GREEN ECONOMY FOR SUSTAINABLE DEVELOPMENT

Compendium of Legal Best Practices

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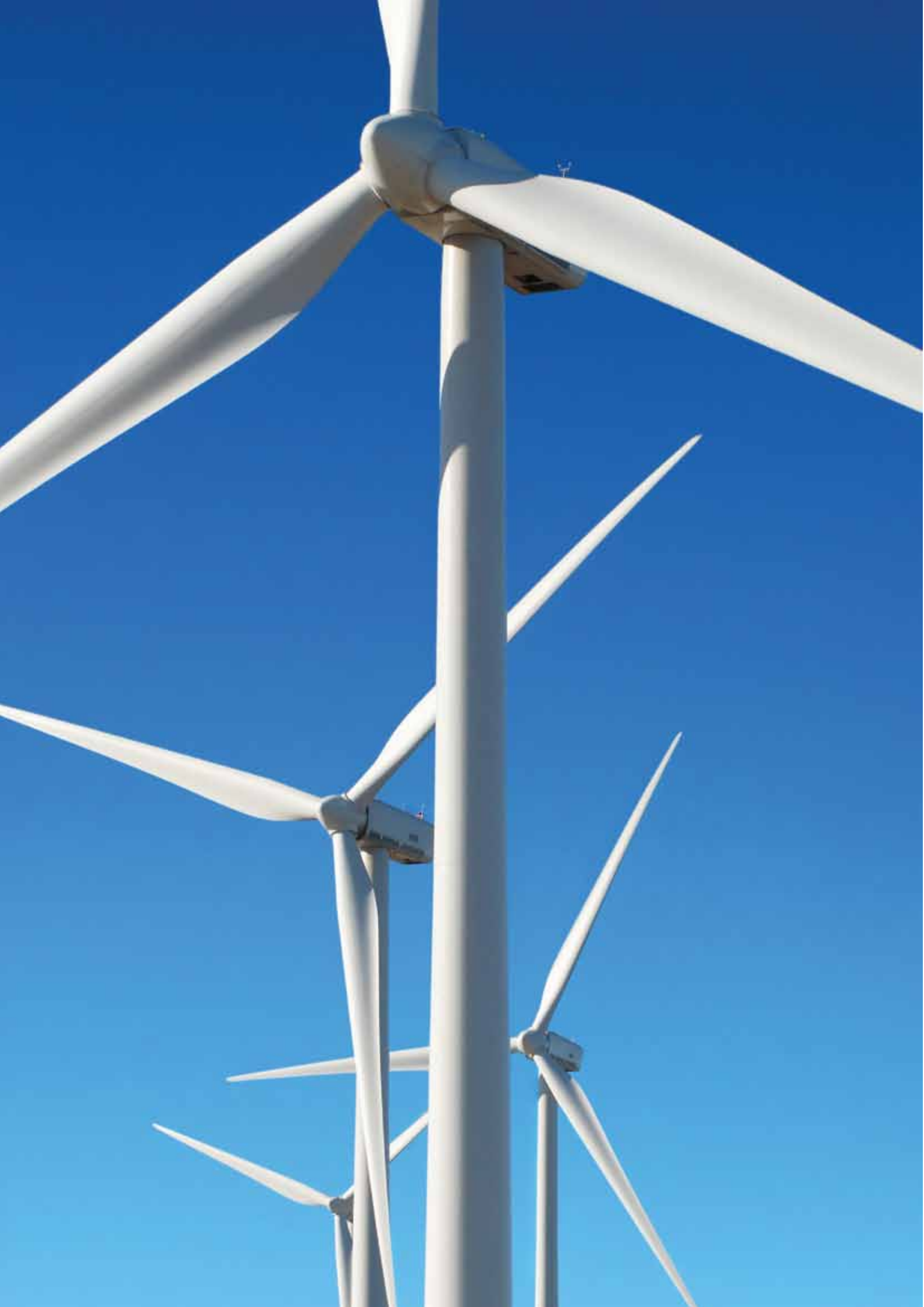
Green Economy for Sustainable Development: Compendium of Legal Best Practices

1 INTRODUCTION



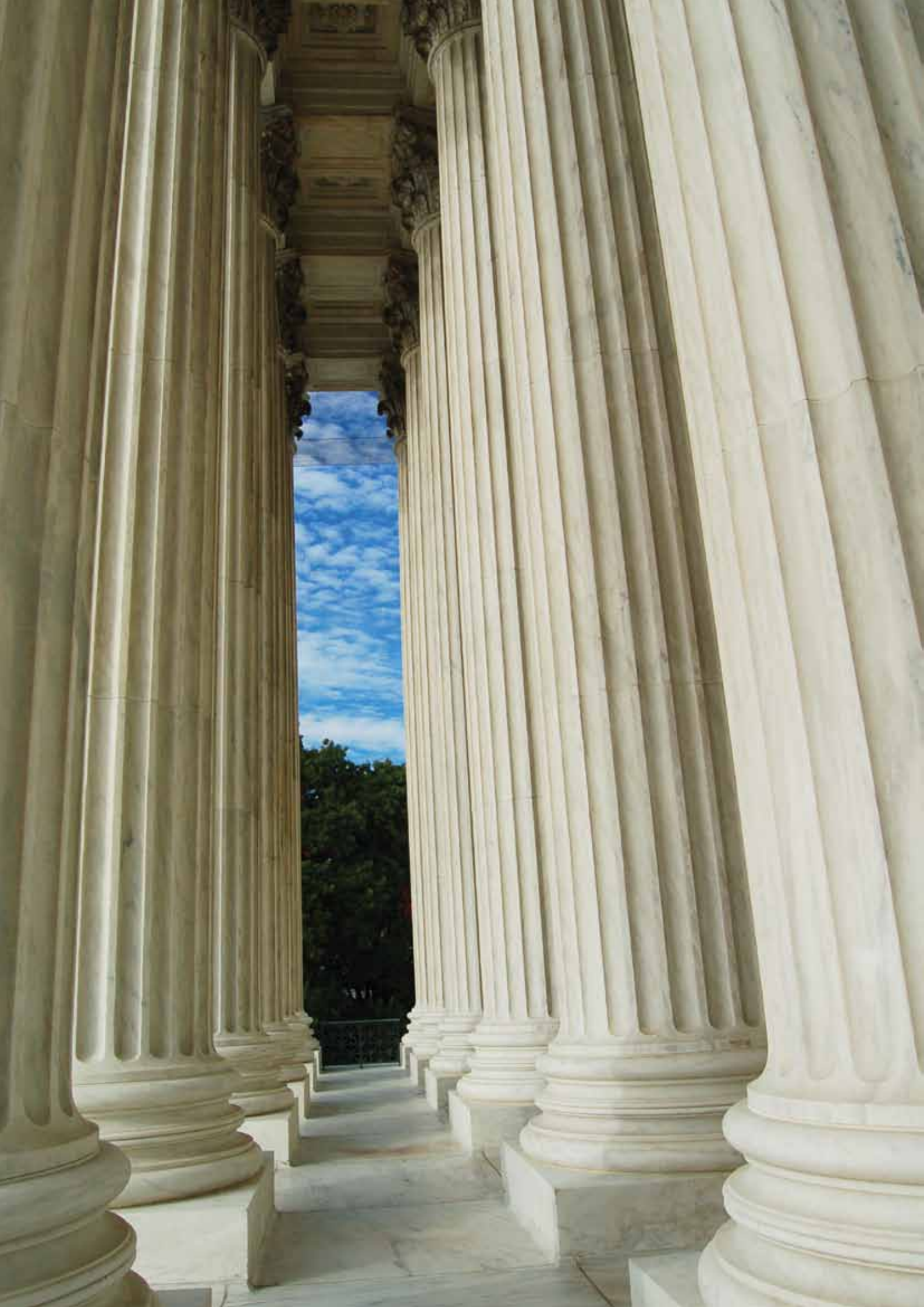
UNEP defines a green economy as one that results in "improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities."[1] The green economy agenda implies a departure from many accepted practices in key sectors of the economy. Numerous States, NGOs, international organisations, businesses and other stakeholder groups recognise that "business as usual economic practices" do not allow for an adequate response to important global challenges such as climate change, loss of biodiversity, prevailing disparities between rich and poor, emerging health hazards and recurring financial crises. The "green economy in the context of sustainable development and poverty eradication" is a main theme of the 2012 Rio+20 Conference. The green economy agenda, outlined in a rigorous and compelling manner in a 2011 UNEP report,[2] proposes a new kind of economic development for both developed and developing countries, which involves "greening" 11 key sectors of the economy: agriculture, fisheries, water, forests, energy, manufacturing, waste, buildings & construction, transportation, tourism, and cities.

The green economy agenda proposes bold and innovative solutions to complex challenges that are fundamentally linked to the manner in which economic development is framed and guided by policymakers. Its basic premise is that economic development that is coupled with improved human well-being and environmental protection will result stable economic growth. Numerous actors have an important place in this process of change, especially businesses and the private sector. Governments and policymakers can play a key role in "kick-starting" financing for the green economy, as well as creating and implementing laws and policies that will guide and support the transition to a green economy in each sector.

The purpose of this compendium is to provide direction and expertise to domestic policymakers with regard to effective law and policy options for the transition to the green economy, in each sector identified by the UNEP report. Legal experts provide an analysis of key challenges in each sector, as well as a summary of some of the main law and policy options available to policymakers to address these challenges. In each sector, 3 examples of best practices in developing and developed countries contribute a concrete illustration of the effectiveness of law and policy as a tool in the transition to a green economy. As such, this compendium is meant to complement the 2011 UNEP Report by analysing, developing and providing best practices of law and policy tools in each key sector.

We hope that this compendium will empower and inspire policymakers, especially in developing countries, to engage with the green economy agenda. The compendium does not purport to provide an exhaustive analysis of law and policy options in each sector. Rather, best options for greening the economy should be contextualised, integrated and involve a hybrid and flexible set of law and policy tools. Further, policymakers need not necessarily address issues emerging from all of the identified key sectors, while some other sectors not analysed here might also require attention. Overall, this compendium will assist policymakers and other stakeholders to comprehend the importance of national and international law and policy in the context of the green economy transition, and provide a starting point for a contextualised analysis of best available practices and solutions.

1 United Nations Environment Programme, *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication* (UNEP: 2011) 16.
2 Ibid



2

LEGAL AND INSTITUTIONAL BARRIERS TO THE GREEN ECONOMY

Transition to the green economy will require efforts by policymakers and other stakeholders at the international, regional, national and local levels to identify and adapt laws and institutions relevant to greening key sectors of the economy. There exists no "one size fits all" model in terms of legal preparedness for the green economy. Legal and institutional change must occur in a contextualized manner, taking into account local factors as well as growing economic codependence in the process of globalization. Further, legal and institutional reform is an incremental process. Legal change is non-linear, long-term and iterative. Laws are often adjusted, modified and reformed to correct for unforeseen effects and adapt to a rapidly changing reality. The adaptability of a legal framework depends on its purpose and its context.

Legal preparedness for the green economy involves identifying, by employing an integrated approach, which laws and institutions govern a given sector. Relevant sectors of the economy are frequently governed by several overlapping legal frameworks, each involving different sets of institutions. Transition to the green economy then requires the identification of legal and institutional barriers and opportunities in each sector, in order to enable effective and durable legal and institutional change. Further, an integrated approach will seek to coordinate and rationalize the efforts of involved institutions, and work with all stakeholders in a consultative process in order to seek input and raise awareness with regard to legal and institutional challenges and their impacts.

2.1

Legal and Institutional Reform for Natural Capital

Legal and institutional reform to enable and facilitate the sustainable management of natural resources is central for the transition to the green economy. The benefits of natural capital are often unrecognized or undervalued in the current economic framework. For instance, the numerous services provided by ecosystems, such as the important role that forests play as carbon sinks, are not reflected in the market value of forests employed for the forestry sector. Furthermore, natural capital is directly linked to the livelihoods of the poor. The poor are most dependent on natural capital for their direct survival. Legal and institutional reform targeting the management of natural capital can therefore have a strong impact in terms of poverty eradication. Legal empowerment of the poor for sustainable livelihoods is linked to legal and institutional rights and barriers affecting access to and control over benefits derived from natural capital.

Legal best practices relating to natural capital in this compendium focus on 4 key sectors: agriculture, fisheries, water and forests.

Legal preparedness for green agriculture relates to the core issue of food security in a context of rapid global population growth. Greening the agriculture sector is essential to the development of a reliable and healthy food supply, produced in a resource-efficient manner that respects decent conditions for food producers. Legal best practices for green agriculture presented in this compendium include India's National Program for Organic Production, which focused on strategic funding and institutional capacity-building for Indian organic agriculture. As a result, India's organic standards are now recognized in both the United States and the European Union. India is also developing a participatory guarantee system for the benefit of smaller organic farmers. This section also examines the Scottish Action Plan for Organic Food and Farming, meant to empower farmers to access funding for organic agriculture, and the successful Cuban National Plan of Action for Nutrition.

Legal preparedness for sustainable fisheries addresses the imminent risk of extinction of many fish stocks. Fishing is an essential sector in many States from an economic and

ecological perspective, and also from a social and cultural perspective. Indeed, fishing is integral in many communities to livelihoods and lifestyles. Legal best practices for sustainable fisheries presented in this compendium include New Zealand's individual transferable quotas, which promoted self-regulation by stakeholders to enhance available stocks by restricting harvesting. Other best practices include the total allowable catch and other law and policy features in Namibia, as well as Mexico's General Law for Fishing and Aquaculture.

Legal preparedness for sustainable water management responds to the core challenges of water access, sanitation and water scarcity, in a context where over 1 billion people worldwide lack access to clean water. Water management is complex and cross-sectorial, impacting individual health but also food and energy production. Legal best practices for sustainable water management presented in this compendium include the Saudi Arabian Food Security Initiative, which aims to phase out inefficient use of water for agriculture in a context of water scarcity. This section also examines the South African constitutional right to water. Finally, this section studies the Australian Water Policy reform, which recognized and required water provision for ecological needs, and modified the institutional structure of water governance to enhance sustainable water management.

Legal Preparedness for sustainable forest management involves a context of global forest cover decline and lack of recognition for the wide range of benefits produced by forests. Sustainable forest management involves recognizing the value of forests for example in terms of natural resources, livelihoods and carbon sequestration. Legal best practices for sustainable forest management presented in this compendium involve the EU Renewable Energy Directive, which includes biomass from forests as a source of renewable energy. Further case studies describe the EU Forest Law Enforcement, Governance and Trade Action Plan, which recognizes a shared responsibility with timber-producing countries to counter illegal logging. The EU now has a Voluntary Partnership Agreement with the Republic of Congo and a number of other developing countries under the auspices of this plan. This section also examines indigenous land rights and the forestry sector in Nicaragua.

2.2

Legal and Institutional Reform for Energy and Resource Efficiency

The key drivers of the green economy are processes such as technological innovation, enhanced and rationalized production systems, or improved strategic planning, leading to energy and resource efficiency. Legal and institutional reform is a key driver to initiate and support change in this context by providing incentives, setting standards, building skill-sets or raising awareness. Challenges and opportunities will differ depending on the context, and so will the legal and institutional changes necessary to adapt to and address difficulties. Broadly, developed and developing countries face distinct issues. Developed countries are more likely confronted with challenges such as replacing existing infrastructure with more efficient models, and addressing the entrenched complacency of business as usual methods. Developing countries, especially emerging economies, must search for best available options to respond to an increasing and unaddressed demand in numerous sectors, such as energy, housing and transport. In this context, developing and implementing effective legal frameworks is particularly challenging, due to the requirement of addressing multiple and immediate priorities, while preserving adaptive capacity and pursuing long-term objectives. Energy and resource efficiency are also intertwined with the availability of a skilled workforce, as well as laws related to decent jobs.

Legal best practices relating to energy and resource efficiency in this compendium focus on 7 key sectors: energy, manufacturing, waste, building & construction, transportation, tourism, and cities.

Legal preparedness for renewable energy addresses perhaps one of the most pivotal sectors presented in this compendium. Energy directly impacts virtually every other sector of the economy, as it is required for most productive activities. The challenges are impressive, in a context where approximately 80% of global energy production still relies on fossil fuels. Nonetheless, numerous legal options are available to support emerging renewable energy technologies. Legal best practices for renewable energy developed in this compendium include the German Feed-in-Tariff model, which has known considerable success

since its introduction in the 1990s. The German experience has served as an inspiration for many other States, including developing countries. For example, another case study focuses on Brazil's Programme of Incentives for Alternative Energy Sources, which aims at 10% of energy from renewable sources by 2022. This Brazilian framework is based in the German model, with several alterations to respond to specific local challenges. This section also examines Chinese policies promoting solar PV home systems for rural electrification, as an effective energy solution for off-grid areas.

