external policy in the field of energy.

3.1. The Energy Community: engaging the neighbours

A very topical example of the EU attempt to spread its vision of energy and environmental regulation further afield is the Energy Community. The Energy Community Treaty[25] was signed on 25 October 2005 and entered into force on 1 July 2006.[26]

So far, the EU,[27] six Balkan countries[28] and two European Eastern countries have ratified this Treaty.[29] However, the geographical scope of application of this Community might be ex-

[21] Eg the Generation IV International Forum (GIF), the international ITER project for fusion.
[22] Eg the European Investment Bank loans for energy projects in third countries. See http://www.eib.org/projects/priorities/energy/index.htm?lang=en.
[23] See Z Laïdi, 'The Normative Empire: The Unintended Consequences of European Power' (2007) *Les cahiers européens de Sciences Po* No 05/2007, 24.
[24] See 'IAEA–EU Joint Action: Partnership in Improving Nuclear Security' (IAEA 2013) 16; J Delbeke (ed), *The EU's Climate Policy* (Claeys & Casteels 2014) 160; Y Selivanova, 'The WTO and Energy: WTO Rules and Agreements of Relevance to the Energy Sector' (2007) *International Centre for Trade and Sustainable Development Issue Paper* No 1, 44.
[25] See the Energy Community Treaty (20 July 2006) OJ L198/18 (hereinafter 'EnC Treaty').
[26] In 2013, the Energy Community Ministerial Council unilaterally decided to extend the duration of the Treaty for a further ten years, from 2016 to 2026, see its 'Decision D/2013/03/MC-EnC on extending the duration of the Energy Community Treaty' (24 October 2013).
[27] The EU, represented by the European Commission, is a permanent Vice-President of the organisation. It chairs most of the institutional meetings. At the same time, any EU Member State may obtain the status of a Participant (Art 95 EnC). As a member of the EU, the Participants have *per se* an obligation to comply with the *acquis*

tended with the negotiation for the accession of Turkey and the expected applications from Georgia and Armenia. Links have been also established since 2012 with the INOGATE Programme, which is developing energy co-operation between the EU, the littoral states of the Black and Caspian Seas and their neighbouring countries.[30] Azerbaijan is also considering applying to enter into formal negotiation for accession to this Treaty, which could represent an interesting development for the EU strategy of energy supply diversification.[31]

Substantially, the Energy Community has three levels of ambition.[32] In the short term, Contracting Parties shall implement the *acquis communautaire* on energy, environment, competition and renewable energies.[33] This process aims at creating open and transparent national energy markets in the territory of the Contracting Parties.

In the medium term, an integrated energy market should be put in place across the region. This integrated energy market should enable free cross-border trade in energy between the non-EU Contracting Parties and take into consideration climate-related matters and social issues (working conditions in the energy sector, public service obligations, the protection of vulnerable customers).

In the long term, this regional market should finally be fully integrated in the European Union's internal energy market.

To date, this EU initiative present both strengths and weaknesses. Looking on the bright side, it is true that the EU energy security might be strengthened thanks to the implementation of the third EU energy package by some energy transit countries like Ukraine.[34] From the EU point of view, the application of the same rules for the functioning of energy markets and the

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communautaire. A country, with a Participant status, has the right to take part in all the institutional meetings of the Energy Community. Presently, as many as 17 EU Member States hold the status of Participants (Austria, Bulgaria, Croatia, Cyprus, Czech Republic, Finland, France, Germany, Greece, Hungary, Italy, Netherlands, Poland, Romania, Slovenia, Slovakia and United Kingdom).

[28] Albania, Bosnia and Herzegovina, the former Yugoslav Republic of Macedonia, Montenegro, Serbia and Kosovo under the jurisdiction of the UN Interim Administration Mission in Kosovo.

[29] Moldova and Ukraine. They respectively joined the Energy Community in 2010 and 2011.

[30] See 'INOGATE and the Energy Community Secretariats Define Areas of Cooperation' (21 February 2012), available at http://www.energy-community.org/portal/page/portal/ENC_HOME/NEWS/News_Details?p_new_id=5561.

[31] The European Commission and the Council are also considering how to include Northern Mediterranean countries like Algeria and Libya in this Energy Community, even this is not ready to happen soon regarding the very different contexts in these countries and the nature of their relationships with the EU. See European Commission, High Representative of the Union for Foreign Affairs and Security Policy, 'Joint Communication to the European Council, the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. A Partnership for Democracy and Shared Prosperity with the Southern Mediterranean' COM(2011) 200 final, 10 and the Council Conclusions on Strengthening the External Dimension of the EU Energy Policy, 3127th Transport, Telecommunications and Energy, Council meeting (Energy Items) (Press Release, 24 November 2011) 3–4.

[32] See Art 2 EnC.

[33] For an updated presentation of the *Energy Community acquis* that is continually evolving with the extension of the EU *acquis* in all the fields covered by this Treaty, see http://www.energy-community.org/portal/page/portal/ENC_HOME/ENERGY_COMMUNITY/Legal/EU_Legislation.

[34] Ukraine is a key transit country for energy resources from Russia to the EU, particularly for natural gas where some 20% of the natural gas consumed in the EU is transited. 60% of the Russian natural gas exported to the EU passing through Ukraine.

opening of energy markets and networks is to encourage competition and more energy exchanges between EU countries and third countries.

