Routledge Studies on the Governance of Sustainability in Europe

COMPARATIVE RENEWABLES POLICY

POLITICAL, ORGANIZATIONAL AND EUROPEAN FIELDS

Edited by
Elin Lerum Boasson, Merethe Dotterud Leiren
and Jørgen Wettestad

Comparative Renewables Policy

Challenging one-eyed technology-focused accounts of renewables policy, this book provides a ground-breaking, deep-diving and genre-crossing longitudinal study of policy development.

The book develops a multi-field explanatory approach, capturing interrelationships between actors often analyzed in isolation. It provides empirically rich and systematically conducted comparative case studies on the political dynamics of the ongoing energy transition in six European countries. While France, Germany, Poland and the United Kingdom opted for 'technology-specific' renewables support mixes, Norway and Sweden embarked on 'technology-neutral' support mixes. Differences between the two groups result from variations in domestic political and organizational fields, but developments over time in the European environment also spurred variation. These findings challenge more simplistic and static accounts of Europeanization.

This volume will be of key interest to scholars and students of energy transitions, comparative climate politics, policy theory, Europeanization, European integration and comparative European politics more broadly, as well as practitioners with an interest in renewable energy and climate transitions.

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Routledge Studies on the Governance of Sustainability in Europe

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At the beginning of the twenty-first century the EU is faced with major economic, environmental and societal challenges. Climate change is at the forefront of these challenges having a wide-ranging impact on the economy and society. This series will examine tensions and ambiguities in European sustainable development from an interdisciplinary and multidisciplinary background, covering the impact of sustainable development policies on European integration, and sustainability issues in energy, environmental, transport, development and agricultural policies.

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Routledge
Taylor & Francis Group
LONDON AND NEW YORK

First published 2021
by Routledge
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

and by Routledge
52 Vanderbilt Avenue, New York, NY 10017

Routledge is an imprint of the Taylor & Francis Group, an informa business

British Library Cataloguing-in-Publication Data
A catalogue record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data
A catalog record for this book has been requested

ISBN: 978-0-367-18766-8 (hbk)
ISBN: 978-0-429-19814-4 (ebk)

Typeset in Times New Roman
by Apex CoVantage, LLC

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Acronyms and abbreviations

ADEME	Environment and Energy Management Agency (France)
AFIEG	Independent Association of Electricity and Gas (France)
AGH	University of Science and Technology, Krakow
AWS	Solidarity Electoral Action (Poland)
BEE	Bundesverband Erneuerbare Energie e.V. (Germany)
BKK	Bergenshalvøens Kommunale Kraftselskap (Norway)
bpb	Bundeszentrale für politische Bildung, German Federal Agency for Civic Education
CCS	carbon capture and storage
CDU	Christian Democratic Union (Germany)
CEER	Council of European Energy Regulators
CEGB	Central Electricity Generating Board (England/Wales, 1958–2001)
CfD	Contract(s) for Difference
CFDT	French Democratic Confederation of Labour
CHP	combined heat and power
CIRED	Centre International de Recherche sur l'Environnement et le Développement
CJEU	Court of Justice of the European Union
CRE	Commission for Regulation of Electricity (France)
CSU	Christian Social Union in Bavaria, Germany
DECC	Department of Energy and Climate Change (UK)
DG	Directorate General in the European Commission
DG Competition	Directorate-General for Competition (European Commission)
DG Energy	Directorate-General for Energy (European Commission)
DSO	Distribution System Operator
DTI	Department of Trade and Industry (UK)
EC	European Community
EC BREC	European Community Baltic Renewable Energy Centre
ECC Select Committee	House of Commons Select Committee on Energy and Climate Change (UK)
EDF	Électricité de France S.A.

EEA	European Economic Area
EEAG	Energy and Environmental State Aid Guidelines (European Commission)
EEG	Erneuerbare-Energien-Gesetz, German Renewables Energy Sources Act
EFTA	European Free Trade Association
EMR	Electricity Market Reform (UK)
EnBW	Energie Baden-Württemberg AG (Germany)
EPA	United States Environmental Protection Agency
EPEX	European Power Exchange
ESA	European Free Trade Association Surveillance Agency
EU	European Union
EU ETS	EU Emissions Trading System
EU RES	European Union renewables
EWEA	European Wind Energy Association
FDP	Free Democratic Party (Germany)
GCB	Global Carbon Budget
GHG	greenhouse gas
HM Government	Her Majesty's Government (UK)
IEA	International Energy Agency
IEO	Institute for Renewable Energy (Poland)
IPCC	Intergovernmental Panel on Climate Change
IRENA	International Renewable Energy Agency
kV	kilovolt
kW	kilowatt
kWh	kilowatt hour
LPR	League of Polish Families
MIT	Massachusetts Institute of Technology (USA)
MPE	Ministry of Petroleum and Energy (Norway)
MW	megawatt
MWh	megawatt hour
NAO	National Audit Office (UK)
NGO	non-governmental organization
NOU	Norges Offentlige Utredninger (Norwegian State Public Assessment Reports)
NTE	Nord-Trøndelag Elektrisitetsverk (Norway)
Ofgem	Office of the Gas and Electricity Markets (UK)
PAP	Polish Press Agency
PGE	Polska Grupa Energetyczna
PIRC	Public Interest Research Centre (UK)
PIS	Law and Justice Party (Poland)
PIU	Prime Minister's Performance and Innovation Unit (UK)
PO	Civic Platform (Poland)
PSL	Agrarian Polish People's Party
PV	photovoltaic

PVs	Photovoltaics
R&D	Research and Development
RES	renewable energy sources
RES Legal	Legal Sources on Renewable Energy
RO	Renewables Obligation (UK)
SAM	State Aid Modernisation (European Commission)
SEA	Swedish Energy Agency
SEC	Single European Code
SER	French Renewable Energy Association
SLD	Democratic Left Alliance (Poland)
SME	small and medium-sized enterprise(s)
SOU	Statens Offentliga Utredningar (Swedish State Public Assessment Reports)
SPD	Social Democratic Party of Germany
SSB	Statistisk Sentralbyrå (Statistics Norway)
StromEinspG	Stromeinspeisungsgesetz; German Grid Feed-In Law
TFEU	Treaty of the Functioning of the EU
TSO	Transmission System Operator
TWh	terrawatt hour
UOKiK	Urząd Ochrony Konkurenciji i Konsumentów, Office of Competition and Consumer Protection (Poland)
UP	Labour Union (political party, Poland)
URE	Urząd Regulacji Energetyki, Polish national regulator
UW	Freedom Union (Poland)
VAT	value-added tax

Foreword

Governments play a key role in solving the great challenges of our time, and we need more knowledge about their roles in solving sustainability problems, for instance relating to biodiversity loss, climate change, poverty, health, sustainable agriculture, security of food supply and water quality. In Europe, we need to take the European Union (EU) into account in order to understand the domestic governance of such issues. Hence, we have launched a book series that provides new and fresh perspectives on the role of domestic policies and the interrelationship with the EU.

This particular book provides a flying start for our series. It presents in-depth and similarly structured studies of the development of national renewable electricity support schemes, providing new, solid and original explanations to differences and similarities across countries. The book's dual focus on EU renewables policy and EU state-aid rules unravels dynamics that have not prior been subject to scientific examination. Moreover, the book illustrates that the interrelationship between European and domestic policy development is more complex than often assumed, and that temporal dynamics can be important.

Major societal change processes may be understood through many different lenses. The multi-field approach presented in this book helps us better capture interrelationships between actors often analysed in isolation. It represents a promising new approach for examination of the political and social aspects of cross-cutting, multi-disciplinary sustainability challenges, such as climate change.

Through longitudinal, systematic and comparative case studies, this book provides crucial new insights into the European energy and climate transition. In addition to helping us understand why the EU has affected countries in differing ways, it also provides a range of more general insights of value to students of a wide variety of public policies. Not least, it helps us understand that politics is more important than is often recognized by studies that primarily investigate economic and technological factors.

Preface

In 2013 we set about studying the shifts in EU support schemes for renewables support – but had not expected the volume and character of the shifts and changes in support mixes that were to come. In 2015, we received funding for a wide-ranging collaborative research project, *REMIX: Revising the National Renewables Policy Mix – The role of state aid and other key EU policies*. REMIX resulted in a series of working papers and articles on EU steering of renewable energy and the development of renewables support in Germany, the UK, Poland, France, Sweden and Norway. These publications examined many aspects of renewables support, but the deeper complexity of the policy processes and actor interrelationships is hard to capture in brief articles. Thus, we decided to write this book.

The result is an edited volume, but we have sought to make it a tightly integrated one that will read like a monograph. Of the many persons who have helped in this work, special mention should be made of the tireless efforts of our great contributing authors. They all followed the same detailed theory framework, applying the same process-tracing case-study method across the chapters; then, systematic comparisons were performed, across countries and over time. This proved demanding for everyone, and it soon became clear why relatively few author-teams interested in climate and energy policy issues have embarked on similar projects. Considerably more time and effort were needed than initially anticipated.

We, the three co-editors, have worked closely with all contributors to this volume: Karin Bäckstrand, Catherine Banet, Hugo Faber, Tor Håkon Jackson Inderberg, Tim Rayner, Inken Reimer and Kacper Szulecki. Four scientific advisors have provided important reviews at several stages of the process: Åse Gornitzka, Andy Jordan, Sebastian Oberthür and Arild Underdal. We are grateful for the contributors' tremendous patience and willingness to review one another's chapters in several rounds. This book would not have been possible without their constructive attitudes and cooperative spirit, and we deeply appreciate the many lively and productive discussions. Special thanks go to Sebastian for forthright, challenging and fruitful review comments on the whole manuscript towards the end of the process. We also wish to thank two anonymous reviewers who provided useful suggestions for improvements to the original book proposal.

Many other individuals and organisations have helped to make this volume possible. The Research Council of Norway funded the REMIX project (no. 243756) together with Statkraft, Statnett, the Norwegian Water Resources and Energy Directorate (NVE), the Swedish Energy Agency and Energy Norway. Skilled and helpful staff at all these organisations provided detailed inputs to preliminary findings and chapter drafts and participated in enlightening discussions at our biannual project meetings. Special thanks to Jan Bråten, Håkon Egeland, Hans Otto Haaland, Knut Kroepelien, Marte Lind, Liv Arntzen Løchen, Mari Groos Viddal and Einar Wilhelmsen. Also, thanks to Berit Tennbakk, from THEMA, who provided fruitful comments at several stages in our work, especially in helping us to understand the functioning of European electricity markets.

Early versions of chapters were presented at various conferences attended by policy-makers and practitioners as well as academics. On 26 April 2017, at a gathering in Brussels hosted by the Norwegian Mission to the EU, more than 80 participants from the European Commission, interest organisations, diplomats and researchers provided valuable feedback to our presentations. On 5 June 2018, Norwegian energy-sector specialists and representatives of the general public engaged in a broad discussion in Oslo about the implications of our findings for the future development of renewables policy in Norway and in the EU. Further, participants at a wide range of panels at international scientific conferences, including the International Studies Association (ISA) Conference 2017, the European Consortium for Political Research (ECPR) General Conferences 2017 and 2018, and the International Conference on Public Policy (ICPP) in 2019, posed thought-provoking questions and offered constructive comments to our work. Our special thanks go to Torbjørg Jevnaker, B. Guy Peters, Jon Birger Skjærseth and Jarle Trondal for insightful opponent comments.

Colleagues in Oslo, at the CICERO Centre for International Climate and Environmental Research, the Fridtjof Nansen Institute and the Department of Political Science, University of Oslo, have provided useful comments on various occasions where portions of the manuscript have been presented. In particular, we wish to thank Elin Allern, Guri Bang, Tom Christensen, Erlend A.T. Hermansen, Jan Erling Klausen, Carl Henrik Knutsen, Staffan Kumlin, Bård Lahn, Gunnell Sandanger and Håkon Sælen. Further, during the academic year 2018–2019, Elin Lerum Boasson and Jørgen Wettestad were Visiting Scholars at the SCANCOR-Weatherhead Center for International Affairs at Harvard University. This invigorating stay also provided invaluable time to make progress with the book manuscript. A special thanks to Frank Dobbin for his hospitality, generosity and valuable feedback. Thanks also to Carsten Greve, Anne Kovalainen, Juho Lindman, Jukka Mäkinen, Seppo Poutanen and Torkel Strömsten for feedback and friendship.

Thanks also to the scholars who have provided detailed comments to separate chapters: B. Guy Peters and Jale Tosun to parts of Chapter 3, Marie Byskov Lindberg and Miranda Schreurs to Chapter 5, Julia Szulecka for assistance with archival queries in Chapter 7; Pierre Boquillon and Béatrice Cointe for comments to Chapter 8 and Mårten Pella for research assistance with Chapter 9.

Many interviewees have generously shared their experience and insights with us and our contributing authors. This book would not have been possible without you; thank you so much! Susan Høivik has copy-edited the whole manuscript. Thank you for being so diligent and patient, Susan, and not least for providing funny anecdotes along the way. Thanks go also to Sofie Løchen Smedsrud and Paolo Zupin for assistance with the final preparation of the manuscript. Finally, we are deeply grateful to Routledge, and especially the editor, Andrew Taylor, for encouraging words, excellent guidance and admirable patience.

We have tried our best to respond to advice and comments, but some flaws and gaps undoubtedly remain. We take full responsibility for the final manuscript and encourage our readers to approach this volume with a critical attitude, to ponder and question our conclusions and to help by developing new and better insights.

Elin Lerum Boasson, Merethe Dotterud
Leiren and Jørgen Wettestad
Oslo, Norway
30 April 2020


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Part I

Setting the stage


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1 Introduction

Elin Lerum Boasson, Merethe Dotterud Leiren and Jørgen Wettestad

Introduction

Europe is going renewable – radically expanding its renewable electricity production. Public policies are at the heart of this major societal change so crucial for combatting climate change. Domestic support schemes for renewables have developed and changed over more than four decades now, with the European Union (EU) playing an increasingly important role. In 2014 the European Commission (the Commission) stepped up its steering of domestic support practices and required changes in many national support schemes. That development caused uproar in some EU member states, Germany among them, but was hardly registered on the political agenda elsewhere, for instance in Sweden.

Speeches held at a major renewable energy conference in Berlin, 27 March 2015, illustrate the differences between German and Swedish renewable electricity politics and policies. On that Friday morning, the German Minister for the Environment, Barbara Hendricks, stood on the podium at the Berlin Energy Transition Dialogue, addressing prominent figures in the booming renewable energy industry: corporate leaders, ministers and researchers.[1] She said she was proud of how Germany's extensive support of renewables had contributed to radical cost reduction and added: 'We want to encourage other countries to follow our example'. Further, she explained to the audience that the German energy transition, the *Energiewende*, had not been easy: 'We have learned some lessons' (Clean Energy Wire 2015).

For years, German renewables support, a key element in the *Energiewende*, had been subject to fierce political struggles and many heated debates – with massive protests from the major electricity utilities, which claimed that Germany's renewables support policy was a key reason why they were now on the brink of bankruptcy. There had also been tough bargaining with the Commission, in addition to legal disputes in the Court of Justice (CJEU). However, speaking in Berlin on that day in 2015, Hendricks did not dwell on all the impediments and hardships; she was proud of what Germany had achieved and pleased that representatives from many industries and countries had come to Berlin to learn.

However, even as Hendricks was speaking to delegates at the Berlin Energy Transition Dialogue, the long-established German practice of guaranteeing

different renewables technologies varying fixed prices for their electricity was about to change. Under this feed-in scheme, producers of expensive renewable energy technologies, such as solar, received higher support than did producers of less costly technologies, such as onshore windpower. In the future, large producers of renewable energy would have to compete for support in auctions. Only small projects would continue to receive traditional feed-in support: large producers would no longer receive a fixed electricity price, but rather an add-on on top of fluctuating market prices for electricity.

The next speaker was Nils Vikmång, State Secretary to the Swedish Minister for Energy and the Environment. In 2003 Sweden had adopted an electricity certificate scheme, which had remained largely unchanged since then. The scheme provided the same level of support to all types of renewables, differentiated between technologies, as in Germany. In addition, all Swedish renewables producers were exposed to fluctuating electricity prices, and the support level was itself determined by the supply and demand of electricity certificates. Like Hendricks, Vikmång represented a social democratic party, and they both came from countries that had radically increased their domestic renewables production. But Germany and Sweden had opted for very different approaches to renewables support. Unlike Hendricks, Vikmång and his colleagues had not experienced domestic support practices for renewables becoming entangled in complex juridical conflicts with the CJEU and the Commission. In Sweden, renewables policy discussions at the EU level were deemed largely irrelevant to domestic political deliberations on renewables policy.

However, the big utilities had started to criticize the Swedish scheme, which, they claimed, had led to overproduction of renewable electricity, ruining the profitability of existing large hydro and nuclear plants. As many renewables technologies had become far less costly, they argued that extra support was no longer needed. But Vikmång and his allies in the Swedish Parliament did not agree. They vigorously defended the traditional approach – and one year after the Berlin conference, the Swedish Parliament agreed to prolong the national electricity certificate scheme for another 15 years. That made Sweden the only EU country with electricity certificates as its main support scheme for renewables.

Germany and Sweden represent two contrasting approaches to renewables support in Europe: the technology-specific and the technology-neutral. Technology-specific mixes for renewables support create a broad range of differing support levels: costlier renewables technologies receive more support; and decentralized, small-scale projects often receive more support than centralized, large projects. The technology-specific approach also allows support to vary across geographical areas, fostering a wide range of renewables technologies and helping to underpin new industry developments and local energy security. By contrast, the technology-neutral approach is more aligned to the business models of big electricity producers operating in liberalized electricity markets. This approach favours large-scale investments in the most profitable technologies, with limited support for small-scale renewables sources.

The sheer number of actors involved in shaping policy and enabling these two countries, Germany and Sweden, to embark on different renewables policy paths is daunting. Even more confusingly, similar actors took strikingly different positions in the two countries. For instance, the Social Democratic Party in Germany promoted a highly technology-specific support scheme, whereas the Swedish Social Democrats promoted technology-neutrality. In order to understand how the two countries ended up with differing support-scheme mixes, we need to grasp how a broad range of factors and actors have interacted over time. Neither country developed its domestic policies in isolation from developments within other European countries or EU steering, but the roles played by what we refer to as the larger 'European environment' have differed greatly.

Challenging the many technology-focused accounts of the development of renewables support, this book takes a deep-dive into the political and social dynamics, developing a new analysis of this policy area as well as a new approach to policy studies in general. In addition to examining the cases of Germany and Sweden, we scrutinize and systematically compare the development of renewable electricity mixes in four other EU/European Economic Area (EEA) countries: France, Norway, Poland and the UK. Our overarching research question is: *What explains the differences and similarities in renewables support-scheme mixes across countries and over time?*

Germany, the UK, Poland and France all have technology-specific renewables support mixes; Norway and Sweden have technology-neutral support mixes. Some of these countries have had rather stable renewables support mixes; others have shifted over time. The UK and Poland switched from technology-neutrality to technology-specificity after 2010. Around that time, Germany and France started to expose new renewables projects more to market prices and competition than before, but without dropping technology-specificity. Countries in both groups have adopted a mix of support schemes, but whereas Germany, the UK, Poland and France offer technology-specific support to both small- and large-scale renewables projects, Sweden and Norway have adopted more technology-neutral schemes for both categories.

Renewable electricity production is central to climate-change mitigation. Globally, as well as in the EU, the combustion of coal, natural gas and oil for electricity and heat is the largest single source of greenhouse gas (GHG) emissions (EPA 2019). In 2017, the energy-producing industries, primarily producing electricity, were responsible for 28% of total GHG emissions in the EU (Eurostat 2019). Renewables support schemes play an important role in strategies for climate mitigation, although other measures, such as carbon pricing, energy-efficiency standards and improved public transport, also contribute. By clarifying the factors and actors that shape the development of renewables support, this book furthers a better understanding of the political dynamics of climate-change mitigation in general.

Like many other climate-policy issues, renewables support mixes are shaped by complex interrelationships involving several parallel and partly intertwined

societal processes. Economic liberalization, Europeanization, climate mitigation and technological change have underpinned the emergence, change and staying power of domestic renewables policies across Europe. Various strands within the political science literature – including EU implementation research, policy diffusion studies, policy process frameworks and historical institutionalism – may help us to assess and understand parts of the policy process, but none of these alone can adequately capture the dynamic interrelationships between the many decision-making bodies and actor-groups involved. Combining these political science literatures in new ways, and adding elements from sociological institutionalism and economic sociology, in this book we develop a *dynamic multi-field approach*.[2]

The multi-field framework

Whereas usual practice has involved analysing a few actor groups in isolation, exploring their positions and actions within limited time-periods, the multi-field framework can help us to identify the *links* between differing groups of actors and how political dynamics develop and unfold – features too often overlooked in studies of public policy, comparative politics, Europeanization and energy transition. The multi-field framework facilitates comprehensive analysis of organizational and political factors and how they interact and change over time.

Social scientists from a range of disciplines emphasize the role of *fields*, but the concept goes under various names, such as 'segments', 'policy systems' or 'policy monopolies' (Baumgartner and Jones [1993] 2009; Bourdieu 2005; Fligstein and McAdam 2012; Kluttz and Fligstein 2016). Fields distribute power among actors and shape values, identities and interests. 'Social fields' are circumscribed spheres of political and social life with particular constellations of actors (Boasson 2015: 1). Each field has an identifiable social architecture: a distinct distribution of resources and particular cultural-institutional beliefs and logics. Fields are issue- or industry-specific configurations of governmental and private organizations, and their importance for policy development results partly from the structural interrelationships and cultural-institutional unity between these organizations (Fligstein and McAdam 2012). Fields are not actors with defined objectives and strategies: they should be seen as socially distinct constellations of actors, with varying degrees of internal coherence and unity, more or less impenetrable boundaries and varying autonomy.

Modern societies can be seen as consisting of multiple fields. All fields are embedded in complex, multi-dimensional webs of dependence with other fields (Fligstein and McAdam 2012; Kluttz and Fligstein 2016: 192). As Scott (2017: 862) notes, most organizations 'simultaneously operate in multiple fields and hence host multiple logics as well as alternative relational systems'. Examination of how multiple fields interact and change over time can help to explain changes and stability in public policy and facilitate more interdisciplinary dialogue – in relation to climate- and energy-policy developments, but also in other policy areas.

Renewables support mixes change as a result of multiple fields interacting and responding to each other. In this book, we pay special attention to how domestic organizational fields of electricity production, domestic political fields and the European environment (described in the following list) interact over time, jointly influencing the development of national renewables support schemes. Some actors may be affiliated with several fields, but the main participants in the three fields are as follows (see also Boasson 2015: 38–46):

- *Domestic organizational fields*: commercial organizations, public regulators and administrative bodies, business associations and sometimes also other non-governmental organizations, such as environmental organizations.
- *Domestic political fields*: the whole range of political actors – political party organizations, legislative assemblies and parliamentary committees, governmental executives and the political leaders of governmental ministries.
- *The European environment*: consists of a range of domestic political and organizational fields (in EU and EEA member states) but also includes EU-level fields and the social processes that unfold at the EU level. With renewable electricity support, processes relating to the development of EU governance of renewables, as well as EU competition policy and state-aid control processes, are of relevance.

The organizational, political and European fields are interrelated in many ways, and these relationships may change over time. For instance, whereas the big electricity utilities used to be embedded within domestic organizational fields consisting of other electricity utilities, grid operators and domestic public agencies that regulate energy and electricity, today they can also be seen as part of the larger European field of electricity production, together with other major utilities and various EU organizations focused on energy regulation. Moreover, domestic political parties used to relate solely to other domestic political parties, but they may also participate in larger European political fields with party groups directly represented in the European Parliament. Further, there is a direct relationship between domestic political and organizational fields, not least because the political executives (the ministers) have their key rooting in the political field, whereas the civil servants in the ministries belong to the organizational field.

Research questions and research design

It is not easy to see which factors can best *explain differences and similarities in renewables support schemes mixes across countries and over time*. The history of the development of renewables policy in Germany, the UK, Poland, France, Sweden and Norway is complex and full of idiosyncratic events, making it hard to pinpoint the similarities and differences on policy outcomes across countries.

Historically, the UK, Germany, France and Poland have rarely opted for similar industrial policies and economic development models (Dobbin 1994; Hall 2014; Nölke and Vliegenhart 2009), yet they developed roughly similar renewables

support mixes. While it is less surprising that Norway and Sweden should have similar approaches, it is intriguing that they opted for an electricity certificate scheme quite similar to the renewables portfolio standards dominant in the world's prime liberal market country, the USA (Rabe 2007). After all, the Scandinavian countries are known for their very different approaches to industry policies and economic development approaches from those of the USA.

In order to detect causal regularities across countries and over time, we operate with six case studies of renewables policy development all guided by the same questions, namely, *how is the development of renewables support mixes affected by:*

- *the European environment?*
- *domestic organizational fields?*
- *domestic political fields?*

And further: *do developments in one field influence developments in others?*

Main findings

Through systematic comparative assessments, we obtain new insights into the drivers of renewables policy developments in the EU and EEA countries, and we also understand and capture the policy-shaping dynamics often overlooked by other explanatory approaches to domestic policy developments. What, then, do we find?

Europeanization spurs differentiation

The European environment approach facilitates coherent and nuanced examination of how Europeanization affects domestic policy developments. In line with recent developments in EU policy implementation research, we take into account that EU influence may lead to both coherence and diversity among the policy approaches of the EU and EEA countries (Thomann 2015, 2019: 9). EU implementation studies tend to focus on vertical Europeanization, understood as top-down EU steering resulting from the EU having gained formal authority within an issue-area (Bulmer and Radaelli 2004: 5). But we also explore the importance of horizontal Europeanization, understood as the diffusion of policy ideas across countries and fields within the European environment (Boasson 2015; Börzel and Risse 2012; Cowles and Risse 2001: 219; Jörgens and Solorio 2017: 12–13). Some scholars hold that, in order to qualify as 'Europeanization', policy transfer must emerge through EU policy or European integration processes (e.g. Radaelli 2003); however, we operate with a broader conceptualization, where Europeanization includes also voluntary transfers across member states, transfers that may not have passed through EU institutions first.

Admittedly, we are not the first to examine vertical and horizontal Europeanization in conjunction (Jörgens and Solorio 2017). However, we contribute

something new by examining the implementation of two interrelated strands of EU policy development in conjunction – EU renewables policy proper, and state-aid policies – and by conducting a longitudinal study that covers more than four decades of Europeanization.

The European environment approach enables us to uncover several new dynamics in Europeanization. We find that the European environment tends to shape domestic policy developments more in periods when strong vertical Europeanization is combined with coherent horizontal Europeanization – implying that one specific support-scheme mix gains superiority in the European environment. But this is not the only situation in which the European environment is important. Impulses for change in the European environment are generally more important for domestic policy developments than we expected, also in situations where the EU lacks formal authority and no particular policy recipe dominates the European environment. The European environment has influenced developments in renewables support in all our case-study countries, albeit at varying times and in differing ways.

European policy impulses with respect to renewables support have changed significantly over the years. Variance in the EU steering impulses and shifting trends in the design of European renewables support has contributed to differentiation in domestic policies. More specifically, the Europeanization of renewables support has amplified differences in renewables support mixes across the two groups of countries examined here, while also spurring convergence within the two groups.

While it has played an important role in many of the technology-specific countries (with the exception of the UK), the European environment had the greatest influence in the technology-neutral countries in the late 1990s and early 2000s. Our longitudinal research design makes possible a far more nuanced understanding of the diversifying power of EU steering than studies that examine implementation of EU policies over a more limited time-span.

Organizational fields are crucial but can be over-ruled

Although electricity production in most countries is dominated by powerful actors with limited initial interest in renewables (domestic regulators and a few large nuclear or fossil-fuel utilities), forceful renewables support schemes have emerged. Often, the regulators and incumbents have been unable to prevent renewables industry actors and environmental organizations from having their way – which surely indicates that all those political science theories that bluntly assume that big corporate actors will have privileged positions in policy development need to be re-assessed and refined (Carpenter and Moss 2014; Lindblom 1977). Using the concept of organizational fields, we can explore why the roles and powers of such actors vary across countries and over time.

Moreover, the many policy frameworks aimed at facilitating assessment of how civil servants, big corporations, idealistic organizations and other non-governmental organizations shape policy development – such as multiple streams (Herweg et al. 2018; Kingdon [1984] 2011), advocacy coalitions (Jenkins-Smith

et al. 2018; Sabatier and Jenkins-Smith 1993) and punctuated equilibrium (Baumgartner and Jones [1993] 2009; Baumgartner et al. 2018) – have failed to produce robust findings on the conditions under which actors other than big business tend to be most influential.

Cumulative research on the relative importance of varying actor groups under differing conditions has been undermined by seemingly endless rivalry between differing policy process frameworks. The seminal *Theories of the Policy Process*, edited by Christopher M. Weible and Paul A. Sabatier [2007] 2018) epitomizes this. This volume gives thorough and insightful presentations of the major policy process frameworks – a great leap forward for policy studies. But since the contributors present each framework as unique, rather than identifying commonalities across them, this spurs competition, rather than creating common research frontiers and cumulative research traditions. Instead of becoming embroiled in the competition among established policy frameworks, we have chosen to draw on insights from many of them in developing our organizational field approach.

We define an organizational field as segmented when most formal authority and information are concentrated within a few large corporations and the governmental regulators and these actors approach and understand renewable electricity promotion in a similar way, i.e. they are embedded in a similar institutional logic. We find that shifts in institutional logics relating to renewables support in domestic organizational fields underpin changes in renewables support mixes, in both segmented and less segmented fields. Some actors understand the promotion of renewables as mainly relating to a technology development logic, and they prefer governmental measures that provide investors with good, stable conditions for developing a broad range of technologies. Others follow a market-logic and rely primarily on technology-neutral measures: they prefer governmental measures that minimize the societal costs of renewables investment and favour the least costly technologies. Some fields are dominated by one of these views, but there can also be a high level of conflict between them, as it was in Germany for a long time. After 2010, the two contrasting approaches came to blend in the UK and France, but also to some extent in Germany, towards more technology-specificity in the UK, and in the other direction in France and Germany. The Norwegian and Swedish support schemes are dominated by technology-neutrality, and this can be partly explained by the dominance of market-thinking in their domestic organizational fields.

Although many segmented fields play an important role in ensuring both stability and change, they rarely control policy development. Nowhere have powerful organizational field actors been in full control over the development of support schemes. Large electricity utilities tend to be more influential when the organizational fields are segmented, but segmentation may also empower public administrative organizations, as in the UK as well as in Sweden in the late 1990s. In several cases, renewables support schemes changed in ways that ran counter to the positions of electricity utilities with dominant positions in segmented fields – in Poland, France and Sweden. The German case shows that when the organizational

field is not segmented, there tends to be more room for influence from the domestic political field and the EU.

The organizational field approach enables us to capture nuances in the role of corporate and public administrative actors. It will be exciting to see how the causal arguments presented in this book will fare when tested out on other countries and other issue-areas.

Political fields tend to drive policy developments when resources are distributed

The multi-field framework develops a new analytical take on the role and importance of politicians for policy development. In media discourse as well as academic debate over climate policy and politics, 'political will' is considered crucial to mitigation of climate change. For decades, climate activists, environmental groups, researchers, green industry groups and others have called for politicians to adopt ambitious climate policies, but we still lack adequate systematic knowledge of how and to what extent political dynamics shape policy development. One reason is that political scientists and policy scholars seldom focus explicitly on the role of politicians and political fields in policy development processes.

We find that domestic political actors and political dynamics can influence domestic policy developments rather independently of what goes on in adjacent fields. Political fields tend to be more important when a political issue is salient and thus subject to political competition. But such fields often play an even more important role when structural resources are distributed among many political actors rather than only a few. This means that it is more likely that the political field drives policy development when responsibility for renewables is shared among several ministries, when the Parliament has a strong position and/or when the government is made up of several parties. We find that, under such conditions, the political field has played a far more important role in Germany and Sweden than in the other case-study countries. In both Germany and Sweden, the political salience of renewables support schemes, the distribution of structural resources among several parties within the government and the existence of strong parliaments contributed to enhance the importance of the political field.

This finding shows that political actors are more important than dominant policy process frameworks (such as multiple streams, advocacy coalitions or punctuated equilibrium) and historical institutionalism lead us to believe. These tend to assume that politicians are important only at rare and brief points ('punctuated equilibria', 'windows of opportunity' or 'critical junctures'). Further, historical institutionalists are deeply interested in the role of the state, but not in the role of politicians in particular. B. Guy Peters et al. (2005: 1283) highlight that historical institutional studies often 'overemphasize the importance of civil servants and bureaucrats in policymaking processes, belittling excessively the continuing (and on occasions elemental) significance of politicians as creative actors'. Our findings strengthen their argument.

Spotlight on politics and culture as policy drivers

In this book, we show that political and cultural-institutional features are crucial drivers of changes and stabilities in renewables support mixes. Renewable electricity technology has made impressive quantum leaps during the period covered here, with particularly radical reductions in costs after 2008 (IRENA 2013, 2019). While this has enabled greater deployment of renewable energy, renewables have been constrained by entrenched fossil-fuel and nuclear energy infrastructures (Geels 2014; Lockwood et al. 2017; Meadowcroft 2011). These technological-economic features have played into shifts in renewables support mixes in all the six countries examined here, but we show that we need to take politics and culture into account in order to understand differences and similarities in support mixes across countries.

We are not alone in recognizing that energy and climate transitions entail complex social shifts, and that technological and economic factors are not the only enablers and constraints. In this book we offer one suggestion as to how political and cultural aspects may be examined. We show that differing cultural aspects, such as institutional logics and political cognitive scripts, can help to explain the behaviour of different types of actors. We also shed light on why political dynamics are more important at some stages of policy development than at others.

Method: case selection, process tracing and systematic comparison

All contributors to this book have carefully mapped the nature of the fields in question empirically. We have aimed to be as transparent as possible regarding the analytical criteria employed in identifying the various fields and their interrelationships, and to build our assessments on detailed and rich empirical material. Further, we have taken care not to attribute agency to the fields, recognizing that this is an analytical construct that encompasses a broad range of actors.

Case selection and process trading

Our case selection is based on the features of interest as regards theory. In selecting cases, we sought to identify cases where it was either highly likely or highly unlikely that the European environment, the organizational field or the political field had played important roles for the development of support mixes (George and Bennett 2005: 121). Causal relationships can be detected only after significant empirical investigation, not *a priori* – indeed, it later became evident that some cases had different qualities than initially expected.

Older comparative methodology approaches emphasize selecting cases that allow for control over ‘independent variables’. Such procedures are based on a deterministic view on causation, while our case comparisons are based on probabilistic, not deterministic, understandings of causality. Rather than searching for features that are necessary and/or sufficient for a certain outcome, we remained

open to the possibility of equifinality – that there might be multiple causal paths to the same outcome (Mahoney and Goertz 2006: 11). One feature may enhance the probability that a certain outcome will occur, but it will very rarely be necessary; and an increase in the value of a factor may cause different outcomes in different cases (Hall 2003: 315). Since all efforts to control cases through case selection implicitly assume that any causal relationships are of a necessary or sufficient nature, these procedures have been largely discredited (see Box-Steffensmeier et al. 2008: 24; also discussion in Mahoney 2003).

We aimed to select countries where the European environment had played differing roles. Research available to us at the time (2015) showed that German actors had repeatedly challenged EU steering, but they also indicated that there had been fewer conflicts in relation to implementation in France, Norway, Poland, Sweden and the UK (see e.g. Boasson and Wettestad 2013; Wurzel and Connelly 2011). Further, the literature indicated that Germany had influenced many other countries as regards copying its renewables support scheme, whereas Norway and Sweden had less success in this respect.

Additionally, we aimed for variation in the impacts of the organizational field. This proved challenging, as the organizational field of electricity production tends to be rather segmented in all European countries. However, research indicated higher degrees of segmentation in Poland, France and Norway than elsewhere (Boasson 2015; Boasson and Wettestad 2013). Lastly, we aimed for variation in the importance of the political field. Previous research has indicated that the political field has played more prominent roles in Germany and Sweden than elsewhere (Boasson and Wettestad 2013; Åstrand 2005).

This book combines comparative qualitative case-study method with process tracing. The case-study approach entails detailed examination of historical episodes in order to develop explanations that may be generalizable to other events (George and Bennett 2005: 5). We conduct within-case assessments and systematic comparative assessments, and we assess interrelationships between cases. In each case study we pose the same set of general questions and relate to similar expectations, thereby ensuring standardized data collection and enabling systematic comparison (Collier 1993: 105; George and Bennett 2005: 67).

In all case studies, we follow the policy developments from inception until 2016, scrutinizing developments in line with widely accepted criteria for process tracing. We understand process tracing as 'the analysis of evidence on processes, sequences, and conjunctures of events within a case for the purpose of either developing or testing hypotheses about causal mechanisms that might causally explain the case' (Bennett and Checkel 2015: 7). We have paid attention to ensuring coherence in method and theory across the cases from all contributing authors; the three co-editors have been involved in writing all but one of the chapters.

Sources and data

We combine written and oral sources. The latter includes a unique assembly of 79 in-depth, qualitative interviews with prominent actors, among them former

government ministers, high-ranking civil servants in ministries and agencies, representatives of national and European industries, representatives of environmental groups and high-level Commission officials. We worked to ensure that the same categories were interviewed in all six case countries; but we encountered some challenges in Poland, where political conditions made it difficult to conduct interviews, so we opted to rely on transcripts from parliamentary debates. Since the author of the Norwegian case, Elin Lerum Boasson, had conducted dozens of interviews about renewable policy developments in Norway in prior work, we conducted fewer interviews in this case (see the lists of interviewees at the end of Chapters 4–10).

As to written sources, we have examined several hundred publicly available documents. These include (but are not limited to) consultation inputs, parliamentary reports, party programmes, government/coalition agreements, written correspondence between national authorities and the EU and news articles.

Moving back and forth between theory and cases has enabled us to formulate new concepts, discover novel explanations and refine pre-existing theoretical expectations in light of detailed case evidence (Mahoney and Rueschemeyer 2003: 13). Most importantly, we have focused on understanding each case individually, but we have also explored how they relate to each other. This research method is resource-demanding, but also rewarding.

Systematic comparisons

In Chapter 10, we perform detailed, systematic comparisons across cases as well as over time, aided by tables that illustrate similarities and differences. This comparative method has been possible because all contributing authors refer to the same time-periods in their chronological accounts. The method helps us to examine the roles played by the various fields across different time-periods: each of our six cases consists of four sub-cases, one for each time-period. Because relatively little of relevance happened before 1999, the first period covers two decades, from around 1970 to 1999, while the subsequent periods are five years each. The last period, post-2010, is slightly longer, as we conducted most of our empirical mapping in 2015 and 2016.

Rather than search for one precise, parsimonious explanation, we have been open to the possibility that different causal patterns may lead to similar outcomes and that complex interdependencies may be important (George and Bennett 2005: 161; Hall 2003: 383; Rueschemeyer 2003: 315). Our objective has been to render observed regularities intelligible by specifying in detail how they were brought about (Hedström 2008: 321).

Presentation of the chapters

This introduction has briefly presented the topic, research questions and main findings of this book. There are three additional chapters in Part I. Chapter 2, by

Elin Lerum Boasson and Merethe Dotterud Leiren, shows how this book builds on and adds to existing research on renewable energy policy and climate transitions. It specifies the analytical dimensions that determine the degree of technology-specificity and performs comparative assessments of the renewables support schemes of the six countries. Lastly, the authors show that research approaches that rely primarily on technological-economic features cannot fully explain cross-country similarities and differences in support-scheme mixes.

The multi-field approach is presented in Chapter 3, by Boasson. The chapter specifies the special character of the European environment, the domestic political field and the domestic organizational field, and presents our specific expectations as to when and how the three will influence policy developments. In addition, cross-field interrelationships and interdependencies are discussed. The expectations developed in this chapter are systematically assessed in the empirical chapters in Part II, and later the findings are compared in Chapter 11. Chapter 4 (authored by Boasson) is empirical in nature: it presents developments and changes in EU steering (vertical Europeanization), as well as broader European trends when it comes to renewables support schemes (horizontal Europeanization). This chapter represents an important background for understanding how and to what extent the European environment have affected the policy developments in the six case studies.

Part II presents our six country case studies. The countries with technology-specific support-scheme mixes are presented first, followed by the technology-neutral countries. Chapter 5 focuses on Germany (authors: Merethe Dotterud Leiren and Inken Reimer), Chapter 6 on the UK (authors: Tim Rayner, Merethe Dotterud Leiren and Tor Håkon Inderberg), Chapter 7 on Poland (author: Kacper Szulecki), Chapter 8 on France (authors: Elin Lerum Boasson, Catherine Banet and Jørgen Wettestad), Chapter 9 on Sweden (authors: Elin Lerum Boasson, Hugo Faber and Karin Bäckstrand) and Chapter 10 on Norway (author: Elin Lerum Boasson). In all these chapters, the authors first present the renewables support mix of the country at the end of 2016, then turn to a causal account of the evolution of the support scheme in each country over four periods: from the 1970s until 1999, from 2000 to 2004, from 2005 to 2009 and from 2010 until around 2016. All chapters examine the expectations put forward in Chapter 3.

Finally, Part III compares and concludes. Chapter 11 (authors: Boasson, Leiren and Wettestad) presents a detailed, systematic comparative assessment, with systematic comparisons of how and to what extent the European environment, domestic political fields and organizational fields have affected the six countries over the four time-periods. We also examine how the fields have interacted and influenced each other over time. The final chapter, Chapter 12 (author: Boasson), presents the central general conclusions to be drawn from the comparisons performed in Chapter 11, with a focus on the implications for research of public policy, climate and energy transitions and EU implementation and Europeanization research. This chapter concludes the book with a discussion of the limitations of the multi-field approach.

Notes

1 The Berlin Energy Transition Dialogue was initiated by the German government, with the aim of spurring international interest in the German renewable energy transition: the *Energiewende*.
2 This approach, first developed by Elin Lerum Boasson (2015), has undergone significant revision and improvement for the purposes of this volume.

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2 Comparing renewable support mixes

Elin Lerum Boasson and Merethe Dotterud Leiren

Introduction

Renewables support schemes may be designed and combined in various ways. In the 1990s most countries had only one renewables support scheme, and this scheme was relatively simple and easy to grasp. After 2010 most European countries adopted encompassing and complex support mixes (Kitzing et al. 2012). For several decades, scholars have discussed how to characterize the most dominant support schemes, usually focusing on single instruments and not policy mixes. Adding insights to this literature, we offer a conceptualization of support-scheme mixes.

Support-scheme mixes differ along many dimensions; thus far the scientific debate has focused on distinguishing between more or less market-based approaches. In contrast we develop a conceptualization of support-scheme mixes that distinguishes between *technology-neutral* and *technology-specific* instruments. We take two dimensions into account: the degree to which differing technologies are awarded varying support; and the degree of exposure to the electricity price. To capture the overall technology-specificity of a renewables support mix, we include both dimensions as regards both large- and small-scale support schemes.

Applying the new conceptualizations to support-scheme mixes in six countries, we find that whereas France, Germany, Poland and the UK had technology-specific support-scheme mixes by the late 2010s, Norway and Sweden had more technology-neutral mixes. Explanations that rely primarily on economic and technological factors have dominated research on renewable energy and climate transitions. We review this literature and conclude that, although these approaches have many good qualities, they are poorly suited for explaining cross-country variation in renewable support mixes.

Technology-specific and technology-neutral support-scheme mixes

Differing categorizations of renewable support measures

There is a significant literature on single policy instruments, while policy mixes have gained less scientific attention. For instance, there is little scholarly agreement

on how to characterize various types of policy mixes (see discussion in Howlett et al. 2015). Like many other policy areas, this is also true for the literature on renewables support measures.

From the early 1990s until about 2010, investment support, fixed feed-in tariffs and electricity certificate schemes were the dominant games in town. Investment support was often calculated on a project-by-project basis (Community Guidelines 2001): non-reimbursable payments in the construction phase of a project (Kitzing et al. 2012: 195). Governments tended to calculate investment support by applying an 'extra cost' approach, where the cost of each renewable electricity project was evaluated against the cost of a conventional electricity plant, and the support corresponded to the additional costs of building the former.

Later, many countries developed fixed investment-support levels, which could vary between different technologies (Community Guidelines 2001, 2014). The first feed-in tariffs guaranteed renewables projects a fixed electricity price for a fixed period, often 15 to 20 years. The system differentiated among the various technologies, resulting in different subsidy levels per unit of generation for different renewables technologies (Buckman 2011: 4105; Kitzing et al. 2012: 194). In addition, renewables electricity had priority dispatch to the grid, which ensured that the electricity from the renewables plant would be bought. This system created predictable gains for renewables producers, but governments could not know in advance how much new renewables electricity would result from the system.

In contrast, electricity certificate systems mandate that a certain quota of the electricity consumed is to come from renewables (Darmani et al. 2016: 373). For every megawatt hour (MWh) of production, certificates are allocated to electricity producers. These certificates can be traded on a market, where the price is set by supply and demand. The demand hinge on the target the governments has set for the system. The price for certificates comes on top of the electricity price. Significant uncertainty relating to electricity prices as well as certificate prices created high investment risks for producers. Further, certificate schemes tend to be technology-neutral, making a broad range of renewables eligible for the same level of subsidies (ibid.: 376). Such systems are referred to by various labels: for instance, in the USA and Australia, the term 'renewables electricity standards' or 'portfolio standards' is used, whereas in Norway and Sweden, and in EU documents, the terms 'green certificates' or electricity certificates are used more often (ibid.: 373).

Until recently, academic as well as political discussions about renewables support were marked by deep disagreement as to which of the two schemes should and could be called 'market-based' – or whether *all* economic support measures could qualify as market-based. Initially, the promoters of electricity certificate schemes labelled this approach 'market-based', whereas feed-in schemes were called 'command-and-control' schemes (Toke and Lauber 2007: 677). Eventually, scholars began to refer to certificate schemes as being market-based (Boasson and Wettestad 2013; Darmani et al. 2016: 373; Linnerud and Simonsen 2017: 560), but there was great variation in how feed-in schemes were labelled. In 2005, a report from the European Commission (the Commission) concluded: 'both instruments are equally market-based in that the regulatory body sets either the price

or the quantity and leaves the determination of the other to the market' (Commission 2005: 54). Similar views emerged in scholarly debates, although here it was more common to underline the regulatory aspects of the measures in question. For instance, Reinhard Haas and colleagues argue that both feed-in schemes and certificate schemes

> rely on a command & control approach of a planned economy. In one case the price is set, in another case the quantity is set; . . . [y]et on the other hand all of these systems are market-based: the goods are produced in a competitive market . . . it is important to note that this market in all cases is created by some kind of artificial demand.
>
> (Haas et al. 2011: 2188)

Discussions were ideologically charged, and no consensus emerged. Eventually, as actual application of both types of schemes grew more complex, it became increasingly common to apply several support schemes in conjunction. Whereas the first feed-in tariffs set the full price, more recent feed-in premiums come as guaranteed add-ons to the electricity market price, or the electricity price is one of several elements that in conjunction decides the full price for renewable electricity. Feed-in premiums may apply for a fixed period or for a pre-determined production volume (Kitzing et al. 2012: 194). While producers of certain technologies tend to be given the right to receive fixed feed-in tariffs, feed-in premiums are often awarded as a result of a tendering procedure whereby only the winners of the auction are granted support (Community Guidelines 2014). Since the second decade of the 2000s, competitive tendering procedures have rapidly ascended towards dominance in Europe as well as worldwide (Fitch-Roy et al. 2019).

Auctioning systems can be organized in a technology-specific way – either with different auctions for different technologies, or with differing sets of technology criteria applied to the same auction (CEER 2018). Governments may also operate with specific reference prices (or 'strike prices') for different technologies, or they may develop differing support calculation equations for varying technologies. Auctioning combined with feed-in-premiums can be almost technology-neutral if all technologies compete on equal terms, but various technology-specific elements may be introduced. Similarly, many electricity certificate schemes have been almost technology-neutral, but a range of technology-specific elements may be introduced (Buckman 2011; Rabe 2007).

Two dimensions of technology-specificity variation

Countries may design and combine the various types of support schemes (such as feed-in and certificates) in many ways. The actual functioning will depend on a range of differing design elements, and how various support measures are combined. Two dimensions are particularly important as regards the technology-specificity of a given measure: differences in support levels offered to varying technologies, and electricity price exposure. Based on these two dimensions,

Table 2.1 Dimensions of technology-neutral and technology-specific support schemes

IDEAL TYPES *DIMENSIONS*	*Technology-neutral*	*Technology-specific*
Difference in support levels across technologies	Low	High
Electricity price exposure	High	Low

Table 2.1 describes ideal versions of a technology-specific and a technology-neutral renewables support mix.

First, the support level may differ across technologies. This can be achieved in many ways, for instance by developing differing support schemes for various technologies, or by allowing certain technologies to be included in more than one support scheme. It has become increasingly common for European countries to supplement large-scale schemes with highly technology-specific support for various types of small-scale technologies, for instance through diversified feed-in tariffs or investment support rules for certain technologies, like solar. However, small-scale renewables may also be promoted by rather technology-neutral measures, for instance by offering the same investment support to a broad range of small-scale technologies. Under certain conditions, the very existence of different support schemes for small and large projects is an element of technology-specificity in itself.

Electricity certificate schemes and the auctioning model are competition-oriented solutions, but they rely on different types and degrees of competition. The extent of competition-orientation is, for example, dependent on whether renewables producers compete for funding in the market or for entrance to the market (Leiren 2015). In the ideal version of certificate schemes (Darmani et al. 2016: 373), all renewable technologies compete in the same market and have the same support level. But adjustments can be made in order to achieve a technology-specific support level – for instance, by issuing more certificates for some technologies than for others, or by creating sub-markets for specific technologies (Buckman 2011; Rabe 2007).

As to auctioning-based systems, the number of technologies included in each auction will influence whether differing technologies are given differing support levels: the more technologies that compete within the same round of auctioning, the more similar the support levels offered across technologies will be (CEER 2018). We may also see geographical differentiation within auctioning schemes: differences in remuneration based on where a renewable energy project is located. Such criteria help to promote certain technologies in areas where developing these technologies would not otherwise be profitable. For example, in Germany, power-plant location was adopted as a criterion in the renewable energy law, to ensure that wind turbines would be profitable also in less windy regions (Leiren and Reimer 2021, this book).

The support that companies compete for within an auctioning scheme may be a fixed or premium feed-in. In feed-in systems, governments create technology-specificity by operating with differing reference prices for differing technologies. In feed-in premium schemes, technology-specific support levels are created by employing differing methods and/or criteria to calculate support levels across technologies (CEER 2018).

The procedures applied for determining whether actors are eligible for support differ from one support scheme to another, and this may indirectly influence differences in support levels across technologies. Electricity certificates, fixed feed-in tariffs and investment support entitle the producers of certain renewable energy technologies to receive support, whereas auctioning schemes provide support only to companies who have won a competitive round for financial support. Details in the design of support schemes are important for whether the support levels across technologies differ. For instance, electricity certificates may be open to any producer of renewable electricity in principle, thus offering all renewable electricity producers similar levels of support, but this may not necessarily be the case in practice. For instance, under the Swedish/Norwegian scheme, the producers of new, renewable electricity (that is, added production under the scheme) are entitled to the same support per MWh delivered on the electricity grid – regardless of which technology is used, whether the plant is located in Norway or Sweden or whether the additional production comes from building a new plant or from updating and expanding an existing one. However, in practice small producers are excluded because of an entrance fee (Teknisk Ukeblad 2014).

Also, fixed feed-in tariffs tend to restrict who is eligible. For instance, Germany's fixed feed-in scheme, which has been the key support scheme there since the 1990s, was until 2004 closed to the participation of large corporations and utilities (Leiren and Reimer 2021, this book). After 2016, most fixed feed-in schemes have included only small-scale projects.

Through competition, auctioning largely ensures that the least costly projects are granted support, whereas projects that would be profitable also without support do not receive support. The outcome of the first German offshore wind tender round in 2017 has shown that this may result in no renewables support at all, as the two successful bidders received awards for three projects on the basis of a price of 0 Euro cents/kWh (Ashurst 2017; on renewable energy costs, see IRENA 2018).

Second, renewables technologies may to varying degrees be exposed to the regular electricity price. In general, technology-specificity decreases where all renewable energies are subject to the same market exposure. As the Nordic certificate schemes are add-ons to the electricity price, all renewables projects in these systems are exposed to similar fluctuations in the regular electricity market (Darmani et al. 2016). By contrast, traditional fixed feed-in provided renewables producers with a fixed price, so few renewables producers were exposed to the electricity price at all. The shift to feed-in premium entails greater exposure to the electricity price, but this can be achieved in several ways and to varying degrees. A feed-in premium can be granted as an add-on, but it may also be calculated on

the basis of a more complex equation where the electricity market price is only one component (CEER 2018).

By taking into account both dimensions – the score on difference in support levels across technologies, and the score on differences in electricity price exposure – we can determine the degree of technology-specificity of a given support-scheme mix. In a highly technology-neutral mix, all technologies are offered the same support, meaning that there tends to be small, if any, difference in support levels across small and large projects.

We do not *a priori* characterize specific renewables support instruments as either technology-specific or technology-neutral. Feed-in tariff schemes tend to be more technology-specific because support remuneration is calculated (in part or fully) on the basis of technology-specific criteria. However, when feed-in is granted via auctions, technology-specificity is reduced as a competitive element is introduced into the granting of financial support. The way the auctions are organized and their frequency influence the extent to which technology-specificity characterizes the setting of the level of remuneration. Electricity certificate schemes are usually technology-neutral, but various features can be added that lead to increased technology-specificity. This applies also to investment support: it may be technology-neutral if all technologies are offered the same support levels and are equally exposed to the general electricity price, but it becomes less technology-neutral when varying technologies receive different levels of support. Moreover, most countries combine various types of support schemes. The schemes for large-scale *and* small-scale projects and technologies must be seen in conjunction in order to get a full picture of the renewables-support mix.

Categorizing technology-specific or technology-neutral support schemes

Turning to the mix of renewables support policies in Germany, the UK, Poland, France, Sweden and Norway, in which categories do they belong? Drawing on the case studies presented in Part II of this book, Table 2.2 summarizes the support mixes in these six countries.[1] All six have specific schemes for small- and for large-scale support, although differing terms are used to describe the two.

First, we note that the degree to which different technologies are offered different levels of support varies. Technology-specific auctioning is the most common. Even when projects based on different technologies are included in the same auctions, differing criteria tend to be applied, so projects based on different technologies seldom compete directly with each other. Our case-study countries vary as to the number of technology categories they have and which technologies are accorded the most favourable conditions. All six distinguish between small- and large-scale projects – which in itself produces some variance in support levels across technologies. We see that whereas Germany, the UK, Poland and France apply technology-specific criteria for large-scale as well as small-scale renewables (except Poland for small-scale), Norway and Sweden offer the same level of support to almost all renewables technologies within each of the two broad

Table 2.2 Comparing renewables support schemes in the six case-study countries (2016 as reference year)

Design features / *Countries*	*Project scale*	*Difference in support levels across technologies*	*Electricity price exposure*
GERMANY	*Large*	High	High
	Small	High	No
UNITED KINGDOM	*Large*	High	Some
	Small	High	No
POLAND	*Large*	High	No
	Small	Low	High
FRANCE	*Large*	High	Some
	Small	Low	High
SWEDEN	*Large*	Low	High
	*Small***	Low	High
NORWAY	*Large*	Low (until 2021)*	High
	*Small***	Low	High

* No new Norwegian projects will be included in the electricity certificate scheme after 2021.
** Small projects may be granted large-scale support in addition to small-scale support.

categories (small- and large-scale). Whereas the main scheme for renewables in Norway and Sweden – the electricity certificate scheme – ensures (in theory) that electricity from all types of renewables will be granted the same level of support, the feed-in premium schemes in Germany, the UK, Poland and France have support levels that vary with the technology. France has separate auctions for different technologies, as does Germany – but from 2018 Germany has a pilot where both wind and solar participate in the same competitive rounds. The UK has had a few auctions that included many technologies but has still applied highly differing criteria for the various technologies.

Norway and Sweden have separate small-scale systems, but this is a very moderate differentiation compared to the many technology-specific categories in the other countries. These two Nordic countries also have technology-neutral investment support schemes for small-scale renewables investment (where small-scale solar and windpower investments are granted the same level of support as a range of energy-efficiency technologies). The support in Norway is marginal, covering only installations in residential buildings. Hence, the overall differentiation in support level is far more pronounced in Germany, the UK, Poland and France than in Sweden or Norway.

Second, the support schemes differ as to the extent to which renewables projects are exposed to regular electricity prices. Countries with feed-in premiums apply various techniques to assess support levels, making comparison difficult. In Germany, the feed-in support is a clear add-on to the electricity price, whereas

France uses complex equations to calculate premium tariffs, with electricity prices one out of many criteria applied. The British Contracts for Difference provides a top-up payment between the market price and a pre-defined 'strike price'. Poland applies reference prices: bids must be below these prices in order to be granted support, but projects that are chosen will obtain the price proposed in the auction for the whole support period. Within the technology-specific group, Germany's renewables projects are more exposed to the electricity market, making the profitability of renewables unpredictable. Polish renewables are the least exposed to electricity prices, but, until 2018, auctions for new support were organized for relatively small volumes of electricity at a time.

In Norway and Sweden, electricity certificates and investment support are awarded on top of fluctuating electricity prices, making renewables projects far more exposed to electricity prices than in the four other countries. Norway is to withdraw from the common green certificate scheme with Sweden in 2021, although it will continue to offer support for projects that have already been included in the scheme. After 2021, possibilities for support in Norway will be limited to small-scale electricity production in residential buildings, and with no differentiation between technologies.

There are cross-country differences in the design of the support schemes, but Germany, the UK, Poland and France have all ended up with support-scheme mixes characterized by technology-specificity for both small- and large-scale renewable electricity projects. Hence, we group these countries together as having a *technology-specific approach*. In contrast, we place Sweden and Norway – with their rather similar technology-neutral support-scheme mixes – in the *technology-neutral* category.

In all six case-study countries, the domestic support mix has developed and changed through intricate and at times rather opaque political and social processes. Indeed, it has been argued that, due to the severity, complexity and scale of the climate crisis, energy and climate policy development processes may be even more complex than is the case in other areas (Peters et al. 2017).

The shortcomings of basing renewables policy assessment on economic factors and technological change

Students of renewable energy policy and energy transitions have applied a range of differing theory frameworks to explain renewable energy developments and politics. In particular, technological change and economic dependency on fossil fuels are used as explanatory factors. These are obviously important when policy-makers decide whether to adopt, change or revise a given renewables support mix. For instance, it seems clear that when renewables schemes fail to boost the deployment of renewables, this serves as an impetus to change (see e.g. Mitchell and Connor 2004). Also, the costs related to different schemes create incentives for change (e.g. Boomsma and Linnerud 2015). Although economic-technological conditions and changes play a key role for renewables deployment

and support-mix developments, such perspectives cannot alone explain the support-mix patterns identified in this book.

Macro-level political economy approaches tend to depict policy-makers as responding to economic-technical change, understanding changes in policy as related to shifts to instruments more efficient under the new conditions (Dobbin 1994: 7). Building on this tradition, Johannes Urpelainen and Michaël Aklin (2018: 180) argue that renewables will be more controversial politically in countries with large capital investments in fossil-fuel infrastructure, and that reduced costs of renewables will lead to convergence in domestic renewables policies as well as investments.

If economic-technological differences in the energy systems had strong explanatory value, then we should be able to identify similarities in energy systems and fossil-fuel shares within each of the groups (Germany, the UK, Poland and France on the one hand; Sweden and Norway on the other) and clear differences between them. However, with the exception of Norway, all these countries started out with high fossil-fuel shares in their energy systems in the 1970s; and although all have gradually reduced their fossil-fuel dependence, the reduction factors differ significantly within the group of technology-specific countries (Global Carbon Project 2019). Germany, the UK, Poland and France developed similar support schemes, even though their energy systems are very different and have followed varying change patterns. Whereas Polish electricity production has remained dominated by fossil fuels, Germany and the UK have lowered fossil shares, and the fossil shares in France have become marginal (Commission 2018: 23). Further, French electricity production has historically been totally dominated by centralized nuclear energy production; Germany and the UK have significant nuclear shares, whereas Poland has no nuclear whatsoever.

Lastly, the growth rates for renewables vary considerably. In 2004, 9% of German electricity consumption stemmed from renewables, but this had risen to 34% by 2017 (Eurostat 2019). The UK had only 3.5% in 2004, but an impressive 28% by 2017. Poland had a meagre 2% in 2004, rising to 13% in 2017, while France had 14% in 2004 and 20% by 2017.

There are also sizeable differences in shares of energy source among the two technology-neutral Nordic countries. Although Sweden reduced its fossil-fuel dependency radically, it never approached the extremely high renewables levels in Norway, where electricity production throughout the period was almost 100% renewables-based (Global Carbon Project 2019). In Sweden the share of renewable-source electricity increased from 51% to 66% from 2004 to 2017 (Energifakta 2019; Eurostat 2019); however, from the 1980s and onwards, Sweden has also had considerable nuclear production, whereas Norway has none (Commission 2018: 23).

Thus, we may safely state that investments in differing types of power plants and infrastructures cannot provide satisfactory explanations of policy variation. Might changes in the cost of renewable energy technology over time provide better explanations of the differences and similarities in renewables support mixes?

Since 2000, the costs of many renewables technologies have decreased. This has happened in unforeseen and unpredictable ways, with a surprisingly steep reduction process starting around 2008 (IRENA 2013, 2018). The rapid changes in costs made it challenging to develop support-scheme mixes that provided stable investment incentives without overcompensating renewables investors. The financial crisis from 2008 and onwards made it even more important for governments to control expenditures, including renewables-support spending. After 2010, the cost of electricity from bioenergy, hydropower, geothermal and onshore and offshore wind had come within the range of fossil-fuel-fired power generation costs between 2010 and 2018. In 2018 the International Renewable Energy Agency (IRENA 2018: 9) concluded that 'by 2020–2022, all existing available renewable power generation options will compete head-to-head with incumbents'. These developments reduced the need for renewables support altogether – and yet, most countries in our study have adopted encompassing renewables-support mixes which are planned to continue until at least 2030. Along every step of the way, it has been hard to foresee how costs would develop, and many predictions have been proven wrong (see Vox 2015 for an overview of failed predictions). Moreover, there have been significant differences in cost developments across differing renewables technologies and countries (IRENA 2018).

