

# RUSSIAN ENERGY AND SECURITY UP TO 2030

Edited by Susanne Oxenstierna and Veli-Pekka Tynkkynen



# Russian Energy and Security up to 2030

The challenges in Russia's energy sector are changing. On the demand side, Europe is seeking to limit its dependence on Russian oil and gas, with the result that China and other Asian countries are likely to eventually become growing export markets for Russian energy. On the supply side, oil and gas fields in West Siberia are diminishing and in future Russia's energy will have to come more from East Siberia and the Arctic, which will necessitate new infrastructure development and the employment of advanced technologies, which may increase Russia's dependence on commercial partners from outside Russia. This book explores the challenges facing Russia's energy sector and the resulting security implications. It includes a discussion of how far the Russian state is likely to continue to monopolize the energy sector, and how far competition from private and foreign companies might be allowed.

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Edited by Susanne Oxenstierna and Veli-Pekka Tynkkynen



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# Preface

The idea for this book came in 2010 when the Russia project, RUFS, at the Swedish Defence Research Institute (FOI) considered making a comprehensive study of the Russian energy sector and development. The same year, in October, the Aleksanteri Institute at Helsinki University organized an international conference on Russian energy 'Fuelling the Future? Assessing Russia's Role in Eurasia's Energy Complex', which covered a wide range of topics and approaches. We were both participants at that conference in different panels, as were some of the other contributors to this volume and during intermissions, lunches and receptions some sketchy preliminary talks arose about the possibility of collecting papers for a book. Later the same autumn, in November, Södertörn University in Stockholm arranged a conference entitled 'Energy Sector in the Baltic Sea Region', which again made it possible for some of the participants of the initial talks in Helsinki to develop ideas for a joint book project. Initially, fundraising attempts were geared at a fully integrated book with a joint methodological platform and outline. However, when the proposals did not make any headway we decided to go for an anthology where authors would choose their topics and methods individually. The design of such a project was worked out by us together with Dr Alexey Gromov, Deputy Director of the Institute of Energy Strategy in Moscow, in connection with an international seminar on Russian energy at FOI in April 2011.

In December 2011, the Swedish Central Bank's research foundation Riksbankens Jubileumsfond awarded us a generous grant for the international conference 'Russian Energy and Security up to 2030' that was held on 24 May 2012 at FOI in Stockholm. With the conference finance in hand we started discussions with the publisher Routledge and in late spring 2012 a contract was signed. The conference was greatly appreciated by the participants and the approximately sixty people in the audience coming from academia, Swedish government agencies, industry, export and energy associations, and representatives of the diplomatic corps. Between June and December 2012, we worked closely together with the contributors to revise the chapters in three drafts. Final versions were accepted in October–December 2012.

We have benefited from the support of many people during this long process. First, we are grateful to the previous project leader of RUFS, Dr Carolina xii Preface

Vendil Pallin, who supported the book project from the start when it was merely an idea and established crucial support for this project with RUFS's funder and client, the Swedish Ministry of Defence. The present project leader, Deputy Research Director Jakob Hedenskog, has lent us both continuing support and his expertise in Russian energy matters and in all ways encouraged the project's successful finalization. We are indebted to Research Director Annika Carlsson-Kanyama, who is an expert on energy and climate change and who organized the Russian energy seminar at FOI in 2011, which was instrumental in planning the conference and the book. She contributed to the conference and has generously provided the means for language editing of the volume. Special thanks are due to Professor Margarita Balmaceda who provided valuable input to the conference, as well as to Harry Helenius, Finland's ambassador to Sweden, who opened the conference in Stockholm thereby underlining the importance of Russian-Finnish energy relations. Mr Ville Anttila compiled the index. Last but not the least, we offer our sincere thanks to Mr John Åkermark who has language edited the volume.