Legal preparedness for green manufacturing targets a sector with a large environmental and social footprint, for example in terms of CO2 emissions, energy and water consumption, and safety and labor standards. Green manufacturing aims at more material-efficient processes, while also providing decent jobs to workers. Legal best practices for green manufacturing in this compendium include Ethiopia's Cleaner Production Centre, an institution that provides policy development and analysis to the government as well as technical assistance to the industry. Its goal is to promote clean production in the Ethiopian industrial sector. Another case study examines green jobs in China, where the government has created educational and vocational training programs to address the skills gap in secondary schools. Finally, the US Green Suppliers Network aims to provide technical assistance to improve efficiency and promote cleaner manufacturing methods, in order to increase the competitiveness of US manufacturers while reducing environmental impacts.

Legal preparedness for sustainable waste management must support a sector that seeks alternative ways of managing sources of waste, as well as reducing the social and environmental impacts of waste disposal. Virtually all levels of government, as well as some actors from the private sector, are involved in carrying out and regulating waste management. Generally, legal frameworks will aim to minimize waste production, recycle unavoidable waste and dispose of the remainder in the least harmful way possible. Legal best practices for sustainable waste management in this compendium include Zero Waste South Australia, an institution that oversees an integrated waste management strategy. Its target is a 35% reduction in waste by 2014, and it coordinates the efforts of a variety of stakeholders including local and state governments, the private sector and end-users. Another case study details a public-private partnership (PPP) between the municipality of Dhaka and private sector actors to establish a composting market, which will help reduce waste in the city. This section also details the Integrated Waste Management plan of Belo Horizonte, Brazil.

Legal preparedness for green buildings and construction involves a sector that is the largest single contributor to greenhouse gas emissions. Buildings are highly dependent on energy use in both pre and post-construction phases. In this context, developing countries need to focus on holistic approaches that ensure stronger performance standards for new buildings, while developed countries might be challenged with retrofitting older designs. Legal best practices for green buildings and construction in this compendium include an analysis of New Mexico's Sustainable Development Testing Site Act. This law sets standards for a number of sustainability criteria, for instance proper sewage treatment systems, in order to obtain testing site permits. Another case study details the 2011 Kenyan National Construction Authority Bill, which establishes the new National Authority for Construction. This institution will coordinate the involvement of several Ministries involved in construction, and aims at a stronger regulation of the construction sector in Kenya. This section also describes green building rating systems in Japan.

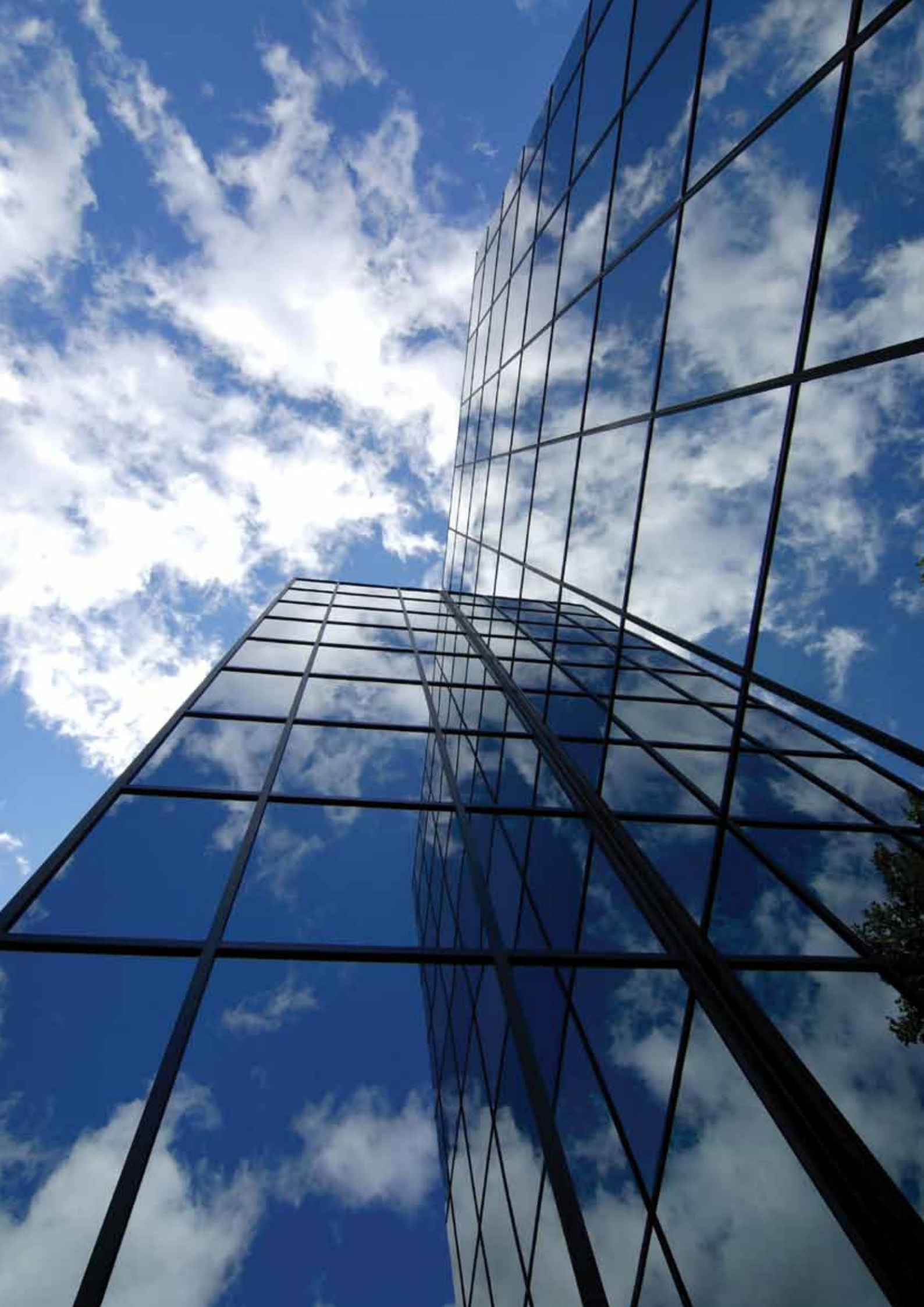
Legal preparedness for green transportation must occur in a context of increasing demand for individual transportation in emerging economies, and a sector that contributes significantly to greenhouse gas emissions and quality of life issues. Legal best practices for green transportation in this compendium include an analysis of the 2010 Transport Integration Act in the state of Victoria, Australia, which aims at enhancing the sustainability and accessibility of the transport system in Victoria. This law also includes provisions for an integrated decision-making process on transport issues involving relevant stakeholders. Other case studies focus on high-speed transit systems in Bogota, Colombia and Lagos, Nigeria, through processes of institutional reform and PPPs.

Legal preparedness for sustainable tourism involves a sector that is the world's largest employer, and plays a central role in poverty alleviation by providing employment, diversifying income-generating sources and raising cultural awareness. Sustainable tourism supports and promotes the natural and cultural environments upon which this sector is built. Legal best practices for sustainable tourism in this compendium include community-based resource management in Botswana, which transfers the management of resources from a centralized government to a local community, offering incentives for the sustainable use of natural resources. Such initiatives promote and sustain

responsible tourism. Other case studies involve policies implemented for sustainable tourism in the context of the New Zealand Resource Management Act, and Costa Rica's certification system for sustainable tourism.

Legal preparedness for green cities emphasizes housing as a key element in mitigating the urban crisis linked to growing urbanization in developing countries, where access to decent infrastructure and housing is still a considerable challenge. Green cities have a number of target characteristics, including for example energy sensitive infrastructure, local networks of public and green spaces, and a combination of vertical and horizontal governance networks. Legal best practices for green cities in this compendium include the Tanzanian National Information and Communication Technology policy, which enables reliable data-acquisition of informal downtown settlements as a key to further informed urban policymaking. Similarly, a case study on policies for Community-Based Participatory research in Cape Town provides a direct link between city officials and planners and slum dwellers, and allows direct input into policymaking. Finally, the urban acupuncture approach to policymaking in Curitiba, Brazil allows for a policy framework that combines immediate response to pressing needs with strategic long-term planning. This approach has enabled the emergence of a Bus Rapid Transit System, urban agriculture, and recycling, for example.

The following sections will detail challenges as well as law and policy options for each key sector, and provide numerous illustrative case studies detailing legal, institutional and policy-based initiatives linked to legal preparedness for the green economy.



3

LEGAL BEST PRACTICES IN THE TRANSITION TO THE GREEN ECONOMY

3.1
LEGAL PREPAREDNESS FOR GREEN AGRICULTURE

In 2011, the world population reached a staggering 7 billion people, throwing the issue of food production sharply into focus: can the earth feed this number of people? The answer is yes; and green agriculture will be an important element in this accomplishment.

Green agriculture facilitates sustainable farming systems by promoting technologies aimed at improving the efficient use of available resources. This is done through a combination of reducing unnecessary losses from the system, improving natural resource productivity through the maximisation of natural inputs into the system, facilitating access to organic inputs, and promoting the cultivation of indigenous food crops and disease resistant varieties. Green agriculture encompasses not only the process of food production itself, but also the conditions of the food producers. In terms of poverty reduction, every 10% increase in yields from green agriculture has resulted in a 10% poverty reduction rate in Africa, and 5% in Asia. Green agriculture techniques and initiatives produced an average yield increase of almost 80% in 57 poor countries.[3] Beyond this increase in productivity, green farming practices aim at enabling healthy ecosystems. The value of green agriculture is therefore not merely economic, but can potentially contribute to the long term stability and resilience of natural resources.

The general challenges to establishing green agriculture, particularly in developing countries, relate to both the demand and supply aspects of green practices.[4] We will summarize below some of the main challenges linked to designing and implementing **law and policy frameworks for green agriculture**.

Domestic Challenges

Firstly, the transition from a conventional farming system to one based on organic sustainable principles entails a shift from capital and chemical intensive farming to knowledge intensive farming. This must be supported by institutional structures aimed at facilitating access to information. Useful and relevant policies will enable dissemination of knowledge and best practices, and a focus on capacity building, including local farmer associations, local training and advisory services. In this sense, it is problematic that government expenditure on agriculture development in developing countries is on a downward trend.[5]

For the transition to green practices to be successful, farmers must adopt a holistic understanding of the concept of organic production. The conversion process can be lengthy and the benefits may take some time to show. A focus on local benefits including self-reliance, fewer chemicals and improved soil quality will allow farmers to withstand setbacks in demand and difficult periods, which might otherwise lead them to revert to conventional farming. Consequently, the institutional information structures must promote a holistic understanding, not just a superficial knowledge of methods.[6]

Secondly, a credible organic certification mechanism can be instrumental in providing access for farmers to distribution channels such as supermarkets and the international market. Developing countries do not always have such certification measures in place. When they do, access can be impaired through logistics or cost.

Thirdly, as noted above, there has been a decrease in the past decades in the public expenditure on agriculture in Least Developed Countries (LDCs), despite the evidence of agriculture's potential to alleviate poverty.[7] The International Fund for Agricultural Development (IFAD) notes that there are negative biases in public expenditure against organic farming systems, such that these producers receive a smaller amount of the available funds than their conventional farming counterparts. This can be improved

3 Pretty, J., Nobel, A.D., Bossio, D., Dixon, J., Hine, R.E., Penning De Vries, F.W.T., Morison, J.I.L. "Resource conserving agriculture increases yields in developing countries". 2006 Environmental Science and Technology, 40, 1114-1119.

4 "Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication. Part I - Investing in natural Capital: Agriculture" (2011) p 44. Available at http://www.unep.org/greeneconomy/GreenEconomyReport/tabid/29846/Default.aspx (last accessed 9/11/2011). On the demand side these include: food security, population growth, changing pattern of demand driven by increased income, and the pressure from bio-fuels. On the supply side these include: limited availability of land, water, mineral inputs and rural labour, as well as the increasing vulnerability of agriculture to climate change and post-harvest losses.

5 UN-DESA Policy Brief 8, "Don't Forget the Food Crisis: New Policy Directions Needed." October, 2008. Available at: http://www.un.org/esa/policy/policybriefs/policybrief8.pdf (last accessed 9/11/2011)

6 IFAD, "Organic Agriculture and Poverty Reduction in Asia: China and India Focus". Available at http://www.ifad.org/evaluation/public_html/eksyst/doc/thematic/organic/execsum.htm (last accessed 7/11/2011)

7 (n 3) 39 - "On average, agriculture's contribution to raising the incomes of the poorest is at least 2.5 times higher than that of non-agriculture sectors in LICs".

through research highlighting the potential of green agriculture in the region and assessing obstructive policies at the government level.[8]

Changes to domestic agricultural investment policies, both public and private, must establish transparent investment mechanisms. A lack of transparency can potentially lead to corruption, distrust, and absence of clarity as to who is entitled to support and when. In this respect, policies and regulations should be benchmarked against globally accepted best practices, including availability to the public of relevant information, and the development of the institutional capacity to handle investment selection.[9]

International developments

At the international level, some promising legal developments have taken place in the movement towards green agriculture. One such example is the International Treaty on Plant Genetic Resources for Food and Agriculture.[10] Recognising the contribution which farmers make to the diversity of crops, the treaty seeks to establish a global system whereby plant genetic materials can be accessed and exchanged. State parties agree to make available information concerning crops stored in their gene banks by way of the Multilateral System. Private individuals can then improve gene materials through use of this information and these benefits are shared among members.

A further example is the Nagoya Protocol to the Convention on Biological Diversity[11] (CBD). This legally binding instrument aims to provide a transparent framework for the achievement of one of the aims of the CBD: the fair and equitable sharing of benefits arising out of the utilisation of genetic resources. Importantly, the Protocol also covers traditional knowledge associated with genetic resources. The sharing of this knowledge is important for the transition to a knowledge-based system of farming.

Green Agriculture and Land Use Regulations

Governments can employ land use regulations to preserve high quality agricultural land and prevent land degradation. However, land regulations should be flexible and efficiently managed, in order to encourage investment.

For example, in tropical regions, land use regulations can be important to find a balance between deforestation due to agricultural encroachment on forests and intensification of food production. Farming practices, whether green or not, that have enabled greater yields on land close to tropical forests have often lead to further expansion into the forest rather than land sparing. As such, policies that promote the use of land which has already been cleared and discourage further deforestation are important. These policies should mainly be targeted at larger commercial enterprises, because it is less difficult for them to readily change locations than for small scale farmers.[12]

Overall, commitment to green agriculture requires a concerted effort on both the national and international law and policy levels, so as to foster agricultural systems capable of sustaining 7 billion people, without hampering the prospects of future generations.

8 (n 5)

9 UNCTAD, "Principles for Responsible Agricultural Investment that Respects Rights, Livelihoods and Resources" (2010). Available at http://www.unctad.org/en/docs/ciicrp3_en.pdf (last accessed 7/11/2011)

10 Available at http://www.planttreaty.org/ (last accessed 21/11/2011)

11 Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS) to the Convention on Biological Diversity 2011. Available at http://www.cbd.int/abs/ (last accessed 21/11/2011)

12 DeFries and Rosenzweig, "Toward a whole-landscape approach for sustainable land use in the tropics" NAS November 16, 2010 vol. 107 no. 46 19627-19632

3.1.1

Case Study: From Export Oriented Policies to the Participatory Guarantee System in India[13]

In 2000, the Indian Ministry of Commerce established the National Steering Committee for Organic Production (NSCOP), which elaborated the National Programme for Organic Production (NPOP). The main objective of NPOP is to promote organic products for the export market. Both the US and EU have recognised Indian organic standards as equivalent to their own.[14]

To facilitate the transition from conventional to organic farming, the government provides financial support for a period of conversion of 3 years, with the possibility of extension. This amounts to approximately US$228 per hectare. In terms of institutional capacity building, the Indian government has been promoting organic agriculture through training programmes for producers and certification agencies, as well as setting up research institutions aimed at improving organic production and developing logistics infrastructure.

An accreditation policy was approved in 2001, which set up a number of accreditation agencies. As of March 2006, the US Department of Agriculture recognised India's organic certification as equivalent to its own, such that the Indian accreditation bodies are now eligible to use the US National Organic Program label. The EU also has recognised India's standards. This opens up an international market for export to Indian farmers, thereby achieving one of the main goals of NSCOP.