In the same way, the EU environmental objectives should be best achieved thanks to the enlarged scope of application of EU rules on renewable energy targets[35] and the application of the Directive 2010/31/EU on the energy performance of buildings.[36] Indeed, buildings are central for the success of the EU energy efficiency policy since in Europe nearly 40 per cent of final energy consumption (and 36 per cent of greenhouse gas emissions) takes place in houses, offices, shops and other buildings.[37]

However, the Energy Community suffers from some evident weaknesses. The case of Ukraine is particularly noteworthy as it shows the limits of the law when confronted by the raw reality of international politics. The decision in November 2013 by Ukraine to suspend preparations for the signing of an association agreement with the European Union together with the series of agreements signed by the Russian and Ukrainian governments in December 2013 on natural gas prices and financial support for Ukraine triggered serious unrest in this country.[38] Whatever the outcome, it is clear that the Russian objective is to retain maximum control over Ukraine and its energy network. Indeed, some sources indicate that Russia demanded that Ukraine withdraw from the Energy Community Treaty in return for the signature of these agreements.[39]

A similar demand was formulated by Russia in the course of negotiations with Moldova for natural gas prices in 2012.[40] In order to ease tensions, the Ministerial Council of the Energy Community adopted a decision extending the implementation deadline of Article 9(1) of the Directive 2009/73/EC[41] on the unbundling of transmission systems and transmission system operators of natural gas networks to 1 January 2020.[42] The importance of Moldova and Ukraine in the struggle between the EU and Russia on the issue of the liberalisation of Eastern European energy markets explains the long implementation deadlines granted to these two

[35] See the Ministerial Council of the Energy Community, 'Decision D/2012/04/MC-EnC on the implementation of Directive 2009/28/EC and amending Art 20 of the Energy Community Treaty that defines the mandatory national overall renewable energy targets of the Energy Community Contracting Parties by 2020 (18 October 2012).
[36] Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings [2010] OJ L153/13.
[37] See European Commission, 'Report from the Commission to the European Parliament and the Council, "Progress by Member States towards Nearly Zero-Energy Buildings"' COM(2013) 483 final, 4.
[38] R Olearchyk, 'Ukraine Freezes Talks on Bilateral Trade Pact with EU' *Financial Times* (21 November 2013); K Hille, 'Russia Cuts Deal to Finance Ukraine' *Financial Times* (17 December 2013).
[39] N Buckley, 'Ukraine: A Choice between the European Embrace and the Russian Bearhug' *Financial Times* (23 January 2013).
[40] P Smolar, 'La Moldavie, victime collatérale des tensions entre la Russie et Bruxelles' *Le Monde* (15 September 2012).
[41] Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC [2009] OJ L211/94.
[42] Ministerial Council of the Energy Community, 'Decision D/2012/05/MC-EnC concerning the implementation of Article 9 of the Directive 2009/73/EC by the Republic of Moldova' (5 December 2012).

countries regarding the implementation of the EU directive on natural gas energy networks.[43] Moreover it will be interesting to follow the progress of the implementation measures of the *energy acquis* in these two countries.

More broadly, as the European Commission itself remarked, the existence of open, transparent and competitive national energy markets in all Balkan Contracting Parties has not been completed yet.[44] The implementation of EU rules in national laws must be accompanied by true administrative supervision capacity and real domestic enforcement mechanisms. Intensive work is on-going on these aspects and the improvement of the effective implementation of the Energy Community *acquis* is in progress. However, it underlines the essential fact that the law as a tool for the external energy policy requires unfailing scrutiny of its enforcement and constant diplomatic dialogue.

3.2. The EU–China energy partnership and the NZEC initiative

Another interesting EU initiative is the EU–China energy cooperation. If the EU–China dialogue on energy was launched in 1994, it was greatly enhanced in 2005 with the Joint Declaration on Climate Change between China and the European Union.[45]

In this declaration both parties committed to take strong measures to encourage low carbon technology development and to develop and demonstrate in China and in the EU by 2020 advanced near-zero emissions coal technology through carbon capture and storage.

In this context, a joint UK[46] and EU initiative with China called the Near-Zero Emission Power Coal Initiative (NZEC) was formally launched with the conclusion of a Memorandum of Understanding between the UK and China in 2005[47] and the subsequent signature of two complementary Memoranda of Understanding between the EU and China in 2006 and 2009.[48]

[43] The market opening for households is 1 January 2015. Whilst the general implementation deadline of market opening for non-households was set for 1 January 2008 for Balkan Contracting Parties, it is 1 January 2013 for Moldova and 1 January 2012 for Ukraine. The implementation of Art 9(1) of this EU directive will be on 1 June 2016, Art 9(4): 1 June 2017 and Art 11: 1 January 2017 for Ukraine. The same deadlines will be applicable for Moldova at the exception of Art 9(1), which shall be implemented by 1 January 2020.

[44] See European Commission, 'Report from the Commission to the European Parliament and the Council under Article 7 of Decision 2006/500/EC (Energy Community Treaty)' COM (2011) 105 final, 5.

[45] See European Commission, 'EU and China Partnership on Climate Change' (MEMO/05/298, 2 September 2005) and P de Matteis, 'EU–China Cooperation in the Field of Energy, Environment and Climate Change' (2010) 6 *Journal of Contemporary European Research* 449.

[46] Among EU Member States, the UK is a global leader in CCS.

[47] Memorandum of Understanding between the Ministry of Science and Technology of the People's Republic of China and the Department of Energy and Climate Change of the United Kingdom (21 December 2005, not published in the OJ).