Stockholm and Helsinki 28 January 2013

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### xiv Contributors

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# Abbreviations and acronyms

APEC	Asia-Pacific Economic Cooperation
APR	Asia Pacific Region
ARCO	Atlantic Richfield Company
bcm	billion cubic meters
BEMIP	Baltic Energy Market Interconnection Plan
bn	billion
BN	breeder reactor
BP	British Petroleum
BTC	Baku–Tbilisi–Ceyhan pipeline
BTE	Baku–Tbilisi–Ezerum pipeline
CEE	Central Eastern Europe
CEO	Chief Executive Officer
CHP	combined heat-and-power plant
CIS	Commonwealth of Independent States
cm	cubic meters
CMEA	Council on Mutual Economic Assistance
DCDC	Development, Concepts and Doctrine Centre
	Development
EBRD	European Bank for Reconstruction and Development
ECT	Energy Charter Treaty
EEZ	Exclusive Economic Zone
EIA	Energy Information Agency
ENL	Exxon Neftegas Ltd
ERD	extended reach drilling
ERIRAS	Energy Research Institute of the Russian Academy
	of Science
ES-2030	Energy Strategy of the Russian Federation up to 2030
ESPO	East Siberia-Pacific Ocean Oil Pipeline
EU	European Union
FBR	fast breeder reactor
FOI	Swedish Defence Research Agency
FSC	Forestry Stewardship Council
GCF	gas condensate field

GDP	gross domestic product
Genskhema-2020	General plan of the Russian power sector until 2020
Genskhema-2030	General plan of the power sector with updates till 2030
GW	gigawatt of electricity
GWh	gigawatt hours
HEU	highly enriched uranium
HR	Human resources
IAEA	International Atomic Energy Agency
ICNND	International Commission on Nuclear Non-proliferation
	and Disarmament
IEA	International Energy Agency
IMEMO	Institute of World Economy and International Relations
IPFM	International Panel on Fissile Materials
IPO	initial public offering
ISAB	International Security Advisory Board
ISTC	International Science and Technology Center
ITGI	Interconnector Turkey–Greece–Italy
kW	kilowatt
kWh	kilowatt hours
LEU	low-enriched uranium
LNG	liquefied natural gas
LWGR	Russian light-water graphic-cooled reactor
mcm	million cubic metres
MET	mineral extraction tax
MIFI	Moscow Engineering and Physics Institute
MOX	mixed oxides
mt	million tons
mtoe	million tons of oil equivalent
MVA	million volt ampere
MW	megawatt of electricity
NATO	North Atlantic Treaty Organization
NIC	National Intelligence Council
NRC	Nuclear Regulatory Commission
NSC	International Nuclear Safety Center
NSGP	Nord Stream gas pipeline
NSS	National Security Strategy
NTI	Nuclear Threat Initiative
OECD	Organization for Economic Co-operation and Development
OGK	wholesale power generating company
ONGC	Indian State Oil and Natural Gas Corporation, Vdiesh Ltd
OPEC	Organization of Petroleum Exporting Countries
PER	primary energy production
PGNiG	Polish Gas and Oil Company
PRS	political risk service
PSA	production-sharing agreement

PWR	pressurized-water reactor
R&D	research and development
RAB	revenue asset based-method
RAO UES	Russian state electricity company up to 2008
RBMK	Russian light-water graphite-cooled reactor
RF	Russian Federation
RFE	Russian Far East
Rosatom	Russia's State Atomic Energy Corporation
RSPP	Russian Union of Industrialists and Entrepreneurs
RUR	Russian roubles
SEER	State Environment Expert Review
SEIC	Sakhalin Energy Investment Company
SINOPEC	China Petroleum & Chemical Corporation
SIPRI	Stockholm International Peace Research Institute
SKV	Sakhalin-Khabarovsk-Vladivostok pipeline
SMNG	Sakhalinmoreneftegas
SODECO	Sakhalin Oil and Gas Development Corporation
TAP	Trans Adriatic Pipeline
TEK	Fuel and Energy Complex of Russia
TEP	EU's Third Energy Package
TGK	regional power generating companies
tm <sup>3</sup>	thousand cubic meters
TNK	Tyumen Oil Company
toe	tonne of oil equivalent
TSO	Transmission System Operator
TWh	terawatt hours
U	uranium
UK	United Kingdom
UN	United Nations
USA	United States of America
USD	US dollar
USSR	Soviet Union
VVER	Russian pressurized-water reactor
WANO	World Association of Nuclear Operators
WEF	World Economic Forum
WNA	World Nuclear Association
WTO	World Trade Organization

