

BOOK REVIEWS

European Energy Policy: An Environmental Approach, edited by FRANCESC MORATA and ISRAEL SOLORIO SANDOVAL. (Edward Elgar Cheltenham UK–Northampton, MA, USA. 2012) 256 pages. Hardback ISBN 978-0-85793-920-3, ebook ISBN 978-0-85793-921-0.

The aim of this book is “to highlight the significance of environmental policy concerns, instruments, and objectives *vis-à-vis* the competing security and market dimensions in order to achieve an all-embracing EU energy policy perspective for the future.” In the introduction Solorio Sandoval and Morata present the analytical framework of the book, the three step “Green Europeanization” model. Step one involves the increasing intervention of the European Commission in the energy chain by means of regulations, motivated by environmental concerns. Step two comprises the subsequent “green Europeanization” of energy policy. This internal dimension is covered in Part I of the book and analyses the process of integrating energy and environmental policy, in which Member states to an increasing extent cede policy-making responsibilities in both fields to Brussels, while relying on their national administration for the execution of policies. Part II of the book covers step three of the model, the external dimension, in which Europe attempts to extend these policies towards neighbouring non-member countries. The substance of the book is formed by a set of rich and informative chapters.

Chapter 2, by Adelle, Russel and Pallemerts, provides the longer term perspective on the process of integration of EU environmental and climate change policies and energy policy. It focusses on the concept of Environmental Policy Integration (EPI), “a strategy to achieve a shift in governance so that the environment is placed at the heart of policy-making in non-environmental sectors,” and evaluates how far and how this integration has taken place, so far.

In Chapter 3, Knudsen examines firstly how EPI has been instrumental in the promotion of renewable energy (RES) at the Community level. Subsequently, he examines the role of EPI in the national RES policies of Sweden, Denmark, Finland and Norway. This chapter highlights the challenges for EPI arising from the variations in the Member States’ characteristics and the consequent tensions with communal policies.

Chapter 4, by Busch and Jörgens, dives deeper into Europeanization of RES policies, analysing the role of mechanisms of policy coordination, i.e. cooperation, coercion and diffusion. It examines whether and how these mechanisms explain the variation in the Member States’ use of policy instruments like feed-in tariffs and green certificate systems over the period 1988 to 2005.

Another mechanism, the role of advocacy coalitions, is treated in Chapter 5. Fisher applies the notion of Europeanization to the technology of Carbon Capture and Storage (CCS). He analyses the interaction between up-stream natural gas companies with depleted fields, the European Commission and the Parliament and large scale fossil fuel consuming countries, like Germany and Poland. He demonstrates how this produced a specific set of policy instruments, including a general framework of guidelines to be implemented by each Member State and funding for specific projects.

In chapter 6, Solorio Sandoval and Zapater attempt to map the sequence of European policy measures and legislative acts to substantiate the green contribution to European energy governance. Therewith they give an overview of the way in which policies are institutionalized at the European level.

Part II of the book is quite interesting, because it provides fairly detailed insights in the way the EU’s neighbouring countries are dealing with their environmental and energy policies. It is clear that differences in their history and in institutional and economic settings have important consequences for their acceptance of the EU model. This is clearly shown in Chapter 7, by Dobbins and Tosun, that investigates the prevalence of market-based energy policy instruments in Central and Eastern Europe

Herranz-Surrallés and Natorski, in Chapter 8, bring in a crucial component of EU energy policy, namely the energy security issue with regard to its Eastern neighbours, including the Ukraine as a main transit corridor for natural gas from Russia. They show that this security component is not simply interpreted “as a matter of survival . . . following the logics of war.” It, however, brings about a rather different way of balancing the objectives of security, environmental and market restructuring, which varies depending on the country involved.

Ciambra, in Chapter 9, investigates to what extent countries in the South East of Europe have accepted the EU’s energy *acquis*, in the context of their regional Energy Community. He shows that, under pressure of their possible entry in the EU, compliance has been fairly swift. This is particularly the case with electricity and gas market related rules and regulations. The chapter is less conclusive regarding environmental policy instruments.

Turkey’s energy sector reform is the focus of Chapter 10, by Carafa. It concludes that EU’s influence on the adoption of measures for sector reform is dependent on their “usefulness” in addressing the national energy problems. Moreover, the success of such rules in Europe appears to be of influence in their acceptance in Turkey; security measures scoring relatively low and the environment high.