If these dramatic cost reductions provided the key explanation to changes in renewables policy, we would expect all countries to respond in similar ways, which would also explain the similarities across cases. However, cost reductions play differing roles in the six cases presented in this book. Whereas achieving cost reductions in renewables was often an important impulse for changes in support schemes, the governments in the six case-study countries understood and responded to the rapid technological changes between 2005 and 2010 in differing ways. The UK and Poland responded by shifting away from technology-neutrality and towards a more technology-specific system, while France and Germany responded by making their systems less technology-specific. They all ended up with systems that were more similar, but for different reasons. Moreover, Norway responded by abolishing its large-scale support altogether, whereas Sweden continued with its technology-neutral certificate scheme. As a result, the two Nordics came to differ more after the cost reductions then they had before. In contrast, the financial support for renewables in the technology-specific countries became more similar, although there is still considerable variation across the schemes.

Conclusions

In this chapter, we have introduced a new way to characterize and measure differences across support-scheme mixes – technology-specific and technology-neutral mixes. We find that Germany, the UK, Poland and France have largely technology-specific mixes, whereas those in Sweden and Norway are far more technology-neutral. We have noted some interesting variations, but the differences between the two groups are far greater than the similarities. Dominant analytical

approaches to explaining variance in renewables support have tended to focus on economic and technological factors. We find them poorly suited to explain differences in support-scheme mixes across countries. The material structure and functioning of the energy systems in our six case-study countries, and global changes in the costs of renewable electricity technologies, provide a set of fundamental conditions for investments in renewables. However, actual domestic renewables-support mixes are not a direct result of such technical and economic realities. An analytical framework is needed that pays far more attention to political and social factors – a major rationale for this book.

The multi-field framework presented in Chapter 3 (Boasson 2021) enables us to take into account various kinds of actors' structural power, as well as the cultural-institutional features that shape the preferences of these actors, and the many multi-dimensional relationships and interdependencies among the wide range of actors involved in policy processes.

Note

1 Only schemes that offer support to new projects are included. Most EU countries also provide support to older renewables projects, based on support schemes in operation when the projects were originally granted support. Since this book aims to explain the state of renewables support as of 2016, the older schemes are not listed in this table.

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3 A dynamic multi-field approach

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Introduction

The multi-field approach is developed to facilitate study of organizational and political factors that shape the development of public policy. Many fields play into developments of domestic support-scheme support. Each field has an identifiable social architecture: a distinct distribution of structural resources and certain specific cultural-institutional characteristics (Boasson 2015: 1). The multi-field approach is a spatial, relational approach to understanding how actors interact with one another (Kluttz and Fligstein 2016: 186). This unit of analysis – a given field – is 'neither a macro-social process that contains some underlying structural logic operating independently of actors (e.g., social class) nor is it a micro-social process that focuses on the idiosyncratic preferences and motivations of individual actors' (Kluttz and Fligstein 2016: 186). A *field* is a socially distinct constellation of actors, with varying degrees of internal coherence, unity and autonomy, and more or less impenetrable boundaries. Thus, a field is not an actor as such, but a distinct social space with some coherence across actors.

In this chapter, we conceptualize three specific fields – the European environment, the domestic organizational field and the domestic political field – and their interrelationships. All three can be seen as social arenas where the actors take one another into account; and all have a local social order that constrains, facilitates or enables certain behaviours and policy developments (Kluttz and Fligstein 2016: 186; Scott [2001] 2014). In this chapter, we develop specific expectations that are examined in the six case studies presented in Part II of this volume. In turn, these expectations form the basis for the systematic comparisons in Part III.

The European environment

We see the European environment as a meta-field, embracing EU-specific developments as well as what goes on in EU member states. It comprises all the domestic political fields and organizational fields in states that are members of, or otherwise affiliated to, the European Union, as well as the European Commission (the Commission), EU-level agencies, the European Parliament, the Court of Justice of the European Union (CJEU) and non-governmental organizations dealing

with specific issue-areas. All EU-affiliated countries are likely to be affected by the European environment, although not in the same way or to the same extent.

Vertical Europeanization

In principle, two European renewables policy processes may play out at the same time: *vertical and horizontal Europeanization*. We understand *vertical Europeanization* as top-down EU steering, resulting from the EU having formal authority within an issue-area (Bulmer and Radaelli 2004: 5). Vertical integration will be strong when the EU rules in question are detailed and specific; when the Commission can develop detailed guidelines or templates, monitor and facilitate implementation; when the Commission and the CJEU have juridical, coercive follow-up mechanisms available and when EU agencies and the Commission gather and distribute significant information (Boasson 2015: 53–58). Early studies of compliance with EU regulations focused on their coerciveness (Mastenbroek 2005). For instance, in 2001, Thomas Risse and colleagues saw Europeanization primarily as 'the emergence and development at the European level of distinct structures of governance' (Risse et al. 2001: 3).

The capacity of the EU system to influence policy development at the national level depends mainly on the extent to which the EU has formal authority and on the ability of the EU organization to gather and distribute information. The emergence of new European authority structures does not necessarily mean that domestic governance loses importance: such authority structures often supplement national authority structures rather than replace them (Newman 2008: 121). Not only will more policy solutions be developed at the European level, but national implementation of EU policy is more likely to engage other participants than in the case of regular processes of national policy development (Schattschneider 1960: 17–18). Only empirical investigation can show which national actors lose influence and which ones may benefit from this change (Jörgens and Solorio 2017: 11–16).

Like many other policy issues, renewables support schemes concern more than one stream of EU steering. Since the 1990s, the EU has had a specific renewables energy policy, as well as rules on state aid that have also applied to renewables support schemes (Boasson 2021, this book). A key element of EU renewables policy is the directives on renewables that have been repeatedly revised through ordinary EU legislative procedures (formerly called co-decision). Regarding state aid, shifts in the authority of the EU may result from changes in the state-aid rules in the Treaty on the Functioning of the EU (TFEU) (although this has not occurred in the period studied here), changes in the rulings of the CJEU and/or shifts in relevant state-aid guidelines adopted by the Commission. Such guidelines must draw on the Treaty and CJEU case law; whereas they are not legally binding on member states, they are binding on the Commission (Boasson 2021, this book).

As regards information, inter-governmentalists tend to argue that the Commission has few resources for gathering and distributing information (e.g. Moravcsik 1999), but others disagree. Multi-level governance perspectives on EU studies

underline how the Commission, and to some extent the European Parliament, can enhance their structural power by creating and governing pan-European expert and policy networks (Eising 2004: 218; Hooghe 2001; Hooghe and Marks 2001; Kohler-Koch 1999; Mazey and Richardson 2006). Scholars of public administration hold that the Commission and the EU agencies have developed significant capacities that work rather independently of domestic administrations (Trondal 2017). In this sense, the Commission may develop superior access to information, as well as a potentially superior ability to distribute information.

Vertical Europeanization captures the 'domestic impact of Europe and the EU' in the sense that domestic actors adapt and change domestic policies and institutions in response to EU rules and regulations (Börzel and Risse 2012: 6). This mode of Europeanization will probably have more far-reaching consequences when backed by strict coercive measures, but it may also be influential when EU-level impulses are of a softer character. For instance, member states may respond to the Commission's preparation of new decisions, or political discussions at the EU level, and not only to outputs from formal EU-level ruling and decision-making. After all, a broad array of EU and member-state actors repeatedly and continuously engage in discursive, deliberative processes, where new and old ideas are discussed, developed and either promoted or dismissed (Schmidt 2018).

EU actors, such as the Commission and the CJEU, may under certain conditions influence domestic developments more than their formal, juridical powers might lead us to expect. After all, countries may do more than they are strictly obliged to – what Eva Thomann (2015) has called 'customizing', as when countries adopt policies in a way that leads to more and/or stricter rules and practices than required (Thomann 2015: 1370). For instance, member states may adopt more encompassing renewables support mixes than EU law obliges them to do, or interpret EU state-aid guidelines in a more restrictive way than strictly required. Still, *we expect vertical Europeanization to shape domestic support-scheme mix developments more when the EU has gained superior structural powers (authority and information) within the issue-area in question*.

Because the countries examined here have differed in their relationships to the EU during the period under study, we do not expect them to be influenced to the same extent and in the same way by vertical Europeanization. For instance, a country that joined the EU late (like Poland) and one that is not a full member of the EU (Norway) will probably be less influenced by vertical Europeanization.

Horizontal Europeanization

Europeanization may also influence national developments through means other than top-down EU steering. *Horizontal Europeanization* refers to how ideas, measures or policy designs may diffuse across countries and fields within the European environment through socialization, contestation, deliberation, learning and the construction of broader systems of meanings and collective understandings (Boasson 2015; Börzel and Risse 2012; Cowles and Risse 2001: 219; Jörgens and Solorio 2017: 12–13). This mode of Europeanization plays out irrespective of

EU-level developments and entails a broad array of horizontal linkages and interactions. In 2001, Maria Green Cowles and Thomas Risse (2001: 219) pointed out how Europeanization consists of constructing systems of meanings and collective understandings, not merely systems of authority. Claudio Radaelli (2003: 30) has conceptualized EU policy development as an institutional process, centred on emergence and diffusion of 'ways of doing things' as well as shared beliefs and norms.

Horizontal Europeanization centres on the processes whereby actors redefine their beliefs and preferences as a result of what other actors are doing, and the socialization process they are part of (Dobbin et al. 2007: 452; March and Olsen 1989). Horizontal Europeanization has been variously labelled 'policy diffusion', 'horizontal policy learning', 'policy convergence' or 'policy transfer' (Börzel and Risse 2012; Jörgens and Solorio 2017: 12–16). Policy recipes begin to diffuse because countries mimic each other, learn from each other or compete with each other; the existence of European-wide networks or expert groups may enhance these effects (Dobbin et al. 2007: 452). For instance, a country may aim to develop a renewables support mix that is rather similar to what others have – although it is adjusted to special domestic circumstances (Dobbin et al. 2007: 457–459). The cumulative effect of many countries adopting the same policy recipe will create 'peer pressure' among countries (Finnemore and Sikkink 1998: 903).

According to the neo-institutional literature, when a policy recipe diffuses, it gains legitimacy, and the pressure on individual actors to adjust to the new policy idea will increase (see Finnemore and Sikkink 1998; Meyer 2000; Meyer et al. 1997; Meyer and Rowan 1977). The more countries that have adopted a certain model, the stronger will be the pressure for others to adopt it (Meyer and Rowan 1977). The actions of large and dominant countries within an issue-area may be particularly important. Hence, the more a specific policy recipe dominates within the European environment, the more likely is it to affect domestic-level developments in any given country. This may take place when the idea for designing a given support scheme is adopted by many countries at the same time and/or the idea is discussed and promoted within organizational and political fields across the entire European environment. We expect *horizontal Europeanization to dominate domestic support-scheme mix developments more when one particular support-scheme idea gains popularity across the European environment*.

Expectations

Horizontal and vertical Europeanization may operate rather independently of each other – indeed, under certain conditions, they may even counteract each other – whereas at other times they may have a reinforcing effect. For instance, increased horizontal coherence may underpin the emergence of strong EU steering – or stronger EU steering may spark horizontal coherence.

Table 3.1 shows how the two dimensions of Europeanization may relate to each other, and how they in conjunction can have a bearing on how the European environment will influence domestic support-scheme developments. *EU governing*

Table 3.1 Four modes of Europeanization

Vertical Europeanization *Horizontal Europeanization*	*The EU is superior*	*Distributed responsibility*
Coherence	**EU GOVERNING** Drives domestic policy developments	**HORIZONTAL HARMONIZATION**
Diversity	**UNPREDICTABLE EU GOVERNING**	**1000 FLOWERS** Domestic developments largely disconnected from European developments

Source: Revised version of Boasson (2015: 55).

and *1000 flowers* are contrasting modes. With *EU governing*, the EU has the upper hand in the policy area, and one policy model dominates: the EU is vertically superior, and there is horizontal coherence across the EU/EEA. In such situations, national actors will likely have few ideas for the design of an alternative renewables support scheme – but if they want to adopt different schemes, they will not have much opportunity to bend the steering signals coming from the EU. However, as EU steering relies on member-state support, this is not a completely top-down situation. Also in issue-areas where the Commission enjoys considerable leeway, such as state aid, the Commission will be partly constrained by the member states. There will be continuous and close dialogue between EU-level fields and domestic fields in *EU governing* situations, but in the end, the EU-level decisions will count more for domestic developments. Changes as well as continuities in domestic support schemes will be closely related to developments at the EU level.

The *1000 flowers* (from the dictum made famous by Mao Zedong, 'let a thousand flowers bloom') will operate when vertical Europeanization (formal responsibility distributed among member states) and horizontal Europeanization are weak (wide diversity in national approaches). This will be the situation for new policy areas not yet covered by EU policy, but it may also occur where the EU has failed to agree on any specific policies and member states apply a panoply of different policy measures. In such cases, domestic policy developments will interact with the larger European environment only if instigated by national-level actors: it is the national conditions that determine whether the domestic support-scheme mix will be influenced by the European environment.

Horizontal harmonization will occur when strong horizontal Europeanization promotes a given renewables support-scheme design, but the EU has not been granted much formal authority to promote this design: the harmonization will result from countries influencing, mimicking, learning or competing with each other. Waves of similar support schemes may be created, but primarily because the domestic fields are open to European impulses. Also, there may be significant variation in how a particular support scheme idea is interpreted nationally. The

cross-country interaction between domestic fields increase, but with less interaction between the EU fields and domestic fields.

Lastly, *unpredictable EU governing* may emerge in cases where the EU has been granted considerable authority but many policy models are in use. Conflicts over how to interpret the EU rules will be rampant, and the room for negotiation between national governments and the EU considerable. Potentially the EU has considerable power, but its actual influence on national policy outcomes will hinge largely on the strategic capabilities of national actors and their bargaining skills.

The role and importance of the European environment will always depend on how it relates to and interacts with the domestic fields, but we expect the European environment to:

- dominate the development of national renewable energy policies more when vertical Europeanization is strong and horizontal Europeanization is coherent, so that one specific support-scheme mix gains superiority (EU governing).

Domestic organizational fields

John W. Kingdon ([1984] 2011) has argued that various policy issues will be embedded in different 'policy communities'. In line with this, we hold that policies will be embedded in domestic organizational fields made up of specialists in a given policy area. An *organizational field* consists of governmental bodies, regulators, industry, business organizations and non-governmental organizations (NGOs) relating to a certain policy, such as renewables support mixes. Organizational fields are issue- or industry-specific configurations of governmental and private organizations, characterized by identifiable structural interrelationships and certain common institutional understandings. To understand how organization fields influence policy development, we need to explore their social architecture and how this changes over time and varies across fields.

Varying organizational fields will have varying structural and institutional characteristics. Initially, sociological institutionalists tended to define organizational fields as fairly unified, but it is now widely recognized that there will be major variation across fields (Wooten and Hoffman 2017). Further, as pointed out by Baumgartner and Jones ([1993] 2009: 6), historical factors will render some policy areas open to change at certain times but not others. Kingdon notes that some communities 'are extremely closed and tightly knit', while others are more 'diverse and fragmented' (Kingdon [1984] 2011: 118). In the 1980s, several network scholars developed typologies aimed at capturing such variation (for a review, see Börzel 1998). For instance, Rhodes and Marsh placed their network types on a continuum ranging from highly integrated policy communities on the one end to loosely integrated issue networks at the other (Rhodes and March 1992). More recently, scholars of regulatory capture have explicitly recognized that different kinds of state–business relations will produce variance in policy influence. For instance, Daniel Carpenter and David A. Moss (2014: 11)

distinguish between strong capture and weak capture, adding that 'to the extent capture exists, it prevails by degrees rather than by its presence and absence'.

All the same, we need deeper and more general insights into how different industry–government nexuses may influence policy developments. Lack of a common terminology has hindered the emergence of a cumulative research tradition.

Structural resources

The social architecture of organizational fields may vary along structural as well as cultural-institutional dimensions. Firstly, the distribution of *structural resources*, such as authority and information, will influence the importance of the organizational field for policy-making. The distribution of authority will be shaped by laws and regulations, economic agreements between firms, organizational charts, ownership structures and so forth (Scott et al. 2000: 358–400). Neil Fligstein and Doug McAdam (2012: 14) argue that a field may be hierarchically governed, or characterized by collaboration among fairly equal organizations; the latter opens the way to looser coordination and competition between several groups.

Whether public or private organizations possess more authority and control of information will vary from field to field. Governmental organizations may have the upper hand in more regulated industries, but strong regulatory traditions may also create firm bonds between corporate and public organizations (Carpenter and Moss 2014). Further, in industries dominated by a few corporations, authority may be concentrated among a small group of corporate executives, whereas it will tend to be more evenly distributed in industries with many small organizations (Egeberg 2003: 7; Fligstein and McAdam 2012; Olsen 1983). Actors with superior authority may have significant control of information, but it may also be that other actors control the two sources of structural power (Boasson 2015: 49).

Concerning climate and energy technologies and investments, commercial organizations will generally have more information than public actors. A government may remain independent of the information provided by industry only if it possesses substantial organizational capacity and in-house technical-economic expertise. If formal requirements give the government access to detailed commercial information, this can create a more level playing field with respect to information distribution. Against this backdrop, we *expect the organizational field to dominate policy development more when structural resources (authority and information) are concentrated*.

Institutional logics

The influence and role of the organizational field will also depend on the degree of *cultural-institutional* unity. Early organizational field studies portrayed the institutional features of these fields as rather unified. For instance, DiMaggio and Powell ([1983] 1991: 65) argued that the 'development of mutual awareness among participants in a set of organizations that they are involved in a common enterprise' provided an institutional 'glue' that caused all actors in a given

organizational field to resemble each other, for instance by adopting similar norms and worldviews.

Similarly, Lowi (1964: 689) argued that established expectations and history of earlier decisions create particular understandings and mind-sets. Eventually, certain professional norms will come to define the 'proper' ways of doing things, and rules of the game that serve established interests will become entrenched (Lowi 1969: 92). Hence, a field's origin and the ensuing social processes shape its institutional hallmarks. The more closely knit the community is, the more likely it is to generate common outlooks, orientations and ways of thinking (Kingdon [1984] 2011: 119; Schneiberg and Clemens 2006; Scott et al. 2000; Selznick 1957). Moreover, cultural-institutional unity is likely to contribute to making organizational fields more influential, whereas internal conflict will have the opposite effect: 'if the group is plagued by internal dissension, its effectiveness is seriously impaired' Kingdon ([1984] 2011: 52).

The issue of change, rather than stability, has gained increasing attention in organizational field studies (Wooten and Hoffman 2017). The introduction of the term 'intuitional logic' has played a major role in this analytical transition. An institutional logic provides a basically coherent template for how to act in different situations (Boasson 2015: 50; Thornton 2004; Thornton and Ocasio 1999, 2008). Logics are the basis for action: they shape which issues and problems to attend to, and what answers and solutions are available (Thornton 2004: 13–14). Different logics will embody different senses of rationality and create different expectations as to how persons may behave in various situations (March and Olsen 1989; Thornton et al. 2012: 9).

Shifts in institutional logics may lead to radical changes in the actions of field-level members (see e.g. Greenwood and Suddaby 2006; Thornton 2004; Wooten and Hoffman 2017). This means that if dominance shifts from one logic to another, field-level actors will change their views, perhaps promoting policy measures that they had previously rejected. The existence of multiple institutional logics enables actors to challenge existing orders as well as propose new policy options (Lounsbury 2007: 302; Reay and Hinings 2009). For instance, actors who are dissatisfied with a given policy will be strengthened if they can argue that it contradicts the dominant logic, and if they can propose a new policy measure more in line with the dominant logic.

Thornton (2004) has specified several important institutional logics in modern societies; more recently, Boasson (2015: 50–52) has pinpointed the logics that play out in relation to climate policy development. Building on these contributions, we present two ideal types of institutional logics relating to promotion of renewable energy: the market logic and the technology development logic.

First, *the market logic* draws on environmental economics (Boasson 2015: 51). The basic assumption is that commercial organizations possess near-perfect information and are capable of acting strategically on this information. Firms are expected to strive to maximize their profits in a medium- to long-term perspective, and governments will work to ensure that renewables investments become more profitable. Support schemes should encourage market actors to compete in

developing the most profitable renewables projects. Thereby the 'best' projects will be developed, and the actors that manage to develop the most profitable projects will be rewarded with the greatest profits. While some economists argue that only those projects that require the lowest level of support in order to break even should be awarded renewables subsidies, others are open for support schemes that also award support to projects that are profitable at the outset (Boasson 2015).

Second, *the technology development logic* is based on technological rather than economic criteria (Boasson 2015: 50–52). It is assumed that emergence of increased renewables shares will hinge on technological innovation and its subsequent refinement. Commercial organizations will aim to enhance technological development, with government ensuring good and stable conditions that enable them to do so. It is the technical quality of the alternatives to conventional production that determines the support levels, so various technologies will receive differing levels of support. Further, in this logic, support schemes are designed to ensure long-term stability, so that commercial actors may invest the time and resources needed to refine the technologies in which they have greatest expertise (Sims et al. 2007: 306). In line with this approach are feed-in tariff schemes that guarantee renewable-energy producers access to the grid, a fixed level of operational support and varying levels of support for different technologies (Boasson 2015: 50–52). Here the incentives for competitive behaviour and cost minimization will be weak. Whereas the market logic favours technology-neutral support schemes, the technology-development logic favours technology-specific measures.

We seek to detect these logics in our empirical case studies, expecting variation in logics across countries. As institutional logics 'are historically contingent and evolve and change over time' (Ocasio et al. 2017: 511), we may also be able to detect significant changes in logics over time. Not least, it is reasonable to assume variation in the extent to which organizational fields will be full of conflict. As noted, fields will tend to influence policy development more when they are united. Hence, we *expect the organizational field to dominate policy development more when one institutional logic is superior, than if the field is rife with conflicts*.

Expectations

Understanding how the organizational fields influence developments in renewables support schemes requires assessing the structural and cultural-institutional aspects in conjunction. Table 3.2 presents segmentation and pluralism as contrasting modes. *Segmentation* will be in operation when structural power is largely concentrated and one professional logic dominates, implying a basically shared view on the promotion of renewable electricity. In such situations, 'some policy experts enjoy tremendous freedom of action, seldom being called upon to justify their actions' (Baumgartner and Jones [1993] 2009: 8); moreover, 'there tends to be a single understanding of the underlying policy question' (ibid.: 26). Various labels have been used to describe segmented organizational fields, like 'interest-group liberalism' (Lowi 1969), 'segmentation' (Egeberg et al. 1978;

Table 3.2 Four modes of the organizational field

Structural pattern *Institutional pattern*	*Concentrated*	*Distributed*
One dominant logic	**SEGMENTATION** Drives policy development	**COLLABORATION**
Several logics	**TURF BATTLE**	**PLURALISM** Low importance

Source: Revised version of Boasson (2015: 48).

Hernes 1983: 290; Lieberson 1971) 'iron triangles' (Hernes 1983: 291), 'regulatory capture' (Carpenter and Moss 2014) and 'policy monopolies' (Baumgartner and Jones [1993] 2009: 7).

Such organizational fields have a fairly hierarchical structure, with one organization or a small group of closely aligned organizations at the top. Policy studies and sociological institutionalism literatures point in the same direction: that the importance of the organizational field to the policy outcome will be most significant in such situations. The field can be expected to influence policy more when this mechanism is in operation. Note, however, that it is primarily the dominant actors that will leave a deep footprint in such situations, while marginal actors will be less important.

In contrast, the *pluralism* mechanism will be in operation when structural resources are fairly evenly distributed and many different logics are in operation. Various actors will have the opportunity to influence policy development. As there will be many parallel disagreements, a broad range of minor conflicts can be expected to erupt in relation to all kinds of decision-making situations. While many pluralist approaches to public policy have held that mobilization of some groups will automatically lead to counter-mobilization, we do not expect to see this in pluralist organizational fields (Lowi 1964; Schmitter 1974). Instead, in situations where few have an intense interest in an issue, the overall influence of the organizational field on policy-making is likely to be meagre. To the extent that the field influences designs for renewables support, this will underpin the development of a set of a diverse and inconsistent mix. We may also see many shifts and turns in support mixes over time.

Not all fields can be subsumed within one of these two extreme modes. Collaboration is likely in fields where structural resources are rather evenly distributed and most participants follow the same professional logic. Actors will tend to have fairly similar viewpoints, and the level of conflict will be correspondingly low. There may be incremental change in support-scheme mixes, but as long as this mode dominates, major shifts are not expected. The *turf battle* mechanism is a tougher version of pluralism, where actors disagree strongly and mobilization is met with counter-mobilization. This mode of influence will emerge when structural power is fairly concentrated but varying logics are in conflict.

Against this backdrop, we expect the organizational field to:

- dominate the development of national renewable energy policies more when characterized by centralized structural resources and one institutional logic (segmentation).

While political fields will relate to organizational fields, and often be influenced by them, they operate in a different way. Kingdon ([1984] 2011) is one of a few scholars who have argued for a clear analytical separation of organizational and political fields (which he often refers to as the 'politics' stream and the 'policy' stream). Since the two are 'largely governed by different forces, different considerations, and different styles' (Kingdon [1984] 2011: 88), we need differing analytical tools to understand how and under which conditions these two fields influence policy development. Let us now turn to the nature and dynamics of political fields.

Domestic political fields

Political fields cover the whole range of political actors: political party organizations, legislative assemblies and committees, governmental executives and the political leaders of the governmental ministries (Boasson 2015: 38–46). It is rarely meaningful to talk of *one* national political field. Rather, politicians in the various parliamentary committees, ministries and political parties will probably be involved in several different political fields, centred around differing policy issues. The structural and cultural-institutional character of the field in question will tend to influence the behaviour of political actors in significant ways. As in other fields, political actors take the actions and positions of others into account in deciding how to approach a given issue (DiMaggio and Powell ([1983] 1991; Kluttz and Fligstein 2016).

The comparative politics literature consists of an array of strong sub-literatures – some focusing on political parties or parties on governments, others examining the roles and voting behaviour of the legislature. By contrast, the *political field approach* aims at assessing the special role of the political realm at large, with respect to the development of specific policy issue-areas. The voluminous political science literature shows that politics have immense importance in democratic societies, but significant disagreement persists as to how and to what extent domestic political governing plays into policy development. By combining insights from policy process theories, various comparative politics literatures and neo-institutional sociology, the political field perspective enables us to develop a more coherent understanding of the relative importance of politics for policy.

The political sociology literature of the 1950s and 1960s tended to regard political parties in European countries as representing certain 'pre-defined sectors of society', with strong ties to various societal groups (Katz and Mair 1995: 7). For instance, Stein Rokkan (1966) regarded political parties and interest groups as manifestations of underlying social cleavages. However, from the 1990s and

onwards, it has become common to regard political parties as less dependent on such ties and increasingly reliant on the electorate channel (Katz and Mair 1995: 7). In certain issue-areas and countries, there remain deep ties between organizational fields and political parties, but by analytically distinguishing between the political and the organizational fields we can explore their relative importance, as well as their interactions and interrelationship.

The political field approach contrasts with the 'partisan influence' literature, where it is assumed that there will be clear and consistent differences in the positions of left-wing and right-wing political parties, and that differences in the party composition of governments will lead to predictable variation in policy development (see reviews in Schmidt 1996; Schmitt 2016). This literature primarily examines issues that fall in line with established societal cleavages, such as welfare or fiscal policies. Climate and energy policy tends to cross across traditional cleavages, many voters have inconsistent views, and which climate sub-issues gain salience differ across countries (Gullberg and Aardal 2019; Pidgeon 2012).

Like other fields, the political field shares structural as well as institutional characteristics. Here we explore each aspect in turn, before examining them in conjunction and developing our expectations.

Structural resources

Structurally, political fields tend to involve considerable formal authority, but little expertise. The distribution of structural resources in a given country will depend on the character of its political system, election results, alliances between political parties in the Parliament and in government and the special characteristics of the policy area in question. In the following, we discuss why concentration of structural resources within the political field contributes to reducing the policy influence of the field, whereas the distribution of resources has the opposite effect (see also Boasson 2015).

First, the distribution of political positions among political parties (the distribution of votes among parliamentary blocs and the composition of the government) delegates authority among the political parties. The relative importance of the legislative assembly, the government and the ministries will differ from country to country – depending on whether the political system is presidential, parliamentarian, federal or whatever. Moreover, the distribution of authority may vary from one issue-area to another (Baumgartner and Jones [1993] 2009: 32; Egeberg 2003; Skocpol 1985: 17).

Richard Rose (1969, 1974) and Richard S. Katz (1987) argue that a party will tend to have greater influence when it occupies the positions with highest authority, when key decisions are made by elected officials, clear policy stands are developed through party internal processes, and the party occupies enough positions to be able to take active part in policy development. However, as has become increasingly clear, 'these conditions are becoming marked more by their absence than by their presence in contemporary European politics' (Mair 2008: 225–226), although less so in two-party systems, as in the UK. Today, coalition governments

of various types, as well as minority governments, have become dominant in Europe (Sagarzazu and Klüver 2017; Strøm and Müller 2000). This changes the conditions for political governing, also making it more important to capture the dynamics between the broad range of political parties, whether they are in government or not. Even though single, large parties still play important roles as developers of policy positions, actual executive decisions tend to be developed through negotiations and bargaining between differing parties and legislative committees. In contrast to Rose and Katz, we do not focus on specific parties but hold that the political field as such tends to play a more important role when formal authority is distributed among many several political parties and ministries.

Second, authority is also rooted in the executive branch of the governmental apparatus. The issue-specific formal distribution of powers among different parts of the government will affect how many ministers pay attention to an issue. While the composition of parliaments and governments changes fairly often, the distribution of authority regarding certain political arenas tends to be determined by formal rules, some of which are difficult to change, such as constitutions (Pierson 2004: 120–121). In most European democracies, a cabinet minister is the political head of a major department of state. This minister directs a team of senior civil servants and has overall responsibility for policy initiation and administration in a key area of state activity (Gallagher et al. 2011: 33–37). However, with climate and energy policy, many issues fall under the authority of several ministers, diffusing the authority over the issue.

Authority can be said to be more 'concentrated' when the results of an election create a clear majority – consisting of one party or a well-aligned coalition of parties, and when one ministry is in charge of a given issue (like climate or energy policy). In contrast, it will be 'distributed' when there is a minority government or a coalition government with differing views on the issue, and the Parliament has formal decision-making powers over the issue-area.

As for the distribution of information, the most striking thing is the lack of it. Most politicians are generalists, who rarely rely on detailed, technical types of expertise (Kingdon [1984] 2011: 37). As Martin Minogue ([1983] 1993: 16) has noted, 'information is frequently inadequate or simply not available . . . information is a resource, to be used and manipulated'. Because the parties in government have access to experts in the administrative apparatus, they tend to have more information than parties that are represented only in the legislative assembly. The governing parties can also to some extent steer which information is available to others. The better the access of oppositional politicians to alternative information sources, the less of a power-tool control over information will be for the parties in government. And if the legislators are not formally involved in the decision-making, they will be less informed and hence unlikely to evince interest in a given political issue.

We expect the political field to influence policy development more when structural resources (authority and information) are more broadly distributed. When structural resources are concentrated, an issue-area may escape political steering altogether. Under such conditions, the lack of political engagement will tend to

move problem-solving downwards to the ministerial bureaucracy, or be resolved in negotiations between civil servants and corporate actors (Boasson 2015: 166). Then, the responsible minister will have few incentives for paying much attention. If the minister happens to have a special interest in the subject, that person will be in a very powerful position. Things will be radically different if authority and information are spread within the political field: the more political actors who share responsibility for an issue, the more information the politicians will have, with greater incentives for engaging and giving priority to it. In organization fields, however, the contrary will apply: the concentration of structural power will enhance the fields' influence over policy-making.

High- and low-salience scripts

The political field has other social norms, rules and understandings than those generally found in other parts of society. Because time is scarce, politicians often resort to institutionalized, cognitive scripts to make decisions about which issues to pay deeper attention to, and which to down-prioritize. In the following, we present the two contrasting cognitive scripts for low- and high-salience issues. These scripts exist independently of specific policy areas; they are coherent recipes for how to behave in relation to specific issues. Whether the high- or low-salience script is attached to an issue will have major importance for how and to what extent the political field will influence policy development within that issue-area. This holds true for schemes for renewable energy support – in focus here – but also for many other issues as well.

Inspired by March and Olsen's 'logic of appropriateness' approach (1989), Donald Searing (2012: xxv) has argued that politicians think a great deal about which behaviours are appropriate under differing circumstances. Pepper D. Culpepper (2011: 180) draws on some of the same thinking when he highlights how the political dynamics of low-salience issues differ from those of high-salience issues. 'Political salience' here concerns how important (in relation to other current issues) politicians from across the spectrum perceive an issue to be in the ongoing political debates – not how important the issue is for individual political parties. When an issue gains high salience across the political spectrum, it prompts politicians to base their behaviour on a different *political cognitive script* from the one they follow in relation to low-salience issues. These scripts can be seen as two different types of 'behavioural patterns or routines that legislators [and other politicians] adopt' and 'can be viewed as strategies for the employment of scarce resources' (Strøm 1997: 155)'. High- and low-salience scripts are institutionalized, behavioural patterns – but which issue-areas are understood as high salience may change over time.

Multiple, interrelated objectives motivate politicians, but they undertake more strategic thinking in relation to high- than low-salience issues. Most political parties aim to increase the number of votes, secure control over the governmental executive, and maximize their impact on public policy, but it is always challenging to assess how the three objectives influence each other (Strøm and Müller

2000). Because there 'are plenty of competing demands on a legislator's time and attention', we need analytical tools that can help us make sense of political behaviour (Strøm 1997: 171). Distinguishing between political cognitive scripts for high- and low-salience issues can be one such tool.

Note that 'salience' is understood differently here than in election saliency research, which explores how salience of an issue varies across political parties, and focuses on how political parties selectively highlight policy issues in order to attract voter support (Budge 2015). Drawing on Culpepper (2011: 4), we focus on the perceived importance of given issues, relative to other political issues, across the political field. Whereas Culpepper argues that the salience of an issue is a result of its actual characteristics – its technical complexity in particular – we do not see the salience of an issue as something constant. Much like market actors adjust their behaviour to what other producers do, politicians position themselves in relation to other politicians (White 1981: 518). Modern political parties conduct polling to learn about public preferences, but they still have difficulty assessing the relative salience of an issue among the public (Culpepper 2011: 7). It is easier for political actors to get a sense of how salient an issue is within the political field. Table 3.3 identifies five major differences between high- and low-salience cognitive scripts.

First of all, high-salience policy areas are subject to intense political competition – low-salience issues are not. Political actors have a shared sense of the positions of other actors in the field (Kluttz and Fligstein 2016: 191), but they pay more attention to how their peers relate to high-salience than they do to low-salience issues. With high-salience issues, politicians will develop their positions in reaction to the positions of others and will generally be consistent with positions they have had before. By contrast, with low-salience issues, political actors will be much more open to inputs from organized actors. Here, individual policy-makers

Table 3.3 Two cognitive scripts in the political field

Salience *Behavioural cognitive elements*	*High*	*Low*
Awareness of others' positions	High, competitive approach.	Low, collaborative approach.
Preferences	Highly normative, simplified, general, differences amplified.	Unclear and ill-defined
Consistency	High. Incremental changes over time.	Low. Radical shifts over time.
Reason for engaging in the issue	Policy influence.	Symbolic attention towards voters. Bargaining chip to be used in negotiations.
Key cause of policy change	Change in political majority or political compromises.	New inputs from outside the field, or initiatives from politicians with additional time and energy.

with special personal interest in the issue and time available to devote to the issue can have huge importance (Cohen et al. 1979: 26).

Second, in low-salience issue-areas, politicians will tend to have ill-defined preferences (Boasson 2015: 164–167; Cohen et al. 1979; Kingdon [1984] 2011). With low-salience issues, politicians will tend to adopt positions only after certain policy actions have been endorsed, as by a party in government or during parliamentary decision-making (Boasson 2015: 134–156). Hence, with low-salience issues, preferences emerge through action, while preferences tend to serve as a basis for action in high-salience issues (Cohen et al. 1979).

Further, politicians will aim to simplify the lines of conflict in high-salience issues – for instance, by portraying the disagreement as being between high and low moral attitudes, and shying away from complexities related to the design and implementation of public policies (Boasson 2015: 83–109). Politicians may also portray their positions as more unique and different from those of other political actors than is actually the case. In relation to climate issues, politicians may characterize their favoured policy option as the only possible position that will contribute to mitigation – for instance, by presenting their favoured support scheme for renewables as the only scheme that will lead to higher renewables shares, while denigrating other design options as undermining renewables and climate mitigation altogether (Boasson 2015: 109–133).

Third, because shifting stances may signal uncertainty and weak leadership, in high-salient issue-areas, political actors will seek to frame their positions as stable and consistent over time. However, they will also be eager to influence policy development (Strøm and Müller 2000: 9). It can be challenging to align these two concerns. Politicians will aim to adopt positions that are ambiguous enough to allow them to engage in compromises, but there are limits as to how far a political party can stray. Political positions on salient issues will tend to be rather sticky, but be more readily subject to change in low-salience issue-areas (Boasson 2015: 134–156). Here, possibilities for brief positive media attention and symbolic gains can tempt politicians to jump to conclusions – and, unlike the case with high-salience areas, neither the politicians themselves nor the electorate are likely to remember their prior positions in the longer term.

Fourth, in high-salience issue-areas, political actors like to portray themselves as influential (Kingdon [1984] 2011: 39) and work systematically to influence decision-making. To this end, they will try to learn as much as they can and be active, also in relation to small and detailed matters relating to the issue (Boasson 2015: 83–108). Bargaining and negotiations will play out in multiple arenas: within political parties, within the state executive, between parliamentary coalitions, and in the media. As the political landscape in most European countries has become increasingly fragmented, cross-party arenas have become more important for deliberations than party-internal processes. Political jockeying will be less evident in relation to low-salience issues. Here, politicians will tend to be reactive, rather uncritically aligning with positions developed by others, and pay little attention to the issue in connection with major political bargains, for instance

when political platforms and governmental platforms are negotiated (Boasson 2015: 134–156).

Since it is important to be on the winning team in high-salience issues, parties will be less willing to agree to policy sacrifices. In such situations, politicians will search for compromises that enable all parties involved in the deal to present themselves as consistent and as winners (Boasson 2015: 164–167). If they fail to identify such compromises, the political competition over the issue may move political opponents further away from each other.

Fifth, as political actors are unlikely to change their positions radically in high-salience issues, governments tend to give stable, long-term steering signals in such issue-areas. Governmental policy will tend to shift if the political majority changes. By contrast, in low-salience issues with less at stake, politicians from all parties will be more willing to make concessions to other parties, and their positions will be far less stable.

It follows from this that the political field will tend to influence policy development in high-salience issue-areas far more than in low-salience issue-areas. High-salience scripts can be coupled to only a handful of issues at a time, but while some issues are salient for only a brief period, others may remain salient for a decade or more (Boasson 2015: 164–167).

Expectations

By taking both the structural and cognitive script dimensions into account, we can better specify under what conditions the political fields will have most influence on developments in renewables support schemes. As Table 3.4 shows, *legislature governing* and *ministerial governing* are contrasting modes. Legislature governing will be at work when the structural powers (authority and information) are distributed and politicians act in line with the high-salience script. Here, almost all aspects related to the issue will be subjected to political deliberation, and politicians across the spectrum will do their utmost to win small and large decision-situations relating to the issue. They will follow each other closely, and even very minor issues may become contended.

Table 3.4 Four modes of the political field

Structural pattern *Cognitive script*	*Concentrated*	*Distributed*
High Salience	**POLITICIZING**	**LEGISLATURE GOVERNING** Drives policy development
Low Salience	**MINISTERIAL GOVERNING** Low policy importance	**RANDOM DECISION-MAKING**

Source: Revised version of Boasson (2015: 39).

In legislature governing situations, the political field will be relatively stronger as compared with other fields. Politicians will devote considerable energy to an issue, paying close attention to how it is dealt with in other fields. The issue will be high on the agenda when party programmes are to be developed, annual meetings held, government coalitions formed and state budgets negotiated. Politicians will take the lead – not interest groups, bureaucrats or international developments. This situation can endure for many years, but not indefinitely (Boasson 2015; Downs 1972).

In ministerial governing situations, structural power is concentrated, and neither other parts of the executive government nor the Parliament have much formal authority. The low-salience script is dominant. Few other politicians are committed to the issue; it is up to the minister with the formal power to decide whether and how to intervene in a policy area. Because the issue has low salience, the minister will normally have little to gain (in terms of popularity and media attention) from becoming involved – and will therefore get involved only if that person has time to spare and personal motivation. In practice, this gives politicians only modest influence on the development of policy. Instead, the actual development of the policy in question is shaped by organizational field developments: problem-solving is moved downwards, into the ministerial bureaucracy, or among civil servants and corporate actors.

The differences between legislature and ministerial governing will rarely be clear-cut, and more a matter of degree. Moreover, there may be intermediate situations. *Politicizing* is when an issue has become highly salient, but structural power concerning that issue is still concentrated. Despite their lack of formal powers, wider parts of the political field will engage in the issue, and political parties will compete over it. Some issues can be solved through politicizing, and the issue will then shift back into the ministerial governing positions – but the conflict may also escalate and shift towards the legislature governing situation. In political systems with strong parliaments and/or coalition governments, this situation will probably lead to the Parliament gaining more formal power regarding the issue – with a shift towards legislature governing. Whether this will happen will depend on the tactics of the sitting government as well as the opposition – and elections may have a significant role here.

Random steering will be seen in low-salience issues when many ministries and/or legislative committees share authority over an issue-area, or when formal decision-making authority over an issue is not clearly defined (Baumgartner and Jones [1993] 2009: 32). As regards other issues, there will be little political competition, and few actors will have time and energy to focus on such matters. Here the importance of the political field will depend primarily on the strength of the organizational field.

Against this backdrop, we expect the political field to:

- dominate the development of national renewable-energy policies more when characterized by distributed structural resources and high salience (legislature governing).

However, the political field will develop and change through a dynamic interrelationship with the domestic organizational field and the European environment. We end this chapter with a brief discussion of the dynamic interrelationships between the multiple fields presented here.

Multi-field dynamics and interrelationships

Understanding how and why renewables support mixes evolve and change over time calls for examination of the role and importance of the differing fields, but also of how they interact and relate to each other over time. In the following, we summarize the field-specific expectations before we specify some crucial inter-field dynamics.

Figure 3.1 offers a simplified picture of the relationship between the many fields at one specific moment in time. Many countries may be involved, but the figure presents only three examples. The relationship between the two domestic fields may be weak, with only a few contact points – or they may be closely related, with strong ties or overlaps. Moreover, the domestic fields may be more or less integrated into the European environment. For instance, there may be strong bilateral links between domestic organization fields and European fields. For instance, national energy agencies may collaborate extensively with sister agencies in other European countries, and the dominant domestic electricity utilities may also have

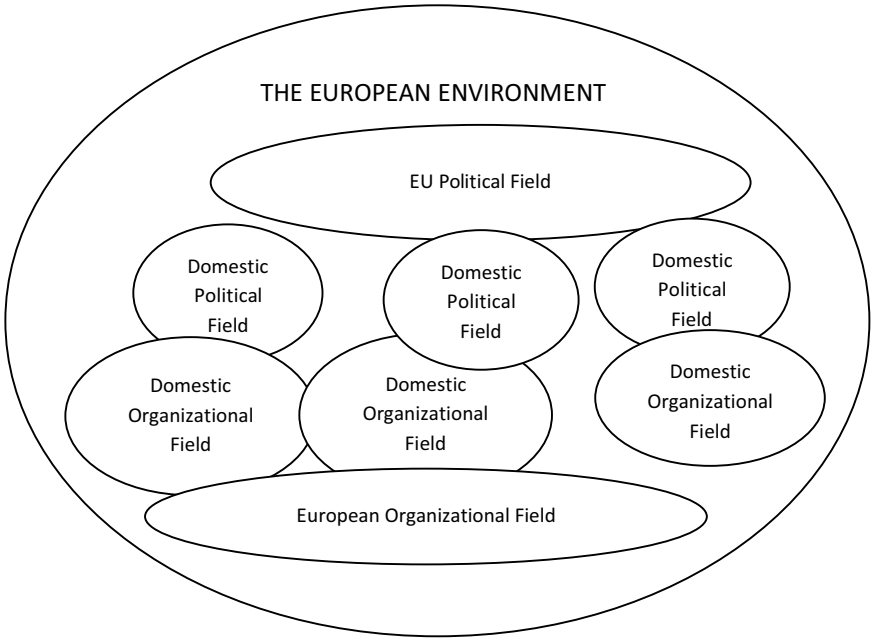

Figure 3.1 Multiple fields involved in European renewables support-scheme developments

a strong presence in many other EU and EEA countries. Under such conditions there will be significant overlaps between the domestic and European organizational fields of electricity. In contrast, regulators and agencies that rarely engage in European networks and corporations that are active in only one country are not well integrated in the European organizational field.

Secondly, while some domestic political fields are strongly linked to the European political field, others have weaker links. For instance, as Norway is not an EU member and thus does not take part in political deliberations in Brussels, it is likely to have weaker links to the European political field than full member states. In other counties, the dominant domestic political parties may have strong representation in the European Parliament and on the Commission.

Figure 3.1 does not show how fields at all levels may evolve and change characteristics and interrelationships over time. In examining the multi-field dynamics that have shaped the development of renewables support, we will aim to detect patterns as to multi-field correlations, causation and interrelationships as well as multi-field effects on policy developments.

Concerning correlations, we will search for answers to the following questions. *Do certain organizational and political field-level modes tend to occur in tandem?* For instance, does the 'ministerial governing' mode tend to occur when the domestic organizational field has certain characteristics? Further, is there any pattern of certain domestic field characteristics that correlate with given European environment characteristics? For instance, does the 'EU governing' mode in the European environment occur at the same time as the domestic fields, assuming certain characteristics? As the interactions between the domestic and the EU-level developments play out over time and at any point in time, the domestic and the European levels may interact (Saurugger 2014a, 2014b). In this volume, we understand Europeanization as a process and not as an exogenous influence on domestic developments. However, organizational and political fields in differing countries will interact with the EU in varying ways, and there is still much to learn about the possible relationships and interdependencies between domestic developments and EU-level developments, and how these patterns may differ across countries and over time.

If interesting correlations emerge, the next step will be to consider whether there are causal interrelationships between fields. In order to detect causation and interdependencies, we will pay particular attention to the timing related to shifts in modes across fields. If one field tends to change its mode after another field has changed its mode, that may indicate a causal relationship between the two. Alternatively, simultaneous changes in several fields may indicate interdependencies.

We also ask: *Are changes in domestic organizational and political fields causally related? If so, does one field cause changes in another field – are they mutually interdependent?* For instance, 'legislature governing' may spur uncertainty and conflicts at the organizational level, or the reverse: conflicts at the organizational field level may cause an issue to shift from 'ministerial governing' to 'legislature governing' within the political field. Further, because organizational fields are particularly dominant when segmented, this may spur developments

towards ministerial governing. But the reverse causal relationship is also possible: that political fields in ministerial governing mode allow the organizational field to become more segmented. By paying attention to how the two fields change over time, we may uncover certain patterns with respect to interrelations and interdependence.

Further, we will pay attention to causal relationships between the European environment and the domestic fields: *Are changes in domestic- and European-level fields causally related? If so, does one level cause changes at other levels, or are they mutually interdependent?* In order to understand the role that the six countries studied here have had in relation to the wider Europeanization process, at least two differing features may be important. First, differing domestic fields may have played differing roles in horizontal as well as vertical Europeanization processes. Some domestic fields may be primarily senders of support-mix ideas; others may be primarily receivers. The latter group may be inspired by developments in other European countries as well as by EU-level actors and developments. Whether a domestic field mainly provides or receives support-scheme ideas may also change over time.

Moreover, countries may differ with respect to their dependence on EU-level developments. In some countries, prominent domestic actors, from the political or organizational fields, may assume pro-active roles towards the EU and call for stronger or different EU regulations. In other countries, actors may be fairly content with the existing EU rules and develop domestic policies less affected by discussions at the EU level. In countries where the political majority or strong organizational field actors find that EU steering is at odds with their favoured renewables support mixes, the EU rules in that issue-area will probably become controversial. Under such circumstances, the country will become dependent on future EU developments. In contrast, countries where the political majority and/or strong organizational field actors regard EU rules as unproblematic may not become very involved in getting the EU steering to change, and it will not be contested nationally.

Our main reason for exploring the interrelationship between multi-field developments is to see how these change processes affect changes in support-scheme mixes over time. We want to find out whether certain multi-field configurations create specific, patterned constraints and enablers for certain developments in renewables support mixes.

Summary

This chapter has presented expectations related to the importance of the European environment, the organizational fields and the political field for renewable electricity support mix development. We expect the dominance of the three differing social spheres to be greater when they have certain structural and cultural-institutional characteristics. More specifically:

- The European environment will dominate the development of national renewable energy policies more when the vertical Europeanization is strong

and the horizontal Europeanization is coherent, implying that one specific support-scheme mix gains superiority (EU governing).
- The organizational field will dominate the development of national renewable energy policies more when the field is characterized by centralized structural resources and one institutional logic (segmentation).
- The political field will dominate the development of national renewable energy policies more when the field is characterized by distributed structural resources and high salience (legislature governing).

These expectations focus on the effect of each of the separate social spheres, but without taking the interrelationship between fields into account. However, the two domestic fields and the many European fields that shape a policy issue like renewables support may be interrelated, in differing ways across time and countries. This means that the social characteristics of the various fields may to a certain extent be shaped by developments in other fields. In systematically comparing our six case studies in Chapter 11, we ask:

- Do certain organizational and political field-level modes occur in tandem?
- Are changes in domestic organizational and political fields causally related? If so, does one field cause changes in another field – or are they mutually interdependent?
- Are changes in domestic- and European-level fields causally related? If so, does one level cause changes at other levels – or are they mutually interdependent?

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4 Europeanization of renewables support

Elin Lerum Boasson

Introduction

This chapter chronicles how the European environment of support to renewable electricity has developed and changed over the course of four decades. In some countries, promotion of new renewable energy began as a domestic policy issue in the 1970s. With the rise of attention to the climate issue in the 1990s, support schemes became a widespread policy measure, eventually becoming subject to significant EU steering.

For a long period, technology-specific feed-in schemes dominated in Europe. These offered beneficiaries a fixed price for electricity for 15 to 20 years, independent of market-price fluctations, often ensuring different levels of support for different renewables technologies (Cointe and Nadaï 2018). To the surprise of many, in 2014 the EU adopted state-aid guidelines that steered countries towards shifting to competitive auctioning combined with feed-in premiums (support on top of the spot-market electricity price; see Fitch-Roy et al. 2019). This shift was *not* the result of changes in EU renewables policy proper, but of the introduction of new guidelines on state aid for environmental protection and energy.

The European environment is a meta-field, embracing developments at the all-EU level as well as in the member states. It can be described along two dimensions (Boasson 2021, Chapter 3 in this book). The horizontal dimension captures how the countries interact and influence each other, while the vertical dimension captures how EU actors and processes interrelate with actors and developments at the domestic level. This chapter asks: *How has the European environment changed over time with respect to the horizontal as well as vertical dimensions of Europeanization?*

Two strands of EU policies are relevant to developments in support schemes for renewables: EU renewables policy proper, as set out in the Renewables Directives, and the EU rules on state aid. The EU started to develop a renewable energy policy already in the 1970s, but the 2001 Renewable Electricity Directive was the first piece of legislation with relevance for national support measures (Boasson and Wettestad 2013). In 2001, the EU also for the first time developed guidelines on state aid for environmental protection that included renewable energy. Later,

these two strands of policies have changed. The member states have developed various practices in renewable energy schemes, sometimes in response to developments at the EU level, other times as a precondition for EU-level change, and sometimes rather isolated from activities at the EU level. The six case studies, presented in Part II of this book, explore in detail how and to what extent the European environment has played into these domestic processes.

Most assessments of EU renewables policy have focused on renewables policy proper (e.g., Boasson and Wettestad 2013; Bürgin 2015; Cointe and Nadaï 2018; Solorio and Jörgens 2017). This is an interesting issue-area in itself – but, when the focus is on renewables support schemes, we also need to explore the development of EU state-aid policy. Indeed, it is not possible to understand the major revisions of support schemes for renewables in many EU member states after 2010 without taking into account the changes in EU state-aid guidelines in 2014.

Whereas the development of EU renewables policy follows ordinary legislative procedures (formerly called co-decision), the European Commission (the Commission) has the upper hand in revising state-aid guidelines. In the ordinary decision procedure, the Commission presents a draft, the Council and the Parliament put forward amendments and, finally, the Parliament and the Council jointly adopt a decision. In contrast, the adoption of new state-aid guidelines is the prerogative of the EU executive – the College of Commissioners (Büthe 2016). The Commission's Directorate-General for Energy (DG Energy) drafts renewables policy proposals, while the Directorate-General for Competition (DG Competition) drafts state-aid guidelines.[1] It has been argued that the Commission has increasingly used state-aid rules as its last resort to steer national developments (Blauberger 2009; Smith 1998). As a main rule, the EU prohibits state aid, but under certain conditions, it may be accepted (Büthe 2016; Smith 1998). EU state-aid rules are inherently political: they involve choosing between competing political objectives, and the decision outcomes constrain the powers of national governments (Büthe 2016: 38; Kassim and Lyons 2013).

Such guidelines draw on the Treaty and CJEU case law, presenting principles for assessing the compatibility of aid (Banet 2020). They are interpretations of the state-aid rules in the basic Treaty on the Functioning of the EU (TFEU) (Art. 7, Art. 87 TEC) as well as case law from the Commission's DG Competition and Court of Justice of the EU (CJEU). The guidelines are not legally binding on member states, but they are binding on the Commission. Member states may challenge the guidelines, but this may entail long delays, affecting renewables investments while litigation drags on. Hence, the exact wording of the state-aid guidelines can be of crucial importance for the development of national practices.

This chapter presents the chronological story of renewables policy developments in the European environment, starting with the rather long and slow emergence of this policy area from the 1970s until 1999, then moving on to the first five-year period with some EU steering of significance, from 2000 to 2004. Next we turn to the 2005–2009 period, with major conflicts at both the EU level and in many member states, and finish with the period from 2010 to 2014.[2]

Renewables support: From rare and national to widespread and EU-governed

Prior to 1999: many ideas, little harmonization

From the 1970s and onwards, there was considerable trial and error, with differing countries adopting varying schemes, although primarily small in scope and simple in design (Boasson and Wettestad 2013; Solorio and Jörgens 2017). During this period, a group of academics also developed differing ideas about more encompassing support schemes. Still, renewable energy was only a marginal policy issue, with few actors wanting the EU to gain the upper hand.

By the early 1990s, three different domestic renewables strategies had emerged. First, Germany, Denmark and, eventually, Spain embarked on technology-specific schemes that involved very little exposure to market forces (Boasson and Wettestad 2013: 82–83). They launched feed-in schemes, relying on fixed support levels for rather long time-periods and guaranteed grid access. These schemes led to the emergence of small-scale domestic renewable-energy industries. The second group of countries – Finland, the Netherlands, Sweden and the UK – offered R&D support and some other measures but did not develop feed-in schemes. In these countries, the traditional utilities initiated a few renewable energy plants, but no new renewables industries emerged. The third and largest group of EU countries hardly promoted renewables at all.

In 1988, the Commission considered harmonizing renewables support, but this came to nothing (Rusche 2015: 25). The first renewables schemes were notified to the Commission in 1990; DG Competition found that both the British and the German schemes constituted state aid but swiftly approved both (Rusche 2015: 81–82). A little later, DG Competition endorsed schemes in the Netherlands, Sweden, Finland and Denmark (ibid.: 82). In order to be regarded as state aid, renewables aid must: (1) be granted by a member state or through state resources in some form, (2) distort or threaten to distort competition, (3) selectively favour certain undertakings and (4) affect trade between member states in a way incompatible with the internal market (Community Guidelines 2008, Art. 7.1). Renewables aid that fulfils these criteria can still be exempted from the ban on state aid *if* the aid promotes 'the execution of an important project of common European interest' (Community Guidelines 2008, Art. 7.2). At this stage, EU steering attracted scant public attention. In the course of the 1990s, EU authority within the realm of state aid became contested, with respect to renewables support as well as a range of other issues (Büthe 2016: 39).

Germany subsequently changed its scheme, and the German Utilities Association lodged a complaint with the Commission over application of the state-aid rules (Jacobsson and Lauber 2006). In response, DG Competition sent a letter to the German government expressing doubt about the continued compatibility with state-aid rules and proposing amendments that would bring German law in line with EU state-aid rules, leading to a reduction in feed-in rates (CJEU 2000, Art. 19–21). In 1998, Germany introduced a revised scheme but, despite consultations

with DG Competition, did not follow up any of the proposals from the Commission (CJEU 2000, Art. 34–38). Instead, it decided that the distribution system operators could pass on their additional economic burden from buying electricity from renewables to the transmission system operators. Although CG Comp complained about this to Germany, it refrained from asking Germany to notify, because a new Renewables Directive was expected to introduce harmonized renewables rules.

At this stage, the electricity supplier PreussenElektra AG refused to pay the distribution system operator Schleswag the extra costs incurred in buying renewables electricity required by the German feed-in law (Kuhn 2001; Rusche 2015: 38). The issue was brought before a German court, which eventually requested the CJEU to clarify whether PreussenElektra was correct in arguing that the German scheme fell under the Treaty's definition of state aid (CJEU 2000, 2001). In the two years that passed before the CJEU reached a judgement, a major political controversy emerged over EU steering of renewables aid in a new renewable electricity directive (CJEU 2000, Art. 38).

DG Energy argued that national support schemes were no longer compatible with state-aid rules. It proposed creating a technology-neutral pan-European 'renewable energy credit' scheme, which would expose renewables to market prices on electricity, and began drafting a directive to that end (Boasson and Wettestad 2013: 84, 87; Rusche 2015: 30). Whereas the largest European electricity utilities supported the idea, the renewable energy industry mobilized against it (Boasson and Wettestad 2013: 84–85). Both industries had ties to Commission officials who supported their opposing views, and major conflicts erupted between the camps. The high level of conflict created uncertainty as to whether the EU would be able to develop a renewables policy of any significance.

The German government protested vigorously against the Commission's initiative for a Renewables Directive, but the Netherlands, Sweden and the UK were more positive. At the national level, the market idea got off to a rather bad start: the British quota system failed to yield much production, and the Dutch government abandoned its voluntary certificate scheme soon after its introduction (Boasson and Wettestad 2013: 85–86). In the end, the EU energy ministers agreed that the Commission should develop a Renewables Directive, on the condition that it did not aim to steer the national support schemes. In parallel, DG Competition began more actively reviewing member states' state-aid practices in a range of issue-areas (Büthe 2016: 56–58). Despite the lack of political consensus in the Council with respect to renewables support, many Commission officials continued to promote a pan-European scheme, based on a certificate scheme idea (Boasson and Wettestad 2013: 83–87).

By the late 1990s, the Court had largely confirmed that the Treaty gave the Commission substantial authority over state aid, but it was unclear whether most renewables schemes fell under the Treaty's definition of state aid (Büthe 2016: 56–58). The Commission had gained authority to require recipients of unlawful aid to repay aid, but many years would pass before it became clear whether the Commission could apply this authority to renewables schemes.

We may conclude that by the late 1990s, the Europeanization process had barely started. Vertical steering was weak, with no clear horizontal patterns discernible. Rather, the few countries that had adopted renewables support schemes drew primarily on their own domestic traditions and experiences, rarely looking to others for inspiration and learning. For most of this period, the EU had relatively few members, and it was unclear whether the EU would be able to exert any governance at all with respect to renewables support.

2000–2004: much EU conflicts, but feed-in diffuses

Around 2000, renewables support became increasingly salient at the EU level. The Commission's understanding of how and to what extent it could influence national renewables support was also fundamentally challenged during this period. In the midst of heated discussions on the Renewables Directive, the Advocate General of the CJEU in 2000 issued an opinion in the *PreussenElektra* case, concluding that the changes that Germany had introduced to its feed-in law in 1998 were not sufficient to trigger the need for new notification – moreover, that the scheme did *not* constitute state aid (CJEU 2000, Art. 19; Kuhn 2001). As neither PreussenElektra nor Schleswag was publicly owned, the money never actually passed through the state or through state resources, and thus the German scheme could not be regarded as 'state' aid (Rusche 2015:. 83). This intervention came as a great surprise to DG Energy, DG Competition and DG Legal Service, who had all defended the Commission's view in the court case (Interviews 5, 6 and 8).

In 2001, the CJEU reached a decision, largely in line with the opinion of its Advocate General (CJEU 2001). By then, however, Germany had changed its system, introducing technology-specific support levels guaranteed for 20 years (CJEU 2000, Art. 34–38; Cointe and Nadaï 2018: 6, 61). It did not notify the Commission, nor did France when it adopted a similar scheme, although the French scheme did repay utilities by means of state resources (CJEU 2013; Rusche 2015).

Many struggled to interpret the precedence created by *PreussenElektra*. Did the ruling imply that neither the Commission nor the CJEU could overrule national renewables support schemes? Or was the German case so special that it did not really create precedence (Kuhn 2001: 364; Rusche 2015: 85)? Interviewees familiar with this case regard it as highly significant. One interviewee (6) stated: 'It is amazing how much this [*PreussenElektra*] influenced the understanding of state aid'. DG Competition officials were confused, leading their decisions in the immediate aftermath of the judgement to lack consistency (Rusche 2015: 86). In any event, the Court's decision legitimized a swift diffusion of feed-in schemes (Cointe and Nadaï 2018: 63).