[48] Memorandum of Understanding between the Ministry of Science and Technology of the People's Republic of China and the European Commission on Cooperation on Near-Zero Emission Power Generation Technology through Carbon Dioxide Capture and Storage (Phase I) (Shanghai, 20 February 2006, not published in the OJ); Memorandum of Understanding between the Ministry of Science and Technology of the People's Republic of China and the European Commission on Cooperation on Near-Zero Emission Coal (NZEC) Power Generation

The NZEC Initiative aims to build a coal-fired power plant associated with carbon capture and storage facilities (CCS). CCS involves capturing the carbon dioxide in fossil fuel combustion and long-term storing in geological formations such as depleted oil wells. As the IPCC notes, CCS technology can reduce carbon dioxide emissions from large industrial sources and coal-fired power stations by around 85 per cent and could be essential technology to significantly reduce greenhouse gas emissions and allow the continued use of fossil fuels without damaging climate security.[49]

The NZEC project has been undertaken in a three-phase approach. Phase 1 (2007–2009) was dedicated to the study of the options for demonstration and building capacity in CCS. Phase 2 (2009–2012) involved further development works on CCS options including legal, environmental and economic aspects. Phase 3 (2012–2015) will involve the construction of a demonstration plant to be completed by 2015.

Although, at present, clean coal at the world level is a polite euphemism, the NZEC project has created a fair bit of interest in China for CCS whereas nobody was interested in this issue before the European initiative.[50] Thanks to this initiative, and even though the NZEC project is not yet completed, about half of all newly identified CCS projects are now located in China[51] and the country is planning several coal and gas power plants that can bury their carbon deep underground.[52]

Beyond the demonstration of the feasibility of such a technology, the NZEC project aims to contribute to the diffusion of technical and legal standards for world CCS technology dissemination on the model of the directive 2009/31/EC related to CCS activities.[53] Indeed, this directive was adopted after the work of the $STRACO_2$ Project with which China was associated. The aim of the $STRACO_2$ Project was to support regulatory activities for CCS in Europe and to determine what legal framework might be appropriate for the development of CCS technology in China.[54] It should have a strong influence on the future legal regime for CCS development in China.

Technology through Carbon Dioxide Capture and Storage (CCS) (Phase II) (Nanjing, 30 November 2009, not published in the OJ).

[49] See B Metz, O Davidson, H de Coninck, M Loos and L Meyer (eds), *Carbon Dioxide Capture and Storage* (Cambridge University Press 2005) 431.

[50] See G de Cock, 'The European Union as a Bilateral "Norm Leader" on Climate Change vis-à-vis China' (2011) 16 *European Foreign Affairs Review* 89.

[51] Worldwide, there are just 8 CCS projects in operation, 9 in construction and 72 planned, see 'The Global Status of CCS: Update, January 2013' (Global CCS Institute 2013) 9.

[52] B Plumer, 'How's That Big Carbon-Capture Push Going? Slowly. Too Slowly' *The Washington Post* (11 October 2012); D Coneybeare, 'China Could Lead in CCS' *Utilities Unbundled* (Issue 14, June 2013) 52–53.

[53] Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC, 2008/1/EC and Regulation (EC) No 1013/2006 [2009] OJ L140/114.

[54] See $STRACO_2$, *Support to Regulatory Activities for Carbon Capture and Storage: Synthesis Report* (July 2009) 88–100.

Thanks to this cooperation, based both on technical and legal cooperation, the EU and China are seeking to become leaders in the development of this nascent technology on the world scene.

3.3. The EU–US energy cooperation: the Energy Star programme

Finally, the EU–US energy cooperation and especially its ENERGY STAR programme on energy efficiency labelling of office equipment, constitute further example of the use of the law by the EU in order to achieve concrete objectives in the field of energy policy.

ENERGY STAR is a voluntary energy-efficiency labelling programme established in 1992 by the US Environmental Protection Agency (EPA). It aims to help businesses and individuals to save money and protect the environment through superior energy efficiency specifications for computers, monitors/displays and imaging equipment (copiers, printers, scanners, etc).

Three international agreements were concluded between the EU the EU–US in 2001, 2006 and 2013[55] in order to enable the implementation of the ENERGY STAR programme in the EU. In Europe, the programme is now linked to mandatory public procurement and SMEs constitute the majority of its participants. This programme seems to be effective in moving the market towards greater efficiency. It is estimated that ENERGY STAR will succeed by 2020 in reducing the energy consumption of the installed base of computers, displays and imaging equipment in the EU by more than 30 per cent.[56]

As it is implemented in several other economies, including Japan, Canada and Australia, through agreements similar to that with the EU, this program may lead to the creation of market driven efficiency standards around the world. That is truly important as information and communication technologies, are among the fastest growing electricity end-users worldwide.

However, this EU–US cooperation on energy efficiency will not be sufficient in itself. As Fatih BIROL, chief economist and director of global energy economics at the International Energy Agency, rightly pointed out at the end of 2012, the world is far from an optimal energy efficiency level of investments. In developed countries, only a half of satisfactory targets

[55] Agreement between the Government of the United States of America and the European Community on the co-ordination of energy-efficient labelling programmes for office equipment (*ENERGY STAR I*) [2001] OJ L172/3; Agreement between the Government of the United States of America and the European Community on the coordination of energy-efficient labelling programmes for office equipment (*ENERGY STAR II*) [2006] OJ L381/26; Agreement between the Government of the United States of America and the European Community on the coordination of energy-efficient labelling programmes for office equipment (*ENERGY STAR III*) [2013] OJ L63/7.
[56] See European Commission, 'Communication from the Commission on the implementation of the ENERGY STAR programme in the European Union in the period 2006 – 2010' COM (2011) 337 final, 8.

of energy efficiency improvements in industrial processes have been realised and 80 per cent of energy saving still needs to be achieved in the construction and restoration of buildings.[57]

4. CONCLUDING REMARKS

These three initiatives show how the EU seeks to influence the way that third countries determine both the rules governing the functioning of their energy market and the protection of the environment.

