

Introduction

The United Nations declared 2010 the International Year of Biodiversity and the world was invited to take action to safeguard the variety of life on Earth and to protect its biological diversity for this and future generations. The biological diversity we see today is the fruit of billions of years of evolution, shaped by natural processes and, increasingly, by the influence of humans. It forms the web of life of which humans are an integral part and upon which we fully depend.

The 1992 Convention on Biological Diversity reminds us that natural resources are not infinite and that ecosystems, species and genes must be used in a way and at a rate that does not lead to the long-term decline of biological diversity. However, this biodiversity is still seriously in danger and threatened by humans and human induced processes, such as the effects of climate change. Since the IUCNAEL Colloquium, parties to the Convention on Biological Diversity met in Nagoya in October 2010 to further agree on measures and policy instruments to be undertaken to halt the increasing loss of worldwide biodiversity and to implement the three main goals of the Convention: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits from the use of genetic resources. The Nagoya Conference can be seen as progress towards one of the Convention's main objectives, by adopting the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization. However, the Protocol is just a small step forwards and ratification is slow (at the end of 2012, 11 states had ratified or acceded, while 50 ratifications are required for its entry into force). In the meantime 2011–2020 has been declared the United Nations decade on biodiversity, while the Global Biodiversity Outlook 3 (2010) concluded that the 2002 target to achieve a significant reduction of the current rate of biodiversity loss as a contribution to poverty alleviation and to the benefit of all life on Earth by 2010 has not been met: all three components of biodiversity – genes, species and ecosystems – are in continuing decline.

Two months after the IUCNAEL Colloquium, from 29 November to 10 December 2010, the parties to the Climate Change Convention and to the Kyoto Protocol met in Cancun, Mexico. The agenda of decisions to be

taken was immense, while the views of the different players on new additional measures to reduce emissions of greenhouse gases were still very divergent. One of the major challenges was of a legal nature: how to ensure that the parties will come to a timely and legally binding successor agreement for the next period of commitments under the Kyoto Protocol. As foreseen in the Protocol, we are in need of a new binding agreement starting in 2013, since the current greenhouse gas emission reduction commitments came to an end in December 2012. The fact that it took more than seven years for the Kyoto Protocol to enter into force and that it already took years of negotiations to propose a text for a binding agreement to further reduce greenhouse gas emissions is a serious concern for the world. At the latest Climate Change Conference in Doha (2012), parties to the Kyoto Protocol could only agree to extend the Protocol commitments and proposed an amendment to the Kyoto Protocol with new emissions reduction commitments for a number of developed countries to be achieved by 2020, while some parties announced they would not adopt new reduction commitments and Canada stepped out of the Kyoto Protocol. The latter is very rare in international environmental law.

While the linkages between the protection of biological diversity and climate change seem obvious, the solutions for dealing with those linkages in an integrated manner are scarce. Climate change has an effect on mountain ecosystems, freshwater availability, ocean temperature and salinity, agriculture and forestry. Climate change contributes to further desertification, mainly in Africa, while other countries witness more rains, floods and storms. This not only affects human beings but also the fragile biological diversity. Deforestation, on the other hand, affects biological diversity in forests and has significant effects on our climate system as well. According to the Millennium Ecosystem Assessment, climate change is to become one of the most significant drivers of biodiversity loss by the end of the century, a conclusion supported by the Fourth Climate Change Assessment Report (2007) of the Intergovernmental Panel on Climate Change. In this Report it is projected that a rising number of species faces extinction if global temperature rises 2° C over pre-industrial levels. About 20 to 30 per cent of species are at increasingly high risk of extinction by a global mean annual temperature change of 1° C to 2° C, while coral reefs are already victims of increased bleaching. Because ecosystems play a key role in the global carbon cycle and provide a wide range of ecosystem services that are essential for human well-being, conserving natural terrestrial, freshwater and marine ecosystems and restoring degraded ecosystems should be an essential goal for both the Convention on Biological Diversity and the United

Nations Framework Convention on Climate Change. However, focus on biodiversity has not been a priority of the parties to the Climate Change Convention, nor for the parties to the Kyoto Protocol. In contrast, the parties to the Convention on Biological Diversity have regularly stressed the link between climate change and biodiversity (for example Decision X/33 on Biodiversity and climate change (2010)).

This book investigates that link. It is divided into four parts, with chapters focusing on specific issues linking biodiversity and climate change.