In 2000, DG Energy published a draft Renewables Directive, proposing a deadline for EU-wide harmonization of support schemes. However, the deadline idea failed to gain support from the Parliament and the Energy Council. The Renewable Electricity Directive was adopted in September 2001 but made no references to market streamlining or harmonization (Directive 2001/77/EC). The same year, DG Competition launched the first state-aid guidelines in which renewable energy

was included. These guidelines did not promote market streamlining or harmonization (Community Guidelines 2001). They distinguished between how investment support and operational support could be calculated, but they introduced no clear limitations on how much aid a renewables plant could receive over its lifetime. Calculations of investment support were to be based on the 'extra costs' compared to conventional plants. It was made clear that operating aid would 'usually be allowable'; and different design options were presented: (a) the 'extra-cost' approach, providing aid 'to compensate for the difference between the production cost of renewable energy and the market price', and (b) the application of 'market mechanisms such as green certificates or tenders' (Community Guidelines, Articles E.3.3.2 and E.3.3.3).

In the following years, the countries that first adopted feed-in schemes stayed on their original path and many others copied them, making feed-in the most widespread way of promoting renewables. Most notably, both Spain and France adopted schemes inspired by Germany and Denmark (Boasson and Wettestad 2013: 86–87; Leiren and Reimer 2021, this book). A few countries opted for green certificate schemes; for instance, Sweden adopted a scheme that immediately boosted renewables investment (Boasson, Faber and Bäckstrand 2021). Still, by 2005 the academic literature as well as most DG Energy documents concluded that feed-in schemes were more effective and less costly than electricity certificates (Cointe and Nadaï 2018: 72).

Hence, the 2000–2004 period was marked by *horizontal harmonization*: Feed-in diffused among the EU member states – but this was not a result of vertical, top-down steering from the EU, but rather a result of horizontal socialization across countries. Despite the Commission's campaign for technology-neutral certificate schemes, it was the technology-specific feed-in model that gained popularity. At this stage, it was still usual to have only one or a few support schemes, but from 2005 and onwards, the support-scheme mixes became increasingly complex.

2005–2009: intensified feed-in diffusion and binding renewables targets

In this period, climate change became a high-level political issue. No longer discussed only by environmental and energy ministers, it became a key point of interest for prime ministers and an important issue in many general elections across Europe (Boasson and Wettestad 2013: 87–94). Moreover, climate change climbed to the top of the agenda as the EU prepared for the global climate summit in Copenhagen in 2009. The conflict from a few years back, between technology-neutral and technology-specific approaches to renewables support, resurfaced. A significant renewables industry had emerged, with strong ties to parts of DG Energy and the European Parliament. Renewables promoters were united in their scepticism towards market streamlining and EU-level harmonization.

By this stage, only seven EU member states had green certificates, whereas 18 had feed-in schemes (Commission 2008a). While many in DG Energy were pleased with the diffusion of feed-in schemes, other Commission officials set

about floating a new version of the old idea of a pan-European electricity certificate scheme (Boasson and Wettestad 2013: 87–94). They envisaged a scheme where aid would be granted to the least costly renewables projects, market forces would determine the support levels and governments would no longer be able to favour specific technologies. The renewables industry, as well as German and Spanish ministries, criticized the idea. The tone was harsh; actors accused each other of fraud, lack of credibility and being reactionary.

DG Energy officials opposed to the market approach ensured that the draft directive was 'leaked' in December 2007 (Boasson and Wettestad 2013: 91), only weeks before the Commission was to launch the draft. The renewables community had little time to lobby against the draft, but it largely succeeded. One month later, in January, the Commission issued a new and rather inconsistent draft directive, opening up for certificate trading but without measures that would ensure the creation of a pan-European certificate scheme (Commission 2008b). At the same time, DG Competition launched revised state-aid guidelines. The 2008 guidelines were quite similar to the 2001 version and were not aligned with the draft directive. They did, however, give more weight to incentivizing lower support levels (Community Guidelines 2008, Art. 1.3.5). One interviewee (2) from DG Energy held that the state-aid revision was not strongly coordinated with the Renewables Directive revision, whereas an interviewee (5) from DG Legal Service stated: 'When they suggested developing a directive at the same time, it would be too blatant if they simultaneously included it in the guidelines. This was due to political considerations'. A DG Competition interviewee explained: 'nobody cared about state-aid guidelines in 2008. It is only more recently that it has attracted a lot of interest'.

At around the same time, the Court radically changed its interpretation of the Treaty. First, the CJEU Advocate General issued an opinion in January 2008 in the *Essent Netwerk Noord BV* case, on state aid in the electricity sector in general. Here, the Advocate General argued that the *PreussenElektra* case was very special: the feed-in costs were not transferred through state resources, and no public entities or private entities created by the government were involved, but this was rare. Hence, the case had little general value for how state-aid rules should be understood (CJEU 2008; Rusche 2015: 103–104). The Court upheld this view in July (Mortensen 2008). According to two interviewees (5, 6), DG Competition had long wanted to challenge *PreussenElektra*, and the *Essent Netwerk Noord BV* paved the way for this.

Revision of the Renewables Directive was subject to fierce debate throughout 2008. An increasing number of voices now raised the concern that many feed-in schemes provided over-compensation for renewables (Cointe and Nadaï 2018: 90). One Commission interviewee even stated: 'We had a lot of people we had never seen before coming to us in black limousines. We understood then that something was wrong' (Interview 8). This hardly influenced the political deliberations, however. A major breakthrough for the strategy of the renewables actors came with the joint compromise proposal from the UK, Poland and Germany in June 2008 (Boasson and Wettestad 2013: 92). The proposal ensured member

states' control over their national support schemes. In the end, the Council and the Parliament adopted a directive that contained binding national renewables targets and required member states to continue to offer state aid to renewables, but they did not give the Commission new authority over domestic support-scheme designs (Directive 2018/2001). As noted, a new CJEU ruling enabled the DG Competition to start applying its state-aid powers on renewables support, but few energy actors seem to have noticed this significant shift in CJEU case law. Small-scale and costly renewables technology gained increased interest, with many countries introducing special feed-in rules for these specific technologies or other types of special support schemes (see the following chapters in this book: Rayner et al. 2021; Leiren and Reimer 2021; Boasson, Banet and Wettestad 2021).

In the end, whereas the adoption of new, domestic renewables targets created indirect pressure on member states to offer more support to renewables support, the EU did not give any clear instructions on how member states should alter their existing support mixes. Any indirect vertical Europeanization was rather diffuse and gave domestic actors considerable room for interpretation. At the domestic level, the horizontal diffusion of feed-in schemes continued, in tandem with renewed interest in small-scale and costly technologies. The financial crisis that hit Europe after 2008, and the fact that many countries had schemes that over-compensated renewables investors, contributed to changing the dynamics of developments in the domestic renewables support mix. In this period, ideological conflicts hindered fruitful dialogue between new renewables actors and traditional energy actors. However, as we will see, such disagreements gradually became less severe.

2010–2016: shift to new support-scheme model and increased state-aid steering

The economic crisis constrained the ability of many member states to offer renewables support, and the costs of renewables costs had become dramatically lower. This led many to reconsider their views on renewables support schemes (Cointe and Nadaï 2018: 89–90). The debate now shifted from a trench war to a more nuanced, though still sometimes heated, exchange of information and ideas (ibid.: 95).

The introduction of a significant share of intermittent renewables changed the price-setting mechanisms in European electricity markets, largely to the disadvantage of the large utilities. Around 2012 it became clear that the industry was facing severe economic challenges. The situation was particularly dire in Germany, where wholesale power prices were reduced by more than 50% from 2011 to 2016 (Newbery et al. 2017: 7–8). Over the years, Germany had added several compensation mechanisms to its support scheme, rendering the *PreussenElektra* ruling outdated. Hence, the German Association of Energy Consumers lodged a complaint with the Commission, arguing that the scheme now constituted state aid (CJEU 2016). The CJEU had also considered whether the French feed-in scheme constituted state aid and, in 2013, ruled that it did (CJEU 2013). This decision

signified a shift in case law, and in late 2013 DG Competition initiated a formal investigation procedure with respect to the German scheme (CJEU 2016: 13).

By this stage, DG Competition was in the midst of a major 'modernization' of all state-aid practices, aimed at ensuring economic efficiency as well as legal certainty (Fitch-Roy et al. 2019: 85). DG Competition asked stakeholders to complete a questionnaire concerning revision of the state-aid guidelines relating to renewables. In their replies, the renewables industry called for minor alterations to ensure more effective implementation of the 2009 Renewables Directive, whereas the electricity industry declared itself generally satisfied with existing practices (Commission 2016). These inputs showed that few expected major changes in the new guidelines. However, according to interviewee 4: 'The member states had committed to the [renewables] targets, but it had consequences that few had expected. When the financial crisis came in addition, it was like a perfect storm'. DG Competition exploited this situation, and in 2013 it issued draft guidelines for consultation which proposed radically ramping up EU steering towards competitive tendering, combined with feed-in premiums. Interviewee 8, who had been involved in promoting certificate schemes, stated: 'We lost that in 2008. . . . I was okay with tendering. It was simply another way to ensure competition and cost-efficiency'. And Interviewee 3 highlighted how auctioning fit the thinking of the Commission in general and that the possibility for bidding processes had opened up in many areas of state aid.

As very few EU countries applied feed-in premiums combined with competitive auctions at this stage, the Commission's proposal came as a great surprise and gave rise to protests (Fitch-Roy et al. 2019). The CJEU ruling did not specify how support schemes should be designed; it merely pointed out that most schemes constituted state aid. The draft guidelines received considerable attention and many inputs. The seven largest utilities and the business association Eurelectric supported the Commission's new approach (Commission 2016). The renewables industry was more critical, arguing that the proposal conflicted with the Renewables Directive. Many interviewees, however, argued that the conflict over more, or less, market steering was not as prominent as before. DG Competition hailed the new UK and Dutch schemes as good models for national support schemes (Commission 2014).

Many member states, however, voiced scepticism. For instance, France, Germany, Poland, Sweden and the UK all called for greater leeway, arguing that the proposal was too restrictive (Commission 2016). Interviewee 3 mentioned the considerable member-state resistance at consultation meetings – a point confirmed by a letter from France, Germany, the UK and Italy in December 2013 (Bundesministerium für Wirtschaft und Energi 2016). The member states wanted leeway to continue with technology-specific feed-in to the extent they saw fit, and to avoid having to open up their schemes to renewables projects in other countries. The final 2014 guidelines were rather similar to the draft proposal, but included significant exemptions from the feed-in premium and auctioning requirement, allowing for more widespread use of technology-specific feed-in than the 2013 proposal (Community Guidelines 2014)

Germany had changed its scheme towards feed-in premiums combined with auctioning already before the Commission concluded in 2014 that the scheme constituted state aid (CJEU 2016: 16).[3] Interviewee 6 held that Germany would never have adjusted its scheme had it not been for Commission pressure, describing the meetings between DG Competition and Germany as 'really heated, really harsh' and 'they did all they could in this case'. Interviewee 5 expressed doubt as to whether the German government was really so displeased with the changes, commenting that 'the revision was in a way modelled on the German situation'. Several German actors had long fought against the feed-in scheme, and they became increasingly able to influence the many smaller revisions of the German support mix in this period. New pressure from the Commission increased the leverage of these actors even further (see Leiren and Reimer 2021, this book).

Interviewees (2, 6, 8, 9) mentioned considerable disagreements between the DGs over the new approach, and internal coordination seems to have been limited. Nonetheless, the College of Commissioners adopted the guidelines in April 2014. Several interviewees mentioned that the Commissioners cast formal votes, which was unusual.

The final 2014 guidelines differ radically from how renewables support was dealt with in prior guidelines and Renewables Directives. They prescribe that aid be 'granted in a competitive bidding process on the basis of clear, transparent and non-discriminatory criteria' (Article 3.3.2). Indeed, all new aid schemes are required to grant aid as a premium in addition to the electricity market price. The bidding process may be limited to specific technologies if certain conditions are met: if there is a 'need to achieve diversification', if the installed electricity capacity is very small, if the number of projects is limited or if competitive bidding could result in higher support levels. Such exemptions may be made only if they do not distort the electricity market or if the energy markets are so poorly designed that market-based support schemes would not work. The Commission has argued that during the period 2020–2030, established renewable energy sources will become grid-competitive, and subsidies should be phased out degressively (Article 3.2.4). The 2014 guidelines accept electricity certificate schemes as an alternative to auctioning and feed-in premiums.

In the immediate aftermath of the adoption of the new guidelines, many countries changed their support-scheme mixes. By the end of 2017, 18 out of 29 EU and EEA countries (all EU member states except Slovakia, and Norway and Iceland in addition were assessed) had introduced tendering or were poised to do so (CEER 2018: 10). One year later, five EU member states (the Netherlands, Poland, Portugal, Spain and the UK) had implemented auctioning procedures with less technology-specificity, while France, Germany, Greece and Hungary planned to introduce more technology-neutral tenders over time.

Many countries adjusted their support-scheme mixes to the new guidelines, but there was also a surge of legal and political disputes relating to EU authority in relation to renewables support. In 2016, the CJEU ruled that German renewables support was indeed state aid, and thus all aspects relating to this would have to be designed in accordance with EU rules (CJEU 2016). Three years later, another

chamber of the Court decided that the German scheme did *not* qualify as state aid after all, once again jeopardizing the authority of the EU over renewables support (CJEU 2019). On the other hand, renewables support gained attention in relation to a recast of the EU Renewables Directive, and as a result the new directive contained a long passage on this matter. Much of the language from the 2014 state-aid guidelines was copied into the new Directive (Directive 2018/2001). However, it should be noted that the text of the final directive included a long list of conditions that would allow the member states to 'limit tendering procedures', such as 'the need to achieve diversification' (Directive 2018/2001, Art 4.5). These criteria may obstruct the Commission in undertaking a more radical revision of the state-aid guidelines in the future. For instance, it may become difficult for the Commission to remove the exceptions that allow countries to retain technology-specific auctioning, and not shift to fully technology-neutral auctions.

Introduction of the 2014 state-aid guidelines serve to increase vertical Europeanization, providing DG Competition with far more authority over domestic support-scheme mixes than previously. A range of CJEU court cases accorded the Commission legitimacy to do so, and many years would pass before the CJEU made rulings that again created questions about the Commission's authority. Despite the legal and political battles, the EU had gained significant top-down power after 2014, and the EU governing was underpinned by a new trend towards auctioning combined with feed-in premium.

Discussion and conclusions

This chapter has described the Europeanization process relating to renewables support schemes, mapping how the state of the European environment changed significantly in the course of four decades, with respect to horizontal as well as vertical Europeanization aspects. From the 1970s until the late 1990s, there was relatively little Europeanization. Although the EU had passed some general policies, and there existed a general ban on state aid, it was not clear that any of this would influence the development of domestic support schemes. This was a *1000 flowers* situation, with weak vertical and horizontal Europeanization. The few countries that did adopt renewables support schemes before 2000 chose differing models. Whether member states supported renewables, and how, depended largely on domestic initiatives and circumstances. While some EU actors, such as Commission officials, had ideas and clear opinions about how support schemes ought to be designed, these positions were not enshrined in EU law. EU member states, and later also the EEA countries, could generally do as they wished concerning support to renewables. As later chapters in this book show, Germany, UK, Poland, France, Sweden and Norway were to exploit this freedom in radically different ways.

We find greater coherence across EU member states after 2000. The years between 2000 and 2004 were a period of *horizontal harmonization*. Vertical Europeanization was weak; the EU adopted its first Renewables Directive, but this did not offer clear guidance as to renewables support. Moreover, the 2001

PreussenElektra court case prevented the EU from applying Treaty rules on state aid to develop stronger vertical steering. The strong horizontal Europeanization process contributed primarily to the diffusion of feed-in schemes, although a few countries adopted electricity certificate schemes. As shown in the country studies in Part II of this book, Germany was a great inspiration for other countries in this period (UK, Poland and France); further, France and Poland were affected by the diffusion of feed-in, Norway and Sweden hardly at all.

Between 2005 and 2009, the horizontal harmonization continued, with the feed-in diffusion gaining speed and electricity certificate schemes becoming less popular. At the same time, the EU added binding domestic renewables targets to its revised Renewables Directive. Many member states ended up with targets that required them to do something to increase domestic renewables production, in turn creating pressure towards the adoption of more encompassing support schemes. Many actors saw this as underpinning more technology-specific schemes that would ensure that also more costly technologies were used, although the Directive did not require the member states to adopt such schemes. The vertical Europeanization of renewables support was fairly modest. More of our six case-study countries were affected, with Norway being the only one that did not introduce greater technology-specificity in its support-scheme mix in this period.

After 2010, the picture changed significantly, towards less technology-specificity and stronger EU steering. By 2010, the CJEU had handed down several decisions legitimizing a more aggressive approach from DG Competition in renewable support cases (see Boasson 2019 for an assessment of Commission entrepreneurship in this respect). Moreover, many important countries, including France, Germany and the UK, had introduced or were in the process of introducing more competitive elements in their support schemes. This new support-scheme trend, or 'horizontal Europeanization', enabled the adoption of new state-aid rules that represented a radical increase in vertical Europeanization. Legal and political battles over the EU authority in this issue-area continued, but for many years after 2014, it appeared that the EU had gained new muscle in this issue-area, radically decreasing the leeway available to the member states. Hence we can say that this period was marked by *EU governing*.

Interviewees

1 Renewable industry representative, WindEurope (European business association for the wind-energy industry), 19 May 2016, Brussels
2 Civil servant, European Commission, DG Energy, 18 May 2016, Brussels
3 Civil servant, EFTA Surveillance Agency, 10 May 2016, Brussels
4 Electricity industry representative, Eurelectric (European business association for the electricity industry), 18 May 2016, Brussels
5 Civil servant, European Commission, DG Legal Service, 10 May 2016, Brussels
6 Cabinet-level civil servant, European Commission, DG Competition, 22 November 2016, Brussels

7 Renewable industry representative, Eurosolar (European business association for the solar-energy industry), 22 November 2016, Brussels
8 Cabinet-level civil servant, European Commission, DG Climate Action, 23 November 2016, Brussels
9 Lower-level civil servant, European Commission, DG Competition, 23 November, Brussels
10 Renewable energy representative, European Renewable Energies Federation (EREF), 16 February 2017, Oslo

Notes

1 The titles of these DGs varied during the period covered by this chapter. For simplicity, they will be referred to as 'DG Competition and 'DG Energy'.
2 Much of the empirical material presented in the following was first published in Boasson (2019).
3 The CJEU confirmed this decision in 2016.

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Part II

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5 Germany

From feed-in tariffs to greater competition

Merethe Dotterud Leiren and Inken Reimer

Introduction

As an industrialized nation, Germany has attracted considerable attention for its efforts to expand renewable energy and abandon fossil fuels, while saying farewell to nuclear energy. This massive challenge, known as the *Energiewende*, is closely linked to the *Renewables Energy Sources Act* (*Erneuerbare-Energien-Gesetz*; EEG) and its rules for a specific renewables support design, the feed-in tariff instrument. Administered by the government, it is characterized by technology steering, where different technologies are granted different fixed prices or premiums when fed into the grid. As one of the first European countries to introduce feed-in tariffs in the 1990s, Germany soon became a feed-in champion, showing good results in deployment of renewables. Other countries followed suit, and feed-in tariffs became the most popular support scheme for renewable energy in Europe (Boasson 2021a, this book).

Nevertheless, two and a half decades later, Germany introduced major changes to its approach to promoting renewable electricity, largely breaking with its feed-in tradition. It continued with technology steering, but now based on competitive tendering. Since 2017 only small projects still receive traditional feed-in support: larger producers typically have to compete for support in auctions. This move towards greater competition was largely in line with the approach favoured by the European Commission (the Commission). That in itself is interesting, as Germany is known as an important veto player at the supranational level when it comes to harmonization of renewable energy policies (Vogelpohl et al. 2017). Ever since the late 1990s, the Commission has advocated a shift towards more 'market-oriented' mechanisms and has tried to get Germany to change its feed-in scheme (EU COM 2014: 7). However, Germany has continuously resisted pressures to introduce greater competition.

Having served as a feed-in role model for other countries, and having gained extensive attention for its successful support of renewable energy, why, then, did Germany change its renewables approach towards greater competition? Is this a radical break with the feed-in tradition, or is it rather a path-dependent development of a long tradition of technology steering? Have the changes to the German feed-in been introduced primarily due to pressures in the European environment

or conditions in the political or organizational field, or due to the relationship between them?

In seeking to explain the development of Germany's support policies for renewable electricity, it is of special interest to explore the influence of the EU, given the Commission's advocacy in trying to get Germany to introduce greater competition (Commission 2014: 7). According to the multi-field framework, the effect of the European environment on national renewables support is greater when the Commission exerts coercive pressure and peer pressure among the member states is particularly strong (Boasson 2021a, 2021b, this book). Several scholars have assumed that the EU is behind the changes in the German support scheme, with its shift from feed-in tariffs and increasingly favouring auctions after 2014 (Beermann and Tews 2016; Tews 2015). In this chapter, we assess how the EU level and national factors have interacted, asking: *What has been the role of the supranational level in this process, and how prominent has it been?*

In studying the historical development of the German support scheme for renewable electricity, we look for explanations also in the organizational and political fields (see Boasson 2021b, this book). The multi-field framework assumes that the national organizational field will be particularly influential at times when this field is segmented, with a few big, closely coordinated commercial and private organizations, dominated by one way of thinking. On the one hand, the corporatist characteristics of the German political system and its coordinated market economy tradition would lead us to expect that the organizational field has been important for the policy development (Hall and Soskice 2001). On the other hand, studies of German renewables policies (see e.g. Kungl and Geels 2016) have shown that the organizational field has been characterized by deep conflicts between the traditional electricity industry and renewables actors. Has this undermined the importance of the organizational field?

Lastly, the multi-field framework holds that the effect of the domestic political field on policy development will be stronger when the legislative assembly has formal decision-making power and renewables policy is highly politicized. In Germany, renewable energy has been politically salient for decades. Does this mean that the German political field has been the major driver of the developments and changes in the renewables scheme over time?

We begin by describing the key characteristics of the German support mix – the rules for granting support in the EEG.

Technology-specific renewables support

By 2016, Germany had a technology-specific renewables support mix, which provides different variants of support depending on the size of projects. There are three key types of support (RES Legal 2019). First, large-scale projects must participate in tendering procedures to receive support; the tenders set the level of this support. This is the rule for onshore and offshore wind projects from 750 kW and upwards, solar projects from 750 kW and upwards (as of 1 January 2017), biomass plants from 150 kW and upwards as well as existing biomass plants. Second, operators of renewable energy plants exceeding installed capacity of 100 kW

which are not obliged to take part in the tendering procedures are supported by a market premium for electricity they sell directly. The amount of this market premium is calculated every month. Third, power plants up to 100 kW are eligible for a feed-in tariff, which the grid operator pays to the plant operators. The tariff amount is set by law and is usually paid over a 20-year period. Plant operators may opt for the market premium instead. This offers higher remuneration and simplifies the reporting procedures for system operators. In exceptional cases, plants with capacity higher than 100 kW can be supported through the feed-in tariff.

In 2014, Germany started to award most large renewable plant projects a market premium – an add-on to the electricity price on the spot market EPEX. This was calculated on the basis of a technology-specific reference tariff (RES Legal 2019).[1] Also in 2014 the government introduced a tendering process for freestanding photovoltaics installations as a pilot project; the first auctions were held in 2015. The aim was to test the viability of auctioning to determine future support levels (Bundesregierung 2013: 54). In 2016, the government transposed the auctioning system for various renewable technologies (photovoltaics, onshore wind, offshore wind, biomass) into law, which was enforced in January 2017. The auction design is tailored for each of the different technologies; hence, it continues to be technology-specific, as was also the feed-in scheme. However, through a pilot project running from 2018 to 2020, Germany also has some auctions that are common for wind and solar (Ministry for Economic Affairs 2017).

The German government has adopted technology-specific growth corridors, specifying annual capacity targets for various technologies (Apunn 2016). In line with the growth corridor, the government auctions off a specified amount of capacity volume each year. Which renewables installations will be granted support are determined via competitive processes (Apunn 2016). The lowest bids are accepted until the volume of capacity auctioned is reached. A maximum price is set in advance. Under certain conditions, installations located in other EU member states may participate in the German auctions (5% of annual bidding capacity).

There are special rules for citizen energy projects (CEER 2018: 9). When competing in auctions, they enjoy benefits such as automatically receiving the highest feed-in tariff accepted in the tender, even if their own bid was lower. Further, with onshore wind, the procedures for citizen cooperatives are simpler and more transparent (Apunn 2016). However, this does not apply for wind farms with fewer than six turbines.

German support arrangements for renewables are the result of gradual changes since the 1990s. We now turn to how Germany has changed its approach, from being a feed-in champion to adopting greater competition.

Historical phases: leading while incrementally altering the support mix

Prior to 1999: the emergence of the German feed-in

The *Energiewende*, for which Germany became famous after 2010, has its roots in the historical conflict over nuclear energy policy. The adoption of the feed-in

tariffs in 1990, a central feature of the *Energiewende*, can be understood only in light of the growing resistance to nuclear energy. The first commercial nuclear reactor in Germany went on the grid in 1961, marking the beginning of the nuclear industrial business in West Germany (Kirchhof and Trischler 2018). Germany was heavily reliant on fossil fuel for electricity generation, so the oil crises of the 1970s hit Germany hard. Alternative energy sources became increasingly interesting. This provided an impetus for the national government to continue to search for new nuclear sites (Agora 2015) but met resistance from societal protest movements. Particularly famous are the Wyhl protests, where a small local community in southwestern Germany was able to halt nuclear plans through direct action and civil disobedience in the 1970s. The success of this community inspired nuclear opposition throughout the country (Morris and Jungjohann 2016). In 1980, several anti-nuclear activists wrote a publication about replacing fossil and nuclear by renewable energy and energy efficiency, introducing the term *Energiewende* (Krause et al. 1980). This concept has later been associated primarily with the transition since 2011.

The 1986 Chernobyl accident occurred just after a range of new nuclear reactors had been set in operation, increasing the nuclear share of German electricity production to over 20% (Statistisches Bundesamt 2019). Chernobyl was to change society's perceptions of nuclear risks: after the accident, 86% of Germans supported a nuclear phase-out (Hake et al. 2015: 536). It also triggered the establishment of the Federal Ministry for the Environment in 1986 (Lexikon der Nachhaltigkeit 2015), which was given responsibility for nuclear safety. Previously, environmental responsibility had been spread across several ministries, with the Federal Ministry for Economic Affairs in charge of energy matters.

Despite societal resistance, the conservative coalition government in power from 1982 to 1998, made up of the Christian Democratic Union (CDU), its Bavarian sister party the Christian Socialist Union (CSU) and the liberal Free Democratic Party (FDP), favoured nuclear power (Hake et al. 2015). After the Chernobyl accident, the Social Democrats (SPD) focused on phasing out nuclear power, although the party was divided on the issue. The Greens (*Bündnis 90/ Die Grünen*), established in 1980 from the anti-nuclear movement, demanded the immediate suspension of all nuclear power plants in Germany.

Climate change was put on the agenda in 1987, when an Enquete Commission was created to address the issue. A broad consultative process that included leading MPs, prominent scientists and large industrial associations created a broad consensus for political action (Hatch 2007).

In 1988 the Federal Ministry for the Environment was given responsibility for the climate issue. Two years later the conservative government adopted Germany's first Climate Change Action Plan. The government supported nuclear energy and saw climate change as an opportunity to counterbalance the opposition to nuclear: nuclear energy produced no CO_2 emissions (Hatch 2007). However, the governing coalition of conservatives and liberals did not support CO_2 taxation or other tough climate measures (Hatch 2007). Concerns about climate change threatened further division of the SPD, which had strong ties to the powerful coal

interests. The party became more united in its rejection of nuclear power after Chernobyl, but the issue of global warming gave rise to questions of the feasibility of a nuclear phase-out. The SPD struggled for years to reconcile environmental, anti-nuclear and pro-coal factions within the party (Hatch 2007). The FDP and most conservatives viewed renewables as a complementary energy source (Jacobsson and Lauber 2006).

Large utilities reliant on coal and nuclear generation dominated the electricity supply system. These utilities deemed renewable energy uneconomic (Jacobsson and Lauber 2006). They benefitted from exclusive supply contracts with the municipalities and established regional monopolies, and they could refuse feed-in to their grid by local renewable energy producers (Jacobsson and Lauber 2006). With German reunification in 1990, the utilities sought to position themselves in the restructuring of the East German power sector, where six nuclear power plants closed down and coal power plants were modernized (Agora 2015).

Under these circumstances, two backbenchers, representing the CSU and the Green Party, proposed the feed-in tariff, referring to a successful Danish scheme introduced a few years earlier (Zeit Online 2006). While the CSU representative was concerned with the situation of small hydropower plant-owners in southern Germany, who got a very low price for their electricity to the utilities, the Green representative called for investments in new renewable energy sources. The two managed to gain support from other MPs who were interested in renewable energies, and eventually from all parliamentary factions. The *Grid Feed-In Law* (*Stromeinspeisungsgesetz, StromEinspG*) was adopted in October 1990, and entered into force in the following year (Stefes 2010). The *Bundesrat* (the legislative body representing the 16 federated states of Germany) also approved of the support scheme. The German states had previously supported renewables in various ways, and the new law would reduce their financial responsibilities. The utilities failed to mobilize against this new legislation: focusing on the East German energy sector, they had underestimated the future economic and political consequences of a feed-in tariff.

The Federal Ministry for the Environment, which led the government's work on climate change, supported the new law and received strong political backing from the CDU Chancellor. In comparison, the Ministry of Economic Affairs played less of a role in the discussions (Stefes 2010). Eventually, however, the slowdown in economic growth and the mounting costs of reunification strengthened the position of the Federal Ministry for Economic Affairs (Hatch 2007).

The Grid Feed-In Law obliged power companies to purchase electricity from producers of renewable electricity, granting to those who fed into the system a compensation of at least 90% of the average cost of private customers. The law built on the approach of the ordo-liberal Freiburg School that stressed the importance of governmental intervention to foster competition and avoid monopolies (Eucken 1990; Morris and Jungjohann 2016). Moreover, the enthusiasts behind the first small renewables plants underlined that energy production should be distributed, democratic and foster a broad range of technologies (Jacobsson and Lauber 2006; Wassermann et al. 2015: 67).

The introduction of the Grid Feed-In Law created an incentive for small, new actors to invest in windpower. Eventually, a range of federal business organizations for renewable energy emerged (Schmid et al. 2016: 266). However, renewables did not fit the utilities' business models, and the law offered no incentives for them to invest in renewables, as corporations were excluded (Interview 5; StromEinspG 1990 §1.2; also EEG 2000 §2.1). In the mid-1990s the established utilities attempted a rollback of the Grid Feed-In Law. In 1996 the German Utilities Association sent a complaint to the Commission, which had asked Germany to reduce its feed-in rates (CJEU 2000, Articles 19–21; Jacobsson and Lauber 2006). The Federal Ministry for Economic Affairs supported the German Utilities Association, but metalworkers, farmers and various groups mobilized massive demonstrations against this proposed rollback. However, the Parliament decided that the distribution system operators (DSOs) could pass on their additional economic burden from buying electricity from renewables to the transmission system operators (TSOs) – and the feed-in rates remained (Boasson 2021a, this book).

Moreover, although the Commission's DG Competition had initially argued that Germany should decrease the rates, the Commission approved the law because the amount of the aid and its impact on electricity prices were minimal (Commission 2001). However, in 1998 the German court asked the Court of Justice of the EU (CJEU) about the interpretation of EU law related to the proceedings between the electricity supplier *PreussenElektra AG* and *Schleswag AG* (de Lovinfosse 2008). In this case, the supplier had refused to pay the DSO the extra costs incurred for buying renewables-produced electricity (Boasson 2021a, this book). The renewables energy feed-in tariff policy was challenged as being inappropriate state aid (Gawel and Strunz 2014). This marked the beginning of a long-lasting controversy between Germany and the Commission.

In the meantime, Germany had introduced a tax, imposed on electricity consumers as part of the law on the initiation of the ecological tax reform. The tax was incorporated into the basis for calculating the feed-in price. The Commission (2001) held that the increase in feed-in price was incompatible with the rules for state aid, but because the German government repealed the Grid Feed-In Law in 2000, the Commission closed the investigation.

The Grid Feed-In Law encouraged small, decentralized energy generation (individuals and citizen initiatives) and contributed to creating jobs and tax income. Broad participation led to widespread acceptance among the public and politicians. In 1998, the Green Party went to the polls with the motto, 'we want 100,000 roof-top photovoltaics' (Interview 8). The campaign was inspired by the Social Democrat Hermann Scheer, who, together with the Green politician Hans-Josef Fell, initiated the German feed-in tariff system. The topic became part of the coalition negotiations between the SPD and the Green Party, resulting in the first red-green coalition government under the leadership of Chancellor Gerhard Schröder (SPD) (Interview 8). A Green politician held the post of Minister of Environment from 1998 to 2005. A Social Democrat with close ties to the coal industry and its trade associations served as Minister of Economy from 1998 to 2002. However, one of the fathers of the law, Scheer, managed to break the opposition from the

coal interests in his party and form a coalition in favour of renewables, by proposing to make mine gas eligible for feed-in (see Morris and Jungjohann 2016: 213). This led to the introduction of a more generous feed-in tariff, described in the next section.

In summary, a societal protest movement against nuclear power managed to stop nuclear projects in the 1970s and gave rise to the Green Party, with its visions of a transition towards renewable energy. However, the CDU, CSU and FDP saw climate change as an opportunity to continue supporting nuclear power. The SPD had been divided on the issue but took an anti-nuclear stance after the Chernobyl accident. Further, after Chernobyl, the government established the Federal Ministry for the Environment, which played a major role in promoting Germany as a leader in fighting climate change. At this point, two backbenchers took the opportunity to promote the Grid Feed-In Law, which was implemented in 1991 and led to the rapid diffusion of wind turbines. When it became apparent that this law had greater effects on deployment of renewables than expected, the large utilities together with the Federal Ministry for Economic Affairs tried to get the law rescinded. However, the wind coalition had already gained considerable public and political clout. Then the Commission questioned the law as being illegal state aid, and the CJEU started its investigation of the *PreussenElektra* case.

2000–2004: renewables gain ground despite the Big Four's opposition

In 2000, the government replaced the Grid Feed-In Law with the Renewables Energy Sources Act (EEG). In the following years, investments in renewables grew exponentially (Wassermann et al. 2015: 68). This growth in investments of renewables occurred despite opposition from the large utilities.

The EEG provided a feed-in tariff not only for renewables but also for mine gas from coal mines. In contrast to its predecessor, the EEG differentiated to a larger extent among various renewable energy sources. Whereas the initial feed-in remuneration had been uniform across technologies, the EEG tariffs differentiated between energy technologies, capacity and location of the plant. Location of the plant as a criterion was introduced to ensure a profitability of wind turbines also in less windy regions, aimed at achieving a more equitable distribution of windpower plants all over the country (Ohlhorst 2015). The remuneration of each technology was based on scientific estimates of the production costs of various renewable energy sources (Mendonca 2007). As the costs of installing solar were particularly high, photovoltaic operators received the highest reimbursement.

The EEG set a target of increasing the share of electricity generated from renewable sources from 5% to 10% by 2010. Grid operators were required to prioritize renewable electricity into the grid, and renewable electricity producers would get a fixed rate of return over 20 years, ensuring predictability for the power producers. The rate would decrease every year, so that each year the level for new plants was reduced by a certain percentage. This combination of a fixed rate and an annual decrease in support 'has been of global importance for the

introduction of renewables and the development of such technology' by bringing the price down (Interview 8; see also Zeit Online 2006).

In order to adhere to the Commission's guidelines on national regional aid,[2] the government incorporated into the EEG a set of provisions on making an annual progress report of the status of costs and deployment of renewable energies (Mendonca 2007: 32). Making location a criterion for remuneration was also a way of complying with the guidelines on over-compensation: the government would avoid having to pay too-high compensation rates for wind energy (Mendonca 2007).

However, pressure against renewables grew. The CDU/CSU and the FDP opposed the introduction of the EEG – with few exceptions – as they regarded 'renewables growth targets [as] utterly illusory' (Gründinger 2015: 238). Moreover, as the new act would drive up electricity prices, the Federation of German Industry was concerned about German competitiveness, arguing that the law would create excessive burdens for the industry (Jacobsson and Lauber 2006). Similarly, the German Utilities Association criticized the law for imposing higher costs on consumers. The Federal Ministry for Economic Affairs supported such concerns, but its role was weakened as the second red-green coalition (October 2002–October 2005) shifted responsibility for renewable energy to the Federal Ministry for the Environment. Support for the Greens had increased since the last election, in contrast to the SPD, bolstering the Greens' ability to strengthen the standing of the feed-in approach at the cabinet table. As a result, the energy sector was spread over two 'hands', one in favour of renewable energy and feed-in tariffs and the other promoting the interests of the utilities and market-oriented support schemes (Interview 6). The ministerial transfer of responsibility for renewable energy brought greater awareness of renewable energy in the German governmental administration and strengthened the support for the feed-in tariff system (Bruns et al. 2009: 15).

This took place despite the increasing power of the utilities. Several energy companies merged at the turn of the millennium, eventually leading to the 'Big Four': E.ON, RWE, EnBW and Vattenfall. This was a result of Germany's accommodating the EU's first Electricity Directive (Kungl 2015). Together with the Federal Ministry for Economic Affairs, the Big Four spoke in favour of developing an electricity certificate scheme, preferably at the EU level (Fouquet and Johansson 2008). While the feed-in tariffs made possible the emergence of new renewable-energy firms (Kungl 2015), the Big Four were hardly interested in investing in renewables: specializing in coal and nuclear, they regarded the renewables rates of return as too low (Interviews 5 and 8).

Nuclear energy remained disputed. All the political parties agreed on the need for international action to combat international climate change, and for more rapid growth in renewables, but disagreed about the role of nuclear (Hake et al. 2015). A major election promise of the Greens had been to phase out nuclear power plants. The SPD was not particularly fond of nuclear, either, but had inner-party conflicts on how to implement a phase-out (ibid.). In 2000, after difficult negotiations, the red-green coalition and the energy utilities reached a 'nuclear

consensus' (Bundesregierung 2000), transposed into law two years later. This nuclear consensus gave Germany's remaining 19 nuclear power plants a lifetime of 32 years. The phase-out was a major political accomplishment, even though Green supporters felt the pace was too slow (Morris and Jungjohann 2016: 200). The nuclear phase-out strengthened the case for renewables, which became the only climate-friendly energy source.

At the EU level, the Commission incorporated concerns about renewable energy in its state-aid guidelines in 2001 (Boasson 2021a, this book). The *PreussenElektra* verdict in 2001 settled the issue, when the Court of Justice of the EU decided that this feed-in tariff, under the given conditions, did not count as state aid, because there was no involvement of financial sources by the state. As a result, the Commission could not prevent other EU member states from copying the German feed-in tariff.

The EEG was never meant to be static; it was continuously evaluated and changed accordingly. The first reform was scheduled for 2004 'to adjust tariffs and other provisions to technological and market developments' (Gründinger 2015: 241). Some changes had also become necessary after the first EU Renewables Directive 2001 had entered into force; this directive set for Germany a non-binding target of a 13% renewables share in electricity production by 2010. The German government wanted to achieve this by introducing an even more differentiated tariff structure (Boasson 2021a, this book). The Federal Ministry for the Environment's first draft of the amendment led to a conflict between the Green Minister of Environment and the more coal-friendly Minister of Economics from the SPD (Mendonca 2007). Arguing that the rates were too high, the Minister of Economics proposed a tendering system instead.

In 2003 the Parliament, following a proposal from the Federal Ministry for Economic Affairs, decided to exempt energy-intensive industry from the EEG surcharge (Special Equalization Scheme Act 2003). Industrial interests and power suppliers wanted exemptions for industrial consumers to protect German firms so that they would continue to be able to compete internationally (Gründinger 2015). This surcharge exemption was important for maintaining consensus about the EEG (Interview 7).

In 2004 the red-green majority in Parliament decided to revise the government bill, largely against the proposal from the Minister of Economy (Mendonca 2007). In the *Bundesrat*, Länder, which had conservative governments, opposed the bill. While the course of the EEG was not fundamentally altered, the law became much more detailed – with adjustments made 'to account for increasing market complexity, minimize unjustified windfall profits and to strengthen incentives for innovation and cost reduction' (Gründinger 2015: 245). The revised act introduced clear regulations for grid costs: plant operators were responsible for paying for grid connection, whereas the grid operator would have to cover costs related to upgrading the grid (Mendonca 2007). The fee structure was differentiated further, and payment conditions for biomass, biogas, geothermal and PV energy improved. Increased tariffs made photovoltaic more attractive commercially, leading to a solar boom.

Larger corporations and utilities were made eligible for feed-in tariff support (EEG 2004 §2). However, large utilities, parts of the industry, the FDP and CDU politicians began questioning the necessity of a feed-in tariff with such high rates. They argued that the EEG was too expensive, contravened market rules and led to more regulation and a vast extension of the grid (Mendonca 2007). The industry and big energy corporations had the financial resources for lobbying against the EEG but also important ties to policy-makers. How to deal with the expansion of renewables was contested. The renewable industries began to join forces, establishing better-organized and more professional lobby structures (Gründinger 2015: 252). These circumstances played an important role in the 2005 national elections where energy issues became politicized, as shown in the next section.

In summary, German renewables support became more generous, encompassing and technology-specific – possible because the CJEU had ruled that the German scheme did not fall under the Treaty's definition of state aid. The issue was highly politicized. While all the parties agreed to speed up the growth of renewables, there was disagreement on how to support renewables and on the size of such support – also among the ministers in the red-green government. However, renewables gained clout at the cabinet table when the Federal Ministry for the Environment was given the responsibility for renewables in 2002.

2005–2009: increasing remuneration rates generates feed-in opposition

Renewables issues became increasingly politicized due to increasing expenses and the argument that the feed-in tariff distorted the electricity market. In the 2005 election campaign, all parties (CDU, SPD, the Greens, FDP, die Linke) addressed climate or energy concerns and called for renewable energies as part of the German energy mix, but they continued to disagree on nuclear phase-out and how to support renewable energy (Greenpeace 2005). The Green Party and the SPD expected the EEG to make Germany an industrial world leader in terms of PV and wind energy (SPD 2005; Bündnis 90/Grüne 2005). In contrast, the CDU/CSU and FDP wanted to change the scope of German renewable energy policy. The CDU programme called for reducing subsidies for renewables but aimed at keeping at least a 12.5% share of renewables in the overall electricity mix (CDU 2005: 19). The FDP wanted to abolish the EEG and replace it with a more market-friendly model and called for retaining nuclear power in the energy mix (FDP 2005: 18).

After the elections, the CDU/CSU and SPD created the 'Grand Coalition' with Angela Merkel as chancellor and Sigmar Gabriel (SPD) as Minister of the Environment. Although industrial interests called for Germany to drop its climate-leadership ambitions (Jänicke 2010), the coalition agreement between CDU/CSU and SPD continued along the same climate and energy policy path as the former red-green coalition (Bundesregierung 2005). In the coalition agreement, the government called for a reform of the EEG without any major changes. For Merkel, known as the 'Climate Chancellor' because of her efforts in getting climate action

on the agenda internationally, it was important to implement climate activities and to set ambitious national climate targets to gain international credibility.

According to the 2005 coalition agreement, the EEG should be retained in its basic structure, but some specific matters (like tariffs) should 'be adjusted to the economic efficiency of the different technologies' (Gründinger 2015: 258). In 2009 the government introduced amendments making the EEG 2009 far more detailed than the previous act. It increased the renewables target (to 30% by 2020), extended industry privileges, and introduced a growth corridor with flexible degression. In order to react flexibly to market growth, the degression rate for solar was made dependent on the size of installations (Hermanns 2008). This new method of calculating the renewable energy surcharge boosted windpower production, while contributing to making the spot-market electricity price negative at that time. In this situation, power generators preferred to pay buyers to take electricity rather than ramping down their plants (Agora 2014). The 2009 amendment made the EEG levy jump abruptly, without providing any compensation payment to those who had to cover the costs of the support scheme (Interview 10).

The inflated returns strengthened the opponents of the support instrument (Interview 10). Promoters of the feed-in tariff highlighted that the high rates of return contributed to greater investment and cheaper solar energy production worldwide (Interview 10), but renewables interest groups, like the German Solar Association, which benefitted from the high rates, lost credibility by continuing to promote conservative prognoses (Seibt 2014). The increased renewables shares threatened the dominance of the Big Four: in 2004 they had 90% of all electricity, but by 2010 this was reduced to 77% (Bundesnetzagentur 2011).

There was another important change in energy policy at this time. The EU's Third Energy Package brought new rules for unbundling (i.e. the obligation to separate energy supply and generation from the operation of transmission networks, to avoid unfair infrastructure access) (Commission 2017). This regulation resulted in 'engraving changes' (Interview 9), forcing the integrated power companies to sell their electricity transmission network operators (Hesse and Bauchmüller 2010; Kloc and Koska 2012). Required to sell off revenue-generating activities, the big utilities found themselves in a difficult situation (Interview 12).

In summary, in this period, German renewables policy followed the same path as under the previous government. The solar and wind industries grew rapidly. The introduction of a new way of calculating the renewable energy surcharge made the levy jump, fuelling opposition to the feed-in tariff.

2010–2016: introduction of auctioning after state-aid inquiry

In the ensuing period Germany gained worldwide fame for its *Energiewende*, while domestic opposition increased.

The conservative-liberal coalition (elected in 2009) initiated the *Energiekonzept* (an energy strategy adopted in September 2010), aimed at achieving national consensus on contentious energy issues, such as the development of renewable energies and the electricity grid and plans for dropping the nuclear phase-out

(Bundesregierung 2010). The concept – especially concerning the nuclear phase-out – was heavily criticized by the opposition as well as environmental NGOs. In March 2011, six months after the concept was adopted, the Fukushima disaster occurred. Four days later, Chancellor Merkel announced a temporary three-month halt of the plan to extend the life of nuclear power plants, a safety check of all nuclear power plants and permanent shutdown of the seven oldest ones (Schreurs 2012). Suddenly there was consensus among all the parties in Germany that nuclear power was no longer an option (Huenteler et al. 2012) – and this at a time when some 20% of electricity production was nuclear (Statistisches Bundesamt 2019). Fukushima had demonstrated that nuclear mishaps of major magnitude could also occur in technologically advanced countries. The accident 'tipped a precarious political balance . . . against nuclear power and towards renewable energy sources' (Schreurs 2012: 31). Supporting nuclear power was no longer politically feasible. In July 2011, the Parliament decided to reverse the 2010 decision to grant nuclear power plants a lifetime extension, voting overwhelmingly in favour of shutting down eight plants and phasing out the remaining nine by 2022 (Wassermann et al. 2015).

This development was accompanied by the rapid acceleration of electricity and heat generation from renewable sources. However, many were concerned by this rapid development. In addition to the increasing surcharge on power, there were technical challenges and high cable costs related to offshore wind parks and bringing the electricity onshore (Schreurs 2012). Resistance to onshore wind increased in areas with high windpower potential. Another issue was the lack of a high-voltage grid infrastructure that could transfer electricity from the northern states, which produce considerable amounts of wind electricity, to the southern states, where there is a demand for more electricity (Schreurs 2012). Pressure on the grid from the growing windpower capacity in northern Germany made it relevant to curb the feed-in tariff for renewables (Apunn 2015).

The organizational field had changed significantly. In 2012, renewables provided more than 20% of domestic electricity production, and almost half of the renewables capacity was owned by local actors, such as individual citizens or farmers, cooperatives or other citizen organizations (Statistisches Bundesamt 2019; Schmid et al. 2016: 265–266). The number of such cooperatives soared, from 35 in 2005 to 365 in 2013. In addition, a diverse group of new renewables investors entered the field: between 2010 and 2013, local governments created 70 new public utilities, but also actors from other societal sectors diversified the field, including energy intensive-industry, banks and insurance companies and project developers. These actors tended to be located near the generating facilities and favoured an EEG that promoted the construction of a wide range of small-scale renewables plants where the electricity was needed – not at sites that would entail the lowest production costs (Schmid et al. 2016: 272; Schmid et al. 2017).

Conflicts between renewables actors and the established utilities were less prevalent, with many actors seeking to find ways of ensuring that the increase in renewables created fewer market distortions, such as negative electricity prices (Schmid et al. 2017). Several renewables plant owners tested out new business

models, such as opting out of feed-in and getting consumers to pay a little extra for an electricity portfolio heavy in renewables (Wassermann et al. 2015). Such direct marketing of renewables became increasingly prevalent after 2010, although there was significant disagreement on how to regulate this.

The Big Four increased their renewables investments but were hesitant to embrace direct marketing (Wassermann et al. 2015: 70). They continued to lose market shares, with their total generated electricity decreasing by almost 16% from 2010 to 2013 (Bundesnetzagentur 2014: 30). They faced a dire economic situation created by the financial crisis, with the closure of many of their nuclear sites and increasing shares of intermittent renewable energy changing the price-setting mechanisms in the electricity market. E.ON was hardest hit: it recorded a profit fall of €1.9 billion in 2011 – the year in which the German nuclear phase-out was decided (bpb 2013). While the EEG surcharge soared between 2009 and 2013 (Wassermann et al. 2015), annual remuneration for renewable technology fell rapidly (Nestle 2016: 2) and the government struggled to adjust remuneration levels accordingly. Against this backdrop, the Big Four stepped up their calls for a less expensive, more cost-efficient EEG and for better plans on how to achieve a cost-effective system of climate-friendly energy supply (Kungl 2015). A representative from a business association argued that, since 2011, 'the system was running against the wall. No one can bear this, the costs' (Interview 4).

The political debate on whether to control the volume of renewable energy became very heated (Interview 9). The conservative-liberal government agreed that renewables needed to become more responsive to market signals and modified the EEG Act again in 2012. Inspired by the direct marketing business models that had emerged, they presented a market premium scheme as a voluntary alternative to feed-in tariffs (BEE 2013; Wassermann et al. 2015). When renewables (and mine gas) operators decided to sell their electricity directly, in line with the voluntary alternative, they could claim support in the form of market premiums paid on top of the market price for electricity, substantially covering the gap to the feed-in tariff amount. The plant operator, and not the transmission network operator, would be responsible for selling the electricity on the market. This was expected to increase flexibility of renewables plants, including voluntary curtailment at times of negative prices, thereby reducing system integration costs (Purkus et al. 2015). However, politicians from the Green Party and the left-oriented *die Linke*, environmental groups, several renewable-energy providers and many researchers criticized the introduction of direct marketing, arguing that it would reduce the diversity of renewable energy producers (Interview 14; Wassermann et al. 2015: 71).

Under such circumstances, the liberal FDP's Minister of Economy, Philipp Rösler, called for drastic cuts in funding and tariffs, and a photovoltaics cap at 9000 megawatts by 2020 (Enkhardt 2012). During the federal election campaign in September 2013, renewables support and the related costs were a key issue. The Environment Minister, Peter Altmaier (CDU), indicated that the *Energiewende* would cost about €1000 billion until 2030 (*Frankfurter Allgemeine* 2013).

Together with Rösler, he proposed reducing the feed-in tariffs for new plants by €1 billion annually.

The pressure was great. The neoliberal German think-tank and advocacy organization New Social Free Market Initiative conducted a massive campaign to 'stop the EEG and save billions'. Low-income earners were addressed as part of this campaign (Interview 6), but energy poverty has otherwise generally attracted scant attention (Interview 5; see also Morris and Jungjohann 2016). Referring to rising costs, Altmaier increased the pressure on the opposition, the Green Party in particular (Der Spiegel 2013). Sigmar Gabriel (SPD) followed suit, arguing that it was necessary to stabilize costs and protect German industry (Sturm 2014). Industrial competitiveness was a key topic (Interview 5):

> The energy transition will become a model of success only if it is economically feasible. Germany has a very privileged position and can afford a lot of investments, but only if, in the end, German industry becomes substantially able to compete through the energy transition, otherwise it will fail.
>
> (Interview 7)

CDU/CSU won the 2013 elections and created another Grand Coalition with SPD. The new government transferred responsibility for renewable energy from the Federal Ministry for the Environment to the Federal Ministry for Economic Affairs (Interview 15). The aim was to concentrate energy responsibilities in one ministry, under Vice-Chancellor Gabriel as minister (Interviews 7 and 15). The entire department working on the energy transition in the Federal Ministry for the Environment, about 80 civil servants, was moved to the Federal Ministry for Economic Affairs (Interview 7).

Interviewees argue that the shift of responsibility weakened the Federal Ministry for the Environment and increased the weight accorded to large industrial interests represented by the Federal Ministry for Economic Affairs (Interviews 4 and 8). Others indicate that the emphasis on costs increased after the shift, but primarily because 'He [the minister] took office to reduce the costs' (Interviews 6 and 7).

Three alternative ways of controlling deployment, thereby cutting costs, were discussed, based on scientific and economic consultations: cap (a limit to how much renewables could be installed), electricity certificates (where the government sets the quota and the remuneration level is set by the market) and auctions. 'My impression was that many were fundamentally opposed to deployment control [e.g. Friends of the Earth, Greenpeace, German Trade Union Federation, the Greens]; however, if volume control were to be conducted, then procurement by tender would be the best alternative' (Interview 9). Since the early 2000s, the utilities and FDP had supported a certificate system, but they turned to support a bidding system prior to EEG 2014 (Lauber and Jacobsson 2015). The CDU favoured market premiums until about the same time, with some members in the business wing promoting a bidding scheme. Shifting to a certificate scheme would entail less technology-specificity, thereby favouring the least costly technologies

and projects (Ecofys 2014: 74). This debate showed how political and economic actors discussed the fundamental principles of the EEG, a price-oriented support scheme with technology-specificity.

The utilities, fearing bankruptcy, favoured auctions and put the Federal Ministry for Economic Affairs under strong pressure (Interviews 3 and 8). They considered auctions advantageous for large companies, as such companies have more large-scale projects, making it easier for them to develop competitive offers (Interview 5). Environmentalists argued that the utilities had only themselves to blame for not having invested in renewables; however, there was some understanding in the green camp about bankruptcy concerns. One interviewee (3) stated, 'Mr Gabriel made an argument, which I can personally understand. He says that if one of the Big Ones goes insolvent, then the *Energiewende* will no longer be a good role model for the outside world'. Germany may be able to pay the remuneration rates, but they are too expensive for other countries to follow suit (Interview 5).

Smaller renewables actors feared the introduction of more market exposure and competitive bidding, and a citizen energy alliance was created in 2014 (Schmid et al. 2016: 266). The CDU/CSU and SPD coalition agreement gave priority to cutting costs related to the renewable energy support scheme, introduced growth corridors with annual technology-specific targets and mentioned procurements by tender as one such support-scheme design (Bundesregierung 2013). One civil servant argues: 'At that point it was relatively clear that we would get procurements by tender and goals [volume] that would be controlled' (Interview 9). One opposition politician agreed: 'We realized early what the deal [auctions] was, and couldn't change much' (Interview 8). He was referring to how the influence of the opposition is limited under the conditions of a Grand Coalition (Interview 6).

The Grand Coalition government stated that it would start dialogue with the Commission and other member states as soon as possible about how to develop the support scheme for renewables in accordance with EU law (Bundesregierung 2013). In December 2013, the Commission opened a formal investigation into whether the EEG was compatible with EU state-aid rules (Commission 2013). The Commission argued that Germany had substantially amended its EEG Act since the *PreussenElektra* judgement, and that the EEG was now considerably different. Since 2008 the new CJEU rulings had also broadened the application of the EU state-aid rules concerning support for renewables (Boasson 2021a, this book).

Among the issues that the Commission addressed was the 'green power privilege', which provides a reduced surcharge for suppliers if 50% of the electricity portfolio is based on domestic renewables (Gawel and Strunz 2014). This may discriminate between domestic and imported electricity – in contravention of state-aid rules. The Commission also criticized the levy reduction for energy-intensive industries. This exemption is aimed at preventing relocation of such industries to countries with lower electricity costs (Gawel and Strunz 2014).

The Commission's focus on the exceptions from the EEG levy for energy-intensive industries was particularly difficult for the German government, as 'the industrial exceptions from the EEG levy are essential for creating political

consensus on the *Energiewende*' (Interview 7). Some companies needed this exemption in order to be able to compete internationally (see n-tv 2014). As one interviewee (7) argued, 'Without the exceptions for industry, the EEG system and the whole *Energiewende* can't achieve consensus in Germany. I have to say, their [the Commission's] focus was cruel, building up maximum pressure'.

The Commission's initiation of a formal investigation into the EEG created uncertainty. If the Commission should conclude that the recipients had been granted unlawful aid, they would have to repay (Boasson 2021a, this book). One interviewee (7) pointed out that company repayment obligations could run to billions of Euros. Hence, the government negotiated with the Commission, trying to reform the EEG while ensuring that it was in line with the state-aid rules. That the EU itself was in the midst of revising its state-aid guidelines made the process even more challenging. One MP found the process opaque, as the Parliament did not receive continuous information; he saw the EU as a 'shadow negotiator' during domestic German EEG discussions (Interview 15). When the Minister of Economics presented the draft to the Parliament in early June 2014, he argued that it could no longer be changed because it had already been negotiated with the Commission (Fischer 2017). Commission representatives have confirmed that the revision of the EU state-aid guidelines and the Commission's negotiations with Germany were closely intertwined (see Boasson 2021a, this book).

In July 2014, three months after the EU had adopted new state-aid guidelines, the German government substantially amended the EEG. First, EEG 2014 applied growth corridors to all technologies and provided detailed figures about the planned increase in installed power for the various energy sources, outlining global targets: at least 35% of gross electricity consumption from renewables by 2020, 50% by 2030, 65% by 2040 and 80% by 2050.

Second, the government introduced 'breathing caps' for onshore wind and biomass. This left the market premium as the only way of direct marketing for new installations – however, depending on the extent to which newly installed capacity is in line with the corridors. Thus, financial support for onshore wind and biomass under the new law is reduced quarterly (not annually) as of 2016 and may be increased or decreased if growth exceeds or falls below the corridor targets.

Third, the revised act made direct marketing (introduced in 2012 as a voluntary option) obligatory, but not for small renewables plants. The market premium became the primary support instrument (Purkus et al. 2015). However, the traditional feed-in continued for small-scale projects. This was important because it is individuals, farmers, small companies and communities who have installed solar panels on their roofs and invested in windmills who have driven the *Energiewende* forward. This actor diversity has created widespread acceptance for the *Energiewende*, exceptional in terms of strengthening public participation as part of the technological energy transition (Morris and Jungjohann 2016).

Further, the EEG 2014 introduced pilot tendering for freestanding PV installations. The first auctions were held in 2015, which was very controversial politically (Interview 9). Bidding procedures were already a discussion topic in Germany, but interviewees (7, 9, 15) indicated that the state-aid inquiry speeded up the shift

towards a tendering system. One policy advisor argued that this 'would certainly not have been so fast . . . if the Commission had not said, "no matter what you do, we need the tender as default" ' (Interview 7). For example, while the Commission questioned the exemptions from the EEG levy for energy-intensive industries in the opening letter (Commission 2013), the final letter accepted such exceptions on condition that Germany introduces procurements by tender (Commission 2016). However, two interviewees (7, 9) held that auctions would eventually have been introduced even without EU pressure.

Although Germany changed its law in line with the EU 2014 state-aid guidelines, tensions remained between the Commission and Germany.[3] One interviewee (9) explained that it was generally unpopular among German politicians across all factions for the Commission to encroach on national responsibilities in the nationally sovereign energy-policy area, as this limits the alternative policies options for national legislators (see also EurActiv 2014).

The EEG 2014 continued to be debated after its entry into force, especially due to concerns about actor diversity and the effects on cooperatives, 'seen as the most important institutional innovation coming out of the energy transition' (Szulecki 2018: 33). The German government confirmed that it wanted actor diversity to continue (see § 2, para. 5, sentence 3, EEG 2014), but it remained disputed whether this was possible (Ohlhorst 2018). As part of the pilot for PV, the Federal Network Agency conducted six competitive tenders, with the first round in 2015 (Ministry for Economic Affairs, n.d.). Competition increased with each round, contributing to steadily falling price levels. Based on this experience, the government concluded that competitive tendering as an instrument was successful. Also, relatively small bidders and projects were awarded contracts.

As shown, the German support scheme changed significantly in this period. While there was agreement that the support instrument should differ among technologies, there was much controversy about the shift to greater competition. This happened in a situation where the big utilities promoted auctions, the feed-in promoters were politically no longer a majority and the EU was adopting a new approach to state aid.

Discussions and conclusions

The German renewable support scheme has undergone several incremental changes. While, at the turn of 2016–2017, the feed-in support remained for small-scale renewables plants, the change towards more competition for large-scale producers marked a radical change in approach, albeit following a long German tradition of technology steering. Also in the auctions, various technologies are granted different levels of support – but the level of support is based on actors' bids in the competitive tenders and is not administered by the state. What explains this development towards a combination of technology steering and competition of renewable electricity support in Germany? Have these changes to the EEG occurred primarily due to pressures in the European environment or conditions in the political or organizational field, or the relationship between them?

While Germany has played a relatively independent role in developing its support scheme for renewable electricity, the evidence still provides support for the expectation that the effect of the *European environment* on national renewables support is stronger in periods when the Commission exerts coercive pressure. However, the effect of member-state peer pressure on policy development is less clear in the German case. In the 1990s, when the original German technology-specific feed-in support scheme emerged, the EU had scant authority over renewable electricity policies and there were no clear European support-scheme trends (Jacobs 2012). As expected, in this period the EU hardly influenced the development of the German feed-in support scheme. Although there was no peer pressure among member states in this period, Germany was inspired by the Danish feed-in, which existed prior to the German scheme.