However, this export focus led to the marginalisation of poorer and smaller farmers. As many as 60% of all farms in India are less than one hectare, and small scale farmers are often poor and illiterate, making access to certification procedures difficult. Indeed, many farmers tend to practice subsistence farming, selling to local markets only when irregular surpluses occur. These farmers may not benefit from the financial incentives as they do not produce for export and therefore are less likely to benefit from the potential of green agriculture. Such marginalisation can also be inferred from the fact that many indigenous cultivation systems are not organically certified.

A promising development in this regard is the Participatory Guarantee System (PGS), established by the Ministry of Agriculture, whereby organic farmers act together to provide a guarantee of organic quality, using social control as the principal compliance mechanism. The farmer can join a local grassroots group, which decides who can be certified. This decision is communicated to the Regional Council and then to the National Council. The National Council then issues certificates to local groups.[15] The PGS mechanism is not necessarily recognised as organic by other countries, and enabling legislation lacks in this regard. However, PGS is aimed at small scale farmers producing for the Indian domestic market. As such, this initiative represents an innovative mechanism for promoting green practices without the burden of certification, which takes into account local conditions and needs.

13 Organic Agriculture at FAO - Country Profiles and Statistics: India (2006). Available at http://www.fao.org/organicag/display/work/display.asp?country=IND&lang=en&disp=summaries (last accessed 7/11/2011)

14 Committee on Accreditation for Evaluation of Quality, "European Union - European Commission Recognition". Available at http://www.caeq.ca/european-union-european-commission-recognition (last accessed 7/11/2011)

15 PGS Organic Report. Available at http://www.ifoam.org/about_ifoam/standards/pgs_projects/pgs_downloads/PGSORGANICFINALBROCHURE.pdf (last accessed 7/11/2011)

3.1.2

Case Study: An Organic Action Plan for Scotland[16]

In 2011 the Action Plan for Organic Food and Farming in Scotland was prepared by the Scottish Government, in partnership with the Scottish Organic Forum. It aims to promote organic agriculture in Scotland, which in 2009 consisted of 4% of the country's total agricultural area.

There is funding for both conversion to, and maintenance of, organic farming under the auspices of the Scottish Rural Development Programme (SRDP). The funding is competitive and based on recognition of the environmental public benefits delivered by organic farming. However, some problems with access to the funding have been reported, with unfortunate consequences. The area of certified organic land in Scotland is down from 225,137 hectares in 2008, to 176,000 hectares in 2010. 80% of farmers leaving the sector attributed their choice to the lack of access to maintenance funding.[17] This highlights the value and need for government support of the organic industry. The Action Plan makes a commitment on behalf of the government to issue better guidance on access to funding through the use of regional coordinators. Through this Action Plan, Scotland is committing to a strong institutional framework for disseminating information about organic farming.

A promising element of the funding system consists in the fact that a farmer must make a 5 year commitment to farming the relevant land organically. This helps ensure that the practices are not abandoned where setbacks are encountered.

16 "Organic Futures: An Action Plan for organic food and farming in Scotland" (2011). Available at http://www.scotland.gov.uk/Resource/Doc/917/0115995.pdf (last accessed 7/11/2011)

17 "News - Scottish organic farmers in crisis as sales plummet", Organic Portal (2011). Available at http://www.organicportal.info/index.php/home-mainmenu-1/news-mainmenu-2/1-latest/1120-news-scottish-organic-farmers-in-crisis-as-sales-plummet.html (last accessed 7/11/2011)

3.1.3

Case Study: Striving for self-reliance through green agriculture in Cuba[18]

Up until the 1990s, Cuba was heavily reliant on the Soviet Union for food and fuel, leaving the country in a difficult position when the Soviet Union collapsed and the US trade embargo took full effect. As a result, the government declared an 'Alternative Model' as the overarching official policy, which focused agriculture on resource conserving technologies as well as local knowledge and resources. Incentives included the diversification of agriculture (an important premise of green agriculture), the breeding of oxen to replace tractors and the replacement of pesticides with traditional methods of pest control. Efforts went beyond methods of agriculture, to the social impacts of green agriculture: encouraging people to remain in rural areas, promoting cooperation and providing wide-spread training. Policies that intended to make Cuba self-reliant and promote food security, led in fact to significant and long-term changes in the agricultural system.

Under this 'Alternative Model,' the Cuban National Program of Action for Nutrition (PNAN)[19] was established to produce policies aimed at addressing the food crisis. The resulting strategies included the reduction of post-harvest losses. Selling directly to consumers in cities by way of urban agriculture promoted the effective use of vacant lots in cities. Changes in land use promoted the widespread decentralisation of land holdings and management, diversification of agricultural production and the transformation of land tenure for State-owned lands.

The Grupo de Agricultura Organica (Organic Agriculture Group) brings together farmers, field managers, experts and government officials. The aim of the Group is to convince farmers that organic based agriculture is viable. There have been some problems, such as coordinating the various actors, decentralising food production and convincing sceptical farmers. Overall, the result of the agricultural changes have nonetheless been widely hailed as an important achievement, with food production up from 1000 kcal/day in the early 1990s, to 2700 kcal/day by the end of the 1990s.

18 FAO, "Challenges and Perspectives for the World Summit on Sustainable Development Johannesburg 2002" (2002) Part 3. Available at http://www.fao.org/docrep/006/Y3951E/y3951e07.htm (last accessed 13/11/2011)

19 Funes-Monzote "Towards sustainable agriculture in Cuba". Available at http://campus.usal.es/~ehe/Papers/Microsoft%20Word%20-%20Towards%20sustainable%20agriculture%20in%20Cuba%201st%20August%5B1%5D.pdf (last accessed 21/11/2011)

3.2
LEGAL PREPAREDNESS FOR SUSTAINABLE FISHERIES

Globally, many fish stocks are considered over-exploited or collapsed.[20] For example, as of July 2011, the International Union for the Conservation of Nature (IUCN) reported that "five of eight tuna species are now threatened or nearly threatened with extinction due to overfishing".[21] Another marine species at risk is the "Patagonia toothfish" (commonly called the "Chilean Sea Bass"). Even though the commercial fishing of the Chilean Sea Bass is a recent industrial venture dating to the early 1990's, the current ecological status of this marine species is precarious. The swift exploitation of this deep ocean fish species can be attributed to technological changes in fishing techniques and a responsive industry. Consumer demand from North America and Japan plus the recent introduction of long-line fishing techniques, which facilitates deep ocean fishing, combined with the introduction of new fishing vessels outfitted for "toothfish longlining and processing"[22] in addition to illegal and unreported fishing events have placed the Chilean Sea Bass at risk of extinction. Together consumption trends, industry and technological change combined with inadequate governance mechanisms have placed the ecological sustainability of this species and the economic viability of this industry at significant risk in the near future.

Declining global fish stocks are not only problematic from a commercial and an ecological perspective. Socially, fish is an essential food source and contributes to the food security of numerous global communities.[23] In addition to highlighting the subsistence significance of fish as a food protein, governance scholar Professor Frans van Waarden also acknowledges both the sustainable livelihood aspect and the commercial value of fish as a tradable commodity:

> "For 2.6 billion people (40 pct of the global population) fish makes up at least 20% of the annual protein intake. 200 million people depend on the fishing industry to earn their daily 'bread'. Fish is also the most heavily traded good in the world. Its value is larger than that of the exports of coffee, tea, rice and sugar combined."[24]

Quite simply, globally, fish is a vital social and economic natural resource. Prof. van Waarden's quote exposes the interdependent features of sustainability – how the subsistence and tradable economic value of fish is tied to the ecological resiliency of the fish stock. Arguably, a resilient, healthy global fish stock is a precondition to ensuring that fish is a sustainable food source and a viable trade commodity. Conversely, the risk of species and industry extinction, as well as human starvation, is the possible outcome of an unsustainable management approach to governing global fisheries.

Experts attribute the root cause of the current unsustainable fisheries problem to several governance factors: single or target species management approaches, inappropriate incentive and subsidy structures and other challenges, which has resulted not only in ecological destruction (for example, coastal, marine and food chain degradation, habitat destruction, by-catch problems, to name of few) but also an urgent need to rebuild the world's fisheries to ensure a viable industry and sustainable livelihoods for local communities.[25]

As a key "common pool resource"[26] with complex, dynamic, and interdependent ecological, social and economic factors at play; achieving a viable global fishery is a challenge that requires the greening of the industry through a sustainable fisheries platform (UNEP, 2011). Some experts argue for "greening" marine fisheries by adopting a principled approach.[27] A principled approach that shifts legal governance mechanisms to be premised upon the three features of sustainability (ecological, economic and social) and includes, but is not limited to the following principles:

20 Boris Worm et al. "Rebuilding Global Fisheries" (2009) 325 Science 578.

21 IUCN, "Increased protection urgently needed for tunas" (07 July 2011) online: <http://www.iucn.org/media/news_releases/?7820/Increased-protection-urgently-needed-for-tunas>

22 Alice Cascorbi, *Seafood Watch: Seafood Report* (Monterrey Bay Aquarium, 13 November 2006) 9.

23 Sindiswa Nobula et al., *WWF Sustainable Fisheries Programme: Working towards a Common Goal* (WWF 2010 Annual Report). <http://www.wwfsassi.co.za/backend/media/325201154242AM/SFPAnnualReport.pdf> Accessed 31 October 2011.

24 Frans van Waarden, "Governing Global Commons: Private-Public Protection of Fish and Forests" [June 2010] Jerusalem Papers in Regulation & Governance Working Paper No. 17, 12.

25 Rashin Sumaila, Green Economy: Fisheries Investing in Natural Capital (2011) UNEP's Green's Economy Report: Pathways to Sustainable Development and Poverty Eradiction. <http://www.unep.org/greeneconomy/Portals/88/documents/ger/3.0_Fisheries.pdf>; R. Quentin Grafton et al., "Incentive-based Approaches to Sustainable Fisheries" (2006) Can. J. Fish Aquat. Sci. 63 699.

26 Elinor Ostrom, Roy Gardner, James Walker, *Rule, Games, and Common-Pool Resources* (University of Michigan Press, 1994).

27 Rashin Sumaila, Green Economy: Fisheries Investing in Natural Capital (2011) UNEP Green's Economy Report: Pathways to Sustainable Development and Poverty Eradiction. <http://www.unep.org/greeneconomy/Portals/88/documents/ger/3.0_Fisheries.pdf>

i) Carrying capacity: recognizing "the carrying capacity of the oceans;"
ii) Sustainable yield: management plans based upon "achieving sustainable yield and the time required to rebuild overfished and depleted fish populations;"
iii) Biodiversity and habitat protection: "marine habitats must be protected and preserved;"
iv) Global but local effects: mitigation and adaption to climate change including "the reduction of the emissions greenhouse gases;"[28] and,
v) Precautionary principle: a recognition of the impact of fishing activity on non-targeted fish, their fish habitat and the health of ecosystems.[29]

In the past, others have argued for an "integrated, adaptive management" approach to sustainable fisheries. This approach to sustainable fisheries requires a governance system that "is an integrated (across disciplines, stakeholder groups, and generations) approach based on the paradigm of "adaptive management" whereby policy-making is an iterative experiment acknowledging uncertainty rather than a static answer."[30] This integrated perspective led to the early development of the Lisbon Principles, which set out six principles for the sustainable governance of oceans. The Lisbon Principles are as follows:

i) Responsibility: Access to environmental resources includes the corollary duty to use the resources in an ecological sustainable manner.
ii) Scale-matching: Governance mechanisms should take into account the multi-scale nature of environmental problems and cross-institutional domains.
iii) Precaution: Decisions should err on the side of caution and the burden of proof should shift to those individuals who activities have the potential to adversely impact the environment.
iv) Adaptive management: Decision-making should incorporate ecological, social and economic information and this data should be gather in an iterative and continuous manner with the goal of adaptive improvement of policies.
v) Full cost allocation: All internal and external costs including social and ecological costs should be taken into account in price mechanisms.
vi) Participatory approach: All stakeholders should participate in the decision-making process.

Regardless of the sustainable fishing principles advanced by policymakers, the overachieving theme of sustainability directs decision-makers to consider the complex nature of governing global fisheries that demands consideration of both short and long policy effects. An important feature of greening sustainable fisheries is the governance system. A governance system includes the institutions, laws and regulatory decision-making processes that influence and support the social-ecological factors of global fishing. The goal of this section on sustainable fisheries is to highlight legal mechanisms that can promote the greening of fisheries. In the next sub-section, a general description of legal and regulatory solutions is outlined to provide policymakers with policy tools and an understanding of how a legal governance system can contribute to the greening of the industry.

Legal and Regulatory Solutions: Legal approaches to sustainable fisheries can rely upon numerous hard and soft law approaches. An overview of potential legal strategies that can be adopted to achieve the greening of global fisheries is presented next, followed by case studies that illustrate the use of these legal solutions.

i) International Public Law Instruments: Global governance of fisheries has included the negotiation of protective international treaties. Numerous international treaties now form the basis of national laws, and may influence the behavior of resource users and lead to the generation of community norms within the fishing sector. For example, several protective treaties have been negotiated: UN Convention on the Law of the Sea (UNCLOS), UN Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UN Fish Stocks Agreement), the Convention on Biological Diversity, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Countries may also choose not to ratify a treaty, and nonetheless enact supportive domestic laws. Generally, effective implementation of a treaty is dependent upon political will to enact the treaty and its protective provisions into domestic

28 Ibid
29 William Edeson, "International Plan of Action on Illegal Unreported and Unregulated Fishing: The Legal Context of a Non-Legally Binding Instrument" (2001) 16 International Journal of Marine and Coastal Law 603.
30 Robert Costanza, et al., "Principles for Sustainable Governance of the Oceans." [1998] Science 281, 198 – 199.

law while also relying upon collective state action to enforce treaty provisions. Finally, the political will to support and promote treaty principles combined with the capacity to establish the internal administrative structures can often be lacking and act as a barrier to the effective implementation of a treaty.[31]

ii) Incentive-Market based Rights Approaches: Fishing rights can take on the form of individual harvesting rights, community or group-based rights and territorial user rights. This rights approach is premised upon the perspective that resource users have a direct interest in the conservation of the resource and bear the cost of overfishing (Grafton et al., 2006). Community rights promote a collective approach that could be premised upon a participatory governance model, and can be structured around collectives or community based management boards where co-management of a resource, two-way communication and community education is fostered between resource managers and resource users. The "exclusive economic zone" (EEZs) is a form of territorial rights. Under UNCLOS, a 200 nautical mile zone off a country's coast provides the sovereign state rights to fish and manage the marine resources within this zone.[32]

It is argued, however, that a rights approach is not without its problems. For example, a rights approach can embed competitive social norms within an allocation system such as the total allowable catch (TAC) approach. Competitive behaviour is encouraged because users race against each other to land as many fish as possible before the set harvest total is reached. The rights approach has also been critiqued as failing to be responsive to technological changes that create more efficient ways to fish. Additionally, the catch-mix may not support the individual quota allocations. The total catch may include the by-catch of non-targeted vulnerable fish species and may indirectly encourage destruction of by-fish, the misreporting of actual fishing activities and corruption tactics that include selling excess fish stock to off-shore secondary markets. Individual transfer quotas can also lead to inequitable allocation of the resource and revenues amongst users, limiting access and profits to a small number of permit holders.[33] Moreover, the collective rights approach can become political sites of governing, where dominant stakeholders can influence the TAC methodology and amend TAC allowances in favour of their interests. A market-based focus may also overlook the biological sustainability of the resource, the slow regenerating factor of some species and ecosystem harm that can leave marine systems irreversibly transformed by the fishing activity.[34] Yet, an oversight regulatory role remains a key feature of market-based approach. State intervention is still required to establish the governance framework, oversee the deleterious impacts upon the marine ecosystem, to manage straddling and migratory fish stocks while also setting societal, public interest objectives that support the greening of fisheries and sustainable fishing practices.

iii) Private and Public Certification Programs: The Marine Stewardship Council (MSC) and Japan's Marine Eco-Label programs are certification examples that rely upon eco-labeling and may rely upon third-party certification. These eco-labeling programs are tools that support sustainable fisheries practices while also play a role in educating consumers through product labeling. It is argued that eco-labeling allows consumers to make informed decisions. Yet, these certification systems are not without critics. First, the MSC seems to be plagued by a lack of consumer demand for eco-labeling, while the Japanese program appears to lack legitimacy given the fishing industry dominance as an economic sector and the industry's poor track record with respect to sustainable business practices. In other words, a social license to operate is a key factor in influencing the success of the certification program, as is creating transparency in the certification process.[35]

31 Frans van Waarden, (n 24).

32 Marion Markowski, "The International Legal Standard for Sustainable EEZ Fisheries Management" in Gerd Winter (Ed). *Towards Sustainable Fisheries Law- A Comparative Analysis* (2009) IUCN. <http://cmsdata.iucn.org/downloads/eplp_74.pdf >

33 Ray Hilborn, "Knowledge on How to Achieve Sustainable Fisheries" in K. Tsukamoto et al., (Eds) *Fisheries for Global Welfare and Environment Congress* (2008) 45.

