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Normative guidance for energy governance : sustainable development and human rights

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Normative guidance for energy governance: Sustainable Development and Human Rights

Table of Contents

1. Introduction: gaps and challenges in energy governance	2
2. Two value-driven legal frameworks	6
2.1 Sustainable Development Law	6
2.2 Human Rights	14
3. Five energy governance challenges	17
3.1 Public participation in decision making.....	17
3.2 Intragenerational equity	21
3.3 Intergenerational justice	24
3.4 Integration.....	27
3.5 Reflexivity and adaptation	31
4. Conclusion	32

1. Introduction: gaps and challenges in energy governance

The production of energy and access to energy services is key to (economic) development and to the fulfilment of socio-economic human rights, both in developing countries and in the developed world. Yet the world is also facing extreme environmental challenges largely due to energy production and consumption.¹ Thus, well-constructed energy governance is crucial in resolving the environmental challenges we face in preserving adequate natural resources for future generations.

This article looks into energy governance taking into account two globally emerging macro trends: (1) a push for rapid increase in economic and living standards in a large part of the so called 'developing world' and (2) the excessive use of polluting energy sources. The former trend typically comes with an ever soaring demand for energy,² the latter with tantamount environmental degradation, among others climate change. On top, the energy industry is characterized by long and complex supply chains, involving a plethora of actors, is cost intensive and known for its strong path dependency.³ These factors pose significant challenges for every energy governance regime that seeks to guide the transition to a more just and environmental friendly energy system. Governance can be defined as "the totality of 'mechanisms' and 'instruments'⁴ available for influencing or steering towards social change in preordained directions"⁵. Energy governance can be defined as the totality of mechanisms and instruments, both formal and informal⁶, available for steering towards objectives formulated with regard to energy security and ecological sustainability as defined in the UN 2030 Agenda for Sustainable

¹ N. L. Panwar, S. C. Kaushik and Surendra Kothari, 'Role of renewable energy sources in environmental protection: A review' (2011) 15 *Renewable and Sustainable Energy Reviews* 1513

² Kamil Kaygusuz, 'Energy for sustainable development: A case of developing countries' (2012) 16 *Renewable and Sustainable Energy Reviews* 1116

³ Andreas Goldthau and Benjamin K Sovacool, 'The uniqueness of the energy security, justice, and governance problem' (2012) 41 *Energy Policy* 232 233

⁴ , 'OECD Book – Sustainable Development: Critical Issues' (2001) 12 *Environmental Management and Health* 529 132

⁵ William Lafferty, 'Introduction: form and function in governance for sustainable development' in William Lafferty (ed), *Governance for Sustainable Development, the Challenge of Adapting Form to Function* (Governance for Sustainable Development, the Challenge of Adapting Form to Function, Edward Elgar Publishing 2004) 5

⁶ "It encompasses public debate, political decision-making, policy formation and implementation, and complex interaction s among public authorities, private bodies and civil society" James Meadowcroft, 'Who is in charge here? Governance for sustainable development in a complex world*' (2007) 9 *Journal of Environmental Policy & Planning* 299

Development (SDGs)⁷, UNFCCC⁸ and the Lisbon Treaty (TFEU)⁹ as far as the European Union is concerned.

Five challenges are to be addressed in energy governance, in order to develop a more just and environmental friendly energy system:

- (1) A first challenge is the top-down bias¹⁰ and the lack of participation mechanisms in the decision making¹¹. Examples are the difficulty to involve the 'affected public' in decision-making on large scale energy projects such as the construction of biomass power stations, wind farms or an energy atoll infrastructure, and top down policy decisions such as the life extensions of nuclear power plants (that stir increasing social debate and protests).
- (2) Secondly, current energy governance is clearly incapable of mitigating the environmental pollution of the production, transport and consumption of energy. Lafferty describes this governance challenge as a policy integration problem or lack of 'environmental effectiveness'.¹² Environmental policy integration should happen on both the vertical level (within every sector throughout the supply chain - defining strategy and objectives, action plans, creating a forum for structured dialogue, budget and monitoring program) and the horizontal level (between sectors – overarching strategies, independent auditor, communications between sectors) throughout government but also across the whole energy sector. Exemplary for this challenge is the lack of clear climate change mitigation measures and the non-institutionalization and non-integration of the latter across different departments and government or semi-government bodies¹³.

⁷ UN General Assembly, 'Transforming our world: the 2030 Agenda for Sustainable Development' (2015) 1 UN Doc A/70/L

⁸ Preamble, UN FCCC, *United Nations Framework Convention on Climate Change*. 1992 (1992)

⁹ Article 194 of the consolidated treaty of the functioning of the EU.

¹⁰ Lafferty, 'Introduction: form and function in governance for sustainable development'

¹¹ James Meadowcroft, 'Participation and Sustainable Development' in William Lafferty (ed), *Governance for sustainable development, the challenge of adapting form to function* (Governance for sustainable development, the challenge of adapting form to function, Edward Elgar Publishing 2004) 166

¹² William M Lafferty, 'From environmental protection to sustainable development: the challenge of decoupling through sectoral integration' (2004) *Governance for sustainable development The challenge of adapting form to function* 191

¹³ Ibid

- (3) Thirdly, intergenerational interests are often not included in energy governance mechanisms. The idea of trusteeship for the natural environment¹⁴ by the current generation is not taken seriously, which is showcased by the failure to curb real greenhouse gas emissions. Lack of long term investment planning for energy infrastructure is at stake and can be seen for example in the absence of gradual investments in new energy infrastructure.¹⁵
- (4) Fourthly, achieving intragenerational equity by ensuring to everyone adequate availability of and access to basic energy provision proves to be increasingly difficult. This applies both to a more developing countries context such as rural India or Africa¹⁶, but also to economically developed countries. E.g., in Belgium, power grid shutdowns are increasingly likely¹⁷ and energy poverty is on the rise¹⁸. The intragenerational equity challenge illustrates the importance of the “leaving no one behind” commitment in the statement of Secretary-General Ban Ki Moon on the occasion of the inauguration of the Sustainable Development Goals(SDGs)¹⁹.
- (5) Fifthly, the capability for adaptive decision-making and reflexive learning in energy governance is often missing.²⁰ Since the energy governance system and policy is typically situated in a changing environment that is complex and uncertain²¹, it should be moulded in an adaptable way. That is often not the case. In Belgium e.g., the adaptation gap is striking in the way nuclear power plants have been managed. Although most power plants were meant to be closed down in 2003, and notwithstanding earlier political decisions to do so in 2015, the life of two nuclear power plants has once more

¹⁴ Present generations are regarded as the trustees of the earth for the future generations acting as beneficiaries.

¹⁵ International Energy Agency (IEA), *Belgium 2016 Energy Policy Review* (2016)

¹⁶ Chhavi Dhingra and others, 'Access to clean energy services for the urban and peri-urban poor: a case-study of Delhi, India' (2008) 12 *Energy for Sustainable Development* 49

¹⁷ Hence the adoption of a plan to do this in a controlled way, see 17 November 2016

<<http://www.marghem.belgium.be/nl/nieuw-afschakelplan-de-belangrijkste-wijzigingen>> accessed

¹⁸ For the technical explication see <http://www.vlaanderen.be/nl/bouwen-wonen-en-energie/elektriciteit-aardgas-en-verwarming/budgetmeter>, retrieved 16/01/2017; for testimonies of the poverty issues by civil society see the <http://joecology.blogspot.be/2013/05/armoede-in-belgie-de-budgetmeter-voor.html>, retrieved 16/01/2017

¹⁹ <http://www.un.org/sustainabledevelopment/blog/2016/08/we-cannot-and-will-not-leave-anyone-behind-ban-says-on-world-humanitarian-day/> retrieved 22/10/2016

²⁰ René Kemp and D Loorbach, 'Reflexive governance for sustainable development' (2006) 104

²¹ Derk Loorbach, 'Transition Management for Sustainable Development: A Prescriptive, Complexity-Based Governance Framework' (2010) 23 *Governance* 161 168

been extended, despite increasing technical breakdowns ('incidents') and growing worries in neighbouring countries like the Netherlands²² and Germany²³.

In addition to these five governance gaps, energy governance is rather technical and guided by the politics of opportunity and ad hoc interest of the powers that be instead of being strongly guided by social values²⁴ (certainly in comparison with fields such as education or health care which are strong social value driven). Given this weak value driven character of energy governance, this article explores two normative frameworks, namely sustainable development law and human rights law, that may guide energy governance towards social change and a future proof and just energy governance system, in line with the SDGs.

Sustainable development can only be fostered if energy production and consumption seek to increase the standard of living while taking into account the carrying capacity of the planet. As the adoption of the SDGs illustrates once more, sustainable development will be one of the defining concepts for policy making in the following decades, also in the area of energy governance. Human rights are equally relevant to some of the challenges for energy governance, in particular to address the participation and intragenerational justice gaps.²⁵

The objective of this article is to show how the legal frameworks of sustainable development and human rights may imbue energy governance with social values and legal principles and mechanisms that make it future proof and just. A sub question is whether sustainable development law and human rights law always point in the same normative direction, and which framework priority should be given in case of tensions. Examples of Belgian and European energy governance will be used to illustrate some of the challenges. This geographic focus is informed by the background of the authors and the assumption that if a so called 'developed'

²² <http://nos.nl/artikel/2081442-onrust-in-nederland-over-belgische-kerncentrales.html> retrieved 24/10/2016

²³ <http://deredactie.be/cm/vrtnieuws/binnenland/1.2634141> retrieved 24/10/2016

²⁴ James Meadowcroft, 'What about the politics? Sustainable development, transition management, and long term energy transitions' (2009) 42 Policy Sciences 323 325

²⁵ Y Omorogbe, 'Policy, law and the actualization of the right of access to energy services' in Kim Talus, *Research handbook on international energy law* (Edward Elgar Publishing 2014) 361

state has significant challenges, a 'developing' country, although it may be in a totally different context, is likely to face similar or even more significant challenges²⁶.

First, this article will introduce some key features of the normative frameworks of sustainable development and human rights as they have been framed legally. Second, it seeks to scrutinize where and what these legal frameworks can contribute to address the five challenges for energy governance: (1) lack of participation mechanisms, (2) the absence of environmental policy integration (3) unsatisfactory protection of interests of future generations, (4) challenges of availability and accessibility of energy for everyone and, (5) lack of adaptivity and reflexivity.

The focus on two *legal* frameworks is not to suggest that the introduction of social values in energy governance is exclusively a matter of legal regulation, nor that law (alone) can address these challenges in a convincing way. We nevertheless believe that principles and values of (sustainable development and human rights) law have a role to play in energy governance, and seek to identify how and when they can offer remedies to the abovementioned energy governance challenges.