In later periods, the German scheme has developed in parallel with changes in EU-level renewables policy and state-aid practices, but not without German resistance. In particular, there has been considerable controversy related to the Commission's attempts to use the state-aid rules to force Germany to abandon its feed-in tariffs, and Germany's defiance. Importantly, the 2001 *PreussenElektra* judgement, where the Court decided that the German feed-in instrument did *not* constitute state aid, weakened the Commission's ability to influence the German renewables support scheme and left Germany at peace to determine its own support scheme for more than a decade.

However, Germany had regularly adjusted its support scheme. This gave the Commission a renewed opportunity to instigate an inquiry into state aid and the EEG, putting considerable pressure on the German government to change its support scheme. By this time, new CJEU rulings and new state-aid guidelines had increased the clout of the Commission (Boasson 2021a, this book).

We find that the EU created a political context that strengthened domestic actors who wanted to change the EEG, but that the key explanation for changes in the German renewables support scheme in 2014 lies in the political and organizational fields. Given the entrenched debates on controlling deployment and costs, the data suggests that the German government would have introduced a tendering system even without pressure from the Commission. However, such pressure helped promoters of auctions to speed up the process (Fischer 2017: 336), as the possibility of blaming Brussels enabled the government to overcome the decision-making trap much sooner.

Many countries have been inspired by Germany and copied its technology-specific feed-in scheme. From 1990 to 2010 Germany influenced EU renewables support steering and support-scheme trends in Europe more than the European environment influenced Germany (Jacobs 2012; Vogelpohl et al. 2017). In line with Vogelpohl et al.'s (2017) characterization of Germany as a 'foot-dragger' in connection with its role as a veto player at the supranational level, we find that the European environment has had a greater effect on German policy change when domestic conditions have been open to such influence.

How has the *domestic organizational field* affected policy change in Germany? Given Germany's corporatist and coordinated market economy tradition (Hall and

Soskice 2001), we expected to find particularly favoured interest groups in the organizational field who would be able to bypass political forums and be particularly influential for the development of the support scheme. However, as Hager (2015) notes, the development of the German feed-in tariff grew 'outside the prevailing channels of institutional power'. Hence, the influence of the organizational field has played out differently from what comparative capitalist literature suggests, partly because the organizational field in the renewable energy sector has not been particularly segmented in this case.

There were two institutional logics. The Federal Ministry for Economic Affairs, with close ties to the big utilities, has favoured cost-efficient, large-scale developments; the Federal Ministry of the Environment and green NGOs have favoured the feed-in tariff, which was informed by the ordo-liberal German tradition of the government taking sizeable responsibility for new industry development. The multi-field approach assumes that such divisions in terms of logics will weaken the influence of the organizational field on policy change. In the German case, the feed-in scheme (once enforced) resulted in structural fragmentation within the organizational field, and the technology-specific logic of the *Energiewende* was strengthened among renewables actors, while the utilities became increasingly embedded in a market logic.

In the first period, multiple change processes were underway in the 1990s, including the unification of West and East German energy systems, and a growing focus on nuclear power. These attracted more attention among the dominant organizational field actors (like the utilities) than did the renewable energy support scheme, which was not expected to contribute to major growth in renewable energy. In this period, the large utilities (before the merger that created the Big Four) had certain privileges in the regions.

After the turn of the millennium, conflicts between the two logics grew more intense, and repeated turf battles played out. On the one hand, the energy liberalization reforms initiated by the EU strengthened the market logic and resulted in the merger of energy companies, leading to the 'Big Four'. On the other hand, renewables actors became more professional and better coordinated, gaining influence when the Federal Ministry for the Environment was given responsibility for renewables. There were enduring tensions between these two turfs in the organizational field. Under such conditions, political engagement increased. In the multi-field approach, this means that the organizational field has been less important in explaining policy change than the political field.

This is also evident later on. In the period 2005–2009, the organizational field remained rife with conflict, with the increased renewables share creating new and unforeseen technical and economic challenges. Conflicts over the renewables support scheme continued in the 2010–2016 period; but the split between utilities and supporters of a competitive approach, on the one hand, and renewables actors and environmentalists, on the other, lessened somewhat as new business models were tested out, helping to making the increased renewables share less disruptive to the German energy system. Key actors now started to combine the two institutional logics that had represented opposites (for a similar change in preferences

among energy industrial actors in Europe, see Lindberg 2019). The possibility that the Big Four might face severe economic challenges was of great concern to the Federal Ministry for Economic Affairs, which took over responsibility for renewables from the Federal Ministry for the Environment. Hence, in this period, the field became more segmented, with more agreement between the actors. These developments underpinned the 2014 decision to change the support scheme. This in turn supports the expectation that the influence of the organizational field on policy change will be greater when the organizational field is segmented than when it is not.

We have already indicated that the *political field* can explain the change in policy better than the organizational field. Has there been intense political salience, and has the German Parliament been powerful over time? The German political system is known for the importance of its legislative assembly, with its many veto powers and distinct bargaining style. Bargaining between the coalition parties in government at the federal level, and between the federal level and the states, is necessary in order to disarm veto players and to enable agreement on policies. The renewable energy support scheme has almost constantly been high on the agenda in parliamentary negotiations. The feed-in tariff policy, originally expected to have only minor effects, proved remarkably successful regarding deployment. This success made it both more popular and increasingly contested in terms of how to control deployment of renewables, and thereby how much funding should be channelled to renewables, and how. Prior to 2000, nuclear was subject to more political competition than renewables, but individual politicians managed to create alliances in the shadow of the more salient energy-policy issue. Two backbenchers were able to mobilize in favour of the first feed-in law.

Already in 2000, opposition to the feed-in tariff became evident, as both the CDU/CSU and the FDP were against adoption of the EEG. However, increasing electoral support strengthened the standing of the Green Party and its Environment Minster, and thereby the feed-in approach, at the cabinet table, where there was also a more coal-friendly Minister for Economic Affairs from the SPD. One important condition for continued support for the feed-in tariff in the second period concerned the exemptions for energy-intensive industry from the EEG surcharge.

Despite consensus about the *Energiewende*, renewables policy remained politicized in the period 2005–2009. The government coalition between CSU/CDU and SPD followed the path of its predecessor, increasing the EEG levy so much that some beneficiaries of the generous feed-in tariff lost political credibility. By the end of the period it had become clear that renewables support design was more complicated than political discussions had indicated: the largely unexpected challenges related to higher renewables shares required the politicians to pay greater attention to the many technical details of the support scheme.

Then, after the 2011 Fukushima disaster, when Germany's political parties had agreed on nuclear phase-out, thereby increasing the importance of renewables, the issue of approaches to renewables support became more politicized. It became crucial to have a smoothly functioning support scheme for renewables, also in view of the political disputes about controlling the deployment of renewables,

and hence costs. This continuing controversy about whether and how to control deployment highlights how the political field has been particularly important to the development of renewables electricity policy in Germany.

Our findings indicate that the influence of the political field on policy development has been strong throughout the history of renewables policy in Germany. Even in the first period when the feed-in support scheme was adopted, at a time when renewables were not a salient issue, the political field was important: German politicians played a key role in initiating this scheme, when two backbenchers were able to get considerable support. This shows how it may be easier to introduce a policy at a time when it is not considered crucial. This period in itself does not give support to the multi-field assumption that the issue must be salient for the political field to be influential; rather, it suggests that when formal authority rests with the Parliament, the issue need not be politically contested for the political field to be influential. In later periods, the influence of the opposition was limited when the government consisted of the Grand Coalition (the two largest political parties in Germany). However, policy development in these periods shows that the political salience of renewables policy has been more important in explaining why the influence of the political field has been greater than that of the organizational field. In light of the multiple streams approach in the public policy literature (e.g. Kingdon 1984), which tends to assume that politicians pay attention to an issue only at brief moments (e.g. in open policy windows, in response to external shocks), the story of the German renewables electricity support is noteworthy: this policy has remained politically salient for more than 15 years.

To conclude, the changes in the German renewable electricity support policy have occurred as a result of an interplay between conditions in the domestic organizational and political fields and pressures in the European environment, which are also intertwined. However, the factors in the political field have been the most decisive. The political field proved unexpectedly important for the introduction of the feed-in tariff in the 1990s. Backbenchers were able to attract support from a majority of MPs at a time when renewables policy was not high on the agenda, and this support instrument was seen as a minor issue. However, once introduced, the feed-in tariff scheme broke up the largely non-competitive electricity generation structure by creating new renewable-electricity generators, with two turfs in the organizational field, each following its own institutional logic. These turfs contributed to exacerbating the political conflict between those favouring the feed-in instrument and those that were opposed.

The support instrument for renewable electricity has remained a highly salient political issue for almost two decades. This highlights the role of the political field in explaining policy change in Germany. In this situation, the European environment has played an important role. By pressuring the German government to change its support scheme, the Commission strengthened the role of change agents (here, opponents of the feed-in tariff instrument) in the domestic organizational and political fields. While the feed-in tariff enjoyed general popularity, there were costs and economic consequences for the utilities. Starting with pilots in 2014, the German government made competitive tenders compulsory for large energy

producers from 2017. This new competitive approach marks a radical break with the feed-in tradition, as those interests (the electricity utilities) that had fought against the support scheme could claim a victory. However, the policy change is still the result of a path-dependent process of incremental changes towards greater market-orientation. The competitive approach may be new in the German renewable electricity sector, but the element of technology steering clearly builds on long traditions in the sector.

Interviewees

1 Representative of civil society interest group Bürgerenergie Berlin, 28 November 2016, Berlin
2 Renewable industry lobbyist, Bundesverband Erneuerbare Energien, 28 November 2016, Berlin
3 Environmental organization representative, Greenpeace, 28 November 2016, Berlin
4 Energy industry representative, Energieeffizienz Unternehmen, 29 November 2016, Berlin
5 Large energy utility representative, E.ON, 29 November 2016, Berlin
6 Political advisor, Green Party, 30 November 2016, Berlin
7 Policy advisor, Agora Energiwende, 29 November 2016, Berlin
8 Former minister and Green Party MP, 30 November 2016, Berlin
9 Civil servant, Ministry for Economic Affairs, 30 November 2016, Berlin
10 Former politician, Green Party, 30 November 2016, Berlin
11 Renewable energy industry representative, German Wind Energy Association (BWE), 1 December 2016, Berlin
12 Consultant at a group of companies providing services for customers in energy and finance industries, 21 February 2017, telephone interview
13 Renewable energy lobbyist, European Renewable Energies Federation (EREF), 16 February 2017, Oslo
14 Environmentalist, Nature and Biodiversity Conservation Union (NABU), 2 December 2016, Berlin
15 Political advisor to CDU energy representative, 2 December 2016, Berlin
16 Freelance renewable energy policy expert, 23 February 2017, telephone interview

Notes

1 The feed-in premium is equal to the difference between the technology-specific reference values and the average monthly reference market value of electricity for the respective renewable technology. The market value of dispatchable renewables is equal to the monthly average of hourly contract values on EPEX (i.e. the electricity spot market) (Energypedia n.d.).
2 This was prior to the Energy and Environmental State Aid Guidelines (EEAG) which the Commission adopted in 2001.

3 This is highlighted by the fact that Germany took to court the Commission's 2014 decision that the EEG 2012 constituted state aid. In 2014 the Commission argued that the EEG 2012 fell under state aid but largely accepted the aid, while ordering partial recovery (Commission 2014). The CJEU supported this decision, ruling that the EEG 2012 involved state aid (CJEU 2016). However, in 2019, the CJEU annulled this decision, ruling that it does not constitute state aid (CJEU 2019).

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6 The United Kingdom

From market-led policy towards technology steering

Tim Rayner, Merethe Dotterud Leiren and Tor Håkon Jackson Inderberg

Introduction

The policy instrument mix by which the UK government has sought to promote renewable electricity has undergone a remarkable journey of twist and turns. This chapter aims to makes sense of 30 years of ongoing change and revision. The energy sector has featured prominently in the UK's quest for market liberalization since the 1980s. Moreover, as a 'first-mover' in liberalizing energy markets, the UK has helped to shape EU energy policy (Padgett 2003). The European Commission (the Commission) endorsed the UK's promotion of market-oriented instruments such as tradeable green certificates, at a time when EU-level policymakers were seeking to harmonize support schemes in the process leading to the 2001 Renewable Energy Directive (Rowlands 2005; Solorio and Fairbrass 2017). In 2002, the government implemented a system of the green certificate type, the Renewables Obligation (RO). However, a decade later the UK moved to replace this with a 'Contracts for Difference' system. Moreover, it introduced a feed-in tariff to support small-scale renewable electricity generation.

These shifts have been regarded as significant turns away from the hitherto preferred market-led approach (Kern et al. 2014; Stagnaro 2015), in favour of more technology-specific, centralized planning of the electricity sector (Keay 2011). In this chapter we ask: why did the apparent taboo on detailed state steering lift, to the extent that the UK developed a technology-specific support mix featuring 'Contracts for Difference' for large-scale, and a feed-in tariff for small-scale, renewable electricity?

Given that the feed-in tariff has been the most popular support scheme among EU member states, while the Commission (in its 2014 state-aid guidelines) promotes feed-in premium auctions, the question of whether and how the 'European environment' has influenced national policy decisions is a complex one. With few exceptions (e.g. Stagnaro 2015), the literature on UK renewables support has paid little attention to the EU (e.g. Connor 2003; Mitchell and Connor 2004; Toke 2011; Kitzing et al. 2012; Kern et al. 2014). In this chapter, we attempt to do more justice to the European dimension of UK policy. According to the multifield framework, the European environment can be expected to influence national renewables support most when the EU has significant authority over the issue and

there is strong peer pressure to adopt a given scheme. As EU steering has become more coercive, and many countries have turned towards feed-in premiums combined with auctioning after 2014, we would expect stronger European influence on UK renewables policy over time – but is this what we find?

We also identify how the domestic organizational field plays into policy developments. The multi-field framework assumes that the organizational field will be particularly important under periods of strong segmentation (where one dominant institutional logic and concentration of authority and information prevails). However, the UK is generally considered to be a relatively pluralist system (Leach et al. 2011: 152), with numerous and varied pressure groups that may influence decision-making. As the UK was early in liberalizing its electricity system, we might expect rather loose ties between governmental regulators and industry actors, and a great variety of actors, giving an organizational field characterized by low segmentation and thus rather low policy impact. But perhaps the instability in the British organizational field can help explain the repeated shifts in the UK renewables support policy mix?

Furthermore, the effect of the domestic political field can be expected to be stronger when renewables policy has become politically salient and when formal decision-making power rests with the legislative assembly (Boasson 2021b, this book). As the UK often experiences strong majority governments, we will expect that these conditions are seldom met – but perhaps renewables policy has become sufficiently politicized at key moments to make political steering important nevertheless?

Technology-specific renewables support mix

As of this writing, large-scale renewables projects are offered feed-in premiums, awarded through competitive tenders (Contracts for Difference) whereas small-scale generators receive feed-in tariffs (RES Legal 2019). Contracts for Difference are long-term contracts between government (in the form of the Low Carbon Contracts Company) and large renewable (or nuclear) electricity generators, which provide a top-up payment between the market price and a pre-defined 'strike price', over a defined period.

Generators compete for long-term contracts for provision of capacity through auctions (CEER 2018). In these, technologies have been divided into established ('Pot 1', including onshore wind and solar) and less established types ('Pot 2', including offshore wind, geothermal and tidal), with each pot assigned its own budget. 'Allocation rounds' have been held through auctions in 2014 and 2017. In the former, both established and less established technologies were included, but only less established technologies were included in 2017. A third allocation round opened in May 2019 to eligible Pot 2 technologies. Although multiple types may be included in one auction, prices received per MWh and contract lengths vary by technology. Different 'strike prices' are determined through the auctioning process but must not exceed an 'administrative' strike price. When a strike price is higher than the market price, the Contract for Difference 'Counterparty' must pay

the generator the difference between the two. Funding for these contracts is generated from levies on consumers' bills.

From 2010, the small-scale *Feed-in Tariff* required participating licensed suppliers to pay fixed tariffs to small-scale generators for renewable electricity generated and transmitted to the national grid. The scheme has been available to anyone who has installed, or is looking to install, solar, wind, combined heat and power (CHP) below 50 kW, or hydro or anaerobic digestion (biogas production) up to a capacity of 5 MW (or 2 kW for CHP) (RES Legal 2019). However, in 2015 subsidies for household-scale solar were cut by 64%, and support for community-scale projects was removed (ENDS Report 2015). Bandings for size of installation were changed, and the pace of the decrease of support over time was accelerated. As a result, installation rates have fallen significantly across all technologies in this size category.[1]

UK renewables support is highly technology-specific for large as well as small-scale projects. To a certain extent, large-scale projects are exposed to fluctuating electricity wholesale prices, but the strike-price feature reduces uncertainties more than in other feed-in premium systems. Whereas small-scale renewables are entitled to feed-in support, only large-scale projects can take advantage of auction allocation rounds for Contracts for Difference. Since 2015, no auction has included the most established renewables technology: onshore wind.

The UK has operated several renewables support schemes over time; we now move on to describe and explain the key developments.

Historical phases: 30 years of testing and revising

Prior to 1999: launch of a tendering system

Historically, British electricity production has benefitted from plentiful domestic coal resources. From the 1950s, nuclear capacity was developed, and gas-fired power stations proliferated in the 1990s. The 1970s saw the status of energy policy elevated, particularly because of the 1973 oil crisis (Pearson and Watson 2012). After a series of industrial disputes that affected energy supplies, in 1979 the Thatcher-led Conservative government was elected. Citing energy security concerns, it planned an expansion of nuclear power. Although an anti-nuclear movement was active in the UK from the 1950s, the issue never reached a high level of political saliency (Cox et al. 2016; Thomas 2016: 426). While many in the anti-nuclear movement were Labour supporters, the party's trade union base has meant that in government, Labour has tended to look favourably on the nuclear sector. Due to a range of technical and economic challenges, it took several decades until the nuclear share peaked at 25% of electricity production, in the early 1990s (Cox et al. 2016: 7, 25; Pearson and Watson 2012).

Informed by free-market principles – government intervention in the economy should be avoided, while privatization and competition would serve the public good – the Thatcher government aimed to transform public sector monopolies into more efficient private enterprises. After a bitter strike, from the mid-1980s

the government prevailed in its goal of closing uneconomic coal mines. The 1989 Electricity Act privatized electricity generation and deregulated the energy sector; the Department for Energy was abolished and its responsibilities transferred to the Department of Trade and Industry (DTI). An independent governmental agency, the Office of the Gas and Electricity Markets (Ofgem), was given responsibility for ensuring fair competition. The formal mandates of the DTI and Ofgem were centred on consumers and competitive markets (Kern et al. 2014).

Until privatization, the electricity industry in England and Wales comprised a vertically integrated generation and transmission business: 12 regional boards responsible for local distribution, and the Central Electricity Generating Board (CEGB). With privatization, the CEGB was divided into four (Newbery 1997): two conventional non-nuclear generating companies, PowerGen and National Power, privatized in 1990; one nuclear generating company, Nuclear Electric, which remained in public hands owing to the continuing need for subsidies; and one transmission company and Transmission System Operator, the National Grid Company. The restructuring led to efficiency gains (which translated mostly into greater profits, not lower prices), and increased the market power of fossil generators (Newbery 1997). It also led to a spate of (unforeseen) foreign take-overs, for example by the French EDF (Meek 2012).

The 1989 Electricity Act heralded the UK's first low-carbon generation support instrument: the Non-Fossil Fuel Obligation. Funded by a fossil-fuel levy, this instrument was originally intended to provide subsidies to the UK's nuclear generators (Kettle 1999). When the government applied for EU state-aid clearance one year later, the instrument was described as a 'non-fossil fuel obligation'. This wording, the precise source and motivations of which have remained 'never clarified or widely agreed', allowed renewable energy an unexpected 'foot in the door' (Mitchell 2008: 124).

The Non-Fossil Fuel Obligation introduced a centralized bidding system for generation contracts, which required suppliers to order a certain level of electricity from non-fossil fuel sources. The process involved the government announcing the intention to set an obligation and specifying the technologies, triggering the non-fossil purchasing agency to launch a competition. The electricity suppliers contracted with the cheapest bidders to fulfil their license condition (Kettle 1999). Environmental and climate considerations were at best co-benefits from the energy-sector reforms of the 1980s, although the salience of these issues was growing (Rawcliffe 1998; Rayner and Jordan 2017).

The 'New Labour' government elected in 1997 was committed to more ambitious climate-mitigation targets, and growth in renewable energy as one component. Its manifesto committed to 10% of electricity supplies from renewables by 2010: ambitious compared to levels at the time – less than 3% of total electricity supplies (de Lovinfosse 2008). At the same time, the new government accepted the liberalization agenda, believing that competitive markets would promote efficiency. But it also stressed social objectives like affordability as well as energy security, highlighting worries about supply and diversity of sources of electricity generation and the increasing reliance on imported gas (Pearson and Watson

2012). By the late 1990s, environmental NGOs were questioning the market-based approach and demanding more government action on climate-change mitigation (Kern et al. 2014).

EU influence in this period was only weak; national targets for the share of energy for renewables and instruments for their delivery were essentially the product of domestic politics and administration (de Lovinfosse 2008). The UK was the first country to notify its renewables support scheme, and the Commission swiftly granted approval (Rusche 2015: 82).

Already by the end of the 1990s, the market logic had become the dominant institutional logic in the British organizational field, epitomized by the relegation of energy policy to a subdivision of the Department of Trade and Industry (DTI). Policy in effect became de-politicized: while the DTI maintained the regulatory framework, responsibility for implementation rested with a new, independent regulator. This development enjoyed wide political support. The UK's first renewables support scheme was nicely in line with the emerging market logic.

2000–2004: emergence of the electricity certificate scheme

After a period of inaction in energy policy (Edge 2006) following its election in 1997, the New Labour government launched a major legislative initiative: the Utilities Act 2000, which included a provision to replace the Non-Fossil Fuel Obligation with a new instrument, the Renewables Obligation. This Act, in conjunction with the government's formal adoption of the manifesto commitment to a 10% renewables share by 2010 (as part of its climate policy programme), marked a significant turning point (de Lovinfosse 2008). A lengthy consultation period produced an impressive level of consensus among key industry actors, regulators and NGOs on both the need to replace the Non-Fossil Fuel Obligation and the form of the new instrument. The Non-Fossil Fuel Obligation was widely seen as having failed to deliver sufficient renewables growth – true to its original purpose, it supported the nuclear industry far more handsomely. Moreover, it no longer fit with the New Electricity Trading Arrangements ushered in by the 2000 Act.

With some exceptions (including the Major Electricity Users Group and local environmental groups) most stakeholders, also the large environmental groups, approved of the new instrument (de Lovinfosse 2008: 254). More detailed design issues featured in two additional rounds of consultations in 2000 and 2001. The Association of Electricity Producers (after 2012, Energy UK), individual energy companies and the British Wind Energy Association (later RenewableUK) were the most prominent participants in the process (ibid.: 254). Neither the RO nor the 10% target it was intended to deliver provoked any significant party-political controversy.

As well as increasing the contribution of renewable electricity to meeting GHG emissions reduction targets, the new instrument was aimed at creating a more competitive industry sector (DTI 2000). The Obligation was a tradable electricity certificate system, requiring suppliers to source an increasing proportion of supplied electricity from renewable sources. The responsible government department

(DTI) set the obligation level each year, leaving detailed management to Ofgem (Truman 2016). Suppliers met their obligations by presenting Renewable Obligation Certificates to the regulator (Mitchell 2008). Those without sufficient certificates to cover their obligation were obliged to pay into a 'buy-out' fund. Despite this apparent market-orientation, Conservatives were initially cool in their response (Toke and Nielsen 2015), although this was not a matter for party-political controversy of any note.

The market-led approach continued to dominate UK climate policy (Kern et al. 2014). At the EU level, from 1998 onwards electricity certificate schemes were hailed as superior by the Commission – making state-aid approval of the new instrument unproblematic (C(2001)3267fin) – but were strongly opposed by many EU member states that preferred to adopt feed-in schemes (Boasson 2021a, this book). We have not detected any indications that this controversy was strongly influenced by UK developments.

During this period, the structure of the electricity supply industry was shifting. From 2000, independent energy suppliers, seeking to establish niches for small-scale and often renewable electricity supply, began to proliferate. Such companies represented about 7.5% of the market in 2000 (Cornwall Energy Associates Ltd. 2014). At the same time, the unbundling and privatization of supply, distribution and energy production in gas and electricity markets led to the creation of the 'Big Six' UK utilities (Meek 2012). In 1997 British Gas was established; EDF Energy emerged from a series of mergers in 2003. E.ON UK was formed as a result of the acquisition of Powergen in 2002; nPower arose from RWE's purchase of Innogy in the same year. In 1998, SSE emerged from the merger between two Scottish electricity companies. Kern et al. (2014: 517) highlight 'a particular set of power relations between the non-interfering state and the private sector in energy, whereby dominant market players had a high degree of influence in policy-making circles'. For the coming decade, the Big Six were almost fully in control of the electricity supply market (Ofgem 2019). Energy market regulations incentivized large companies to maximize their profits through cost-cutting, and utilization of existing assets, rather than reinvestment in new capacity (Kern et al. 2014). The large nuclear operator British Energy was not able to make profits in the new market, and in 2003 the government intervened to avoid bankruptcy (Thomas 2016: 422).

Despite this increasing segmentation of the organizational field, the government nevertheless proved itself capable of contemplating bold policy choices concerning the future of energy. The Energy Review undertaken in 2002 by the Prime Minister's Performance and Innovation Unit (PIU) (PIU 2002) represented a significant departure from traditional practices, commissioned as it was outside the established institutional infrastructure of energy policy-making and staffed by a team drawn largely from outside government (Cox et al. 2016). The result was a review that advocated relegation of the role of nuclear, and more decisive promotion of decentralized renewables and energy efficiency. The PIU's findings, including its scepticism towards nuclear, were largely echoed in a 2003 White Paper (DTI 2003; Thomas 2016: 423).

The government also introduced support schemes specifically targeting small-scale generation of electricity from renewables. Inspired by Germany, in 2002 and 2003 the UK introduced two grant-based support schemes for micro-generation (less than 5 MW photovoltaics or windpower mounted on household or SME rooftops). Although this happened in the aftermath of heated discussions in the EU and the adoption of a directive with an indicative UK electricity-specific target (a 10% share by 2020), these EU-level developments apparently attracted little attention in the UK and did not drive decision-making there (de Lovinfosse 2008).

We may conclude that the government initiated a new, market-oriented renewables support measure for large-scale renewables and a new investment support scheme for small-scale in the absence of significant party-political competition or debate. Mergers reduced the number of utilities and the Big Six emerged, as did a range of new renewables companies. Developments occurred with little reference being made to the major controversies about renewables support at the EU level.

2005–2009: parties attempt to 'out-green' each other; nuclear makes a comeback

In this period, growing concerns about rising prices (for oil as well as electricity), insufficient competition, security of supply (with the looming prospect of coal-station closure because of tighter EU air-pollution legislation) and climate change all raised the political saliency of energy policy. Around 2006–2007 came two particularly important developments. First, Labour significantly changed its position on nuclear, indicating a new willingness to invest in expansion (Thomas 2016). As part of this, in 2005 a new energy review process was launched that, in time, would come to influence the renewables support mix. Second, climate change rose to a prominence on the political agenda not seen before. Parties' attempts at 'out-greening' each other (Carter and Jacobs 2014) contributed to maintaining the public profile of climate and energy policy. The Friends of the Earth-led campaign for a legal framework to ensure delivery of significant emissions reductions by 2050 garnered strong cross-party support, prompting the Labour government to introduce the pioneering Climate Change Act (2008). In this political climate, a new renewables support instrument was able to break through.

Interviewees (1, 3, 4, 10) mention one event as being particularly significant. At the March 2007 European Council, Prime Minister Tony Blair departed significantly from the customary UK line by arguing that the EU needed binding national-level targets for renewable energy as part of its global leadership on climate change (Financial Times 2007). At this time, Blair was competing to be the EU's most climate-progressive head of government, and showing unprecedented prime-ministerial willingness to develop EU-level energy policy (Boasson and Wettestad 2013: 88). In advocating national targets, he over-ruled his Trade and Industry Secretary and defied wider scepticism within the government, including from the powerful Treasury (Interview 1). At the same time, and apparently motivated by both energy security and climate concerns (Pearson and Watson 2012), Blair committed strongly to more nuclear stations. On both EU targets and nuclear

expansion, Blair's knowledge that his tenure in office was shortly to end appears to have boosted his freedom to take political risks (Interview 1).

However, the government's 2007 Energy White Paper (DTI 2007) drew criticism for its apparent complacency in the face of a looming new national target (ENDS Report 2007). While restating the goal (set in 2000) for renewables to supply 10% of UK electricity by 2010, and noting an aspiration to double this by 2020, it neglected the fact that the UK had committed to new, binding targets in the negotiations over a revised EU Renewables Directive. It was clear that the Renewables Obligation, as then formulated, would not be sufficient to reach such targets (DTI 2007; Interview 9; ENDS Report 2008b). At the time, barely 6.7% of electricity in the UK was derived from renewable sources.[2]

The Renewables Obligation failed to boost deployment rates significantly. Several researchers have argued that this was because it created too much financial risk for renewables investors, in the form of short-term contracts and uncertainty about future payment levels, and failed to take into account differences in risk levels across technologies (Connor 2003; Mitchell and Connor 2004; Wood and Dow 2011). As a result it tended to favour investments by the larger companies and in the cheapest technologies (wind). The National Audit Office and various parliamentary committees voiced similar criticism, leading to a re-design being proposed in the 2007 White Paper. The main innovation was to introduce 'technology banding': differentiated levels of support for five different groups of technologies, taking into account levels of maturity and risk, and overseen by Ofgem.[3]

The proposal prompted Ofgem, which administered the Renewables Obligation, to express major concerns about the practicalities and costs of reform (Ofgem 2007). It highlighted that rising wholesale electricity prices and the EU Emissions Trading Scheme had improved the prospects for renewable generation, and it suggested long-term, fixed-price renewables contracts as a means to stabilize revenues, reducing the costs to customers if the wholesale price should rise. Ofgem also argued that setting renewable technology bands would conflict with its own role of ensuring energy-market competitiveness. However, representatives of the larger players in the renewables industry, like RenewableUK, welcomed the reform (Interview 8), as did several of the Big Six. A notable exception was EDF, the world's largest nuclear operator, whose position had been strengthened in the UK after its purchase of the nuclear company British Energy (House of Lords 2008; Thomas 2016: 424), and as a result of the prime minister's conversion to the technology. EDF now promoted a revenue stabilization concept broadly similar to what Ofgem had proposed, while also calling for the UK's goal for renewable electricity share to be lowered (with a correspondingly higher target for renewable heat). At its existing level, EDF complained, the renewable electricity target compromised the prospects for new nuclear (ENDS Report 2009).

There were few smaller players in the UK, but those that would profit more by a system of feed-in tariffs became increasingly vocal (under the auspices of the Renewable Energy Association) in their criticisms of the Renewables Obligation. They were supported by environmental organizations and academics (e.g. Mitchell et al. 2006; Toke 2012), who advocated a fixed feed-in tariff as the primary

support mechanism, based on the apparent successes in Germany and Spain. Feed-in tariffs were seen to be much simpler and to allow 'all plausible projects developed by all types of developer to come to market' (Toke 2012: 5). The debate was sometimes heated, with established renewables lobbyists defending the RO (Interview 8).

With cross-party competition and politicization over energy and climate issues growing, Conservative Party leader David Cameron's installation of a roof-top wind turbine at his London home received wide publicity (BBC 2007). A group of Conservative politicians returned from a fact-finding trip to Germany enthusing over feed-in tariffs (Interview 14). Labour ministers were keen not to be out-done, despite the instrument's potentially regressive effects that disproportionately affected low-income bill payers (Interview 14; Monbiot 2010). Resistant at first, the Labour government eventually agreed to calls from backbench MPs to develop feed-in tariffs – but only for small-scale renewables (ENDS Report 2008a).

From 2008, Blair's successor Gordon Brown continued to support both renewables and nuclear. One political advisor noted a linkage between the two: 'If you want to win public support for nuclear you have to do renewables as well' (Interview 1). In 2008, Brown created the Department for Energy and Climate Change (DECC), to bring greater coherence to energy and climate-change mitigation policies. The Department's first Secretary of State, Ed Miliband, was keen to implement 'a move away from the obsession with market mechanisms as being sufficient'; 'he started talking about the need for small scale feed-in tariff from day one in DECC' (Interview 10).

The political imperative to develop the instrument over-rode a degree of civil service scepticism. As a representative of the renewable industry argued,

> it has been quite clear that feed-in tariffs is not so popular among civil servants . . . It was forced by this major backbench drive. . . . It was a sense of Ed Miliband going, 'ok, I get the message', it was passed on to the civil servants: 'Do something about this!'
>
> (Interview 8)

Further factors driving the decision were that small independent producers constituted a fledging industry that New Labour wanted to encourage, and Miliband's close relationship with the environmental and other organizations campaigning for the pioneering Climate Change Act (Carter and Jacobs 2014; Interview 8; see also FoE 2011). Lobbying from environmental and renewables organizations clearly contributed to the government incorporating a provision for small-scale feed-in tariff into what became the Energy Act (2008). The design was modelled on feed-in schemes directed at large-scale projects in other European countries, but in the UK it remained targeted towards small-scale investments only (Kitzing et al. 2012; Lockwood 2016).

The 2009 EU Renewables Directive committed the UK to a 15% overall share for renewable energy. To meet it, the government proposed three production

sub-targets: 30% in electricity, 12% in heat and 10% in transport (DECC 2010a). But this was not before a last-ditch attempt to dilute the UK target, undertaken by high-level civil servants who had never quite reconciled themselves to Blair's 2007 renewables gambit. Embarrassingly, this behind-the-scenes action was leaked to the press (Guardian 2007). Ultimately, UK policy-makers found themselves 'trapped by their own climate change leadership discourse' (Solorio and Fairbrass 2017: 111) and forced by public opinion to reaffirm the national commitment to ambitious and binding renewables targets.

Given the high profile of the issue, in developing a renewable energy strategy to deliver on EU-level commitments (HM Government 2009a), staff from the Prime Minister's Office were in effect making decisions alongside DECC (Interview 1). Foreshadowing the instrument introduced by the subsequent government, the strategy expressed support for a 'contracts for difference' scheme to prevent generators from receiving excess profits when electricity prices were high, but envisaged it operating alongside, rather than replacing, the Renewables Obligation (HM Government 2009a).

To summarize, during this period, renewables support became politicized in an unprecedented way. The organizational field was now somewhat less unified in its preferences, with small-scale actors successfully calling for a feed-in scheme, whereas most large utilities were happy with the Renewables Obligation. Ofgem called for reform to rein in costs through fixing long-term renewables contracts that could reduce the costs to customers if wholesale prices rose, an idea favoured by the increasingly powerful EDF. In addition, the establishment of the Department of Energy and Climate Change (DECC) brought the promise of a more coherent climate and energy policy. The global financial crisis that started in 2008 did not immediately influence the debate greatly. As explained next, however, this changed after 2010.

2010–2016: technology-specific electricity market reform – and uncertainty

By 2010, it was clear that huge investments would be required to deliver on renewables targets and replace around a quarter of the existing capacity (mainly coal and nuclear) expected to close by 2020, primarily due to old age (Leiren et al. 2019: 4). The constraints imposed by the financial crisis increased the emphasis on meeting the targets at acceptable cost to consumers.

During the 2010 election campaign, both Labour and Conservatives championed a mix of renewables, nuclear and 'clean coal' (using carbon capture and storage), while the Liberal Democrats opposed new nuclear. The election resulted in the Conservatives and Liberal Democrats creating the UK's first coalition government since 1945. The two parties agreed to establish 'a full system of feed-in tariffs in electricity' and to 'reform energy markets to deliver security of supply and investment in low carbon energy, and ensure fair competition' (HM Government 2010). To ease tensions over nuclear, it was agreed that there would be no public subsidy for new plants but that, subject to parliamentary ratification, a new

National Planning Statement could in principle allow aging stations to be replaced (BBC 2010; HM Government 2010: 17).

In December 2010, the new government initiated public consultations on a new Electricity Market Reform (EMR). Since DECC had already reviewed a range of support schemes under Ed Miliband, the process could begin quickly, but time pressure was high and the government lacked staff with relevant expertise (Interviews 9 and 10; NAO 2009). In a controversial move, mistrusted by many stakeholders, staff numbers working on EMR were boosted by various secondees from the Big Six energy companies (The Guardian 2012).

The initial consultation document presented Contracts for Difference as the favoured option, broadly in line with what Ofgem (and EDF) had proposed earlier, but highlighted feed-in premium tariffs (which it defined as a static payment to generators in addition to their revenues from selling electricity in the wholesale market) as an alternative (DECC 2010b). Several factors led government (DECC and the Treasury) to favour Contracts for Difference, rather than a mere add-on to the electricity price. These included the expectation that investments, and decarbonization, would be delivered faster, at lower cost (since electricity providers would pay the government back when the market price exceeded the contracted strike price) and with greater certainty (DECC 2010b). The consultation notes positive experience with the instrument in Denmark and the Netherlands. Contracts for Difference were also considered as 'fitting' better with a carbon tax, which would push up wholesale electricity prices, reducing the need for subsidies. But significantly, government also wanted an instrument that would in principle be suitable for nuclear (and indeed, CCS) as well as renewables.

The global recession contributed to renewed interest in industrial policy – also within DECC, which saw particular potential in offshore wind (HM Government 2009b; Watson et al. 2010). While DECC led on policy development, in order to contain the aggregated cost of low-carbon subsidies, the Treasury established a ceiling for public levies, the Levy Control Framework (Lockwood 2016). Critics worried that a short-term outlook among Treasury officials, reflected in modelling practices and discount rates applied to evaluate policy, would lead to less effective renewables policies (see e.g. Mitchell 2012; Green Alliance 2014). Many civil servants had an 'instinctive lack of sympathy with anything that doesn't provide baseload power' (Interview 3). The fact that the Chancellor (the Minister of Finance) was a Conservative with little commitment to fighting climate change (Rayner and Jordan 2017) compounded DECC's difficulties. In numerous meetings at official and ministerial levels, Treasury officials required DECC to demonstrate how the Contracts for Difference instrument was the cheapest way to deliver the investments required (Interview 9).

A wide range of interest groups contributed to the consultation. For some groups in the renewables sector, the consultation's suggestion of entirely replacing the Renewables Obligation with Contracts for Difference came as an unwelcome surprise (Interview 8). Some renewable-energy trade interests favoured the feed-in premiums concept as it was applied elsewhere (Toke 2012: 15), while others feared the Contracts for Difference would prove less generous for smaller

projects (Toke 2011), or that the process would not provide adequate 'routes to market' for less resourced, non-vertically integrated players. Certain renewables sector organizations found, at least initially, that the doors were closed to them (Interview 8). Although they were subsequently more able to engage, 'there was always a sense that [government] did not quite trust what we were telling them' (Interviews 4 and 8). Most environmentalists expressed mixed opinions about the move away from RO, but the Green Alliance and consumer organizations, for example, welcomed it (Interview 15).

Opinion varied among the Big Six. In general, companies with substantial amounts of nuclear in their portfolios, such as EDF, or that planned to build new nuclear, such as E.ON, favoured Contracts for Difference (ECC 2011: para 129). Those with more renewables or fossil-fuel generation and less nuclear were more sceptical. For example, SSE, the UK's second-largest supplier of electricity and gas and its largest generator of renewable energy, saw Contracts for Difference as a ruse primarily intended to support nuclear (ECC 2011: para 93) without directly contradicting the Conservative-Liberal Democrat Coalition Agreement not to provide direct subsidies.

Unlike renewables-sector interests, some interviewees (7, 9, 10) saw the Big Six as having been quite influential. Civil servants indicated that the big utilities' ability to be heard was related to their competence and ability to provide useful market information (Interviews 9 and 10). One Big Six representative suggested that their competence in modelling complex, interconnected energy systems was especially important (Interview 7), reassuring policy-makers of the workability of their own proposals.

In Parliament, the Select Committee on Energy and Climate Change, set up to monitor the work of DECC, was more open to inputs from independent, non-vertically integrated generators than DECC. Concerns about routes to market problems for non-vertically integrated players received a hearing. The Committee expressed misgivings that, while contracts for difference were undoubtedly the best option for nuclear, the concept was less well suited to other types of low-carbon generation. The government 'should not distort the market merely to save political face about the precise meaning of the Coalition Agreement' (ECC 2011, para 132). A further actor in the debate was the independent advisory body established under the Climate Change Act 2008, the Committee on Climate Change, which supported introduction of a scheme incentivizing the nuclear technology that, at the time, was considered (wrongly) to be the most economical (Committee on Climate Change 2011).

Once legislation was passed (in the 2013 Energy Act), state-aid clearance was needed before the first contracts allocation round. This was duly granted in June 2014 – hardly surprising, given the close contacts between DECC and Commission staff during the policy-making process, covering the content of soon-to-be-adopted revised state-aid guidelines (DECC 2014: 12). Contacts led to 'material effects on the design of various instruments' (Interview 9). In time, the Commission welcomed Contracts for Difference as a 'fine example of how to promote the decarbonisation of the economy with market-based support mechanisms, at the lowest possible cost for consumers' (Commission 2014).

Seven large renewables projects were offered early contracts in May 2014; the first formal auctioning round began in the autumn. Implementation coincided with the beginning of a wider energy policy 'reset', in which scaling back small-scale feed-in tariffs featured prominently. In 2013, reports (never denied) that David Cameron had ordered aides to 'get rid of all the green crap' in order to reduce energy bills (The Guardian 2013) exposed a long-simmering coalition quarrel over support for renewables. At the time, the feed-in mechanism had already had huge impacts on the numbers of micro-generators (including households), which reached a cumulative total of roughly 650,000 individuals by 2015 (Inderberg et al. 2016).[4] A boom in companies assisting and selling installation services followed, creating a new interest group. There was a clear trend of new, independent company formation, including producers such as Ecotricity as well as stand-alone suppliers. While the established Big Six remained largely fossil fuel- and nuclear-based, a considerable share of the smaller newcomers' portfolio was based on renewables. In 2014 the Big Six were still dominant, with about 92.4% of the UK gas and electricity market, but that share was down from 99.8% in 2009 (Cornwall Energy Associates 2014).

Winning a surprise majority in the 2015 General Election, the Conservatives found they could create a government alone. Their election manifesto, otherwise vague on energy policy commitments, promised to 'halt the spread of onshore windfarms' and put an end to subsidies (Brown 2016). The party was also strongly committed to increased nuclear production, with a significant element at best 'lukewarm' towards the climate issue and visceral in its opposition to wind turbines (PIRC 2011, Lockwood 2013; Cox et al. 2016: 5). Supported by a largely right-wing tabloid press, this element now seized its opportunity.

In November, the new DECC Secretary announced a 'reset' of energy policy, ostensibly to control costs for bill payers, with the implication that onshore wind (except on Scottish islands) would not be included in future auctions (Brown 2016). Thus, while the architecture of the British renewables support mix remained unchanged, the new government applied what had been meant as an instrument to deliver cost-effective investments in a way that excluded the cheapest technology – onshore wind. Legislation for Contracts for Difference allowed the government great flexibility to determine, at very short notice and without parliamentary approval or statutory consultation, the technologies eligible for support in a given auction.

In addition, the government cut small-scale feed-in subsidies by 64% for household-scale solar, and community projects lost investment support (ENDS Report 2015). Feed-in tariffs for microgeneration were cut significantly across all technologies, bandings for size of installation changed, the degression mechanism accelerated and quarterly caps were introduced.

This renewables reset prompted a wide-ranging set of actors to voice concern, with large corporations such as Ikea and Panasonic joining investors, industry bodies like Energy UK and RenewableUK, the National Farmers' Union, the Trades Union Congress and green and community groups (Business Reporter 2015). Nearly 90% of respondents to the public consultation on the reset argued

that the proposed tariffs were too low to bring forward new generation (DECC 2015), and early indications showed a significant downtrend in installations of new small solar panels (Inderberg et al. 2016).

Although the need for generous support for technologies such as photovoltaics had passed, thanks to the marked decrease in technology costs (ENDS 2015), the overall weakening of the policy framework led to an eventual admission from DECC that the 2015 reforms put delivery of the UK's 15% renewables target for 2020 further out of reach (ENDS Report 2015). Two years later, in 2017, investment in renewable energy was reported to be down by 56% (The Guardian 2018).

In sum, the period after 2010 saw significant developments: the shift towards the technology-specific Contracts for Difference scheme came as the result of intense negotiations involving organizational field actors, but it was ultimately restricted in its application (exclusion of onshore wind) by decisions made in the political field. Increased steering efforts by the EU do not appear to have been especially influential. In the remainder of this chapter, we turn to a fuller, multi-field assessment of UK policy developments over all time-periods examined.

Discussions and conclusions

The historical phases outlined in preceding sections highlight that the UK has experienced several re-orientations of its renewable support mix. By 2016, it had a policy portfolio – including a technology-specific scheme for large-scale renewables, and also a technology-specific feed-in tariff for small-scale generation – that would probably have surprised a time-travelling policy analyst from the year 2000. While the radical cuts in support and more selective (politically motivated) application of auctioning after 2015 reduced the number of technologies that profited from the system, the schemes were no less technology-specific in nature.

As EU steering has gradually become more coercive, and many countries have turned towards systems based on feed-in premium combined with auctioning after 2014, we expected the *European environment* to influence British renewables policy the most after 2010. That is not what we have found, however; the UK would have adopted Contracts for Difference regardless. Interestingly, however, the experience of the Netherlands and Denmark with similar systems was referred to favourably in the government's 2010 consultation, suggesting an element of horizontal learning.

In the first of our periods, leading up to 2000, the EU had hardly any specific rules covering the design of support schemes. Nor were any clear trends evident among member states. Hence, it is not surprising that we do not detect European environment influence in this period. Later, the Commission was to hail the Renewables Obligation as a good design, though the instrument's failure to spur much renewables production somewhat undermines this view (see Boasson 2021a, this book).

In the 2000–2004 period, the UK shifted to an electricity certificate scheme: the Renewables Obligation. Evidence does not indicate that this choice was heavily

influenced by the prospect of new, indicative national targets in the 2001 Renewables Directive (de Lovinfosse 2008). Bucking the trend towards feed-in tariffs in this period, the UK headed further down the path of technology-neutrality and fluctuating support levels than it had with its first scheme. While this fit well with the preferences of the Commission, we do not find that such conformity was something that UK policy-makers actively pursued.

In the third phase, more specifically in 2007, the British Prime Minister supported ambitious, nationally binding targets to be set at the EU level. This would ultimately require the introduction of a more state-led renewables-support effort. Bound up with British efforts to be seen as a climate leader, significant pressure was placed on succeeding UK politicians and civil servants to develop new measures capable of delivering the 15% renewables target. Making the Renewables Obligation more technology-specific was the first response to this pressure. The extent to which the target drove adoption of feed-in tariffs for small-scale renewables is debatable, but figures included in the 2009 Renewable Energy Strategy show how small-scale technologies, of the kind supported by feed-in tariffs, were expected to deliver 2% of the projected required electricity demand (HM Government 2009a).

In addition, in this period UK actors were influenced by the sweeping, EU-wide trend towards feed-in tariffs. The increased influence of the European environment between 2005 and 2009 is broadly in line with our expectation, with the intriguing twist that the increased EU steering resulted partly from UK political inputs: in 2007, the UK first pushed through more ambitious renewables objectives at the EU level, which in turn underpinned changes in British support schemes.

The British shift towards a more technology-specific regime after 2010 contrasts with the Commission's increased pressure towards technology-neutrality, but the UK was an early mover among EU member states in adopting a feed-in premium scheme combined with auctioning. The Commission may have influenced some of the details of the Contracts for Difference scheme, but the instrument seems much more inspired by the British organizational field, where actors (primarily Ofgem) had suggested core features of the new scheme significantly before the Commission became involved. While the UK after 2010 inspired others to shift to feed-in premiums, it had itself been inspired *by* others to adopt fixed feed-in tariffs for small-scale only a few years earlier.

Like Solorio and Fairbrass (2017), we conclude that developments after 2005 cannot be fully understood without reference to Europeanization, but we also detect some interdependencies. First, the UK was crucial for the EU's adoption of binding renewables targets in 2009; second, the British Contracts for Difference scheme influenced the drafting of the 2014 EU state-aid guidelines (Boasson 2021a, this book). Hence, in effect the UK repeatedly enabled the EU to increase its authority over national renewables support.

How and to what extent did the *domestic organizational field* affect developments? As the UK liberalized its electricity system early on, we expected to find a rather pluralist field with many criss-crossing conflicts, and thus low policy impact. However, the evidence does not support this.

Introduction of the first support scheme coincided with the liberalization of the energy sector, so it is not surprising that the Non-Fossil Fuel Obligation fits this context. However, the precise motives for including renewables within the scope of an instrument primarily intended to support nuclear introduction remain obscure. Since both could co-exist, however, it was acceptable to the big utilities of the day.

While liberalization led to consolidation around the Big Six and thus a state of near segmentation in the 2000–2004 period, company policy positions were by no means unified, reflecting their differing generation portfolios. The shift to a green certificate scheme (the Renewables Obligation) was more closely aligned to the market logic than the preceding scheme had been; technology-neutral and with a fluctuating support level, set by market forces. The new scheme did not cover nuclear but was still broadly supported by most large utilities. That is in line with our expectations, and the increasing degree of segmentation in the organizational field can largely explain this development. The field remained rather segmented in the 2005–2009 period, making the adoption of a feed-in tariff for small-scale generation – supported only by the still very marginal renewables actors and a few academics – counter to what we expected.

The prevailing market logic was increasingly questioned after 2010, as conditions made necessary investments in new electricity production (nuclear in particular) unprofitable. Ofgem (and the nuclear corporation EDF) championed a shift to a more technology-specific support scheme for both renewables and nuclear, which eventually crystallized in the form of the Contracts for Difference scheme. Secondments to DECC from the Big Six highlight that the relationship between the utilities and key decision-makers was strong (based on the policy-makers' need for certain kinds of industry knowledge). Hence, the field was still structurally unified. However, the cultural-institutional character of the field had shifted towards a logic of technology development; it was now recognized that a greater degree of longer-term state planning was necessary to meet specific objectives – most obviously, maintaining a nuclear programme. Hence, cultural-institutional change within the field can largely explain the shift to Contracts for Difference.

Lowering of support levels for small-scale renewables after 2015 can to some extent also be understood as a result of organizational field developments. After all, the Big Six had no interest in supporting competition from smaller players. On the other hand, that a broad coalition mobilized against the policy reset shows how the organizational field had become more diverse. Thus, this perspective cannot fully explain the shift.

Our finding here is in line with Catherine Mitchell's (2012) argument that the UK government, compared to its German counterpart, for example, is in general more favourably disposed to more established technologies, and that of Kern et al. (2014), who highlight the ability of larger companies to steer policy in the context of a 'non-interfering' state. Other interest groups, such as those representing renewables, did not have this level of access to the policy development process.

In sum, the promotion of small-scale feed-in tariffs and their subsequent retrenchment are hard to explain from an organizational field perspective. Can the

domestic political field shed more light? According to the multi-field framework, this field will be most influential when renewables policy has become of high political salience, and formal decision-making power rests with the legislative assembly. Does this apply also to the British political system, which is dominated by two strong parties and often has very powerful governments?

The political salience of renewable energy policy has fluctuated over time. Initially, renewables policy was not particularly politicized. The focus was on privatizing the electricity sector, which the incoming New Labour government of 1997 largely accepted. In the second phase, responding to EU legislation and other dynamics, the Labour government gradually became more active on renewable energy issues, but the design of the scheme was not the subject of much political controversy.

In contrast, renewable energy policy became rather politicized after 2005. The biggest parties competed to 'out-green' each other (Carter and Jacobs 2014), and this clearly influenced the development of the support-scheme mix. First, Blair's 2007 commitment to binding, ambitious renewables targets in the European Council went against the advice of his civil servants and later contributed to introduction of more technology-specific aspects in the Renewables Obligation, without which, it was feared, the UK's target would not be reached. Second, while the civil service was never fond of feed-in tariffs, in response to a groundswell of parliamentary support, the new Secretary of State commanded his civil servants to present a proposal. On such occasions, despite running up against 'the departmental view' (Barker and Wilson 1997), government politicians have proven themselves able to set ambitious goals and push new means of delivering them that go against established orthodoxies. Despite the great symbolic importance, politicians do not appear to have paid much attention to the details of the new support scheme.

In the fourth phase, some degree of party competition over climate change was still evident, but the growing political profile of the consumer-costs issue complicated the picture. From 2010, tensions within the incoming Conservative-Liberal Democrat coalition over nuclear affected the development of renewables support, but a support scheme encompassing all low-carbon energy sources served to de-fuse the conflict. The 'green crap' controversy showed that the competition for green credibility related to supporting decentralized renewables was over: neither climate issues nor renewable energy had become enduring salient issues in British electoral politics (Lockwood 2013: 1342). The UK's first-past-the-post electoral system has a tendency to lead to strong majority governments, shifting between Labour and Conservative, with heavy influence on policy direction and limited need for parliamentary support. The exception was the Conservative-Liberal Democrat coalition, which experienced a greater need for parliamentary support – but, as this coincided with a de-politicizing of renewables, it did not increase the weight of the political field: the Contracts for Difference resulted primarily resulted from organizational field developments instead. However, a necessary condition was an explicit political decision in favour of nuclear.

Following the 2015 election and the return of the Conservative Party with a full majority, the situation in the UK could be best labelled *ministerial governing*. With a clear majority, the Conservatives could largely do as they pleased; and, since electricity costs were the high-salience issue (and not renewables support per se), a 'reset' of policy looked attractive. Increasingly vocal opposition towards onshore wind within the Conservative Party also played an important role. As the new government generally agreed with sentiments of the dominant actors in the organizational field, it is hard to distinguish clearly between the importance of the two domestic fields here.

Still, our findings indicate that in a Westminster-type system, where the ruling party usually also has the parliamentary majority, the multi-field framework expectation that the importance of political field will be strongest when the legislators have the authority to adopt decisions and the issue in question is politicized does *not* accurately reflect how this political system works. While we see that the political field has clearly been more influential when renewables policy was subject to political competition, we do not find that variance in the formal authority of the Parliament strengthens the importance of the political field.

Tracing the many shifts in British policy for renewable electricity generation, we find that developments in the European environment, organizational and political fields have all played important roles at different times, and are interrelated in complex ways. Briefly put, we find that prior to 1999, developments in the organizational field were the most decisive. Likewise, for the 2000–2004 period, the shift to the Renewables Obligation certificate scheme was primarily influenced by the organizational field and its market logic. Between 2005 and 2009, a combination of developments in the European environment and factors in the political field, with interdependencies between developments in the two spheres, contributed to spur change. From 2010 to 2015, organizational field-level developments, supported by and interrelated to European environment developments, account for the shift towards Contracts for Difference. However, the evidence suggests that such an instrument would most probably have appeared even without European Commission involvement. Our findings highlight the difficulty, long recognized by scholars of multi-level governance, of disentangling the European environment from domestic discussions.

Interviewees

1 Special advisor to Labour politician, 28 April 2016, London
2 Academic, consultant to environmental NGO, 23 May 2016, telephone interview
3 Conservative MP (now retired), 24 May 2016, London
4 Energy specialist, formerly with the Green Alliance, 7 June 2016, telephone
5 Former Liberal Democrat politician, 16 June 2016, London
6 Climate and energy policy lobbyist, formerly WWF, 16 June 2016, London
7 Large energy utility representative, 17 June 2016, telephone interview

8 Renewable industry representative, RenewableUK, 27 June 2016, London
9 Former civil servant, Department of Energy and Climate Change (DECC), 27 June 2016, London
10 Special advisor to Labour politician, 28 June 2016, London
11 Civil servant in HM Treasury, 7 July 2016, telephone interview
12 Environmental NGO state-aid specialist, 21 March 2017, telephone interview
13 Consultant for regulatory assistance project, 28 March 2017, telephone interview
14 Former civil servant, DECC, 2017, 30 March 2017, Norwich
15 Former civil servant, DECC, 23 August 2018, telephone interview
16 Two consumer-interests representatives, Citizens Advice, 10 March 2017, telephone interview

Notes

1 The scheme was closed to new applicants on 31 March 2019, leaving the future support for small-scale generation uncertain.
2 The proportion for the 2006–2007 Renewables Obligation period (Ofgem 2008).
3 The Utilities Act 2000 had made provision for this eventuality.
4 The UK distinguishes between microgenerators, with installed peak capacity below 50 kW, and small-scale generators, which have installed peak capacity between 50 kW and 5 MW (Wood and Dow 2011: 2232).

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7 Poland

Incumbent stability amid legislative volatility

Kacper Szulecki

Introduction

In the European energy sector, Poland is certainly not seen as a renewable energy frontrunner. Critics have dubbed it 'Coal-land' – not only because of its reliance on coal-generated energy but also because it has argued strongly for safeguarding coal interests against climate policy. Yet, by 2015 the country ranked seventh in installed windpower capacity in the European Union (EU) and was on the path to meeting its renewable energy targets.

However, Poland has low investment stability for renewable energy (see Księżopolski and Pronińska 2017). As a journalist specializing in energy policy has pointed out, a fundamental piece of legislation – the 1997 energy law – had been revised 60 times by early 2017, on average every four months (Derski 2017). What can explain the apparently precarious character of Polish renewable energy policy, as well as its broader directions?

Why did Poland in 2015, after lengthy political debate, adopt volume-based auctioning as its main support scheme for renewable energy, since 2016 combined with net-metering for prosumers? This scheme is highly technology-specific, with separate auctions held for very narrowly defined sub-categories of renewables, while public administration determines both the frequency of these tenders and the volumes of electricity to be delivered.

This chapter may well be the first analytical attempt to explain the development and instability of the Polish renewables support mix and trace the influence of external and domestic factors. Many studies of the Europeanization of Polish renewable energy policy do so on the margins of broader climate-policy analysis (Ancygier 2013b; Ceglarz and Ancygier 2015; Jankowska 2010, 2017; Skjærseth 2018). On the domestic level, Karolina Jankowska has used the concept of 'policy capture' and advocacy coalition theory to explain how Polish renewable energy policy developed until 2008 (Jankowska 2012). Andrzej Ancygier has complemented this bottom-up approach with a more top-down analysis, focused on Europeanization and the transposition of Renewables Directives 2001/77/EC and 2009/28/EC (Ancygier 2013a), whereas Jon Birger Skjærseth (2018) focuses on the policy feedback resulting from implementation experiences. Horizontal Europeanization and policy diffusion (or lack thereof) have also been explored,

hinting at the ways in which domestic political economy as well as beliefs can hinder learning and diffusion processes (Ancygier and Szulecki 2014a; Szulecki et al. 2015; Wedel 2016).

This chapter moves beyond the existing literature by discussing the evolution of Polish renewables policy until the end of 2016 and exploring how Polish political and organizational fields have influenced the renewables support mix. The influence of the European environment is also taken into account. Poland joined the European Union only in 2004, but it was influenced by EU legislation already before that. With the EU (specifically, the Commission) gaining more competence in the area of renewable energy policy, its influence can be expected to grow. However, in the case of Poland, also a reversed dynamics may be expected – with the direct influence of the EU over Polish renewable energy policy gradually decreasing, with accession conditionality gone after 2004 and with Poland's increasing assertiveness in negotiations with the EU. Europeanization is a question not solely of the influence of the EU, but also, in its 'horizontal' form, of policy diffusion and harmonization between member-states. Do we find that Poland has been more influenced by the European environment when one policy recipe has dominated in the EU/EEA counties, or does Poland's accession status make this different?

The case of Poland is particularly interesting since its political field lacks the stability found in most Western democracies: in the period 1993–2016, 17 parties were voted into the Sejm (lower chamber of the Polish parliament). Polish politics is characterized by 'leadership volatility, party volatility, and electoral volatility', and this creates 'whirlpools of continuing uncertainty' (Millard 2009: 218). Much of instability with respect to renewables support may be explained by the frequent and rapid changes in government composition and ruling coalitions. Is the Polish political field more influential when renewables support is politicized and the Sejm is engaged in decision-making, or does the political field conceptualization in this book fail to capture the Polish dynamics?

Lastly, how independent is the political field as regards the organizational field? Are the large, state-owned companies that produce energy from coal closely aligned with the governmental organizations? Does a segmented organizational field control the design of the renewables support scheme? Or have pro-renewables actors been able to disrupt the field, drawing on impulses from the European environment for greater impact?

Technology-specific renewables support mix

Poland's main support scheme for large-scale renewables is an *auctioning* mechanism, based on tenders organized by the relevant ministry. However, caution should be exercised in making a link between the name of a scheme and how it actually functions: as many different measures may be subsumed under the label of 'auctioning'. In Poland, following the 2016 amendment of the renewables act, these were tenders for volume-restricted feed-in tariffs, where the national regulator (*Urząd Regulacji Energetyki* – URE) and Ministry of Energy control the

volume of energy that they will purchase, and bids are made only for the lowest delivery price, which then becomes a fixed feed-in tariff.[1]

The mechanism works as follows: the regulator divides renewable energy sources into categories (baskets), by technology and 'size' (capacity) (Księżopolski and Pronińska 2017). As of 2017, there were 21 different, highly detailed categories of renewables – for instance, biogas plants of less than 1 MW, or offshore wind, in seven baskets. The ministry sets reference prices for different technologies, determining technology-specific maximum support levels. The national regulator sets a maximum annual volume of renewable energy from various sources to be sold and purchased through auctions in a given year, as well as the order in which tenders will be held (sorted by technology). The regulator then organizes tenders for set volumes of renewable energy to be produced at prices close to the reference price. Only renewables producers who bid well below the reference price can count on winning the auction, thereby securing the possibility to sell the produced energy at the agreed price, as both simulation tenders and first renewables tenders in 2018 have shown (Gram w Zielone 2018). The reference price served as the maximum, and the regulator automatically 'cuts out' the top 20% most expensive bids. The price agreed in the auction then functions as a feed-in tariff, but for a fixed volume of energy (a certain amount of MWhs). This mechanism provides the government with fairly strong power to steer developments in renewables. Further, producers who were selling energy before 2016 may remain in the previous electricity certificate system for a maximum of 15 years after they began production, or they may opt to switch to the auctioning system (Księżopolski and Pronińska 2017).