Morocco’s potential as a future solar energy supplier to the EU is examined by Escribano-Francés and San Martín González in Chapter 11. It highlights the need to embed such strategies in a much broader package of economic, institutional and even economic modernization of the southern Mediterranean coast.

Francesc Morata and Israel Solorio Sandoval conclude in the final chapter that, internally environmental considerations have been key drivers for the shaping of a European energy policy. Externally, however, it appears that security of supply and other general policy considerations have been more important in shaping the EU’s policies, depending on target countries. Hence, EU policy coherence “speaking with one voice” is difficult to achieve in this area.

Altogether, this book offers a very rich picture of EU energy policy, as far as the environmental face is concerned. It attempts to create an understanding of the process of Europeanization. Therewith it is much more valuable than the many works that only evaluate the (lack of) progress towards the EU’s proclaimed objectives. Yet, unfortunately, it has a major weakness in achieving real understanding, because the other main energy policy objectives in the EU and its Member States’ energy policies, namely the Internal Market and Security of Supply, are only mentioned in passing. One substantial chapter on the tensions between the three pillars of EU energy policy would have done the job.

Now we have a book full of information, insights and a conceptual model about EU environmental and climate change policy that will be useful particularly to academics working on European energy and environmental policy-making. These days Europe is increasingly confronted with the huge challenges of actually integrating market, environment and security of supply. So far, as I would argue, we have seen only “Europeanization light.” Now, the question is whether it will be the EU or the Member States that will take the next steps in integration and how this will take place. This book may be of help.

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Physics for Future Presidents, by RICHARD MULLER. (New York: W.W. Norton & Company, 2009) 384 pages. ISBN: 978-0-39333-711-2. Paperback.

Richard Muller’s *Physics for Future Presidents* is an absolute tour de force. Muller provides clear, approachable discussions of the physics of a variety of issues. His chapters on energy

supply, climate change, and nuclear weapons are particularly strong, while chapters on the science of terrorist attack tools and space also inform the reader's (or President's) ability to meaningfully understand the science that shapes public policy. Closing each section with a "Presidential Summary" is a particularly nice device.

Muller starts strong with a discussion of the physics behind the terrible tragedy of September 11. Jet fuel is tremendously energy dense and was able to deliver some of this energy to the World Trade Center support columns by burning—enough to soften the support columns to the point of collapse. It is because of this energy density that oil is such a valuable source of fuel. (Muller makes use of his charming tone and ability to find relatable examples by comparing the energy density of gasoline to chocolate chip cookies and steak. Oil has more energy than either.)

Similarly, Muller's chapters on nuclear power, nuclear weapons, and radiation are marvelous. One section lays out various types of nuclear reactors, how they work, and (importantly for Presidents and the public) why American nuclear reactors cannot explode like nuclear weapons. Another discusses the design and manufacturing difficulties in building different types of nuclear weapons, where a clandestine nuclear weapons program would be likely to struggle, and what observable signals such a nuclear weapons program would send.

A running theme of Muller's explanations is to contextualize risk, often by comparing an expected number of fatalities to a baseline. For example, potential cancer deaths induced by a radioactivity incident are compared to the general population's cancer rate, while radiation and hazards from the proposed Yucca Mountain nuclear waste storage are compared to the radioactivity level of the Colorado River (which flows through uranium-rich areas). The implication is that the public is not concerned about naturally occurring radiation and thus should not be concerned by smaller hazards inherent in using nuclear power.

The one pervasive shortcoming through the book is that Muller gives short shrift to social science (disclosure: this reviewer is an economist). This is perhaps most jarring when Muller closes an otherwise excellent discussion of different energy sources by noting that the cost per kilowatt hour of coal is wildly different from that of gasoline or AAA batteries. He then claims that "[i]f the marketplace were 'efficient', as economists sometimes like to postulate, then all these fuels would reach a price at which the cost would be the same." In the same paragraph he notes that AAA batteries are extremely portable, that diesel fuel holds more energy per pound than coal, and generally that fuel sources have important characteristics beyond price per kilowatt hour. Of course, these attributes all could lead to different prices for energy in different forms.

