1. Energy governance: a key challenge in the era of globalization

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Societies need to build material infrastructures and feed their reproduction through energy production and consumption. A fundamental element of this social metabolism, conceived as the complex interaction between society and nature where human beings obtain resources and produce waste, is the energy cycle. It is now informally recognized that we are possibly living in a new geological epoch called the Anthropocene where social metabolism is increasing with the expansion of our capitalist world-system. Within this trajectory of exponentially growing energy consumption, environmental impacts are simultaneously increasing and the Earth and its systems are being pushed towards critical tipping points which might eventually mean an end of life as we know it. This accelerated growth and its concomitant anthropogenic impacts is arguably the greatest challenge facing contemporary societies today.

To respect the biological thresholds of the planet, it is imperative that our social metabolism is adapted to a fragile and closed Earth system which consists of humans, non-human but living entities, and non-living entities. The aggressive and massive energy consumption by humans during the last two centuries (a distinct period since the Industrial Revolution) has obvious and alarming consequences for the functioning of the biosphere. Since cheap and easily accessible sources of energy, such as coal and oil, were available during this period, social metabolism has increased as a result with no chances of replenishing such non-renewable energy resources. The consequences are immense resource depletion, significant environmental pollution and associated socio-economic crises all over the world, suggesting that a new approach in energy governance is urgently required. While technological innovation will play a decidedly important role, law and governance as socio-institutional regulatory interventions will also have their part in creating
more sustainable futures for societies. Therefore, this fundamental transition to sustainable and just forms of energy production has deep implications for law and lawyers.

Recognizing the centrality of and urgent need for innovative modes of energy governance in contemporary societies, the International Union for Conservation of Nature’s Academy of Environmental Law (IUCNAEL) organized its twelfth annual colloquium under the title ‘Energy for a Fair Society on a Safe Planet’, which sought to cover a wide range of energy-related topics, ranging from social energy needs to environmental justice and safety issues. Held at the Universitat Rovira i Virgili, in the Catalan town of Tarragona, the colloquium benefited from several original contributions prepared by leading scholars and specialists from all over the world. Debates around the issue of energy were critical, at times deeply unsettling, but with little exception, future-oriented and constructive. This book is a direct scholarly product of this high level meeting of global experts. It presents a selection of representative, innovative, high-quality papers that contain cutting edge research on the future of energy governance and the role of law within the energy governance paradigm.

Confronted as we are by climate change and resource depletion, thinking about energy transitions and environmental justice has become an important concern that reaches into the deepest realms of the global ecological and existential crisis through which humankind is living. In this context, this book attempts to offer the reader some novel insights into contemporary debates on energy governance from a juridical perspective. The different authors in their respective chapters show a deep commitment to and acquaintance with the social relevance of knowledge, contributing with their scholarship to the ongoing discussions revolving around energy governance. The book is organized into three related and sequentially organized parts: Foundations, Experiences and Governance Gaps. The first Part offers conceptual and theoretical contributions which help lay the groundwork in understanding the challenges and elaborating new approaches. The second Part showcases concrete innovative experiences in energy governance from around the globe. The third Part focuses on critical approaches to current social metabolism relating to energy.

I FOUNDATIONS

The first Part begins with a thought-provoking contribution by Klaus Bosselmann (University of Auckland). Being faithful to his radical ecocentric approach aiming to envisage deep changes in social patterns,
Professor Bosselmann commences from the profound implications of the **Energiewende** (energy transition) to challenge lawyers’ attitudes in the process of social change. This chapter defines a space for debate, while at the same time addressing an alternative approach to energy governance. From this point of departure, the author argues that the social role of experts demands from them a deep social involvement where they act as agents of social change. He reminds us that traditionally lawyers have been merely reactive, being entrenched as they were (and continue to be) in formalism and specialization. Bosselmann criticizes this reductionism, pleading for a deeper engagement in ethical and political issues. In this context, the author offers a consequential reflection focused on climate governance that is based on the consideration of the atmosphere as a concern of the global commons.

James R. May and Erin Daly (Widener University, Delaware Law School) deliver an insightful chapter addressing the constitutional foundations of energy governance, especially in the area of shale gas. They point out that hydraulic fracturing (‘fracking’) demands new legal responses, which cannot be limited to a restricted sectorial approach, but should be opened to a more comprehensive constitutional approach. May and Daly consider that environmental constitutionalism is particularly relevant in order to enhance the potential for sustainability in the domain of shale gas. The ten good practices defined in the text can be seen as means in this constitutional framing of fracking. Finally, attempting to practically illustrate their approach, the authors analyze a landmark American court decision (*Robinson Township et al. v. Commonwealth of Pennsylvania*), which shows the relevance of constitutional considerations in relation to fracking and the role that the constitutional perspective could play in such matters.