In addition, since the 2016 amendment Poland has had two support mechanisms for small-scale renewables (Sejm 2016). First, a net-metering scheme for *prosumers* – end-energy consumers who also produced energy for their own use could reclaim a certain volume of energy from the grid for every unit of energy they feed into it. For every 1 kWh sent to the grid, they receive 0.8 kWh back if they own an installation below 10 kW, and 0.7 kWh if it is over 10 kW. This was intended as an incentive for self-consumption, rather than turning micro-installations into an additional source of income for households: the optimization of household use is the goal. Second, businesses owning micro-installations could sell their surplus energy to a local distribution company at the average wholesale price for the previous quarter, which is announced by the regulator.

A final provision of the new scheme is the development of *energy clusters* – multi-stakeholder partnerships involving local governments, individuals, cooperatives, research institutes and companies functioning locally (in one county [*powiat*] or in a maximum of five municipalities [*gminy*]), together working towards the 'generation, balancing, distribution and trade of energy from renewable sources and other sources in the distribution grid under 110 kV' (Sejm 2016: 2). The goal of this new scheme, which is clearly in line with the citizen-oriented elements of the Energy Union and the EU Clean Energy Package, serves to create conditions for the development of locally balanced and semi-autonomous distributed generation, increasing energy security in sustainable ways. However, there is

no special support scheme for these arrangements; the increase is meant to come through cooperation, local capacity building and synergies enabled by favourable regulatory and administrative measures.

Political uncertainty and coercive EU influence

Prior to 1999: renewables and emulating European modernity

Renewables had been a non-issue in Poland in the 1970s and 1980s; then, during the 1990s (and closely related to the fall of the Communist regime), the country adopted a wide array of relevant policies. After the Second World War, Poland, rising literally from the ashes, conducted a massive electrification programme based mainly on hard coal power plants. By 1980, Poland had become the second-largest producer of coal in Europe, after the Soviet Union. Already in the early 1970s the Communist authorities began to explore the possibility of achieving nuclear energy capacity in order to limit the dependency on coal (Szulecki et al. 2015), as well as constructing several large-scale hydropower plants.

Renewable energy swiftly emerged as an issue after the Communist regime collapsed in August 1989. At that point, the electricity system was concentrated around large-scale hard coal or lignite power plants – almost 99% of power was generated in coal-fired plants. The environmental crisis of the late Communist period, caused by emissions from the industrial and energy sectors, led to greater awareness of 'alternative energy sources'. However, plans for nuclear energy spurred massive societal protests, culminating in the blockade of construction (already very advanced) at the Żarnowiec site (Szulecki et al. 2015). In 1990, a 15-year moratorium was emplaced on nuclear energy.

The energy and environment debate in Poland aligned swiftly to broader European discussions – unlike the case of the political system. The 1990s marked a transitional political and economic stage for Poland, with the shift from a centrally planned economy and an authoritarian regime to a market economy with a consolidating democratic system. In fact, the political system that emerged after the fall of Communism in 1989 was a hybrid. To borrow a metaphor from Dryzek and Holmes (2002), much of the institutional 'hardware' of Polish politics had been inherited from the period of state socialism, while cultural 'software' was a hybrid of long-established 'traditions' plus the globalization and Europeanization pressures of the early 1990s. The Polish Communist government had been divided into ministries, which maintained institutional continuity also after 1989. A multiplicity of political parties emerged, but none with mass memberships. They never became stable organizations with clear political programmes, as in Western Europe. Their main source of legitimacy was the mandate they received in elections.

Poland's democratization in the 1990s emphasized representation over participation (Szulecka and Szulecki 2019). Seeking to tame the strong social movements that had brought down the Communist regime, the new political elites hesitated to develop systematic procedures for consultation and dialogue with

societal groups. This forced insulation of policy-making from societal inputs resulted, among other things, in very low levels of trust in political parties and institutions.

The period 1990–1991 saw an eruption of environmental legislation in all domains, including energy (Szulecka and Szulecki 2019). In 1990, the Sejm passed the bill 'Foundations for Poland's energy policy until 2010', stating that 'environmental protection should be the main factor influencing the choice of energy sources' and indicating renewables as the preferred solution (Marszałek Sejmu 1990). The first windpower plant (150 kW) was built in 1991 in Lisewo as part of the Żarnowiec plant complex, financed mainly by the Danish government (AGH 2007). In the same year, the need to rationalize energy consumption and production was adopted as an official policy goal, with renewables support as an important instrument (Urząd Rady Ministrów 1991). As a result, there was a feed-in tariff from 1993 to 1999 (Jankowska 2012). Tariffs were set at approximately 30% above the energy market price, and the adjusted prices were announced only one year in advance by the Ministry of Finance. However, as the support level was low and the scheme lacked long-term predictability, it did not result in major investments (Ancygier 2013a: 239).

Nevertheless, the first Polish renewable energy developers began to appear. In 1994, the EC Baltic Renewable Energy Centre (EC BREC) was established by the European Commission (the Commission), becoming part of the Ministry of Agriculture in 1997. It swiftly became the main advocate of higher and more predictable renewables support (Podrygala 2008: 72). In addition, an array of smaller organizations promoted specific technologies, such as small-hydro, wind and solar. Together with environmental organizations, they became the main promoters of renewables.

Even though Poland was not yet an EU member, the EU had influenced Polish energy-policy debates already in the 1990s – most clearly after Poland's formal accession bid was accepted in 1994. This was evident especially at the rhetorical level, with clean energy as a noticeable element in the modernization project. In 1997, the Parliament adopted an 'Energy Law' clearly inspired by the Commission's energy papers from a few years earlier. This law explicitly mentioned the development of renewables as a goal for national energy policy, as well as established an independent national regulator, URE (Ancygier 2013a: 240–241; Sejm 1997).

The 1997 elections brought victory to the centre-right and a coalition government, headed by Jerzy Buzek and supported by a parliamentary majority of the Solidarity Electoral Action (AWS) and Freedom Union (UW), both rooted in the anti-Communist 'Solidarity' trade union movement. This government aimed a restructuring the Polish energy sector towards greater liberalization, combining innovative, competitive and dispersed generation with environmental protection and energy security (Wiśniewski 2015: 45). In 1999, the Minister of Economy introduced a *Renewable Purchase Obligation* (Ministry of Economy 1999), replacing the phased-out feed-in tariff. This took place through an Executive Ordinance, not a decision in the Parliament. Energy distributors were now obliged to

buy all the renewable energy from sources smaller than 5 MW available in their distribution region at a price not higher than their highest final user tariff. The scheme resulted in uneven but low support levels across distribution areas and actually served to disincentivize distribution companies from investing in renewables.

At the same time, the EC BREC was instrumental in the adoption of a parliamentary resolution on increasing the use of renewable energy (Sejm 1999). The Sejm called on the government to prepare mid- and long-term renewables goals, adopt a strategy to foster the development of a renewables industry and to harmonize the new renewables policy with the country's energy and environmental policies. At that time, renewables fell under the Ministry of Environment and were not an integral part of the energy sector, which was under the Ministry of Economy. The resolution also recommended the active participation of private, civil society, cooperative and communal stakeholders in the expansion of dispersed energy production (EC BREC 2000). However, the resolution was only an expression of political will; it would still need to be operationalized through the executive branch (Biuletyn 2003a).

Renewables arrived late as a political issue in Poland. Several policy elements were adopted in the 1990s, but the country did not develop transparent procedures for development and policy change. A nascent renewables industry emerged, but there was no clarity as to whether and how it should be involved in the political processes. The traditional coal producers still had a very dominant position.

2000–2004: pre-accession conditionality and interministerial struggles

In this period there was much political discussion on renewables, but no actual adoption of a new renewables support scheme. The Ministry of Environment swiftly followed up the 1999 Sejm resolution by proposing concrete regulations, proposing the development of renewables schemes along the lines discussed in Brussels at the time: 'certificates, bidding competitions or tenders' possibly adding some technology-specific elements (Ministry of Environment 2000). A pilot project for wind energy development was prepared but never introduced (Wiśniewski 2011). Interestingly, the Environment Ministry's strategy did not define biomass co-firing as a green, renewable energy source – but, as we shall see, this soon emerged as the key renewables source in Poland.

At that time, Poland had reached the final stage of EU accession negotiations and was under strong pressure from the EU to implement renewable energy legislation (Biuletyn 2003a). In 2000, the Ministry of Economy adopted an ordinance with *targets* for total share of renewables in the electricity market – at 2.4% in 2001, set to increase to 7.5% by 2010 and 14% in 2020 (Ministry of Economy 2000). However, these targets were only an expression of good will and were not binding. Compliance with EU law was the main driver for this hasty legislative change.

After the 2001 elections, the Democratic Left Alliance (SLD) together with Labour Union (UP), and the agrarian Polish People's Party (PSL), formed a

coalition government which was not as open to energy-sector reform as the Buzek government had been. Key figures in the new government had strong ties to coal mining and traditional utilities as well as a highly centralist attitude (renewables expert interview, 2018). Now the conflict between conventional incumbents and the coal-mining sector on the one hand and renewables – especially the growing wind industry – on the other became evident for the first time. The windpower lobby was growing in strength, trying to push for either universal renewables support or a targeted wind support programme. Opponents argued that wind farms would rely on imported parts and potentially replace jobs in the conventional energy sector, thus spurring negative social consequences (Biuletyn 2002). On the whole, the question of costs was becoming increasingly prominent (Biuletyn 2001). Even a Member of Parliament who supported renewables stated: 'with time the support for renewable energy will be a necessity', but added that '[we] have to decide who will pay for this. Will it be the consumer or the state budget, and if it is the budget, where will the money come from. This is what it all boils down to' (Biuletyn 2003b).

Renewables were not 'politicized' at the time but remained a technical and not overly salient topic for society. Still, some patterns with respect to renewables positions and links between particular interest groups and various political groups had emerged. The agrarian PSL and populist 'Self Defence' favoured bioenergy. The post-Communist left-wing SLD was split, with a majority in the party (and the affiliated UP) close to the mining sector and either openly opposed to renewables or simply ignoring it, or at most favouring biomass co-firing as a cheap way of achieving renewables targets without threatening conventional industry. However, one faction within the SLD was close to the nascent windpower industry. Finally, conservative and nationalist parties, such as the League of Polish Families (LPR) and later the conservative-nationalist faction in Law and Justice (PiS), had geothermal energy as their pet renewable, usually justifying this in terms of sovereignty and geopolitics – a Polish technology for tapping Polish natural resources. The liberal parties had little to say, apart from lip service to the need for meeting EU renewable energy targets. Solar power had scattered support, mostly from various individual MPs (renewables expert interview, 2018).

This period also saw a significant shift in responsibility within the government. Until 2000, the Ministry of Environment had been the main actor as regards (limited) renewables regulation. Responsibility was now shifted to the Ministry of Economy, thus moving renewables from the realm of *environmental protection* to that of *energy policy* (Biuletyn 2003a). Moreover, the relevant instruments fell under the competence of the Ministry of State Treasury (Biuletyn 2003a). However, several politicians complained in 2003 that the Ministry of Economy was utterly passive and even reluctant to join an interministerial team to move renewables regulation forward (Biuletyn 2003a). Renewables supporters demanded a parliamentary bill that would regulate renewables and support mechanisms, with targets and a longer-term strategy.

The Purchase Obligation adopted in 1999 was, in principle, meant to translate into a kind of fixed tariff system, where renewable energy would sell at

highest local retail prices. However, many distribution companies simply failed to abide by the regulation. According to the vice-president of the national regulator's office, 17 distribution companies in 2011 (over one half) did not follow the obligation and refused to pay the ordained fines, instead taking their case to the anti-monopoly courts (Biuletyn 2003a). This had severe consequences for some small-renewables investors (Biuletyn 2003b). In addition, renewables were subject to a 22% VAT rate, whereas conventional energy sources were under a 7% VAT. Even worse, the transmission system operator PSE introduced an internal regulation in 2002, forcing energy sellers to report their production 48 hours in advance – effectively blocking all intermittent renewables from the wholesale market, and adding to the hurdles already encountered in the distribution zones. The centralist organizational logics of the energy sector was fragmented, and politically powerful conventional utilities were pre-emptively making market entry difficult for renewables. Some held that this showed that the coal industry was such a powerful monopoly as to be 'above the law, and all this [renewables support] is a game of delusion' (Biuletyn 2003a).

The Ministry of Economy, the TSO, and the conventional electricity utilities were all embedded in a mind-set dominated by engineering and coal, with centralized, national coal production and distribution regarded as the backbone of the Polish economy. This clashed with the vision of the 1999 Parliamentary Resolution. Members of Parliament began calling on the government to move forward quickly with a clear new support scheme – ideally *green certificates* (Biuletyn 2003a), possibly with a feed-in tariff 'like the one in Denmark, Spain or Germany' as transitional support before a new system was in place (Biuletyn 2003a). However, it became increasingly clear that the Parliament was not able to enforce what it had adopted (Biuletyn 2003a).

Nevertheless, as Poland had joint the EU in 2004, it had to conform to the 2001 Renewables Directive (Boasson 2021, this book). Both the Buzek and Miller governments were clearly pro-European and eager to comply with EU regulations. Poland was also bound by emission reductions agreed in the Kyoto Protocol; however, due to structural changes in the industry, Poland fulfilled its reduction targets without needing to decarbonize its power sector. Thus, the international climate policy did not really serve as an incentive for Poland to reform its domestic energy system and expand renewables.

Following negotiations between Poland and the relevant EU institutions in 2002–2003, the 7.5% target for renewables by 2010 and other provisions of the ordinance were included in the EU Enlargement Treaty. That made the target a 'key driving force for development of further legislation and for the increase in the amount of renewable electricity in Poland' (Wiśniewski, in Jankowska 2010: 167).[2]

Despite the lack of liberalization reforms in the electricity sector, the deputy director of the Economy Ministry argued that 'in energy, also renewable, we will be moving towards market solutions. Setting a fixed tariff, like in Germany, will not be right. We propose market mechanisms, so-called Green Certificates, a renewable energy market' (Biuletyn 2003a). Representatives of the conventional

energy sector called for biomass co-firing to be included in the support scheme, which would allow the energy companies to benefit from renewables support.

With sectoral expectations mounting and Polish EU accession looming, the draft of a new renewables law was issued in the summer of 2003. It was prepared by the former EC BREC, by then transformed from a unit within the Ministry of Agriculture to an independent non-governmental think-tank – the Institute for Renewable Energy (IEO 2017) – and was sent to the Ministry of Environment. The draft proposed technology-neutral green certificates as the core support scheme. However, in November 2003 the Department of Instruments for Environmental Protection sent back a completely new draft, changing the balance between renewable energy technologies to be supported, clearly granting more competence to the transmission and distribution system operators and downplaying the role of local governments and dispersed energy producers.

The new draft underwent a new round of consultations; but, while these were ongoing, in late December the Department prepared yet another draft, asking stakeholders to send in their comments within one day (Grużewski 2004). This was met with outrage among the interest groups concerned, and after heated discussions in the Ministry, another amended draft was sent out for consultations. However, renewable energy organizations and environmental groups were not included, whereas conventional energy industry companies were. At the time, the head of the Department was a former employee of the TSO, an engineer linked to the conventional power sector since the early 1980s – and his role in Poland's energy governance and policy-making was described as a 'personal union' between the energy industry and government (Grużewski 2004).

The revised draft was, again, rejected after the governmental reorganization in May 2004. Now, the cabinet of Leszek Miller was replaced with a new one formed by Marek Belka, with a new Minister of Environment (Jankowska and Ancygier 2017). The new government implemented the Renewables Directive through Executive Ordinances and amendments, and little parliamentary involvement (Ancygier 2013a: 246; see also ClientEarth 2013). In the majoritarian parliamentary culture that had emerged in Poland, dialogue with minority voices and thus the plurality of competing interests relating to renewables rarely featured in policy debates (Cianciara 2015: 74). As a result of the preferences of the traditional utilities, co-firing was added to the list of renewable energy technologies in 2004; this was also in line with EU regulations. But when would the long-awaited support be introduced?

By 2004, renewables policy had been mainstreamed into energy policy in Poland. The Ministry of Economy, with its sectoral logic conditioned by the conventional energy industry, set the terms of the debate. While Poland aligned its policies to the EU in a broad array of areas in this period, it did not align to EU procedures when it came to organizing transparent policy consultation processes (Cianciara 2015: 56–57). Top-down EU pressures, combined with bottom-up pressures from the growing renewables lobby, made the introduction of a support mechanism inevitable. However, that did not happen in this period, despite several draft consultation processes.

2005–2009: green certificates and learning EU energy governance

The emerging renewables industry failed to gain much influence in the period 2005–2009. However, as we will see, Poland adopted a certificate scheme that had the paradoxical effect of strengthening its traditional coal-based electricity industry.

The parliamentary elections in September 2005 re-shuffled the political scene considerably, bringing an eclectic coalition of the conservative-right Law and Justice Party (PiS), the nationalist LPR and the agrarian-populist Self-Defence Party to power. Work continued on a renewables law that would be compliant with EU regulations. In October 2005, the Sejm adopted a 'Renewable Energy Act' – in fact an amendment of the 1997 Energy Law and the 2001 Environmental Protection Law (Sejm 2005), adding to the legal complexity. Tradable electricity certificates were introduced, with a quota that obliged energy producers to generate a certain percentage of their power from renewable sources. Those who failed to meet the quota had to pay a 'substitution fee' – which was transferred to a governmental pool used for renewables investments. All renewable electricity was guaranteed access to the wholesale market (Biuletyn 2005). In addition to the green certificates, the scheme also included 'red' and 'yellow' certificates for high-efficiency cogeneration.

However, already the following year, an MP from the ruling coalition complained that the main beneficiaries of the certificate scheme were 'cogeneration plants co-firing biomass with coal and old hydro plants' and indicated that the system needed immediate correction (Biuletyn 2006b). It was clear that such co-firing was not spurring the development of new and renewables electricity technology (Biuletyn 2006b). The system favoured those who invested in the cheapest renewables (co-firing), whereas more expensive renewables were simply not developed. The agrarians' 'pet renewable', biogas, widely seen as a technology that would boost both employment and agricultural production, also proved to be a loser in the new system.

The effects of certificates on anything but low-cost co-firing took longer to emerge, even if many developers showed interest in investing (Biuletyn 2006b). In 2006, Poland still had only two windfarms and some scattered turbines. A 'run on wind energy' was observable, but the effects were late in coming, due to the burdensome administrative procedures as well as other problems caused by the conservative TSO. Yet, even the most vocal proponents of renewables noted that, without additional support for domestic investment, foreign investors would become 'the greatest profiteers in this business' and dominate the wind sector (Biuletyn 2006b).

Importantly, introduction of this new system coincided with a fundamental shift in the Polish energy market. Due to EU regulations (the Second and Third Energy Packages), Poland was encouraged to consolidate its existing energy producers – until then usually individual power plants run as semi-public companies – into large industrial energy consortia. Around 2006–2007 this led to the formation of the Big Four: Polska Grupa Energetyczna (PGE), Tauron, Enea and Energa.

This consolidation gave the conventional utilities an even more powerful position in the organizational field of stationary energy. Moreover, it became increasingly common to equate the interests of the large energy-industry players with the interests of the state (RES expert interview, 2016).

The certificate system was inherently unstable, as income for investors depended on the price of electricity and the price of green certificates (operating like equity with a price set by the energy exchange) – both of which fluctuated dramatically. Price drops were linked to an oversupply of certificates (reaching 18 TWh in 2015) – with increasing renewables capacity and increasing volumes of co-firing. Additionally, until they were withdrawn in late 2013, other types of certificates (red and yellow for high-efficiency cogeneration) influenced the price of green certificates. The 'substitution fee' – which was fixed by the national regulator each year – added to the investment risk, because under low prices it was cheaper for producers to pay the fee than to buy certificates. Hence, some funding that would have otherwise ended up financing renewables went into the governmental fund. This generally high risk made investment possible only at a higher rate of return. Capital costs made the certificate system more expensive per unit of installed capacity than a feed-in scheme. The opposition criticized the government for lack of vision, coordination, strategic thinking and focusing solely on fulfilling EU targets (Biuletyn 2006b). This resulted in the creation of a new position, the 'government's plenipotentiary for promoting renewable energy', charged with coordinating the work of five or six ministries in that area (Biuletyn 2006c).

Already in 2007, the coalition government established in 2005 collapsed. Snap elections brought the liberal-conservative Civic Platform (PO) and agrarian PSL into power, with Donald Tusk forming the new government. While initially the pro-EU government was also seen as pro-environmental, it quickly opted for 'cheap growth' with minimal emphasis on sustainability (Szulecka and Szulecki 2013). In 2009, the differences in organizational logics between the Ministry of Environment and the Ministry of Economy came again to the fore. The Environment Minister and leading figures in the environmental movement called biomass co-firing 'technological and economic nonsense'. Prime Minister Tusk accepted the resignation of Environment Minister Maciej Nowicki and transferred all competences on renewable energy policy to the Ministry of Economy. The Ministry of Treasury, which managed the state-owned energy companies, wanted a continuation of the co-firing practice. This gave the impression 'that the national 'champions' do not defend national interests, but rather that the state defends their interests' (Wiśniewski 2013). Importantly, Poland's satisfactory fulfilment of EU renewable targets was based largely on co-firing, as had been clear from the start (Biuletyn 2006a).

The national debate now seemed gridlocked. Revision of the Renewables Directive at the EU level attracted scant attention, as the government focused primarily on the revision of the EU Emissions Trading System (ETS) (Jankowska and Ancygier 2017; Skjærseth 2018: 503). In parliamentary discussions, the MPs treated legislative work on matters like the 2020 targets as something that was going on 'out there' (Biuletyn 2007).

Summing up, in this period green certificates were introduced, and, together with restructuring of the corporate sector, this strengthened the position of Poland's existing utilities. The support scheme had long been awaited, and, under high certificate prices, the investment conditions were favourable. It was primarily biomass co-firing that benefitted, but also, to a certain extent, wind farms. During these years, Poland also started to learn how to influence EU energy policy, moving from a passive receiver and becoming a co-shaper, at times even a veto player.

2010–2016: domestic struggle and EU assertiveness

After 2010, Poland became a more important player in EU policy development – and a less eager adopter of EU renewables policy. It also entered a period of opaque policy development processes relating to renewables support. In 2015, the country also experienced a shift to a single-party majority government that undermined the role of open political processes in the Parliament altogether.

As required by the 2009 EU Renewables Directive, Poland developed a national renewables action plan in 2010 (Ministry of Economy 2010). This plan aimed to meet the Polish target with wind, biomass co-firing and one new large hydropower plant (Jankowska 2012). Moreover, a new bill on renewable energy sources should be adopted in 2011 (Ministry of Economy 2010: 37). At that time, the ETS debate helped to establish a clear link between energy and climate policy, but the dominant sceptical attitude of the energy industry spilled over to renewables regulation. The government began relying on a narrow group of trusted consultancies – most importantly EnergSys, a think-tank established by energy engineers with backgrounds in the conventional energy sector. By 2013 EnergSys had become the government's first-choice reporting body,[3] with considerable agenda-setting power.

In the 2011 elections, renewables became a political issue for the first time. The strongest commitment and most concrete proposals came from the agrarian PSL. The newly formed Palikot Movement had a generally enthusiastic attitude; it became the third-largest party in Parliament shortly after it was created. The largest party in the Sejm, PO, mentioned renewables only as part of EU obligations to be fulfilled. The main opposition force – PiS – voiced open climate scepticism: favouring coal, it called for rationalized renewables support that would give priority to national resources such as biomass, waste, hydro and geothermal energy (Kaczorowska 2013). After the elections, PO and PSL remained in power as a coalition, while the Palikot Movement, although it had been visible and active, dissolved by the end of the term.

Work on a new renewable energy act re-started in 2011, with the aim of fully transposing the 2009 EU Renewables Directive and streamlining the regulation of the renewables. This was meant to be part of the 'Energy Three-Pack' – a joint and coordinated reform of all energy-related legislation, including a long-delayed update of the 1997 Energy Law, the Gas Act. The new laws partly resulted from pressure on the part of the Commission, which threatened Poland

with proceedings before the European Court of Justice for not implementing the Directive. In December 2011, a draft renewables law was presented, including radical changes to the existing support mechanism.

In March 2012, a Renewable Energy Department was created in Poland's Ministry of Economy to deal with implementation of EU policy. After strong criticism of the 2011 draft, a significantly changed proposal was presented in July 2012. Following public consultations, the new department developed a proposal to introduce feed-in tariffs for smaller installations, and to reduce and ultimately abolish support for large hydropower and for co-firing. The Economy Minister accepted the proposal and asked the Institute for Renewable Energy to analyse the economic consequences of the proposed feed-in tariff (IEO 2016). The conclusions were later included in revised versions of the draft.

Meanwhile, due to mounting pressures from the Commission, a parliamentary project of a 'small three-pack' – a provisional set of temporary amendments to the Energy Law – was introduced in the Sejm. This shifted attention away from the renewables work within the Ministry of Economy. The small three-pack was adopted by the Parliament in July 2013 (IEO 2016). It dropped feed-in tariffs and opted for the continuation of the green certificate scheme, but new technology-specific certificate assignment would ensure that for each MWh produced in cheap co-firing, only 0.5 certificate would be granted, compared to 2.0 for solar. Renewable energy industry endorsed the changes but called for reduction of barriers to small-scale renewables investments (IEO 2016).

Renewables investments continued to grow rapidly. Between 2004 and 2013 the share of renewables in gross final energy consumption increased from 6.9% to 11.3%. But this golden age proved short-lived. In March 2013 Tusk stated that Poland would search for the renewables path that was 'safest and cheapest for the people', aimed at fulfilling the 15% target for 2020 – and 'nothing beyond that' (PAP 2013). This indicates that fulfilment of EU obligations was the main driver of renewables support in Poland, but also that the coming policy mix should give the government control over energy price. While there was strong willingness to invest in renewables at the local level (Ancygier and Szulecki 2014b), the complex support mechanism, as well as the unfavourable conditions for prosumers and cooperatives, left the potential for small-scale developments untapped.

In November 2013, a new Minister of Economy was appointed. He presented a completely new renewables act proposal, erasing two years of drafting and consultations. The project was prepared by a team in the Chancellery of the Prime Minister. The draft, heavily influenced by utilities and industrial energy companies, made nuclear the preferred tool for decarbonization (IEO 2016). The certificate scheme was replaced with *auctioning*, without giving priority to new and more costly renewables. The Ministry refused to conduct a new round of consultations, claiming consultations had already been held, albeit concerning a very different draft.

At that time, new EU state-aid guidelines were under development, and while it was signalled that traditional feed-in would not be accepted, it still seemed as if certificate schemes would. The Polish authorities were concerned by the direction

this regulation was taking. In a consultative response to the Commission, the Office of Competition and Consumer Protection argued that renewables could play at best an auxiliary role in Poland, and it called for a more technology-neutral approach that would allow Poland to subsidize conventional generation and nuclear 'due to geographical, geological and climatic conditions' (UOKiK 2014).

The Polish Council of Ministers approved the draft Renewable Energy Act in April and in May sent it to the Commission, launching a notification procedure – which it soon discontinued. In July the draft Act went to the Sejm, where the opposition (PiS) demanded a public hearing, claiming that public consultations to date had been 'fictitious', and that the new renewables act had been 'written by lobbyists', noting that windpower was allegedly favoured in the project (*Komisja* 2014).[4] The public hearing was held in September 2014, with a record-high 129 participants (Sejm 2014). Nevertheless, the haste with which the project of a new support mechanism (auctions) was pushed through the Sejm gave rise to objections. There were also fears that the new schemes might be dismissed as unjustified state aid, as this had not been notified to the Commission in due time (*Komisja* 2014).

In January 2015, the new Act was finally adopted in the Sejm. First auctions were scheduled for January 2016. The Act was criticized for its complexity (144 pages of detailed regulations) and high up-front costs of entering the auction, making it difficult for municipalities and cooperatives to participate. In addition to the suggested auctioning scheme, the Sejm adopted a fixed feed-in tariff for installations below 10 kW, aka the 'prosumer amendment', proposed by a PSL deputy and supported by an unprecedented media campaign on the part of renewables actors and environmental organizations. An ad hoc majority that formed around the issue, including the coalition junior partner PSL, adopted the amendment against the will of the ruling Civic Platform party. The government and PO tried to topple the amendment in the Senate, which proposed its own, watered-down 'prosumer amendment'; but in a second vote in February 2015, the Sejm adopted the Renewable Energy Act with a guaranteed price at the level of the average wholesale price from the preceding year. This price and market access guarantee, combined with preferential credit offered through public financial institutions, attracted wide interest.

Presidential and parliamentary elections in June and October 2015, respectively, brought a new political situation, putting the long-term opposition party, the conservative PiS, in full control of the state administration. This time, the electoral campaign was much more focused on energy and climate issues – with PiS supportive of local, dispersed generation, with the liberal PO and newly formed Nowoczesna sceptical to renewable energy and with the main proponents of renewable generation again among the agrarian PSL and on the left (United Left and Your Movement, neither of which gained seats in the Sejm) (Kijewska 2014).

A new Ministry of Energy took over energy governance competences from the Ministry of Economy (which was dismantled), and the long-time director of the Renewable Energy Department was dismissed. Understaffed, the new ministry was unable to continue legislative work on renewables policy. Already in

December 2015, a new amendment to the renewables act passed through the parliament. It extended the 'green certificate' system and postponed auctions until 1 July 2016. Further, it gave the new Energy Ministry authority to insert changes in the small-scale feed-in scheme if investments seemed to be growing too fast. This extended the systemic instability for larger investors and left the angry prosumers in limbo. Those who invested or took up mortgages on their home photovoltaic installations were worried, because PiS – initially seen as prosumer-supportive (Szulecki and Ancygier 2015), began sending rather negative signals.

In June 2016, the Sejm, solely with the votes of the PiS majority, adopted another new amendment. MPs from PiS submitted the proposal in a format that allowed bypassing all public consultations and sped up the decision-making procedure. This was part of a larger trend, with the PiS using this special procedure to avoid public hearings altogether (only two were held in the first year) (Obywatelskie Forum Legislacji 2017). It was claimed that major stakeholders had been consulted, but that had not happened.

The 2016 amendment included co-firing, and the biomass-to-coal ratio needed to qualify as 'renewable energy' was changed from 30/70 to 20/80. As to the tenders, the government would now decide each year what kind of technologies would be required through an Executive Ordinance, defining the technology and amount of energy to be bought in an auction. In a separate act, the PiS introduced a localization regime highly unfavourable to wind farms, which, as ClientEarth noted, was harsher than for coal-fired plants (Chojnacki 2016). In October, the Ministry of Energy published a list of reference prices per MWh of energy (basis for auctioning), distinguishing 21 renewables categories, on the basis of technology and size. For the first two years, no auctions for onshore wind were held: the first one came only in November 2018.

Discussion and conclusions

This chronological presentation has shown that the European environment has played a vital role in shaping Poland's renewable electricity support-scheme mix. This research confirms Jankowska's argument that, without external EU pressure, 'there would not have been an energy and climate policy in Poland even half as ambitious as it is now' (Ceglarz and Ancygier 2015: 137; Jankowska 2010: 168). In the first phase (until 1999), renewable energy seemed a rather distant, futuristic idea associated with 'modernization'. At the time of political, social and economic transition from Communism, 'the West' – epitomized by the EU – was perceived as a role model (Ancygier and Szulecki 2014a; Szulecki and Kusznir 2017). Poland was a relatively early adopter of a feed-in scheme; a main reason seems to have been influence from the early feed-in adopters in the EU. All this happened before Poland became an EU accession country, and long before Brussels had any formal authority over Polish energy policy.

Later, EU conditionality gave the Commission superior authority over Poland across a range of issues, and harmonization of domestic policy with EU norms and expectations accelerated. In line with the findings of Jankowska and Ancygier

(2017), we can conclude that this explains why Poland adopted a certificate scheme. While feed-in diffused and became increasingly popular in other EU member states, Poland was influenced more by the Commission than were its peers. After accession, the carrot-and-stick of membership and conditionality disappeared, but learning to navigate the new corridors of power in Brussels took time. Until 2010, Poland was still building up expertise and capability in energy policy-making and negotiations. Domestically, renewables were but a marginal issue.

Early in 2015, Poland adopted a support scheme for large-scale renewables, closely aligned to the approach recommended in the EU 2014 state-aid guidelines. As Poland already had a certificate scheme that was acceptable under the new guidelines, this change seems puzzling and cannot be interpreted as a direct result of the increased authority of the EU with respect to renewable energy issues (Boasson 2021, this book). Policy-makers and incumbents were clearly dissatisfied with the technology-neutral certificate scheme. As there was growing pressure from the outside (the Commission) and below (renewables lobby and environmental NGOs) for full implementation of the 2009 EU Renewables Directive, the new renewables act was seen as an opportunity to realign the support scheme and the political economy of renewables. On the surface, Poland seemed to be following the crowd. It adopted a variant of auctioning, which was the Commission's preferred price-setting scheme, adopted by several other member states – but the Polish authorities made sure it was highly technology-specific and easy to steer. In contrast, the Polish Parliament ensured that Poland adopted a support scheme for small-scale renewables apparently inspired by small-scale schemes in other EU member states (Leiren and Reimer 2021; Rayner et al. 2021).

We can conclude that the *European environment* has been very important for the development of renewables policy in Poland ever since the 1990s. Indeed, EU policy seems to have had prime importance when the EU has had the greatest authority (in the accession period, and after 2014). Poland has been affected by trends in the European environment, but the 2015–2016 changes show that these could be used more selectively and instrumentally.

Moreover, we cannot overlook EU influence in other areas that had repercussions for the Polish renewable energy mix. While EU unbundling and electricity-market regulation has had positive effects on the nascent renewables industry, the creation of a state-energy-industrial complex was also the result of EU pressures on horizontal and vertical consolidation (Jankowska and Ancygier 2017; Szulecki 2018).

As to the *organizational field*, it remained segmented during all the periods examined here. While governmental ministries were very important initially, sectoral incumbents became more powerful after the EU induced consolidation around 2006. Responsibility for the development of renewable energy shifted frequently between different ministries, and the utilities appear to have gained influence after responsibility for renewables was moved away from the Ministry of Environment in 2009. To some extent, external consultants with close ties to the large utilities served to strengthen the utilities' control over information.

Even though Poland had a market-based support scheme for a while, the market logic does not appear to have been strong in the organizational field. Nor do any of the institutional logics relating to climate mitigation appear to have a strong standing in the field, which remains dominated by a centralized and state-steered system where conventional (coal) baseload generation is seen as the backbone of the Polish economy. The Ministries of Economy and later Energy and the regulator TSO, as well as the major state-owned utilities, all share this mind-set. There is a clear 'revolving door' issue, with considerable (re)circulation of experts (Szulecki 2018). Renewables are frequently depicted as undermining state energy security (Szulecki and Kusznir 2017). Despite the dominance of the large utilities, we can find several examples where small renewables actors have been able to influence policy – most clearly with the adoption of the feed-in scheme for small-scale renewables in 2015. However, it did not take long before the major players in the field were able to weaken this scheme severely. Hence, the emergence of a small renewables community has not counteracted the other tendencies towards stronger segmentation in the field.

We may conclude that the logic of the organizational field, with increasing segmentation, has become consolidated, its impact on policy growing over time. The outcome of the 2012–2016 legislative process is the most important evidence: it was the energy-sector experts, and not the challengers (despite increased politicization of the issue), that got the upper hand.

Lastly, turning to the *political field*, it seems clear that prior to 2010, renewable energy in Poland was de-politicized, and the main governing method was ministerial. This is supported by strong evidence: between 1997 and 2014 (except for the 2005 Renewables Act), most regulation was conducted through ministerial ordinances. However, a broader debate did open in 2011, gaining salience until 2015. This shifted the governing mode to legislative – and politicization ensured that the political field had significant influence on the renewables schemes adopted in 2015, the small-scale support in particular. Since then, all new regulation has been conducted as amendments to amendments to amendments, passed through the Parliament. The period after 2010 can thus be seen as a time of increasing politicization. However, with the single-party majority in power after October 2015, 'legislative' itself becomes a problematic concept.

The political struggle immediately leading to the adoption of the 2015 Renewable Energy Act, with an ad hoc coalition forming around the 'prosumer amendment', indicates that politicization of renewables policy has been uneven in Poland. Public awareness has indeed been growing, and, strengthened by the experience of neighbouring Germany, the focus is primarily on small-scale – not large-scale – renewables.

Despite the chaotic drafting and legislative action between 2010 and 2016, there has actually been relatively little political competition in the classic sense. Political party programmes revealed a weak focus on renewable energy up until the 2019 Polish electoral campaign. Throughout that period, the PSL and the Palikot Movement/Your Movement were the strongest advocates of renewable energy generation, whereas the position of the PiS is very difficult to pinpoint – struggling between strong prosuming attitudes to open hostility towards windpower.

Put in the language of political and organizational field theory, the dominant institutional logics of the organizational 'conquers' the political. This in turn is linked to the fact that in the case of Poland it is very difficult to draw a clear line between the two, although the organizational field appears dominant. This is additionally reinforced by the surprising ease with which individuals cross the frontier between political posts (parliamentarians, political ministerial officials) and organizational roles (leadership and supervisory positions in state-owned and private companies). This ease of passing through the proverbial revolving door is not seen as problematic, simply because the interest of large energy-industry players is equated with the interest of the state (Szulecki 2018).

That last point can be explained in purely rational terms, concerning how the political economy of the Polish energy sector is organized. If (partly) state-owned energy companies generate income that can be used by the state budget, the state will have an incentive to design policies that protect their business model and maximize budgetary profits. A switch to dispersed renewables would require a complete paradigm change – thereby challenging the existing hegemonic professional logic with the energy technology development logic of the renewables actors. Large-scale renewables can be integrated into the centralized model, but that feat is much more difficult for small-scale and decentralized production.

Changes in government often bring policy reversals, but rarely a shift in the overall approach to energy policy. Even the otherwise drastic political rupture in Poland, when, after eight years in power, the Civic Platform liberal-conservative government was replaced by the conservative-nationalist Law and Justice Party, can be seen as an example of continuity in energy and climate policy.

The European environment has been crucial in pushing for stronger renewables support policies in Poland, while the apparent legislative instability is strongly linked to the highly conflictual political field. On the other hand, the choice of specific instruments, within the confines of options acceptable to the EU, is best explained by the stable and segmented organizational field, dominated by the professional logic of the centralized, engineer-led coal sector, which in turn is linked to the importance of Poland's natural resource endowment.

Poland's current renewable energy policy mix seems optimal for the actors dominating the organizational field. Indeed, changing *that* situation would require a deep paradigm shift and a total reversal of the political economy of the energy sector.

Interviewees

1 Renewable energy consultant, 16 March 2016, Warsaw
2 Renewable energy consultant, 2 February 2018, telephone interview

Notes

1 However, an amendment from 7 June 2018 has changed that system once again, introducing a feed-in tariff for small renewables installations (< 500 kW), an option of a feed-in premium for mid-sized installations (500–1000 kW), and an auctioning scheme for

installations larger than 500 kW. The tender system is similar to the one established in 2016, but the resulting price is the basis for Contracts for Difference (CfD), and the number of technology 'baskets' was reduced to five: biogas and biomass; hydro, geothermal, liquid biofuels and offshore wind farms; agricultural biogas; onshore wind and photovoltaic farms; hybrid installations. These changes occurred after the project's research period.

2 During the important plenary meeting of the Commission for Environmental Protection on a Pilot Executive Program for renewables, 2003–2005, eight out of ten policy-makers who took the floor mentioned the EU as a direct or indirect influence. Additionally, six of the experts and civil servants also referred to EU regulation and influence, see *Biuletyn* 2003a.

3 Personal communication with a Polish environmental movement expert, April 2013. In 2016 the main expert of EnergSys, Bolesław Jankowski, became the vice-president of the state-controlled PGE energy company.

4 In fact, at the time, legislative transparency was improving significantly. Cianciara reports that by 2009 formal consultations were taking place, but the legislators often organized them at the latest possible stage to fulfil the formal requirement but limit societal impact (2015: 66). A more recent study, however, found that by 2012, 93% of governmental legislative projects were subject to consultations and 50% of these involved consultation with more than 20 entities – signalling an increase in openness and transparency of the process during the second half of Civic Platform/PSL coalition period in office (Kopińska et al. 2014).

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8 France

From renewables laggard to technology-specificity devotee

Elin Lerum Boasson, Catherine Banet and Jørgen Wettestad

Introduction

France has an energy system and a climate policy dominated by centralized, large-scale nuclear energy. Despite the emergence of an anti-nuclear movement in the mid-1970s and repeated bursts of protest, only the United States produces more nuclear electricity than France, and no other country is as reliant on nuclear power (Brouard and Guinaudeau 2017: 126). Early on, the French government chose to put all its energy eggs in the nuclear basket, developing a highly segmented energy sector with one monopolist utility, Électricité de France (EDF). From the late 1950s and for the next decades, the French energy system was increasingly nuclear-dominated.

This chapter tells the story of how and why France came to adopt a renewables support-scheme mix with the potential to transform the world's most monocentric electricity system radically, adding significant amounts of small-scale, decentralized energy. We will also see how and why France ended up with a highly technology-specific renewable energy support mix.

France has great renewable energy resources available, with potentials for a range of associated renewables technologies: hydro, wind, solar and bioenergy. The country exploited much of its potential for large hydro in the first decades after the Second World War, but many years passed before it started to develop a broader array of renewable energy technologies. Precisely because the energy system was so heavily dominated by large centralized nuclear energy, it seems puzzling that the French government should decide to adopt a technology-specific approach, based on a mix of support measures, which could eventually challenge the highly centralized nuclear energy system. France had modelled its feed-in scheme basically on the German scheme. However, when the European Commission (Commission) from 2012 began calling for less technology-specificity and greater exposure to electricity market prices, France was reluctant to adjust its scheme.

The story of France's renewables energy policy has been given moderate attention in the literature on European energy transition. A few scholars have examined French climate and energy policy in general (see e.g. Szarka 2007, 2011; IEA 2010, 2017; Meritier 2011; Whiteside et al. 2010), and certain specific aspects of

French renewables policy have been assessed (see e.g. Nadai 2007; Evrard 2012; Jacobs 2012; Cointe 2015, 2017; Boquillon and Evrard 2017). However, we are not aware of attempts at explaining the development of the French renewables support-scheme mix, or systematically exploring the relative importance of the French organizational field, political steering and EU influence in this respect.

Our multi-field framework rests on the assumption that the European environment will become more influential if one policy measure comes to dominate and Brussels gains stronger formal authority. Chapter 3 (Boasson 2021a, this book) shows that the EU has gradually gained more authority over national renewables support, and that feed-in premiums combined with auctioning became increasingly popular after 2013. Against this backdrop, it would be natural to expect the European environment to influence France more and more over time. But can this explain developments in France? To what extent was France influenced by Brussels and the actions of other EU countries (such as feed-in frontrunner Germany), and to what extent was the French renewables support scheme shaped by domestic factors?

Our general assumption in this book is that organizational fields dominated by a few actors that share a similar institutional logic will have strong policy impact. The highly segmented nature of the French stationary energy field, and the dominance of its centralized nuclear energy technology development logic, would lead us to expect the French organizational field to be very powerful. But it is hard to see how a support-scheme mix that promotes a broad range of decentralized technologies fits with the traditions of the French organizational field of electricity production. Might it be that the liberalization of the 2000s has radically reduced the segmentation of the field, and thus its influence?

Finally, to what extent can French political steering explain why France ended up with a distinctly technology-specific support approach? Has political steering perhaps played an important role, changing the course of development at critical points? According to the multi-field framework, the political field will influence the development of renewables policy most when the national legislature has considerable formal decision-making power and the issue is highly politicized. However, the French Parliament has not been a forceful actor in energy debates, and energy policy has apparently not often been politicized (Brouard 2013; Brouard and Guinaudeau 2017). Hence, we find no compelling reasons to expect the political field to provide key explanations to the development of the country's renewables support-scheme policy.

Technology-specific renewables support mix

By 2016, France had a technology-specific renewables support mix consisting of feed-in premiums ('remuneration complement contracts') for larger projects and fixed feed-in tariffs ('purchase obligation contracts') for small-scale renewables (RES Legal 2017). Certain smaller projects were entitled to feed-in tariffs, and thus a guaranteed price, but only the large-scale projects that successfully navigated the competitive procedure would be awarded feed-in premiums (add-ons

to the electricity price). Feed-in premiums were awarded to projects that won calls for tenders or had been selected as a result of competitive dialogue whereby the government negotiates with bidders about their projects. French renewables support was distributed through a special governmental fund, financed by energy taxes (CJEU 2012a).

Only solar plants of fewer than 100 kW installed on buildings, as well as biogas and hydropower plants of fewer than 500 kW, could get traditional feed-in support (RES Legal 2017). Levels differed between technologies; for solar, the feed-in tariff would be adjusted every quarter. For most technologies, the support levels would be reduced during the lifetime of the plants, but reduction rules differed across technologies. The aim was for feed-in support to be progressively replaced with feed-in premiums, and support financed by the aforementioned governmental fund that compensates the EDF and other distributors for their extra costs (CJEU 2012a).

The French feed-in premium, the remuneration complement, was allocated either through direct guaranteed contracts (*guichet ouvert*), projects that won calls for tenders or competitive dialogue with pre-selected candidates (RES Legal 2017). With the latter, the government negotiates with candidates that fulfil certain criteria, aiming to get the developers to improve their projects. The choice of procedure was to depend primarily on the technology and size of the installation, but the government had a certain leeway here. In practice, tenders have dominated, and they represent the largest volumes of added generation capacity (CEER 2018).

Various factors are to be taken into account in calculating the level of the feed-in premium – such as investment and operation expenses, revenues, the capacity of the facility, actual electricity produced, market integration, reference tariffs (set by the government) and market electricity prices (RES Legal 2017; Norton Rose Fulbright 2018). The weight accorded to various factors differed slightly between renewables technologies, but for all technologies the level of the feed-in premium was to a certain degree influenced by electricity market price developments. Price was to be the main criterion for project selection in tenders or competitive dialogues process, but other criteria, such as contribution to industrial development, were also taken into account (ibid.: 15, 26). Because France divided the tenders into many different categories, the support levels varied significantly across technologies: solar photovoltaic, onshore wind, offshore wind and bioenergy. The technologies were divided into multiple sub-categories and each was, as a main rule, awarded support through differing tenders.

A multi-annual investment plan for energy has set out detailed technology-specific investment targets and provides indicative timing for the national bidding procedures (RES Legal 2017). France has sometimes had technology-neutral tenders where different projects applying the same technology competed (as with as diverse solar projects), but not tenders where projects based on different technologies competed against each other (CEER 2018: 37). In addition to the main schemes, France has had several tax exemption rules that favour prosumers.

We can conclude that in 2016, the French support scheme was highly technology-specific. Small-scale projects were not exposed to electricity price development although large-scale projects were, to a certain extent. While eligibility for small-scale support was primarily rights-based, large-scale support would normally result from a competitive procedure. In the following, we trace the history of the French renewables support mix back to the 1970s, showing how differing factors have influenced developments over time.

Historical phases: from nuclear monopolism to renewables pluralism

Prior to 1999: becoming a nuclear champion and a major electricity exporter

Unlike the case in many other Western European countries, the oil crises of the 1970s did not lead France to increase its support to renewable energy – mainly because it had embarked on a nuclear path in the previous decade. Over time, France came to produce so much nuclear electricity that an important energy-policy challenge became how to get rid of it all.

The development of the grandiose French nuclear programme resulted from efforts at restoring the economic, political and military status that France had lost during the Second World War (Hadjilambrinos 2000: 1114–1115). Technological prowess, catering to energy-intensive industries and centralized electricity production, was a crucial element in this state-steered reconstruction. As domestic coal and large hydropower resources were limited, the government soon sought alternatives. Due partly to its military implications but also to energy-security concerns, nuclear technology gained important symbolic meaning in France. It was deemed essential to ensure that France could be restored to its former glory and international position.

By the entrance to the 1950s, several organizations dedicated to development of a centralized, large-scale, nuclear-based electrification of the French society were established. The nuclear technology research centre, the Commission for Atomic Energy (CEA), was created already in 1945 (Brouard and Guinaudeau 2017: 127). The public utility EDF was created the same year through nationalization of almost 2000 privately owned companies. It was granted a state monopoly for electricity export, import, generation, transmission and distribution. Initially the EDF primarily produced large hydropower, but the government steered it towards nuclear (Hadjilambrinos 2000: 1114). However, the state also required it to purchase hydropower at a special price, a practice quite similar to what later emerged with renewable energy feed-in tariffs schemes (Rusche 2015: 22).

France started up the world's first commercial nuclear reactor in 1959 (World Nuclear Association 2018). In 1973, the EDF started to implement the government's nuclear ambitions under the slogan 'tout électrique, tout nucléaire' (all-electric, all-nuclear). By the 1970s, the organizational field of electricity production had become very stable, highly centralized and centred on

construction and operation of nuclear reactors; the regulator CEA had superior expertise and authority, the EDF was the sole electric utility, Framatome the single nuclear reactor supplier, and Alstom the only nuclear turbine-generator supplier (David and Rothwell 1994: 296, Krieger et al. 2017: 277–278). The EDF was fully state-owned, but the state also had shares in the two latter companies. EDF was widely held to be powerful, often referred to as 'l'Etat EDF' (the state within the state) (van den Hoven and Froschauer 2004: 1083). The company was strongly centralized and hierarchical (Bauby and Varone 2007: 1056; Boquillon and Evrard 2017). Military and civilian nuclear technology development remained closely related until the two activities were split in 1969 (Brouard and Guinaudeau 2017: 128).

A few wind turbines were set up in the 1960s, but by the end of that decade, renewable energy technology was seen as unable to provide the large volumes needed to cover societal needs (Laali and Benard 1999; Hadjilambrinos 2000: 1115). The 1970s oil crisis was widely perceived as a severe threat to French prosperity. Prime Minister Messmer responded promptly by endorsing a nuclear power programme, aimed at constructing 200 nuclear reactors by 2000 (Hadjilambrinos 2000: 1115). The 1974 'Messmer Plan' was adopted without being debated in the parliament. An anti-nuclear movement emerged, calling for decentralization of both energy production and political power (Brouard and Guinaudeau 2017; Hadjilambrinos 2000: 1116). Mobilization against nuclear energy peaked in 1977 with protests against the Superphénix fast-breeder reactor (Brouard and Guinaudeau 2017: 128). The movement had some success locally, but civil disobedience protests were met with increasingly harsh retaliation (Kitschelt 1986: 75).

To understand why the anti-nuclear protesters failed to win through, we need to take the character of the French political field into account. Ever since 1958, France has had two-round elections for the presidency and the parliament and a dual executive system, where the prime minister and the president each have significant formal authority over the government (Cole et al. 2013). The president nominates the members of the government and defines meeting agendas, but only the prime minister has formal authority over the individual members of the government. The French executive has a strong position, especially when the president and the prime minister are from the same party – as was the situation from 1958 to 1986 (Brouard 2013). Only a few interest groups (environmental organizations not among them) had access to influence the French executive (Kitschelt 1986: 65). The French Parliament has rather little political clout, the party system is instable and 'French parties are famous for their weakness' (Haegel 2016: 378). Moreover, 'small parties are systematically underrepresented and large parties systematically overrepresented' (Blais and Loewen 2009: 352).

In the 1970s, only a marginal Socialist Party was opposed to nuclear; there was hardly any promotion of renewables (Brouard and Guinaudeau 2017: 134). Conservative Gaullist parties and the Communist Party were most in favour of nuclear, while the socialist-oriented parties were internally split (Brouard and Guinaudeau 2017: 136–138, 151). Prior to the 1981 elections, the Socialist presidential candidate François Mitterrand tabled several proposals critical to nuclear,

for instance that national referendum be held (Hadjilambrinos 2000: 1117–1118). But the political resistance at this stage was far from sufficient to reverse the development towards nuclear: after being elected, Mitterrand halted construction of six plants, but eventually the referendum was cancelled and the nuclear roll-out continued. Key electricity industry actors feared that a scale-back would seriously harm them, so new nuclear was constructed even though it was well known that this would lead to more electricity production than the country needed.

Even though renewable energy was a minor issue, governmental bodies with responsibility for renewables were set up. For instance, a solar energy commission was established in 1978; in 1982 it merged with the French Energy Conservation Agency, which in turn merged with other agencies and became the French Environment and Energy Management Agency (ADEME) in 1992 (Décret n°82–404). ADEME supports project developers, citizens and policy-makers with analysis and research and development financial support (IEA 2017: 152). At the ministerial level, the energy portfolio was given to the ministry in charge of economy, finance and industry. A small renewable energy industries association, SER, was established in 1993, but it did not have much political clout (Boquillon and Evrard 2017: 165). These actors were not much involved in the development of French energy policy: the ensuing five-year energy policy plans were developed and executed by the cohesive nuclear energy policy community (Krieger et al. 2017: 295).

In the 1990s, the EDF became a truly Europeanized utility. By the late 1990s, the EDF was exporting nearly 20% of its electricity production (Hadjilambrinos 2000: 1118; van den Hoven and Froschauer 2004: 1085). In parallel, it was involved in many countries outside France. Indeed, the company 'transformed itself from a national monopoly responsible for providing public services into a multinational enterprise focusing on its development abroad' (van den Hoven and Froschauer 2004: 1085–1088). Because of significant overproduction, France promoted the adoption of an EU policy that would open up neighbouring markets for its electricity export. Aiming to secure the EDF access to foreign markets, the French government eventually agreed to an EU policy that would open the French market to new electricity utilities, but the EDF still continued to dominate.

Climate change received only moderate attention in France in the late 1980s (Boquillon and Evrard 2015, 2017). As France had a much less carbon-intensive economy than most other well-off countries and plenty of cheap non-polluting domestic electricity production, the issue was not regarded as pressing. Carbon taxation was the main climate issue, but climate concerns also contributed to the adoption of the wind-generation programme 'Eole 2005' in 1996 (Deroubaix and Lévêque 2006; Laali and Benard 1999). The main aims of this programme were to explore the cost-effectiveness and competitiveness of wind energy and to spur development of a domestic French wind industry. Inspired by the UK non-fossil fuel obligation, Eole 2005 applied tendering (Nadai 2007; Interview 10). The EDF operated the scheme together with the French Ministry for Industry and the governmental agency ADEME. Fifty-five wind projects were selected through tenders, but few were realized – indicating both the criticism of and moderate

priority accorded to this programme by various actors (Szarka 2007: 323; Interview 10).

A green party with an anti-nuclear agenda had been established in 1984, but failed to gain much national political influence initially (Boy 2002: 64; Brouard and Guinaudeau 2017: 136). Eventually, the Socialists became more critical to nuclear, and prior to the 1997 general elections, they declared their intent to increase renewable energy incentives (Brouard and Guinaudeau 2017: 138). The special two-round French election system makes it attractive for the parties to create pre-election alliances, and the Greens and the Socialists agreed on a government programme that would restrict the development of nuclear energy (Boy 2002; Brouard and Guinaudeau 2017: 128). In the end the Greens won only 5% of the vote, but they still secured a position in the Socialist government. As a result, nuclear expansion was halted somewhat, and a feed-in renewables support scheme was eventually initiated (see the next section).

Thus, by the late 1990s, the organizational field of stationary energy in France was unified around nuclear energy. France adopted a windpower support scheme, but neither climate change nor nuclear energy were really central political issues. Although only a quarter of the reactors originally included in the overly ambitious 1974 Messmer plan had actually been constructed, the country now produced far more electricity than it needed. As the EDF sought to sell its electricity abroad, it was on the verge of becoming a truly European company.

2000–2004: shifting to technology-specific feed-in

Despite producing far more electricity than it needed, France went on to adopt a more encompassing renewables policy in this period. This took place in parallel with a prudent liberalization of French electricity regulation.

Soon after the Eole 2005 programme had been adopted, French energy experts, various environmental movements, the renewables association SER and the environmental agency ADEME began criticizing the programme, seeing the German feed-in scheme as preferable (Boquillon and Evrard 2017: 167; Nadai 2007; Interview 10). Now in government, the Green Party had better access to decision-makers than previously, and prominent Green Party politicians called for a shift to feed-in tariffs, primarily because they wanted to spur the development of a new French renewables industry (Cointe 2017: 487). Even though this was not a headlines-grabbing debate, and only few politicians were actively engaged, it still influenced the law on 'modernizing the electricity public service'. This law was intended to transpose the EU's first Electricity Directive, but it also introduced a technology-specific feed-in scheme and a new energy regulator: the Commission for Regulation of Electricity (CRE) (Bauby and Varone 2007: 1057). Thus, the feed-in tariff scheme was introduced even though it had hardly been discussed politically (Cointe 2015: 383). While Eole 2005 had aimed at ensuring cost-efficient renewables development *and* the development of a French renewables industry, the feed-in scheme was aimed primarily at the latter (Jacobs 2012).

A multi-annual investment plan set a range of technology-specific investment targets, and a statutory order detailed the procedures for determining technology-specific feed-in tariffs for various technologies (Jacobs 2012: 58, 106). For two years, the utilities, the ADEME, and industry representatives negotiated how the feed-in level should be calculated (Cointe and Nadaï 2018: 97; Cointe 2017: 485). In the end, it was decided that calculation of the tariff should be based on costs avoided compared to conventional power generation – the calculation method favoured by the EDF (Cointe 2017: 486–487). Hence, the tariff was *not* determined on the basis of actual investment costs. If renewables investments threatened to over-shoot the technology-specific targets in the investment plan, the government could use tenders instead of feed-in (Cointe 2017: 486). Grid operators (primarily the EDF) were obliged to buy renewable electricity at the pre-determined tariffs, compensated by funds raised through a tax paid by electricity consumers (CJEU Case C-262/12:2). The EDF had operated the earlier Eole 2005 scheme, but now it was one of the actors targeted by the new scheme. Despite disliking the new scheme, the EDF increased its windpower investments in France radically from 2004 and onwards (EDF Renewables 2018).

France never reported its new support mix to the Commission as state aid (Rusche 2015: 91). In 2003, the validity of the French feed-in scheme was challenged in the French supreme court for administrative justice, the Conseil d'État. The court did not ask the CJEU to clarify the interpretation of EU state-aid rules. Instead, it ruled that, since the CJEU in 2001 had decided that the German scheme was not state aid, the French scheme was not state aid, either (Boasson 2021b, this book; Rusche 2015: 91). This was surprising, as the French scheme, unlike the German one, relied on a public fund to compensate electricity utilities for additional costs (CJEU Case C-262/12: 2). Later, it became clear that the Commission disagreed with the decision of the Conseil d'État, but many years would pass before the legality of the French support scheme was assessed by the Commission.

In 2001, the EU adopted a Renewables Directive that set the indicative, non-binding target of a 21% renewables electricity share for France in 2010, 5% higher than in 2000 (Boquillon and Evrard 2017: 168; Rusche 2015: 60). Also in 2001, the government initiated several calls for windpower tenders, offshore and onshore (IEA 2010: 95; Banet 2020). After the Conservative Party won the 2002 general elections, attention to renewables decreased. President Jacques Chirac hailed nuclear energy as the key to climate mitigation. A climate plan aimed at radical cuts in French emissions was put forward, but with little attention to renewables (Boquillon and Evrard 2015).

While the modest liberalization of French energy regulation opened the French market for new actors, the EDF remained dominant. However, it did increase its engagement in renewables, 2004 establishing its renewables subsidiary EDF Energies *Nouvelle* (EDF 2005). The same year, the EDF changed from a state-run company to a publicly registered company, but it remained fully state-owned (Bauby and Varone 2007: 1055). From the mid-1990s and onwards, it moved rapidly into liberalized markets in Britain, Germany and Italy (van den Hoven and Froschauer 2004: 10894). The EDF energy production portfolio in France

remained dominated by nuclear, and complemented by some hydropower, but in 2005 the EDF decided to develop new windpower in France and abroad (EDF 2005).

Thus, France radically changed its incentives for renewables development in this period, with the cost-efficiency arguments that had underpinned the Eole 2005 support now replaced by a highly technology-specific feed-in approach (but still with moderate rates). Interestingly, France ignored the EU state-aid rules altogether in this period. Renewable energy was only modestly politicized, and the participation of the Greens in the government was crucial for the shift of support scheme.

2005–2009: aiming to become an international climate champion

Much happened in French renewables policy in the years 2005–2009. For the first time in decades, there were serious discussions on reducing the country's dependence on nuclear power. A substantial ramping up of renewables support also took place, setting off a rapid expansion of solar as well as wind (IEA 2018). Moreover, the international leadership ambitions of President Nicolas Sarkozy led him to commit more strongly to renewables at the EU level, in interaction with the development of renewables support domestically.

By 2005, some nuclear reactors had become so old that they had to be taken out of operation. France now built its first nuclear reactor in 15 years, and an energy law adopted in 2005 ensured that nuclear energy would remain a cornerstone of the French energy system in the future (Brouard and Guinaudeau 2017: 128). Renewables received much more attention than earlier, but had also become far more politically controversial. As Alain Nadai (2007: 2717) has pointed out, 'wind power became a national issue and a genuine controversy', invoking landscape issues and local opposition. Still, electricity price development was a more salient political issue than renewables. A 200% increase in wholesale electricity prices between 2004 and 2008 created a political crisis that eventually led to stricter regulation of electricity price developments (Reverdy 2015).

Due to relatively low feed-in tariff levels, complex local planning procedures, lack of grid connections and lawsuits against windpower projects, France was not on track to reach the indicative target in the 2001 EU Renewables Directive (Nadai 2007; Szarka 2007; Rusche 2015: 60; Green Optimistic 2018; Reuters 2018). But after 2007, renewables investments accelerated, thanks to the introduction of more precise and ambitious renewables targets in the second multiyear investment plan, and a doubled feed-in rate for solar photovoltaic (Jacobs 2012: 58). The new feed-in tariff was a symbolic decision at the top level, probably made by Prime Minister Dominique de Villepin; it was not discussed in the Parliament and was against the will of the energy regulator CRE (Cointe 2015: 154, 2017: 487). Moreover, the principle for calculating the tariff for solar was changed, from avoided costs to investment costs. No one expected solar investments to soar because of this change; the intention was rather to spur the development of a new French industry (IEA 2010: 98).