Despite the weaknesses inherent in the law and the long road ahead before full implementation of these initiatives, the EU's legal external policy in the field of energy could foster some evolutions in the world energy landscape.

Indeed, beside the negotiation of a legal framework to combat climate change, the EU pursues its aim to stimulate the development of energy and climate legislations in a maximum of third countries. It is clear that the more third countries develop energy and climate legislation, the more favourable the conditions for a global legal framework for combating climate change will become.[58]

However, the legitimacy and the relevance of the EU choices in the field of energy may be questioned. Concerning the regulation of energy markets, it is clear that the EU demand for liberalization may engender some frictions with certain third countries. Is the EU choice for the liberalisation, if not in reality, for an *ordoliberal* management[59] of energy markets, really the most efficient from an economic point of view? This question to which economists will need to answer in the future is both fundamental and very complex as the demand for liberalization seems to be the only type of external energy action that the EU can promote owing to the intricate division of competences between the EU and its Member States and the essential fact that liberalization in the EU itself will only come true if the EU's suppliers go through unbundling.[60]

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[57] M-B Baudet, 'L'efficacité énergétique doit être une priorité pour les États – entretien avec Fatih Birol, économiste en chef de l'AIE' *Le Monde* (13 November 2012).

[58] As Christiana Figueres, the new Executive Secretary of the United Nations Framework Convention on Climate Change, said: 'It's very difficult to have international regulation before you have enough national legislation', see E Crooks, 'Compelling Case for Global Deal on Climate, Says UN' *Financial Times* (14 January 2014).

[59] Indeed, EU energy law and policy combine both a regulatory approach (compliance with competition rules, public service obligations, etc) and economic interventionism (financial support to energy infrastructures, research and innovation). On the ordoliberal foundations of the European Union see: F Bilger, 'L'école de Fribourg, l'ordolibéralisme et l'économie sociale de marché' (8 April 2005), available at http://www.blogbilger.com/esm/ecoledefribourg.pdf; and J Drexl, 'La Constitution économique européenne – L'actualité du modèle ordolibéral' (2011) *Revue internationale de droit économique* 419.

[60] See T Romanova, 'Towards a Comprehensive Theory of Legal Harmonization between the EU and a Third Partner: The Case of the EU–Russian Energy Dialogue', paper presented at the Warwick University Conference: Governing Energy In Europe and Russia (Warwick, 3–4 September 2010) 10. On the existing economic research dealing with the question of the relevance of the liberalisation of energy markets see, eg, A de Hauteclocque, *Market Building Through Antitrust: Long-Term Contract Regulation in EU Electricity Markets* (Edward Elgar

Regarding finally the issue of environment and climate change regulations, it is clear that the EU must be able to negotiate balanced and equitable agreements especially with developing countries.

The road ahead will certainly be a long one. Public and private interests will need to be commensurate in order to provide a clear and legitimate direction for the governance of energy issues at the world level. Nonetheless, what is at stake in this process is fundamental because it will determine the wealth of States and the way of life of billions of people in the future.

2013) 224; and I Rutledge and P Wright (eds), *UK Energy Policy and the End of Market Fundamentalism* (Oxford University Press 2011) 448.

CONCLUSIONS

UNITED IN DIVERSITY – TOWARDS EUROPEAN SUSTAINABLE ENERGY LAW

HANS VEDDER

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As we can already see from Article 194 TFEU, European Sustainable Energy Law has been shaped by the dual objective of market integration and combatting climate change, ie sustainability. The question, however, is whether we can speak of a truly *European* Sustainable Energy Law. The fact is that the EU itself is only a relatively small player in terms of energy consumption and greenhouse gas emissions. The majority of the practical implications of this area of the law take place at the Member State level and given the strategic importance of energy, this European interference with one of the cornerstones of a society is bound to meet with some national opposition. We see this prominently in the constitutional framework for European sustainable energy law: Articles 192 and 194 TFEU. Here we see that on the one hand the Treaty sets ambitious goals and enables the EU to achieve these goals but on the other EU competence is greatly restricted whenever conditions for exploiting energy resources, choices between different energy sources and the general structure of the national energy supply are significantly affected.

Legislative practice shows that the European Union is stretching the boundaries of this constitutional framework. On the one hand, Article 192(1) TFEU has been used as a legal basis for almost all the legislative instruments adopted by the EU. As a result, recourse to Articles 192(2) and 194(2) TFEU has been avoided. On the other hand, the possibility for the Member States to adopt stricter standards than those prescribed by the EU legislator has been constrained by means of Article 114 TFEU or specific prohibitions. Article 114 TFEU has been used as a legal basis to prevent Member States from adopting more stringent sustainability criteria for biofuels in the Renewables Directive and in the Directive on fuel quality.[1] Specific prohibitions to adopt stricter environmental standards can be seen in the ETS Directive,[2]

[1] Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC [2009] OJ L140/16 and Directive 98/70/EC of the European Parliament and of the Council of 13 October 1998 relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC [1998] OJ L350/58, respectively.