34 Hakan Eggert and Mads Greaker, "Effects of Global Fisheries on Developing Countries: Possibilities for Income and Threat of Depletion" (EfD Discussion Paper Series: EfD Dp 09-02 January 2009). <http://www.efdinitiative.org/research/publications/publications-repository/effects-of-global-fisheries-on-developing-countries-possibilities-for-income-and-threat-of-depletion-1>

35 Patricia A. Moye, "Private Certification versus Public Certification in the International Arena: the Marine Stewardship Council and Marine Eco-Label Japan Fisheries Certification [Mar. 2010] Vanderbilt J. Transnational Law 533.

3.2.1

Case Study: The Namibian Fishing Industry

Even though a small-scale indigenous fishing community exists amongst the Topnaar tribe and in the tourism sector, the dominant form of fishing in Namibia is industrial. The fishing industry is organized into a Confederation of Fishing Associations. The rights of the fishing sector are set out in the Fisheries Act, 1992. The Minister of Fisheries and Marine Resources oversees the management system, with a Fisheries Observer Agency that includes fishery inspectors and data collection from the fishery industry. An advisory body called the Marine Resources Advisory Council, comprised of industry, research institutions and trade unions representatives, offers advice to the Minister. While the government provides incentives to the fishing industry by the way of education and training, it does not provide subsidies or tax exemptions.

Within Namibia's "EEZ" all commercial vessels must be registered. The Minister manages this zone through a fishing rights system. A license is issued for periods of seven, ten, fifteen and twenty years depending on the ownership of the company (that is, depending on the degree of Namibian ownership). These fishing rights are non-transferrable. Foreign vessels require two licenses.

A Total Allowable Catch (TAC) system ensures a sustainable approach by establishing TAC for each species based upon a biological assessment. The TACs vary according to species and year to year based upon environmental changes, and are designed to promote recovery of fish stocks. The TACs are allocated amongst companies according to quotas that indicate the maximum catch of specific species.

A monitoring, control and surveillance system is in place that relies upon on-board observers for large vessels, sea-patrols to monitor fishing fleet movement and illegal fishing, to name a few key features. Finally, Namibia's management system also includes areas closed to fishing, a closed season system to protect spawning fish, net restrictions that include limits on mesh size, and a ban on throw away catches.[36]

3.2.2

Case Study: Mexico's General Law of Sustainable Fishing and Aquaculture

Fishing activity in Mexico is primarily formed around associations (for example, National Chamber of the Fisheries Industry) and social co-operative organizations (for example, abalone, lobster fishing). Mexico is a party to numerous international treaties. Under the Constitution, the rights of indigenous peoples to sustainable fishing and traditional customary practices are supported, but not necessarily upheld in practice. The Fisheries Law (1992) promotes a property rights approach to fishing and prescribes standards on fishing gear, closed seasons, minimum fishing sizes along with management plans (for example, shrimp, sharks and rays). In 2007, a General Law of Sustainable Fishing and Aquaculture came into force. A participatory governance structure is advanced through this legislation by setting out the powers of a range of stakeholders that include federal, state and local authorities, as well as resource users. Multi-party fishing and aquaculture state councils are responsible for a range of activities including the granting of a license, fisheries management programs, monitoring and surveillance. The National Commission of Aquaculture and Fisheries is an oversight body that is responsible for planning, evaluation and fisheries management, surveillance and legal support. The National Council of Fishing and Aquaculture provides advisory opinions to the National Commission.

Mexico provides incentives through subsidies for aquaculture, processing, commercialization, energy support (for

36 Paul Webber, "Sustainable Fisheries in Namibia" (November 2008) Geography Review 27. <http://www2.sd38.bc.ca/~rhammerschmidt@sd38.bc.ca/FOV4-0008B2CF/FOV4-0008DC60/S06EEF3DE.0/sust%20fishing%20in%20Namibia%20GR.pdf>; Gerd Winter (Ed). *Towards Sustainable Fisheries Law- A Comparative Analysis* Report (2009) IUCN. <http://cmsdata.iucn.org/downloads/eplp_74.pdf >

vessels: diesel, oil and aquaculture farms: electricity) and vessel buy-back programs. Several support programs that provide training, technical advice and network developments have been developed.

Under the 1992 and 2007 fishing legislation, a fishing license is required. The time period of the license can be up to 20 years and is dependent upon a technical and economic assessment. The permit confers a right to catch based upon specific terms and restrictions.

A TAC system has been implemented for certain fish species (for example, tuna and clam fisheries) but not all fish species. The quota is based upon a biological (population assessment, setting of baseline, reproduction rates) rather economic assessment. Some species are subject to further harvest restrictions (for example, minimum catch size, closed seasons, etc). An individual transferable quota (ITQ) is not endorsed in Mexico.

Numerous protected areas have been established, under a management plan that promotes protection of the marine ecosystem.

Enforcement and compliance of fishing activities is achieved through a penalty system that targets such behaviour as fishing without a concession, a license or a permit, exploiting a species, transferring rights without government approval, harvesting during a closed season, possessing species of specific weight or size that is below set specifications, to name a few violations.[37]

37 G. Ponce-Diaz, *et al., "Promotion and Management of Marine Fisheries in Mexico"* in Gerd Winter (Ed). *Towards Sustainable Fisheries Law- A Comparative Analysis* (2009) IUCN. <http://cmsdata.iucn.org/downloads/eplp_74.pdf>

3.2.3

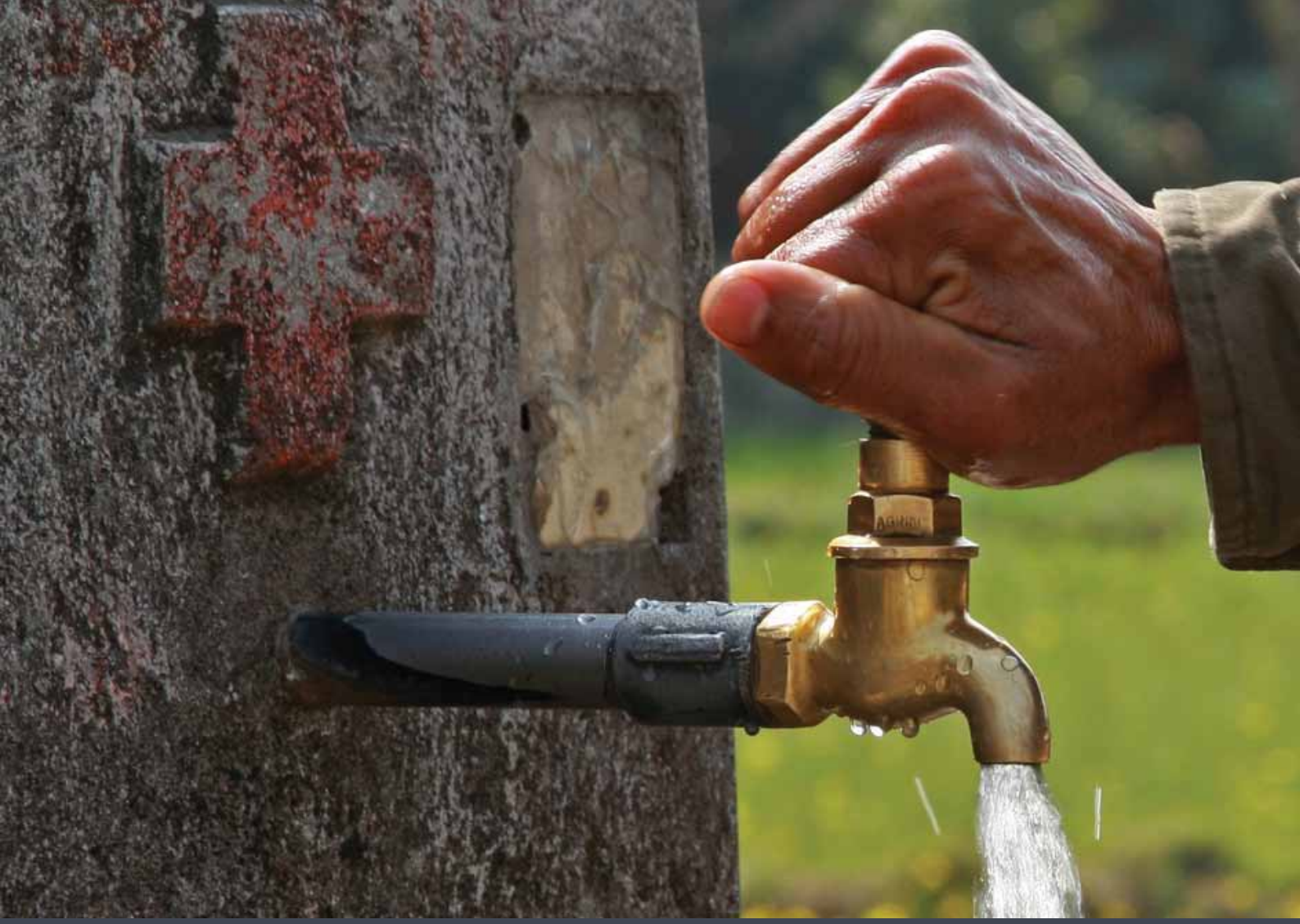
Case Study: Individual Transferable Quotas (ITQ) in New Zealand

While economic profitability is key feature of the New Zealand's national fishing program, achieving biological sustainability has been a challenge. A certification program for the New Zealand Hoki fishery resulted in push back from conservationist groups that were concerned with the by-catch effects upon fur-seals.

Profitable fishing is promoted through allocation of ITQs. An ITQ system that is applied to individuals and vessels has been adopted as a method to avoid over-capitalization by reducing the incentive to increase total catch through technical means.[38]

Individual harvesting rights have also promoted protective collective action, which resulted in the recovery of a lobster species. The application of individual harvest rights to the east coast rock lobster fostered the development of a local fishing strategy that included lowering the commercial catch and restricting the winter harvesting to shorter periods to allow for monitoring of illegal harvesting. This experiment led to stock recovery and higher quota values. Moreover, research on New Zealand's market for individual harvesting rights points to price signals that take into account ecological changes. New Zealand fishers also contribute to management plans through active participation and by funding research. New Zealand's fishing community has been instrumental in establishing protected marine reserves, no-anchoring zones, disallowing commercial fishing in inland waters, and fostering a recreational fishing scheme and has established a advisory council called the Fiordland Marine Guardians that provides advice to the government.

38 Ray Hilborn, "Knowledge on How to Achieve Sustainable Fisheries" in K. Tsukamoto et al., (Eds) *Fisheries for Global Welfare and Environment Congress* (2008) 45.



3.3
LEGAL PREPAREDNESS FOR SUSTAINABLE WATER MANAGEMENT

The greatest challenges for developing countries seeking to sustainably manage water resources are water access, sanitation services, and water scarcity. If current practices continue without adjustment, demand for water withdrawal is estimated to overshoot global supply by 40% within 20 years.[39] As a result, policymakers must confront the substantial challenge of finding innovative means to use water more efficiently, while ensuring availability at a reasonable cost and allocating sufficient quantities to sustain the environment.[40] Developed countries tend to set water management goals geared towards reducing poverty and enabling economic development.[41] Conversely, developing countries tend to focus on maintaining infrastructure and supplying residents with affordable access to water at reasonable cost for the government.[42] There is no one simple solution to sustainable water management, but rather each region must tailor its solutions to its unique challenges.[43] Importantly, studies indicate that countries that pursue mixed solutions tend to achieve the best results.[44]

Drinking water and sanitation services:

The World Health Organization and UNICEF have found that nearly one billion people lack access to clean drinking water and nearly 2.6 billion people lack access to adequate sanitation services.[45] Studies show that there is a direct correlation with lack of access to clean water and adequate sanitation and higher mortality rates.[46] Lack of access to water and sanitation services cause illness[47] and hinder residents' opportunities for gainful employment because they are forced to spend large amounts of time fetching water or paying high prices to have the water fetched for them.[48]

Water and agriculture:

Of the water extracted for human purposes, approximately 70 percent is used for agricultural purposes, approximately 20 percent is used by industry (including power generation), and approximately 10 percent is used for direct human consumption.[49] Forty percent of the world's food is produced on irrigated land.[50] As a result, policymakers must find ways to reduce the amount of water consumed by irrigated agriculture in order to be able to transfer water to other sectors.[51] Moreover, policymakers are faced with the challenge of determining how to accomplish this without adversely impacting the environment or food security.[52]

Water and energy:

Policymakers should also consider the interdependent relationship between water and energy. Water plays an important role in energy generation, such as for use as a coolant in power stations.[53] Consequently, as countries develop and require more water for their industrial sectors, they will need to reduce the amount of water used for irrigation in the agricultural sector.[54] Conversely, water supply and sanitation systems consume large amounts of energy.[55] For example, the large volumes of water transported over long distances in arid California, USA consume 19 percent of the state's electricity and 30 percent of its natural gas.[56] Thus, policymakers must try to ensure that water treatment and distribution systems remain affordable.

39 United Nations Environment Programme, *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication*, Water Chapter 10 (2011)
40 Ibid, 40
41 Ibid
42 Ibid
43 Ibid, 27
44 Ibid
45 Ibid, 18; *see also* World Health Organization, *UN-Water Global Annual Assessment of Sanitation and Drinking-Water (GLAAS) 2010: Targeting Resources for Better Results* (2010)
46 *See* UNICEF, *State of the World's Children 2005* (2004); J Ward, D Kazcan, A Ojilvie & A Lukasiewicz, "Challenging hydrological panaceas: evidence from the Niger River Basin" (2010)
47 *See* P Gleick, *The World's Water: The biennial Report on Freshwater Resources 2008-2009* (Island Press, London 2009)
48 V Fournier, P Folliasson, L Martin & Arfiansyah, "PALYJA 'Water for All' programs in Western Jakarta" (2010) (describing the cost increases for water purchased from water carts in Western Jakarta, Indonesia); WHO/UNICEF, *Progress on Sanitation and Drinking-Water: 2010 Update* (2010) (describing the amount of time required to fetch water in East Africa)
49 UNEP (n 39) 14
50 Ibid
51 Ibid
52 Ibid
53 Ibid, 16
54 Ibid
55 Ibid
56 Ibid

Water and ecosystems:

Another important factor for policymakers' consideration is the relationship between water and ecosystems. Ecosystems are what provide the availability of adequate water quantities.[57] Consequently, it is impossible to determine water security in terms of water scarcity, flood risk and water quality without acknowledging this relationship.[58]

UNEP's Green Economy Report compared two global models for water supply: the green investment scenario and the business-as-usual scenario.[59] In the business-as-usual scenario, both surface and groundwater quantities decline.[60] However, in the green investment scenario, global water use is kept within sustainable limits and is more efficient, resulting in increased production for agriculture, biofuels and industry.[61] It would require an investment of approximately 198 billion USD on average annually over the next 40 years.[62]

Policymakers can augment these investments if they simultaneously take certain actions, such as improving institutional arrangements, entitlement and allocation systems, expanding Payments for Ecosystem Services (PES) and improving water charging and finance arrangements.[63] With the aid of these improvements, the amount that country needs to invest in water supply can be reduced significantly.[64]

Addressing water scarcity:

Numerous innovative legal endeavors have emerged in developing countries, such as Saudi Arabia's Food Security Initiative and South Africa's constitutional right to water. Saudi Arabia's Food Security Initiative (discussed *infra* 3.3.1) has improved the country's water efficiency for agriculture by phasing out individual water subsidies for heavy consumer crops, such as wheat, and using the revenue to focus on scientific water management and drip irrigation.