# **1** Introduction

## Susanne Oxenstierna and Veli-Pekka Tynkkynen

Russian energy policy attracts a great deal of attention at home and abroad because it affects so many different policy fields and interests. Energy is and will remain the core business of the Russian economy and it is the only good in which Russia has a comparative advantage and can compete for increasing wealth through international trade. Being a large energy player worldwide and the largest energy supplier to Europe, energy is also a vital part of Russia's foreign policy and security policy, which is reflected in the literature (see e.g. Perovic et al. 2009). Furthermore, energy exports pay a large part of the public expenditures in the federal budget and this has given energy a paramount role in Russia's domestic policies and in the regional development of its vast space. The Russian government is deeply involved in the energy sector and it has increased state ownership and control since the early 2000s, which has led to an increasing politicization of the energy assets and trade. The securitization of energy, implying that energy is not just a question of generating electricity and earning export income, but also a question of national security for Russia as well as for its trade partners, has occurred since the end of the 1990s when oil prices started to rise and Russia began changing the terms of trade for former socialist countries linked to its energy grid. Energy relations create interdependencies between companies, countries and political actors and even with a sound commercial basis for the initial interdependence, energy may become a political issue and be used as an 'energy weapon' in disputes between the parties.

The debate on Russian energy has been dominated by issues related to Russia's hydrocarbon production and export. The reasons are quite obvious: with surging oil prices in the 2000s Russia got out of its transition decline and became a high-growth economy able to service its international debt, regain global influence and increase the population's standard of living. As European countries have become increasingly dependent on Russian energy, concern has been voiced regarding the security of supply of Russian oil and particularly gas, both in terms of physical availability and of political trust. Gas deliveries were cut off for economic and political reasons on several occasions in the 2000s. The disputes with Ukraine in 2006 and 2009 affected large parts of Europe, and raised serious concerns about whether Russia is a secure energy supplier.

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For its part, Russia has raised concerns regarding the security of demand. After the gas incidents in the 2000s, Europe diversifies its energy suppliers. In addition, the EU climate and energy package enacted in 2009 aims to ensure that the European Union (EU) meets its climate and energy targets for 2020. These targets are known as the '20–20–20' objectives and include a 20 per cent reduction in EU greenhouse-gas emissions from 1990 levels, raising the share of EU energy consumption produced from renewable resources to 20 per cent, and 20 per cent improvement in the EU's energy efficiency. The 20-20-20 objectives enhance reduction of energy consumption and an increasing share of renewable energy sources in the EU's energy mix, which decreases the demand for Russian gas. Added to this comes the shale gas revolution and dumping of LNG on European gas markets. To compensate for this, Russia has turned East and attempted to develop its energy relations with China and other Asian countries. This is linked to new types of challenges for Russia. In addition to a pronounced level of suspicion and uncertainty prevailing in Russia-China relations, China's rich unconventional gas resources cast further doubts on Russia's central role as an energy supplier for this region. A new more recent challenge is the antitrust case launched by the European Commission's Directorate-General for Competition against Gazprom on 4 September 2012 (Riley 2012). This case has the potential of radically diminishing Russia's dominant role on European gas markets, but is also an opportunity for initiating a long-needed reform of Gazprom and Russia's domestic markets.

The crucial importance of the energy sector and energy export for Russia and the significance of secure energy supply to Russia's customers implies that 'security' is a key aspect of Russian energy policies. In the literature, security is used as a main variable in analysing *interaction* in energy policy between Russia and its main clients. The fact that Russia uses its position as a regional energy power to affect countries dependent on its oil and especially gas has been shown by Larsson (2008; 2010) and Smith Stegen (2011). Particularly in the CIS countries Russia has used the 'energy weapon' to attain certain privileges (Balmaceda 2011; 2012). As noted by Wenger (2009: 241), the energy system is a key link between global markets and local conflicts in a globalized world. For these reasons, growing interdependencies in the energy area require better coordination between countries as regards energy and foreign and security policies.

## Objectives and methodology of the study

The first objective of the book is to provide a picture of long-term trends in Russian energy policies, identifying challenges and analysing the prospects of these being addressed and solved by the proposed policies during the coming twenty years. The second objective is to highlight selected interdependencies of Russia's foreign energy relations and to discuss their implications for Russia and its trade partners now and in the future. Besides these objectives, several contributions in the book investigate aspects of the crucial interactions between the energy sector and domestic policies and their implication for the economic and regional development in Russia.

