

Environmental Protection in the European Union

Volume 4

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Foreword

The 5th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) published in 2014 consolidated the certainty that mankind will have to contend with significant challenges of climate change. In this regard, the reduction of greenhouse gas emissions is of fundamental significance. The Federal Republic of Germany has, through consistent promotion of electricity generation from renewable energies, contributed enormously to the transition to a non-fossil fuel energy generation. Particularly, through the creation of a large entry market for industrial mass production of alternative energy systems in Germany. Hence, the drastic drop in prices for photovoltaic systems of more than 70 % within a few years is a result of the massive amount of assistance from the German Renewable Energy Sources Act (EEG). Consumers in Germany have, through the EEG surcharge, exclusively financed the technological development and launching costs of these innovative, clean and unlimited sources of energy. Unfortunately, the number of countries that consistently try to reduce their greenhouse gas emissions is rather small. International commitments in the 2nd Commitment Period of the Kyoto Protocol have been received only from Australia, the EU and some other European countries. Meanwhile the time for effective mitigation measures is running out. Climate change is in full swing and will continue to worsen. In this respect, adaptation measures are essential. This book deals with the adaptation to climate change in different areas, regions and countries of the world and, thus, represents a significant contribution to possible adaptation measures, but, however, does not relieve the states of the world and its citizens from responsibility to reduce their emission of greenhouse gases. Sun and wind don't send us a bill. With the 100 % change of energy we can generate not only ecological advantages, but also economical profits. Germany is renewable, Europe is renewable, the world is renewable.

Franz Alt is a German journalist and author

Foreword

Climate change is transforming the world we live in and coping with the changes is unavoidable. While preventing climate change from worsening must be a key priority, making sure we're ready to deal with the consequences is equally as pressing.

The latest reports by the International Panel for Climate Change (IPCC) are unequivocal. Action to reduce greenhouse gas emissions must be taken now to prevent more climate-related damages in the future. The EU has already taken bold measures: it is bound to overachieve its commitments under the Kyoto protocol and now observes the lowest emissions on record. But with only 10 % of the global emissions, the EU cannot act alone. All countries—large, small, developed, and developing—have a role to play and agree on a global agreement on climate change in 2015.

This book is testimony of what an all-encompassing and complex task is before us. Adaptation strategies are needed at all levels of governance and administration. Most measures will take place at the local, regional, and national levels to address the immediate impacts on our communities and ecosystem. On the other hand, trans-boundary effects of climate change—like when entire river basins are affected—make it clear that efforts also need to be stepped up at the European and international levels. Each of these levels has a specific role to play, but we can only tackle climate change efficiently if this is done in a coordinated manner. Countries and regions need to learn from one another and set up examples of good practices to guide new adaptation measures around the world.

Here, the EU's comprehensive adaptation strategy is a good example of how working together with all EU countries is helping us to strengthen our climate change defenses. The EU adaptation strategy adopted in April 2013 makes it easier for Member States to work on joint initiatives. It also makes sure that adaptation is considered when taking decisions in other policy areas like agricultural planning or construction of energy systems.

But of course, the EU is not alone. The contributions in this book give a good overview of adaptation initiatives from around the world and document best practices in different economic sectors. With input from a range of international

scholars and environmental experts, the book sheds light on current discussions on adaptation and outlines challenges to further global action.

Forewarned is forearmed, an old expression says. This holds especially true for climate change. The earlier we take action to prevent the risks of climate change, and the sooner we prepare to face its impacts now, the more we can avoid the damages to our environment and our society.