2. Two value-driven legal frameworks²⁷

2.1 Sustainable Development Law

Since the Stockholm Declaration in 1972²⁸ and the Brundtland Report in 1987,²⁹ sustainable development has emerged as a political-economic concept that tackles environmentally disturbing industrial development. Ever since the use of the concept in policy documents, international agreements and later on in a legal context, there has been discussion on the content and meaning of sustainable development. Parallel to the manifold economic

²⁶ The historic greenhouse gas emissions by industrialized nations still play a large role in present climate change negotiations, development funding schemes and energy cooperation. Though, it is outside the scope of this article to discuss this further.

²⁷ Though the concepts of '(human) rights' and 'the environment' are not always understood in the same way, this article does use two value-laden legal frameworks that draws from the two concepts. See more about the constructs in Gear, Anna. "Editorial: Questioning the constructs: 'the environment' and '(human) rights'", *Journal of Human Rights and the Environment* 7.2: 165-169

²⁸ Stockholm Declaration, 'Declaration of the United Nations conference on the human environment' (1972) URL= <http://www.unep.org/Documents/Multilingual/Default.asp>

²⁹ Gro Brundtland and others, 'Our Common Future ('Brundtland report')' (1987)

interpretations³⁰, there are multiple legal interpretations. Sustainable development for example appears simultaneously in WTO regulations and environmental treaties. This section seeks to specify which aspects of sustainable development law are relevant for ecologically sustainable and just energy governance and where different interpretations arise.

Sustainable development is generally described as “*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*”. In 1994, the economist John Elkington introduced a three pillar approach, with the economic, social and environmental as three equally important objectives of sustainable development.³¹ Even though these objectives became the focal point of ‘sustainable development’, they do not contain any normative content.³² The normative content can rather be found in the various principles that underpin the notion of sustainable development. Many of them, such as the principle of common but differentiated responsibility, the precautionary principle and the intergenerational equity principle were stated in the Rio declaration and later further developed in new treaties and national legislation, case law and doctrine.³³ We submit that these principles are at the core of ‘sustainable development law’, and should therefore be central to the creation and interpretation of law and to every (legal) action undertaken to achieve the three objectives.³⁴ This means that for example an energy development policy is supposed to be designed and implemented in accordance with these principles.

Both the list and the content of these sustainable development principles is evolutive in nature.³⁵ In addition to the abovementioned three principles, the integration principle too plays

³⁰ Bill Hopwood, Mary Mellor and Geoff O'Brien, 'Sustainable development: mapping different approaches' (2005) 13 Sustainable Development 38

³¹ John Elkington, 'Partnerships from cannibals with forks: The triple bottom line of 21st-century business' (1998) 8 Environmental Quality Management 37

³² Gerd Winter, H Bugge and C Voigt, 'A Fundament and Two Pillars: The Concept of sustainable development 20 years after the Brundtland Report' (2008) Sustainable development in international and national law 39

³³ Among other in the Rio Declaration, multiple MEA's, ILA Delhi principles of sustainable development. Marie-Claire Cordonnier Segger, 'Sustainable Development Law in International Law' in Hans Christian Bugge and Christina Voigt, *Sustainable Development in International and National Law: what did the Brundtland Report do to Legal Thinking and Legal Development, and where can we go from here?*, vol 8 (ISBS 2008) 166

³⁴ Elisabeth Buergi, *Agricultural Trade: Taking Integration Seriously* 15

³⁵ V. Barral, 'Sustainable Development in International Law: Nature * and Operation of an Evolutive Legal Norm' (2012) 23 European Journal of International Law 377 382

a pivotal role in reconciling the three objectives (economic, social and ecological).³⁶ Principle 4 of the Rio Declaration states that '[i]n order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.'³⁷ Hence, the integration principle too has to guide energy governance. How these sustainable development law principles can offer that guidance in practice is explained in the next section.

Sustainable development decision-making

The figure below shows a decision making-chart on the basis of the Sustainable Development Law (SDL) framework (inspired by E. Bürgi's Sustainable Development Concept, Integrative future-oriented approach)³⁸, and explains how SDL could be used in practice by law- and policy-makers. The vertical axis contains the principles to be taken into account and to be respected when drafting energy policies e.g., whereas the goals to be pursued are reflected in the horizontal objectives. The integration principle acts as balancing instrument between the three objectives, and between the vertical principles and horizontal objectives. In addition, an ongoing process of Sustainability Impact Assessment (SIA) is needed to inform the decision making process.

³⁶ Ibid

³⁷ Principle 4, Rio Declaration, *Rio declaration on environment and development* (1992)

³⁸ Bürgi, *Agricultural Trade: Taking Integration Seriously* 14

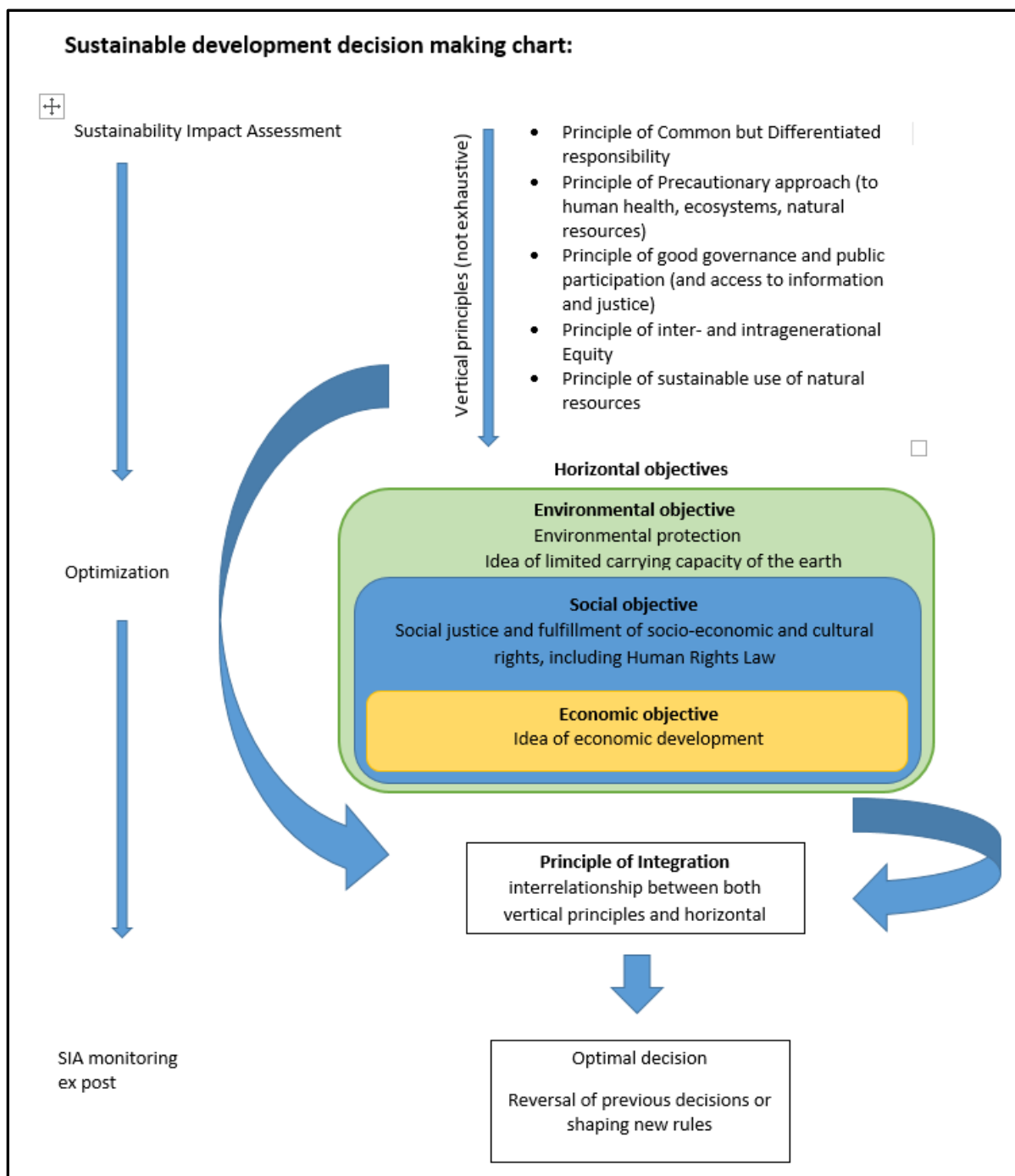


Figure 1. Inspired by/drawing on Elisabeth Bonanomi Bürgi's flow diagram of sustainable, inclusive and informed decision making³⁹

³⁹ Bürgi, *Agricultural Trade: Taking Integration Seriously* 14

The vertical principles are the following:

- **Precautionary approach to human health, ecosystems and natural resources**

The precautionary principle plays at two levels: the protection of human health and the protection of natural resources and ecosystems. Even in case of scientific uncertainty, the obligation exists to take cost-effective measures to avoid damages to human health or nature. The obligation to take precautionary measures becomes stronger in proportion with the probability that the realization of damage increases and the severity of potential (serious or irreversible) damage, as mitigated by the proportion of the precautionary measure⁴⁰. Though primarily developed in international environmental law,⁴¹ the precautionary principle has also been introduced in health protection such as Asbestos-cases⁴² and nuclear energy-cases⁴³. International case law⁴⁴ has developed the precautionary principle over time into a widely recognized legal tool for public decision making (also in national law)⁴⁵. However, the difficulties resulting from politicizing the interpretation of proportion and probability have prevented the principle from becoming a decisive element in legal practice.⁴⁶

- **Good governance and public participation, including access to information and justice**

The principle of good governance encompasses the proper functioning of the state including the obligation for states to assure political accountability, fight corruption and guard socially responsible investment.⁴⁷ Further, it enshrines the requirement of public participation, access to information and access to justice which has been codified in the Aarhus Convention regarding

⁴⁰ Nicolas De Sadeleer, *Environmental principles: from political slogans to legal rules* (Oxford University Press on Demand 2002) 91

⁴¹ In among others art. 3 UNFCCC, art 14.I(b), art. 8 (g) UN Convention on Biological Diversity, Cartagena Protocol on biosafety, Rotterdam Convention of prior informed consent procedure for certain Hazardous chemicals and pesticides and WTO-law. See *ibid*

⁴² Paul Harremoës and others, *The precautionary principle in the 20th century: Late lessons from early warning* (Routledge 2013) 49

⁴³ Lorenzo Di Lucia, Serina Ahlgren and Karin Ericsson, 'The dilemma of indirect land-use changes in EU biofuel policy—An empirical study of policy-making in the context of scientific uncertainty' (2012) 16 *Environmental science & policy* 9 13

⁴⁴ For an extensive overview of case law development see De Sadeleer, *Environmental principles: from political slogans to legal rules*

⁴⁵ Geert Van Calster Ellen Vos (ed), *Risico en voorzorg in de Rechtsmaatschappij (Risk, Precaution and the Rule of Law)* (Intersentia 2004)

⁴⁶ De Sadeleer, *Environmental principles: from political slogans to legal rules* 130

⁴⁷ Nico Schrijver, *The evolution of sustainable development in international law: inception, meaning and status* (Brill 2008) 201

environmental matters. These good governance requirements give citizens and civil society organizations procedural rights in and tools for environmental action⁴⁸.