[2] Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC [2003] OJ L 275/32.

which amended the IPPC Direcitve,[3] a modification today maintained in the IE Directive,[4] in order to impede the insertion of emission limit values for greenhouse gasses into permits for IPPC installations covered by the ETS regime. Similarly, the EU regulations on passengers vehicles and small commercial vehicles prohibit the Member States from adopting stricter sanctions than those established under the regulations upon car manufacturers that fail to comply with the regulations.[5]

The tenability of such legislative techniques under EU primary law can be questioned.[6] This notwidstanding they show the clear intention on the side of the EU legislator to pursue the highest degree of unity possible under the current stage of development of European Sustainable Energy Law. Market integration seems to be the main argument used to reduce the room for diversity among the Member States, as the example of the sustainability criteria clearly shows.

Juxtaposing the European Union with the Member States, the motto of the European Union, 'United in Diversity' immediately springs to mind.[7] Europe-wide goals and, as has been set out in the preceeding paragraphs, far-going legislation are confronted with reticent Member States that at times subscribe to these goals to a greater and lesser extent. More fundamentally, the European Union has a shared competence in this field. Hence defining and, more importantly, operationalizing these policies is to take place by the EU as well as the Member States.

We see both unison and diversity if we look at the contributions to this volume. Relative unison exists when we look at the concept of sustainability from a distance. Everyone has a more or less similar 'gut feeling' about what is sustainable and what is not. A closer look, as has been argued in the introduction, reveals considerable ambiguity and the corresponding diversity.

Even if we confine ourselves to the concept of sustainable energy, defining what exactly is sustainable remains a challenge. This is the message that clearly emanates from the contribu-

[3] Directive 2008/1/EC of the European Parliament and of the Council concerning integrated pollution prevention and control [2008] OJ L24/8. This directive codified Council Directive 96/61/EC concerning integrated pollution prevention and control [1996] OJ L257/26.
[4] Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions (integrated pollution prevention and control) [2010] OJ L334/17
[5] Regulation (EC) No 443/2009 of the European Parliament and of the Council of 23 April 2009 setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO 2 emissions from light-duty vehicles [2009] OJ L140/1; and Regulation (EU) No 510/2011 of the European Parliament and of the Council of 11 May 2011 setting emission performance standards for new light commercial vehicles as part of the EU's integrated approach to reduce CO 2 emissions from light-duty vehicles [2001] OJ L145/1, respectively.
[6] For a discussion on Article 193 TFEU and limitations to its application see L Squintani, JM Holwerda and KJ de Graaf, 'Regulating Greenhouse Gas Emissions from EU ETS Installations: What Room is Left for the Member States?' in M Peeters, M Stallworthy and J de Cendra de Larragán, *Climate Law in EU Member States. Towards National Legislation for Climate Protection* (Edward Elgar 2012) 67; and L Squintani, *Gold-plating of European Environmental Law* (PhD Thesis, University of Groningen 2013) 9–27, and the references here made.
[7] The motto has a longer history, but appeared prominently in Art I-8 of the Constitutional Treaty. See also Declaration No 52 to the Treaty of Lisbon.

tions by Gordeeva and Douma. If something as tangible and down to earth as biomass raises difficulties in defining and operationalizing sustainability, how are we to deal with the sustainability where less intuitive effects and risks are involved in certain forms of energy? How do we take account of the risks associated with nuclear fission or the effects on ecosystems of windfarms in a decision on the sustainability of these forms of energy production? The answer may well follow from the process that is described and analysed in these contributions. This is an iterative process of true learning by doing. Interestingly, some of these iterations are the result of private initiatives, such as the various forest certification schemes that have come into existence. This points to an important dimension to the operationalisation of sustainability: the multi-level governance scheme in which this is most likely to take place (Gaines).

Whatever may be of the obscure clarity or clear obscurity[8] of the substance of sustainability, the fact remains that it will be shaped in a system of multi-level governance in which the Union's motto can be used to explain trends, challenges and the solutions to these challenges. As this book clearly shows, much of this multi-level framework is formed by public authorities: Member States, Union institutions and international bodies. Within the World Trade Organisation (Kahl), the United Nations (Gaines), the European Union and Member States (Köck, Basse, Egelund Olsen and Tegner Anker, Dreyfuss, Pradel), as well as third countries (Du Toit), public authorities are involved in shaping a sustainable energy system.

However, the book has also highlighted the role played by local authorities as well as economic actors. The Danish, as well as French experience, as set out in the chapters by Egelund Olsen and Tegner Anker and Dreyfuss respectively, highlight the significant potential of a more bottom-up approach that enables local diversity to permeate decision-making processes and shape the institutions and procedures in a way that enables regulatory experimentation. The example analysed by Karageorgou provides us with a poignant example of a top-down imposed regime that fails to tap into this potential, increasing costs of the renewable energy projects involved.[9] This bottom-up approach, in turn, involves the economic and societal actors in the decision-making process in a way that moves them beyond the passive role that is often attributed to them. With this we refer to the role of economic actors as entities that apply for a permit and then simply comply with the conditions laid down in the permit. As Frins and Schoukens show, adaptive management may well be an important way forward to solving the economic growth vs. environment and renewables vs. nature conundrum, but it requires an active attitude of the industry involved. Industry will have to move beyond contrasting nature conservation and renewable energy production, as happened in *Azienda Agro-Zootenica Franchini*,[10] and integrate nature conservation considerations and the uncertainties that come with it in the management of the facilities concerned. This active attitude not only potentially

[8] Adapted from C-202/88 *France v Commission* [1990] ECR I-1223, Opinion of AG Tesauro, para 11.
[9] In this regard we need only think of the legal costs and costs of delays resulting from legal challenges to these projects.
[10] Case C-2/10 *Azienda Agro-Zootecnica Franchini Sarl v Regione Puglia* [2011] ECR I-6561.

creates more room for manoeuvre under Article 6(4) Habitats Directive,[11] it enables learning and thus the generation of knowledge.