Russian energy is a multidisciplinary topic and many social scientists follow Russian energy development from different positions. One motivation behind this book comes from the difficulty in covering this multifaceted topic and its many multifarious aspects with just one disciplinary approach. The volume consists of twelve chapters with contributions from fourteen authors of different academic backgrounds from nine countries, which have resulted in a rich variety of issues discussed and methods used. The authors have chosen their particular research issues themselves. All authors are social scientists, which means that there is some common ground for the research. However, because economists, political scientists and geographers differ in disciplinary specific methodology and focus on different issues there is no explicit common methodological foundation for the book. Each author has stated his or her approach in their respective chapters. Nevertheless, *ex post* with all the chapters at hand, we may define some main approaches and themes that characterize the research presented in this volume.

One approach is to start off with the official Russian documents that describe what the Russians say they intend to do and compare these stated policies and intentions to other strategies and forecasts of the Russian energy sector and discuss their realism and implications. A variation is to assess the official strategies with reality. This approach is used widely e.g. in Chapter 2 which presents and analyses the implications of the current Russian Energy Strategy up to 2030 (ES-2030, Ministry of Energy RF 2009); also in Chapter 8 which discusses the power sector against the background of the general power strategy (Genskhema); in Chapter 9 which compares the ES-2030's forecasts regarding the use of nuclear power in power generation with IEA forecasts; and in Chapter 12 which compares a wide range of scenarios relative to the development of the Russian energy sector and foreign policy. The comparisons of official strategies with other forecasts or implementation are mainly geared at the economic implications of Russia's energy policies and an assessment as to their realism. Another approach is to focus on the interdependencies between Russia and its energy trade partners, particularly in the gas trade, a topic which is deeply linked to national security. This approach is applied in Chapters 3, 4 and 5 where both economic and political aspects of the problems are highlighted. In Chapter 7, a Baltic view is taken on Russia's foreign energy policy, which provides a specific perspective into the interpretation of these interrelations. A third approach looks at the close links between Russia's energy policy and domestic policy and foreign policy, respectively. Chapter 6 which investigates the possible politicization of trade in renewables, Chapter 10 with its analysis of the role of private oil companies and Chapter 11 with a focus on regional development of Pacific Russia are good examples of this. Obviously, many chapters use combinations of these three starting points in their analyses. The book offers the reader examples of a broad range of methods from advanced formal analysis to an ambitious study of Russian original sources.

## The context

During the 2000s, Russian energy production rose dramatically as a result of increased foreign demand for fossil fuels (oil, gas and coal). As Figure 1.1 shows, Russia exported about one-third of its energy production in 2000 and as much as almost half of the total by 2011. Crucial to the country's ability to meet rising demands was the high price of oil throughout the period. This enabled it to step up its exploitation of existing deposits and vigorously expand both its oil and gas pipeline system and other export routes.

Domestic energy consumption also increased in the 2000s, but only by 11 per cent for the period as a whole. It is still below the 1990 level, and, according to some OECD/IEA scenarios, it will remain so at least up to 2020 (Oxenstierna and Hedenskog 2012: 312). In the IEA's main 2010 scenario (the 'New Policies Scenario', NPS), in which countries implement environmental and energy-saving measures they have already committed themselves to, the level of domestic demand in Russia increases marginally (Figure 1.2). Energy use in the EU, on the other hand, is expected to decline. This contrasts sharply with the situation in the other emerging economies, especially in China. China overtook the US as the world's largest energy user in 2009, and it is estimated that it will see a dramatic increase in energy consumption during the period (ibid.). Russia stands out in that it will continue to use gas as its main source of energy, in contrast to the other countries, where coal and oil are the principal sources. In power generation, Russia uses mostly gas but also coal,



*Figure 1.1* Russia's energy production by fuel divided into domestic consumption and export 2000–11; *mtoe* Source: FOI based on BP (2012).



Figure 1.2 Domestic consumption and energy mix 2008 and 2030 in selected countries, according to the IEA's New Policies Scenario\*; mtoe

#### Source: FOI based on IEA (2010).

Note: \*The New Policies Scenario (NPS) assumes the introduction of a number of measures to combat the carbon dioxide problem.

hydroelectric and nuclear power. The ES-2030 foresees a decline in gas and an increase in the use of other sources for power generation, since gas will be needed to meet international demands.