In the first part on 'National and local experiences', three chapters deal with climate change, biodiversity and human rights in Africa, while two others have the Philippines and the European Union as case studies. In the first chapter on 'Bureaucratic rhetoric of climate change in Nigeria: international aspiration versus local realities', Rhuks Ako and Olubayo Oluduro explain the difficulties of implementing national legislation to reduce and prevent gas flaring from Nigeria's oil exploitation industry. Gas flaring is seriously damaging the rich biodiversity in the region of the Niger Delta, the world's largest wetland and the third largest mangrove in the world. Gas flaring, contributing to acid rains, not only affects biodiversity but has serious human health implications too, both directly as well as indirectly via the food chain. The authors explain how environmental law standards on gas flaring were postponed or cancelled, and finally flaring was initially taxed instead. Although gas could be an energy source for households, industry and export, the transportation of gas is an expensive undertaking that multinational oil companies active in Nigeria are hesitating to finance, regardless of financial incentives adopted by the government. Since the government is acting slowly to support gas export due to lack of finance and technology, the only legal means available to local communities to address the flaring is to bring cases before courts based on violations of certain human rights enshrined in Nigerian constitutional law and the African Charter on Human and Peoples' Rights. In the meantime Nigeria is not performing well in implementing the Climate Change Convention and the Convention on Biological Diversity at the local level.

In the second chapter, Gloria Estenzo Ramos reports on the latest developments in 'Combating climate change and biodiversity loss in a "hot spot" mega-diversity country', namely the Philippines. Although the Philippines has sufficient legislation to deal with climate change and biodiversity protection, as well as a progressive constitution addressing substantive (right to life, right to health etc.) and procedural (public participation, access to justice etc.) human rights, consistent implementation and enforcement of this legislation by local and national authorities

has been problematic due to patronage politics. The emergence of the Supreme Court as an ecological champion in some landmark cases in the 1990s and ground-breaking initiatives, such as creating 170 specialized environmental courts in 2008 and adopting procedural rules for environmental cases in 2010, has inspired citizen movements and energized stakeholders to push for the restoration of the rule of environmental law. The author stresses the importance of this movement, in particular an increased stakeholder participation and the use of law as a tool for ecological transformation. In Chapter 3, Nathalie Hervé-Fournereau and Alexandra Langlais critically assess whether ‘the concept of ecosystem services promotes synergies between European strategies for climate change and biodiversity’. Departing from EU policies and legislation on climate change and biological diversity and the 2004 EU Environmental Liability Directive, the authors pay attention to the influence (or rather diffusion) and the meaning of the concept of ecosystem services in recent major environmental law and policy developments in the EU (e.g. the 2008 Marine Strategy Framework Directive; 2009 Geological Storage of Carbon Directive; 2009 Energy and Climate Change Directives; 2010 Green Paper on Forest Protection). The authors provide some insights on the use of the same instruments implementing ecosystems services in the context of climate change and biodiversity, such as market based instruments, and point to several risks of linking carbon and biodiversity markets, if the latter is desirable.

In Chapter 4 on ‘Impacts of climate change, biodiversity loss and population on sustainable development in Ethiopia’, Mekete Bekele Tekle explains how climate change effects, such as desertification, deforestation and biodiversity loss, resulted in the death of millions of Ethiopians in the past. The author provides an overview of laws and policies the government has recently adopted to tackle these major environmental challenges that are considered a major cause of poverty and famine in Ethiopia. Besides improved protection of natural resources by reforestation and more sustainable use of land, measures have been taken to reduce the fertility rate and plans have been adopted for poverty reduction and sustainable development. In Chapter 5 on ‘Climate change, human rights and the Darfur crisis’, Linda Mbone Ndongo and Frank Maes argue that climate change effects are one of the causes of the crisis in Darfur (Sudan), resulting in migration to more fertile land and strong competition to access land, water and other natural resources such as wood, and turning into violence and human rights violations. They stress the relationship between environmental degradation and human rights abuses, while arguing that in Darfur a human rights approach is necessary to influence policy responses to climate change. Environmental

degradation not only affects nature, but in the Darfur region it seriously impacts human rights, such as the right to life, shelter and children's rights. Instead of a top-down approach, as found in numerous peace agreements that have been concluded but not implemented, they propose a bottom-up approach that takes into account the views of the people affected and starts to revisit the traditional land tenure system that is partly responsible for the violence.