This will only increase the diversity of solutions brought forward in the myriad attempts to come to a sustainable energy system as the initiatives concerned inherently reflect local conditions in an abundance of Member States with an incredible diversity. Obviously, learning whilst doing inherently increases the opportunities for learning from others, in particular if there is more network-based cooperation in the implementation of European policies and law.[12] More importantly, the active attitude for the economic actors involved may well evolve into a positive attitude. This positive attitude may take the form of an integration of environmental concerns in the management processes of the economic actors involved. It may also build upon and encourage consumer awareness, leading to the market developing certification schemes that are designed to bring about more sustainability.[13] Contrasting the bottom-up approaches thus analysed with the fast-track legislation analysed by Karageorgou and the regulatory framework on smart water utilities discussed by Basse, the latters not only negates the potential benefits in terms of reduced project and investment costs, they fundamentally fails to harness the power of the market for the benefit of the environment.

If we follow up on this characterization of attitudes as positive and negative and look at judicial activity, it appears that, at this moment, economic actors are primarily involved in what can be coined a negative fashion. From the famous *PreussenElektra* case[14] to the more recent judgment in *Azienda Agro-Zootenica Franchini*, we see that the companies that started the case are essentially interested in lowering the costs and/or the level of environmental protection. This negative stance taken by the economic actors can then also be, slightly paradoxically, contrasted with the negative stance taken by the traditional antagonists of the economic actors: environmental NGOs and neighbours. The multitude of cases revolving around the EIA Directive and, more recently, the Aarhus Convention and its implementation in the EU serve as examples of this negative attitude that is also subsumed under the heading of NIMBYism. Taken together, these two lines of judicial activity hardly seem conducive if we seek a framework that is to deliver sustainability. Still, what is considered sustainable development at that specific time is the ultimate result of this legal activity. A continual process of fine-tuning and amending legislation that seeks to channel and proceduralise certain economic activities to reflect the judicial activity that interprets and applies this legislation, could be argued to result in a legal framework that represents a contemporary idea of sustainable development. This process, however, is iterative and inefficient to a high degree. We need only remind ourselves of the average time-span it takes for a case to reach the ECJ and for that Court to hand down a judgment that is then to be applied. The saga surrounding the definition

[11] Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora [1992] OJ L206/7.
[12] See E Korkea-aho, 'Watering Down the Court of Justice? The Dynamics between Network Implementation and Article 258 TFEU Litigation' (2014) 20 *European Law Journal* 649, for an excellent discussion of the disadvantages and advantages of networks in implementing EU law through a discussion of the Common Implementation Strategy as part of the Water Framework Directive.
[13] Such as the wood and timber certification schemes described by Gordeeva.
[14] Case C-379/98 *PreussenElektra AG v Schhleswag AG, in the presence of Windpark Reußenköge III GmbH and Land Schleswig-Holstein* [2001] ECR I-2099.

of what constitutes 'waste' took twice as long as Odysseus' odyssey and involved well over twenty cases.[15]

Similar sagas are still being told today, and in relation to European sustainable energy law an important ongoing chronicle relates to transnational renewable energy schemes. In a way, this is a story that has its beginning in *PreussenElektra* and – for the moment – reached its climax in *Alands Vindkraft*.[16] The main storylines of this narrative are, again, formed by unity and diversity. More interestingly, however, the two main events in this story show that and why the attitude of the economic actors that gave their names to the cases has changed from negative to positive.

It is not difficult to observe that the objective of a sustainable European energy system that unites the EU and its Member States is invariably going to affect energy supply and the choice of energy sources for the Member States, triggering diversity in the latter. The restrictions on the use of fossil fuels and the impact that large scale uptake of renewable energy production will have grid operation are just two phenomena that result in more or less reticence on the part of the Member States. Moreover, the abundance or dearth of local (renewable) energy sources also affects Member States' stance *vis à vis* the European Union's objective of moving to a sustainable energy system. In this regard, the market integration objective is less controversial and as a result meets with less Member State opposition. This unity concerning market integration can be explained by the fact that Member States currently have well over fifty years' experience with the theory of comparative advantages that underlies the creation of the common or internal market.