Connie Hedegaard

Foreword

Humanity stands in an unthinkable moment in time, facing unequivocal climate change and an imminent threat of uncontrollable planetary heating. Policy responses pale in comparison to the magnitude of danger confronting global society. Though most leaders have set a goal of limiting Earth's temperature increase to 2 °C, actions taken thus far are grossly inadequate to meet that goal. Moreover, recent science indicates that even 2 °C heating may lead to disastrous consequences for human civilization, compromising the basic habitability of the planet.¹

Alarmingly, carbon emissions from human activity have caused the global atmospheric carbon dioxide (CO₂) concentration to rise over 400 parts per million (ppm) in 2014—a concentration that has not been exceeded in millions of years.² Without a swift and ambitious global transition away from fossil fuels, atmospheric CO₂ concentrations could pass a cataclysmic threshold, triggering dangerous feedback loops that create “self-amplifying” climate change to which there is no

¹ James Hansen *et al.* *Assessing “Dangerous Climate Change”: Required Reduction of Carbon Emissions to Protect Young People, Future Generations and Nature*, 8 PLOS ONE e81648 (2013) (presenting science indicating need to restore the atmosphere to a CO₂ concentration of 350 ppm to maintain a planet that is conducive to human habitation). *See also* Brief for Scientists Amicus Group as Amici Curiae Supporting Plaintiffs-Appellants at 16, *Alec L. v. McCarthy*, No. 13-5192 (D.C. Cir. Nov. 12, 2013) (“Effective action remains possible, but delay in undertaking sharp reductions in emissions will undermine any realistic chance of preserving a habitable climate system, which is needed by future generations no less than by prior generations.”), available at <http://ourchildrenstrust.org/sites/default/files/FiledScienceAmicus.pdf>; *see also* Joel Smith *et al.*, *Assessing Dangerous Climate Change Through an Update of the International Panel on Climate Change (IPCC) “Reasons for Concern,”* 106 Proceedings of the National Academy of Sciences 4133 (2008).

² For interpretation, *see* “NASA Scientists React to 400 ppm Carbon Milestone,” NASA, GLOBAL CLIMATE CHANGE, <http://climate.nasa.gov/400ppmquotes/>; Mark Fischetti, “2-Degree Global Warming Limit is Called a ‘Prescription for Disaster,’” SCIENTIFIC AMERICAN BLOG (Dec. 6, 2011), <http://blogs.scientificamerican.com/observations/2011/12/06/two-degree-global-warming-limit-is-called-a-prescription-for-disaster/>.

practical prospect of adaptation.³ The future well-being of the world's youth and their descendants hinges on present society's willingness to redefine and reconstruct the current disaster-track socioeconomic structure.

While slashing carbon emissions stays crucial, the concomitant challenge of adaptation becomes imperative in response to the climate chaos already under way. Due to the carbon pollution remaining in the atmosphere from prior emissions, there exists heating "in the pipeline" that cannot be called back. As economist Thomas Friedman states, a climate approach must both "manage what is unavoidable and avoid what is unmanageable."⁴ Managing the unavoidable (the climate change already occurring) is known as *adaptation*, while avoiding what is unmanageable (lowering carbon emissions to stave off global catastrophe) is known as *mitigation*. This volume focuses on the adaptation challenge by providing a pragmatic and analytical approach to managing impacts from global warming.

The degree of change faced by humanity may be nearly unfathomable to decision makers operating in a context of industrialized society that has enjoyed relatively stable climate conditions. The average global temperature in 2012 was only 0.85 °C warmer than what it was in 1880.⁵ To a layperson, this may sound negligible. However, five times as many natural disasters—including floods, hurricanes, droughts, and wildfires—occurred during 2001–2010 as compared with 1971–1980.⁶ Rising sea levels, extreme water scarcity, ferocious storms, and plummeting crop yields are already destroying human communities and causing deaths across the world. While different regions face different forms of upheaval, one thing is certain: there is no safe haven on the planet safe from global climate change. Projections indicate that by 2050, between 50 million and 350 million people could be forced to migrate due to the impact of global warming.⁷ Climate change will literally redraw the geopolitical boundaries that presently exist.

The adaptation challenge calls forth the basic duty of government to provide for the safety and welfare of the people. Officials in countries throughout the world must rise to these unprecedented circumstances. Leaders today occupy a crucial moment in history, holding unparalleled responsibility for the welfare of both

³ Durwood Zaelke, *As Climate Impacts Accelerate, Speed of Mitigation Becomes Key*, HUFFINGTON POST (July 15, 2014), http://www.huffingtonpost.com/durwood-zaelke/as-climate-impacts-accelerate_b_5588113.html.