57 Ibid, 11
58 Ibid
59 Ibid, 27
60 Ibid

61 Ibid
62 Ibid, 11
63 Ibid
64 Ibid

Using a different approach, South Africa's constitutional right to water (discussed *infra* 3.3.2) demonstrates the country's commitment to ensuring that even the most disadvantaged residents receive free access to potable water. Subsequent legislation implementing the right has been lauded for its extension of potable water to ten million South Africans in ten years.[65]

Addressing water in ecosystems:

Australia has found an innovative legal approach to acknowledge the necessity of investing in water-dependent ecosystems. It recently enacted a national agreement on water policy reform (discussed *infra* 3.3.3), in which the Australian government recognized for the first time the environment as a legitimate use of water and required water provision for ecological needs.[66] The policy reform also segregated institutional responsibility for water access services for humans from managing water resources in ecosystems in order to prevent potential conflicts likely to occur when both responsibilities fall under the purview of a single institution.[67]

In order to build a Green Economy and manage water resources sustainably, policymakers must acknowledge where water is scarce and manage it carefully based on their country's unique challenges.[68] Policymakers can advance these goals by redesigning governance arrangements, improving specification of property rights, adopting policies that reflect the full costs of use (including costs on the environment), and through improved regulation.[69] Although there is no one answer to these challenges, studies reveal that pairing investments in infrastructure with policies that encourage private investment tend to be the most effective in reducing the financial burdens on governments.[70] Thus, the key question for policymakers is not which policy is best, but rather which combination of policies is best to address each country's unique needs.[71]

65 David R. Boyd, 'No Taps, No Toilets: First Nations and the Constitutional Right to Water in Canada"' (2011) 57 McGill L.J. 81, 127
66 Tom Le Quesne, Eloise Kendy & Derek Weston, *The Implementation Challenge: Taking Stock of Government Policies to Protect and Restore Environmental Flows*, WWF Report, 47 (2010)
67 Ibid

68 UNEP (n 1) 12
69 Ibid, 12-13
70 Ibid, 26
71 Barbara van Koppen, Mark Giordana, John Butterworth & Everisto Mapedza, *Community-based Water Law and Water Resource Management Reform in Developing Countries: Rationale, Contents and Key Messages*, Management Reform in Developing Countries, 2 (2010)

3.3.1

Case Study: Saudi Arabia's Food Security Initiative

In 2009, Saudi Arabia launched its Food Security Initiative, in which the government seeks to ensure Saudi food security by investing in agricultural land abroad and reducing high water consumption agriculture domestically.[72] The initiative has two important components: (1) the Saudi government phases out the water subsidies provided to individual agriculture businesses that grow heavy water-consuming crops, such as wheat; and (2) Saudi public and private investment companies purchase and farm land in countries better suited for cultivating food.[73]

In enacting the initiative, the Saudi government recognized that it is inefficient to grow heavy water-consuming crops in such an arid climate and instead uses the revenue toward putting more sustainable practices in place, including scientific water management and drip irrigation.[74] In particular, the government recognized the high energy costs associated with pumping and treating water for agricultural purposes and that vast amounts of water are actually lost when piped over long distances due to leakage or evaporation in the distribution process.[75]

Saudi Arabia's decision to invest in land in more arable countries came as a result of a food crisis in 2007.[76] Saudi Arabia's food imports come mainly from India, which temporarily banned exports due to its own shortages.[77] The Saudi government became concerned that, despite its wealth, it would be unable to purchase the food it needs as its population increases.[78] In 2008, the Saudi government partnered with the International Fund for Agricultural Development to develop the Food Security Initiative.[79] According to Abdullah Al-Hamoudi, Deputy Minister for Foreign Trade at the Saudi Ministry of Commerce and Industry, Saudi Arabia has identified over two-dozen countries for potential agricultural investment, including Turkey, Ukraine, Egypt, Sudan, Ethiopia, Kazakhstan, Vietnam, Poland, and the Philippines.

The Saudi Food Security Initiative has enabled its residents to access food at more affordable prices and allowed the government to use the revenue saved from phasing out wheat subsidies for other more sustainable purposes.[80] The initiative demonstrates that arid countries may find more efficient ways of preserving water and ensuring ample food for their residents than pumping water over long distances.

72 U.S.-Saudi Arabian Business Council, 'Chicago Forum: Saudi Arabia Plans New Agricultural Initiative Abroad' <http://www.us-sabc.org/i4a/pages/Index.cfm?pageID=3794> accessed 12 November 2011
73 Ibid
74 Thomas W Lippman, 'Saudi Arabia's Quest for 'Food Security'' (2010) 17 Middle East Policy 90, 91
75 Ibid, 94-95 (citing some studies that have found that as much as 40 percent of the water sent through Saudi pipes and watermains is lost to leakage and evaporation)
76 Ibid, 91
77 Ibid
78 Ibid
79 Ghazanfar Ali Khan, 'Food security initiative launched' *Arab News* (20 May 2009)

3.3.2

Case Study: South Africa's Constitutional Right to Water

Although there is much discussion of why water should be a human right, South Africa is one of only a few countries that has provided its residents with the explicit right to water.[81] Despite economic studies demonstrating that even destitute South Africans are willing to pay for water, the country decided not to charge access to water, effectively placing human and ecosystem needs as its highest priorities.[82] According to economic and legal scholars, South Africa's method has revolutionized both water and human rights and other industrializing nations have subsequently endorsed the South African model.[83] As Nelson Mandela has stated, the extension of clean drinking water to millions of South Africans since the mid 1990s is "amongst the most important achievements of democracy in [South Africa]."[84]

80 UNEP (n 1) 17
81 Barton H. Thompson, Jr., 'Water As A Public Commodity' (2011) 95 Marquette Law Rev. 17, 33
82 *Willamette University College of Law: Center For Sustainable Communities*, Implementing the Human Right to Water in the West: Conference Report 48 Willamette Law Review 1 (2011) 26
83 Ibid
84 Nelson Mandela. 'No Water, No Future' (Address delivered at the World Summit on Sustainable Development, Johannesburg, South Africa, 28 August 2002) <http://www.gov.za/>

South Africa's constitution, adopted by the post-apartheid government in 1996,[85] and bill of rights explicitly provides the right of access to sufficient food and water, and provides that the government must take "reasonable legislative and other measures, within its available resources, to achieve the progressive realisation of the right."[86] The obligation that the government take "reasonable legislative and other measures, within its available resources" imposes an affirmative duty on the government, but also allows policymakers the latitude to implement the rights without having to stretch beyond available resources. This language is of particular importance because it prevents courts from holding the government strictly liable for an individual's lack of water access and ensures that the power to implement the right stays in the hands of legislators and policymakers.[87]

Since 1996, this right to water has been translated into legislation, policy, and a major investment in South African infrastructure and has been credited by legal scholars as urging local authorities to extend potable water to ten million South Africans in ten years.[88] The South African constitutional right to water has enabled the government of the arid country to ensure that even the most disadvantaged residents receive free access to potable water within the limited means of the nation.

3.3.3

Case Study: River Restoration in Australia's Murray Darling Basin

Studies show that investments are best made at the river basin, catchment and local level.[89] In fact, countries have begun to recognize the importance of investing in biodiversity and ecosystem services management as a way of obtaining water security.[90]

In early 2007, the Australian government announced it was committing 10 billion AUD (10 billion USD) to restoring the health of the Murray-Darling Basin.[91] This commitment stemmed from a national agreement on water policy reform, called the National Water Initiative (NWI), in which the national government recognised for the first time the environment as a legitimate use of water and required water provision for ecological needs.[92] The NWI has since become an international standard for water reform.[93]

The NWI provides broad guidelines and leaves states to undertake implementation, the specifics of which are governed by the Water Act 2007.[94] The Water Act created the Murray Darling Basin Authority and charged it with writing a Basin Plan for managing the Murray-Darling Basin by 2011.[95] The Water Act calls the Basin Plan to establish "environmentally sustainable limits" on water withdrawal, called sustainable diversion limits (SDLs).[96] Legal scholars credit SDLs as having the potential to change the face of water use in Australia because they require that water use is balanced between consumptive and environmental uses.[97]

Although the effectiveness of the SDLs in the Murray-Darling Basin remains to be seen, Australia's NWI and Water Act demonstrate that the country is at the forefront of investing at the river basin level and recognising ecosystems as intrinsically deserving of water use.

85 Constitution of The Republic of South Africa No. 108 of 1996

86 Ibid §27(1)-(2). Section 27 states:
(1) Everyone has the right to have access to --
a. health care services, including reproductive health care;
b. sufficient food and water; and
c. social security, including, if they are unable to support themselves and their dependants, appropriate social assistance.
(2) The state must take reasonable legislative and other measures, within its available resources, to achieve the progressive realisation of each of these rights.

87 'What Price for the Priceless?: Implementing the Justiciability of the Right to Water' (2007) 120 Harvard Law Review 1067, 1088

88 Boyd (n 65) 127

89 UNEP (n 1) 27

90 Ibid, 27

91 Ibid, 23

92 Tom Le Quesne, Eloise Kendy & Derek Weston, *The Implementation Challenge: Taking Stock of Government Policies to Protect and Restore Environmental Flows*, WWF Report (2010) 47

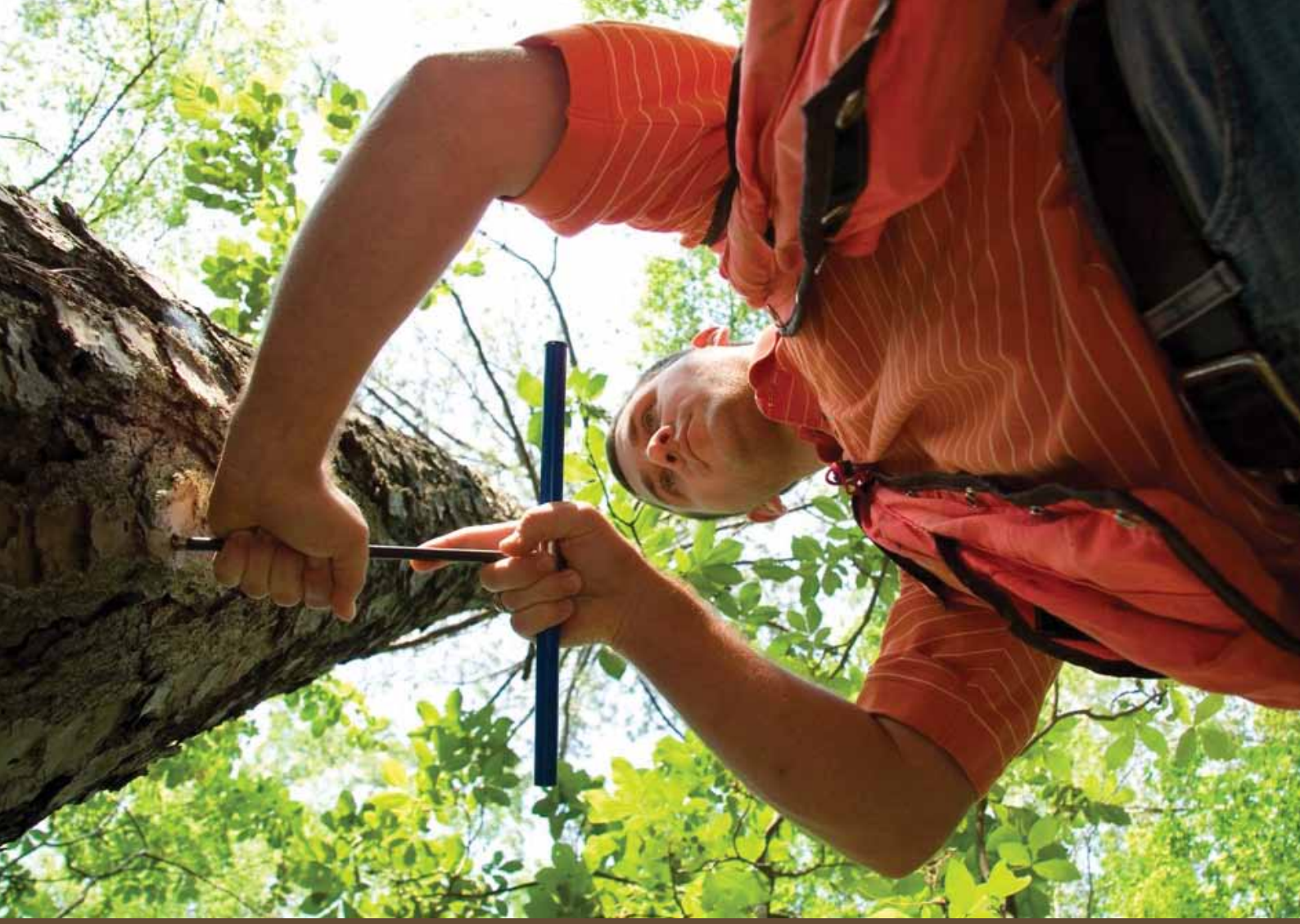
93 Robert David Pilz, 'Lessons in Water Policy Innovation from the World's Driest Inhabited Continent: Using Water Allocation Plans and Water Markets to Manage Water Scarcity' (2010) 14 U. Denv. Water L. Rev. 97, 104

94 Ibid, 105

95 Water Act, 2007, §§ 171-72 (Austl.)

96 Water Act, 2007, § 20(b), §23

97 Robert David Pilz, 'Lessons in Water Policy Innovation from the World's Driest Inhabited Continent: Using Water Allocation Plans and Water Markets to Manage Water Scarcity' (2010) 14 U. Denv. Water L. Rev. 97, 106



3.4
LEGAL PREPAREDNESS FOR SUSTAINABLE FOREST MANAGEMENT

The world's total forest area consists of approximately 4 billion hectares, covering 31 percent of the total land area[98] but forest cover is declining alarmingly in the world with a deforestation rate of 13 million hectares per year (change in land use for agricultural expansion or timber logging are among the main causes).[99]

Forests represent valuable assets. Indeed, they produce a wide range of economic, social and environmental benefits to over 1 billion people. Forests provide habitat and natural resources for biodiversity, and are also a source of livelihoods. The majority of plant and animal species are found in forested areas. Finally, forests have the ability to store and sequester carbon. As carbon sinks, they contribute, among other things, to climate change mitigation. Overall, forests provide ecosystem services and support local and national economies through the export of timber and non-timber products.

The forestry sector can significantly contribute to a green economy although currently investments in the forestry sector remain low.[100] They can be a powerful tool for sustainable economic development towards a green economy if specific actions are undertaken.

The UNEP report states that greening the forestry sector implies managing it and investing in it as an asset class that produces a wide range of benefits to society.[101] Policy reforms and initiatives are needed to enhance and encourage greening the forestry sector. Actions taken should be closely linked to the way forests are managed and to forest governance.

The year 2011 was marked by the International Year of Forests. During that year, several activities were undertaken, notably the Summit of the three rainforest basins was organised. 35 countries from the three major rainforest regions (the Amazon, the Congo and the Borneo-Mekong forest basins) met to discuss an action plan on sustainable forest management that will be submitted for signature at the Rio+20 Summit.[102]

Numerous laws and policy options are available to green the forestry sector. They can take various forms:

Payments for Environmental Services (PES):

PES can be defined as 'a voluntary, conditional agreement between at least one "seller" and at least one "buyer" over a well-defined environmental service'.[103] In the forestry sector, the Costa Rica scheme is often cited, but positive impacts of PES have not clearly been shown.

Community-based Forest Management:

it encompasses the management of forest lands and forest resources by or with local people, individually or in groups, and for commercial or non-commercial purposes.[104] It creates an incentive for forest communities to protect the forest.

Clean Development Mechanism (CDM):

The CDM was established by the Kyoto Protocol allowing developed countries (Annex 1 countries) to develop emission reduction projects in developing countries in order to meet their emission reduction targets.[105] With regard to the forestry sector, only afforestation and reforestation activities are covered by CDM projects. However, several methodological and scientific concerns were raised and remain unresolved, in particular the questions of 'additionality' and 'leakage'. Only 8 forestry-related projects have been registered out of almost 1 900 CDM projects.[106]

Voluntary carbon offset schemes:

these schemes allow for the sale of carbon credits to companies or entities that wish to mitigate the emissions linked to their activities. Planting trees is the main example of carbon offsetting.