- **Inter- and intragenerational equity and the eradication of poverty**

The principle of inter- and intragenerational equity is based on the idea of fair access and a just distribution of the earth's natural resources among peoples within the current generation⁴⁹ and with regard to future generations. Therefore the phrase "for present and future generations" can often be found in international law documents. The principle of intragenerational equity is reflected in human rights law in article 1 of the Charter of the United Nations. Intergenerational equity is coined as the responsibility towards future generations in the form of planetary rights and planetary obligations in relation with the generations before and after, with regard to both ecological and cultural heritage.⁵⁰

- **Sustainable use of natural resources**

The principle of sustainable use of natural resources entails the duty for states to manage and use their resources sustainably.⁵¹ It can be seen as an extension of the sovereignty principle's restriction to not cause irreparable damage to other states by causing damage to the global environment, indirectly harming other states' interests.⁵²

- **Common but differentiated responsibility**

The principle of a common but differentiated responsibility (CBDR) creates a differential treatment for developing and developed countries on the bases of their contribution to the problem and their economic or developmental situation. It reflects the adage that the strongest shoulders should carry the most weight. The CBDR principles has been developed the strongest

⁴⁸ Articles 4-9 , *UNECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters* (2001)

⁴⁹ Elisabeth Bürgi Bonanomi, *Sustainable development in international law making and trade: international food governance and trade in agriculture* (Edward Elgar Publishing 2015) 124

⁵⁰ Edith Brown Weiss, 'In fairness to future generations' (1990) 32 *Environment: Science and Policy for Sustainable Development* 67

⁵¹ Bonanomi, *Sustainable development in international law making and trade: international food governance and trade in agriculture*

⁵² Marie-Claire Cordonier Segger and Ashfaq Khalfan, 'Sustainable development law: principles, practices, and prospects' (2004) OUP Catalogue 109

in international environmental law, in particular in the UN framework conventions on biodiversity and⁵³ climate change⁵⁴.

Horizontal objectives

In the sustainable development decision-making chart, vertical principles are complemented by horizontal objectives. The horizontal objectives of environmental protection, economic development and social justice form the three pillars of sustainable development. The environmental objective pursues ecological sustainability, the economic objective the fulfilment of economic needs and the social objective aims at social justice (as substantiated in human rights law). How these three objectives relate to and interact with each other (and with the principles), is determined by the integration principle, which we will now discuss.

The integration principle: two diverging views

Two diverging views on the integration principle have emerged.

The first interpretation can be found in the Rio+20 outcome document “the future we want”. This document reflects, according to the triple bottom line-discourse, the equal importance of economic development and growth, and of environmental protection (besides social development)⁵⁵. This three pillar approach suggests a reconciliation between environmental protection and economic development by placing both on an equal footing.⁵⁶

In contrast, Klaus Bosselmann argues that many of the listed principles seek to ensure ecological sustainability as the principle bottom line of the sustainable development concept.⁵⁷ In other words, in this view, ecological sustainability prevails over economic development and physical ecological boundaries to development are accepted.⁵⁸ As the carrying capacity of the biosphere

⁵³ UN, *United Nations Framework Convention on Biodiversity* (1993)

⁵⁴ FCCC, *United Nations Framework Convention on Climate Change*. 1992

⁵⁵ Paragraphs 4 and 6 Rio+20 Outcome document ‘the future we want’ UNGA (19 June 2012) UN Doc A/CONF.216/L

⁵⁶ Marie-Claire Cordonnier Segger, ‘Sustainable Development in International Law’ in Bugge and Voigt, *Sustainable Development in International and National Law: what did the Brundtland Report do to Legal Thinking and Legal Development, and where can we go from here?*

⁵⁷ Bosselmann Klaus, ‘A vulnerable environment: contextualising law with sustainability’ (2011) *Journal of Human Rights and the Environment* 54; Andrea Ross, ‘Modern interpretations of sustainable development’ (2009) 36 *Journal of Law and Society* 32 47

⁵⁸ Will Steffen and others, ‘Planetary boundaries: Guiding human development on a changing planet’ (2015) 347 *Science* 1259855

is at risk of being damaged beyond repair, there is little space for 'equally important' economic development to be achieved.⁵⁹ Economic growth based on natural resource exploitation on a physically limited earth and preservation of a liveable planet is incompatible.⁶⁰ For example, effective climate change mitigation, freshwater conservation and forestry conservation are all minimum features to ensure socio-economic wellbeing of people.⁶¹ There is little option but to protect enough of nature's carrying capacity. The prevalence of ecological sustainability over sustained growth is resonated in the principle of intergenerational justice, the precautionary principle and the principle of sustainable use of natural resources, which all emphasize ecological aspects. In line with this reading of the integration principle, sustainable development could play a role in support of a 'rule of law for nature', where environmental protection law could be used as constitutional law.⁶² In what follows, we will equate the notion of SDL with this second view of the prevalence of ecological sustainability because of the obvious reality that human development and more precisely human life cannot humanely exist without a healthy natural environment nor without the coexistence with the flora and fauna that are part of the same ecosystem and life system as humans. This view of SDL is however not cast in stone.

Bürgi points out that using SDL as a legal norm can be subsumed under the normative school of thought, although the theoretical conceptualization of this legal norm still needs to be developed further.⁶³ There are opposing views on the normative flexibility of SDL. Ross has put forward the idea that the flexibility of 'sustainable development' permits the normative core to adapt over time and gives the environmental protection bottom line the opportunity to trickle down.⁶⁴ This would mean that the normative core of 'sustainable development' may shift from the first view (ecological and economic objective on a par) towards the second (the ecological objective prevails) according to social needs that occur over time. However, Viñuales warns that since the 1972 Stockholm Conference, sustainable development has shifted from a more

⁵⁹ Staffan Westerlund, 'Theory for Sustainable Development: Towards or Against' (2008) Sustainable Development in International and National Law Europa Law Publishing, Groningen 60

⁶⁰ Sam Adelman, 'Rio+ 20: sustainable injustice in a time of crises' (2013) *Journal of Human Rights and the Environment* 6

⁶¹ Steffen and others, 'Planetary boundaries: Guiding human development on a changing planet'

⁶² L Kotzé, 'Sustainable Development and the rule of law for nature' in Christina Voigt, *Rule of law for nature: new dimensions and ideas in environmental law* (Cambridge, United Kingdom : Cambridge University Press 2013) 130

⁶³ Bonanomi, *Sustainable development in international law making and trade: international food governance and trade in agriculture*

⁶⁴ Ross, 'Modern interpretations of sustainable development'

environmental protection content⁶⁵ towards more economic development oriented, thus decreasing the urgency of environmental conservation. We believe though that precisely the prioritization of ecological sustainability is key to use SD as normative framework to guide energy governance. Therefore we take Bosselmann's environmental bottom line approach, i.e. taking ecological sustainability as the principal bottom line of the sustainable development concept.

2.2 Human Rights

The contents of human rights law is fairly well-developed, and it is quite well codified in binding norms (that is treaties). Although human rights law is considered to be part and parcel of SDL, through the social objective, we discuss it here also as a separate value-driven framework for two reasons. First, it has been widely used as a normative lever for social change processes which are broadly similar to the energy governance transition that we discuss in this article. Second, the experiences within human rights law can be instructive about the political economy of a value-driven framework and its inherent challenges. For these two reasons, human rights law deserve more in-depth treatment in a separate section.

Human rights tend to be classified in three categories: civil and political rights; economic, social and cultural rights; and collective or solidarity rights. This *threefold* categorization has been challenged conceptually (Donnelly), and could be argued to have lost its relevance given the wide endorsement of the interrelatedness and interdependence of all human rights in the 1993 Vienna Declaration. Nonetheless, in practice, the categories still matter a lot, politically and legally. Typically, economic, social and cultural rights are considered to be much more open to discretion, as their realisation is qualified by the availability of resources. States have a mere obligation to progressively realise economic, social and cultural rights, albeit it to the maximum of their available resources (domestically and through international cooperation).⁶⁶ As a corollary to the obligation of progressive realisation, an (albeit rebuttable) assumption applies that deliberate retrogressive measures are not permitted. The Committee on Economic, Social

⁶⁵ Jorge E Viñuales, 'The rise and fall of sustainable development' (2013) 22 Review of European, Comparative & International Environmental Law 37

⁶⁶ See art. 2 ICESCR

and Cultural Rights (CESCR) has developed criteria to assess whether resource constraints can justify retrogressive measures.⁶⁷ Minimum core obligations have been argued to either enjoy priority attention or to apply immediately (in other words, not to be subject to progressive realisation).⁶⁸ For a very long time, the justiciability of economic, social and cultural rights was also questioned. Since the adoption of a complaints procedure for violations of economic, social and cultural rights under the International Covenant on Economic, Social and Cultural Rights in 2008, it may be argued that the justiciability discussion has been put to rest from a legal perspective, but the political debate seems to continue.⁶⁹ Solidarity rights in turn are legally underdeveloped and politically highly contested.