Asserting that efficient markets would lead to all energy sources having equal per-kilowatt prices could reflect a momentary lapse, but this lack of acknowledgement of social sciences show up in broader points. A section titled "Evidence" argues that climate policy advocates who make claims beyond what is strongly and ultimately correctly supported by science risk alienating the public and causing the public to disregard future calls to action as the proverbial boy crying wolf. This may very well be the case. There is scholarly work showing that trust in scientists is important to the public understanding of science and for the public's risk assessment.¹ However, determinants of public knowledge about climate change and support for climate policy are more complex than trust and vary across the population.² Muller does not substantially engage with this body of work,

1. See Slovic, P. (1999). Trust, emotion, sex, politics, and science: Surveying the risk-assessment battlefield. *Risk Analysis*, 19(4), 689-701 or Malka, A., Krosnick, J.A., and Langer, G. (2009) "The Association of Knowledge with Concern About Global Warming: Trusted Information Sources Shape Public Thinking," *Risk Analysis*, 29(5), 633-647.

2. This point is shown in Kotchen, M., Boyle, K.J., Leiserowitz, A.A. (forthcoming). Willingness to Pay and Policy-Instrument Choice for Climate-Change Policy in the United States. *Energy Policy* and Maibach, E, C. Roser-Renouf, and A. Leiserowitz. 2009. *Global Warming's Six Americas: An Audience Segmentation*. New Haven, CT: Yale Project on Climate Change, Yale University. It's implications are discussed in National Research Council. *Informing an Effective Response to Climate Change*. Washington, DC: The National Academies Press, 2010.

which is a shame as the chapter would greatly benefit from a stronger and more scientifically grounded discussion of the formation of public opinion.

The book does feel dated because it does not address the ongoing shale gas revolution.³ This is of course through no fault of the author's—the EIA Annual Energy Outlook of the same year projected that U.S production of natural gas would increase modestly from 21 to 24 trillion cubic feet per year by 2030, whereas more recent estimates shows that the U.S. already produces 24 trillion cubic feet per year and project production of 30 trillion cubic feet by 2030.⁴ However, the publication date leads to unfortunate omissions such as a chapter which discusses feasible ways to reduce greenhouse gas emissions but makes no mention of switching from coal to gas for electricity generation.

Interested, non-expert readers will find the book worthwhile reading. I certainly would have appreciated the opportunity to read this book as an undergraduate physics major. A high school level background in science would be helpful, but by no means necessary. Muller's obvious strength in explaining physics, particularly the physics of energy issues, as well as continued changes in and the continued importance of energy issues suggest a need for another book focusing on the energy sector. Happily he has written just that, titled *Energy for Future Presidents*.

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Global Warming Gridlock: Creating More Effective Strategies for Protecting the Planet by DAVID VICTOR (Cambridge: Cambridge University Press, 2011), 392 pages. ISBN: 780-5-2186-501-2. Hardback.

This book is likely to remind many readers of the Punch cartoon about the curate's egg. The good parts are that it includes some important and interesting material explaining the gridlock in the development of policies to address climate change and outlining alternative strategies that may lead to better outcomes. Unfortunately, these arguments are embedded in a presentation that is sometimes bewildering and often irritating because of the amount of repetition, the reliance upon assertion rather than data and analysis, and an emphasis on issues of U.S. policy with limited consideration—or understanding—of the perspectives of other important agents.

For those with limited time and patience, Chapters 1 and 7 are, in Michelin terms, “worth a detour.” Chapter 1 provides an excellent overview of the argument. Victor argues that CO₂ is a particularly difficult pollutant to control and that climate diplomacy has relied upon a series of myths about how policies can be designed and implemented. Focusing on targets and timetables will ensure that any agreements are constrained in membership and content by the inability of governments to exercise effective control over national emissions. Instead, he argues that diplomacy should focus on forming voluntary clubs of countries who commit to implementing certain policies subject to collective scrutiny. Such clubs can take on new members and expand their commitments over time as the advantages of membership and the benefits of collective action become apparent.

Few readers need to go beyond this overview. Those who have attended international environmental conferences may be interested in Chapter 7 which examines why climate diplomacy is different from other forms of environmental diplomacy. In essence, Victor argues that climate diplomats faced a difficult problem and made it worse by deploying the wrong tools. Negotiators

3. A hardback version of the book was published in 2008. This author reviewed the more recent paperback version.

4. U.S. Energy Information Administration, Annual Energy Outlook, 2009 and U.S. Energy Information Administration, Annual Energy Outlook, April 20.

may feel that this is a case of shooting the messenger, because they have to work with the political expectations of the major parties in the process. The key role of the EU is acknowledged but Victor does not examine how the EU's approach to climate negotiations has been shaped by the internal procedures of the EU in dealing with environmental policy.