98 Global Forest Resources Assessment 2010.
99 FAO, State of the world's forests 2011, 3
100 FAO, 'The forest sector in the green economy in Africa' [2011] 26 Nature & Faune 1, 5
101 United Nations Environment Programme, *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication* (UNEP, 2011), 163
102 Summit of the Three Rainforest Basins, 31 May – 3 June 2011, Brazzaville, Republic of Congo
103 Michael Richards, 'Potential and Challenges of Payments for Ecosystem Services from Tropical Forests' [2007], FPEP Forestry Briefing 16, 2
104 Augusta Molnar & al. 'Community-Based Forest Management The Extent and Potential Scope of Community and Smallholder Forest Management and Enterprises' [2011] Rights and Resources Initiative
105 Kyoto Protocol to the United Nations Framework Convention on Climate Change, 1997, Article 12
106 Alain Karsenty, 'What the (carbon) market cannot do...' [2009] 1 Perspective CIRAD, 1

Forest certification schemes:

certification schemes are generally voluntary. They are market-based tools that support responsible forest management and require legal compliance to deliver certificates. Through forest certification, distinctions can be drawn between products coming from good forest practices and other timber products. The most known certification scheme is the Forest Stewardship Council (FSC) which has developed standards describing how forests can be managed to meet the social, economic, ecological, cultural and spiritual needs of present and future generations.[107] The Programme for the Endorsement of Forest certification (PEFC) is the other major international certification scheme.[108]

Green public procurement:

to promote the use of legal timber and timber products in the European Union (EU), some Member States adopted green procurement policies.[109] They require public purchasers to demonstrate that timber they buy is legally produced or sustainable. The objective is to ensure that purchases of timber products do not contribute to illegal logging and forest loss.[110] However, these policies differ from one Member State to another. Besides, not every country has adopted this type of policy. It is worth noting that Japan and New Zealand also adopted public procurement policies covering timber.[111]

Tackling illegal logging:

greening the forestry sector goes hand in hand with the struggle against illegal logging. The USA was the first country that introduced provisions specifically banning the import and sale of illegally harvested wood: it is unlawful to 'import, export, transport, sell, receive, acquire or purchase in interstate or foreign commerce … any plant taken, possessed, transported or sold … in violation of any foreign law'.[112] The Lacey Act defines what 'illegal timber' is and requires an import declaration that includes the scientific name of the species, the value and quantity of the timber and the name of the country in which it was harvested.[113]

Other initiatives in this area include the EU Timber Regulation which applies to all operators that place timber in the EU market.[114] The importer is required to exercise due diligence, i.e. to ensure that the timber is from legal source. The regulation will be applied from March 2013.

REDD+:

Reducing Emissions from Deforestation and Forest Degradation (REDD) was introduced for the first time at the 13th Conference of the Parties to the United Nations Framework Convention on Climate Change.[115] It creates financial incentives for developing countries to store carbon, i.e. it aims at compensating developing countries for the costs of avoiding deforestation and forest degradation. REDD+ is the inclusion of conservation of forest carbon stocks, enhancement of forest carbon stocks and the sustainable management of forests. Several pilot projects are underway under different programmes and organisations.[116]

Greening the forestry sector does not only rely on the above actions but also with initiatives that aim at combating corruption and money laundering, improving transparency, strengthening public participation and building capacity, etc.

This section will look specifically at 3 case studies on:

1) Forest and renewable energy,
2) Forest and governance, and
3) Forest and land rights.

It is important to underline that most initiatives are currently on-going in the forestry sector. It is therefore challenging to presently draw conclusions on successes or gaps of these initiatives; only assumptions can be ascertained.

107 See <http://www.fsc.org/certification.html>
108 See <http://www.pefc.org/>
109 Austria, Belgium, Bulgaria, Denmark, Finland, France, Germany, Italy, the Netherlands and the United Kingdom
110 Proforest, *FLEGT licensed timber and EU Member States procurement policies* (Proforest, 2010)
111 United Nations Environment Programme, n. 3 above, 188
112 The Lacey Act (Chapter 53 of Title 16, United States Code), section 3372 (a)(B)(2)(i)
113 Duncan Brack, 'Controlling Illegal Logging: Consumer-Country Measures', [2011] EERG IL BP 2011/01, 7
114 Regulation (EU) No 995/2010 laying down the obligations of operators who place timber and timber products on the market (EU Timber Regulation) [2010] OJL 295
115 Decision 1/CP.13, Bali Action Plan 2007, paragraph 1(b)(iii), in Report of the Conference of the Parties on its thirteenth session, held in Bali from 3 to 15 December 2007, Addendum, Part Two: Action taken by the Conference of the Parties at its thirteenth session, 14 March 2008, FCCC/CP/2007/6/Add.1
116 For example, under the UN-REDD programme (http://www.un-redd.org/) and the Forest Carbon Partnership Facility (http://www.forestcarbonpartnership.org/fcp/)

3.4.1

Case Study: Forests and Renewable Energy in the European Union

Wood is more and more used in "green buildings" and "green infrastructures" but also as a bioenergy. It can be a substitute for many products that are harmful to the environment.[117]

It is recognised that forests can increase the share of renewable energy sources. In fact, energy from forest biomass is in many countries one of the most important sources of energy from renewable sources.[118] It is expected that the volume of forest biomass for energy generation will increase in the next few years insofar as biomass power is seen as a growing opportunity for greening the economy.

To tackle climate change and green the European economy, the European Council has set up two targets:[119]

- A reduction of at least 20% in greenhouse gases (GHG) by 2020; and
- A 20% share of renewable energies in EU energy consumption by 2020.
-

The European Commission responded by providing tools to deliver the '20-20 by 20 targets'.[120]

Following the European Commission's Communication, a 'climate and energy package' was adopted in 2009. It comprises four elements, including Directive 2009/28/EC of 23 April 2009 on the promotion of the use of energy from renewable sources (EU Renewable Energy Directive).[121] Member States had to transpose the Directive in their national laws by 5 December 2010.The objectives of the directive are to decrease the EU's dependence on imported energy and fossil fuels as well as to reduce the level of greenhouse gas emissions. The EU Renewable Energy Directive introduces mandatory national targets for renewable energy. These targets vary from one country to another depending on the capacity of each Member State (the national targets range from a share of 10% in Malta to 49% in Sweden).[122]

Forests as biomass are included in the EU Renewable Energy Directive. The directive defines biomass as 'the biodegradable fraction of products, waste and residues from biological origin from agriculture (including vegetal and animal substances), forestry and related industries […]'.[123] Biomass can be used for heating, producing electricity, etc. The use of biomass can significantly reduce greenhouse gas emissions. Indeed, the carbon dioxide when burned is offset by the amount absorbed when the plant in question was grown.[124]

The adoption of the EU Renewable Energy Directive has the potential for contributing to a greener forestry sector. However, pressure is increasing with a high demand for wood supply. The availability of forest biomass for renewable energy is contingent upon sustainable forest management practices that ensure continuity in supply. Furthermore, concerns were raised about indirect land use change from the use of biofuels.[125] They relate to the fact that land use change may lead to an increase of greenhouse gas emissions resulting from land conversion.

117 FAO, n. 82 above, 26
118 Udo Mantau, *Final report - Real potential for changes in growth and use of EU forests* (EUwood, 2010), 43
119 European Commission, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: 20 20 by 2020 - Europe's climate change opportunity* (COM(2008) 30 final, 2008), 2
120 Ibid, 5-11

121 Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources [2009] OJEU L 140/16

122 Ibid, 46
123 Directive 2009/28/EC, n°3 above, art 2
124 See European Commission energy website <http://ec.europa.eu/energy/renewables/bioenergy/bioenergy_en.htm>
125 Ernst and Young, 'Biofuels and indirect land use change: a case for mitigation' [2011] Ernst and Young, 6

3.4.2

Case Study: Forest Law Enforcement, Governance and Trade in the Republic of Congo

Ensuring the legality of forest operations is considered a vital first step for better governance, forest management and thus greening the forestry sector.

The European Union launched its Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan in 2003. The Action Plan recognizes that the EU, as a major consumer of wood products, shares responsibility with timber producing countries to tackle illegal timber and its related trade.[126] The FLEGT Action Plan sets a range of measures to prevent the import of illegal timber in the EU and to improve forest governance. One of the key recommendations is the conclusion of Voluntary Partnership Agreements (VPAs) between the EU and timber-producing countries. Once a VPA is ratified, the import of timber into the EU market from the VPA timber-producing country will only be authorised if the timber is covered by a FLEGT license.[127] VPAs are a useful tool to green the economy insofar as issues such as use rights, environmental regulations or social obligations are addressed in these agreements. All together it allows for sustainability of forests.

VPAs incorporate a national legality assurance system (LAS) that defines what constitutes 'legal timber'. This definition is based on the national legal framework of the timber-producing country and on a participatory process where the major stakeholder groups are involved.

The Republic of Congo is the first country of the Congo Basin that agreed and signed a VPA with the EU.[128] Negotiations started in June 2008 and the VPA was signed on 17 June 2010.[129] It has yet to be ratified by the government of Congo. Congo is presently developing the LAS, i.e. a system that provide for the necessary framework of legislations, controls and verification procedures to ensure that timber is exported legally for the implementation of the VPA. Congo aims at issuing the first FLEGT licence by the end of 2012.

During the negotiations, areas in needs of policy and legal reforms were identified (they are listed in Annex IX of the VPA). The Republic of Congo is currently in the process of preparing and adopting new regulations to improve its legal framework based on Congolese legal standards and not on EU law. The legislative reform process also provides for multi-stakeholders participation and involvement. Some of the areas of concerns are the following: participation and involvement of stakeholders, local communities and indigenous populations; community forests; modalities for monitoring and verification and environmental impact assessment studies. The VPA will help Congo to have a functional legal framework and improve forest governance.[130]

It is too early to determine the impact and the efficiency of the VPA system as the VPA with Congo was recently signed and none of the VPAs signed have been fully implemented yet. However, it certainly has the potential for greening the forestry sector by creating incentives for good forest governance and practices. Improving law enforcement will lead to more sustainable forest management. The VPA process will be further strengthened with the application from March 2013 of the EU Timber Regulation that prohibits the placing of illegal timber and timber products on the EU market.[131] Proving the legal origin of timber will be a necessity to gain access to the EU market.

126 European Commission, *Communication from the Commission to the Council and the European Parliament, Forest Law Enforcement, Governance and Trade (FLEGT), Proposal for an EU Action Plan* (COM (2003) 251 final, 2003)

127 For more details on the FLEGT process, see the FLEGT briefing notes 2007 developed by an expert group convened by the European Commission in March 2007 < http://www.illegal-logging.info/item_single.php?it_id=449&it=document> accessed 7 November 2011

128 VPAs were signed with 6 countries (Cameroon, Congo, Ghana, CAR, Liberia and Indonesia), are being negotiated with 4 countries (Democratic Republic of Congo, Gabon, Vietnam and Malaysia), and 13 countries have formally been introduced in the FLEGT / VPA process (Guyana, Ivory Coast, Honduras, Nicaragua, Ecuador, Madagascar, Cambodia, Thailand, Laos Guatemala, Colombia, Peru, and Belize)

129 Voluntary Partnership Agreement between the European Union and the Republic of the Congo on forest law enforcement, governance and trade in timber and derived products to the European Union (FLEGT) [2011] L 92/127

130 Proforest, (n 5) 3

131 Regulation (EU) No 995/2010 of 20 October 2010 laying down the obligations of operators who place timber and timber products on the market, OJEU L 295/23

3.4.3

Case Study: Greening the Forestry Sector through Securing Land Rights in Nicaragua

It is generally accepted that securing land rights is an important step towards greening the forestry sector, especially for successful implementation of REDD + initiatives. Forest tenure reforms have been undertaken in several developing countries, including Nicaragua.[132] However, although tenure rights may be recognised by national laws, these rights are not always enforced in practice and their effective implementation is not necessary easy.

Nicaragua's 1987 Constitution recognizes and guarantees the rights of indigenous communities to their cultural identity, and property, as well as to the enjoyment of their forests. Moreover, in 2003, the Communal Lands Law (Law 445) was adopted and provides for the rights of indigenous communities to their territories.[133] It also establishes procedures for demarcation and titling and for the formal recognition of indigenous authorities. Finally, a new Forestry Law (Law 462) was enacted in 2003.

However, in 2001, the Awas Tingni, one of the indigenous communities of the coast of Nicaragua, filed a demand before the Inter-American Court for Human Rights against Nicaragua for the violation of their right to property because the Nicaraguan government had granted to a Korean company a concession to log in their territories.[134] The Court found that the Nicaraguan Government had violated the American Convention on Human Rights as well as the community's rights to communal property as guaranteed by the Nicaraguan Constitution. It ordered Nicaragua to demarcate and title Awas Tingni's traditional lands.[135] This case is of a great significance, as it is the first case acknowledging and recognising land rights to indigenous communities over government action.

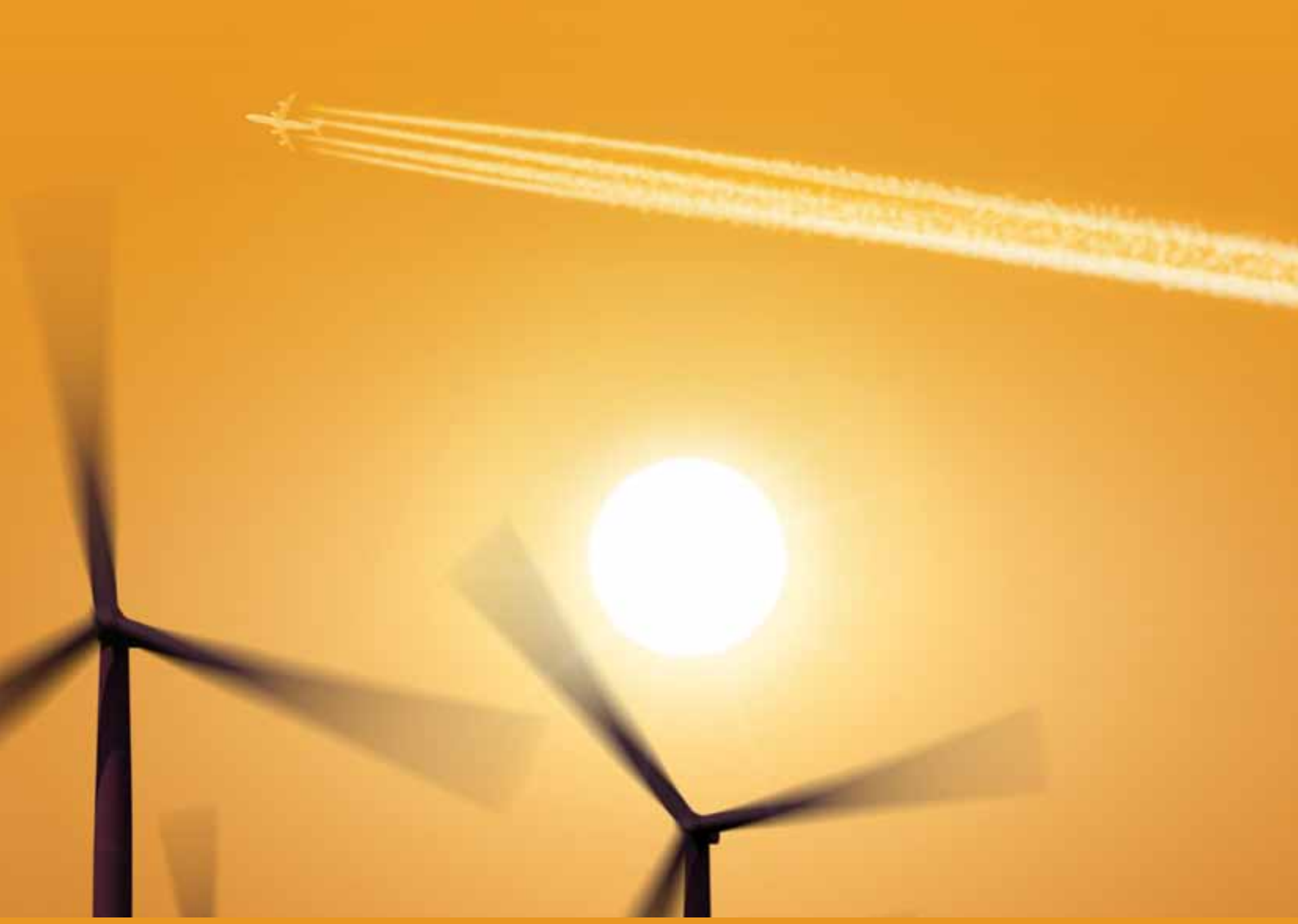
Determining who can claim land rights over forests is an essential question, and closely linked to the issue of who will receive benefits associated to forest land tenure and how the forests will be managed. Strengthening and enforcing existing rights will be a first step towards the successful implementation of REDD+ activities.