Typically, human rights are framed as the rights of individuals (the rights holders) against the state (as duty-bearer). Obligations incumbent on the state encompass both negative and positive obligations (i.e., abstention and action may be required). Positive obligations in the field of economic, social and cultural rights tend to be divided into obligations to protect against third parties (*Drittwirkung*) and to fulfil. The latter obligation is further split up into sub-obligations to fulfil-facilitate, fulfil-promote and fulfil-provide.⁷⁰ Over the last decade, increasing attention has been paid to the human rights obligations of foreign or extraterritorial States, and of (some) non-State actors like companies and international organisations.⁷¹

Human rights may contribute to energy governance in different ways and for different purposes. First, human rights may provide a social corrective to economic development, through a human right to energy. Second, human rights may indirectly contribute to the

⁶⁷ CESCR, *Statement of the Committee on Economic, Social and Cultural Rights, An Evaluation of the Obligation to Take Steps to the "Maximum of Available Resources" under an Optional Protocol to the Covenant* 2007) para 10

⁶⁸ CESCR, General Comment 3 on the Nature of States Parties Obligations 1990, para.10

⁶⁹ Wouter Vandenhoe, 'Completing the UN Complaint Mechanisms for Human Rights Violations Step by Step: Towards a Complaints Procedure to the International Covenant on Economic, Social and Cultural Rights' (2003) 21 *Netherlands Quarterly of Human Rights* 423 Arne Vandenberg and Wouter Vandenhoe, 'The optional protocol to the international covenant on economic, social and cultural rights: an ex ante assessment of its effectiveness in light of the drafting process' (2010) 10 *Human Rights Law Review* 207

⁷⁰ See, e.g., CESCR, General Comment No. 15 para 21-29

⁷¹ See, for an overview, e.g., Wouter vandenhole, 'Extraterritorial Human Rights Obligations: Taking Stock, Looking Forward' (2013) *European Journal of Human Rights* 804 Wouter Vandenhoe, Gamze E. Türkelli and Rachel Hammonds, 'Reconceptualizing human rights duty-bearers' in Anja Mihr and Mark Gibney (eds), *SAGE Handbook of human rights*, vol 2 (SAGE Handbook of human rights, SAGE 2014)

environmental objective by guaranteeing protection of human health and the human environment, or directly by offering environmental protection more generally.

Human rights law can be operationalized in energy governance through human rights-based approaches (HRBA). A HRBA to development typically helps to operationalize the complex myriad of human rights, including economic, social and cultural rights, by having them included in the operational goals and actions of a project plan.⁷²

Value-driven guidance can be offered at two levels. First, human rights law may give an indication of what the goal of energy governance policies should be (i.e. fulfillment of in particular economic and social human rights), but also how the process towards this goal should be conducted (i.e. through respect for civil and political rights such as the right to participation in public affairs).⁷³ HRBAs include primarily human rights principles that may offer normative guidance on the process. One of the commonly used acronyms to list the key human rights principles in HRBAs is PANEL, which refers to participation, accountability, non-discrimination, empowerment and linkage to human rights.⁷⁴

For the purposes of energy governance, HRBAs are a useful way to align the often technical and complex energy policies to human rights standards that offer normative guidance on both processes and objectives. An advantage of resorting to human rights principles may be that it is much more easily accepted that they also apply to non-state actors, such as corporations.⁷⁵

In the next section we will discuss how the two value-driven frameworks of sustainable development law and human rights law can address the five energy governance challenges that we identified in the introductory section. It will also explore how to balance and prioritize between sustainable development law and human rights law if they conflict with each other.

⁷² Paul Gready, 'Rights-based approaches to development: what is the value-added?' (2008) 18 *Development in practice* 735

⁷³ See the definition of the OHCHR <http://www.ohchr.org/EN/Issues/Pages/WhatAreHumanRights.aspx> retrieved on 17/10/2016

⁷⁴ Vandenhoe has proposed the acronym PANEN, replacing the 'linkage to human rights' with normativity, see Wouter Vandenhoe and Paul Gready, 'Failures and Successes of Human Rights-Based Approaches to Development: Towards a Change Perspective' (2014) 32 *Nordic Journal of Human Rights* 291 294. Haugen has distilled seven human rights principles from the sources of international law: dignity; non-discrimination; the rule of law; accountability, transparency, participation and empowerment (see Hans M Haugen, 'Human Rights Principles: Can they be Applied to Improve the Realization of Social Human Rights?' (2011) 15 *Max Planck Yearbook of United Nations Law* Volume 430).

⁷⁵ Haugen, 'Human Rights Principles: Can they be Applied to Improve the Realization of Social Human Rights?'

3. Five energy governance challenges

3.1 Public participation in decision making

Top-down bias and the lack of participatory decision-making has been identified higher as a major challenge for energy governance. Public participation is an important feature of SDL as well as of HRBAs, be it in the elaboration of new policies, in one off decision making or in litigation (as a way of post factum legal decision making in court).

In the SDL decision-making flow chart, the procedural guarantee of public participation in decision-making is part of the vertical principles. Bringing value choices of individuals and communities from different spheres of social life together in the decision making process is necessary for the construction of social change, namely the energy system and everything related to that required by the changing natural environment ⁷⁶. Participation is key in “experimenting with reforms so knowledge can be accumulated to enable [...]more successful management” and appropriate future social and ecological governance.⁷⁷

Though most of the progress on public participation has been achieved on the local level⁷⁸, it has also been paid lip service to or genuinely promoted at the international level.⁷⁹ The principle of public participation has been legally entrenched and operationalized in the Aarhus convention⁸⁰ and the Cartagena protocol on Biosafety,⁸¹ through the creation of a mechanism that assures access to adequate information, participation in decision-making and access to justice through judicial remedies. In human rights law, Art. 25 (a) ICCPR ensures every citizen the right and opportunity to take part in the conduct of public affairs. Several human rights instruments have been read to guarantee individual procedural rights, in particular to information and remedies. The European Committee of Social Rights that monitors the

⁷⁶ René Kemp and Derk Loorbach, '5. Transition management: a reflexive governance approach' (2006) *Reflexive Governance for Sustainable Development*, Cheltenham, UK and Northampton, MA, USA: Edward Elgar 103

⁷⁷ Meadowcroft, 'Participation and Sustainable Development' 162 165

⁷⁸ Nathalie Bernasconi-Osterwalder, 'Transparency, Participation and Accountability in International Economic Dispute Settlement: A Sustainable Development Perspective' in Hans Bügge Christina Voigt (ed), *Sustainable development in International and national law* (Sustainable development in International and national law, Europa Law Publishing 2008) 232

⁷⁹ it is expressed in among others the Brundtland Report⁷⁹, the Rio declaration⁷⁹, AGENDA 21, OECD report on 'sustainable development: critical issues'⁷⁹ and the 2030 agenda for sustainable development (Goal 16.7).

⁸⁰ , *UNECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters*

⁸¹ Cartagena protocol

European Social Charter, for example, has confirmed the positive obligation to “*inform and educate the public about environmental problems, and to provide advisory and educational facilities for the promotion of health*” as part of the right to ‘access to information’.⁸² Under the right to life, the European Court of Human Rights has emphasized the public’s right to information and to appropriate procedures for identifying shortcomings and errors as part of the preventative obligations to protect life that are incumbent on a State,⁸³ as well as of remedial obligations. In the *McGinley and Egan v. the United Kingdom* case, the Court stated that “where a Government engages in hazardous activities [...] respect for private and family life under Article 8 requires that an effective and accessible procedure be established which enables such persons to seek all relevant and appropriate information.”⁸⁴ Beyond access to information, under the right to respect for private life, the Court has held that a State may in certain circumstances be obliged to actually *provide* information that allows individuals to assess risks to their health and lives, also preventatively and with regard to environmental and occupational risks.⁸⁵ This may also imply that states have to require from businesses full transparency about the methods used and the risks involved, notwithstanding commercial interests to keep that information secret.⁸⁶ In addition, the ECtHR has included the possibility to make representations, and the possibility to challenge decisions in court as relevant procedural elements in the balancing exercise a State has to undertake when confronted with conflicting environmental and economic interests.⁸⁷ The UN Committee on Economic, Social and Cultural Rights systematically includes participatory and transparent processes as part of the core obligation to adopt and implement a strategy and action plan for each of the economic, social and cultural rights.⁸⁸

In HRBADs, participation has been included as one of the human rights principles. A HRBA to energy governance may thus ensure inclusion of stakeholders in the drafting and main decision-

⁸² *Marangopolous Foundation for Human Rights v Greece* (Complaint no 30/2005) ECSR 2006 [104]

⁸³ ECtHR 30 November 2004, *Öneryildiz v. Turkey*, para. 90

⁸⁴ *McGinley and Egan v the United Kingdom* (App no 21825/93) ECHR 2000 [101]

⁸⁵ ECtHR 5 December 2013, *Vilnes and others v. Norway*, para 235.

⁸⁶ ECtHR 5 December 2013, *Vilnes and others v. Norway*, para 244.

⁸⁷ ECtHR 8 July 2003, appl no 36022/97, *Hatton v. United Kingdom*, para. 128.

⁸⁸ See, e.g. CESCR, General Comment No. 14 (2000), The Right to the Highest Attainable Standard of Health (Article 12 of the International Covenant on Economic, Social and Cultural Rights), UN Doc. E/C.12/2000/4 of 4 July 2000, para. 43.

making process of energy policies that often have a large environmental, health and financial impact on citizens' lives, especially in cases of displacements of people. Further, the participation principle can guarantee a correct implementation of an energy policy as well as a continuous exchange of information about infrastructural and operational activities. Empowerment of citizens in 'citizenship skills' such as opinion forming, public communication and group organization is a prerequisite for effective participation in the decision-making processes. More generally, the HRBA principle of empowerment may guide energy policies in enabling citizens to increase their living standard by providing access to energy services.

In sum, public participation (and correlatives as access to information and remedies) features prominently in both SDL and HRL. In comparison, SDL has a better conceptual and procedural understanding of *collective* participation (as reflected in particular in the Aarhus Convention), but HRL and HRBAs may be stronger in defining individual participation rights and may be more advanced in being able to offer post-factum remedies when violations occur.

The principle of participation requires inclusion of stakeholders in the drafting and main decision-making processes that have a large environmental, health and financial impact on citizens' lives. Further, participation is key in ensuring a correct implementation of energy policies and a continuous exchange of information about infrastructural and operational activities. Participation is all the more important because energy transition is not just a matter of governance for governments, but in essence a societal project. Communities and citizens can and want to design, adapt and steer their own energy system and create their own energy governance system⁸⁹, as illustrated by the transition towns movement⁹⁰ and the German success of energy cooperatives.⁹¹

A strong application of the participation principle in energy governance includes citizens directly in important debates and one off decision making, beyond their political representation in

⁸⁹ Anaïs Guerry, 'A Reflection on Some Legal Aspects of Decision Control in the Energy Transition Process: A Comparison of France and Germany' in Nathalie J. Chalifour and Louis J. Kotzé Jordi Jaria i Manzano (ed), *Energy, Governance and Sustainability* (Energy, Governance and Sustainability, Edward Elgar Publishing 2016) 202

⁹⁰ Gill Seyfang and Alex Haxeltine, 'Growing grassroots innovations: exploring the role of community-based initiatives in governing sustainable energy transitions' (2012) 30 *Environment and Planning C: Government and Policy* 381 395

⁹¹ Hannes Kirchhoff and others, 'Developing mutual success factors and their application to swarm electrification: microgrids with 100% renewable energies in the Global South and Germany' (2016) 128 *Journal of Cleaner Production* 190 198

parliament. Long term strategic choice decision making sometimes falls beyond the scope of the Aarhus convention. In the case of nuclear power plants the convention would only apply when a nuclear power plant was to be built, dismantled or decommissioned, not in case of a life extension decision. A stronger application of public participation would include citizens in the decision-making, beyond their political representation in parliament. Participation in this kind of decisions is all the more important given their often very sensitive nature in national or regional energy governance, because those projects often account for large parts of the energy production and represent strong vested interests.