⁴ Thomas L. Friedman, *The Scary Hidden Stressor*, THE NEW YORK TIMES (Mar. 2, 2013), http://www.nytimes.com/2013/03/03/opinion/sunday/friedman-the-scary-hidden-stressor.html?_r=0.

⁵ International Panel on Climate Change, 2013: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S. K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

⁶ World Meteorological Organization, *Atlas of Mortality and Economic Losses from Weather, Climate and Water Extremes (1970–2012)*, WMO—No. 1123 (2014).

⁷ United Nations, General Assembly, *Climate change and Its Possible Security Implications: Report of the Secretary-General*, A/64/350 (11 September 2009).

present and future generations of citizens. Today's crisis requires such leaders to act with vision and courage in face of uncertainty and turbulence. The impacts of climate change once considered distant possibilities are happening now, several generations earlier than indicated by even the most pessimistic predictions of the past. Leaders of today's world must learn to be proactive, rather than reactive. Entire coastlines sit vulnerable to rising seas, for example, a phenomenon that will destroy homes, flood entire cities, and unleash massive toxins from existing port facilities and nuclear plants situated near the ocean. A systematic relocation and preemptive cleanup will save lives, communities, and economies. But the challenge is immense, and society must act swiftly in the waning window of climate stability to accomplish such massive restructuring. The task ahead is to imagine the unimaginable and act in bold and effective ways based on the best available science and analysis—untainted by vested political and economic interests that have strong profit interests in assuring no change at all.

Ultimately, leaders must pursue adaptation and mitigation urgently as one integral goal. With smart planning, a community can fortify its ability to adapt to climate change while also accomplishing measurable carbon emission reduction. Rather than being mutually exclusive, the adaptation and mitigation goals can be—and in every case should be—jointly reinforcing and synergistic. This great societal transition should take shape around the basic aim of building local resilience and self-sufficiency by creating fossil-fuel free economies. This effort will entail unraveling many of the economic systems that perpetuate dependency on distant global markets and multinational corporations. Such an effort will require re-localizing food systems, creating local manufacturing systems, and designing transportation options independent of fossil fuels. Action on these levels should achieve significant co-benefits, by infusing local economies with investments and creating more political autonomy for communities. But the importance of lifestyle choices cannot be underestimated. If the world's youth are to inherit a habitable planet, citizens of developed nations must decide to reject high-carbon lifestyles that have become intolerably destructive, and citizens of developing nations must form a new vision that does not simply model the excesses of the industrialized world. In all cases, this re-envisioning of how we live and how we work requires willpower and imagination, but perhaps most of all the fortitude to challenge the entrenched assumptions governing our current decision-making processes.

This book provides a platform for building a concrete vision of local and global adaptation. It boldly confronts the imminent change facing humanity, yet its reasoned and practical approach allows readers to maintain the optimism and determination necessary to work towards a future with a habitable climate. It is designed for a broad range of readers, including educators, journalists, scientists, citizens, business entrepreneurs, religious leaders, and government officials. The challenge ahead calls forth people from all sectors of society to take initiative and innovate change in their own distinct realm of society. True pioneers in this pivotal age will create new systems and economies that improve the condition of humanity. But we must all act with extreme urgency. There is not a moment to lose.

Mary Christina Wood author of *Nature's Trust: Environmental Law for a New Ecological Age* Cambridge University Press, 2013 is the Philip H. Knight Professor of Law at the University of Oregon School of Law and serves as Faculty Director of the school's nationally ranked Environmental and Natural Resources Law (ENR) Program. She expresses gratitude for the contribution of Rance Shaw, Bowerman Fellow for the ENR Program's Conservation Trust Project.