132 Anne M. Larson and al., 'Tenure Rights and Beyond - Community Access to Forest Resources in Latin America'[2008] CIFOR Occasional paper NO. 50, 13

133 Law no. 445 on the Communal Property Regime of the Indigenous Peoples and Ethnic Communities of the Autonomous Regions of the Atlantic Coast and the Bocay, Coco, Indio and Maíz Rivers, December 2002

134 The Mayagna (Sumo) Awas Tingni Community v. Nicaragua, Judgment of August 31, 2001, Inter-Am. Ct. H.R., (Ser. C) No. 79 (2001)

135 Ibid, para. 173



3.5
LEGAL PREPAREDNESS FOR RENEWABLE ENERGIES

Due to the historical dependence on fossil fuels for energy, an increase in energy consumption has traditionally been coupled with an increase in greenhouse gas emissions.[136] There is an ever-increasing demand for energy globally. However, international recognition of the need to reduce greenhouse gas emissions in order to mitigate climate change necessitates a decoupling of energy use from greenhouse gas emissions. Renewable energy technologies have the potential to support social and economic development, increase energy security, reduce energy poverty and decrease greenhouse gas emissions.[137] Renewable energy is defined by the International Energy Agency to be energy derived from natural processes that are replenished constantly, including solar, wind, biomass, geothermal, hydropower and ocean resources, and biofuels and hydrogen derived from renewable resources.[138]

Challenges to the adoption of renewable energy technologies vary according to technology, the maturity thereof, as well as geographic conditions and scale of deployment. Broadly, they can be categorized as political, financial, substitution and skills challenges, and this section will briefly discuss each in turn.

Firstly, political risk arises from changes in government policy that lead to a discontinuance of renewable energy policy incentives. A long-term, transparent and certain renewable energy policy, including renewable energy targets, is vital to attracting investment for renewable energy deployment.[139]

Secondly, renewable energy technologies are generally not cost competitive with fossil fuels, due to high fossil fuel subsidies, and policy incentives are required to reduce the cost of renewable energy technologies. Common government policies aimed at producing price parity of renewable energy technologies include feed-in tariffs, quotas, preferential tax policies or exemptions and direct government payments, such as rebates and grants (see case study 3.5.2 for an example of feed-in tariffs).[140] These financial policies also reduce investment risk and increase the ability of renewable energy companies to access private finance by providing guaranteed purchase and revenue for renewable energy power stations. However, in remote rural areas with good renewable energy sources and where the costs associated with connection to a centralized electricity grid are high, the price of renewable energies can actually be on par with subsidized fossil fuels.[141] There is great potential for off-grid renewable energy to provide electricity to rural communities (see case study 3.5.1).

Gaining access to private investment is also challenging. As many renewable energy technologies have never been deployed at a large scale, there are many unknowns, including timeframes, construction costs, operating and management costs, and also the predictability of the renewable energy resource, which leads to uncertainty in electricity produced and thus revenue generated from the plant.[142] Private lenders unfamiliar with renewable energy power projects may be uncomfortable with providing such a large amount of finance, particularly in the current economic downturn.[143] Public finance mechanisms reduce the risk profile of large-scale renewable energy investments. They are generally designed to leverage private investment and to provide private companies with the skills and experience necessary to build renewable energy power stations without government assistance in the future.[144] This is the policy basis for the Australian Government's Solar Flagships Program, which supports the private construction of large-scale, grid-connected solar power stations in Australia.[145] In the United States, loan guarantees have been a popular public finance mechanism, where the Federal Government enters into a contractual obligation with private creditors and borrowers, guaranteeing to cover the borrower's debt obligation if the borrower defaults.[146]

Regulations may also promote the deployment of renewable energy, such as priority grid access, building

136 International Panel on Climate Change, 'Summary for Policymakers' in International Panel on Climate Change, *Special Report on Renewable Energy Sources and Climate Change Mitigation* (CUP 2011) 2.
137 Ibid.
138 International Energy Agency, *Renewables Information* (2008 edn, OECD Publishing 2008).
139 Ton van Drill and Xander van Tilburg, 'Renewable energy: investing in energy and resource efficiency' in United Nations Environmental Programme, *Towards a Green Economy* (2011) 200, 226.
140 International Panel on Climate Change (n 136) 22.
141 United Nations Conference on Trade and Development, *Renewable Energy Technologies for Rural Development* (United Nations 2010) 19.
142 Ton van Drill and Xander van Tilburg (n 139) 226.
143 Australian Department of Resources, Energy and Tourism, *Large Scale Solar Deployment in Australia* (Discussion Paper, 2011) <http://www.ret.gov.au/energy/Documents/cei/sfp/Large-Scale-Solar-Discussion-Paper.pdf> accessed 1 November 2011.
144 Ton van Drill and Xander van Tilburg (n 139) 230.
145 Australian Department of Resources, Energy and Tourism, 'Solar Flagships Program' <http://www.ret.gov.au/energy/clean/cei/sfp/Pages/sfp.aspx> accessed 1 November 2011.
146 United States Department of Energy, 'Loans Program' <https://lpo.energy.gov/> accessed 5 November 2011.

mandates, zoning laws, and guaranteed purchase of renewable energy (see case study 3.5.2 and 3.5.3). Regulations also address the challenge of substitution of renewable energy for fossil fuels, which includes the issues of grid integration and variability. The technical challenges associated with integrating variable energy sources, such as solar and wind, into the electrical grid require design upgrades to the grid to accommodate for the intermittent energy production.[147] In addition, storage of electricity generated by variable renewable energy technologies remains a further challenge to be improved with R&D, which should be a complementary part to deployment policies.[148]

Finally, there are specialised skills required for the renewable energy industry, and renewable energy policies should focus on giving preference to education programs and skills transfer (see case study 3.5.1). Particularly in countries looking to develop a renewable energy programme, it is vital that domestic labour forces be trained in the maintenance and operation of renewable energy technologies.[149]

Climate change policies that seek to internalise the negative environmental externalities associated with fossil fuel use and support renewable energy technologies, as well as advances in technology leading to a decline in the cost of renewable energy technologies, will improve the relative competitiveness of renewable energies and accelerate their deployment.[150]

147 International Panel on Climate Change (n 136) 14.
148 Ibid, 26.
149 Ton van Drill and Xander van Tilburg (n 139) 232.
150 Ibid, 211.

3.5.1

Case study: China's Rural Electrification Scheme

From the 1980s, the Chinese Government has adopted many national policies to promote the development and deployment of renewable energy, including the Eleventh Five Year Plan for Renewable Energy Development, Medium- and Long-Term Plan for Renewable Energy Development and Renewable Energy Promotion Law.[151] The Eleventh Five Year Plan for Renewable Energy Development, published in 2007, and the Medium- and Long-Term Plan for Renewable Energy Development, published in 2008, outline the goals for the development of renewable energy technologies in China.[152] These policies confirm the target that around twelve to fifteen per cent of electricity in China will be generated by renewable energy by 2020.[153]

The Renewable Energy Promotion Law, which came into effect on 1 January 2006, provides the framework for Government policies to promote the development of renewable energy within China.[154] This law establishes a mechanism for renewable energy development, including through identifying the development and use of renewable sources as an area of priority for future energy development and requiring grid operators to purchase resources from renewable energy producers.[155] It has also provided a framework for the introduction of complementary policies on specific renewable energy measures, including renewable energy based rural electrification.[156]

Despite the Chinese Government having achieved 98.4 per cent electrification through an intensive policy effort, twenty million people in China still had no access to electricity in 2010.[157] This is mainly due to geographic constraints in building the infrastructure needed to extend the electrical grid to remote rural areas. Lack of energy is a key impediment to

151 Huiming Zhang et al, 'Comparison of renewable energy policy evolution among the BRICs' (2011) 15(9) Renewable and Sustainable Energy Reviews, 4904, 4905.
152 Li Li et al, 'Energy Conservation and emission reduction policies for the electric power industry in China' (2011) 39 Energy Policy 3669, 3671.
153 Huang Liming, 'Financing rural renewable energy' (2009) 13 Renewable and Sustainable Energy Reviews, 1096, 1099.
154 Judith A. Cherni and Joanna Kentish, 'Renewable energy policy and electricity market reforms in China' (2007) 35 Energy Policy 3616, 3620 and 3624.
155 Huang Liming (n 153) 1099.
156 Li Li et al (n 152) 3671.
157 Judith A. Cherni and Joanna Kentish (n 154) 3617.

economic development and improved living standards.[158] However, these same remote rural areas often enjoy some of the best renewable energy resources.[159] The Chinese Government has driven rural electrification by encouraging the exploitation of renewable energy sources, such as solar and wind, which simultaneously reduces energy poverty.[160]

The Chinese renewable energy-based rural electrification policy known as Song Dian Dao Xiang, literally 'Sending Electricity to Townships', was launched in 2001.[161] The Chinese Government provided cash grants directly to renewable energy suppliers, to subsidise the cost of solar photovoltaic (PV) home systems for consumers.[162] A typical 20 Watt-peak system was therefore sold for between $105 and $120, approximately the cost of a yak.[163] The cash grants steadily decreased, with the aim of transitioning to an independent, commercial market.[164] Today, sales of solar PV home systems continue to grow outside the Government program.[165] Strengthening the quality of solar PV home system suppliers and products was a key aim of the program, and the Chinese Government spent forty per cent of total expenditure on training suppliers and approval processes.[166] Only suppliers approved by the Government could participate in the program. To advance the policy aim of securing strict quality standards, ten-year guarantees for the solar PV modules and two-year warranties on batteries, inverters and lights were provided.[167] The success of this policy stems from the appropriate government financial subsidies and the focus on strengthening the products and services to ensure reliability and quality.[168] Between 2003 and 2008, the Government subsidized the installation of 402,000 solar PV home systems, with improvements for the rural communities in better lighting for study, work and recreation.[169]

In addition, by 2006 the Chinese Government had installed a total capacity of 30MW of wind energy in rural areas, to demonstrate the viability of wind energy to private companies, with the aim of encouraging private investment, and to promote this technology to rural communities.[170]

158 Huang Liming (n 153) 1097.
159 United Nations Conference on Trade and Development (n 141) 17.
160 REN21, *Renewables 2011 Global Status Report* (REN21 Secretariat, 2011) 1, 12.
161 Huang Liming (n 153) 1000.
162 Ibid, 1001.
163 United Nations Conference on Trade and Development (n 141)19.
164 Huang Liming (n 153) 1000.
165 Ibid.
166 Ibid.
167 Ibid.
168 Ibid, 1098.
169 United Nations Conference on Trade and Development (n 141) 18-19.
170 Huang Liming (n 153) 1098.

3.5.2

Case Study: Germany's Model for the Rest of the World

The introduction of feed-in tariffs in Germany since 1990 has increased the share of electricity produced by renewable energy sources from below 4 per cent in 1990 to nearly 21 per cent in 2011.[171] Germany's feed-in tariff has become a reference point for other feed-in tariff policies worldwide, which included feed-in tariffs in at least 61 countries and 26 states or provinces by early 2011.[172] A feed-in tariff is basically a government policy that ensures a guaranteed price is paid for power generated from a renewable energy source, including wind power, hydropower, biomass and solar power, over a fixed, long-term period.[173] In Germany, this price, set by the German Renewable Energies Law (EEG) is based on the cost of generation plus a reasonable rate of return.[174] The feed-in tariff is not readjusted during the 20 years of the payment, which results in a decrease of the actual value of the compensation over time, due to inflation.[175]

Linked to the guaranteed price for renewable energy is a legal obligation for electricity retailers to purchase supplies of renewable energy electricity and feed it into the electrical grid.[176] These statutory requirements oblige electricity distributers to purchase an increasing amount of electricity from renewable energy sources, even though the purchase price is generally more expensive than the price of electricity from fossil fuels.[177] While electricity distributers pass this cost onto household consumers in full, in Germany, this only gave rise to increases in electricity bills of between €2 and €6 per month, approximately 5% of the total household electricity price.[178]

171 German Association of Energy and Water Industries, 'Renewable energy produces more than 20 per cent of electricity' (29 August 2011) <http://www.bdew.de/internet.nsf/id/DE_20110829-PI-Erneuerbare-liefern-mehr-als-20-Prozent-des-Stroms> accessed 5 November 2011.
172 REN21 (n 160) 55.
173 Ibid.
174 Ibid.
175 Johannes M. Kissel and Stefen C.W. Krauter, 'Adaptations of renewable energy policies to unstable macroeconomic situations – case study: wind power in Brazil' (2006) 24 Energy Policy 3591, 3598.
176 Claudia do Valle Costa et al, 'Technological innovation policies to promote renewable energies: Lessons from the European experience for the Brazilian case' (2008) 12 Renewable and Sustainable Energy Reviews 65, 79
177 Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 'Electricity from Renewable Energy Resources – What does it cost?' (2009) < http://www.erneuerbare-energien.de/files/pdfs/allgemein/application/pdf/brochure_electricity_costs_bf.pdf> accessed 1 November 2011, 19-20.
178 Ibid, 27.

The feed-in tariff legislation was supported by other laws, including land-use planning and zoning regulations. In 1996, the German government legislated that local governments should designate areas for the development of renewable energy installations.[179]

Feed-in tariffs in Germany have been effective due to the certain and long-term fixed price of renewable energy electricity, guaranteed purchase of all renewable energy electricity generated, electricity network connections, and complementary policies.[180]

3.5.3

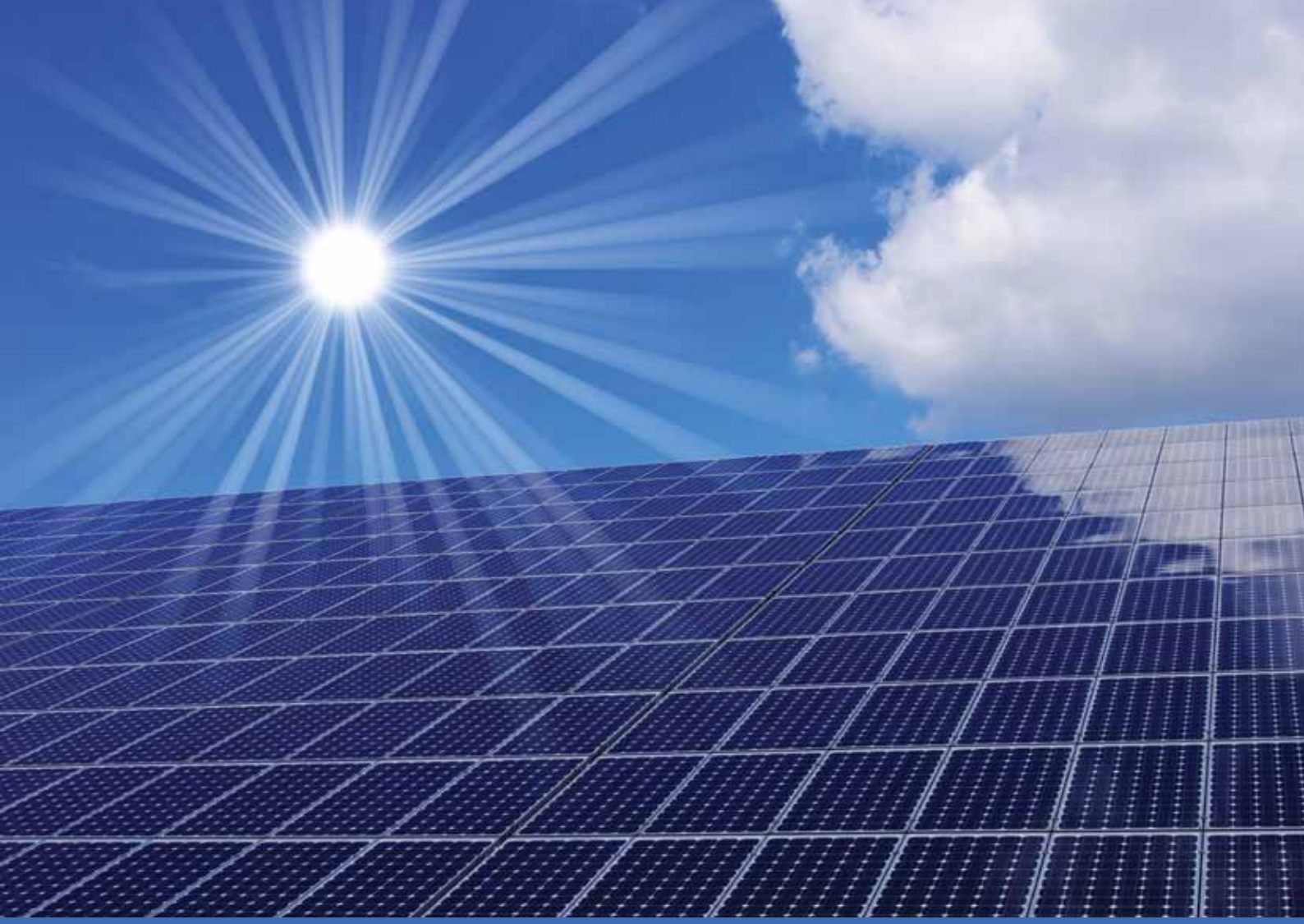
Case Study: Brazil's Push for Wind, Small Hydropower and Biomass Energy