Public participation in ongoing decision-making can be embodied by cooperation or representation. For example, community cooperatives can take over energy production and (financial) management. Wase wind is a Belgian wind energy cooperative started by citizens, that builds and finances its own wind park.⁹² This ensures direct access to information and permanent participation in decision making for the associated individuals.⁹³ For other energy sectors than the wind sector, the cooperative system may face more limitations.⁹⁴ The challenge is to include all affected actors (consumers of energy, neighbours, etc.) in the whole governance setup of the energy scheme from production to consumption. A third example shows how representation of citizens in local energy governance bodies may help to preserve fully their interests *such as price setting, local environmental impact, etc.* In Belgium the public company responsible for the electricity distribution network in Flanders, Eandis, is largely owned by Flemish municipalities. When it had been decided to outsource capital stock of this company to an overseas investor, leaving part of decision making on issues (such as price setting) that have direct impact on local energy services to that foreign investor, a petition by an anti-poverty organisation was launched, which eventually led to the withdrawal of the outsourcing by the Flemish government⁹⁵ A similar issue came up in France where the local energy distribution

⁹² CE Delft, *The potential of energy citizens in the European Union*, 2016); <http://www.demorgen.be/opinie/als-het-moet-dan-bouwen-we-die-energie-infrastructuur-gewoon-zelf-b3668720/> retrieved 5/10/2016

⁹³ Guerry, 'A Reflection on Some Legal Aspects of Decision Control in the Energy Transition Process: A Comparison of France and Germany'

⁹⁴ Delft, *The potential of energy citizens in the European Union*

⁹⁵ Verbruggen, *Waarom de VREG zich vergiste in Eandis* – <http://www.demorgen.be/opinie/waarom-ook-de-vreg-zich-vergiste-in-eandis-be82da2b/demorgen> retrieved 5/10/2016

companies where nationalized under a centralized scheme, which disrupted local decision making, impeding local price setting and progressive citizen initiatives⁹⁶.

In conclusion, energy governance guided by SDL and HRL will pay stronger attention to public participation and bring in more community interests into decision making (both one off and ongoing). The importance of participation cannot be overestimated: people are more inclined to accept and co-construct energy infrastructure when they have been involved from the beginning and can take part in the project.⁹⁷ No real tensions appear between both frameworks. SDL is stronger developed at the level of collective participation and remedies, but HRL offers more remedy options and adds value to the principle in the form of normative content and legal instruments.

3.2 Intragenerational equity

The second challenge of energy governance is to ensure intragenerational equity, reflecting the “leaving no one behind” commitment. It is about ensuring availability and accessibility of energy without creating new injustices and inequalities.

To date, there has been no explicit recognition of a right to energy in human rights law.⁹⁸ So, could a right to energy be read into human rights law, and could such a right address the intragenerational equity deficiencies of energy governance?

Whereas formal recognition of a right to energy⁹⁹ is lacking and would take away any doubts on the existence of such a right, it can already be read into existing human rights. A hint to a right to energy can be found in Art. 11 of the San Salvador Protocol to the American Convention on Human Rights, which guarantees the right to have access to basic public services. Human rights expert bodies on economic, social and cultural rights (in particular the UN Committee on

⁹⁶ Guerry, 'A Reflection on Some Legal Aspects of Decision Control in the Energy Transition Process: A Comparison of France and Germany' 209

⁹⁷ Maarten Wolsink, 'Wind power implementation: the nature of public attitudes: equity and fairness instead of 'backyard motives' (2007) 11 Renewable and sustainable energy reviews 1188

⁹⁸ For a comprehensive overview of the degree of legal recognition of a right to access energy, see Marc Clemson, 'Human rights and the environment: Access to energy' (2012) 16 New Zealand Journal of Environmental Law 39

⁹⁹ Compare Stephen Tully, 'Access to electricity as a human right' (2006) 24 Neth Q Hum Rts 557 para 37 on the formal recognition on a right to access electricity

Economic, Social and Cultural Rights and the European Committee of Social Rights) have also paid attention to the availability and accessibility of essential services such as water, electricity and gas. The treaty leads have been provisions on the highest attainable standard of health; the right to adequate housing, and the right to social, legal and economic protection.

What would such a right entail? Essential and interrelated elements of a right to energy could be said to be not only accessibility, but also availability and quality. Accessibility is typically further dissected into dimensions of physical accessibility; economic accessibility (affordability), non-discrimination and information accessibility.¹⁰⁰ Drawing on the CESCR's General Comment on the right to water, the following minimum core obligations could be identified:

1. to ensure physical access to energy facilities and services;
2. to ensure the right of access to the minimum essential amount of energy for personal and domestic use;
3. to ensure the right of access to energy, energy facilities and services on a non-discriminatory basis, especially for disadvantaged or marginalized groups;
4. to adopt relatively low-cost targeted water programmes to protect vulnerable and marginalized groups.¹⁰¹

Further, the non-discrimination principle of HRBA can strengthen the protection of the most vulnerable groups against obstacles in access to energy and against risks of adverse impacts of energy infrastructure construction and operation.

SDL offers less explicit normative guidance. Whereas the social objective features prominently in SDL and the SDL decision flow chart introduced above, its practical meaning has been less discussed. The principle of equity lies at the core of SDL. The social pillar could be read as implying HR standards for present (intra generational) and future (intergenerational) generations according to the principle of intra generational equity as mentioned in the ILA Delhi declaration and principle 5 of the Rio-declaration, so that the human rights standards on the availability and accessibility of energy can be read into this social objective.

¹⁰⁰ Compare Social and Cultural Rights Committee on Economic, *General Comment No. 15, The right to water (arts. 11 and 12)* (2002) para. 12

¹⁰¹ Ibid

In sum, human rights can give are more legal content to intragenerational equity than SDL. For energy governance, the non-discrimination principle (both in HRBA, HR treaties and national constitutions) and availability and accessibility of energy stand out. SDL has not much to add.

The following two examples show the potential of using human rights in ensuring intragenerational equity.

A Flemish policy denying in practice energy access to energy poor people was mitigated following civil society campaigning for minimum energy services on the basis of the equity principle. The mitigation consists of a governmental credit system for electricity and gas supply for individuals who cannot pay their energy bills anymore, with the aim of controlling and reducing energy debts.¹⁰² A minimum guaranteed electricity service (not gas) of 10 ampere (enough to power a couple of lights and a television) was introduced too.¹⁰³ Although this minimum service is not free, it creates a sort of limited right to basic energy services which can be regarded as pursuing poverty relief. The mitigation is not perfect, though. Still, civil society organizations argue to the contrary that the credit system without minimum service could lead to the shutting of the gas supply for households, which provides for heating during the winter, thus increases energy poverty and related debt problems.¹⁰⁴

A second illustration of how human rights law could and should play a role in fostering intragenerational equity is a solar subsidy scheme aimed at increasing private investment in renewables. Under that scheme, private entities, companies and individuals alike, received a remuneration for every unit of clean energy they fed back to the grid.¹⁰⁵ In Flanders, especially companies with large roof surfaces massively benefited from the subsidies, which led to a financially untenable situation and forced the government to increase electricity prices in general to recover these costs.¹⁰⁶ The government thus transferred a cost created by wealthy

¹⁰² <http://www.vlaanderen.be/nl/bouwen-wonen-en-energie/elektriciteit-aardgas-en-verwarming/minimale-levering-van-elektriciteit-en-aardgas-voor-wie-een-budgetmeter-heeft> retrieved 20/10/2016

¹⁰³ <https://www.eandis.be/nl/veelgestelde-vragen/eandis-als-sociale-leverancier> retrieved 20/10/2016

¹⁰⁴ <http://www.samenlevingsopbouw-oost-vlaanderen.be/uploads/documenten/pdf%20-%20Evaluatie%20van%20de%20Sociale%20Openbaredienstverplichtingen%20Energie.pdf> retrieved 20/10/2016

¹⁰⁵ <http://www.vlaanderen.be/nl/bouwen-wonen-en-energie/elektriciteit-aardgas-en-verwarming/groenestroomcertificaten-voor-zonnepanelen> retrieved 21/10/2016

¹⁰⁶ <http://www.vlaanderen.be/nl/bouwen-wonen-en-energie/elektriciteit-aardgas-en-verwarming/distributienettarieven-voor-elektriciteit-en-aardgas> retrieved 21/10/2016

strata of the society to people who had not invested in solar energy, including those without the financial means to do so, and partially also to future generations. According to the intragenerational principle as embodied by SDL2.0 and the right to energy in HRL, the cost of renewable energy subsidies should not lead to an increase of the overall energy prices, in particular for poorer people.

In sum, HRL has certainly the potential, if not yet the current ability, to guide energy governance on the issue of intragenerational justice, through normative elements of availability and accessibility of energy, and through the non-discrimination principle. However, this concern with intragenerational justice, as addressed by human rights law, may have anthropocentric and here-and-now overtones that conflict with SDL principles of intergenerational justice (3.3) and the environmental objective (3.4). In what follows, we examine how real these conflicts are, and how they may be resolved.

3.3 Intergenerational justice

The third energy governance challenge is to take properly into account future generations in the form of adequate trusteeship for the natural environment and long term investment planning for energy infrastructure.