Back in 2005, the French people had rejected the proposed new EU constitution in a referendum, making the relationship to the EU an issue in the 2007 presidential elections (Cole et al. 2013). Climate issues were also on the agenda (Brouard and Guinaudeau 2017: 136; Cointe 2017: 488). While the political platform of Nicolas Sarkozy's centre-right Union for a Popular Movement party emphasized how the French nuclear programme would help to reduce greenhouse gas emissions, the Socialist presidential candidate Ségolène Royal argued that the renewables share of energy consumption should be almost tripled, to 20%, by 2020 (Brouard and Guinaudeau 2017: 136; Royal 2017). Climate issues gained attention after the popular TV presenter and leader of an environmental foundation, Nicolas Hulot, formulated a manifesto calling for a massive reduction of oil, gas and coal consumption, a fourfold decrease of GHG emissions by 2050 and a strengthening of the Ministry of Ecology. Hulot managed to use the manifesto to pressure both candidates to clarify their climate positions; Sarkozy signed Hulot's Pact in January 2007 (Whiteside et al. 2010).

Sarkozy won the presidential elections in May 2007; in the ensuing parliamentary elections, the Conservative Party won an absolute majority (Cole et al. 2013: 6). Sarkozy proved to be more involved in policy developments, including renewables, than most of his predecessors had been (Cole et al. 2013: 5). Standing forth as a leader at the European level was important for Sarkozy; already on election night he declared, 'ce soir, la France est de retour en Europe' (Drake 2013: 218). He was elected just after the EU had decided in March 2007 to adopt binding national 2020 renewables targets (Boasson 2021b, this book). When France assumed the presidency of the Council of the European Union in the second half of 2008, Sarkozy developed a work programme that gave high priority to climate change and renewable energy (Drake 2013: 222). He did not support the Commission's initiative for developing a directive that would leave it to the EU to steer the design of national support schemes, but the French government worked hard to facilitate internal agreement within the EU on a less constraining directive (Boasson and Wettestad 2013: 48, 92; Boquillon and Evrard 2017: 170).

In 2007, energy issues were moved from the Ministry of Industry to the Ministry of Ecology, slightly reducing the dominance of the cohesive nuclear-energy policy community (Cointe 2017: 489). However, the EDF remained the dominant actor, although state ownership was now reduced to 85% (Bauby and Varone 2007: 1052). In addition, new renewable-energy actors were appearing at the generation stage. From 2006 on, membership in the renewable energy industries association SER increased, up to close to 400 entities (Interviews 2 and 3).

Sarkozy also initiated the Grenelle Environment Forum, a three-month collaborative consultation process where governmental organizations, local authorities, trade unions, business and environmental groups participated in 2007. The Grenelle working group on climate and energy recommended increasing the share of renewables in energy consumption by 20% by 2020. In January 2008, Sarkozy announced that this should become an official French target (Renewable Energy World 2008). A more detailed renewable-energy action plan was launched in November 2008, outlining 50 measures for enhancing the development and

deployment of renewable energy in order to reach the Grenelle target – for instance, constructing at least one photovoltaic plant in each region by 2011 (IEA 2010: 95). However, the French target was upped in the final Renewables Directive in 2009: the targeted overall share of renewable-energy consumption in France by 2020 was to be 23% (Directive 2009/28/EC). This increase was related to the French diplomatic offensive aimed at securing agreement on the Directive (Boquillon and Evrard 2017: 169).

The increase in renewables ambitions came at a time when investment costs were falling radically, and photovoltaic investments skyrocketed. However, the government lacked resources to steer these developments and close the gap between investment costs and the feed-in tariff (Cointe 2015, 2017). Few of the windpower projects selected through tendering procedures were realized (Furtey et al. 2015: 37–38). Thus, at the entry to the new decade, the French support-scheme mix over- and underachieved simultaneously.

2010–2016: shifting to feed-in premium and more tendering endorsed by the EU

Unlike many other feed-in countries, France had for many years applied tenders as a method of selecting projects eligible for bioenergy and onshore wind support. In 2010 and 2011, the government issued the first calls for solar and offshore wind tenders (Feurtey et al. 2015: 37; Norton Rose Fulbright 2013) – even though many French renewables actors were critical of tendering as a selection method (Feurtey et al. 2015: 37–38).

In order to keep up with the rapid reduction in investment costs, the feed-in tariff was reduced twice in 2010, and the government introduced differing support levels for different solar technologies (Cointe 2015, 2017: 489–490). However, the feed-support was still criticized for contributing to the rising electricity prices and for profiting Chinese industry. To avoid a speculation bubble, the government introduced a three-month photovoltaics moratorium in December 2010, and a public consultation process was initiated. This process was messy, with a wide range of actors including various equipment producers, large utilities, farmers, environmental groups and several new solar-energy interest organizations in addition to SER. According to Beatrice Cointe (2015: 156–158) these actors had very different, sometimes irreconcilable, interests and objectives, and the process did not result in any consensus on reform of the support scheme. Against the wishes of most solar energy actors, the government finally decided to reduce the feed-in tariffs for small-scale projects, and a combination of feed-in premium and technology-specific tenders for larger projects was introduced. The feed-in premium was calculated on the basis of a complex equation.

In the midst of the support-scheme debate, the Fukushima nuclear accident in Japan in March 2011 spurred greater public debate over the future of nuclear as well as renewables. The French government and President Sarkozy responded by increasing spending on nuclear safety and promising greater investments in renewables (The Guardian 2011; Krieger et al. 2017: 289). They also argued:

'renewable energy doesn't allow for an abandonment of nuclear energy involving anything but an increased reliance on fossil fuels. A hurried abandonment of nuclear energy cannot be financially and environmentally neutral, so it can only be irresponsible' (French Embassy in London 2011).

Public support for nuclear actually increased after Fukushima, probably resulting from the pro-nuclear campaigning performed in relation to the presidential and general elections in 2012 (Brouard and Guinaudeau 2017: 142). While the Gaullist party stood by nuclear even though the costly replacement of old reactors was immanent, the Socialist challenger for the presidency, François Hollande, campaigned on reducing the nuclear share to around 50% (Brouard and Guinaudeau 2017: 138). This would necessitate more renewables support, but renewables as such received less explicit attention than in 2007, due partly to how the financial crisis had affected France (Interview 11).

Hollande won the presidential elections in the spring of 2012; one month later, the left-wing parties scored a historic win of the majority in both chambers of the Parliament (Brouard et al. 2013: 36). The new government, a coalition between the Socialist Party and the Green Party, swiftly took three important decisions with implications for the energy transition process, formally committing to: reduce the share of nuclear power in electricity generation to 50% by 2025; shut down the country's oldest nuclear station; and merge the climate and energy policy portfolios in one ministry in charge of ecology, sustainable development and energy.

A new round of debate and consultations on energy policy started in the autumn of 2012: the 'National Energy Debate'. Key issues included the place of renewable energy sources in the national energy mix and the design of the support schemes. At this stage, the general public was becoming more positive towards renewables and more negative towards continued reliance on nuclear (EWEA 2014). Moreover, the media reported that one of France's two main labour unions (the CFDT) was, for the first time, now calling for more renewables (Energy Transition 2013; Interview 10). It also it became clear that the support regime for photovoltaic introduced in 2011 had led to a severe crisis in the industry. In an attempt to remedy the situation, annual targets were increased and support levels were changed accordingly (Cointe 2017: 494).

In July 2012, an opinion issued by the Advocate-General of the CJEU concluded that the French renewables support scheme fell under the definition of 'state aid' as per the EU Treaty (CJEU 2012a). This view was confirmed in the judgement of the Court in December of the same year (CJEU 2012b). This implied that the French government would have to notify the Commission of its support schemes. The CJEU rulings created profound legal uncertainty concerning whether the Commission would dismiss any of the French state-aid practices as unlawful and thus decide that recipients would have to repay some or all of the support they had been granted. This uncertainty was amplified by the Commission's then-ongoing revision of the relevant state-aid guidelines (Premier Ministre 2014). France engaged in dialogue with the Commission already in January 2013, but it took several years for the Commission to endorse all French support schemes (Norton Rose Fulbright 2013; Commission

2016; Commission 2017c). In 2013, it became clear that DG Competition aimed to introduced new state-aid guidelines that were inspired by some of the changes that France had already introduced, but also was pushing for renewables to be even more exposed to electricity market prices and greater technology-neutrality (Boasson 2021b, this book). France protested, calling for greater leeway (Premier Ministre 2014).

In the autumn of 2013, the French government launched a public consultation on the future of the French renewables support schemes. This consultation attracted massive interest in the sector (Interviews 2 and 3). For instance, the Commission for Energy Regulation (CRE) recommended several changes to the support schemes, basically wanting them to become more aligned to the EU guidelines (CRE 2014). The EDF warned against favouring renewables investments too heavily as compared with other energy sources (EDF 2014).

By now, several large European electricity utilities had entered the French electricity market, such as Vattenfall, Enel and E.ON (AFIEG 2012). A broad range of new actors had moved into solar energy and offshore wind development, giving rise to several new industrial consortiums between windpower developers and equipment producers and French electricity actors (Banet 2017; Cointe 2015; Norton Rose Fulbright 2013). Moreover, the EDF had become a significant renewables investor in France, in wind as well as in solar (Cointe 2015: 156; EDF Renewables 2018).

A few months after the EU had adopted new state-aid guidelines in April 2014, the French Minister of Ecology, Sustainable Development and Energy, Ségolène Royal proposed a new energy law that included a new multi-annual investment programme with technology-specific targets and a new support-scheme mix, introducing new equations for calculating feed-in premiums, increasing the use of competitive tendering and reserving the use of fixed feed-in for smaller renewables projects (Brouard and Guinaudeau 2017: 2–7; Energy Transition 2014). The Parliament started to debate the proposal in October 2014, but the future of nuclear and the overall direction and speed of the energy transition attracted more attention than the design of the renewables support-scheme mix (Interviews 10 and 11). The Greens advocated a radical phase-out of nuclear, but due to meagre support from the socialist parties, no agreement was reached on this (Brouard and Guinaudeau 2017: 7). A final law was adopted in July 2015 (Energy Transition 2015b, 2015c).

France started formal notification of its scheme to the Commission in late 2014, but it took three years before deliberations with the Commission were concluded (Commission 2017a; Commission 2017b). The French government invested considerable resources in these negotiations with the Commission (US Press Agency 2016). While the law from 2015 was largely in line with EU state-aid guidelines, many details needed to be sorted out. The French authorities were particularly negative to the Commission's calls for less technology-specificity. In December 2016, DG Competition finally announced that it had accepted the French support schemes for geothermal deposits, biogas, small hydropower, and wind farms that had applied for aid during 2016 (Commission 2016). Another

six months would pass before the DG Competition endorsed the French support schemes for large-scale renewables and the Commission agreed to the continuation of technology-specific tenders (Commission 2017c). Large-scale solar energy had shifted to feed-in premium and tendering already in 2011; similar procedures were now developed for almost all large-scale renewables projects.

There have been no major changes in the support-scheme mix after Emmanuel Macron was elected president in 2016, and his new centrist party 'La République En Marche!' won a majority in the parliament. However, the leadership did aim to accelerate the development of windpower projects and continued support to solar (ENDS Report 2018; Reuters 2018).

Discussions and conclusions

This chronological account shows that the French support-scheme mix has emerged as the result of complex and often slow-moving developments. Different fields have played differing roles and had varying importance over time. By 2016, France had a highly technology-specific renewables support mix, where large-scale projects were partially exposed to fluctuating electricity prices, and support was awarded primarily through some sort of competitive bidding. The feed-in premium was not a mere add-on to the electricity price; the price of electricity was calculated by applying technology-specific equations that gave varying weight to factors such as operating expenses, revenues, the capacity of the facility in question, actual electricity produced, market integration, reference tariffs (set by the government) and market electricity prices. In addition, tendering based on price competition usually determined which projects were granted support. However, most small-scale projects were still awarded fixed feed-in support. All support schemes were technology-specific.

To what extent was this specific support-scheme mix a result of varying facets of the European environment? That is, to what extent was the French renewables support scheme shaped by EU steering and inspiration from other EU countries? The French renewables support story started in the mid-1990s, when France, inspired by the British tendering scheme, adopted a tendering system for windpower. A few years later the German scheme was hailed as superior, and France adopted a feed-in scheme. The tendering scheme was not abandoned, however. From the early 2000s, tendering and feed-in were combined for windpower, and gradually more and more technologies were granted feed-in after having won the tendering procedures. In order to understand the unusual combination of approaches in France, it is important to bear in mind the inspiration from two neighbouring countries, the UK and Germany, with very different approaches to renewables support.

For a long time, EU-level developments hardly influenced France. For instance, major political conflicts in Brussels concerning how and to what extent the 2001 Renewables Directive should influence national support schemes did not influence French debates and decisions. That France did not reach its indicative target in the 2001 Directive indicates how little attention France initially paid to the EU.

Furthermore, by not notifying the EU of its support schemes, France was able to avoid DG Competition and CJEU influence over these. This was in part thanks to the 2001 CJEU ruling that the German support scheme did not fall under the EU definition of 'state aid'.

After Sarkozy became president, the role of the EU increased, primarily because his European leadership ambitions led France to develop more ambitious renewables policies. France held the EU Presidency in the crucial autumn of 2008 when the climate and energy package was finalized, and an even more ambitious EU RES target was accepted than previously adopted domestically. As the EU target was binding, this contributed to increase the willingness of French governments to improve existing support schemes, but there were repeated difficulties in setting feed-in support levels that could spur investments without leading to overcompensation. In order to perform better, France developed a type of feed-in premium relying on highly complex technology-specific equations for calculating support levels, and it stepped up its use of technology-specific tenders. Hence, France's key role in the negotiations over the second Renewables Directive in 2008 indirectly helped to make the French renewables support mix even more technology-specific.

The CJEU ruling in 2012, that French renewables support did indeed fall under the definition of 'state aid', gave rise to profound insecurity among French renewables actors – but DG Competition subsequently launched new and more constraining state-aid guidelines that proved to not require a shift to schemes radically different from the support mix France already had. Eventually, these guidelines led to the introduction of more competitive elements in the French support mix, but DG Competition did not succeed in persuading France to adopt technology-neutral tenders. Moreover, the liberalization of the French energy sector, driven by the EU, contributed to reduce the power of the EDF and probably also influenced the development of the French renewables support portfolio.

Initially, we had expected the *European environment* to influence France increasingly over time, since the EU gradually gained more authority, and feed-in has come to prevail as the most common support scheme for small-scale projects – and feed-in premium combined with tenders has become the dominant approach for large-scale projects. But this is not what we find in the case of France. France was early on influenced by the UK even though very few other countries copied its scheme, and it emulated the German scheme long before feed-in had become the most common support-scheme design in the EU. Moreover, France had introduced widespread use of feed-in premium combined with tendering for large-scale projects even before the DG decided to favour this support-scheme mix. Hence, the effect of greater EU authority in this issue-area after 2014 is less than it may appear at first sight. In any event, influence from the European environment cannot account for all aspects of French renewables policies.

Further, we had expected the French *organizational field* to have influenced the country's support schemes most when the field was the most segmented; when one institutional logic dominated, and authority as well as information were concentrated. But, as it was difficult to see how a support-scheme mix that promoted a

broad range of decentralized technologies could fit with the traditions of the dominance of centralized nuclear energy in the French organizational field, we focused on whether it in fact was the EU-induced liberalization in the 2000s that slightly reduced the segmentation of the field, making possible the introduction of technology-specific renewables support.

The impact of the organizational field emerges as being more complex than we had expected. Initially it was highly segmented, with authority and information controlled by a few players, with the EDF at the centre. In addition, the field was dominated by a technology-development logic, geared towards refining and improving only one technology: nuclear. From the 1950s and until the early 1990s, segmentation hindered development of any renewables support. Moreover, the overly ambitious nuclear plan from the 1970s undermined the need for any more domestic energy production for decades to come. Only when the nuclear installations became so old that they needed to be replaced did renewables support development really became more of a priority issue.

Windpower is the renewables technology that offers the most centralized power production, so it is hardly surprising that this should be the first technology to attract some kind of governmental support in France. The EDF accepted the introduction of tendering schemes for windpower, partly because this support method rewarded the least costly projects. In contrast, the adoption of the feed-in scheme in 2000 clearly took place despite resistance from the organizational field. True, the EDF was initially able to ensure feed-in tariffs too low to lead to much investment, but eventually the old 'centralized nuclear technology logic' gave way to an alternative 'decentralized technology development logic', where it was assumed that the state should ensure development of a broad range of new French industries rather than only protecting the old and established nuclear industry (Cointe 2015: 482).

In 2010, the industry development aspects of French renewables policy had become strong and a broad range of new renewables industry actors had emerged. At this point, the legitimacy of the French feed-in was deteriorating. Despite lack of coherence and considerable internal conflicts, the new actors managed to underpin continuation and gradual refinement of the French support-scheme mix. Over time, the ministry and agency for environment gained more formal authority over renewable energy; a new energy regulator was also established. Civil servants seem to have played key roles in the gradual changes in the support mix that occurred after 2010, and the dominance of the old nuclear policy community was clearly weakened. In particular, the EDF's influence lessened, not least because the company struggled to develop clear priorities with regard to renewables support developments. It proved difficult to unite market thinking, centralized (nuclear) technology development logic and a decentralized technology logic; significant internal conflicts and uncertainties ensued.

We conclude that the EDF played a key role in the launch of the tendering practice in France, but feed-in was adopted more in spite of than because of the French organizational field. Eventually, the de-segmentation of the French organizational field and the emergence of a new decentralized technology development logic underpinned the adjustments and refinement of the support-scheme mix

from 2010 and onwards. Hence – contrary to our original expectations – it seems that the field actually becomes more important for the development of the support scheme when the degree of segmentation is somewhat reduced.

Research needs to include developments within the French *political field* in order to explain the French renewables story more fully. According to the multi-field framework, the political field will influence renewable support developments most when the legislative assembly has the formal powers to make decisions, and when renewables are subject to political competition. But since the French Parliament is known to be weak, we had not expected to find that political steering played much of a role in the French case. Is that also what we found?

No, not quite. True, the political field played a very marginal role up until 2000. It is not all clear what sparked the adoption of Eole 2005, but it seems to have happened without any strong prior political involvement. At two later points in time, central politicians heavily influenced the development of renewables policy, despite the lack of intense political competition. Around 2000 the Greens were instrumental in ensuring that France introduced a feed-in scheme, and in 2008 Nicolas Sarkozy ensured that EU renewables policy development contributed to strengthen the French feed-in scheme. In both cases, the political involvement was driven primarily by other concerns besides strong views on specific support-scheme designs: the first was related to nuclear phase-out, and the second concerned strong EU leadership ambitions on the part of France. The French Parliament did endorse the introduction of feed-in, but the details of the scheme were later determined without parliamentary involvement. Sarkozy's commitment to more ambitious French renewables targets was not endorsed by the Parliament until long after it had been included in the EU Renewables Directive.

After 2010, we see that the election victories of the French socialists, with their new stance on nuclear downscaling, underpinned the process of refining the French support mix in the years to come. Still, there does not seem to have been strong political involvement in the actual adjustments made to the overall scheme after 2010. Here we see that political involvement has been important also when the issue is not subject to political competition and the Parliament is not strongly involved. Simply put, the political field has been important in differing ways from those predicted by the multi-field framework.

We conclude that the French support-scheme mix is the result of intricate interplay between the European environment and developments in the domestic political and organizational fields. The organizational field has gradually increased its impact and importance, but political steering has been vital at a few crucial points. Furthermore, while models in the European environment initially served as a crucial source of inspiration, other parts of this environment later acted to constrain the processes of adjusting and improving the French support mix.

Interviewees

1 Electricity industry representative, Statkraft, 28 August 2017, telephone
2 Renewable industry representative, Syndicate of Renewable Energies, 8 November 2017, Paris

3 Renewable industry representative, Syndicate of Renewable Energies, 8 November 2017, Paris
4 Independent energy law expert, 8 November 2017, Paris
5 Electricity industry representative, EDF, 23 January 2018, Paris
6 Electricity industry representative, EDF, 23 January 2018, Paris
7 Electricity industry representative, EDF, 23 January 2018, Paris
8 Civil servant, Ministry of Ecology, 23 January 2018, Paris
9 Civil servant, Ministry of Ecology, 23 January 2018, Paris
10 Energy policy researcher, CIRED, 23 January 2018, Paris
11 Energy policy researcher, University of East Anglia, 21 February 2018, telephone interview

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9 Sweden

Electricity certificate champion

Elin Lerum Boasson, Hugo Faber and Karin Bäckstrand

Introduction

In the late 1990s, electricity certificate schemes were strongly favoured by the European Commission (the Commission) as well as the electricity industry, but 20 years later Sweden is the only EU/EEA country with certificates as its main renewables support scheme. In addition, the Swedish government offers tax exemptions and investment support for solar photovoltaics (PVs). Sweden seems to have been unaffected by the two dominant policy approaches to promoting renewable energy in EU countries: the diffusion of feed-in schemes in the period 2000–2010, and the shift to feed-in premium combined with auctioning that has occurred since 2010 (Boasson 2021b, this book).

The research question that guides this chapter is: *Why has Sweden electricity certificates combined with technology-specific solar investment support, apparently without being influenced by European policy trends in renewable energy?* The certificate scheme is technology-neutral. The amount of renewables in the scheme is subject to political decisions, but the supply and demand of electricity certificates determine the certificate price. The Swedish scheme was introduced as early as in 2003, and in 2016 the certificate scheme was prolonged until 2030, setting 2045 as an end-date of support to projects included in the scheme. This chapter traces the historical development of Swedish renewables policy from the 1970s and onwards, and identifies factors that can explain the Swedish exceptionalism in renewable energy policy.

Sweden harnessed much of its potential for large hydropower in the post-Second World War era. In the late 1970s, nuclear energy became a highly contested political issue, and an advisory referendum in 1980 determined that all nuclear should be phased out by 2010. The public contestation of nuclear power later paved the way for political willingness to promote alternative and new renewable energy sources, reinforced by the advent of climate-change threat in the early 1990s. For over 40 years, nuclear energy has been a heated political issue in Sweden. Renewables have seldom been at the centre of political conflicts.

A main assumption of this book is that the influence of what has been termed the 'European environment' will be strongest at times when the EU wields considerable formal authority and where one policy recipe is dominant. However,

the Swedish case study runs counter to this expectation: the EU emerges as most influential when it has had less formal authority and when many competing renewables support-scheme designs were in circulation in Europe.

In order to explain why the EU has played this role, we explore the relationship between Sweden and the European environment, examining the politics of renewables in Sweden, as well as the special character of the Swedish organizational field of stationary energy (Boasson 2021a, this book). Has Sweden opted for a largely technology-neutral support mix because this was embraced and promoted by a segmented organizational field of stationary energy? Or is the explanation that a political majority has fought for this through political competition? As we will argue, politics play a crucial role, not least due to the close relationship between renewables and the contested issue of nuclear power.

This chapter presents a case that has received limited attention from scholars of Swedish energy and climate policy (for a notable exception, see Åstrand 2005). To our knowledge, no other study has sought to explain the historical development of Sweden's renewables support schemes, and no other study has investigated the relative importance of EU steering, national political steering and the influence of corporate actors and civil servants. We also take into account the influence of the EU's renewables policy as well as EU's state-aid rules. The Swedish case study is especially pertinent as it provides insights into a case where Europeanization that occurred at one point in time froze, and remained in place many decades after the EU had shifted its policy to promote radically different national practices.

Technology-neutral renewables support mix

Sweden has a mostly technology-neutral renewables support mix, with an electricity certificate scheme for large-scale renewables and an investment support scheme for small-scale renewables. The certificate scheme involves a government-induced market for renewable energy securities (SOU 2017). Governmental regulations determine the operation of the market, the key factor being the size of the quota that renewable energy producers are obliged to produce or purchase. The quota level is based on a domestic renewable energy target expressed in TWh. With higher targets, the quotas increase, thereby increasing the demand for certificates. This leads to higher prices, and thus to higher support levels for renewable energy. While the level of support is determined by supply and demand on the certificate market, demand itself is highly dependent on the quota obligation. What the purchaser of a certificate buys is not the actual energy, but a certificate confirming its economic contribution to the operation of green electricity.

One certificate for every MWh produced is allocated to producers of renewable electricity. Distributors are required to hand over a certain number of certificates to the government based on a percentage quota of their energy sales or consumption. Energy-intensive industry is exempted from the quota obligation. If they do not produce renewable energy themselves, they must buy certificates from renewable energy producers, thereby creating a market where producers of renewable

energy can obtain additional funding. In the end, the additional expense of obtaining certificates is added to the electricity price (Swedish Government 2003).

Wind, solar and tidal power, geothermal energy, new hydropower, existing small-scale hydropower, biofuels in Combined Heat and Power (CHP) and peat in CHP can be included in the scheme (Bergek and Jacobsson 2010: 1258). All producers receive a bonus through the certificate scheme, corresponding to the value of certificates at that point in time. Thus, all are also exposed to the market price of electricity. Further, as all energy sources receive the same amount of certificates per MWh, this support is technology-neutral. It aims at expanding the most competitive renewable energy sources and ensuring minimal societal costs by letting the market select the most profitable technologies (ibid.: 1257ff). The scheme has since been prolonged and expanded, but the design has not changed significantly after it was adopted in 2003. The price of the certificates has varied: in late 2016, prices were at an all-time low, around €7 per certificate (Ekonomifakta 2016).

Sweden adopted an investment support scheme for solar PV on public buildings in 2005. This support covers up-front investment cost, but not operational costs. In 2009, also private individuals and corporations became eligible for investment support for grid-connected solar power (Swedish Government 2009a). Initially, the programme covered 60% to 80% of installation costs. It has since been lowered gradually, and since the beginning of 2015 companies can get 30% and private individuals 20% of their installation costs covered (Energy Agency 2015: 8). Between July 2009 and September 2016, some €51 billion were distributed through the scheme; an addition €19 billion have been granted (Energy Agency 2016). The programme has a fixed budget, providing support on a first come, first served basis. Each year, applications have exceeded annual budgets, leading to lengthy waiting times. The Social Democratic–Green Party government coalition increased the budget of the system for 2016–2019, but waiting times have remained significant (Swedish Energy Agency 2015: 5). Those who feed electricity back to the grid receive the current market price.

In addition, small-scale renewable energy producers can receive a tax reduction of €0.06 for every kWh they transfer to the grid, up to £2000 per year (Swedish Government 2014). Solar power is also included in the certificate scheme, and private persons who hire assistance to install solar cells in their own homes can also get a tax reduction based on the costs of this labour, in line with the general tax reduction for hiring workers to do home renovations in Sweden.

Renewables in the shadow of the nuclear controversy

Prior to 1999: politicization of nuclear and energy policy in general

Major political controversy surrounded nuclear energy in the 1970s and 1980s. The rapid expansion of nuclear power in these years spurred political conflicts that were to have repercussions for many decades (Energy Agency 2003: 8).

Sweden had developed a significant portfolio of large hydropower during the 1950s and 1960s (SOU 2017: 96). This led to some minor protests, but energy was

not a salient political issue in the early 1970s (Kaijser 1992). Rather, experts – researchers, civil service officials, industry representatives – enjoyed considerable leeway in determining policies. Increased electricity consumption was largely regarded as a prerequisite for economic growth, industrial competitiveness, increased welfare and high employment in Sweden (Nilsson 2005: 212; Sarasini 2009: 639). At this stage, state-owned Vattenfall – the national transmission system operator and regulator as well as the country's largest electricity producer (Högelius and Kaijser 2010) – saw nuclear electricity generation as the technology of the future (Kaijser 1992: 449).

Sweden's first large-scale nuclear reactor began operation in 1972, with seven more reactors in the pipeline (Kaijser 1992: 447). Then, the international wave of nuclear protest reached Sweden. Eventually, the Centre (formerly Agrarian) Party, the Communist Party and parts of the ruling Social Democratic Party became alerted to the environmental risks related to nuclear energy. The oil crises of the 1970s spurred the politicization of energy policy and the contestation of nuclear energy, in turn paving the way for greater political attention to renewables (Söderholm et al. 2007: 368).

A windpower research programme, initiated in 1975, resulted in a few demonstration wind farms (Engström 2015: 32, 39–40, 203). In addition, direct government support was introduced for bioenergy (Andersson 2013: 20). However, these were marginal developments compared to the rapid expansion in nuclear power. In the 1976 elections, nuclear energy became the main issue. The pro-nuclear Social Democrats lost power, for the first time in 44 years, to a coalition of the Centre Party, the Liberal Party and the (conservative) Moderate Party (Nohrstedt 2005; Vedung and Brandel 2001: 220).

The Centre Party suffered a series of defeats to the pro-nuclear parties in the government, as the construction of new reactors was eventually permitted. So severe were the internal conflicts that the coalition resigned after only two years in power (Nohrstedt 2005; Vedung and Brandel 2001). The conflicts over nuclear expansion made it very hard to create stable governments (Nohrstedt 2005; Nordhaus 1997). The nuclear issue divided the Social Democrats internally, but it also made it difficult for the liberal-conservative parties to form an alternative coalition government. Five major reactors were already under construction in Sweden, but the political conflict regarding nuclear expansion continued. Thus the government decided to hold an advisory referendum in 1980.

All three alternatives offered in the referendum implied an expansion of renewables but were silent on how to achieve this. One alternative called for immediate decommissioning of nuclear plants, but this gained only 39% of the vote. A second alternative did not imply decommission but added that the state and municipalities should own all future energy facilities also gained 39% of the vote. Even though no alternative gained more than 50% of the vote, the outcome enabled the minority government to gain stable parliamentary support in the Swedish Parliament (*Riksdagen*) (Nordhaus 1997: 33–44). The referendum outcome was followed by a parliamentary decision to: (1) phase out nuclear power by 2010, (2) reduce Sweden's dependence on oil and (3) facilitate the transition to

'an energy system based as far as possible on lasting, preferably renewable and domestic energy sources with least possible environmental impact' (Kaijser 1992: 445; Wang 2006). However, given the pace of nuclear expansion, the support for renewables was primarily symbolic (Nohrstedt 2005: 1048). When the last reactor was finalized in 1985, Sweden had a sizable electricity surplus (SOU 2017: 99).

In the period leading up to the 1980 referendum, the Swedish electricity industry was unified and dominated by Vattenfall, the national transmission system operator and regulator as well as the largest electricity producer (Högelius and Kaijser 2010). Vattenfall collaborated extensively with the 11 other large energy corporations, and this 'power club' controlled 90% of Swedish electricity production (see Högelius and Kaijser 2010: 2246). Many smaller municipal energy companies produced some 10% of the electricity as well as transmitted electricity from the large producers. Inga Carlman (1990) has shown that the utilities saw windpower in particular as a threat to nuclear. Sweden had a significant energy-intensive industry, dominated by pulp and paper production. These consumers had rather strong ties to electricity producers and generally supported nuclear expansion (see Högelius and Kaijser 2010: 2246).

Due to the long-term target of phasing out nuclear, renewables gained traction and greater political attention. In 1985, the Social Democratic government initiated more research and development on windpower alternatives (Åstrand and Neij 2003: 22). A few windpower projects were initiated, but the turbines were imported, and no domestic windpower industry emerged (Engström 2015: 53). Moreover, the Chernobyl disaster in 1986 reinforced Sweden's political decision to phase out nuclear as well as to reduce support for its nuclear research and development programme (Högelius and Kaijser 2010: 2247; Kaijser 1992: 457).

At the end of the 1980s, energy policy was still among the most politicized issues in Sweden, but the country lacked both a support scheme for operation of renewable energy and a domestic renewable energy industry. The nuclear controversy had given the politicians the upper hand in energy policy, at the expense of the electricity corporations, which lost authority and control over the issue-area. Swedish policies were clearly influenced by global anti-nuclear protests and rising climate ambitions. In the 1990s, economic liberalization and climate change had climbed the political agenda, in addition to the recurrent debate on nuclear power (Högelius and Kaijser 2010; Nilsson 2005; Sarasini 2009). Moreover, Sweden was headed for a serious financial crisis with wide repercussions for politics, economy and society.

In 1991, the Social Democrats, the Centre Party and the Liberal People´s Party agreed to introduce an investment support scheme for wind- and biopower (Åstrand and Neij 2003: 22). The scheme was technology-specific; funds were to be allocated continuously over the annual state budgets (Wang 2006: 1213), frequently leaving no support at the end of the budget cycle.

Simultaneously, economists forcefully argued the way the government regulated and steered energy production and distribution came with significant societal costs, as seen in over-investment in nuclear energy (Högelius and Kaijser 2010: 2248–2249). The government proposed a reorganization of the electricity

regulation, in order to ensure that profit maximization became the driving force in the energy market, rather than long-term state planning (Högelius and Kaijser 2010: 2248). The Ministry of Finance was supportive, but Vattenfall and the private electricity utilities were initially reluctant. However, this changed rather swiftly as the ensuring liberalization spurred significant merger and acquisition activities (Högelius and Kaijser 2010: 2249–2250). In 1992, Vattenfall was privatized, and transmission grid responsibilities were transferred to the new Swedish transmission grid operator – Svenska Kraftnät (ibid.: 2250). Vattenfall lost no time in developing an international strategy, aiming to become a leading European energy company. Initially, it branded itself as a non-fossil fuel corporation, active primarily in the Nordic countries and the Baltics (Darmani et al. 2016: 12).

Sweden's energy liberalization created significant political turmoil, not least due to internal conflicts among the Social Democrats (Högelius and Kaijser 2010: 2252). However, the Swedish Parliament accepted a liberalization reform in 1995, and the Nordic electricity exchange opened in 1996. This immediately led to market concentration, with three major producers – Vattenfall, Fortum, and Sydkaft/E.ON – controlling 90% of power generation (ibid.: 2253). Even though Vattenfall Europeanized its activities, our interviewees agree that it did not take an active role in bringing impulses from the EU to Sweden.

Nuclear power remained central for Swedish energy policy in general (Högelius and Kaijser 2010). A windpower production subsidy was introduced in 1994, after a parliamentary initiative from the Centre Party. The size of the subsidy corresponded to the electricity tax paid by consumers (Wang 2006: 1214; Åstrand and Neij 2006: 280). Further, societal cost-efficiency was to serve as a guiding principle for energy-market regulation as well as climate-change mitigation (Nilsson 2005: 215).

Climate change gained increased salience with the new Prime Minister Göran Persson of the Social Democrats and his vision of the 'Green People's Home'. In 1997, the Social Democrats, the Centre Party and the Left Party jointly endorsed an 'ecologic energy transition' agreement (Nilsson 2005: 216). This entailed establishing an Energy Agency with responsibility for renewables and energy efficiency, instructing Vattenfall to become an 'instrument for ecologic transition, and the decommissioning of two nuclear reactors at Barsebäck in southern Sweden (Swedish Government 1997). The need to compensate for this closure spurred further support for renewable energy (Wang 2006: 1212; Åstrand and Neij 2006: 279). Investment subsidies for wind- and biopower were therefore extended until 2002, small-scale hydro was included, and additional funds were secured for operational support to windpower (Swedish Government 2000: 20).

However, as the liberalization of the energy market led to decreasing electricity prices, the new support schemes spurred rather few investments in renewables (Energy Market Inspectorate 2005). It was primarily bioenergy projects related to existing industry activities that profited, a development that transformed many waste and pulp-and-paper actors, previously energy consumers only, into energy producers as well (Jacobsson 2008: 1492). The bioenergy expansion was especially significant as regards district heating (Andersson 2013: 11). However, new

domestic industries related to new renewable electricity sources, like wind or hydro, did not emerge (Andersson 2013). To the extent that such new renewables were developed, this was undertaken by the traditional electricity actors, first and foremost Vattenfall (Andersson 2013: 14; Wang 2006: 1215).

According to several interviewees, the renewables schemes were widely considered expensive and ineffective. The dependence on yearly allocations over the state budget and lack of flexibility to adjust support levels to the volume of applications created an unreliable stop-and-go system (Åstrand and Neij 2006: 277, 292). Moreover, Sweden became a full member of the EU in 1995 – and the Commission rather quickly signalled that the 'environmental bonus' to windpower was in conflict with EU state-aid rules (Åstrand 2005: 114).

In December 1999, a government task force was set up to develop a new comprehensive and long-term renewable energy support scheme that could replace previous measures. Civil servants dominated the group, but they had regular meetings with energy corporations as well as the political parties (Swedish Government 2000: 20, 1). The Commission and Eurelectric (the European confederation of the electricity industry) promoted certificates as the best support measures (Boasson 2021b). The Netherlands had implemented a voluntary certificate scheme and the Danish government had initiated a shift to certificates, but no EU countries had implemented a full-scale certificate scheme. The Swedish government task force visited the two countries in its search for new and better renewables support schemes.

Our interviewees indicate that Swedish civil servants engaged in the then-ongoing EU discussions about liberalization of energy markets and development of a pan-European certificate scheme. In the late 1990s, the financial crisis had led the Swedish government to instruct all ministries to set about developing innovative approaches to cut state spending (Åstrand 2005: 112). The first EU Renewables Directive was in the making, and the negotiations 'strengthened the belief among the Swedish civil servants, invoked by the state-aid rules, that the future of other instruments than a certificate trading system was limited' (ibid.: 117). This view was supported by our interviewees. One interviewee (9) explained: 'Every ministry worked like crazy to come up with proposals for how to cut costs from the state budget. When we had discussions with the EU, with [name of EU official] and other enthusiastic people, then we at the energy unit thought, "oh my God, well, then, we can simply apply that [the certificate] idea"'. Several interviewees state that the Commission's initial response to the *PreussenElektra* court case led Swedish government representatives to assume that only certificate schemes would be endorsed in the future (see also Åstrand 2005: 115). However, no interviewees can recall that Swedish electricity utilities actively called for the introduction of a certificate scheme. Rather, these appeared to focus on other policy issues, such as nuclear energy, decommissioning, market streamlining, and Europeanization.

We have seen that the idea of certificates gained hold in Sweden as early as the late 1990s. It had come from the EU but was compatible with the dominant market modes in the Swedish organizational field since the energy market liberalization.

The certificate idea created an opportunity to support renewables without using state resources. Three large corporations dominated Swedish electricity production, but they had little influence on renewables policy. Hence, civil service officials enjoyed considerable leeway regarding renewable energy support policies.

2000–2004: EU influence and the adoption of a certificate scheme

At the beginning of the new millennium, political divisions on energy were no longer an impediment to stable Swedish governments. However, nuclear phase-out was still politicized, and the electricity industry had started to adjust its corporate strategy to the liberalized market. There was political consensus on the need to expand domestic renewables, and the Swedish government was highly aware of the ongoing negotiations of the first EU renewables directive and the *PreussenElektra* court case (Boasson 2021b).

In March 2000, the government task force issued an official report recommending the creation of a certificate scheme (Swedish Government 2000: 20). Anne Bergek and Staffan Jacobsson (2010) as well as Kerstin Åstrand (2005) conclude that the EU had major influence on the work of this Commission. Also, our interviews indicate that Commission officials were directly involved in the drafting of this report.

The government appointed an expert task force to develop a detailed proposal for a certificate scheme design (SOU 2001: 77). According to one interviewee (3), this task force paid special attention to the *PreussenElektra* court case, assuming the arguments of the Commission would be upheld by the European Court of Justice. The aim was to design a scheme that was as market-streamlined as possible and that did not involve direct use of state aid. The group discussed a technology-specific design element whereby the most costly energy sources would receive more certificates, but this was rejected on the grounds that it would be difficult to ensure that the volume target was reached. The group then focused on developing a scheme that could be adopted by other countries, enabling the development of an international certificate market (SOU 2001: 77). One interviewee (4) explained: 'This was a couple of years after the deregulation of the electricity market so there was very much of a market focus really, and it was natural to also have a market-based instrument'.

The programmes of the Swedish political parties rarely refer to specific requirements concerning renewables support schemes (Centerpartiet 2001; Folkpartiet Liberalerna 2001; Kristdemokraterna 2002; Miljöpartiet de gröna 2002; Moderata Samlingspartiet 2001; Sveriges socialdemokratiska arbetareparti 2002; Vänsterpartiet 2000). However, our interviews indicated that representatives from all political parties eventually supported the idea proposed by the governmental task force.

The final report of the expert task force was presented in October 2001, after which the government developed a law proposal and issued it for notification to the Commission. The scheme would expose renewables producers to market risks relating to fluctuating certificate prices, but they would be guaranteed a minimum

price in the first five years of the scheme. Two weeks after receiving the notification, the Commission endorsed the Swedish proposal (Commission 2003). The guaranteed price was regarded as state aid, but in compliance with the exemptions allowed under the EU Treaty.

By now, the CJEU had sided with the German state in the *PreussenElektra* case, and the EU had adopted a Renewables Directive that did not require member states to develop certificate schemes (Boasson and Wettestad 2013: 86–87). These developments failed to de-legitimize the certificate idea in Sweden. Quite the converse: in April 2003, the Parliament decided to introduce a certificate scheme. The initial target was to produce 10 TWh of renewable energy until 2010 (Swedish government 2003). The Social Democratic, Centre and Left Parties saw the phase-out of nuclear power as an important rationale here. In contrast, the Liberals and the Moderate Party voted against the bill, supporting nuclear energy and arguing that investments in renewable energy would be made also without support (Swedish Parliament 2003). Also, the Christian Democratic Party opposed the bill, preferring a feed-in scheme. The Green Party abstained from voting, arguing that it would be better to extend the CO_2 tax.

Our interviewees agree that the electricity industry was not very involved in the decision-making process. The electricity market was almost as consolidated as it had been in the late 1990s, with three large electricity corporations accounting for more than 80% of annual electricity production in Sweden (Energy Market Inspectorate 2005). Vattenfall was the largest, supplying almost half of the electricity, and was also the third-largest actor in the German market, with a portfolio dominated by incumbent coal power production (Darmani et al. 2016). Vattenfall had indeed become a commercial player, making investment decisions based on short-term profit concerns, removed from long-term objectives set by the Swedish government. Several interviewees noted that, even though Vattenfall did not actively promote certificates, they were positive to this measure.

The scheme became an immediate success, in terms of expanding biopower. For the first years of operation, the certificate price was several times higher than the guarantied price (Ekonomifakta 2016). However, it took some time for the scheme to yield results in actual increased capacity other than biopower.

In this section, we have seen that EU influence played a major role in the establishment of the Swedish certificate scheme, and that the civil servants remained important. In the political field, Sweden's renewable energy policy languished in the shadow of the nuclear issue, and most electricity producers were rather uninterested.

2005–2010: booming renewables investments, and modest industry diversification

In this period, the certificate scheme spurred a boom in biopower as well as windpower in Sweden. Investment support for solar power was introduced and proved far more popular than anticipated. The politically controversial issue was the lifting of the ban on nuclear power expansion.

Sweden has long had a large share of district heating, fuelled primarily by biomass and waste. The certificate scheme made biomass electricity a profitable by-product of already-existing district heating and the pulp-and-paper industry (Engström 2015; Jacobsson 2008). Windpower development did not immediately take off to the same extent. Gradually, Vattenfall became more interested; by 2005 its declared aim was to be the largest windpower producer in Europe (Darmani 2016: 13, 14). Vattenfall also experienced costly nuclear incidents in Sweden and abroad, increasing its interest in other energy sources (ibid.: 13).

With the bioenergy boom, the dominance of Vattenfall was reduced to 44% by 2008, but Vattenfall, together with E.ON (earlier, Sydkraft) and Fortum, provided 79% of Sweden's electricity (Energy Market Inspectorate 2010: 24). No new renewables industry emerged, but the Swedish pulp-and-paper industry gained a more prominent role in the organizational field. The scheme has been criticized for favouring mature technologies, but it was generally popular within the industry as well as in the political establishment (Bergek and Jacobsson 2010; Jacobsson 2008: 1505; Söderholm and Pettersson 2011: 521). Another development in the organizational field was that the utilities previously dominated by engineers became heavily influenced by the market thinking of economists (see Inderberg 2012).

As part of a portfolio of measures introduced to enhance the energy performance of buildings, the first solar support scheme was introduced in 2005 (Näringsdepartementet 2008). Publicly owned buildings now became eligible for up-front support covering part of the cost of investments. This scheme was initiated in relation to Swedish implementation of the EU Energy Performance of Buildings Directive (Boverket 2009). The Directive promoted (in non-binding terms) installation of PV on buildings and encouraged member states to focus on public buildings. Our interviews indicate that the Parliament endorsed the scheme without political controversy. EU state-aid guidelines allowed for solar investment support, even though many countries, among them the UK and Germany, were opting to apply feed-in to promote solar (Leiren and Reimer 2021; Rayner et al. 2021, both in this book). The solar power support scheme was eventually designed to fit the requirements in the EU state-aid guidelines. Getting formal approval from the Commission took longer than expected, but it does not seem as if inputs from the Commission led to any significant changes in the scheme (Boverket 2009).

In 2006, the Social Democratic government proposed prolonging the certificate system until 2030, which meant expanding the target to 17 TWh by 2016 (Swedish Government 2006). As in 2003, the Centre, the Left and the Social Democrats favoured the scheme, while the Liberal Party and the Moderate Party wanted it revoked (Swedish Parliament 2006). The Christian Democratic Party repeated its call for a feed-in tariff. The Green Party had many objections to design details and called for support to a wider range of technologies and a higher renewables target. After a revised version of the scheme was passed by the Parliament, windpower investments increased (Pettersson and Söderholm 2009: 2036).

In September 2006, Swedish national elections resulted in a shift of government, and the Moderates, the Liberals, the Centre Party and the Christian Democratic

Party formed the 'Alliance' coalition government. Describing energy as the most challenging issue for this government, one of our interviewees (15) stressed that the government managed to 'keep peace publicly', but the internal disagreements were significant. The Centre Party wanted to increase the targets in the certificate scheme; the others wanted to stall the nuclear phase-out.

In November 2008, the Swedish Ministry of Enterprise informed the Commission that it aimed to include private citizens and commercial actors in the solar investment support scheme (Näringsdepartementet 2008). The Ministry requested swift notification, arguing that, with the scheme for public buildings expiring soon, Sweden was about to enter a period without any functioning scheme. Correspondence records show that it took several months of informal deliberations before the Swedish government managed to adjust the design of the scheme to the EU state-aid requirements (Commission 2009). In May 2009, the Commission endorsed the scheme – but the notification was valid only until December 2011 and could not be prolonged without re-notification.

Interviewees indicate that the Centre Party used its leadership of the Ministry of Enterprise to promote the solar scheme, but there was also support from the opposition, solar power actors, and environmental protection groups. Although technology-neutrality was accepted as a guiding principle for the government's energy policies, all political parties, including the more nuclear-friendly Liberals and the Moderate Party, accepted the according of special treatment to solar energy. The Ministry of Finance, led by the Moderate Party, was sceptical – but our interviewees stress that solar was not expected to constitute a significant part of the energy mix, so the issue was regarded as of minor importance. The conflict was resolved at the highest political level, in internal negotiations among the coalition parties.

As so often before, the nuclear issue generated major political divisions in Sweden. In March 2009, the parties in government settled on a climate and energy agreement that opened up for *replacing* old nuclear reactors, which meant ending the ban on nuclear power expansion (Swedish Government 2009a, 2009b). At the same time, the government made decisions that reduced the profitability of nuclear: nuclear energy would not be eligible for subsidies, the safety requirements became stricter and the nuclear energy owners' liability responsibilities in case of accidents were increased (Swedish Government 2009c). Moreover, the certificate scheme was given an expanded production target for 2020 and was prolonged until 2035 – thus, the last actors to enter by 2020 will be entitled to certificates for 15 years.

Several interviewees (1, 6, 15) held that the Centre Party called for higher ambitions in the certificate scheme in return for agreeing to lift the nuclear ban. Although ending the ban on nuclear energy was hard to swallow for the anti-nuclear Centre Party, it could also be reasoned that subsidizing renewable energy without giving nuclear energy new state aid made it impossible in practice to construct new reactors anyway: a question of 'letting nuclear energy dismantle itself' (Interview 9). However, some scholars claim that the 2009 agreement served to prolong the life of nuclear energy in Sweden, hampering the expansion of renewables (Sarasini 2009: 650; Tobin 2015: 148).

The new Swedish agreement implemented the revised EU 2009 Renewables Directive. As with the first directive, actors favouring a pan-European certificate scheme failed to exert influence here. Interestingly, it does not seem as if the failure of certificates at the EU level served to de-legitimize the Swedish certificate scheme. The 2009 EU Directive entailed a binding renewable energy target of 49% by 2020 for Sweden, which the Swedish Parliament later raised to 50% (Swedish Government 2009a, 2009b). Moreover, the Swedish and Norwegian governments agreed that Norway should join the certificate scheme (Boasson 2021c, this book). This spurred intense collaboration between the energy agencies of the two countries, but our interviewees agree that it did not lead to significant changes in design (see also Swedish Government 2010). The EU Directive also played an important role in the making of the 2009 Swedish agreement. The Alliance government had initially planned to postpone any major energy-policy decisions in order to keep peace internally. According to an interviewee (1) from the Alliance government, the need to implement the Renewables Directive was a key incentive for creating the 2009 agreement.

Thus, nuclear and renewable energy became more politically interconnected in this period, a development further reinforced after 2010 (see the next section). Influenced by the EU, Sweden introduced aid for micro-generation, but the rapid diffusion of feed-in schemes in the European environment did not affect Swedish support schemes.

2010–2016: certificate scheme prolonged against all odds

After 2010, the big Swedish utilities as well as the EU generally turned against designing renewables support as certificate schemes. All the same, the Swedish scheme was prolonged and made more ambitious. To understand this, we need to examine the extraordinary political situation in the Swedish Parliament and the increased politicization of renewables.

We observe a remarkable shift in the larger European environment in this period. The 2008 financial crisis and the steep reduction in the cost of renewable energy led to criticism of feed-in schemes, especially from the financially constrained electricity utilities (Boasson 2021b). Moreover, the EU's steering of renewables support schemes became significantly more coercive in 2014, when the Commission issued guidelines that clearly favoured auctioning combined with feed-in premium. This created a shift from traditional feed-in schemes to auctioning plus feed-in premium all over the EU, also in feed-in champion Germany (Boasson 2021b; Leiren and Reimer 2021, both in this book). Energy policy developments in Sweden were, however, of quite a different nature, and very few actors tried to bring 'European' developments to Sweden.

In May 2010, the Swedish Parliament endorsed implementation of the Alliance government's 2009 energy agreement. The minority opposition favoured expansion of the certificate scheme with 5 TWh more, called for additional technology-specific feed-in tariffs and accused the government of being too nuclear-friendly (Bolund et al. 2010). Both the government and the opposition appeared as two

coherent blocs, and none of the parties that had previously opposed the certificate scheme voiced open criticism.

In the 2010 elections, the Alliance lost its parliamentary majority, and the right-wing populist party, the Sweden Democrats (*Sverigedemokraterna*), entered the Parliament; however, the Alliance still had more seats in Parliament than the red-green parties (the Social Democratic, the Left, and the Green Parties). As the red-greens refused to cooperate with the Sweden Democrats, the Alliance continued as a minority government. The deep-seated conflicts over energy policy became fiercer, forcing the government to forge alliances with other parties in order to achieve parliamentary support (Interview 15).

The 2020 target of 50% renewables energy consumption was reached already in 2012 (Energy Agency 2014: 39). In that year, windpower became the dominant technology in the certificate system, as older biopower facilities were phased out and windpower investments were growing almost exponentially (Energy Market Inspectorate 2010, 2014: 24). Vattenfall, Fortum and E.ON dominated electricity production, with more than 83% of the market, but a range of new electricity providers had emerged as well (Bergek et al. 2013; Energy Market Inspectorate 2014: 26). These new windpower investors had highly varying backgrounds (Darmani 2015), but corporations that sold biopower based primary on waste management, pulp-and-paper and agriculture dominated. By now, Vattenfall's European ventures had become very, very expensive: turning from Europe, the Swedish home market became more important (Darmani et al. 2016: 15).

The 2014 Swedish elections brought a minority government consisting of the Social Democrats and the Green Party. As this government lacked a stable basis in the Parliament, Swedish politics became significantly messier, with alliances shifting across issues. In 2015, the new government gained parliamentary support to up the target for Sweden in the Swedish-Norwegian scheme to finance 30 TWh new renewables to 2020, replacing the earlier target of 25 TWh (Swedish Government 2015a).

In addition to the existing solar investment scheme and certificates, the new government introduced tax reduction for small-scale renewable electricity. Interviewees indicate that the solar industry association had initially pushed for a system that would reward who fed that electricity into the net, but the government argued that this would not be compatible with EU state-aid and competition policy (SOU 2013). The renewable electricity industry, the red-green parties, and the Energy Agency disagreed, while the Sweden Democrats opposed any such aid (Jakobsson 2014; Nordin 2013; Motion 2014). All the same, the Swedish government had to negotiate with DG Competition for more than a year before agreement was reached on how to design the tax exemption (Swedish Government 2014: 9).

In March 2015, the Swedish government appointed a parliamentary task force, instructed to propose a broad energy policy agreement by January 2017 at the latest (SOU 2017: 29). The group was headed by the Minister of Energy; the directors of the Transmission System Operator, the Energy Agency and the Energy Market Inspectorate participated in all meetings. Corporate actors were

consulted but were not formally included in the task force. In January 2016, Vattenfall, surprisingly, announced that all its Swedish nuclear power plants would have to close down because of the low electricity prices, the effect of the tax on nuclear power and the new safety requirements (Dagens Industri 2016). Not only would that mean enormous losses to the state-owned company, it would put the entire Swedish electricity system at risk (SOU 2017). Interviewees confirm that politicians from most parties deemed it critical to respond swiftly to Vattenfall's latest move. Hence, they set about negotiating a new energy agreement – one year before the task force had planned to finalize its technically and scientifically informed assessment.

The traditional electricity industry had now turned more negative towards the certificate scheme, claiming that new renewables production was the main cause of the 65% drop in wholesale Swedish electricity prices between 2010 and 2015 (Hirt 2016). Several interviewees emphasized that Vattenfall aimed at influencing the politicians' decisions on nuclear, paying less attention to renewables. At the time of these negotiations, the Norwegian government had already decided to leave the certificate scheme after 2020, but this did not influence the Swedish decisions much (Boasson 2021c, this book). Moreover, in 2014 the Commission issued new state-aid guidelines, requiring auctioning combined with feed-in premium. Certificate schemes could also be acceptable if certain design criteria were met (Boasson 2021b, this book). Interestingly, the final report from the parliamentary task force makes only a superficial reference to EU state-aid guidelines – indicating that these received little attention from the politicians (SOU 2017: 67–68).

In June 2016, the parties in government (the Social Democrats and the Green Party) and three of the four parties of the former centre-right Alliance Government (now in opposition) struck an energy policy deal. The overall goal was for Swedish energy production to be 100% renewable by 2040 (SOU 2017: 16). However, ambiguity entered the picture: this was 'a goal, not an end date prohibiting nuclear power', and it did not imply 'a politically forced closure of nuclear'. This new agreement also removed the thermal effect tax on nuclear power production, while ensuring that nuclear would not be allowed state aid in any form (SOU 2017: 17). On the other hand, the certificate scheme was prolonged and expanded by 18 TWh worth of certificates until 2030, setting an end-date of 2045.

Interviews with politicians in the task force indicate that they were motivated to reach an agreement well in advance of the 2018 elections. A dominant view held by many actors in both the political and the organizational fields was that nuclear energy was central in delivering sufficient effect in the Swedish electricity system. In this view, reducing taxation was necessary to keep nuclear plants in business, thereby ensuring the safety of the power system and that 'the lights didn't go out' (Faber 2018). According to our interviewees, the Centre and Green Parties pushed hard for expansion of the certificate scheme, whereas the other parties accepted this on the condition of reduced taxation for nuclear energy and large hydropower.

In a press release, the Green Party stated that the agreement meant 'step by step leaving old nuclear power and fossil electricity behind us' (Miljöpartiet 2016).

In contrast, the Moderate Party claimed that it had secured 'the conditions for nuclear power to be an important part of Sweden's energy supply for a long time to come' (Moderaterna 2016). The Christian Democratic Party even proclaimed that they had 'saved nuclear power' (Kristdemokraterna 2016). By contrast, the Liberals and the Swedish Democrats opposed the agreement, which they felt would mean overly hefty subsidiaries to renewables (SOU 2017: 333, 338). The Left Party (Vänsterpartiet) also opposed the agreement, mainly because it was too nuclear-friendly (SOU 2017: 352).

The prolongation of the certificate system ran counter to the inputs from the electricity industry to a public consultation over the future design of the scheme in 2015 (Energy Agency 2015). Vattenfall, E.ON, several medium-sized electricity utilities and the Swedish Energy Business Association (Svensk Energi, later changed name to Energiföretagen Sverige), criticized the system; it had been effective in the past, but it did not solve the current challenges. E.ON explicitly called for a system based on auctioning, similar to the system prescribed in the new EU state-aid guidelines (see Boasson 2021b). Fortum was the only major producer that did not voice criticism. The pulp-and-paper business association, the Swedish windpower organization and environmental NGOs supported continuation of the system. The bioenergy association criticized certificate schemes for not being market-based and for causing too-low prices.

The fate of Sweden's certificate scheme was related to the sudden nuclear controversy in 2016. The unstable parliamentary situation contributed to heighten the level of political conflict related to nuclear as well as renewables. Advocates of a prolonged certificate scheme were to a surprising degree unconcerned about the factors that undermined the legitimacy of this scheme. Also in this period, Swedish civil servants engaged in several lengthy negotiations with the EU on the detailed design of the two support measures for solar energy. Consensus was lacking on how to interpret the various EU rules, and the dialogue with the EU contributed to create instabilities in these support schemes (Interview 9).

Discussions and conclusions

Sweden's renewables support mix consists of a certificate scheme for large-scale renewables with direct investment support for solar power and tax reductions for small-scale renewable energy. All schemes expose renewables producers to the electricity price, and almost all renewables investors and/or producers are eligible for support. The certificate scheme is not directly technology-specific (it includes both large- and small-scale renewables), whereas small-scale support applies only to small-scale renewables – in practice, mainly solar power.

To what extent and how has the *European environment* influenced the Swedish renewables support mix? From the late 1990s and onwards, Sweden's support schemes have emerged in conjunction with developments at the EU level, but political constellations and conflicts in Sweden differ from those at the EU level. In Sweden, the large electricity utilities did not promote the certificate scheme, and feed-in was hardly mentioned as a serious alternative.

Swedish civil servants transferred the green certificate idea from Brussels in the late 1990s, expecting that a pan-European certificate scheme would soon emerge. This led to the adoption of the certificate scheme. This did not happen, but instead feed-in schemes became much more common in Europe. These European developments had no significant effect on Sweden. The adoption of the 2009 EU Renewables Directive with mandatory national renewables target had some impacts on the ambitions of the certificate scheme, but not on the design of the scheme itself. The Commission's shift away from electricity certificates as the ideal model in 2014 had limited influence on Sweden's energy policy.

The promotion of rooftop PV on public buildings in the 2002 EU Directive on Energy Performance of Buildings seems to have spurred the development of a solar investment scheme for public buildings, although the directive did not require this. The scope of the scheme was gradually expanded as commercial as well as individual households were included. The initial design of this scheme was neatly adjusted to the requirements of the EU state-aid guidelines, but Sweden applied an investment scheme, not a feed-in scheme like most other EU countries. Moreover, the time-consuming Commission notification procedures created substantial instabilities in the system, which in itself fostered demands for additional support schemes. This contributed to explaining why Sweden in 2015 introduced a tax reduction on top of its other support measures for solar power.

In contrast to the expectations set out in Chapter 3 (Boasson 2021a, this book), we find that the European environment had the most significant influence on Swedish renewables developments in a period when the EU had the least formal powers. EU influence was crucial for the development of the Swedish certificate scheme, and the idea later became consolidated and more resilient. Because it had been influenced by the Commission at such an early stage, by 2014 Sweden had a scheme that did not violate the new state-aid guidelines. In general, we can note that Sweden has been far more affected by the ideas advanced by the Commission and the European electricity industry, compared to the policies of other EU member states. Indeed, Swedish politicians held on to this instrument after 2010, despite substantial opposition from the domestic organizational field. The original EU impulse froze. Sweden held on to the technology-neutral idea of electricity certificates, even though very few other actors followed suite.

To what extent, when, and how has the *Swedish organizational field* of stationary energy production influenced the support schemes? In the 1970s, the field was segmented and the institutional logic of technology development had become highly institutionalized. The strong politicization of nuclear power came as an external shock to the field, but it did not lead to reduced internal unity of the field. Rather, nuclear expansion in Sweden continued for a full decade after the 1980 referendum, creating an electricity surplus that served to reduce the need for renewables.

The Swedish organizational field is segmented, although there is some variation over time. In the 1990s, a modest de-segmentation process in the field began, as market thinking gained prominence and a liberalization reform was implemented in Sweden. Moreover, the rise of climate change on the political agenda weakened

Vattenfall's control of the field somewhat. The Energy Agency was established – a powerful regulatory agency that to some extent could counter Vattenfall in authority and knowledge. Moreover, the pulp-and-paper sector emerged as important energy producers, with more to gain from the development of new renewables (especially biomass) than the conventional actors. Together with E.ON/Sydkraft and Fortum, Vattenfall continued to control most of the Swedish electricity market, but the shift in logic from technology development to market thinking created internal tensions. It was the public actors who promoted electricity certificates; commercial actors seemed rather uninterested initially. Further, from 2000 and onwards, the field became heavily dominated by market logic, among the electricity producers as well as the Energy Agency. This mind-set eventually became heavily institutionalized, as shown by the smooth implementation of the certificate scheme.