After discussing what has gone wrong with climate diplomacy Victor proposes an alternative approach based, he claims, on the experience of the GATT and the WTO. Having spent a considerable period studying trade policy, I believe that his analogy would not convince any economist familiar with the history of trade agreements. It rests on the argument that voluntary international clubs can expand their membership and increase their commitments over time. In reality, trade negotiations have repeatedly been paralysed for a decade or more because further progress would require challenging powerful domestic interests, particularly in agriculture but also in many services. Earlier trade rounds focused on liberalising trade in manufactures because almost everyone could benefit from a reduction in trade barriers. Even these agreements provoked strong resistance from heavily protected sectors, which had to be bought off by a redistribution of the gains from liberalisation through support for trade adjustment.

The book establishes that the current approach to climate diplomacy is unlikely to yield agreements that are effective in reducing global emissions by more than small amounts in the foreseeable future. On the other hand, Victor is reluctant to follow the implications of his own arguments. The club of enthusiasts is too small to have a significant impact on their own and is, in any case, contracting with the loss of Japan and other participants. Unanticipated factors—such as the rapid development of shale gas in the U.S.—may lower emissions in reluctant countries but this merely emphasizes why many countries are unwilling to commit to binding targets, unless they know how and at what cost they can be met. Further, in advocating reliance on voluntary clubs he fails to examine the process and nature of accession negotiations for both the WTO and the EU when dealing with large applicants such as China for the WTO and Turkey for the EU.

There are two important themes that emerge from Victor's review of past environmental agreements. The first concerns the role of technology. This is the subject of the longest but least convincing chapter in the book. It is central to the stories of the Montreal Protocol and the UNECE Convention on the Long Range Transport of Acid Pollutants (LRTAP). Most of Chapter 5 is devoted to a general discussion of the economics of invention and innovation but it underplays the specific features of technical development in the energy sector. The familiar focus on silicon and the internet has limited relevance to a sector with much longer asset lives and high requirements of reliability. Recent history is replete with examples of failed or failing efforts to promote technical change in large energy systems including nuclear fusion, synthetic fuels, CCS and wave power. Many of the technologies that have had the largest environmental benefits over the last 50 years were not the outcome of conscious technological policy but were the product of commercial incentives drawing upon ideas and technologies developed for other purposes. Most government mandates have failed to promote the development and adoption of technologies that can match or undercut more polluting alternatives. The analogy with trade policy is illuminating: most infant industries don't grow up and even those that do tend to waste vast amounts of money in the process.

The second theme is the cost of reducing emissions, which depends upon the technological options that are available. Victor refers repeatedly to the Specker Law, which is an assertion that the general public is unwilling to accept large increases in energy prices driven by climate policies. This claim is based on U.S. experience, but developments since the book was finished suggest that it is equally applicable in Europe and Japan. Unfortunately, Victor does not go beyond generalities. In particular, he does not attempt to reconcile the results of global assessment models which claim that the cost of meeting global emissions targets will be about 2% of GDP with his own view that climate policies will tend to favour costly and inefficient measures that appeal to particular interest groups.

These themes are highlighted because Victor explains that successful environmental agreements have relied upon the adoption of alternative technologies or emission controls that can be

implemented at reasonable cost. This may be extended by noting that the willingness of enthusiasts—the U.S. and the EU for the Montreal Protocol, Germany and the Nordic countries for the LRTAP—to pay most or all of the transitional costs has been critical and depends upon keeping aggregate costs within limits that can be accepted by rich country taxpayers.

Despite the virtues of this book in examining the reasons for gridlock in climate diplomacy it is unconvincing as a guide to the way forward. The remedies offered are things that might appeal to those living in the artificial bubble of international meetings but deliberately they avoid the conflicts of priorities and difficult choices that have stymied progress up to now. Economists may argue about the technicalities of climate policy, but it has long been clear that any effective action will depend upon pricing carbon. In addition, there is only one deal that really matters—between the U.S. and China—though this is neglected here and will be hostage to the political relationship between the two global economic powers.

Victor knows this but he believes that the current balance of international and domestic interests cannot cope with such clarity. He argues, most cogently in his overview, that a strategy based on voluntary clubs and limited emission trading can evolve in the direction of explicit carbon prices via the adoption of price floors and ceilings together with sanctions for countries that choose to remain outside the clubs. Unfortunately, he ducks the question of time. If the history of trade diplomacy tells us anything, it is that effective agreements to reduce CO₂ emissions on the model advocated here are unlikely to have any significant impact before 2050. Readers can make their own assessment as to whether any alternative approach is likely to pay off earlier.

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