The intergenerational principle in SDL brings in a strong time dimension, in that it emphasizes the importance of protecting also future generations. Weiss describes the responsibility towards future generations in the form of planetary rights and planetary obligations in relation with the generations before and after with regard to ecological and cultural heritage.¹⁰⁷ Whereas the principle of intergenerational equity provides a legal ground for the conservation of the environment for future generations of humans¹⁰⁸¹⁰⁹, the precautionary principle indirectly protects the ecosystems as such, by imposing a precautionary approach where risks arise

¹⁰⁷ Weiss, 'In fairness to future generations' 7

¹⁰⁸ Edith Brown Weiss, 'Planetary Trust: Conservation and Intergenerational Equity, The' (1983) 11 Ecology LQ 495 499

¹⁰⁹ Since justice is based on moral principles, and moral principles tend to be primarily anthropocentric, intergenerational justice is mostly interpreted as anthropocentric. Axel Gosseries, 'Theories of intergenerational justice: a synopsis' (2008) SAPI EN S Surveys and Perspectives Integrating Environment and Society

towards human health, natural resources and ecosystems.¹¹⁰ With the exception of environmental conservation law¹¹¹, very few mechanisms have been recognized in law to uphold the rights and interests of future generations. Legal standing for the natural environment¹¹² or the future generations themselves, an ombudsman or a monitoring mechanism for cultural and natural resources¹¹³ may be envisaged, but are not yet options currently.

Human rights law is by and large silent on the rights of future generations. Admittedly, some attention has been paid to children of people affected in their health or life by environmental pollution, but that does not amount to a proper multigenerational perspective.

Exceptionally, the time dimension of 'rights of future generations' has been incorporated in human rights at both the procedural and the substantive level. In two court cases on environmental protection, human rights were brought in to take also future generations into account. Despite their anthropocentric character, human rights can thus reinforce SDL at a procedural level. The first and famous case is that of *Oposa v. Factoran* in the Philippines¹¹⁴, where legal standing was given to 'future generations' in an environmental protection case. Legal standing was only given in this particular case however, and thus does not set a precedent.¹¹⁵ It shows nonetheless how intergenerational protection in SDL and human rights can be reconciled procedurally. That leaves still open the question how to reconcile the human rights of present and future generations substantively.

A substantive link has been made more recently in the Dutch Climate Case by the applicants. They alleged violations under Articles 2 and 8 ECHR for future, but nonetheless certain human

¹¹⁰ Bonanomi, *Sustainable development in international law making and trade: international food governance and trade in agriculture* 128

¹¹¹ Such as the whaling convention, Cartagena protocol, Paris Protocol on biodiversity and domestic environmental conservation law.

¹¹² However there is a debate whether also non-human species can claim intergenerational justice, see as examples Christopher D Stone, 'Should Trees Have Standing--Toward Legal Rights for Natural Objects' (1972) 45 S CAL I rev 450 and the Ecuadorian Constitution.

¹¹³ Weiss, 'In fairness to future generations' 6

¹¹⁴ *Oposa et al. v. Fulgencio S. Factoran, Jr. et al* (1993) G.R.No. 101083 (Supreme Court of the Philippines)

¹¹⁵ Dante B Gatmaytan, 'Illusion of Intergenerational Equity: Oposa v. Factoran as Pyrrhic Victory, The' (2002) 15 Geo Int'l Envtl L Rev 457 459

rights violations. These allegations were not acknowledged by the Dutch judge,¹¹⁶ following the ECtHR's reasoning in the *Kyrtatos v Greece* case that "[n]either Article 8 nor any of the other Articles of the Convention are specifically designed to provide general protection of the environment as such[...]"¹¹⁷. However, the judge did take future human rights interests threatened by environmental degradation into account indirectly, under the duty of care in national tort law.¹¹⁸ While indirect, this approach shows how human rights can be used to give further substance to sustainable development law.

In sum, human rights law, and in particular human rights litigation, may have a strong current generation bias, and may therefore sit uneasily with the intergenerational principle of SDL. However, that tension is not unavoidable: human rights law could benefit from the long-term multigenerational perspective taken in SDL, and at least balance more explicitly, where appropriate, rights and interests of current and future generations.

SDL makes it imperative to take future generations into account. For example, the failure to set up governance mechanisms to enable large scale investments in fair renewable energy schemes in order to really curb greenhouse gas emissions, protecting the eco-systems for tomorrow, can be seen as breaching this intergenerational justice principle. As much is the impotence of moving away from the nuclear paradigm in fear of threatening energy security. The strong path dependency¹¹⁹ in the development of energy capacity, makes it even more important to have future generations' interests represented in decision making as early as possible. The importance of taking future generations into account also applies in other examples: a solar panel subsidy scheme should be set up in such a way that the cost of the subsidy does not lead to increases in energy prices and a public debt for future tax payers; reduction of greenhouse gas emissions should be real, not just an accounting fiction as it currently is under the dysfunctional Clean Development Mechanisms.¹²⁰

¹¹⁶ *Stichting Urgenda v the State of the Netherlands* (2015) C/09/455589 (Civil Court The Hague) [4.45-4.51]

¹¹⁷ ECtHR 22 May 2003, *Kyrtatos v. Greece*, para 52.

¹¹⁸ *Stichting Urgenda v the State of the Netherlands* (2015) C/09/455589 (Civil Court The Hague) [§4.109]

¹¹⁹ (IEA), *Belgium 2016 Energy Policy Review*

¹²⁰ CDM is an economic mechanism part of the Kyoto Protocol; <http://www.11.be/artikels/item/als-de-schone-lucht-niet-zo-schoon-blijkt-is-het-dan-geen-tijd-om-de-regels-te-veranderen> retrieved 21/10/2016; Ben Pearson, 'Market failure: why the Clean Development Mechanism won't promote clean development' (2007) 15 *Journal of Cleaner Production* 247

A more positive illustration is the establishment of a trust fund for future generations such as the Norwegian sovereign wealth fund. Initially created from oil extraction profits, it has the aim of ensuring that future generations enjoy the natural resources exploited today. Although this substitution of natural resources by financial resources may have its own limitations, this trusteeship idea helps to take into account the intergenerational aspect to some extent.¹²¹

The deep normative basis for intergenerational justice can be found in SDL, rather than in HRL. As suggested by the examples, intergenerational justice could vastly improve energy governance, especially when it comes to path dependent decision-making. Despite attempts of creative activists, the protection of future generation rights appears to be difficult in HRL because of the present generation bias and anthropocentric view. So SDL provides the deep normative basis for the protection of the interests of future generations, but it has no strong procedural tools. In HRL, remedies may be stronger, although not so much for 'real' future generations.

3.4 Integration

Environmental protection should be an objective of sustainable energy governance. Most current governance systems are clearly incapable of mitigating the environmental pollution of the production, transport and consumption of energy¹²². Exemplary for this challenge is the lack of clear climate change mitigation measures and the non-institutionalization and non-integration of the latter across different departments and government or semi-government bodies. The normative content of SDL, in particular its environmental integration standard, often clashes with existing customs and governance paradigms. Due to the complex social and environmental challenges related to energy, it often does not offer an obvious solution at first sight. Environmental policy integration should therefore happen at both the vertical level (within every sector- defining strategy and objectives, action plans, creating a forum for structured dialogue, budget and monitoring program) and the horizontal level (between sectors

¹²¹ Gordon L Clark and Ashby HB Monk, 'The legitimacy and governance of Norway's sovereign wealth fund: the ethics of global investment' (2010) 42 Environment and Planning A 1723 1724

¹²² See IEA energy policy reviews of members and non-members alike on <https://www.iea.org/countries/membercountries/> retrieved 17/01/2017

– overarching strategies, independent auditor, communications between sectors) throughout government but also across the whole energy sector.¹²³

Can SDL and HRL contribute to addressing this inability? Just as human rights law, SDL is also a multi-layered, complex and interrelated body of law that is difficult for governments (local or national) and private actors to integrate and implement in their governance systems. Besides the principles of sustainable use of natural resources, and prevention and precaution with regard to environmental protection, the principle of integration aims to prevent the crossing of environmental limits. This idea and reality of environmental and social limits, inherent to sustainable development, is often seen as difficult to take into account in policy making. The adoption of a norms-based approach in the implementation of energy policies may be part of the solution here. We could call this a sustainable development norms-based approach (SDNBA).¹²⁴ Similar to a HRBAD, a SDNBA could offer normative guidance in the implementation of energy policies. A certain context, a certain decision or particular mechanism requires a case-by-case application of sustainable development principles.¹²⁵ Cutting the complex energy issue into manageable pieces and applying the sustainable development principles throughout the various energy governance instruments may help to make the integration of sustainable development a more manageable strategy.¹²⁶

In human rights law, the integration principle (reconciling the economic, social and ecological objective) has taken the form of an environmental corrective, namely the right to environment. The right to a healthy environment is often mentioned as one of the solidarity rights, but no Declaration, let alone a Convention, has so far been adopted to clarify its meaning. Article 24 of the African Charter on Human and Peoples' Rights comes closest to the recognition of a solidarity right with the right of all peoples "to a general satisfactory environment favourable to

¹²³ William M Lafferty, 'From environmental protection to sustainable development: the challenge of decoupling through sectoral integration' (2004) *Governance for sustainable development: The challenge of adapting form to function* 191 203

¹²⁴ A first strategy of normative sustainable development decision making has been attempted by Tom Waas and others, 'Sustainability Assessment and Indicators: Tools in a Decision-Making Strategy for Sustainable Development' (2014) 6 *Sustainability* 5512

¹²⁵ Katja Gehne, *Nachhaltige Entwicklung als Rechtsprinzip: normativer Aussagegehalt, rechtstheoretische Einordnung, Funktionen im Recht*, vol 9 (Mohr Siebeck 2011) 350

¹²⁶ Waas and others, 'Sustainability Assessment and Indicators: Tools in a Decision-Making Strategy for Sustainable Development' *ibid*

their development.” In the 2001 Ogoni case , the African Commission equated the combined reading of the (individual) right to health and the peoples’ right to a favourable environment with the right to a healthy environment.¹²⁷ The African Commission identified the following State obligations: to take reasonable and other measures to prevent pollution and ecological degradation, to promote conservation, and to secure an ecologically sustainable development and use of natural resources; to desist from directly threatening the health and environment of their citizens (para. 52); and independent scientific monitoring of threatened environments, requiring and publicising environmental and social impact studies prior to any major industrial development, undertaking appropriate monitoring and providing information to those communities exposed to hazardous materials and activities and providing meaningful opportunities for individuals to be heard and to participate in the development decisions affecting their communities (para. 53).

In sum, while the textual recognition of a right to a healthy environment creates opportunities for the protection of the environment beyond individual human interests, the meaning of that right needs further substantiation. Moreover, human rights law faces some clear conceptual limitations in regulating environmental protection: it focuses on individual rights holders in the present, to the detriment of acknowledging the rights and interests of future generations.