This internal energy market has been construed in the light to the provisions concerning the free movement of goods, as electricity is – somewhat counter-intuitively – characterised as a good, and the competition rules, with the Commission and economic actors as important drivers of this process.[17] In this regard the starting point is most often *PreussenElektra*. However, older cases such as *Outokumpu* and the *Electricity and Gas Monopolies* cases,[18] have equally sparked the debate on energy market integration. Moreover, *PreussenElektra* also concerned the interface between competition law, in particular the rules on state aids, and sustainable energy law. This element is not as prominent in *Essent Belgium*[19] and *Alands Vindkraft*, where the preliminary questions and the opinion of the Advocate General focus on Article 34

[15] For a discussion of the merits of a wider or more narrow concept of waste see E Scotford, 'Trash or Treasure: Policy Tensions in EC Waste Regulation' (2007) 19 *Journal of Environmental Law* 367. It could be argued that the saga has ended with the entry into force of Directive 2008/98 that contains clearer rules to distinguish waste from non-waste.
[16] Case C-573/12 *Ålands Vindkraft AB v Energimyndigheten* (ECJ, 1 July 2014).
[17] For an overview see M Sadowska, *Committed to Reform? Pragmatic Antitrust Enforcement in Electricity Markets* (PhD Thesis, Erasmus University Rotterdam 2013) and A de Hauteclocque, *Market Building Through Antitrust: Long-term Contract Regulation in EU Electricity Markets* (Edward Elgar 2014).
[18] Case C-213/96 *Outokumpu Oy* [1999] ECR I-1801 and eg Case C-157/94 *European Commission v Netherlands* [1997] ECR I-5699 respectivly.
[19] Joined Cases C-204 to 208/12 *Essent Belgium NV v Vlaamse Reguleringsinstantie voor de Elektriciteits- en Gasmarkt* (ECJ, 11 September 2014).

TFEU.[20] This, however, should not detract from the possibility to explain these cases from a theory of comparative advantages and thus the market mechanism.

The two main events in our story both deal with national schemes to incentivize renewable energy production. Whether they are feed-in tariffs, like in *PreussenElektra*, or renewable certificates schemes, as in *Alands Vindkraft*, the aim of such schemes is to introduce a market based element in the national policies to encourage renewable energy production. In *PreussenElektra*, the companies involved essentially wanted to be freed from the costs arising from the scheme. A declaration that the scheme would constitute state aid would expose the scheme to Commission scrutiny, potentially resulting in lower feed-in tariffs and thus a reduced financial burden for the companies that started the case. At the same time it is only logical that a reduced feed-in tariff will also reduce the incentive to invest in the production of renewable energy. *PreussenElektra* therefore reflects the negative attitude of economic actors that are confronted with measures related to sustainable energy.

When comparing *PreussenElektra* on the one hand with *Essent Belgium* and *Alands Vindkraft* on the other an important element is the temporal qualification the Court has introduced in *PreussenElektra*. It may be recalled that the Court's finding that EU did not stand in the way of the German *Stromeinspeisungsgesetz* was firmly framed by 'the current state of Community law'. This conclusion was the result of an appraisal of the relevant EU law as a reflection of a gradual process of market liberalization as well as a step in the process of establishing a policy to encourage renewables at the EU level rather than at the national level. This highlights the multilevel nature of decision-making and policy framing by the European Union. Between these levels, decision making power has moved from the national level to the 'lower' level of the economic actors and the 'higher' level of the European Union, reducing the importance of decisions taken at the Member State level.

This temporal element and the concomitant shift of policy making from the national to the private and EU level can also be analysed in the light of a theory of comparative advantages. In this regard, the market is that for regulation and what we see is an example of regulatory competition between the national and the EU level with an invariable tendency towards Europeanisation as the necessary corollary to market integration. In other words: the unity that exists between the Member States as regards the application of the market paradigm that is shaped at the EU level by the Commission reduces diversity in the flanking policy areas.

We see this when the Commission intervenes on the basis of the competition rules in the Treaty and, most prominently in relation to sustainable energy policy, and the state aid supervisory regime. On the basis of Articles 101 and 102 TFEU, the Commission started numerous proceedings against national incumbents that have significantly contributed to opening up hitherto protected national markets. Discriminatory practices in relation to the operation of networks and all other practices that could restrict market entry have fallen foul of the compe-

[20] Case C-573/12 *Ålands Vindkraft AB* (ECJ, 28 January 2014), Opinion of AG Bot.

tition rules that implement the market paradigm. This increase in contestability of markets has also enabled market entry for sustainable energy.

A good example of this market entry can be seen in *Alands Vindkraft*. Here, the case was started by a Finish producer of renewable (wind) energy that fed most if not all of its energy that was not consumed locally in the Aland archipelago into the Swedish grid. It is therefore hardly surprising that Alands Vindkraft sought to benefit from the Swedish scheme that requires electricity supply companies to purchase renewable electricity certificates to cover a certain percentage of the electricity supplied. The demand for such certificates creates a market premium that should incentivize renewable energy production. The combined result of the creation of a market mechanism and market access, the theory of comparative advantages resulted in Alands Vindkraft seeking to benefit from the incentive provided by the neighbouring state. Instead of trying to limit its costs or reducing the level of environmental protection, Alands Vindkraft sought to profit from what it considered a better regulatory framework than the one offered by the Member State where it was established. This is not different from the positive attitude that we see generally in markets, with economic actors continuously trying to outbid the other with even better products at even lower prices. The diversity of national incentive schemes can then serve as a catalyst to improve these schemes, provided that the market access for energy is matched with access to the incentive scheme. The outcome of Alands Vindkraft is known and the Swedish scheme was not open to the Finish producer as a result of, inter alia, the limited harmonization that had taken place at the European level. To translate this into the terminology of unity and diversity: a lack of unifying European institutions results in more national diversity without a prospect of being united. This is not purely attributable to the Court, as its ruling in *Alands Vindkraft* was overwhelmingly dictated by the legislative framework formed by the Renewables Directive.