Russia remains one of the most energy-intensive countries in the world. In 2005, energy intensity per unit of GDP was 0.42 kg of oil equivalent, which is twice as high as that of the two largest energy users, the US (0.19) and China (0.20). Assessment have indicated that Russia should be capable of reducing its energy consumption by 45 per cent (Oxenstierna and Hedenskog 2012: 128). President Dmitry Medvedev signed a decree in June 2008 laying down that energy intensity in the Russian economy was to be reduced by 40 per cent by 2020. A law was subsequently passed and the government also adopted an action plan for the promotion of energy efficiency. At the same time, a new Russian energy authority (Rossiiskoye agentstvo energetiki) was tasked with implementing the planned improvements in energy use (World Bank 2010). Energy savings is a catalyst that Russia has not previously made use of in its energy policies and improved energy efficiency could be of key importance in the 2010s. It is also clear that technological renewal of the energy sector could act as an engine of modernization of the Russian economy. As pointed out by Mau (2010), modernization of the energy sector and further emphasis on energy exports are both essential if Russia is to progress to a more modern, innovative economy. Thus, contrary to what is sometimes claimed, priority to the energy sector does not necessarily conflict with the modernization efforts as long as investment and technological renewal proceed competitively and give innovative new enterprises the chance to grow.

Europe is Russia's most important external energy market and Russian hydrocarbons are crucial for the European Union to meet its energy needs. In

2011 almost 90 per cent of oil, 70 per cent of gas and 50 per cent of coal exported from Russia went to the EU (Ministry of Energy RF 2011). At the same time, imports from Russia represented over one-third of the EU's gas, one-third of the EU's crude oil imports and 30 per cent of its coal imports. It follows that revenues from gas and oil exports are of great importance to Russia, and the EU views energy as a key component of security and still depends on Russia as a supplier of energy. One central question is why it has proved so difficult to develop trust and long-term agreements between these two interdependent partners. Russia argues that its activities in the energy field are motivated by economic goals, but they may also be interpreted as a strategy for strengthening the regional superpower status of Russia and to use energy for coercing other countries to behave in Russia's interests. Among the EU states there have been difficulties in reaching a common platform in the policy regarding Russian energy due to different degrees of dependencies of Russia and different economic and historical conditions. Dependence on Russian energy varies considerably within the EU. Some EU countries have been strongly opposed to a common European energy policy. As a rule, these countries have access to alternative fuels and the delivery of gas from other countries besides Russia, and have robust energy companies able to offer Gazprom access to financing, technology and major markets. The countries of Central and Eastern Europe have had fewer alternatives and are usually dependent on Russian oil or gas for their energy supply (70-100 per cent) (Oxenstierna and Hedenskog 2012: 137). These countries have tended to be more keen on a common European energy policy towards Russia.

Together with alternative gas supplies entering Europe, such as LNG and shale gas, the European Commission case against Gazprom is a serious attempt at enforcing competition rules to create a liberalized European gas market and might substantially change the conditions for Russian gas in the EU. As pointed out by Riley (2012: 13), this is an opportunity to induce much needed reforms in Gazprom and the broader Russian gas market. However, resilient resistance to the antitrust process may be expected. Increasing exports to Asia is an option that Russia explores in its attempt to ensure security of demand for the coming decades. China's energy usage is growing (Figure 1.2), but China is a different trade partner from Europe and acts independently and states its own terms. Apart from joint projects with Russia, China has invested heavily in Central Asian energy resources and infrastructure, including oil and gas pipelines from Kazakhstan and Turkmenistan. In addition, China's shale gas resources are assessed to be significant, further complicating energy relations between China and Russia.

## Organization of the book

The organization of the chapters in this book was not premeditated and each chapter stands for itself. For the reader, who might want to read the book from cover to cover, the logic behind the order that we finally chose is that it starts with a chapter that presents and analyses the current Russian energy strategy up to 2030 (ES-2030), which gives an overview of the long-term tendencies in Russian energy policies. This chapter also assesses the achievements of energy policy during the first stage of ES-2030 and identifies policy challenges during the coming years. Subsequently, we have grouped the five chapters discussing issues linked to the economic and political interdependencies of Russia's gas trade with the EU and the CIS. Most of these chapters touch upon the securitization of energy and the security problems of energy trade. In the second half of the book, we have grouped the five chapters that are basically concerned with economic aspects of energy policies or their interrelations with Russia's domestic policies. These chapters highlight issues such as power sector reform, the expansion of nuclear power, the role of private oil companies, and the development of Pacific Russia. In the final chapter, the domestic and foreign development are tied together again providing an exposé of a wide range of energy scenarios for Russia and different views of its energy future as well as Russia's role in the global energy system.