Because of its anthropocentric underpinnings, HRL is limited in its scope and mechanisms to integrate an environmental bottom line in its normative base. SDL offers a better understanding of environmental protection in the context of social and economic decision making which is crucial in the field of energy, where the three are intrinsically linked to each other. This better understanding of environmental protection in SDL lies in the integration of the triple objectives on a case by case basis and the prioritization therein of the environmental bottom line. SDL can be operationalised by a SDNBA which will first check the compliance of energy decisions with the vertical principles followed by the integration exercise.

An example where a SDNBA would be appropriate is Belgian climate governance. At present, Belgian climate governance is guided by European and international politically negotiated

¹²⁷ (*The Social and Economic Rights Action Centre and the Centre for Economic and Social Rights v. Nigeria*, African Commission on Human and Peoples' Rights, Comm. No. 155/96 (2001), para. 52).

targets and deals that are not well integrated. The national¹²⁸ and regional climate action plans each consist of a bunch of measures in particular sectors such as transport, energy, agriculture, industry, etc. with most of the planned measures having their own monitoring carried out by established agencies. In Flanders, the industries and sectors under the Emission Trading Scheme (ETS) are excluded from the action plan¹²⁹ which leaves the mitigation for more than 50% of Belgium's greenhouse gas emissions over to a dysfunctional system, the ETS.¹³⁰ Although the ETS has the aim of decreasing GHG emissions, it gives priority to the good functioning of the carbon market, rather than to the absolute curtailing of GHG emissions. The SDL integration principle would offer solid guidance to structure the governance system towards more value based and environmental protection in all different sectors now left to the ETS. A SDNBA would require compliance to, among other vertical principles, the precautionary principle which would probably lead to more environmental friendly designing of market-based instruments. Likewise, for the ETS-industries and sectors a stricter integration with the environmental bottom line would incentivize real curbing of greenhouse gasses, beyond the low market incentive the ETS has now. For the climate action plans not falling under the ETS, integration with the environmental bottom line should at least follow science based climate targets. It is difficult though to predict how far the environmental integration in every course of action can be stretched.¹³¹

It is clear that SDL offers a strong normative basis for environmental integration, having priority over the social and economic objective as shown on figure 1. This element is key in lowering the environmental footprint of our energy system.

¹²⁸ The last drafted national climate action plan was for the 2008-2012 period. Negotiations about a follow up plan are still ongoing between the Federal and regional governments. See <http://www.klimaat.be/nl-be/klimaatbeleid/belgisch-klimaatbeleid/nationaal-beleid/nationaal-klimaatplan/> retrieved 22/10/2016.

¹²⁹ See Flemish Climate Action Plan <http://www.vlaamseklimaatop.be/hoever-staat-de-uitvoering-van-het-vlaams-klimaatbeleidsplan-2013-2020>

¹³⁰ Frédéric Branger, Oskar Lecuyer and Philippe Quirion, 'The European Union Emissions Trading Scheme: should we throw the flagship out with the bathwater?' (2015) 6 Wiley Interdisciplinary Reviews: Climate Change 9 9

¹³¹ Kars de Graaf, 'Balancing Exploitation and Protection of the Dutch North Sea; The Dutch Struggle with the Need For Wind Energy at Sea and a Legal Framework for the Protection of the Marine Environment' in Christina Voigt Hans Christian Bugge (ed), *Sustainable Development in International and National Law* (Sustainable Development in International and National Law, Europa Law Publishing 2008) 588

3.5 Reflexivity and adaptation

The fifth challenge that energy governance is facing is the lack of reflexivity and adaptation. Reflexivity and adaptation point to the capacity to reflect and react on the functioning of the governance framework, on its effects and effectivity towards the aimed outcome. It is necessary to be able to not only reflect on and adapt the given policy or institution, but also the process of reflection and adaptation itself such as the built-in monitoring, evaluation and redress.¹³² This is important in the early stages of a policy change given that the energy sector has a strong path-dependency and given that external factors such as the environment are rapidly changing over time.¹³³

The two concepts in SDL that embody this reflexivity and adaptation is the precautionary principle and Sustainability Impact Assessment (SIA). As discussed earlier¹³⁴ the precautionary principle requires an ongoing risk analysis towards human health, eco-systems protection and natural resources conservation.¹³⁵ Even in case of scientific uncertainty, the obligation exists to take cost-effective measures to avoid damages to human health or nature. The obligation to take precautionary measures becomes stronger in proportion with the probability that the realization of damage increases and the severity of potential (serious or irreversible) damage, as mitigated by the proportion of the precautionary measure¹³⁶. This probability is a changing factor, but the goal of human and environmental protection remains.

SIA is a feedback mechanism that functions as indicator of changing factors, effects of decisions. The impact assessment measures (changing) situations with regard to the three sustainable development pillars, and gives hence social, economic and environmental information. Ideally, this information reflects on and informs new decision-making. In HRL too, the practice of impact assessment is known as reflection tool, both at the level of organizations and projects¹³⁷ and on the state level, where the Universal Periodic Review serves as reflection and performance

¹³² Loorbach, 'Transition Management for Sustainable Development: A Prescriptive, Complexity-Based Governance Framework'

¹³³ Goldthau and Sovacool, 'The uniqueness of the energy security, justice, and governance problem'

¹³⁴ See page 8 'the precautionary principle'.

¹³⁵ Jacqueline Peel, *Science and risk regulation in international law* (Cambridge : Cambridge university press 2010) 2

¹³⁶ De Sadeleer, *Environmental principles: from political slogans to legal rules*

¹³⁷ James Harrison, 'Human rights measurement: reflections on the current practice and future potential of human rights impact assessment' (2011) 3 *Journal of Human Rights Practice* 162 216

indicator¹³⁸. Positive obligations and in particular on the level of ESC-rights, are often subjected to the idea of progressive realization and (as outlined above a non-absolute) prohibition of retrogressive measures. This establishes an adaptation mechanism to a changed situation, namely an improved economic situation.

For a sector characterized by a very versatile factor as the environment, energy governance should be guided by an adaptive normative framework. The precautionary principle gives the SDL the ability of adapting the normative content to the emerging needs revealed by the SIA. HRIA appears to be a more static instrument to measure the progress towards the aimed human rights standard. Progressive realization may push the transition process towards a certain standard, but does not lead to an adapted norm.

The best example for which energy governance needs a highly reflexive and adaptive capacity is climate change mitigation and adaptation. In light of the changing knowledge about the impacts of climate change, new norm setting as well as new strategies and governance measures are required to tackle the challenges. There are no separate national or regional mechanisms throughout Europe that monitor greenhouse gas emissions with the aim to set new normative pollution standards in line with what is needed according to the science of climate change¹³⁹. Under the auspices of the European Commission's 2020 scheme, there is a particular EU monitoring system applicable though.¹⁴⁰ Whereas this system functions well in urging EU-states to curb emissions, efforts should be made towards adapting the targets towards science-based targets, in line with the precautionary principle.

4. Conclusion

Both value-driven frameworks of SDL and HRL can and should inform energy governance to address the challenges it is faced with. SDL and HRL both reinforce demands for strengthened public participation in energy governance. HRL and SDL both offer normative guidance on

¹³⁸ <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N05/502/66/PDF/N0550266.pdf?OpenElement> retrieved 23/10/2016.

¹³⁹ Rajendra K Pachauri and others, *Climate change 2014: synthesis Report. Contribution of working groups I, II and III to the fifth assessment report of the intergovernmental panel on climate change* (IPCC 2014)

¹⁴⁰ http://ec.europa.eu/clima/policies/strategies/progress/reporting/index_en.htm retrieved 17-10-2016

intragenerational equity too. In this regard, HRL is further developed in terms of norm setting and mechanisms, and can be usefully integrate in SDL, in particular to give more concrete meaning to the social objective. SDL also requires the introduction of intergenerational equity in energy governance. Likewise, the integration principle in SDL offers a stronger base for environmental protection than HRL does, since the latter's anthropocentric focus limits it to human interests. Finally, the precautionary principle in SDL necessitates a reflexive and adaptive normative base for energy governance in order to deal with continuously changing challenges.

At times, sustainable development law and human rights law do reinforce each other. At other times, though, they do not point in the same direction, and tensions may arise between both valued-driven frameworks. HRL acknowledges the importance of a solid economic base for the realization of ESC rights, in that the general obligation of States to realize ESC rights is qualified by the availability of resources. It does not prioritize economic development, but neither does it ignore the importance of economic development: it acknowledges that (relative) human rights may have to be balanced with economic interests. In practice, human rights judges and lawyers often disagree on where to strike the balance, so that a certain interest may prevail *de facto* (notwithstanding the balancing rhetoric). This turns out to be problematic in practice.¹⁴¹ This dynamic towards prioritisation of a certain interest resembles what tends to happen in SDL. The objective of economic growth and development is often perceived as essential for the realization of the social objective and sometimes even argued to be necessary to protect the environment. Here too, judges and lawyers have difficulties in striking a balance, puzzled by the often vague conceptualization of sustainable development and the uncertainty about the existence of an environmental bottom line.

We have argued that environmental protection prevails in SDL, properly understood. For energy governance, this means that one has to find ways to increase fulfilment of the right to energy without crossing certain environmental boundaries. This could mean turning to low energy intensive consumption behaviour or technological innovation.

¹⁴¹ Başak Cali, 'Balancing human rights? Methodological problems with weights, scales and proportions' (2007) 29 Human rights quarterly 251

In sum, the value-driven canons of HRL and SDL are reinforcing each other in rejecting the hegemony of economic development interests in governance mechanisms, but they may disagree on which concern should prevail: HRL focuses on social development (albeit with some attention to human-centred environmental concerns), SDL prioritizes integration of different objectives with the environmental objective as the decisive priority. So when priority must be given to one of the two frameworks in case of conflict, SDL offers more compelling guide towards a more future proofed energy system and liveable planet.