Eugene, OR

Mary Christina Wood

Preface

Climate change is considered a fact; it is no longer an illusion and not seriously disputed. Its effects are global and can be experienced in different ways and in different intensities. Human activities have led to a significant increase in the concentrations of greenhouse gases in the atmosphere which enhances the natural greenhouse effect and leads to an additional warming of the average temperature of the earth's surface and the atmosphere. It is also a fact that the majority of greenhouse gases emitted worldwide in the past and in the present come from developed countries and that the per capita emissions are still relatively low in developing countries.

But the social needs for development will have to be satisfied. As a consequence the proportion of greenhouse gases emitted from developing countries will rise worldwide. Therefore, climate change will increase and the impact on natural ecosystems and on people will intensify. So it is not surprising that the upcoming changes in the climate of the earth and its adverse effects are met with concern by all humanity.

As varied as the causes and effects of climate change, so varied are the proposed solutions and approaches to deal with the problem and to do something against it. Taking into account the global character of climate change, a comprehensive global cooperation is called for that leads to an effective and appropriate international action—in accordance with the respective responsibilities, common but at the same time differing depending on the capabilities and the social and economic situation of the respective actors.

The 19 contributions to this book are presenting some ideas, approaches, and tools about the adaptation to climate change. In addition to (existing) legal instruments, these contributions also focus on the implementation of economic instruments and planning tools as well as their (further) development. Here, Wätzold shares with us the economic perspective on climate change adaptation while Afroz and Naser give an overview of global adaptation politics. Gawor portrays the advantages of the Life Cycle Assessment in climate change mitigation. Andrew Long discusses the possibilities of REDD+; Zschiegner and Wanki introduce the German Renewable Energy Source Act (EEG), whereas Burleson depicts the opportunities of innovation in climate change law.

Apart from the strategy to counteract climate change by avoiding emissions, the general approach to adapt to climate change is pursued as well. In this context, Camacho writes on the learning infrastructure in the United States' federal system while Send, Riedel, and Hansch identify the role of crowdsourcing in climate change politics.

The responsibility of dealing with the effects of climate change is identified as a central theme by Piroch (liability for damage caused by climate change), Krause and Egute (risk management and climate change), as well as Mißler-Behr and Mehicic (strategy development and risk management in emission rights trading).

A number of articles deal with country-specific problems related to climate change and the respective possible adaptation strategies. The countries in focus are the Netherlands (Gupta, Klostermann, Bergsma, and Jong), Nigeria (Ogbonna), Syria (Ibrahim), and—treated in three different articles—Cameroon (Somah and Schmidt, Lambi and Kometa, Egute and Albrecht). On a more global level, Clouting, Douven, Ostrovskaya, Schwartz, and Pataki analyze the institutional capacity for wetland management. Spyra and Albrecht discuss concepts for the future—beside adaptation.

As the climate change conference COP19 in Warsaw lately pointed out, adaptation is becoming more important and the need for specific adaptation strategies has to become more urgent.

The key points of the climate conference in Warsaw deal with the global climate agreement: There is a specific timetable in order to develop the global climate treaty until 2015 in Paris. The conference has also created a solid framework in order to protect forests. Poorer countries should earn money when they protect their jungle and thus contribute to climate protection. Furthermore, the conference implemented the “Warsaw mechanism.” Thus, developed countries should help developing countries in climate change related loss and damages.

The industrialized countries had already stated an increase in climate finance in poorer countries up to 100 billion dollars (74 billion euros) annually in 2020. Although poorer countries had asked for it, specific intermediate steps have not been made in Warsaw. A major source of this increase is the Green Climate Fund.

Based on the already existing and financial difficulties, the adaptation fund for developing countries to the consequences of climate change will get as early as 2013, a cash injection of around 100 million dollars (74 million euros) by a few industrialized countries in order to be able to stay operational. This is primarily a signal to developing countries so that they will not lose confidence in the negotiating process.

The editors would like to give their hearty thanks to the 34 authors from ten different countries around the world for their contributions and their cooperation.

Cottbus, Germany

Eike Albrecht
Michael Schmidt
Magdalena Mißler-Behr
Simon Spyra

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