In the period 2010–2016, the big utilities began questioning the market logic, and there came an influx of new, smaller actors. The utilities had experienced major economic problems, caused partly by market reactions to increased intermittent new renewables capacity, in Sweden and elsewhere. The utilities have neither resisted nor promoted the solar support schemes developed by the Energy Agency, even though this scheme is embedded in a technology development logic alien to the big utilities. At this stage, Sweden's solar industry was small but growing, and there seems to be a constructive dialogue with the Energy Agency, and with the politicians. The influx of a diverse group of solar and wind energy actors in the field does indeed contribute to creating more internal conflicts and less unity, making the field more pluralistic. This is illustrated by the actors' diverging perspectives to the 2015 consultation on the certificate scheme. In this period, the utilities, and especially Vattenfall, invested significant efforts in rescuing their nuclear facilities, while paying less attention to the renewables support schemes.

Therefore, we conclude that the segmented nature of the organizational field contributed to hindering development of ambitious renewables support in Sweden in the period leading up to the late 1990s. Subsequently, the shift to market logics and the diversity of actors involved served to make the field somewhat less segmented over time, but the change is modest. The adoption of the certificate scheme in 2003 was not precipitated by a united field but was rather a result of civil servants working to implement the political ambitions for renewables. From 2010 and onwards, we detect internal conflicts between the various groups of commercial actors over how to design renewables support. Importantly, the Energy Agency has been open to inputs from a range of actors, not only the dominant utilities. However, the field has still been rather segmented, and thus the Swedish Parliament's decision in 2016 to prolong various renewables support schemes despite lack of support among the major electricity producers cannot be explained by de-segmentation of the field. Moreover, Vattenfall expended few resources on influencing renewables policies, focusing instead on nuclear; the renewables issue was sacrificed partly because another issue (nuclear taxation) appeared more important at that point. All the same, the utilities' lack of political influence emerges as striking and contrasts with what we expected to find.

Finally, to what extent and how did *the Swedish political field* influence the support schemes? The nuclear referendum in 1980 reinforced nuclear energy as a subject of intense political competition. The ambitious referendum result paved the way for a tradition of broad energy-political agreements in the Parliament. The structural power of the Parliament was further strengthened after the 2010 elections, due not least to the unstable parliamentary basis of the new minority government.

From 1980 to 1999, renewable energy held significant symbolic value – but, as Sweden already had abundant electricity production, renewables policy had very little practical importance. In the early 2000s, a political majority decided to adopt a more potent renewables support scheme. Notably, however, the design of the scheme was not politicized but delegated to civil servants and experts. In the period 2000–2009, we also observe rather unstable and rapidly shifting political positions on certificate schemes, except for the firm support from the Centre Party.

However, political discussions on renewables support have been increasingly intertwined with nuclear energy. The politicization increased after 2005, but only after 2010 have renewables support schemes become a salient political issue in their own right. However, it is hardly possible to separate the two issues. With respect to both nuclear and renewables, politicians across the parliamentary parties have tried to act in consistency with their former positions, presenting diverging interpretations of the ambiguous energy deal in the hope of being seen as winners. Thus, we see the dynamics of the Swedish *political* field as the main driver of developments in the renewables schemes after 2010 – whereas the influence of European developments or the organizational field has been limited. This explains why Sweden has extended the certificate period and upped the level of ambition. In addition, the investment support scheme and the tax reduction for solar energy production have achieved broad political support, although promoted by small and rather marginal actors in the organizational field. With political interest in introducing such support, the design was primarily a result of bureaucratic support in the Energy Agency.

In all periods after 1999, Swedish actors have devoted considerable resources, and increasingly so, to ensure that the Swedish support mix is in line with EU state-aid guidelines. This has probably been frustrating for the actors involved, but the lengthy and protracted dialogues with the Commission have had minor importance for the actual design of the resultant schemes. If anything, this has sustained the impression of unreliable support, perhaps fuelling demands for additional solar energy support – the tax exemption.

Against this backdrop, we conclude that after 2005, political steering has been an important explanatory factor for the design of the renewables support mix, and the political field grew even more important after 2010. This is in line with our expectation: *the political field has influenced the development of renewables in the Swedish context to a greater degree when power has shifted to the Parliament regarding key decisions and when renewables have been subject to political competition*. Ironically, the politicians made sure to 'freeze' an earlier EU impulse, implemented in a period when the civil servants ruled and political steering had

less importance. And, interestingly, we find that the importance of the European environment has *not* been determined by the strength of coercive signals from the EU (vertical Europeanization), or the diffusion of practices in the European environment (horizontal Europeanization), but has been conditioned by the position of the two domestic fields.

Interviewees

1 Former political appointee (Centre Party), Ministry of Enterprise and Energy, 6 April 2017, telephone interview
2 Electricity industry representative, Swedenergy and Vattenfall, 15 November 2016, Stockholm
3 Civil servant, member of Electricity Certificate Task Force 2000–2002), 18 November 2016, Stockholm
4 Civil servant, Ministry of Enterprise and Energy, 13 March 2009, Stockholm
5 Former civil servant, member of Energy Task Force 2016–2017, 10 January 2017, Stockholm
6 Civil servant, Swedish Energy Agency, 14 October 2016, Oslo (identical to Interviewee 7 in Chapter 8)
7 Representative of the Confederation of Swedish Enterprise, 16 December 2016, Stockholm
8 Representative of Svenska Kraftnät (the Swedish TSO), 18 January 2017, Stockholm
9 Former civil Servant of the Ministry of Industry, 18 January 2017, Stockholm
10 Former political appointee (Centre Party), Ministry of the Environment, 30 March 2017, telephone interview
11 Electricity industry representative, Vattenfall, 15 November 2016, Solna
12 MP, the Moderate Party (liberal-conservative), 16 November 2016, Stockholm
13 Former civil servant (director), Swedish Energy Agency, 14 November 2016, Stockholm
14 Electricity industry representative, Vattenfall, 15 November 2016, Solna
15 Former political appointee (Centre Party), Ministry of Enterprise, and Energy and renewable energy industry representative, 16 November 2016, Stockholm
16 Renewable energy representative, Solar Energy Association of Sweden, 17 January 2017, Stockholm
17 MP, Centre Party, 16 November 2016, Stockholm
18 Civil servant, Svenska Kraftnät (the Swedish TSO), 18 January 2017, Stockholm

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10 Norway

Certificate supporters turning opponents

Elin Lerum Boasson

Introduction

By 2016, Norway had the most technology-neutral support mix in Europe, which also offered very low levels of support. The story of how Norway ended up with this particular support mix involves a range of puzzling twists. Elsewhere in Europe, large electricity utilities and environmental organizations have clashed over how to design renewables schemes. In Norway, however, they joined forces in the early 2000s and campaigned for an electricity certificate scheme. It took more than ten years before they succeeded – and then, when this scheme started running in 2012, the utilities did an about-face and called for the system to be removed. At this point, it took only three years before the Storting (the Norwegian Parliament) followed suit and decided that no new projects were to be added to the scheme after 2021 (Innst. 401 S. 2015–2016: 30). Then, in 2015, Norway adopted a very modest investment support scheme for small-scale renewables. Hence, the country has ended with an exceptional 'less is more approach' to renewables development.

This chapter asks: *Why did Norway end up with one of the most technology-neutral and least-generous support-scheme mixes in Europe?* When the production of renewable electricity boomed elsewhere in Europe at the turn of the millennium, Norway already had close to 100% renewable electricity production (SSB 2020a; MPE 2008a). Why, then, did it develop a support scheme for renewable electricity? Norway had grown accustomed to being self-supplied in energy, but then came several years where it failed to provide all the electricity needed to cover consumption; moreover, the government and the electricity industry had been expecting further continuous growth in domestic energy consumption (NOU 1998). Hence, there was a thirst for more domestic production of renewable electricity. Large-scale hydro had become controversial: due to nature preservation concerns there was political agreement on preserving Norway's remaining major streams and waterfalls – not damming or regulating them for hydropower production (St.meld. nr 37 2000–2001). This added to the surge of interest in other options – onshore windpower in particular.

As a European Economic Area (EEA) country, Norway is required to implement most EU rules concerning renewable energy (MPE 2019). However,

renewables support in Norway came to follow a different pattern than in the EU. When most EU member states adopted feed-in schemes, Norway adopted a certificate scheme for renewable electricity; and when other countries shifted to auctioning and feed-in premium, Norway scrapped its large-scale renewables support (Boasson, Faber and Leiren 2021, this book). When we began to work on the present volume, we assumed that the influence of the European environment would prove to be strongest in cases where the EU wielded considerable formal authority and one policy recipe was dominant (see Boasson 2021a, this book). But in Norway, the European environment proved to have influenced Norway more when EU steering was rather weak and when an approach other than the one Norway adopted dominated. Why has Norway been influenced by the European environment in this unexpected way?

Can the answer lie within the Norwegian organizational field of electricity production? Most of the time, this field has been as segmented as in many other European countries, but between 2000 and 2010 it was characterized by turf battles between large electricity utilities and the Ministry of Petroleum and Energy (MPE). Further, environmental organizations in Norway have much closer relations with the electricity industry than elsewhere. Can these characteristics of the organizational field explain how the Norwegian support mix came to develop?

We expect the political field to be more important when renewables support is politically salient, and the formal authority over the issue is diffused, i.e. executive power is shared between several parties and the legislative assembly has significant formal powers (Boasson 2021a). Politically, renewables support has rarely received major political attention in Norway, with the exception of the period around 2006–2007. Did politicization contribute to reduce the importance of the European environment or the organizational field? Or would the Norwegian support mix have developed in largely the same way regardless of the political field?

Researchers have examined the development of Norwegian climate policy, but few have delved into the renewables policy more specifically, and longitudinal studies – like the one presented here – have been missing. This chapter chronicles the development of Norwegian support to renewables electricity from the 1970s and until 2016. Some scholars such as Espen Moe (2012), as well as Anne Therese Gullberg and Guri Bang (2014), have compared Norwegian renewables policies and those of other countries. This chapter challenges some of their conclusions, particularly as regards the importance of EU steering and the role of the Norwegian petroleum industry.[1]

Highly technology-neutral renewables support mix

The Norwegian support-scheme mix consists of two main elements: an electricity certificate scheme that provides extra support to renewables projects included in the scheme prior to 2021, and up-front investment support for small-scale renewable electricity in residential buildings. The latter is part of a larger support scheme that encompasses both energy efficiency and other small-scale renewable energy measures.

In 2012 Norway joined the Swedish certificate scheme, and thus the Swedish–Norwegian scheme emerged (MPE 2010c). The Norwegian government committed to financing 13.2 TWh in new renewable electricity production (including small hydro) by 2020 as their share of the common Norwegian–Swedish certificate market (MPE 2010a). All actors who transmit electricity to end-users or who consume the electricity they produce themselves were required to purchase green certificates (Lov om el-sertifikater 2016: §16). Norwegian renewable power plants with construction start-up date by September 2009 have been part of the certificate scheme. In addition, small hydropower plants constructed as early as January 2004 were included in 2015 (Lov om el-sertifikater 2016: § 8). The actual support level would change over time, as the value of the electricity certificates would depend on the relation between supply and demand of renewables certificates in Norway and Sweden.

Purchasers of green certificates do not buy the actual electricity; they buy a certificate that confirms their economic contribution to the operation of green electricity somewhere within the area where the scheme applies (see Boasson and Leiren 2020, this book). The number of certificates that actors are required to purchase varies according to a pre-determined ratio, growing annually and peaking in 2020, and then gradually falling until the end-year in 2035 (Lov om el-sertifikater 2016: § 17). Norwegian participation in the Norwegian–Swedish scheme expires in 2021, but all projects included in the scheme at that time will be awarded funding until 2035.

In 2015, Norway started to offer investment support to home-owners who produce their own renewable electricity and feed the surplus back to the grid (Enova 2019, *Teknisk Ukeblad* 2014). The maximum support level per building is some €2500. The electricity may come from solar photovoltaics (PV), small-scale wind or biopower (up to 15 kW in installed effect). All residential buildings are eligible for support, but not commercial or state-owned buildings. The scheme is technology-neutral, but it is primarily small-scale, roof-top PV that receive support (Enova 2018). Small-scale electricity production can also be included in the green certificate scheme, but due to the registration cost, it is not profitable for most producers to join the scheme (Norsk Solenergi 2019).

In addition to these two schemes, Enova awards funding to innovative energy solutions that can contribute to reduce emissions (Enova 2020). A new technological solution, or a new combination of different technological solutions, can be awarded support only once. Thus this is not support to the operation of renewables electricity, but is one-off R&D support for pilot projects and technology development. Hence, this scheme falls outside the scope of this book.

Chronological Story: blooming late and withdrawing early

Prior to 1999: emergence of a liberalized large hydropower system

Abundant waterfalls with tremendous energy potential led Norway to develop a hydropower-based electricity system. Like many other countries, it struggled

to find the right balance between the volume of supply and demand of electricity, and in order to solve this challenge, Norway liberalized its electricity system already in the 1990s. This led to a shift in the institutional logic of the organizational field of electricity – which was to have profound implications for discussions on renewable electricity in the 1990s.

From 1945 until the 1980s, investments in large hydropower expanded radically (Midttun 1987; Thue 1996). This allowed for the emergence of a strong energy-intensive industry, crucial to the development of the Norwegian welfare state. The Norwegian Water Resources and Energy Directorate NVE (henceforth Energy Agency) was made responsible for hydropower investments, operations, transmission and energy regulation – an arrangement that encompassed the major power producer, the transmission system operator and a construction advisory body (Nilsen and Thue 2006; Thue 1996). The aim was to enhance the quality and effectiveness of large hydropower technology. There were some hydropower stations operated by smaller regional corporations, but these were of minor importance. Despite widespread protests against the construction of large dams and interference with waterfalls from the 1970s and onwards, massive hydropower developments continued.

A small nuclear reactor had been established for research purposes in the late 1950s, and the oil crisis of the 1970s spurred further discussion of nuclear power, but all plans were shelved a few years later (Reinertsen and Asdal 2010). As several large hydropower plants were under construction and oil had been discovered on the Norwegian continental shelf, there was no urgent need for more domestic energy production. This also meant that there were no actors pushing hard for the development of new renewable energy.

The Energy Agency had as a key goal to ensure sufficient supplies of electricity (Midttun 1987; Thue 1996). It regularly estimated future electricity demand, and the state and local municipality-owned power producers adjusted their investment plans in line with these estimates. The price of electricity was set by the government and did not necessarily reflect actual investment and operation costs (Bye and Hope 2005: 5269). As energy-demand predictions overestimated actual developments, electricity production capacity substantially exceeded demand in the 1980s. Moreover, the Energy Agency focused far more on achieving technological improvements than on ensuring cost-efficient production (Midttun 1987: 102–109).

In 1986, Statkraft was outsourced from the Energy Agency and established as a state-owned utility controlling one third of Norway's electricity production (Bye and Hope 2005: 5269). But this did not solve the problem of matching production to actual consumption of electricity. Discontent with the economic losses of the state and municipal-owned production facilities underpinned demands for a profound liberalization reform. In 1990, a new energy law established a liberalized electricity market, with a spot market for trade of interruptible power, providing all actors access to the grid, and outsourcing transmission grids from Statkraft to Statnett, the new state-owned Transmission Systems Operator (TSO) (ibid.: 5271). This liberalization reform did not mean privatization, so there was

no influx of new private electricity corporations. A common Swedish–Norwegian electricity market was established in 1996, with Finland and Denmark joining somewhat later.

Historians have described how the reform brought a shift among Norwegian power producers, from the logic of large hydro-technology development to a market logic (Thue 1996; Nilsen and Thue 2006). Rather quickly the main objective of corporate actors changed, from constructing well-functioning large hydropower and ensuring specific volumes of power supply to a particular geographical area, to maximizing the profits from existing power stations. The overarching objective of the MPE also changed, as it now aimed at minimizing the use of public resources and the costs for consumers and ensuring that the energy producers did not reap excessive profits (Thue 1996; Nilsen and Thue 2006). By the mid-1990s, engineers had lost many central positions to economists in the electricity industry as well as in governmental organizations.

As the inflow of water in large hydro follows a stochastic pattern (Bye and Hope 2005: 5269), electricity prices in Norway after liberalization fluctuated according to variations in precipitation (NOU 1998: 4). Prices peaked during the dry winter of 1995–1996, and the Energy Agency and other experts elsewhere expected increases in a similar fashion as had been the case historically (NOU 1998). Even though the price was set by the Nordic market and not by the Norwegian government, this still became a politically salient issue. The price spike in 1996 was held to be caused by inadequate domestic production capacity, and politicians across the political spectrum voiced concerns about Norway becoming dependent on electricity imports (NOU 1998: 5).

Climate change had become an important political issue already in the late 1980s, but renewable energy sources were not initially central in Norwegian climate discussions. However, the government started to offer modest R&D support, to be determined on a case-by-case basis (Gjerløw 1996). A windpower development programme resulted in the construction of eight windpower turbines in the 1990s, purchased abroad (NOU 1998: 335). At this stage, feed-in support schemes had started to spur renewables investments in Germany and Denmark, and the European Commission (the Commission) had begun preparations on a new renewable energy directive. Although these European developments received scant political attention in Norway (NOU 1998; St. meld nr. 29 1998–1999), Norway's largest hydropower producers were involved in the European power-producers' promotion of a common EU electricity certificate scheme (Boasson 2015: 115). Moreover, the first large-scale windpower construction in Norway was financed through the Dutch voluntary electricity certificates, and it eventually proved very profitable for Statkraft (Riksrevisjonen 2010: 48; Statkraft 2006). Hence, the electricity industry embraced this support-scheme idea; but, because Norway in 1994 had voted against joining the EU, MPE officials were not involved in EU-level discussions of support to renewables (Boasson 2015: 111–119).

At this stage, there seemed to be no need for a support scheme for small photovoltaic (PV), as this energy source had been expanding rapidly, with as many as 70,000 units installed already by 1997 (NOU 1998: 317). These PVs were

primarily installed at holiday cabins where there were no grid connections. Norwegian industry produced components for PVs, but mainly for export. In 1998, a governmental task force concluded that electricity from PVs was unlikely to make any significant contribution to Norwegian energy production in the foreseeable future (NOU 1998: 320, our translation).

The main climate-policy issue in Norway in the late 1990s was the construction of gas-power plants, adding fossil fuels to the renewable Norwegian electricity system. A political majority supported construction of gas-fired power plants, while the minority coalition government then in office opposed it (Boasson 2015: 86). In 1999, the government, as part of a White Paper focused on constraining the development of gas power, proposed adopting more specific domestic renewables targets, aiming for 4 TWh renewable heating and 3 TWh windpower by 2010 (St. meld nr. 29 1998–1999). Paradoxically, the decreasing profitability of gas power now led the electricity utilities to intensify their search for profitable investment options in renewable electricity, while gas-power construction became more contested politically (Boasson 2015: 89–92). The utilities initiated a host of windpower projects in the late 1990s – but if these were to become profitable, a new support scheme would be needed (NOU 1998: 337). Hence, the government set about preparing the development of a support scheme aimed primarily at large-scale windpower (St. meld nr. 29 1998–1999).

By the end of 1999, the Norwegian government was posed to create the country's first renewable electricity support scheme, and the Norwegian utilities had embraced electricity certificates as the best support-scheme design. However, as we will see in the following, the corporate actors had a hard time convincing the public administration about the advantages of electricity certificates.

2000–2004: a cost-efficient renewables support regime fails to spur investments

What was to become a ten-year conflict over how to design the support scheme for renewables electricity started in 2000. In this section, we will see that the conflict about support to renewables remained an internal issue in the organizational field in the period 2000–2004.

In March 2000, the minority Centre coalition government resigned over the gas-power issue (Boasson 2015: 88–89), and a new minority Labour government took office. The gas-power conflict had been rooted in the government's proposals in the White Paper that also proposed establishing renewables targets and a support scheme for renewables (St. meld nr. 29 1998–1999). On the same day that the government resigned, the Storting voted to increase annual domestic windpower production by 3 TWh by the year 2010. This represented a turning point, as it meant development of operational support for renewables. At this stage, a global cost-efficiency approach had become entrenched in Norwegian climate policy, with the national climate strategy relying on the application of the flexibility mechanisms in the Kyoto commitments, global emissions trading and opting only for domestic mitigation options with low costs (Boasson and Lahn 2017). Against

this backdrop, MPE was tasked with setting up support schemes for heating and electricity that would reduce governmental spending to a minimum; a new state enterprise, Enova, would operate the schemes (St. meld nr. 29 1998–1999; Ot. prp. nr. 35 2000–2001).

Only months after the Storting had decided to create a cost-effective Enova scheme for electricity, the majority of its members called for the Labour government to consider an electricity certificate scheme instead (Budsjett-innst. S. Nr. 9 2000–2001). Boasson (2015: 111–119) has shown that this decision came about because Statkraft and environmental organizations had joined in efforts to influence the Storting. At this stage, few political parties had developed firm views as to which support scheme for renewable energy they preferred: they simply wanted a more ambitious policy. Statkraft argued that Norway had to keep up with European developments and that the EU was now set to develop a pan-European certificate scheme, even though the certificate promoters in Brussels had lost the EU discussions over this (Boasson 2020b; St. meld nr. 37 2000–2001).

In his 2001 New Year's speech, Prime Minister Jens Stoltenberg (Labour) proposed introducing a new ban on major new large-scale hydropower development, which later gained support from a firm parliamentary majority (St.meld. nr 37 2000–2001). As most actors expected domestic energy demand to grow steadily, this made the new support scheme more important. In 2001, a Liberal/Conservative minority coalition took office and allowed the MPE to develop a support scheme in line with the first parliamentary decision, rather than the later call for a certificate scheme. The Ministry designed a support scheme that neither resembled the feed-in schemes elsewhere in Europe nor had much in common with the electricity certificate idea, as it offered support only to projects that needed the lowest level of support in order to achieve profitability (Boasson 2015: 120–121). In fact, this scheme resembled the feed-in premium auctioning schemes that would become widespread throughout the EU more than a decade later (see Boasson, Faber and Leiren 2021, this book).

In November 2002, the government issued a White Paper that rejected the creation of a Norwegian certificate scheme, arguing that it would be a good idea only if a pan-European scheme could emerge (St.meld. nr 37 2001–2002: 107). The White Paper also expressed doubt as to whether an EU renewable electricity scheme would fall under the EEA agreement (and would thus be legally binding on Norway). At this stage, Statkraft joined forces with other utilities and environmental organizations in a coordinated campaign, calling for the Storting to instruct the new government to adopt a certificate scheme and implement the EU Renewables Directive (Boasson 2015: 121; Kollbeinstveit 2009: 22). Statkraft found the certificate idea intriguing; it saw opportunities for considerable profits from the voluntary certificate scheme (trade with guarantees of origin) rooted in the Renewables Directive. By this time, the Swedish certificate scheme was up and running (Boasson et al. 2021, this book).

The joint campaign from electricity utilities and environmental groups proved successful. After having left the executive government, Labour now changed its position on renewables certificates, joining the parliamentary majority and

instructing the new government to initiate negotiations with Sweden on joining their certificate scheme (Innst. S. 167. 2002–2003: 18–19). In line with inputs from the electricity industry, they also called for the Renewables Directive (2001/77/EC) to be included in the EEA agreement, as they regarded this as a precondition to enable Norwegian actors to take part in 'international certificate trade' (Innst. S. 167. 2002–2003: 18–19). This formulation gives the impression that the Directive underpinned the emergence of a pan-European scheme, but that was not the case (see Boasson 2021b, this book).

The certificate scheme idea fit hand-in-glove with Norwegian electricity industry's way of operating after liberalization. A wave of mergers among municipally owned companies ensured that, by 2008, the ten largest of Norway's 200 energy producers controlled 70% of the country's power production (MPE 2008a). Statkraft alone represented 30% of production capacity; it had substantial minority ownership in a handful of other large power producers, and commanded superior economic and analytical resources (Nilsen and Thue 2006). It had also acquired power plants in several other European countries. Eventually, most electricity producers joined together in the Norwegian Electricity Industry Association (later named Energy Norway) (Boasson 2015: 115). Coordination of lobbying efforts became a key task of this association, where Statkraft was the dominant actor. Both the MPE and Statkraft focused on economic efficiency – the former aiming at minimizing societal costs, the latter at maximizing corporate profits. The energy-intensive industry produced wafers for solar PVs, but these actors exported their products and did not take part in discussions on the Norwegian support scheme (Kollbeinstveit 2009). Hence, Norway did not have a new renewable energy industry that aimed at ensuring the development of renewable energy technology.

Precipitation was low in the winter of 2002–2003, and, as a result the price of electricity soared (St.meld. nr. 9 (2002–2003). The consumers had to pay, while the power producers reaped large profits. Because the state and the municipalities owned most energy producers, this led to increased public revenues. The media, however, were brimming with consumer protests. Labour was among the political parties that most forcefully blamed the Conservative coalition government for the high electricity prices (Innst. S. nr. 167 2002–2003). Still, it was the spikes in the price of electricity and the gas-power struggle that were subject of the most heated political arguments, not the tug-of-war between the government and the Storting about renewables support-scheme design. The repeated electricity certificate instructions from the Storting must be understood in light of the fact that Norway had three minority governments between 2000 and 2005. No matter which parties were in opposition, renewable energy support provided a good opportunity to criticize the government. Because the political salience of renewable energy was limited, few politicians actually delved into the details of the green certificate scheme (Boasson 2015: 111–119).

EFTA Surveillance Agency (ESA) plays the same role in relation to EEA countries as the Commission does for EU member states. Most EU member states notified their first support schemes to the Commission (Boasson 2021b,

this book), but Norway did not notify ESA initially. In 2002, ESA called for Norway to notify its schemes, and the MPE embarked on five years of tough negotiations with ESA on whether the Enova support scheme violated the state-aid rules. Initially, the Ministry held that the Enova scheme did not fall under the EU definition of 'state aid' (MPE 2003). Later, it began arguing that the Norwegian renewable support scheme had been designed with a view to minimizing societal costs, and that, because no party would receive more state aid than needed to realize the production of renewable energy, it was not 'state aid' (MPE 2004). However, cost-efficiency was not the main concern of the ESA, which instead probed into why Norway did not follow the extra-cost methodology prescribed by the state-aid guidelines. This method was technology-specific: all projects that applied for state aid should be granted the support they needed in order to become just as profitable as conventional power production (Boasson 2021b, this book).

Two years followed in which Norway tried to persuade the ESA to accept that the Enova scheme could not be aligned to the extra-cost model (ESA 2005a, 2005b; MPE 2004). The Ministry argued that because hydropower requires huge investments, using this as a reference technology would allow for unreasonably high levels of support (MPE 2003: 7, 2004). Eventually, it managed to persuade the ESA that the minimizing societal costs approach made more sense than the extra-cost model; but still, ESA first endorsed the modified Norwegian support scheme in 2006 (ESA 2005a, 2006).

By late 2004, the government had yielded to the instructions repeatedly given by the Storting and issued draft legislation for a certificate scheme for public consultation (MPE 2005). A unilateral Norwegian scheme was never seriously discussed, primarily because economic calculations showed that a common scheme with Sweden would be far more cost-efficient (St.meld. nr 37 2001–2002: 109–123; MPE 2004). Energy economists were tasked with assessing the efficiency of the scheme; most of the ensuing reports were issued in 2005 (Kollbeinstveit 2009: 22). As the scheme would increase energy production, it might eventually reduce market prices, but that effect was hard to predict (Energy Agency 2004).

Despite favourable wind conditions in Norway, there were few applications for windpower support from the cost-efficient Enova scheme in these years, and by 2005 only a capacity of 1.1 TWh windpower had been constructed. Although small hydro had not been included in the Enova scheme, a host of new, small actors initiated a rush of new projects (Yttri 2019). The coalition government (Christian Democrats, Conservatives, Liberals) encouraged this development (Yttri 2019: 333) and also promised that the forthcoming certificate scheme would reimburse some of the costs of small-scale hydropower plants constructed after January 2004 (*Stavanger Aftenblad* 2004).

Even though politicians had occasionally paid attention to renewable energy support in the period 2000–2004, it never became a salient political issue. Politicians were more preoccupied with discussions over gas power and electricity price peaks, and the MPE staff were kept busy aligning Norway's support schemes with EU state-aid regulations.

2005–2009: politicization of renewable electricity support

By 2005, the lack of stable political steering signals about the renewables support design had led to frustration within the electricity industry. As the climate issue had an upswing in salience in general, renewables support finally gained political salience.

The 2005 elections brought a change of government, with the Labour Party forming a majority red/green coalition with the Socialist Left and the (traditionally agrarian) Centre Party. Although renewable energy had not been high on the agenda during post-election negotiations, the new government readily declared that it would continue to negotiate with Sweden on a common green certificate scheme (Soria Moria 2005). In parallel, a string of energy economy reports, which had been ordered by the previous government, concluded that a certificate scheme would *not* be a cost-effective climate measure (see Kollbeinstveit 2009: 22). One report noted how a certificate scheme would bring an immediate increase in the price of electricity and a burden on the consumers (Golombek and Hoel 2005). Another report concluded that the increased renewables support would reduce the prices and thus the value of existing large hydropower production (Aune et al. 2005). Hence it was unclear whether the utilities or the consumers would profit from a certificate scheme, but all reports agreed that companies with the most profitable windpower projects could reap higher profits that would be needed for overall profitability.

These reports led Labour to re-assess its position towards certificates. Labour politicians feared that the parliamentary minority would blame them if the scheme served to increase the price of electricity. As one interviewee (see Boasson 2015: 119) concluded, 'we were living in the shadow of the power price issue'.

The electricity utilities and environmental organizations continued to promote a shift, referring to the high support levels in the Swedish green certificate scheme (MPE 2007). They also continued to frame certificate schemes as the most successful scheme in Europe and called for Norway to implement the EU Renewables Directive (see MPE 2005). Partly because few Norwegian actors were informed about recent European developments away from certificates and towards feed-in in Europe, these arguments gained a foothold.

Politicians recall it as demanding to collaborate with the administration in the MPE on the certificate issue (see Boasson 2015: 119). All along, the Swedish government demanded that Norway adopt a high renewables target, on the grounds that if the coherent target became too low, only the least costly projects would be realized – and these were to be found mainly in Norway, not in Sweden (Energimyndigheten 2005). Labour politicians and administrative actors alike wanted a low Norwegian target: the higher the target, the more likely that the certificates would gain a high value and corresponding increase in electricity price. Given the lack of greenhouse gas emissions from the Norwegian electricity sector, this would not be a cost-efficient climate measure. Thus, the Norwegian government held out for a far lower ambition level than the Swedes were ready to accept (MPE 2006; see Kollbeinstveit 2009: 30–31).

Now the electricity utilities competed for the best projects and enhanced their organizational capacities. Five of the ten largest utilities included windpower in their organizational structure, and many smaller companies created shared windpower development subsidiaries (see Agder Energi 2007; BKK 2007; NTE 2004; Statkraft 2005). Only one rather large utility, EC-O, opposed the certificate scheme, worrying that new electricity production would reduce the profits from existing large hydropower (MPE 2005).

Eventually, negotiations with Sweden failed, due to Norwegian reluctance. The electricity industry reacted with an outcry, immediately gaining support from the political opposition (see Innst. S. nr. 205 2006–2007: 5). It was particularly surprising that the populist right-wing Progress Party joined the bandwagon. According to one interviewee (2), the party seized this opportunity to show that they had changed from basically denying climate change as anthropogenic, to supporting climate measures that would profit the consumer, believing that the certificate scheme would reduce electricity price-levels in general. In the coming months, electricity shortages and soaring electricity prices in northwestern Norway contributed to make the negotiation failure seem even more severe (Normann 2015: 187).

With the political competition intensifying, the red-green government hastily initiated efforts aimed at sweetening the retreat from green certificate plans. It promised to develop an alternative scheme that would take account of the concerns of all three parties in government: it would offer high support, but it would be financed by the state and not the consumers and would offer similar support levels to various technologies (MPE 2006). Further, the scheme would offer producers an add-on to the electricity price – not a guarantee of a set electricity price, as other feed-in schemes in Europe did at that time.

It was first at this stage that political appointees in the MPE realized that the EU guidelines on state aid severely constrained their work on designing an alternative scheme (Boasson 2015: 121). After months of internal deliberations, the government notified the ESA of their hybrid scheme (St.meld.nr. 11 2006–2007). But instead of straightforwardly following the same criteria they had applied with the previous Norwegian notification process, the ESA now referred to new precedents created by Commission notifications of EU support schemes over the past two years (ESA 2007). Thus, the Norwegian government came to realize that, due to deliberations with the ESA, substantial time would be needed to develop a new scheme. Given the current high political salience of the issue, this put the ruling coalition in a very difficult position.

According to two interviewees (1, 6) who played leading roles in developing the support scheme, the prospects of a long and cumbersome ESA process prompted the government to initiate new negotiations with Sweden about Norway joining the green certificate scheme. After all, green certificate schemes were exempted from the general ban on state aid. A political appointee (Interview 6) noted that the government had much contact with the environmental organization Zero in this period. The minority in the Storting now lauded the government for 'finally coming to its senses' (see e.g. Innst. S. nr. 145 2007–2008). In taking this

decision, the government was challenging the MPE administration, which did not favour such a scheme (see Gullberg and Bang 2014: 108). According to Åslaug Haga, Minister of Petroleum and Energy from 2007 to 2008, 'the new negotiations with Sweden about a common green certificate scheme would never have happened if the iron triangle [the MPE, the Ministry of Finance and the Prime Ministers' Office] had got it their way' (Haga 2012: 296, own translation). This shift to certificates took place despite the decreasing popularity of such schemes elsewhere (Boasson 2021b, this book). Interestingly, the European turmoil over the support-scheme-related content of the Renewables Directive attracted hardly any attention in Norway.

Conflicts over how to design the renewables support hindered actual investments in renewables in this period (Riksrevisjonen 2010). Aiming to compensate for this, in 2008 the government awarded Enova greater funding for its running scheme for windpower – and, between 2008 and 2011, windpower with an annual production of 1 TWh was constructed, most of which was operated by large Norwegian utilities (Enova 2014: 5). Still, the target of 3 TWh annual production by 2010 was not met.

The parties in government disagreed about how to approach the new round of negotiations. According to one interviewee (6), the Centre Party and the Socialist Left Party disagreed on whether to include small-scale hydro, whereas Labour was still reluctant to increasing renewables production significantly. In parallel with these tumultuous political discussions in Norway, the EU member states had agreed to introduce binding domestic renewables targets for later inclusion in the revised Renewables Directive (Boasson 2021b, this book). As the first version of the directive was already included in the EEA agreement, the Norwegian government readily accepted implementation of the revised one (Regjeringen 2007). Interviewees (1, 6) underline that the Norway–EU negotiations on the new directive and the Norway–Sweden negotiations about the certificate scheme were conducted in parallel, without being interrelated. As small-scale hydro was less costly than windpower, it would be easier to meet new renewables targets if this technology were included. Thus, the inclusion of small-scale hydro in the certificate scheme made it easier for Labour to accept a rather high target for the scheme. At this point the political stakes had become high: the government would lose face if it withdrew from the negotiations with Sweden a second time. The parties in government found themselves with little leeway, and they had to accommodate the demands from Sweden.

Late in 2009 Norway and Sweden agreed on the main principles for the new scheme. Norway committed to a 13.2 TWh electricity target by 2020 – half of the joint Swedish–Norwegian 26.4 TWh target (MPE 2010a, 2010b). Negotiations with the EU eventually resulted in Norway agreeing to increase its share of renewables in domestic energy consumption from 58% to 67.5% (NOU 2012: 38), with the certificate scheme as the main measure for reaching this target.

In the shadow of the certificate dispute, plans for offshore wind were launched in 2005 (Norman 2015: 185). Many actors aimed at developing new technological offshore solutions, such as Statkraft and other major Norwegian utilities, but also

large petroleum companies (Statoil/Equinor and Shell) and petroleum equipment producers. The government had asked leaders from the electricity and petroleum industries to draft a special report on offshore wind. They recommended adoption of a technology-specific feed-in scheme for offshore wind only (MPE 2008: 20–21). The Storting responded with more R&D funding, but no additional support scheme was developed (Norman 2015: 186–187).

The years 2005 to 2009 saw considerable drama with respect to renewable energy, ending with a radical shift in policy. Norwegian politicians showed an unprecedented engagement in the development of a support scheme for large-scale renewables; this finally resulted in a decision to join the Swedish green certificate scheme. Although financially powerful actors engaged to promote feed-in for offshore wind, they did not succeed; and technology-specific solar power support was not an issue at all.

2010–2016: an uncontroversial shift away from large-scale renewables support

After 2010, renewables were no longer a salient political issue. Norway was producing more electricity than it needed domestically; electricity prices dropped, and the electricity utilities changed their position towards the certificate scheme. Eventually, all of this resulted in a significant policy shift.

The new Swedish–Norwegian certificate scheme was put into operation in January 2012 (MPE 2010a, 2010b). In the same year, a task force appointed by the Norwegian government, with politicians as well as experts, concluded that after 2009, Norway would be producing significantly more electricity than it needed, and the power surplus would gradually increase (NOU 2012: 17). The task force did not come up with any recommendations about the future of the certificate scheme (NOU 2012: 74), but a few months later, the Minister of Petroleum and Energy announced that the scheme would run only until 2020 (Nettavisen 2012). An electricity utility interviewee (5) describes the industry's initial promotion of electricity certificates as rooted in misplaced expectations as to developments in energy demand and electricity prices: in fact, the latter dropped significantly after 2010 (SSB 2019). Introduction of new renewables electricity through the certificate scheme may have contributed to reducing the electricity prices, but many other factors were also involved – such as greater energy efficiency, increased inflow of water in many large hydropower plants, the financial crisis, lower costs of windpower equipment and the construction of fewer interconnectors than originally planned (NOU 2012) – so that the electricity demand failed to rise as expected. In 2015, Norway's electricity corporations had the lowest profits in more than a decade (SSB 2020b), and Statkraft ended with a substantial deficit (Statkraft 2016).

In 2012 the certificate price was far lower than expected, only half of what it had been in 2008 (Energy Agency 2019). Interviewees (1, 6) say this came as a surprise, as the theory behind the scheme predicted that the certificate price would increase when the electricity prices drop. As this was a shared Swedish–Norwegian

scheme, it did not matter from which country the actual renewables certificates came: Swedish certificates could contribute to fulfilling the Norwegian targets, and the reverse. One interviewee (1) pointed out that Swedish investors knew and understood the certificate scheme, whereas the Norwegians had a 'wait and see' approach. According to two interviewees (1, 5), Norwegian utilities initially positive to market logic lost their enthusiasm when they experienced the fluctuating support levels in addition to low electricity prices.

Examination of the party programmes prepared for Norway's general elections in September 2013 shows very little attention to the future of the certificate scheme (Arbeiderpartiet 2013; Fremskrittspartiet 2013; Høyre 2013; Kristelig Folkeparti 2013; Miljøpartiet De Grønne2013; Senterpartiet 2013; Venstre 2013; Sosialistisk Venstreparti 2013). The few parties that mentioned certificates merely called for minor adjustments to them. Many parties wanted to promote more expensive renewables technologies but were not very specific on how to design such schemes. The election outcome led the red-green coalition to resign. The Conservatives and the Progress Party agreed on a governmental declaration, stating that they would develop a new energy-policy White Paper, increase renewable power production, consider adjustments in the certificate scheme and offer tax deductions for energy-efficiency investments in residential buildings (Regjeringen 2013). In the Storting, the new minority government had support from the Liberal Left and the Christian Democratic Party.

Once in office, the new government initiated encompassing public consultations in preparation for the new White Paper on energy policy (Meld. St. 25 2015–2016). In 2014 a range of actors provided written inputs, but few paid attention to the certificate scheme (Regjeringen 2014), with two exceptions: Energy Norway, the business association of the Norwegian electricity industry, and Statkraft asked for no new projects to be included in the scheme after 2020. In 2015, small hydropower plants constructed as early as January 2004 were included in the scheme (Lov om el-sertifikater 2016: § 8). This significantly reduced the volume of new facilities that needed to be constructed in order to achieve the ambitions of the scheme.

According to interviewees 2 and 4, the MPE worked hard to ensure broad agreement on the need to remove the electricity surplus and to stop the certificate scheme by 2020. Initially, corporations with the most expansive windpower plans and the environmental organizations resisted, but 'in the end no one was against' (Interview 2). Interviewees 2 and 7 underlined that, because most electricity corporations had municipal owners, society at large would profit from a higher electricity price, as this would make the local municipalities richer. One environmental organization interviewee (4) said they had no chance of 'winning a war for a prolonged scheme', and in any event, 'we had the feeling we had won, it was so cheap to develop wind power in Norway, it was almost profitable at market prices'.

In April 2016, the government finally issued its energy White Paper, where it concluded that no new objective for the Norwegian certificate scheme would be introduced for the period after 2021 (Meld. St. 25 2015–2016: 188). At this stage

Norway already had achieved a 69% renewables share of its energy consumption, higher than that required by the EU (Meld. St. 25 2015–2016: 187). Hardly any protests arose and a majority in the Storting endorsed the proposal, with the 'creation of space for more technology-specific support schemes' as a rationale but without proposing a new scheme (Innst. 401 S. 2015–2016: 30). Only the Socialist Left Party called for the certificate scheme to be prolonged.

The Energy White Paper discussed offshore wind, without any specific support proposals. Solar power was discussed primarily as a phenomenon outside Norway; and although a modest investment support scheme for small-scale renewables in residential buildings had been introduced one year earlier, this attracted scant attention (Meld. St. 25 2015–2016: 188).

Interviewees 2, 3 and 4 explained that the small-scale renewables scheme was rooted in the government declaration's promise of introducing tax deductions for energy-efficiency investments in residential buildings. According to these interviewees, the government immediately encountered a problem with the introduction of such a measure, and therefore they turned to Enova and asked it to develop a support scheme instead (see also *Teknisk Ukeblad* 2014).

At this time, the environmental organization Zero, together with leading architects and building construction corporations, had started to promote rooftop PVs in Norway (Zero 2013). Zero joined forces with other environmental organizations and various business associations who already had a coordinated campaign aimed at influencing implementation of the energy-efficiency formulation in the governmental declaration (*Norsk Teknologi* 2014). Thus, it was a rather broad collation that eventually called for PV support to be included in the new energy-efficiency scheme. In the end, Enova launched a scheme offering up-front investment support with equal support levels for a wide range of energy-efficiency and renewable-energy technologies, but solar PV was expected to be the most attractive technology (*Teknisk Ukeblad* 2014).

In other settings, MPE and the Energy Agency officials argued that decentralized small-scale, costly renewables production did not fit the Norwegian energy system (Zimmermann 2018). But none of the interviewees recalled that these actors tried to prevent PV from being included in the new Enova scheme. Moreover, interviewees 2 and 3 underlined that neither the executive government nor the Storting played much of a role in this process. Later, the Liberals, one of the parties that had ensured the government a majority, succeeded in getting the government to accept that certificates could be granted to small-scale renewable electricity production, but because they had to pay a fee in order to be included in the scheme, few actually received such support (Statsbudsjettet 2016).

The organizational field of electricity production had remained rather unchanged, although Statkraft had increased its share of electricity production to some 35% (MPE 2019). Moreover, Statkraft had gained a more prominent position in Europe, particularly as operator of hydropower in Sweden and as a wind-power developer in the UK (Statkraft 2020). Statkraft was still fully Norwegian state-owned, with most of the remaining electricity production owned by regional and local governments. Cross-ownership became increasingly common, but

most hydropower producers were small: only 11 had more than 250 employees (Espelien 2017). Several petroleum-related corporations had started to develop offshore wind, but they focused primarily on markets outside Norway, as did producers of solar PV equipment.

In 2016, windpower provided only 1.4% of Norwegian power production, and very few windpower corporations had emerged. Interviewees 1, 2, 4 and 5 expected more construction in the final phase of the certificate scheme and held that windpower might soon become profitable even without support. Norway has not seen an influx of new renewables actors, as was the case in some other countries. One interviewee (1) put it like this: 'we sit here laughing at the Germans who are ruining themselves on feed-in. The costs have been enormous – but then, they have gained new industry and jobs. Maybe we should have thought of that too?'

Discussions and conclusions

By 2020, Norway had a technology-neutral renewables support mix, with no prospects of offering large-scale renewables investors any support after 2021. This policy outcome was the result of decades of complex decision-making processes. How have the European environment, the Norwegian organizational field of electricity production and the domestic political field contributed to the development of the support scheme, and how have these three spheres influenced each other over time?

We start with the importance of the *European environment*. Even though Norway had hardly any CO_2 emissions from electricity production, climate change heightened the focus on renewable electricity in the 1990s. The Norwegian electricity industry soon became interested in electricity certificates, primarily through participation in EU-level discussions and the Dutch certificate scheme that financed a Norwegian windpower project. The government in 1999 proposed to introduce a cost-efficient support scheme which resembled neither a certificate scheme nor a feed-in scheme. Hence, we cannot say that the European environment affected the actual decision on support schemes in Norway in the period leading up to 1999, although some actors had been inspired by EU-level developments.

In the early 2000s, Norwegian civil servants developed an auctioning scheme aimed at minimizing support. However, the utilities gained increasing interest in electricity certificates and, together with environmental organizations, they succeeded in getting the opposition, which had a majority in the Storting, to embrace their idea. As a result, the government half-heartedly started negotiating a common scheme with Sweden but later withdrew. Although European environment impulses from around 2000 had long-lasting impact on some key actors, they did not actually influence policy decisions in this period.

Gullberg and Bang (2014: 109) conclude that Norwegian members of Parliament simply did not consider alternatives to a joint Swedish–Norwegian certificate scheme in 2008 – but this is not fully accurate. The parties in government had tried to develop another scheme, but EU state-aid rules obstructed the

development of a special Norwegian support scheme. Even though EU state-aid practice at this stage was quite open to more technology-specific schemes, the cumbersome process made the Norwegian government withdraw its proposal. Thus, the government turned to certificates again. The Swedish scheme had been up and running for a while, and although the certificates scheme had fallen out of fashion elsewhere, Norwegian actors seemed basically unaffected by feed-in gaining prominence over certificates in Europe.

According to Gullberg and Bang (2014: 103), Norway's willingness to join the Swedish certificate scheme was spurred by the binding domestic targets in the 2009 Renewables Directive. However, the detailed process tracing shows that it was European certificate impulses from ten years earlier that now came to fruition, while the binding target had little importance. The government was under pressure to show its support to renewables; and, because EU state-aid rules made it hard to develop a special Norwegian scheme, certificates appeared as the only viable option. Indeed, it seems likely that Norway would have adopted an electricity certificate scheme at this stage irrespective of the binding EU targets.

Note that Norway did not adopt any scheme for small-scale renewables during the 2005–2009 period: thus, the growing focus on small-scale renewables and the popularity of feed-in in Europe did not influence Norway.

From 2014 and onwards, Brussels governed the development of renewables schemes in the EU and EEA countries, with the Commission gaining authority to require auctioning combined with a feed-in premium. Also in 2014, the EU decided against adopting binding domestic renewables targets for 2030. It is hard to say what Norway would have done if new domestic 2030 renewables targets had been imposed, but the lack of new targets made it easier to withdraw from the certificate scheme. Norway introduced investment support to small-scale renewables in residential buildings in 2015; but Norway adopted a far more technology-neutral scheme than did most EU countries. Thus, we see that the European environment played a very modest role for Norwegian developments in this period.

On the whole, then, the European environment influenced Norwegian actors in the early 2000s, when EU steering was weak and no particular scheme dominated. The European environment had less importance in Norway, when the EU later gained more authority and a particular support mix became dominant. This contrasts with our expectations (see Boasson 2021a) and shows that EU impulses can be important even when EU steering is weak; also, that it can take a long time before European impulses actually influence domestic policy developments in Norway.

Can the *domestic organizational field* explain more of the developments in Norway than does the European environment? The liberalization of the Norwegian electricity system started back in the 1990s, and the institutional logic shifted away from technology development and towards market thinking. Until around 1999, the segmented field was quite united, focusing mainly on how to make existing large hydro more profitable. Although interest in windpower solutions was rising, the technology-specific feed-in scheme that emerged in Europe contrasted with the economic institutional logics that had come to dominate the organizational field in Norway.

In the 2000–2004 period, conflicts between the market based-economic logic of Statkraft and the cost-minimizing logic of the MPE led them to favour differing support schemes. While the latter wanted a scheme to the lowest societal costs, Statkraft wanted a scheme that would enable greater corporate profits. The electricity certificate idea was in line with the logic of the corporate actors, whereas the government developed an auctioning/feed-in premium type of scheme. Failing to influence the MEP, Statkraft and other large electricity utilities targeted the Storting, with the backing of environmental organizations. Turf battles continued throughout the period, but the issue never gained enough saliency to ensure stable political steering signals. Hence, development of the support-scheme development was primarily determined by the MPE administrative staff in this period.

Only when the government withdrew from negotiations with Sweden in 2006 did renewables support become a salient political issue. There ensued a few years when policy development was determined mainly by the political field and not the organizational fields.

After 2010, however, the electricity utilities changed their preferences, siding with their former foes in the MPE. With the low level of investments in renewables, the organizational field did not experience fragmentation, instead becoming more segmented than before. As we expected (see Boasson 2021a), this has served to make the organizational field more influential. With the entrenched resistance to certificates in the Ministry and Statkraft now going against a prolonged scheme, it is not surprising to find that more marginal actors see this reversal as unstoppable. The introduction of marginal support to small-scale renewables has come about through low-level negotiations between various actors on the fringe of the organizational field. Unsurprisingly, given the modest support levels and technology-specificity, the dominant actors have not mobilized against this. However, no support scheme for offshore wind has been developed.

Although some offshore wind promoters, such as Statoil (later Equinor), were powerful in their own right, they did not hold a sufficiently strong position within the organizational field of electricity production to succeed in their demands (see also Normann 2015: 189). According to Espen Moe (2012: 19), 'Norway, with its powerful petroleum industry, has fed vested interests and built institutions to support the already existing industry, to the detriment of renewables'. The process tracing undertaken in this chapter has shown another story, with petroleum actors having played no direct role in the development of Norwegian support to renewables.

Finally, we turn to the role of the *political field*. In line with our expectations, the political field has generally had little importance for development of the Norwegian scheme in periods when the issue was not politicized. In the 1990s, politicians agreed that the government should promote renewables more than they had done, but they were not particularly engaged in how the support scheme should be designed. From 2000 and onwards, the Storting repeatedly asked for a shift to green certificates. But here we see the same pattern with most parties in and out of government: when in opposition they embraced certificates,

but once in government they were convinced by the MPE administrative staff. We may say that they jumped onto the certificate-scheme bandwagon merely in order to symbolize their general support to renewable energy, without any deeper engagement.

The issue changed from low to high salience in the period 2005–2009. This was prompted by the government's retreat from negotiations with Sweden, and the political optics proving highly negative. However, when EU state-aid rules were found to obstruct the rapid development of a special Norwegian hybrid scheme, the government had to re-initiate negotiations with Sweden in order to save its credibility at home. With the issue becoming increasingly salient, the government was now willing to agree to far higher renewables ambitions than before.

After 2010, support to renewable energy again faded as a political issue: for instance, the failure to meet the 3 TWh windpower target attracted scant attention. Moreover, in 2012, the same government that had taken Norway into the Swedish scheme now stated that it would not be prolonged after 2020, even though few new renewable-energy power plants had been constructed in Norway. A new government came into position in 2013, and in the following years, the political leadership of the MPE worked to ensure unity within the organizational fieldWhen in 2016 they finally recommended that the Storting pull out from the Swedish–Norwegian scheme, this was readily endorsed without much discussion. The Storting called for replacement of the outgoing scheme but did not work to ensure that the government followed up. At this stage, the development of renewables support was determined by the segmented organizational field, whereas the political dynamics had limited importance. A few years later, a boost in windpower construction in the final phase of the Norwegian certificate scheme made windpower highly controversial – but our material indicates that issues of nature conservation did not affect the 2016 decision.

Further, the political field has not been important for the introduction of the modest support offered to small-scale renewables for residential buildings. True, the scheme is rooted in the governmental declaration, but the initial political formulation was exclusively about energy efficiency, with no mention whatsoever of small-scale renewables. The design of the actual support measure was negotiated between Enova and actors at the fringes of the organizational field, with little to no political involvement.

Against this wider backdrop, we again ask: why did Norway end up with the most technology-neutral and least-generous support-scheme mix in Europe? Here we can conclude that the main reason was that this was in line with the preferences of the structurally dominant actors in the segmented organizational field: the Ministry of Petroleum and Energy, and Statkraft. Since it took so much time for Norway to introduce a well-functioning support scheme for renewables, no new actors with major interests in new renewable electricity development emerged. In the period 2005–2009, the Norwegian political field ensured that the European certificate idea came to fruition – but, after 2010, policy developments were steered primarily by the organizational field, with political dynamics playing a limited role.

Interviewees

1 Civil servant, Norwegian Energy Agency (NVE), 22 February 2016, Oslo
2 Former political appointee (Progress Party), Ministry of Petroleum and Energy, 21 June 2018, Trondheim
3 Environmental organization representative, Zero, 25 June 2018, Oslo
4 Civil servant, Enova, 21 June 2018, Trondheim
5 Electricity industry representative, Statkraft, 14 October 2016, Oslo
6 Former political appointee (Centre Party), Ministry of Petroleum and Energy; electricity industry representative, Energi Norge, 18 February 2016, Oslo
7 Civil servant, Swedish Energy Agency, 14 October 2016, Oslo (identical to Interviewee 6 in Chapter 8)

Note

1 I have previously examined the development of the support schemes for renewables electricity and heating between 2000 and 2010 (Boasson 2015); parts of the chronological story that follows draw on that earlier publication.

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Part III

Assessments and conclusions


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11 Comparative assessments and conclusions

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Introduction

In this chapter, we systematically compare the development of renewables support mixes in Germany, the UK, Poland, France, Sweden and Norway, asking: *what can explain the differences and similarities across countries and over time?* Specifically, *why have some countries developed technology-specific mixes, whereas others have focused on technology-neutral mixes?* Further, we examine whether our findings are in line with explanations under the multi-field approach, as presented in Chapter 3 of this book. Systematic comparison of developments in four differing time-periods in the six countries enables us to offer answers to the sub-questions that have guided this book – namely, *how and to what extent is the development of renewables support mixes affected by:*

- *the European environment?*
- *the domestic organizational fields?*
- *the domestic political fields?*

And further: *do developments in one field influence developments in others?*

We present a range of systematic comparisons, showing that differences and similarities across countries can largely be explained by variance in the state of the domestic political and organizational fields and their differing interrelationship with the wider process of Europeanization. Systematic comparative multi-field assessment can offer new insights into the role of political and institutional dynamics for energy and climate transitions, as well as for policy change and stability more generally.

Our comparisons aim at answering the research questions of this book, one question at a time. This chapter draws on all the other chapters of this book but does not go in dialogue with scientific literatures on Europeanization, policy processes or climate transitions. The more general implications for larger scientific discussions on these topics are presented in Chapter 12.

The European environment: spurring variation

Chapter 2 presented the story of the development of renewables support schemes in Europe. The ensuing case-study chapters have discussed how and to what

extent renewables support in each country in focus has been influenced by the European environment (see Table 11.1 for a summary of the main findings). We had expected the European environment to dominate the development of domestic renewable energy policies more when vertical Europeanization was strong and when horizontal Europeanization was coherent, in the sense that one specific support-scheme mix had gained superiority (EU governing). While we do find that the European environment is more important for many countries under EU governing conditions, it emerges as generally more important than we expected also under other conditions. Indeed, we find that the actual effect of the European environment depends partly on developments in domestic fields.

The first row in Table 11.1 shows differences in the state of the European environment over time, whereas the following rows describe how (horizontal and/or vertical) and to what extent (grey scale) the European environment has affected the countries. Light grey shading indicates the time-periods where the European environment has influenced the development of domestic support mixes, whether by supporting or by undermining developments in the domestic fields. Influences on small-scale as well as large-scale support schemes are taken into account. Periods when Europeanization processes have been of little importance are marked by a dash, in turn indicating the importance of domestic organizational and/or political fields in shaping policy developments in these periods. Note that the European environment has never been *the main driver* of changes or stabilities in the domestic support schemes, so there are no periods with dark grey shading.

Horizontal Europeanization refers to the diffusion of ideas, measures or policy designs across countries and fields within the European environment. The more

Table 11.1 Comparing the role of the European environment across time and cases*

Period *Country*	*1999 and earlier*	*2000–2004*	*2005–2009*	*2010–2016*
State of the European environment over time	*1000 flowers*	*Horizontal harmonization*	*Horizontal harmonization and (indirect) EU governing*	*EU governing*
Germany	–	–	–	Vertical and horizontal
UK	–	–	Vertical and horizontal	Vertical and horizontal
Poland	Horizontal	Vertical	Domestic fields	Vertical
France	Horizontal	Horizontal	Vertical	Vertical and horizontal
Sweden	Vertical	–	Vertical and horizontal	–
Norway	–	Vertical	–	Horizontal

* Light grey: some importance, white: almost no importance

a specific policy recipe dominates within the European environment, the stronger the effect it may have on policy development at the domestic level. Vertical Europeanization refers to top-down EU steering: the greater the structural power controlled by the EU, the greater will be the impact on domestic policy development.

Chapter 4 described a gradual increased strength in vertical Europeanization, peaking after 2010 and with two peaks in horizontal Europeanization: a fixed feed-in trend from 2000 to 2009, and a feed-in premium trend combined with competitive auctions emerging after 2010. After 2010, the horizontal and vertical Europeanization processes created an EU governing situation, so we should expect the European environment to have become especially salient for domestic support-mix developments after 2010. In fact, however, the pattern of European environment influence over time (see Table 11.1) does not fit this description. This calls for a more detailed assessment of the role of the European environment in differing phases, taking account of developments in all six case-countries.

The EU had little formal authority in the period leading up to 2000, and vertical Europeanization was weak. The European Commission (the Commission) promoted a pan-European electricity certificate scheme, but the member states approached the issue in different ways, so horizontal Europeanization was also weak. From 1990 and onwards, the Commission started to regard renewables support as an EU state-aid issue, but it readily adopted all notified support schemes and did not perform actual steering. That was a *1000 flowers* situation, where we would expect countries to test out a range of new solutions, without being deeply affected by developments elsewhere in Europe. However, we find that the European environment influenced three out of our six case-study countries in this period.

Poland adopted technology-specific feed-in (inspired by Germany), and France adopted rather technology-neutral tendering (inspired by the UK). Both developments seem to have come about because domestic actors looked to other countries to find new policy ideas – not because of strong pressures from the European environment. In addition, Sweden was influenced by the Commission's campaign for a technology-neutral pan-European certificate scheme. The vertical steering signals were weak, but domestic actors were receptive to the Commission's arguments: hence, that Sweden adopted a certificate scheme was largely a result of drawing lessons from abroad. Interestingly, 30 years later, the domestic support mixes in Sweden and France bear the hallmarks of the initial European impulse from this period. In Poland, by contrast, this initial European environment impulse faded quickly.

The 2000–2004 period was dominated by *horizontal harmonization*. The Commission argued that the EU member states had to adopt more technology-neutral schemes in order to act in accordance with the state-aid guidelines, but the CJEU *PreussenElektra* ruling ensured that technology-specific feed-in was recognized as legal under EU law. Hence, in this period, the Commission did not gain any forceful authority with a basis in state-aid rules. The EU adopted its first Renewables Directive – but, as the Commission's proposal for a binding, technology-neutral support-scheme was rejected, vertical Europeanization remained limited.

Moreover, feed-in diffused rapidly. Hence, the period was characterized by horizontal harmonization, in turn underpinning the development of feed-in in France. Although feed-in (and not certificate schemes) gained in popularity during this period, Norwegian actors were receptive to the certificate idea from the Commission and the European electricity industry. Despite the absence of strong vertical Europeanization pressure for certificates, the idea gained acceptance in Norway, although it took years before it came into fruition.

The Commission had somewhat more authority over Poland because of its accession status, so Poland experienced stronger vertical Europeanization pressures than the other countries in the 2000–2004 period. This partly explains why Poland prepared for a shift to a certificate scheme in this period (adopted in 2005), overruling the initial European environment effect on Polish developments (which had led Poland to adopt a feed-in scheme). However, EU steering cannot explain why the Polish scheme promoted co-firing of biomass in co-firing coal-power plants, and not wind and solar.

As Germany was the source of the European trend in this period, it was hardly 'a taker' of European environment impulses. Further, neither the UK nor Sweden was much affected by European developments. Given the lack of strong vertical Europeanization, it is not surprising that the European environment affected different countries in different ways. Due to domestic differences, the European environment contributed to introducing technology-neutrality in Poland and Norway, but technology-specificity in France (to which we return later). Moreover, the overall salience of the European environment proved to be higher than expected in this period.

In the 2005–2009 period, the authority of the EU increased, due to the introduction of binding renewables targets. Hence, a certain indirect *EU governing* was added to the horizontal harmonization character of the European environment. These two modes of Europeanization existed in parallel because of the 2007 European Council decision to adopt binding, domestic renewables targets for 2020, and because feed-in became increasingly dominant. The Commission could not steer how member states designed their support mixes, but it could pressure them to adopt schemes that could fulfil the targets. Germany, already having high renewables ambitions and being the feed-in leader, was not much affected by the European environment, but we detect significant effects in other countries.

The UK and Sweden were influenced by the greater focus on small-scale production all over Europe. Sweden, however, adopted a more technology-neutral instrument than the other countries. Despite the historically strong dominance of market logic in the UK, and the prior technology-neutrality of its large-scale scheme, the country adopted a feed-in for small renewables plants, influenced by the German feed-in. The UK also introduced greater technology-specificity in its large-scale support schemes. The shift towards technology-specificity in the UK came about partly because of Prime Minister Tony Blair's bold support for adoption of binding domestic EU renewables targets. When the EU later gave the UK a high target (compared to its low initial share), this eventually strengthened the domestic actors that for a long time had argued that the UK needed greater

technology-specificity. This added to the effect of the strong vertical Europeanization (due to the dominance of feed-in) and the high EU-wide focus on fostering small-scale renewables. Also in France, the EU-level actions of President Nicolas Sarkozy boomeranged, strengthening the domestic actors that wanted greater technology-specificity.