There is, however, such a unifying European institution in relation to Article 107, the rules on state aids. The internal (energy) market presupposes undistorted conditions of competition and this requires – inter alia – production costs to be reflected adequately in the prices. As a result, state aids that artificially lower production costs of any form of energy are fundamentally unacceptable under the EU market integration paradigm. By and large, such aids are only allowed if there is an objectively established market failure and the aid is limited to what is proportionate.

State aids entail a very significant element of regulatory competition, or, more specifically, a risk of subsidy competition, with Member States outbidding the others in an attempt to attract investment and thus create economic growth. In view of this, the market paradigm requires an independent arbitrator in these matters at the EU level and the Treaty finds this in the Commission. In the Treaty framework all aids must be notified to the Commission in advance and must be deemed compatible with the internal market by the Commission. In determining this compatibility the Commission has significant discretion, that it has used to set out a policy in various areas, one of which concerns environmental protection.

Since 1974 the Commission has issued guidelines on environmental protection every six years or so. In these guidelines we see that the Commission has a firm belief in the powers of markets to curb and reduce environmental protection through the application of the polluter pays principle. However, over the course of the years, the Commission has had to adjust this belief to increasing international competition and lacking international standards. This meant that the Commission gradually came in the position where, by means of the setting of state aid policy, was able to indirectly steer national policies in relation to sustainability. This process has increased with the advent of the 2009 Climate and Energy Package, which integrates energy market liberalization and climate change legislation at the European level. Following on from this package, the Commission has amended its guidelines on environmental aid to the point that the most recent 2014 guidelines question the acceptability in the first place of subsidies for renewable energy production. This is a fundamental shift compared to the earlier guidelines that worked from the premise that the higher production costs of renewable energy by definition meant that there was a market failure resulting from failing internalization of environmental costs, and a concomitant need for subsidization.

In the 2014 Guidelines, the Commission has opted for a greater exposure of renewable energy production to the market forces, which combines its interest in undistorted competition with that of the market participants that seek market access. In this view, market mechanisms should influence decisions on how much renewable energy is produced where and when in the European Union. This may be Spanish photovoltaics one day and North Sea wind on another. This policy adjustment is of course a gradual one, but cases like *Alands Vindkraft* show, just like *Outokumpu*, how the market thinks ahead and forces a reappraisal of national sustainable energy policies with a view to opening these up to the internal market with all of the comparative advantages that come from it. However, this can only happen if the diversity of local conditions meets a unifying European institution, like the Commission.

Again, national diversity may be helpful, as Köck shows with the analogy between the food safety situation in Germany post Chernobyl and the current situation concerning radiation from high voltage cables. The absence of federal norms concerning irradiated food was quickly met with federal norms in the light of the obvious necessity to come to a coordinated effort to protect the consumer. Indeed, in view of the need to not only have more high voltage connections throughout Europe, but also to coordinate and literally connect these national cables, a unified European solution is nothing more than sensible.

Most interestingly, however, is the conclusion that can be drawn on the basis of this book that such unified European solution does not invariably require a unitary European entity, such as the Commission. Any institutional arrangement that enables local experimentation and the exchange of knowledge can be such a unifying European institution.[21] In this regard, a network of local authorities or renewable energy producers that exchange the knowledge they have acquired is a unifying European institution. In that regard, the EELF, the conference and this

[21] As a matter of fact, the 2030 Climate and Energy Policy Framework accepted by the 23 and 24 October European Council explicitly includes a governance paragraph that empowers economic actors as well as the Member States and European institutions.

book are such a unifying European institution that enables the world to learn from experiences in Greece, Germany, South Africa, the Netherlands, France and myriad other countries. United in diversity, Europe is moving forward to a renewable energy system. United in diversity, the contributions to this book are a small step towards building sustainable energy law.

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SUSTAINABLE ENERGY UNITED IN DIVERSITY

Challenges and approaches in energy transition in the EU

This book is the first volume published by the European Environmental Law Forum (EELF). The EELF is open to scholars and practitioners that study the environmental law in the European Union and its Member States and allows for discussion, cooperation and dissemination of ideas on a regular basis. This book, which is an open source peer reviewed publication, aims at achieving these goals. It bundles twelve contributions from those presented during the First EELF Conference held in Groningen, on 4-6 September 2013. It focuses on the relationship between environmental protection and the production, distribution and consumption of energy and the regulatory and policy challenges that are felt in the transition to a sustainable energy system and more generally a low carbon economy.

Today, an increasingly important part of EU environmental law concerns this energy transition, triggering regulatory experimentation and judicial activity at myriad levels. 'Sustainable energy united in diversity – Challenges and approaches in energy transition in the European Union' contains contributions by Sandy Gaines, Wybe Douma, Yelena M. Gordeeva, Vicky Karageorgou, Ralph Frins, Hendrik Schoukens, Ellen Margrethe Basse, Birgitte Egelund Olsen, Helle Tegner Anker, Magali Dreyfus, Louise du Toit, Wolfgang Köck, Hartmut Kahl and Nicolas Pradel showing the widely differing national policy initiatives in the diverse legal frameworks working – more or less successfully – to attaining the overarching 20-20-20-objectives the EU has set itself. With a foreword by Rebecca Harms, co-president of the Greens/EFA Group and member of the European Parliament, this book not only explores the national and European regulatory activities, but also finds a regulatory dynamic that identifies a European framework as a valuable way forward.

All authors are visible in the group photo taken at the First EELF Conference

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