Constitutionalism is not limited today to nation-states, but is growing within a complex network of constitutional ‘sources’ ranging from international law to intra-state and transnational developments. Human rights are often seen as the core of the (international) constitutional paradigm. Manuel Peter Samonte Solis (Adelaide Law School), offers a comprehensive contribution addressing universal access to energy services framed in terms of a critical rights-based approach. Solis argues that the lack of universal access to modern energy services continues to drive a widening gap between the ‘haves’ and ‘have-nots’, resulting in the marginalization of a significant segment of society – chiefly the poor. With this marginalization, the human rights dimension of poverty due to the lack of access to modern energy services comes to the fore, as poverty results in disempowerment and gives rise to equity considerations. Intuitively, these are matters that typically fall within the purview of energy governance.
of human rights conversations; a conversation that he critically pursues in his chapter. In his chapter, Solis examines in broad terms the merits and limits of the language of needs compared to the language of rights in the context of the challenge of enhancing universal access to modern energy services. While doing so, the chapter also investigates the plausibility of integrating needs-talk into rights-talk.

Environmental justice is an important conceptual, theoretical and practical notion, developed during the last three decades since the seminal grassroots activism in Warren County, North Carolina, in 1982. Elodie Le Gal (Australian Centre for Agriculture and Law, University of New England), focuses on environmental justice in the domain of energy and addresses the key question of risk analysis. The author underlines that energy technology innovations carry their own risks of social failures, threatening effective advancement in the construction of an equitable social metabolism. The parochial debate in this domain is often centred on securing energy supply and combating climate change, but Le Gal shifts the focus towards environmental justice, exploring how this approach could potentially provide a new framing for the discussion and new foundations for regulation in this domain.

A proper energy transition from non-renewable to renewable sources should in theory move society to a decentralized, more equitable and less aggressive model of energy governance, based on a rapprochement between sources and consumption focuses. This is the topic addressed by Jessica Wentz (Columbia Law School) and Chiara Pappalardo (American University Washington College of Law) in their chapter on microgrids. By initially showing the many shortcomings of energy supplies at the global level, the authors consider that community-based renewable energy microgrids are potentially a more feasible way to ensure more sustainable energy production, supply and access, especially in developing countries such as India and in Southern Africa. By focusing on several useful case studies, the authors illustrate the many benefits of renewable energy microgrids. They specifically focus on community-based projects, and provide recommendations on how policies and regulations could feasibly be (re)structured to most effectively harness those benefits. They address two critical issues for ‘scaling up’ the deployment of these systems: namely, removing restrictions on the collection of electricity tariffs, and designing a national programme that will attract external investment in these projects.

Finally, Richard L. Ottinger and John Bowie (Pace Law School) provide an analysis of financing for renewable energy projects, which is a key issue for energy transition. Their chapter is premised on the assumption that renewable energy is central to any future-oriented
development agenda. The authors focus on the issue of securing financing for renewable energy projects, noting that the renewable energy market is growing mainly as a result of innovative financing techniques around the world. The authors specifically focus on recent innovative methods for financing the high initial capital costs of many renewable energy resources, with case studies of their application.

II EXPERIENCES

Part II of the book is devoted to analyzing different experiences in innovative energy governance, providing a birds-eye view of innovative and cutting edge approaches in this domain. The first chapter of this section is devoted to the relevance of the emergent idea of the smart city and its connection with energy law and governance. Lye Lin-Heng and Melissa Low (National University of Singapore) propose a comprehensive and innovative vision of smart cities and energy using the city of Singapore as a case study. They analyze a wide range of measures that are meant to pave the way to change the energy consumption patterns of the city-state. The authors propose legal solutions that are based on a clean energy model and they identify and discuss financial instruments that could be used in a smart city’s energy transition.