Bibliography

- X., 'OECD Book – Sustainable Development: Critical Issues' (2001) 12 *Environmental Management and Health* 529
- UNECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters* (2001)
- IEA, *Belgium 2016 Energy Policy Review* (2016)
- Adelman S, 'Rio+ 20: sustainable injustice in a time of crises' (2013) *Journal of Human Rights and the Environment* 6
- Assembly UG, 'Transforming our world: the 2030 Agenda for Sustainable Development' (2015) 1 UN Doc A/70/L
- Barral V, 'Sustainable Development in International Law: Nature * and Operation of an Evolutive Legal Norm' (2012) 23 *European Journal of International Law* 377
- Bernasconi-Osterwalder N, 'Transparency, Participation and Accountability in International Economic Dispute Settlement; A Sustainable Development Perspective' in Voigt HBC (ed) *Sustainable development in International and national law* (Sustainable development in International and national law, Europa Law Publishing 2008)
- Bonanomi EB, *Sustainable development in international law making and trade: international food governance and trade in agriculture* (Edward Elgar Publishing 2015)
- Branger F, Lecuyer O and Quirion P, 'The European Union Emissions Trading Scheme: should we throw the flagship out with the bathwater?' (2015) 6 *Wiley Interdisciplinary Reviews: Climate Change* 9
- Brundtland G and others, 'Our Common Future (\Brundtland report\)' (1987)
- Buergi E, *Agricultural Trade: Taking Integration Seriously*
- Bugge HC and Voigt C, *Sustainable Development in International and National Law: what did the Brundtland Report do to Legal Thinking and Legal Development, and where can we go from here?*, vol 8 (ISBS 2008)
- Cali B, 'Balancing human rights? Methodological problems with weights, scales and proportions' (2007) 29 *Human rights quarterly* 251
- CESCR, *Statement of the Committee on Economic, Social and Cultural Rights, An Evaluation of the Obligation to Take Steps to the "Maximum of Available Resources" under an Optional Protocol to the Covenant* 2007)
- Clark GL and Monk AH, 'The legitimacy and governance of Norway's sovereign wealth fund: the ethics of global investment' (2010) 42 *Environment and Planning A* 1723
- Clemson M, 'Human rights and the environment: Access to energy' (2012) 16 *New Zealand Journal of Environmental Law* 39
- Committee on Economic SaCR, *General Comment No. 15, The right to water (arts. 11 and 12)* (2002)
- De Sadeleer N, *Environmental principles: from political slogans to legal rules* (Oxford University Press on Demand 2002)
- Declaration R, *Rio declaration on environment and development* (1992)
- Declaration S, 'Declaration of the United Nations conference on the human environment' (1972)
- URL= <http://www.unep.org/Documents/Multilingual/Default.asp>

Delft C, *The potential of energy citizens in the European Union*, 2016)

Dhingra C and others, 'Access to clean energy services for the urban and peri-urban poor: a case-study of Delhi, India' (2008) 12 *Energy for Sustainable Development* 49

Di Lucia L, Ahlgren S and Ericsson K, 'The dilemma of indirect land-use changes in EU biofuel policy—An empirical study of policy-making in the context of scientific uncertainty' (2012) 16 *Environmental science & policy* 9

Elkington J, 'Partnerships from cannibals with forks: The triple bottom line of 21st-century business' (1998) 8 *Environmental Quality Management* 37

Ellen Vos GVC (ed), *Risico en voorzorg in de Rechtsmaatschappij (Risk, Precaution and the Rule of Law)* (Intersentia 2004)

FCCC U, *United Nations Framework Convention on Climate Change*. 1992 (1992)

Gatmaytan DB, 'Illusion of Intergenerational Equity: Oposa v. Factoran as Pyrrhic Victory, The' (2002) 15 *Geo Int'l Env'tl L Rev* 457

Gehne K, *Nachhaltige Entwicklung als Rechtsprinzip: normativer Aussagegehalt, rechtstheoretische Einordnung, Funktionen im Recht*, vol 9 (Mohr Siebeck 2011)

Goldthau A and Sovacool BK, 'The uniqueness of the energy security, justice, and governance problem' (2012) 41 *Energy Policy* 232

Gosseries A, 'Theories of intergenerational justice: a synopsis' (2008) SAPI EN S Surveys and Perspectives Integrating Environment and Society

Graaf Kd, 'Balancing Exploitation and Protection of the Dutch North Sea; The Dutch Struggle with the Need For Wind Energy at Sea and a Legal Framework for the Protection of the Marine Environment' in Hans Christian Bugge CV (ed) *Sustainable Development in International and National Law* (Sustainable Development in International and National Law, Europa Law Publishing 2008)

Gready P, 'Rights-based approaches to development: what is the value-added?' (2008) 18 *Development in practice* 735

Guerry A, 'A Reflection on Some Legal Aspects of Decision Control in the Energy Transition Process: A Comparison of France and Germany' in Jordi Jaria i Manzano NJCaLJK (ed) *Energy, Governance and Sustainability* (Energy, Governance and Sustainability, Edward Elgar Publishing 2016)

Harremoës P and others, *The precautionary principle in the 20th century: Late lessons from early warnings* (Routledge 2013)

Harrison J, 'Human rights measurement: reflections on the current practice and future potential of human rights impact assessment' (2011) 3 *Journal of Human Rights Practice* 162

Haugen HM, 'Human Rights Principles: Can they be Applied to Improve the Realization of Social Human Rights?' (2011) 15 *Max Planck Yearbook of United Nations Law Volume*

Hopwood B, Mellor M and O'Brien G, 'Sustainable development: mapping different approaches' (2005) 13 *Sustainable Development* 38

Kaygusuz K, 'Energy for sustainable development: A case of developing countries' (2012) 16 *Renewable and Sustainable Energy Reviews* 1116

Kemp R and Loorbach D, '5. Transition management: a reflexive governance approach' (2006) *Reflexive Governance for Sustainable Development*, Cheltenham, UK and Northampton, MA, USA: Edward Elgar 103

Kemp R and Loorbach D, 'Reflexive governance for sustainable development' (2006)

Kirchhoff H and others, 'Developing mutual success factors and their application to swarm electrification: microgrids with 100% renewable energies in the Global South and Germany' (2016) 128 *Journal of Cleaner Production* 190

Klaus B, 'A vulnerable environment: contextualising law with sustainability' (2011) *Journal of Human Rights and the Environment*

Lafferty W, 'Introduction: form and function in governance for sustainable development' in Lafferty W (ed) *Governance for Sustainable Development, the Challenge of Adapting Form to Function* (Governance for Sustainable Development, the Challenge of Adapting Form to Function, Edward Elgar Publishing 2004)

Lafferty WM, 'From environmental protection to sustainable development: the challenge of decoupling through sectoral integration' (2004) *Governance for sustainable development The challenge of adapting form to function* 191

Lafferty WM, 'From environmental protection to sustainable development: the challenge of decoupling through sectoral integration' (2004) *Governance for sustainable development: The challenge of adapting form to function* 191

Loorbach D, 'Transition Management for Sustainable Development: A Prescriptive, Complexity-Based Governance Framework' (2010) 23 *Governance* 161

Meadowcroft J, 'Participation and Sustainable Development' in Lafferty W (ed) *Governance for sustainable development, the challenge of adapting form to function* (Governance for sustainable development, the challenge of adapting form to function, Edward Elgar Publishing 2004)

Meadowcroft J, 'Who is in charge here? Governance for sustainable development in a complex world*' (2007) 9 *Journal of Environmental Policy & Planning* 299

Meadowcroft J, 'What about the politics? Sustainable development, transition management, and long term energy transitions' (2009) 42 *Policy Sciences* 323

Pachauri RK and others, *Climate change 2014: synthesis Report. Contribution of working groups I, II and III to the fifth assessment report of the intergovernmental panel on climate change* (IPCC 2014)

Panwar NL, Kaushik SC and Kothari S, 'Role of renewable energy sources in environmental protection: A review' (2011) 15 *Renewable and Sustainable Energy Reviews* 1513

Pearson B, 'Market failure: why the Clean Development Mechanism won't promote clean development' (2007) 15 *Journal of Cleaner Production* 247

Peel J, *Science and risk regulation in international law* (Cambridge : Cambridge university press 2010)

Ross A, 'Modern interpretations of sustainable development' (2009) 36 *Journal of Law and Society* 32

Schrijver N, *The evolution of sustainable development in international law: inception, meaning and status* (Brill 2008)

Segger M-CC and Khalfan A, 'Sustainable development law: principles, practices, and prospects' (2004) OUP Catalogue

Seyfang G and Haxeltine A, 'Growing grassroots innovations: exploring the role of community-based initiatives in governing sustainable energy transitions' (2012) 30 *Environment and Planning C: Government and Policy* 381

Steffen W and others, 'Planetary boundaries: Guiding human development on a changing planet' (2015) 347 *Science* 1259855

Stone CD, 'Should Trees Have Standing--Toward Legal Rights for Natural Objects' (1972) 45 *S CAL L rev* 450

Talus K, *Research handbook on international energy law* (Edward Elgar Publishing 2014)

Tully S, 'Access to electricity as a human right' (2006) 24 *Neth Q Hum Rts* 557

UN, *United Nations Framework Convention on Biodiversity* (1993)

Vandenbogaerde A and Vandenhoe W, 'The optional protocol to the international covenant on economic, social and cultural rights: an ex ante assessment of its effectiveness in light of the drafting process' (2010) 10 *Human Rights Law Review* 207

Vandenhoe W, 'Completing the UN Complaint Mechanisms for Human Rights Violations Step by Step: Towards a Complaints Procedure to the International Covenant on Economic, Social and Cultural Rights' (2003) 21 *Netherlands Quarterly of Human Rights* 423

vandenhoe W, 'Extraterritorial Human Rights Obligations: Taking Stock, Looking Forward' (2013) *European Journal of Human Rights* 804

Vandenhoe W and Gready P, 'Failures and Successes of Human Rights-Based Approaches to Development: Towards a Change Perspective' (2014) 32 *Nordic Journal of Human Rights* 291

Vandenhoe W, Türkelli GE and Hammonds R, 'Reconceptualizing human rights duty-bearers' in Mihr A and Gibney M (eds), *SAGE Handbook of human rights*, vol 2 (SAGE Handbook of human rights, SAGE 2014)

Viñuales JE, 'The rise and fall of sustainable development' (2013) 22 *Review of European, Comparative & International Environmental Law* 3

Voigt C, *Rule of law for nature: new dimensions and ideas in environmental law* (Cambridge, United Kingdom : Cambridge University Press 2013)

Waas T and others, 'Sustainability Assessment and Indicators: Tools in a Decision-Making Strategy for Sustainable Development' (2014) 6 *Sustainability* 5512

Weiss EB, 'Plantetary Trust: Conservation and Intergenerational Equity, The' (1983) 11 *Ecology LQ* 495

Weiss EB, 'In fairness to future generations' (1990) 32 *Environment: Science and Policy for Sustainable Development* 6

Westerlund S, 'Theory for Sustainable Development: Towards or Against' (2008) *Sustainable Development in International and National Law* Europa Law Publishing, Groningen

Winter G, Bugge H and Voigt C, 'A Fundament and Two Pillars: The Concept of sustainable development 20 years after the Brundtland Report' (2008) *Sustainable development in international and national law*

Wolsink M, 'Wind power implementation: the nature of public attitudes: equity and fairness instead of 'backyard motives'' (2007) 11 *Renewable and sustainable energy reviews* 1188