The second part of this book on 'International and transboundary approaches' contains five contributions dealing with a thematic or transnational approach linking biodiversity and climate change. In Chapter 6 ('The clustering of multilateral environmental agreements: can the clustering of the chemicals-related conventions be applied to the biodiversity and climate change conventions?'), Nils Goeteyn and Frank Maes assess the potential of clustering the biodiversity and the climate change conventions based on recent political clustering of chemicals-related conventions (Basel, Rotterdam and Stockholm Conventions). It seems almost an impossible political task to cluster climate change and biodiversity agreements since the biological diversity cluster itself can entail more than 100 agreements, while linkages between both Rio Conventions at first sight seem obvious. A major political problem will be the legal autonomy of both conventions and the role of their respective Conference of the Parties (COP) with different major players. Instead, inter-agency cooperation could be stimulated at the level of secretariats. In Chapter 7 ('Retreading negotiations on equity in environmental governance: case studies contrasting the evolution of ABS and REDD+'), Claudia Ituarte-Lima and Suneetha M. Subramanian discuss equity in environmental governance by means of case studies related to ABS (Access and Benefit Sharing) and REDD+ (Reducing Emissions from Deforestation and Forest Degradation). Both authors take the negotiations leading to the adoption of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization, and, in particular, the debate on 'equity', as a realistic approach to assessing the rights and benefits of various stakeholders in future REDD+ agreements. To illustrate their arguments, two case studies have been selected: the ABS discussion and the holders of rights in Peruvian legislation, such as indigenous people in the Peruvian Amazon, and the REDD+ initiatives in Indonesia. The authors depart from the assumption that the principle of reciprocity in REDD+ negotiations should not be taken for granted. Equitable environment-related negotiations between, for example, forest-dependent people and other ABS actors need to be actively fostered by effective mechanisms to overcome power imbalances between actors dealing with ABS or REDD+, to raise awareness and

make use of participatory processes to achieve a free and prior informed consent. Svitlana Kravchenko explores synergies between climate change, biodiversity and human rights in Chapter 8. The author provides some examples of climate change effects on biodiversity and human rights, and a number of initial attempts at synergies in measures dealing with climate change and biodiversity at the international, national (US) and regional (EU) levels. Although in the US, citizen groups have used biodiversity laws, such as the Endangered Species Act, to combat climate change effects, the author remains sceptical that synergies between climate change measures and biodiversity protection will increasingly develop. There is more optimism about connections between climate change law and human rights law, since climate change has an impact on fundamental human rights (Human Rights Council Resolution 7/23 of 2008), such as the right to life, the rights to health, culture, and self-determination and indigenous peoples' rights. Human rights institutions can be used to protect human rights violated by climate change effects. Examples are given of violations of the right to life, to privacy and family life due to environmental degradation according to the European Court of Human Rights. Furthermore, procedural rights (such as rights of access to information and public participation) have a chance of gradually finding their way into the decision-making processes of institutional bodies under the Climate Change Convention. In Chapter 9 on 'Reducing emissions in the forest sector under the United Nations Framework Convention on Climate Change: a new opportunity for biodiversity conservation?', Annalisa Savaresi analyses the REDD debate within the Climate Change Convention and opportunities to coordinate efforts with the Convention on Biological Diversity, by identifying potential benefits and challenges in combining forest carbon sequestration with biodiversity conservation. She comes to the conclusion that REDD is mainly about climate change mitigation and its potential for biodiversity conservation will not follow automatically, but will depend on better coordination, funding, careful site selection, and on the development of mutually supportive standards which are adequately implemented and monitored. In Chapter 10, Michelle Lim focuses on 'Transboundary conservation of mountain biodiversity in a climate change impacted world: governance perspectives from Central Asia and the Island of Borneo'. Based on multidisciplinary desktop research, a set of 11+1 criteria for effective transboundary conservation of terrestrial ecosystems is developed, after being tested in two case studies: the Pamir-Lai Land Management project (Tajikistan–Kirgyzia) and the Heart of Borneo project (Malaysia, Indonesia and Brunei), for which interviews and site visits took place. The 11+1 criteria for effective transboundary

conservation of mountain biodiversity provide a check-list of key considerations for evaluating conservation programmes. Although not all criteria need to be fulfilled, the fewer criteria that are fulfilled the more likely it is that conservation initiatives will fail.