Trevor Daya-Winterbottom (University of Waikato) provides a detailed account of the New Zealand courts’ reaction to the many new, diverse and often complex legal developments and socio-juridical concerns in the domain of energy law and governance. The chapter is richly documented and analyzes a series of decisions of New Zealand courts regarding use of renewable energy, as well as the social implications of fossil fuel and climate change and their relationship. The author indicates that there is considerable existing investment in renewable energy in New Zealand and there are significant prospects for future renewable energy projects. Nevertheless, the slow evolution of government policy regarding climate change and renewable energy has left a vacuum that has resulted in significant judicial involvement in determining policy questions regarding renewable energy and climate change governance.

By using France and Germany as case studies, the chapter of Anaïs Guerry (Sciences Po Law School, Paris) focuses on the extent to which law and governance is instrumental in facilitating the much needed energy transition from non-renewable to renewable energy resources. The chapter commences by establishing the meaning of ‘energy transition’ (Energiewende), and by distinguishing between governmental strategies addressed to modify dynamics of energy production and consumption
that should lead to a deeper cultural change in society in this domain. The author then shows how legal instruments are used in France and Germany to achieve an energy transition in two decisive fields: distribution networks and cooperative companies that produce energy. Guerry underlines the importance of social commitment to reach success in this complex transition process, while emphasizing the roles of cities and the legal framework in this respect.

A particularly important topic in energy law and governance is the energy efficiency of buildings which are said to be responsible for almost half of the total greenhouse gas emissions in urban areas. Teresa Parejo-Navajas (Carlos III University) addresses this issue in her chapter by comparing the measures taken in Europe and in the United States to achieve more energy-efficient buildings. The author underlines the importance of taking measures with respect to existing buildings, which are many more than the new built ones. Parejo-Navajas finds that the European Union has taken the lead in this particular field, being a potential global inspiration for new advancements in energy-efficiency measures for buildings. The chapter considers that there is sufficient legal room to address energy efficiency in existing buildings, while highlighting the different strategies that can be used to do so.

Although energy consumption is a source of waste, Melissa Scanlan’s (Vermont Law School) chapter demonstrates that energy-related waste can also be harnessed as a source of energy. More specifically, the author underlines the carbon footprint of traditional urban wastewater treatment and investigates the potential of wastewater as a renewable source of energy. This innovative reconfiguration of energy consumption into potential energy production is illustrated through three case studies that showcase best practices in reducing carbon emissions in municipal wastewater treatment facilities and opportunities for wastewater treatment systems to become net energy exporters. Scanlan’s chapter also identifies several policy drivers that could facilitate a transition away from fossil fuels towards renewable energy from sewage.

### III GOVERNANCE GAPS

Energy governance, as a crucial aspect of social metabolism, is flawed because of the internal imbalances of social reproduction at the global level. There are significant differences between countries situated in the developing South and countries in the developed North. Such inequalities and socio-economically constructed hierarchies often lead to grave injustices. In order to address these injustices, sustainable energy law and
governance strategies must also have a very strong social justice dimension to them. The two final chapters of the books seek to vividly illustrate some of the many challenges apparent in global energy governance and the disproportionate impact and resultant injustices that often fall on countries and people in the global South as opposed to those situated in the global North.

The first of the chapters is devoted to a particularly serious case of environmental injustice that is related to exploitation of energy resources in a developing county by multinational companies, namely, that of the Niger Delta that has been devastated by the consequences of oil and gas extraction for decades. Eloamaka Carol Okonkwo (Strathclyde Centre for Environmental Law and Governance) addresses one of the gravest consequences of corporate greed in the Niger Delta, that is, environmentally displaced persons. By focusing on the dire negative impacts that oil exploration and extraction is having on local communities in the Delta, the author discusses the notion of environmentally displaced persons and contextualizes this discussion in terms of the realities that prevail in that particular geographical area. The chapter concludes that environmentally displaced persons in the Niger Delta are not adequately protected, neither under international law, nor under Nigerian law. It recommends interim actions within the human rights framework, followed by the enactment of a legally enforceable regulation that should ideally be built on internationally agreed principles.

The final chapter in this volume focuses on energy consumption in the agricultural sector, which is particularly relevant in the global South, where agriculture is often the main source of income and serves as the origin for much of the world’s food resources. In this chapter, Cristiane Derani (Federal University of Santa Catarina) points to the interlinked nature between global agriculture, transportation and energy consumption, showing that the current dynamics of food distribution are particularly intensive in terms of energy. The author argues that this global network of food production, distribution and consumption is inefficient with respect to energy use, and she argues for policies in the international arena oriented towards transforming these unsustainable patterns of social behaviour into sustainable ones.