Chapter 2, by Alexey Gromov and Nikolay Kurichev, presents the Russian ES-2030 and analyses its risks and opportunities. The ES-2030 is one of the key strategic documents describing the leading role of the energy sector in the Russian economy. The ES-2030 has indicative targets on the long-term national energy policy concerning production and consumption, investment, energy security, energy efficiency, the economic efficiency of the energy sector and environmental security, etc. In their assessment, Gromov and Kurichev focus on the first stage of the strategy 2009-15 when the Russian energy sector should recover from the economic crisis. The authors find that although the ES-2030 was approved in late-2009, the strategy still reflects the inertia of the pre-crisis realities and that the main challenges to Russia's supply security remain insufficient as well as non-optimal investments in the energy sector, low technological levels and standards of efficiency compared to the global level, plus a poorly developed energy infrastructure. These indicators have improved only marginally, although the gross production and energy exports have picked up during 2011 and 2012.

Chapter 3, by Chloé Le Coq and Elena Paltseva, is the first of the chapters examining the interdependency in the EU and Russia gas relationship. Written by two economists, the chapter aims at demonstrating the mutual dependency through an index-based approach and also discusses how the development of gas markets may affect this dependency. Le Coq and Paltseva use a unified framework to assess the security of gas supply for the EU and the security of gas demand for Russia, thus showing that Russia is as dependent as the EU. This approach accounts not only for the traditional import–export dependency measures, but also for the balance of power between Russia and the EU. After having defined the indexes the authors use the methodology to address the evolution of the EU–Russia gas relationship in view of the gas market's developments exemplified by implications of new gas pipelines projects (South Stream and Nabucco) or the increasing availability of liquefied natural gas (LNG) on the market.

Chapter 4, by Stacy Closson, studies the question of why Russia has continued with an energy policy of subsidies in its gas trade to neighbours when this does not seem to work. Russia uses various mechanisms to subsidize its gas trade to other countries, which are often meant to make an otherwise economic relationship into a political one. These mechanisms include discounted prices in exchange for assets, joint ventures, and a marginal profit through opaque intermediaries. Closson finds that the Russian state does not seem to benefit from this trade in a significant way either economically or politically. She also argues that policies of subsidies have somewhat had the opposite effect of alienating customers, particularly when recipient governments change hands. The author offers several propositions as to why Russia uses subsidies and analyses how they have had an impact on trade relations in European countries.

Chapter 5, by Hanna Smith, investigates the politicizing of energy security both in Russia and the EU, based on political science and international relations theories. Smith argues that after the economic crisis 2008–9, Russia–EU relations have set out on a new path. Prior to the crisis, the EU was looking for ways of coming up with a common energy policy, while subsequently Russia is facing a more competitive market in the EU, and EU members are further away from creating anything common relating to the energy field. Smith uses three central aspects when analysing the politicizing of energy relations on both sides: perceptions, pipeline policies and differentiated prices. Perceptions include threats, suspicion and protective policies. Pipeline politics reflect the geopolitics of energy policies that are sometimes in conflict with the economic benefits. Discriminating pricing policies have become increasingly difficult and might not be an option for Russia much longer. The author concludes that all of these components will have implications for future Russia–EU relations, although it is difficult to foresee how.

Chapter 6, by Veli-Pekka Tynkkynen, applies past experiences from the interdependency between Russia and the EU in the gas trade to a discussion of the potential of Russian renewable energy and the EU 20–20–20 goal. Tynkkynen discusses Russia's potential for becoming a major exporter of renewable energy to Europe and analyses the political implications, such as energy interdependence and the dependence between the EU and Russia regarding such energy. The EU has set a goal to produce 20 per cent of its energy with renewables and to cut its greenhouse gas (GHG) emissions by 20 per cent (in relation to 1990) by 2020. Russia's renewable energy potential, including biofuels, is vast, but Tynkkynen finds that it is underutilized and argues that measured in terms of what is economically viable, Russia could produce onethird of its domestic energy with renewables. The ES-2030 states that by 2030 about 5 per cent of Russia's electricity should be produced with renewable energy, but according to the strategy Russia is to invest in renewables only after 2020. According to Tynkkynen, the fact that the EU is moving fast in