The EU-wide emphasis on small-scale renewables and the new renewables targets also influenced Sweden. However, in line with its traditions, Sweden adopted technology-neutral investment support for small-scale renewables. Poland was rather unaffected by developments in the European environment in this period. Likewise, Norway remained rather isolated from the new European environment, although the old certificate impulse lingered. For instance, it seems that since Norwegian politicians had not been involved in negotiating the Renewables Directive (as an EEA member, Norway is required to adopt certain EU laws but does not have formal access to the EU decision-making process), neither the adoption of new targets nor the diffusion of feed-in schemes in Europe attracted much attention in Norway. Overall, we find that most of the EU steering was directed at increasing the share of renewables, whereas horizontal Europeanization had a more direct impact on the support-scheme mixes. The authority of the EU had increased, but still the importance of the European environment was rather similar to prior periods.

After 2010, we see a clear upward shift in the salience of the European environment. It plays a significant role for all countries in this period, except Sweden, but it does not determine the course of developments in any of the countries. The EU steering of renewables support schemes was becoming radically stronger, through new state-aid guidelines that favoured auctioning combined with feed-in premiums and promoted technology-neutrality. Electricity certificates were accepted by the EU but were not promoted by the new guidelines. In parallel with the deliberations over the new guidelines, the UK, France and Germany prepared a shift towards feed-in premiums combined with auctioning – in effect, a new trend. With vertical and horizontal Europeanization increasing in tandem, the European environment shifted to *EU governing*. Strong domestic forces underpinned developments in the UK, France and Germany, but the adoption of the new EU state-aid guidelines in 2014 stands out as decisive for domestic-level developments, especially in France and Germany. Interestingly, all three counties continued to have schemes that were more technology-specific than prescribed by the Commission.

The European environment did not have an equally strong impact on renewables-support mixes in Poland, Norway or Sweden. Poland did change its large-scale scheme, but not because the new guidelines required this. After all, Poland already had a certificate scheme largely in line with the guidelines. Rather, it seems as if the shift in support scheme was primarily a strategic move, aimed at worsening the conditions for the development of large-scale renewable projects. Poland also introduced new schemes for small-scale renewables, but the process was opaque, and it is not easy to ascribe these developments to EU steering. Norway was influenced by the greater European-wide focus on small-scale, introducing a modest investment support for small-scale renewables. However, that scheme was far

more limited and more technology-neutral than small-scale support schemes in the other countries. Moreover, Norway's decision to not prolong the certificate scheme was not influenced by the European environment.

Support schemes in Sweden were not influenced by the shift in EU steering at all – hardly surprising, as Sweden already had a large-scale scheme largely in line with the new rules, and it had adopted a small-scale renewables support scheme a few years earlier. Interestingly, Sweden retained its electricity certificate scheme, although such arrangements had fallen out of favour almost everywhere else.

All six countries would have ended up with different renewables support mixes if it had not been for enablers and constraints within the larger European environment. In fact, the European environment contributed to spur differentiation between the technology-specific and technology-neutral countries. As we will see, the growing salience of the European environment after 2010 occurred in parallel with domestic factors that also gained salience, which means that there is an interrelationship between domestic and European factors.

Organizational fields: crucial but not totally dominant

The case-study comparisons presented in Table 11.2 show that even though the organizational fields of stationary energy tend to be segmented most of the time in most countries, there is interesting variance in the policy salience of the segmented fields. Initially, we expected that the organizational fields would dominate the development of domestic renewable energy policies more when the organizational field is characterized by centralized structural resources and one dominant institutional logic (segmentation). While we find that *segmentation* tends to make organizational fields more important for policy development, not all segmented fields are equally important. Hence, segmented organizational fields are crucial but not totally dominant – and are thus generally less important than we initially assumed.

A brief glance at Table 11.2 shows our expectations are largely supported, although there is still greater variance in the importance of segmented

Table 11.2 Comparing the role of the organizational field across time and cases*

Period / *Country*	*Before 2000*	*2000–2004*	*2005–2009*	*2010–2016*
Germany	Pluralist	Turf battle	Turf battle	Segmentation
UK	Segmentation	Segmentation	Segmentation	Segmentation
Poland	Segmentation	Segmentation	Segmentation	Segmentation
France	Segmentation	Segmentation	Segmentation	Segmentation
Sweden	Segmentation	Segmentation	Segmentation	Segmentation
Norway	Segmentation	Turf battle	Turf battle	Segmentation

* Dark grey: high importance, light grey: some importance, white: almost no importance.

organizational fields than we had expected. In all countries, the organizational fields played a considerable role in policy development in at least two periods. Their relative importance increased after 2010 – in some cases this happened as the degree of segmentation increased, but in other countries the importance of the organizational field increased even though the degree of segmentation remained roughly the same. At this stage, renewables had become more mainstream, and all countries had achieved some new renewables production. In Germany and Norway the variation in the role of the organizational field is generally in line with variation in segmentation, but this pattern is less clear-cut for the other countries. In Poland and Sweden, we find periods where the organizational field had less salience for policy developments, even though the degree of segmentation was high.

Let us then first assess the countries where the organizational field has dominated support-mix developments more when it has been segmented than when characterized by *turf battles* or *pluralist* patterns: Germany and Norway.

In *Germany*, the organizational field became more important after 2010, when structural resources had become more concentrated and institutional conflicts were lower. In the first period, large utilities benefitted from exclusive supply contracts with the municipalities and established regional monopolies. Although such monopolies did not represent pluralism regionally, the field had a more pluralist nature at the national level, with room for the political field to dominate the initial development of Germany's support scheme. German reunification in 1990 contributed to this pluralist nature by causing de-institutionalization; the merger of two different domestic fields of stationary energy production created a host of challenges for all actors involved. Dominant public and private actors had more pressing issues to attend to than concocting a new renewables support scheme.

After 2000, the initial feed-in scheme had contributed to the creation of a range of new renewable-energy actors, embedded in a technology development logic. In parallel, the traditional utilities became increasingly dominated by market logic. This spurred recurrent and tense institutional conflicts over renewables support. That the Ministry of Environment was given formal responsibility for renewables support served to strengthen the renewables actors and the technology logic. From 2000 to 2009, there were arguably two turfs, embedded in different logics and each with rather significant authority and ability to process information, constantly challenging each other. Due to deep-seated conflicts at the organizational field level, other fields – both the domestic political field, and EU actors – were repeatedly mobilized to help in solving the fierce conflicts over renewables support schemes. The ongoing turf battles in the organizational field enabled the political majority in Germany to determine quite independently which organizational field actors would gain the most influence. They often favoured the renewables actors over the incumbents and this resulted in a series of incremental changes to the initial feed-in.

After 2010, the boundaries between renewables actors and traditional utilities became less clear-cut as utilities invested more in renewables, and some renewables technologies became so profitable that they needed less technology-specific

support. Moreover, more actors seemed to combine elements from the two different institutional logics, aiming to come up with new business models and support-scheme ideas that could ensure that the rising share of renewables had a less distorting impact on the overall functioning of the German energy system. In addition, the traditional electricity utilities gained leverage – because they were in a dire economic situation, but also because responsibility for renewables support was shifted from the Ministry of Environment and into the Ministry of Economic Affairs. The latter ministry also had with responsibility for other energy policy.

As the degree of segmentation increased, field-level deliberations, negotiations and developments became crucial to the ensuing shifts in the German support scheme. EU developments and political field changes also affected developments. The situation was highly complex, but the organizational field came to play a pivotal role in the end – and, in line with our expectations, a more important role after it had become segmented.

In *Norway*, the field was initially segmented, and because the dominant field-level actors had little interest in developing new renewables support, no stable scheme emerged. However, by the end of the 1990s, the major utilities were becoming interested in windpower. Energy liberalization had made the commercial sector align to market logics while the Ministry of Petroleum and Energy was embedded in a distinctly Norwegian logic of minimizing societal costs. This logic contrasted with the market logic in many respects. Auctioning, combined with a technology-neutral feed-in premium mechanism proposed by the Ministry of Petroleum and Energy and endorsed politically in 2000, was opposed by the utilities. The ensuing turf battles between the commercial actors and the ministry obstructed the implementation of the new scheme and new renewables projects.

Eventually the utilities, with support from environmental groups, gathered political support for a shift to a technology-neutral certificate scheme, but that shift was caused primarily by political dynamics. It took many years before Norway joined the Swedish scheme – and when this finally happened, the utilities had realized that the increased electricity production resulting from the scheme would reduce electricity prices and thereby the profitability of their large hydro portfolios. By now, public and private organizations had become more united, both voicing concerns about the low profits of the electricity utilities. The increased segmentation of the field continued to explain why Norway eventually decided to withdraw from the certificate scheme, even before the scheme had spurred many projects in Norway. Introduction of a marginal technology-neutral investment support for small-scale renewable energy projects also reflects the market logic of the segmented organizational field. Thus, in many ways, the Norwegian support-scheme mix around 2016 can be said to be a product of a segmented field.

Neither in Germany nor in Norway were the shifts and changes in the support mix after 2010 *exclusively* the result of field-internal developments, but the field clearly played a more important role for policy development when it was segmented. In both countries, the dominant corporate actors – the electricity utilities – quite significantly changed their preferences over time, with major consequences for the development of the renewables support schemes. In Norway, change in the

perceptions of the dominant utilities was *the* prime driver of changes in the large-scale support scheme in 2010. The picture is more complex in Germany, where field-level developments were more intertwined with political field change and shifts at the EU level. As a result of a whole host of developments, the large Germany utilities shifted from favouring technology-neutrality to accepting a fairly technology-specific renewables mix, whereas the Norwegian utilities changed from promoting a technology-specific mix to wanting to do away with all support. In both countries, the utilities changed their positions, but their preferences did not become more similar over time.

We now turn to the four case-study countries – the UK, Poland, France and Sweden – where the roles played by the organizational fields are less well aligned to our initial assumption, asking: Is the variance in the importance of the organizational field explained by field-internal changes too subtle to be captured by our initial two-by-two model (see Chapter 3)? Or is it caused by developments in the political field or the European environment?

The *British* organizational field remained segmented for a long time. The new market logic that resulted from the liberalization process swiftly gained a foothold in the 1990s, and this influenced the design of the first British support scheme, although few organizational field actors were particularly involved in this initial phase. Then, from 2000 and onwards, segmentation increased further. There were six dominant utilities; they had a strong relationship with the regulators, and they were all embedded in a similar market logic. Since the initial technology-neutral scheme failed to result in significant new production, few actors had a vested interest in protecting the initial scheme. That circumstance made possible a swift shift to another technology-neutral support-scheme design. Eventually, however, around 2010, there came a shift towards technology-development logics among the traditional utilities, due partly to their interest in developing nuclear. At this stage, some renewables actors were sceptical to greater technology-specificity, because they feared that this could favour nuclear and not renewables. However, they did not attract much attraction in the policy debate – and the field remained segmented, although the number of renewables actors had increased.

Institutional change at field level resulted in the special British auctioning and feed-in premium system – the Contracts for Difference. Later, changes in the political field led to shifts in how this scheme was operated, with fewer auctioning rounds than expected and thus less support. Still, the design of the new scheme was a result of a shift in institutional logic within the organizational field. The British feed-in support for small-scale renewable energy projects, however, was, as we discuss later, primarily the result of developments in the political field. In most instances, shifts in the British support mix were underpinned by changes in the dominant institutional logic of the organizational field. The British case shows how the institutional logic in a field may change without spurring conflicts that reduce the degree of segmentation.

The upshot is that changes in the British scheme in the period 2000–2004 and after 2010 were mainly the result of internal changes in the organizational field, while the field played a less clear role for developments before 2000. The

adoption of small-scale support in the period 2005–2010 is better explained by developments in British politics, whereas the organizational field was of greater importance for the development of the support scheme for large-scale, low-carbon projects.

Poland has always had a strongly segmented field; still, the organizational field has not completely dominated the development of support schemes. The field has a special kind of technology-development logic, focused on the continuation of coal production, rather than renewables development. This logic seems to have remained largely unchanged over time. Initially, ministerial actors had the upper hand, but the coal utilities gradually became structurally dominant. The instability in renewables support contrasts with the stability found at the organizational field level. The chief explanation for this mismatch may be that the powerful utilities seem to have been less concerned about the type of support, and more about its (in)effectiveness.

The initial technology-specific feed-in scheme was introduced as a token adjustment to Western values after the fall of Communism. It is not surprising that policy development in a period of upheaval should differ from our expectations, which were formulated for more mundane policy-development processes. Later on, Poland largely introduced wide-ranging support-scheme changes in response to EU steering and European trends, but the segmented organizational field undermined the emergence of Polish renewables actors. Hence, renewable production never really became institutionalized within the Polish energy sector. There was considerable political commotion after 2010, but eventually there came a shift towards giving large-scale renewable energy projects technology-specific support and a new, marginal support for small-scale producers (prosumers). The segmentation of the organizational field thus had a major impact, bringing instability and hindering institutionalization of renewables support, even though it appears not to have had much influence on the design of the support scheme. Hence, we conclude that variance in the importance of the organizational field in Poland is not related to changes in the degree of organizational field segmentation.

Initially, the *French* field was segmented, with one totally dominant utility, Électricité de France. (EDF). Historically, the EDF has been embedded in a centralized nuclear-technology development logic, although it welcomed some market logic features during the 1990s. To a certain extent, the French adoption of a tendering measure in the mid-1990s, inspired by the UK, was in line with the increased market focus in the EDF at the time. But this may also be understood as primarily a symbolic gesture, enabling the EDF to appear positive to market thinking and renewables, while at the same time assuming that the new measure would not actually lead to much new production. In the period 2000–2004, France first adopted feed-in, in contrast to EDF recommendations, but later the EDF succeeded in reducing the strength of the feed-in. Eventually, however, the old centralized nuclear-technology development logic of all the dominant French actors was challenged by an alternative decentralized technology-development logic, and the EDF was not able to stand united against change.

By 2010, the generous French feed-in scheme had spurred a host of new renewables actors, and the governmental organizations had gained experience in how various actors responded to differing support schemes. Moreover, the Ministry of Ecology had taken over responsibility for renewable energy. Even though this rendered the field slightly less segmented than before, the EDF continued to have a very strong position. In essence, the incremental changes in the French scheme came about by trial and error, deliberations and a modest strengthening of the decentralized technology development logic within the organizational field. The French field was less segmented than before, but segmented nonetheless. By now it included actors that were willing and able to focus on energy sources other than nuclear. Although the French case largely confirms our initial expectations, it is puzzling that the French organizational field became more important after 2010. This is a result of French developments moving in tandem with developments within the European environment.

In *Sweden*, civil servants introduced the technology-neutral electricity certificate idea (from the Commission). Eventually corporate actors as well as politicians endorsed it, as it was in line with the recent liberalization of the Swedish energy market. From 2000 and onwards, all major field-level actors in Sweden seem to have accepted and underpinned continuation of the electricity certificate scheme. The small-scale renewables support that was adopted after 2005 was promoted mainly by marginal actors inspired by European developments. They succeeded due to strong political support, and despite the crucial role that Vattenfall and a few other utilities played in the organizational field.

After 2010, the organizational field in Sweden largely turned against the electricity certificate scheme (although not all actors agreed) – but, surprisingly, this had no impact on decision-making. Even though the Swedish and Norwegian situations were quite similar after 2010, the organizational field was far less influential in Sweden than in Norway. Despite the field being rather segmented, and with both public and private actors questioning the existing scheme, Swedish politicians agreed to prolong it to 2030. True, the Swedish field was somewhat less segmented than previously, not least because of a host of new renewables actors. Still, it is surprising that the field could be so completely overruled.

Hence, Swedish developments after 2010 run counter to our initial expectations. At this stage, the Energy Agency in Sweden had grown quite powerful and some new renewables actors had emerged, and this to some extent counteracted the influence of the dominant utility Vattenfall. The main reason that the organizational field in Sweden was overruled after 2010 seems to be the special and intense situation of political salience, although a slight reduction in segmentation in the organizational field also contributed.

Against this backdrop, we conclude that differences in institutional logics between the organizational fields in Germany, Poland, France and the UK on the one hand, and Sweden and Norway on the other, contribute to explain the emergence of the difference between technology-specific countries and technology-neutral ones, although other fields also have played a role here. Moreover, we see that segmentation tends to ensure that the organizational field becomes the crucial

locus for changes and stabilities in renewables support mixes – but this field is never alone in determining policy developments. Most importantly, political field dynamics may overrule factors internal to the organizational field, even when it is segmented.

Political fields: surprisingly important

We find significant variance across countries, and over time, in how domestic political fields play into support-mix developments. To a certain extent, this is a result of changes over time in the degree of political salience and distribution of structural resources in the political fields. Initially, we expected the political field to dominate the development of domestic renewable-energy policies most in a situation characterized by distributed structural resources and high-salience (legislature governing). Indeed, we see that the political field is more important when it is in this legislature governing mode. However, the political field is also important under other conditions: on the whole, it emerges as more important than we had assumed.

Table 11.3 summarizes the roles played by the political fields in the development of renewables support schemes in the six countries. The table indicates that up to 2005, the political field had low salience in most countries, but this changed significantly after 2005. The political field played a more central role between 2005 and 2009 than in any other period, but it was also surprisingly important after 2010. This greater political salience had considerable consequences for small-scale support: in several countries, politicians initiated the adoption of special schemes for small-scale renewables in this period. In fact, Norway appears

Table 11.3 Comparing the role of the political field across time and cases*

Period / *Country*	*Before 2000*	*2000–2004*	*2005–2009*	*2010–2016*
Germany	Politicizing	Legislature governing	Legislature governing	Legislature governing
UK	Ministerial governing	Ministerial governing	Politicizing	Ministerial governing
Poland	-	Ministerial governing	Ministerial governing	Politicizing
France	Ministerial governing	Politicizing	Politicizing	Ministerial governing
Sweden	Ministerial governing	Ministerial governing	Legislature governing	Legislature governing
Norway	Ministerial governing	Ministerial governing	Politicizing	Ministerial governing

* Dark grey: high importance, light grey: some importance, white: almost no importance.

to be the only country where the adoption and design of small-scale support were not heavily influenced by political dynamics – but Norway also has a far less extensive small-scale scheme than the others.

Legislature governing is relatively rare, as we detect only five such periods: three in Germany (2000–2004, 2005–2009, 2010–2016) and two in Sweden (2005–2009, 2010–2016). In all these periods, the political field played a central role in the development of renewables schemes, and in three, the political field was dominant.

Ministerial governing is the most dominant political field mode, detected 12 times; and in most of these cases, the political field had only minor impact on the development of the support-scheme mix. Given our initial expectations, it is still surprising to find that, in 3 of the 12 instances, the political field had substantial importance for the development of support schemes. We identify six periods characterized by politicizing, and in all of them the political field played a significant role in how the renewables-scheme mixes developed. Thus, the political field emerges as more important in such situations then we had expected. Let us now explore in greater detail why the political fields have played differing roles in different countries.

Germany stands out as a country where the political field has been the main driver of the development of the support mix, although its relative salience decreased after 2010. First, the political field was more important for initial adoption in Germany than elsewhere. At this stage, politicians contributed to making the issue salient, but some time passed before the traditionally strong organizational field actors – the electricity utilities in particular – started to protest against the feed-in scheme. The push-back from these actors continued to ensure that the issue remained politically salient for a very long time. From 2000 to 2010, political field dynamics played the dominant role in enduring the continuation of the German scheme; even though the scheme was adjusted several times, these were incremental changes, in line with the path embarked on in the early 1990s. Germany has a strong parliament, and this created structural conditions that allowed legislature governing, while the decision to transfer renewables responsibility to the Environmental Ministry added to this.

The long period of legislature governing in Germany helps to explain why, after 2010, Germany exposed renewables investments more to electricity price developments. That the politicians for a long period refrained from giving the utilities what they wanted created a boomerang effect. Because the feed-in scheme together with other factors eventually contributed to weakening the economic position of the large utilities, and they were 'too large to fail', many politicians eventually changed their minds and allowed these actors greater influence on the development of support schemes. Moreover, the critical situation after 2010 forced politicians, corporations and public officials to engage in deeper deliberations with one another. Since the issue had high salience and structural resources were distributed between many political actors, the political field gained the upper hand: legislature governing spurred a succession of political conflicts and compromises. In the first periods, the German case fits with our expectations; but after

2010, the increased strength of the organizational field and the European environment led to a complex process of policy development that involved many actors from multiple fields.

Developments in *the UK* are not equally in line with our initial expectations. For many decades, ministerial governing remained dominant. However, in 2005–2009, politicization became evident, when small-scale renewables became subject to political competition; this eventually led to the adoption of a feed-in scheme for small-scale renewables. In the same period, politicization also occurred as a result of Prime Minister Tony Blair's engagement in EU deliberations, endorsing a high renewables target had implications for the UK's support schemes, towards greater technology-specificity (more high-cost renewables were deemed necessary to reach the target). After 2010, the large-scale scheme became radically more technology-specific. This obtained political endorsement, but the main explanation for the shift lies in the organizational, not the political, field. The 2015 elections had a major influence on how the new technology-specific scheme would be operated, with very few auctions taking place. This shows that in the UK system, the political field can be very powerful even when an issue is dominated by ministerial governing.

The special political system in the UK appears to make ministerial governing both more prevalent and potentially more powerful than in other countries. The UK has a two-party system, where the party with a majority in Parliament tends to control the government. This makes the dynamics of the political field different from what we had expected; as the structural resources are never really distributed, this dimension is less analytically useful here. Control of the executive branch matters much more than in the five other countries, and this has had profound effects on the dynamics in the political field. In any event, in the UK the initial technology-neutrality and the eventual shift to technology-specificity came about primarily because of developments in the organizational field – the exception being the politically induced small-scale feed-in.

Despite the peculiarities of the *Polish* political system, the political field perspective captures central aspects of how politics have played into support-scheme developments. The exception is the initial adoption of a support scheme, which took place in a period where a new political system was in the making and was thus hard to capture analytically. From 2000 and until 2010, however, the Polish political field was in ministerial governing mode; and, in line with our expectations, the political field had very little impact on policy development in this period. After 2010, the issue became politicized and the Polish Parliament influenced the support scheme for small-scale, but soon a new parliamentary majority introduced less-favourable legislation. While we note considerable unpredictability and shifts in the decision-making process, making it challenging to pinpoint what importance it actually had in this period, the political field had at least some impact on support-scheme developments, particularly for small-scale projects.

In *France*, the initial, rather technology-neutral scheme was adopted under ministerial governing conditions, and in line with our expectations, the political field had hardly any influence. After 2000, renewables became politicized, and

this had major importance for the adoption of the feed-in scheme. In 2005–2009, the political field influenced the revision of the scheme, but renewables support gained salience primarily because of the French President's commitments to higher renewables targets at the EU level. Moreover, significant adjustments in the support scheme after 2010, towards more auctioning, were made without the political field apparently playing much of a role – as expected under ministerial governing.

In *Sweden*, the political field was not very important for the initial adoption of a certificate scheme. As expected, the political field started to influence the development of the scheme only after the issue became salient in the 2005–2009 period, but it was not until after 2010 that the political field became the key driver, ensuring protection of the technology-neutrality of the scheme. The latter point is truly remarkable, in view of the resistance from the organizational field after 2010. Indeed, this is the only case where we find a rather segmented organizational field being overruled by developments in the political field. This is an essential element in explaining the technology-neutrality of the Swedish scheme after 2016.

In *Norway*, the political field played a minor role for the development of support schemes in the years leading up to 2005. After this, conflicts at the level of the organizational field made the issue increasingly salient, until finally the political majority abolished the existing scheme and shifted towards technology-neutral electricity certificates. After 2010, however, the political majority merely rubber-stamped proposals developed by dominant actors within the organizational field. By then, Norwegian utilities had had a change of heart and readily got political endorsement for not including more Norwegian projects in the certificate schemes after 2010. In short, political field dynamics contributed to Norway's opting for technology-neutrality, but the key drivers for later changes lay elsewhere.

Overall, we see that the political field has been crucial for the development of renewables-support mixes. Indeed, under certain rare conditions, it can remain the main driver of policy stability as well as change for extensive periods.

Multi-field dynamics

The assessments presented thus far in this chapter show clearly that the renewables-support mixes in our six case-study countries in the late 2010s all resulted from dynamic developments within multiple fields, and their interaction over time. Both domestic fields (the political as well as the organizational) and the European environment have influenced policy developments in all six countries. Indeed, we cannot gain a good understanding of any of the six domestic policy processes without taking this multi-field nature into account.

We now turn to how and to what extent the varying fields have influenced developments in other fields. More specifically, we show that

1 segmentation within the organizational field tends to produce ministerial governing within the organizational field, and this enhances the autonomy of the organizational field over time;

2 while the social architecture of the organizational field tends to remain fairly (but not fully) inert, the political fields are more malleable, and this has profound effects on how policy processes unfold over time;
3 domestic policy developments in some countries are far more interdependent and intertwined with EU-level developments than other countries; and
4 the multi-field process is not a zero-sum game: several fields may be important simultaneously, and the more fields that have an impact, the more complex and murky the policy process is.

Segmentation spurring ministerial governing

Let us first assess the relationship between the political and domestic fields. We have analysed how the organizational and political fields match over 24 periods (four periods in six countries), and the organizational field is segmented in 19 of these. In 12 sub-cases, the political field is in the ministerial governing mode. Indeed, the most frequent combination is segmentation in the organizational field and ministerial governing in the political field: it occurs twice in four countries (the UK, Poland, Sweden and Norway) and three times in France – but never in Germany. In these situations, the organizational field drives support-scheme developments, while the political field primarily performs rubber-stamping. But why do ministerial governing and segmentation go together so well? Systematic examination of the chronological relationship between the two modes may offer a better understanding of this causal relationship.

Let us first compare the cases where segmentation remained unchanged over several periods, but where the mode of the political field changed. In the UK, Poland, France and Sweden, 'segmentation-ministerial governing' situations changed to segmentation combined with either legislature governing or politicizing. Incremental changes within the political field spurred these shifts in the mode of the political field, sometimes combined with European environment developments. Ministerial governing was combined with another organizational field mode than segmentation in only one instance: Norway in the 2000–2004 period, when ministerial governing was combined with turf battle. This was a temporary situation, as the turf battle within the organizational field eventually created politicizing within the political field. This shows that conflicts within the organizational field can spur changes in the mode of the political field – but in our sample, that is more the exception than the rule.

Germany is the only case where the organizational field was *not* segmented most of the time. Here, the conflicts between the two turfs at the level of the organizational field ensured that renewables support had high political salience. Comparison of Norway and Germany illustrates how the political field may respond to organizational field turf battles. In the Norwegian case, the political field was mobilized to solve conflicts at the level of the organizational field. It did take several years before the issue became salient, but eventually the politicians responded by adopting a new support scheme. However, this decision did not spur the creation of new firms or business models that could undermine the

segmented state of the organizational field. Rather, together with other factors, it led to greater segmentation, and the issue was again dealt with as ministerial governing within the political field. Thus, later changes in the support mix in Norway after 2010 were solved through negotiations between field-level actors, merely rubber-stamped by the political majority.

In Germany, turf battles at the organizational field level had much longer-lasting effects on the mode of the political field, but the impact also runs in the other direction: a series of political decisions challenged the dominant organizational field actors, the utilities. The initial renewables support strengthened the new renewables actors, and this in itself hindered segmentation of the field, in turn contributing to the continued high political saliency of the issue. Because the political majority had committed to technology-specificity, this approach was sustained, which again strengthened the position of the renewables actors. Hence, legislature governing decision-making hindered segmentation in the organizational field, which again ensured that the dominance of the legislature governing mode was remarkably long-lasting. The clashing dynamisms between the two domestic fields forced actors within both of them to devote considerable attention and creativity to the issue for a long time, eventually leading to creative processes and merging of two institutional logics previously regarded as opposites. When this happened after 2010, a segmentation process set in at the organizational field level. However, it took almost two decades before such collaborative and creative processes emerged.

The 'segmentation spurring ministerial governing' tendency means that we can expect major political decisions relating to segmented organizational fields to be resolved through negotiations between organizational field-level actors, and not through open political deliberations. Note that this does not necessarily imply that the commercial organizations have the upper hand; public governments may also be influential in such situations. Moreover, this is only a tendency, not a rule. It may require considerable effort, but politicizing issues under such conditions is not impossible. Indeed, we find many examples of political dynamics gaining salience also when the issue pertains to a segmented organizational field.

The inertia of organizational fields and the malleability of political fields

We detect rather few shifts in the degree of segmentation in the domestic organizational fields over time. In most countries there have been only slight shifts from rather segmented to fully segmented, or the reverse. The German and Norwegian organizational fields are different. While the Norwegian field merely shifted from segmented to turf battle and back again, the German field changed incrementally and substantially over time, from pluralist to eventually becoming segmented. German reunification resulted in less unity within the organizational field of electricity than seen in most other European countries. Eventually, the German renewables support scheme contributed to the creation of a host of new actors that in turn led to conflicts and obstructed segmentation. In Norway, periods with less

segmentation were primarily the result of conflict between governmental organizations and the utilities

In all the other case-study countries – the UK, Poland, France and Sweden – the organizational fields remained more or less segmented throughout the whole period. True, conflicts over renewables policy may have created slightly less unity within these organizational fields, but not enough to change the degree of segmentation significantly. However, it should be borne in mind that renewables support schemes, or conflict over these schemes, are merely one among a whole range of factors that may undercut segmentation, or strengthen it. With the exception of Germany, renewables policies seldom influence the degree of segmentation within organizational fields.

Political fields are far more malleable to change. It is particularly the high/low salience dimension in the political field that changes, whereas the distribution of structural resources is less malleable. We have detected three main reasons for shifts towards greater salience. First, changes in salience may result from processes internal to the political field. This may be due to changes in the political majority, to the emergence of new political alliances or to shifts in the size of various political parties in the parliaments after an election. For instance, politicians from differing political parties created a surprising new alliance for feed-in in Germany during the 1990s, but later election results in Germany also created alliances that underpinned the salience of the issue. In other instances, marginal political actors almost single-handedly succeeded making renewables support more salient. The clearest illustration of this in our sample is the Green Party in France, which managed to politicize renewables support in the 2000–2004 period, in turn leading the other political parties to develop a more active approach to the issue as well. Part of the explanation to this shift was that the Green Party was included in the governmental coalition for the first time, giving the Greens far more authority to promote the issue than otherwise.

Second, high salience can result from conflicts at the level of the organizational field. This happened in Germany in 2010–2016, and in Norway in 2005–2010. In both cases, the political parties shifted their positions in response to developments in the organizational field; in the end, key actors from both fields engaged in negotiations and developed solutions that could gain acceptance within both fields. In Norway, it took many years before politicians responded to the organizational field conflict, and the politicization did not last long. By contrast, the issue remained politicized for a long time in Germany, and two decades of tumultuous conflicts between the political and the organizational field reinforced the enduring political salience.

Third, we detected two instances of issues becoming highly salient because political leaders made bold domestic commitments at the EU level, seeking to influence EU-level developments. In the 2005–2009 period, both French President Sarkozy and British Prime Minister Blair committed their countries to adopting the 2020 renewables targets that were binding on the EU level – and in both instances, this later bolstered the arguments of domestic actors calling for more elaborate domestic support schemes. Hence, the interrelationship with EU-level

developments helped to enhance the clout of the domestic political leaders, and it spurred politicization at the domestic level.

To a certain extent, the malleability of the political fields can compensate for the de-politicizing effect of high degrees of segmentation at the level of the organizational field. Even when an issue relates to a segmented organizational field, politicization is possible – if politicians follow the issue for some time and engage sufficiently to gain a good understanding of it, they may in the end make decisions counter to the arguments of powerful actors in the organizational field. It is especially interesting to note that national political leaders can use their European positions to enhance their clout in relation to strong domestic organizational fields.

Varying interdependencies between domestic fields and the European environment

The interdependence between the domestic and the European environment varies across countries, as well as over time. Germany is in a special category, as it has played a crucial role for developments in both vertical and horizontal Europeanization, and it has also been highly dependent on EU decision-making for its own domestic policies. Germany has been the major determinant of EU policy development, serving as the main source of inspiration for other European countries – but after 2010 it also significantly changed its support mix (partly) as a result of EU steering. Poland, France, Sweden and Norway have all been influenced by vertical as well as horizontal Europeanization, although at differing times and to differing degrees. The UK has played a special role, developing (over several decades) support-scheme models that the Commission later partly copied in its EU-level policies. Eventually, France also came to play a somewhat similar role to the UK in EU policy developments.

While this assessment has shown that the European environment approach can offer a useful and nuanced understanding of the importance of Europeanization to domestic developments, we have thus far not examined the differences in the interrelationships between domestic and European developments across the countries, as well as the implications for domestic and EU-level policy developments. Some countries tend to be more affected by EU developments than others; and, the reverse, developments at the EU level tend to depend more on domestic developments in some countries than in others.

Multi-field processes: not a zero-sum game

As the issue of renewables-support mix has grown in importance, so has the number of fields that have influenced its development. We have noted the slight tendency for all fields to become more important over time, indicating that developments in support arrangements for renewable electricity gradually become more and more complex. Some of this can be explained by the growth in the number of instruments in the domestic support mixes, but it also results from the

growing numbers of actors that pay attention to and have authority over the development of renewables support schemes. Juxtaposing Tables 11.1, 11.2 and 11.3 in this chapter, we see that there is no neat pattern where it is easy to identify which field is most important in each of the six case-study countries or periods. Indeed, many countries have experienced one or several periods where three fields have been significant or important at the same time.

The period after 2010 is special in the sense that the organizational field gained significance in all countries, except Sweden, and it had high impact in four out of the six countries. In Germany, the UK, France and Norway, the organizational field became far more salient than in the previous period; and in Poland, it was as important as before. Here Sweden is the deviant case, as the organizational field lost in importance. However, we cannot find any other period where one of the fields has been so clearly superior in so many countries at the same time. This seems quite puzzling, as the European environment has had at least some importance in five of the six countries in this period, and it is in EU governing mode. Moreover, after 2010, the organizational field is segmented in all fields, also in Germany and Norway, in contrast to earlier periods.

As we have limited information about the interrelationship between domestic organizational field actors and key actors at the European level, it is difficult to know what to make of this pattern. It may indicate that greater domestic segmentation helped spur the increased Europeanization that occurred in this period, including the shift in horizontal Europeanization from underpinning fixed feed-in to promoting feed-in premium combined with auctioning and greater degree of vertical EU steering. Except for Poland and Norway, the domestic organizational fields have been dominated by big electricity utilities active in many other European countries and with a strong presence in Brussels. This may have contributed to more direct relationships between utilities and EU-level actors. However, the political field was not marginalized in this period.

Conclusions

Through systematic comparative assessments, across countries and over time, in this chapter we have offered answers to our research question: what can explain the differences and similarities in renewables support mixes across countries and over time? There is no single explanatory factor that explains why some countries have ended up with largely technology-specific support mixes, and others with technology-neutral mixes. Rather, we found it essential to account for developments in multiple fields, over long stretches of time, in order to understand why two groups of countries emerged, and why the technology-specific countries became more similar over time, while the technology-neutral ones became increasingly different. Moreover, it emerged that countries sometimes end up with rather similar support schemes, for quite different reasons.

Developments in the European environment around the turn of the millennium were involved in creating a split between technology-specific Germany and France on the one hand, and technology-neutral Sweden and Norway on

the other. By contrast, developments in the organizational field at the country level can explain why Poland and the UK came to join Germany and France, while Norway became increasingly technology-neutral. The political field proved especially important for developments in Germany and Sweden, accounting for consistencies in the approaches taken by both countries. It was the political field that ensured that Sweden retained its support mix basically unchanged, whereas Norway came to scrap its support for large-scale renewables due to developments in the organizational field.

Overall, we find that the European environment has influenced domestic support mixes less than the domestic fields. Still, it has played a crucial role for support-mix developments in all countries, especially after it shifted to EU governing mode after 2010. Domestic organizational fields are especially important when segmented, but even under such conditions, other fields are never powerless. Political fields are more prone to drive support-mix developments under conditions when the legislature governs, but they can also be important when the political field is characterized by politicization.

We have detected intriguing patterns in the relationships between multiple fields over time. Segmentation at the level of the organizational field tends to make the political field gradually less important, but this may shift if political actors succeed in politicizing an issue. In addition to developments within the political field itself, such politicization may also result from a wide range of dynamics: the broader European environment or conflicts at the level of the organizational field. We note the concurrence of EU governing and growing importance of segmented organizational fields after 2010, but we find it challenging to fully explain this pattern. However, it is clear that there is no zero-sum game between the multiple fields as regards influence. As renewables support mixes become more complex but also more important, many different fields become increasingly influential.

12 Implications for climate research and policy studies

Elin Lerum Boasson

Introduction

The multi-field approach was initially developed to examine climate policy change in one country, Norway (Boasson 2015), but in this book, we have shown how it can be applied to a much broader range of countries. While many excellent books on public policy focus on one rather narrow topic and contribute to one research frontier, this volume has been planned as more of a cornucopia, providing contributions to a broad range of ongoing scientific discussions. This chapter shows how the main conclusions emanating from Chapter 11 contribute to social science discussions on Europeanization, public policy processes, climate transitions and more.

EU implementation and Europeanization research have blossomed – but still we lack analytical tools necessary to answer a crucial question: *Under which conditions does EU steering have the most profound impacts on domestic developments?* With its conceptualization of the 'European environment', the multi-field approach used in this book opens up a new research frontier with precisely this question at the centre. Further, by introducing temporality into Europeanization studies, the contributions to this collection enhance our ability to examine the various ways in which Europeanization may affect domestic policy developments.

The existence of many public-policy frameworks has facilitated the emergence of multiple parallel research traditions, but the perennial competition among the dominant frameworks obstructs scientific progress with respect to central questions such as: Under which conditions are corporate actors and civil service the most influential? When do political actors have independent importance, and act not only as instruments for other actors? The multi-field approach enables us to explore such questions in a nuanced way. It also opens up for a broader range of temporal change patterns than the 'long periods of stability, short periods of rapture' storyline so characteristic of policy studies.

Finally, many analytical approaches present climate-transition processes as dominated by neatly compartmentalized economic-technological changes, with key actors behaving in economically rational and easily predictable ways. In this book, we have shown that climate transitions tend to be complex, chaotic and partly opaque, with key actors having a hard time determining their preferences.

Rather than encouraging researchers to compromise on crude simplifications, the multi-field framework allows for assessments that consider real-world intricate conditions. It opens up for a wide diversity of behavioural patterns, pays attention to political and cultural-institutional factors and provides analytical tools for examining and capturing climate transitions in coherent and realistic ways.

Bringing temporality into Europeanization research

This book confirms some of the findings from the new wave of EU-implementation research while adding new elements to our understanding of Europeanization and EU implementation – in particular, by enabling us to consider the analytical implications of the temporal dimensions of Europeanization.

Early studies of EU policy implementation focused primarily on legal compliance with EU rules. This research tradition eventually expanded to include a broader range of domestic effects of EU steering (see Héritier 2001; Mastenbroek 2005). For instance, Eva Thomann and colleagues have shown that EU rules tend to undergo change during the process of domestic transposition: as a result, implementation of EU policies may in itself spur differentiation (Thomann 2015, 2019; Thomann and Sager 2017). Our findings support this: in all our six case-study countries, *domestic conditions have played a major role in determining the effects of European impulses*. This has been especially clear in periods where the EU has had little formal authority and vertical pressures towards Europeanization have been modest. For instance, the receptiveness of Norway and Sweden to EU-level campaigns for electricity certificates helped to ensure that these two Nordics ended up with a far more technology-neutral support mix than other countries. Differences in how specific EU rules are interpreted and transformed during the implementation process can help to explain cross-country differences, but that is far from the only reason why Europeanization creates differences across countries.

Second, *we have shown that both vertical and horizontal Europeanization play into domestic policy developments, and that both dimensions must be taken into account in order to understand why the European environment contributes to differences and similarities across countries*. These findings are in line with the conclusions reached by Israel Solorio and Helge Jörgens (2017) in their assessment of the Europeanization of renewable energy policy. The European environment has played into the developments in all countries, but at varying times, in differing ways and with surprisingly varied consequences. In most countries, the support mixes have been affected by vertical as well as horizontal Europeanization. In the early stages, vertical and horizontal change impulses tended to have opposing effects: the European Commission (the Commission) promoted technology-neutral support, while at the same time the technology-specific German scheme diffused widely. Here, lack of consistency across the two dimensions spurred differentiation. However, after 2010, both dimensions underpinned the shift to feed-in premium combined with auctioning, although the effects of this have been less pronounced in Norway and Sweden. By examining both Europeanization dimensions, we gain a fuller understanding than if we had focused on only one of them.

Third, *the effects of strong EU top-down steering (high degree of vertical Europeanization) is higher when it occurs in tandem with one policy idea gaining popularity across Europe (high degree of horizontal Europeanization)*. The importance of what we have termed the European environment increased after 2010, when the EU gained more authority as regards the design of support schemes, and one specific support-scheme mix became dominant. While others have juxtaposed the effects of horizontal and vertical Europeanization (see Börzel and Risse 2012), we explore the relationship *between* the two. Each of the two dimensions can be effective on their own terms, but the overall Europeanization effect tends to be stronger when they work in conjunction. However, it is by no means necessary for horizontal Europeanization to be strong in order for vertical Europeanization to produce consequences, or the reverse. For instance, EU rules gained greater salience after 2010 – but it had been relevant also in earlier stages when it was not combined with strong horizontal Europeanization.

Fourth, *we gain a more thorough understanding of how Europeanization processes affect domestic policy developments when the temporality of the process is taken into account*. The literature on EU implementation (see review in Thomann 2019; Saurugger 2014: 123–144) as well as the literature on Europeanization more broadly (Börzel and Risse 2012; Saurugger 2014: 123–144) has been fairly static, dominated by intense scrutiny of brief snapshots of Europeanization, without following Europeanization over longer stretches of time. Because there has been so little stability in EU renewables support steering (see Boasson 2021, this book), examination of brief snapshots would give limited understanding of how the EU affects domestic renewables support. There is no reason to assume that renewables policy is special in this respect: the EU operates with a broad policy portfolio, repeatedly revising and transforming most of these policies (Chini and Borragán 2015). A better understanding of the temporal character of Europeanization may facilitate studies of differences in the importance of the European environment across issue-areas.

The temporal character of how domestic developments have interrelated with developments in the larger European environment was found to differ across our six case studies, but we can also note some commonalities. From our comparative case studies, we can specify four Europeanization processes with different temporal dimensions, probably also with different long-term consequences for policy developments. Table 12.1 presents these four temporal patterns: layered Europeanization, frozen Europeanization, shallow Europeanization and shielded Europeanization.

Layered Europeanization has dominated in France, while also playing out to a more moderate extent in Norway. In France, the European environment has repeatedly influenced domestic-level developments; later effects added to, rather than replaced, earlier policies. Two horizontal Europeanization effects were important to France: UK inspiration led the country to adopt tendering in the mid-1990s, and Germany inspired it to adopt feed-in a few years later. After 2005, vertical Europeanization gradually became more important, first when the advent of binding targets underpinned domestic ambitions, and second when the new

Table 12.1 Four temporal Europeanization processes

Europeanization process / *Factors and countries*	*Layered*	*Frozen*	*Shallow*	*Shielded*
Role of the European environment	Repeated high impact	High impact initially, but not later	Causes repeated change, but none become institutionalized	Small
Degree of stability and change determined by	Domestic and European factors	Domestic factors	European factors	Domestic factors
Countries	France, Norway	Sweden	Poland	Germany, the UK

EU state-aid guidelines influenced the shift to feed-in premiums combined with auctioning. This resembles what Wolfgang Streek and Kathleen Thelen (2005: 24) describe as layering, where 'active sponsorship of amendments, additions, or revisions to an existing set of institutions' and new elements '[set] in motion dynamics through which they, over time, actively crowd out or supplant by default the old system'. Layering involves amendments, revisions or additions to existing support measures (Mahoney and Thelen 2010: 16). While Thelen and colleagues focus on domestic causes to layering, we include only layering that results from Europeanization processes here. Most countries have renewables support mixes that reflect several layers of domestic policy outputs, but in France the layering has resulted more specifically from differing Europeanization effects over time.

Differing Europeanization signals have also led to layered Europeanization in Norway. First, weak vertical Europeanization, combined with some horizontal inspiration from Sweden, caused it to adopt an electricity certificate scheme. Later, horizontal Europeanization contributed to the introduction of a very modest investment support for small-scale solar, whereas the EU decision to drop binding targets for domestic renewables underpinned the decision to not include new projects in the certificate scheme after 2021.

Frozen Europeanization occurs in Sweden and differs from layered Europeanization in that the initial impulse for change came primarily from the European environment, whereas later European processes of change hardly affected domestic-level developments. This is a well-known phenomenon in institutional theory: initial developments create feedback effects that lead to increasing stability over time. In the words of Paul Pierson (2004: 11) 'dynamics triggered by an event or process at one point in time reproduce themselves, even in the absence of the recurrence of original event or process'. Swedish policy-makers were initially influenced by EU-level actors to adopt green certificate schemes; this approach eventually became entrenched at the national level. Because the initial impulse for change was strongly institutionalized, Sweden later became basically immune

to later shifts and changes in the European environment. Indeed, the incremental changes in its domestic support mix resulted mainly from feedback effects and dynamics in the domestic political and organizational fields, not those at the European level. In Norway, the effects of the certificate scheme idea gradually undermined the certificate scheme while in Sweden, having politicians committed to the measure ensured stability.

Shallow Europeanization occurs when a country changes policies in response to vertical and horizontal Europeanization, without institutionalizing the new rules and practices. We detect this type of Europeanization in Poland. While both frozen and layered Europeanization resemble temporal mechanisms as described by historical institutionalist scholars, shallow Europeanization is more in line with the perspectives of sociological institutionalism. Domestic policy-makers introduce new support schemes because they aim to maintain legitimacy, not because they aim to increase domestic renewable energy production (DiMaggio and Powell [1983] 1991; Meyer and Rowan 1977). Actual developments within the organizational field of electricity production are largely decoupled from the renewables policy discussion, so new support schemes rarely gain a foothold (Brunsson 1989). We have noted the lack of institutionalization and thus constant instability and change in Poland. It has been very receptive to signals of change, in terms of horizontal trends and vertical EU steering – resulting in profound instability. Also, the UK has been marked by instability, but whereas that was caused largely by domestic actors changing preferences, Polish instability has been spurred primarily by shifting signals regarding Europeanization. The renewables support changes resulting from Europeanization remain shallow in Poland and thus inherently open to new shallow changes. Because few successive support-scheme mixes have led to renewables investments and the organizational field has remained rather unchanged, they are not institutionalized.

Finally, *shielded Europeanization* played out in the UK and Germany. Despite significant differences between them, there are intriguing similarities in how they relate to Europeanization of renewables support. In both the UK and Germany, the domestic support schemes for renewables have inspired other countries and EU legislators, whereas the development of domestic policy seems generally unaffected by either vertical or horizontal Europeanization. Hence, both countries are entangled in broader processes of Europeanization, although it is difficult to specify the exact effect of these processes on domestic-level developments. However, the two countries differ as regards why they are shielded from being heavily affected by the European environment. Whereas German governments have worked hard to obstruct EU steering, engaging in repeated litigation, British governments have generally acted in line with broad EU rules. Therefore, neither the Commission nor the CJEU has actively challenged British practices, whereas German governments have repeatedly been involved in litigation, fighting hard to avoid having to change their practices because of EU steering.

Still, Germany and the UK resemble each other in the sense that change and stabilities in their support schemes result mainly from domestic factors. True,

there have been some instances of EU-level developments affecting domestic processes in both countries – with respect to the adoption of small-scale feed-in support in the UK and the post-2010 changes in Germany – but also in these cases, domestic actors have been the most important, acting in tandem with the Europeanization pressures.

On this backdrop, we can develop four expectations that can be explored within other issue-areas:

- A country entangled in layered Europeanization will repeatedly add new elements to its policy in line with changes in vertical and horizontal Europeanization processes. Stability and change in domestic-level policy developments will result from domestic as well as European factors and processes.
- A country entangled in a frozen Europeanization process will hardly be influenced by ongoing processes of change in the European environment – as long as its rules are in line with EU rules. Whether the policy area is characterized by stability or change will depend mainly on domestic factors.
- A country entangled in a shallow Europeanization process will repeatedly change its policy in line with changes in vertical and horizontal Europeanization processes. Stability and change will depend largely on European developments.
- A country entangled in shielded Europeanization will not be particularly influenced by vertical and horizontal Europeanization processes. Stability and change in domestic policy developments will result primarily from domestic-level factors and processes.

The organizational field lens shows how culture and structure shape policy

While it is common to assume that economically powerful corporations will be superior in policy development, this has rarely been so with developments regarding renewables support in our six case-study countries. True, cultural-institutional and structural features play key roles in policy development, but not in the same ways that many political science theories would have us believe.

Firstly, although we conclude that organizational fields tend to be more important when they are segmented, we also show that the importance of organizational fields should not be overestimated, not even under conditions of segmentation. We find two instances where organizational fields were *not* important when segmented (Poland before 1999, Sweden after 2010), and many examples of segmented fields that have only been moderately influential when segmented. In France during 2000–2004, France and the UK during 2005–2009, Sweden during 2005–2009 and 2010–2016, as well as Germany after 2010, political dynamics reduced the importance of segmented organizational fields, causing developments that partly or fully contrasted with the positions of dominant organizations, public as well as private, within the segmented organizational fields. This indicates that the importance of segmented organizational fields

depends partly on developments in other involved fields, especially within the domestic political field.

Moreover, we detect a 'segmentation spurring ministerial governing' tendency, which means that policy development relating to segmented organizational fields often are dealt with by one ministry, and not the political field more broadly. Under such conditions, we can expect major political decisions to be resolved through negotiations among organizational field-level actors, and not through open political deliberations. Note that this does not necessarily imply that the commercial organizations necessarily have the upper hand; public governments may also be influential in such a situation. Moreover, this is only a tendency, not a rule. It may require considerable effort, but politicizing issues under such conditions is far from impossible. Indeed, we find many examples of political dynamics gaining salience also in relation to issues pertaining to segmented organizational fields.

Secondly, changes in institutional logics over time help to explain policy change over time, and differences in institutional logics across countries help to explain differences across countries. Our study, with its long time-perspective, has clearly shown that organizational field actors do not tend to have stable positions over time. Rather than acting on the basis of calculations of economic interests, actors draw on differing institutional logics; when these logics change, actors also tend to change their interest perceptions. With the exception of Poland and Sweden, the domestic support mixes after 2010 have largely reflected the institutional logics dominating the organizational fields. For instance, shifts and changes in the technology-specific approaches of Germany and France after 2010 resulted partly from changes in the dominant institutional logics. In both countries, the technology-development logic and market logics merged to some extent, and the level of institutional conflicts decreased. Also, in the UK we can note a shift in logic, but there it caused a change away from technology-neutrality and towards technology-specificity. The clear exception is Poland, where actors in the organizational field have paid less attention to design features, focusing instead on distorting long-term stability and thus preventing the schemes from creating deep changes. In Sweden, changes in logics at the organizational field level have had less impact on the support mix.

While institutional logics have gained traction in business studies after 2005, to the extent that it has become established as a research school in its own right (Ocasio et al. 2017), we are (to our knowledge) the first scholars to apply this approach to explore policy stability and change. This has proved very fruitful, leading us to conclude that cultural-institutional features may well be more important than generally recognized in the literature on energy and climate governance.

As organizational fields of electricity production tend to be segmented, we find limited variation in the degree of segmentation across cases in this study. For more general insights into the role of organizational fields across policy areas, we need studies of other policy areas, where organizational fields have other characteristics.

Political dynamics can spur change but also ensure stability

The *political field perspective* fills a void in sociological field studies, as well as in studies of policy processes. Sociologists who study fields have generally paid scant attention to politics; and, although political scientists are understandably far more interested in politicians, there is no tradition of exploring the relative importance of political fields for policy developments. Scholars of comparative politics tend to focus on one aspect of the political field at a time (such as the election system or patterns in legislative voting), and these studies are rarely related to policy developments. Students of policy processes as well as historical institutionalists tend to assume that politicians play marginal roles within stable policy areas, whereas infrequent moments of change are associated with rare bursts of high political activity (Baumgartner et al. 2018; Capoccia and Kelemen 2007; Herweg et al. 2018). These brief periods of change are described in slightly different ways and have been given various names, such as 'punctuated equilibrium' (Baumgartner and Jones 1993), 'critical junctures' (Capoccia and Kelemen 2007) or 'window of opportunity' (Kingdon [1984] 2011). In this book, we have documented temporal features of policy-change process other than those prescribed by such perspectives, and we find that the political field has played another role than these perspectives would lead us to believe.

First, we show that under certain conditions, political actors and political dynamics can influence domestic policy developments rather independently of what goes on in adjacent fields. The multi-field approach does not rest on *a priori* assumptions concerning the relative importance of the political field, but it predicts that political fields will play varying roles under differing circumstances. This enables us to assess and understand variance in the role of political dynamics across issue-areas, countries and time. We find that political parties, governments and legislators are *not* mere agents of voters and/or powerful economic actors, or carriers of domestic regulatory traditions. Rather, they can have independent importance and their behaviour is to a certain extent affected by the social architecture of the political fields, and both cognitive scripts and the distribution of structural powers can be relevant here.

Brief politicization leads politicians to approach a given issue in a very different way from what they had done previously, and that can be enough to ensure that political field dynamics overrule impulses from the organizational fields. If an issue becomes salient and thus politicized, this often leads to change – as we can see in the 2005–2009 phase, where the growing salience of climate change in general, and renewables more specifically, led to the adoption of a range of support schemes for small-scale renewables projects in many countries. Moreover, in Norway and France, changes along the salience dimension primarily affected the development of support schemes for large-scale renewables projects.

Second, wide distribution of structural resources tends to make the political field more important. Germany and Sweden are the only countries where the political field has played a major role for policy development over a long period.

Both countries have political fields with significant distribution of structural resources; further, several ministries share responsibility for renewables policy issues, and there are strong parliaments and often-unruly parliamentary situations where several political parties share majority power. These conditions seem to underpin more enduring engagement on the part of political actors. While political salience can give the political field importance in brief periods, it alone cannot ensure that the political field will remain important for longer stretches, unless the relevant structural resources are distributed.

The effect of the structural dimension was slightly different in the UK from the other countries: here the role of the political fields appears considerable also when formal powers are gathered in one strong party in government – whereas, in other countries, having distributed structural resources served to enhance the importance of the political fields. In several of our case-study countries, aspects of the structural dimension in the field change over time, such as how many ministers share responsibility and whether the government is in the majority – but we do not find similar variation over time in the UK. Indeed, the British election system seems to produce a political field with structural dynamics other than those in the other countries in our sample.

Third, political field dynamics can ensure both change and stability in policy development. Political actors and political dynamics play different roles in the policy-change processes presented in this book from what tends to be captured by studies guided by the dominant policy process frameworks and historical institutionalism. Historical institutionalist accounts generally show that policy stability results from social structures outside the political field, such as the governmental apparatus and interest groups that depend on a certain policy outcome (Pierson 2004; Moe 2015). In multi-field language: such studies show that policy feedback effects within the organizational field tend to sustain or create incremental changes in a policy area over time. Both historical institutionalism and policy-process framework usually see periods of dramatic change – termed 'critical junctures', 'punctuated equilibriums' (Baumgartner and Jones [1993] 2009) or 'windows of opportunity' (Kingdon [1984] 2011) – as times when politicians become more active. All these approaches lead us to expect that the political field can only drive change, not ensure stability; further, that when politicians become highly involved, they will aim for change.

There is nothing in our findings to indicate that the political field cannot drive change through brief, dramatic and intense periods of political involvement. Indeed, we saw some examples of this, for instance in Norway in the 2005–2009 period, when conflicts at the level of the organizational field led the issue to be politicized, and the political field finally ensured a change in policy. The introduction of feed-in for small-scale renewables projects in the UK in that same period also resulted from such brief politicization. But on the whole, few of the salient twists and turns in policy have been characterized by brief, dramatic and intense periods of political involvement. Indeed, policy changes taking place outside the political field can be very important: this goes for most of the many changes in

the UK and Poland, as well as for the initial introduction of technology-neutral support in Sweden, and the policy change in Norway after 2010.

Moreover, we have found that strong involvement of the political field in policy developments can help to create stability – sometimes even ensuring policy stability despite change-impulses within the organizational field. This was particularly clear in Sweden and in Germany, where many politicians worked hard for years, trying and suceeding to obstruct policy change. Thus we can conclude that both low political salience and high political salience may lead to change, or to stability.

Fourth, policy development may unfold in many different temporal patterns. The temporality of the policy change described in this book differs from standard accounts guided by historical institutionalism, punctuated equilibrium theory (Baumgartner and Jones [1993] 2009) and multiple streams theory (Kingdon [1984] 2011). All these approaches assume a similar temporal pattern of policy development, where long periods of stasis are interrupted by short periods of hectic change. None of our six countries developed its renewables support mix in ways that fit this description. For Sweden, we found no distinct periods of brief, dramatic and intense change: and the only period with intense political conflict, post-2010, led to stability, not change. In the five other countries there were many periods of change, often occurring five to eight years (or fewer) after the previous significant change. Overall, developments in support to renewables have been characterized by enduring change; and incremental or abrupt changes have often occurred in rapid succession, not after long stable periods.

On this backdrop, we conclude that in order to make sense of policy change and stability, we need to be open to temporal patterns other than the dominant 'long periods of stability, short periods of rapture' storyline. Further, we must stop equating high political involvement with change, and low involvement with stability.

Lessons for climate and energy policy and transition studies

Energy and climate policy processes may indeed be messy. Still, it is possible to understand them, especially when the political and cultural-institutional aspects are recognized. Technological and economic factors are important, but they alone cannot explain similarities and differences across countries. Actors embedded in different social fields tend to understand and respond differently to similar technological and economic factors. Yes, economics and technology clearly matter – but when push comes to shove, it's the politics and the culture, *stupid!*

We have followed up the call from transition scholars as well as political scientists who have pressed for more attention to politics, and have recommended applying historical institutionalist approaches to capture the political dimensions of energy transitions (Andrews-Speed 2016; Geels 2014; Lockwood et al. 2017; Rosenschöld et al. 2014). They are correct in arguing that historical institutionalism offers promising analytical concepts that can help in explaining the role of

politics in climate transitions, but our findings indicate that this approach also has limitations. Neither the role that historical institutionalism prescribes for politicians nor the temporal patterns of policy stability and change over time fit with the actual empirical patters we have identified.

Politics, both nationally and at the EU level, are of profound importance. Although politicians may not often become deeply engaged in policy development, there are many exceptions. Politicians are not always instruments in the hands of powerful corporate actors: they can voice the concerns of marginal actors, they can come up with ideas on their own – and sometimes politics takes on its own dynamics, with unexpected results. This finding is probably not surprising for practitioners with detailed knowledge of climate and energy policy, but political science has lacked theory-based approaches that can help to explain such features of political life. Moreover, politicians tend to act in line with the cognitive scripts pertaining to political fields, so their behaviour may differ from the institutional logics pertaining to organizational fields. Persons unfamiliar with the cognitive scripts of the political field will struggle to understand why politicians act as they do.

We have shown that cultural-institutional features, such as institutional logics and cognitive scripts, influence how climate policy, politics and transitions can unfold. Few scholars have paid attention to how cultural-institutional features shape policy development, although there are some exceptions. Two of the editors of this volume have shown elsewhere that cultural-institutional features have played key roles in development of other climate policy areas, at the EU level as well as in Norway (Boasson and Wettestad 2013; Boasson 2015). In addition, sociologists have shown that such features have been crucial in other processes relating to climate mitigation. For instance, Ann Hironaka (2014) has highlighted how cultural change has underpinned the emergence of environmental organizations on the global scale; Andrew Hoffmann (2015) has shed light on how culture influences climate change debates. Those studies are interesting, but they do not assess the importance of cultural-institutional features for climate policy development specifically.

Limitations: material conditions, entrepreneurship, public support

We have highlighted the many advantages of the multi-field approach, but preparing this book has made us aware that it also entails some limitations and blind spots. Most importantly, the multi-field approach does not specify how and to what extent material conditions, entrepreneurship and public support play into and shape policy development. To examine these factors, we need to combine the multi-field approach with other approaches.

First, the multi-field framework does not help to specify the actual importance of material conditions, in terms of technological developments, existing infrastructure investments, technological change, fossil-fuel resources, renewables resources and other factors. While the case studies in this book indicate

that political processes may sometimes develop quite independently of technological and economic realities, there are limits to how long policy developments can remain decoupled from broader material developments, including material-economic conditions. For instance, support schemes that undermine the functioning of the existing electricity system, threaten the economy of the largest utilities, or reward renewable energy investors with far too-high profits, will eventually change. In this book, we have not systematically explored the interrelationships between such material conditions and social multi-field dynamics. Because they are so intertwined empirically, it is hard to determine the actual effect of physical and economic realities on the one hand, and social features and processes on the other. We hope that others will take up this challenge and contribute to a deeper understanding of such relationships.

Second, this book highlights cultural-institutional and structural features and does not explore the role of policy or institutional entrepreneurship. That means we do not capture extraordinary achievements resulting from single actors or small groups of actors aiming to punch above their weight in policy development processes, nor do we examine why some have failed while others have succeeded here. Given our focus on examining so many countries over so many years, we could not trace such micro-mechanisms. This does not imply that we regard all actors as 'cultural dopes', unable to come up with innovative ideas, or to work in unconventional ways in order to 'get it their way'. Indeed, as Boasson (2015) has shown, multi-field explanations may be combined with examination of policy entrepreneurship.

Finally, we have not given deep consideration to shifts and changes in public support to renewable energy, or indeed to climate issues in general. This is a weakness, especially as resistance to renewables and other types of climate measures has increased after 2010. We hope that other scholars will take up the challenge and examine the relationship between political salience and popular support in greater detail.

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