The third part of this book focuses on climate change and biodiversity in the field of land-use planning and agriculture. In Chapter 11, Katrien Debeuckelaere and Gretta Goldenmann provide insight on lessons learned from land-use planning in relation to the Scheldt River as an example of an adaptation measure for climate change effects, creating new opportunities for improved biodiversity protection in wetlands. Recognizing ecosystem services provided by flood plains and their potential role in mitigating flood damage, the deepening of the Western Scheldt as a shipping route to the port of Antwerp has been compensated for by an expansion of an existing wetland. This highlights the role of land-use planning in flood safety management and biodiversity conservation, creating a win-win situation for both. In Chapter 12 on 'Climate change and biodiversity: the vulnerability of the Amazon rainforest in the face of the increasing ethanol demand', Heline Sivini Ferreira, Maria Leonor Paes Cavalcanti Ferreira and Patryck de Araújo Ayala analyse the ecological risks of ethanol production in the Amazon Rainforest. The Amazon Rainforest is part of the national patrimony of Brazil and protected by the Federal Constitution. Any activity to be developed in this biome needs to incorporate measures to ensure its preservation for present and future generations. The production of ethanol from sugarcane in Brazil is increasing due to global demand for biofuels in order to mitigate the effects of global warming. However, ethanol production that is linked to monoculture and sugarcane straw burning has potentially damaging effects on biodiversity. The authors give a good overview and analysis of legal instruments designed to protect the Amazonian ecosystem, with special attention to the ecological zoning of sugarcane and the prohibition on the use of fire in forests. Although enforcement is a weak point in environmental protection, the authors prove that judicial decisions demonstrate the growing environmental awareness of the Brazilian judiciary in relation to climate change and sugarcane burning issues, stressing the relation between the standstill principle and the duty to preserve the biological diversity of the Amazon biome. In Chapter 13, Eckard Reh binder critically analyses the contribution of the EU Common Agricultural Policy to the protection of biodiversity and the global climate in Europe. Administrative environmental regulations for agricultural practices in Europe are still weak in achieving major improvements to protect biodiversity and climate. However, subsidization of farmers under the Common Agricultural Policy (CAP) can have a strong leverage

effect in greening European agriculture if these payments are subjected to 'cross compliance' with EU environmental directives. More recent CAP reforms have led to its ecological enrichment, in particular the requirement of maintaining agricultural land in good agricultural and ecological condition (first pillar). The financing of agro-environmental measures with the restriction of additionality can also contribute to targeted protection of biodiversity and the global climate (second pillar). However, the practical results still seem to fall short of aspirations. So far, the programmes have focused too much on intensification of agricultural land-use and only to a certain extent on the protection of biodiversity. Climate protection has been neglected and reforms of the CAP in this respect are called for.

The fourth part of this book contains two contributions, one on meeting ecological criteria for networks of marine protected areas through legislation and one on biosecurity. In Chapter 14 on 'Creating marine protected area networks in Pacific North America for biodiversity conservation: linking ecology to legislation', Vernon G. Thomas assesses how legislation fulfils ecological criteria that contribute, inter alia, to connectivity among marine protected areas. Departing from six ecological criteria for establishing a network of marine protected areas along the eastern Pacific region of North America, the study assesses how US and Canadian legislation, at both the federal and state/provincial levels, meets or does not meet defined ecological criteria with the aim of creating a Pacific marine network of 28 marine protected areas, mainly under national jurisdiction. Although there are variations in fulfilling these criteria by the legislation under study, the criterion of 'connectivity' is often absent in law. The author proposes updating the Law of the Sea Convention and the Convention on Biological Diversity or creating new international legal provisions for promoting connectivity among protected areas, as a contribution to biodiversity conservation and for offsetting climate change effects. In general, the absence of globally agreed criteria for the management of such areas is a major hindrance to their establishment. In Chapter 15 on 'Preventing and mitigating the impacts of climate change and biodiversity loss through biosecurity', Opi Outhwaite discusses the concept of 'biosecurity' as an approach to combating the spread and prevalence of diseases, to ensuring food safety and security, and to achieving sustainable livelihoods. Besides outlining the legal frameworks for implementing biosecurity, the author identifies the obstacles for adopting a biosecurity approach and proposes possible developments to facilitate more effective regulation at national and international levels.

The book does not provide the final answer, but is a contribution to the debate on the linkages between biodiversity and climate change. What the book illustrates is that the law adapts slowly to change. New and innovative approaches need to be adopted internationally, regionally and nationally to ensure that biodiversity is not depleted, that climate change is not expedited and that the less fortunate do not suffer.

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