In Latin America, Brazil has become the pioneer state for renewable energy following the enactment in 2002 of Brazil's Programa de Incentivo a Fontes Alternativas de Energia Elétrica, the Programme of Incentives for Alternative Electricity Sources (PROINFA) that supports the development of wind, biomass and small hydropower stations.[181] PROINFA has two stages; the objective of the first stage of the program was to install 3300MW of wind power, small hydropower and biomass power plants by 2006, divided equally among the three energy sources.[182] Electrobrás, Brazil's energy utility, guarantees the purchase of electricity generated for 20 years and the costs incurred by Electrobrás were passed on to the end consumers, with the exception of those that consumed less than 80kWh/month.[183] Once the 3,300 MW objective has been met, the second stage of the PROINFA programme seeks to achieve 10% of gross electricity consumption generated by the three specified renewable energy sources by 2022.[184]

Broadly, PROINFA is based on Germany's feed-in tariff model, although with some modifications to address Brazil's specific challenges.[185] Due to large interest rates and inflation in Brazil, which would devalue a fixed renewable energy price and have a significant impact on long-term investments, there is considerable alteration in the 20-year compensation period provided to renewable energy companies.[186] The Banco Nacional de Desenvolvimento Econômico e Social, the Brazilian National Development Bank, has made special financing programmes available for renewable energy projects under PROINFA: it offers loans with much smaller interest rates than those available on the free market in Brazil, and it will cover up to 80% of investment costs.[187]

Alongside this broad renewable energy policy, Brazil has adopted a regulatory structure to encourage long-term power purchase agreements for wind and biomass plants. In Brazil, power projects must enter into long-term contracts with energy distributers via a reverse auction system, organised by Brazil's electricity regulatory agency, Agência Nacional de Energia Elétrica.[188] Regulations adopted in 2004 include an exclusive auction for wind energy and biomass energy, to prioritise these renewable energies. In 2008, Brazil held its first biomass-only reserve energy auction and the wind-only energy auction was held the following year, with 4,184 MW of power from wind and biomass plants cumulatively auctioned.[189]

179 Claudia do Valle Costa et al (n 176) 79.
180 International Panel on Climate Change (n 136) 23.
181 Johannes M. Kissel and Stefen C.W. Krauter (n 175) 3591.
182 B. Ruiz, V. Rodrigues and C. Bermann, 'Analysis and perspectives of the government programs to promote the renewable electricity generation in Brazil' (2007) 35 Energy Policy 2989, 2992.
183 Johannes M. Kissel and Stefen C.W. Krauter (n 175) 3594.
184 Ibid, 3591.
185 Ibid.
186 Ibid, 3595.
187 Ibid, 3596: the interest rate for PROINFA projects was 13.25%, in comparison to the Brazilian base rate of 19.75% in 2005.
188 International Energy Agency, 'Electric Power Auctions – Wind.' (Climate Change: Policies and Measures) <http://www.iea.org/textbase/pm/?mode=cc&action=detail&id=4482> accessed 4 November 2011.
189 Ibid; International Energy Agency, 'Electric Power Auctions – Biomass.' (Climate Change: Policies and Measures) <http://www.iea.org/textbase/pm/?mode=cc&action=detail&id=4481> accessed 4 November 2011.



3.6
LEGAL PREPAREDNESS FOR GREEN MANUFACTURING

The manufacturing industry is responsible for over a third of global electricity use, over a fifth of CO_2 emissions and 10% of water consumption.[190] Green manufacturing "aims to reduce the amount of natural resources needed to produce finished goods through more energy- and materials-efficient manufacturing processes that also reduce the negative externalities associated with waste and pollution."[191] Properly applied, this creates win-win situations whereby manufacturers benefit from reduced costs while protecting the environment, human health and sustainable livelihoods.

UNEP Policy Framework

UNEP outlined a detailed framework of policy instruments to enable green manufacturing.[192] This includes regulatory and control mechanisms, economic or market based instruments, fiscal instruments and incentives, and voluntary action, information and capacity building.

Regulatory requirements involving cleaner technology standards can target the significant emissions and effluents in manufacturing industries. Where these standards are clearly defined, green investment is encouraged and natural resources are used more efficiently. Through the use of licencing and planning policies, existing industrial parks can be transformed into eco-parks by encouraging closed-loop manufacturing and principles of industrial symbiosis.

Tradeable permit systems aimed at air pollution, water quality and land management, together with fines for non-compliance, are outlined as economic or market based systems to reduce pollution. Such policies have found success in the USA 1990 Clean Air Act, where an emission-trading scheme was introduced to reduce SO_2 and NO_x emissions.

Alongside these restrictions, fiscal policy such as subsidies can provide powerful incentives by altering the cost-benefits for consumers and producers and thereby driving change. Such policies of subsidies and taxation have been popular in car industries, with China offering substantial subsidies for the purchase of green cars and the financing of infrastructure for charging electric cars.

Information is crucial to building market demand for green manufacturing. Eco-labelling systems and education programs enable consumers and manufacturers to make informed decisions. Examples of this type of incentive is discussed below when considering the voluntary program in the US.

The Main Challenges

The focus of investment in the manufacturing sector is a significant challenge facing developing countries in particular. International donors and governments have largely directed funds at businesses only, neglecting the role of government in promoting change. This approach is premised on the belief that businesses are fully rational and will convert to green practices when the benefits are presented to them. However, businesses will generally use resources to expand production rather than increase efficiency. Consequently the role of government in providing incentives and enabling conditions is crucial. The promotion of green manufacturing must address underlying policy frameworks, as well as the provision of information and training to businesses themselves.[193]

Globalisation has prompted a restructuring of manufacturing industries such that they are now predominately located in developing countries.[194] However, developing countries often lack the capacity to restructure the manufacturing sector in order to promote green practices. In this respect, partnerships with developed countries and international organisations can be helpful, as illustrated by the case study of Ethiopia below. Obstacles to restructuring are by no means insurmountable, as can be seen from the National Manufacturing Policy initiated by India in 2011.[195] Green endeavours such as environmental audits, water conservation and renewable energy have been incorporated into the overall manufacturing strategy, providing the necessary overarching approach to maximise effectiveness. For green manufacturing policies to become entrenched and effective, they must be part of a holistic effort to incorporate clean production into industrial, educational and other government areas.[196]

190 UNEP "Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication. Part II - Investing in energy and resource efficiency: Manufacturing" (2011) at 247 and 263.
191 Ibid, 249
192 Ibid, 272
193 UNEP Industry and Environment. "Cleaner Production: Sixth International High-Level Seminar Montreal" (2001) 46
194 (n 190) 271
195 National Manufacturing Policy, available at http://india.gov.in/allimpfrms/alldocs/16395.pdf (last accessed 12/11/2011)
196 UNEP, "Changing Production Patterns: Learning from the experience of national cleaner production centers" (2002) at 47

Green Jobs

Another aspect of green manufacturing is the promotion of green jobs. These are defined as positions in manufacturing (amongst other areas) which contribute substantially to preserving or restoring environmental quality. This includes jobs that help to reduce water consumption, energy use and waste production.[197] While policies promoting green manufacturing will lead to the creation of such jobs, incentives to create green jobs themselves will push the movement towards green manufacturing forwards.

At the international level there have been a number of initiatives focused on green jobs. UNEP has been collaborating with the International Labour Organisation (ILO), the International Trade Union Confederation (ITUC) and the International Employers Organisation (IEO) to analyse, assess and promote the creation of green jobs as a consequence of environmental policies.[198] A separate initiative by the ILO produces policy guidance to ILO constituents through technical assistance, national policy workshops and policy implementation, as well as capacity building.[199]

Promising developments at the domestic level have combined general policies for the promotion of green manufacturing with skills training for green jobs. The market is relied on to create the demand for new jobs, and government incentives as well as private initiatives have sought to meet this demand by training employees in green skills, as illustrated in the final case study below.

3.6.1

Case Study: Greening Supply Chains in the USA

The US Department of Commerce, along with the US Environmental Protection Agency have produced a joint venture known as the Green Suppliers Network.[200] This is a promising incentive which targets small to medium businesses and seeks to improve the sustainability of their manufacturing processes through changing behaviour rather than large capital investment.

Large manufacturers join the program and in turn nominate small to medium suppliers in their supply chain. If these manufacturers choose to join the programme, a local Green Supply Chain (GSC) Review team will conduct an on site 'lean and clean assessment' to determine how the company can improve its efficiency and manufacture in cleaner ways, in particular how to make full use of raw materials, conserve water, increase energy efficiency and eliminate toxic material. Importantly, the programme aims to train employees to identify environmental opportunities within the manufacturing process.

The principal incentive behind the programme is the all-round benefits it provides. For the small/medium manufacturer costs are reduced and their competitiveness in the market increased. This is particularly important given that in 2007/08, 32% of companies deselected suppliers for failing to meet sustainability criteria, and this is projected to rise to 76% in future.[201] After undergoing the 'lean and clean' assessment, Beachley Furniture Co. Inc had an estimated annual saving of US$200,000 in reduced scrap and rework, and US$6,500 reduced energy use[202].

Large suppliers also benefited through no costs access to a green supply chain, which involves lower costs because of competitive suppliers. The overall benefit for the Government is a reduction of environmental impacts and increased competitiveness of US manufacturers.

The GSC Programme therefore meets the needs of multiple stakeholders simultaneously, and actors all levels of a supply chain are motivated to participate. In providing direct customised technical assistance to companies, the programme seeks to fill the gap which these small to medium private companies cannot meet.

197 UNEP "Green Jobs: Towards decent work in a sustainable, low carbon world" (2008). Available at http://www.unep.org/labour_environment/features/greenjobs.asp (last accessed 22/12/2011)
198 Ibid
199 Green Jobs Programme of the International Labour Organisation. Available at http://www.ilo.org/empent/units/green-jobs-programme/about-the-programme/lang--en/index.htm (last accessed 22/12/2011)
200 Green Suppliers Network. Available at http://www.gsn.gov/about/index.html (last accessed 12/11/2011)
201 "Green Suppliers Network", OECD-UNEP Conference on Resource Efficiency, April 23-25th, Paris, France (2008). Available at http://www.oecd.org/dataoecd/13/55/40798884.pdf (last accessed 12/11/2011)
202 "Success Story - Beachley Furniture Co., Inc. Available at http://www.gsn.gov/results/beachley.html (last accessed 12/11/2011)

3.6.2

Case Study: The Ethiopian Cleaner Production Centre[203]

In 2000, an agreement between the Government of Federal Democratic Republic of Ethiopia and the United Nations Industrial Development Organisation led to the establishment of the Ethiopian Cleaner Production Centre (ECPC). The ECPC aims to promote clean production in the Ethiopian industrial sector, focusing on small to medium enterprises and those industries with the greatest impact on economic growth.

The ECPC provides a series of services to both the private sector and the government. Beginning with the government, the Centre is well placed to provide policy inputs and aid in policy implementation. The centre notes that sustainability and clean production will only become a general practice in industry if effective regulations and policies are put in place.[204] This includes administrative measures such as licensing, economic measures such as realistic charges for use of water and energy, and a package of incentives to industry. Given the coordination of national stakeholders and the expertise provided by UNIDO, the ECPC is well placed to help formulate such policies.

Apart from informing policy, the ECPC was established by Ethiopia to provide training and technical assistance in industry. The training is aimed at general capacity building for managers, technicians and national consultants to enable them to implement clean production in local enterprises. This allows for in-plant training specific to individual companies. In terms of technical assistance, in-plant assessments helps companies identify wasteful processes and how to improve them, with the aim of bringing about quantifiable financial and environmental benefits through clean production.

Raising awareness is crucial and this is a further function of the ECPC. Companies must be aware of the potential changes they can make and the benefits this will entail. The ECPC envisages this process as being two-sided: both informing industry on clean production, and receiving feedback from stakeholders regarding their needs and interests. This function is very important, given that the greatest obstacles to clean production in Ethiopia have been identified as a lack of awareness in the industrial sector and a lack of commitment from high level management.[205]

203 Ethiopian Cleaner Production Centre. Available at http://www.ecpc.org.et/ (last accessed 12/11/2011).

204 ECPC, CP Policy Advice. Available at http://www.ecpc.org.et/?q=node/11 (last accessed 12/11/2011).

205 Retta, N "Cleaner Industrial Production Practice in Ethiopia: Problems and Prospects". Journal of Cleaner Production, Volume 7, Issue 6, December 1999, Pages 409-412.

3.6.3

Case Study: Green Jobs in China[206]

As part of the recovery following the global economic crisis, the Chinese government crafted a stimulus package, which was strongly oriented towards promoting renewable energies and energy efficiency. The most energy-intensive industries, such as coal and cement, have been impacted by this greening of the manufacturing industry, which has led to job losses as plants downsize. In the cement industry alone, job losses are expected to reach 584,000 between 2005 and 2020.

However, this does not mean that there will be less jobs overall, simply that the jobs will shift from older, polluting industries to new ones. Crucial to a smooth transition is the training of workers in the new skills that energy efficient industries will require. An important element of this is ensuring that supply and demand in the labour market for green jobs are well matched. To this end, the Chinese Government used surveys to identify future skill demands, together with quantitative projections of employment based on econometric models.

The Ministry of Human Resources and Social Security and the Ministry of Education have begun to address the skills gap for green jobs through the vocational education and training (VET) programme. Approximately 50% of secondary school students attend the VET programme, which covers 80% of occupations. Within the VET system, the government is introducing basic training for green job skills, including education for trainers to train others in these skills. There are improvements in infrastructure for training in green job skills, as well as the creation of support systems. These support systems will include subsidies for workers already in employment participating in training for green jobs.

Training is done not only through the government programmes themselves. As an example of how environmental policies can promote training for green jobs financed by the private sector, it is instructive to consider the car manufacturing business in China. The Government established the National Commission of Reform and Development, which has been supporting pilot programmes in 13 cities to subsidise the use of new energy cars in the public transport system. This has created a corresponding need for workers skilled in green practices and technologies, encouraging companies to implement training programmes themselves. These include both existing employees and new employees, and can even involve sending an employee to university for further training. So policies aimed at environmentally friendly cars can lead to privately funded training and the greening of existing jobs, as well as creation of new green jobs.

206 International Labour Organisation, "Skills for Green Jobs, A Global view. Synthesis Report Based on 21 Country Studies" (2011). Available at http://www.ilo.org/skills/projects/WCMS_115959/lang--en/index.htm (last accessed 22/12/2022)

3.7
LEGAL PREPAREDNESS FOR SUSTAINABLE WASTE MANAGEMENT

The waste sector includes municipal solid waste, i.e. "wastes generated by households, and wastes of a similar nature generated by commercial and industrial premises, by institutions such as schools, hospitals, care homes and prisons, and from public spaces such as streets, markets, slaughter houses, public toilets, bus stops, parks and gardens"[207] as well as a few special waste streams such as used electrical and electronic equipment, vehicles, wastes from construction and demolition as well as health care and biomass waste.[208]

The main challenge of sustainable waste management is to find alternative ways to manage all these sources of waste, in order to reduce the social and environmental impacts of waste disposal. This requires shifting focus away from waste treatment and disposal towards waste minimization. The Integrated Solid Waste Management approach orders waste management strategies into a hierarchy where priority is on waste avoidance and minimization followed by the 3Rs (reduction, recycling, recovery) and, finally, disposal for residual waste.[209]

Challenges

The waste sector is continuously growing both in quantity and complexity. The two main factors driving this growth are population and income.[210] At a fixed rate of resource consumption per capita, an increasing population will consume more resources and generate more waste. In dense, urban areas, population growth is even more significant for waste management, notably in the developing world, where unplanned, spontaneous urbanization translates often in the lack of accessible road networks and adequate management of sewage and waste disposal systems. Consequently, the cost of basic waste management can reach 20% to 40% of the municipal budget. Increasing the revenue for waste management is particularly challenging in the context of high levels of urban poverty, where municipalities are incapable of levying comprehensive municipal rates.[211]

Additionally, studies have shown that the main driver of waste generation is income level. High-income countries generate on average four times more waste than low and middle-income countries. Despite technological advancements and increased awareness, the correlation between wealth and waste generation remains strong.[212] Moreover, as countries develop and become wealthier, not only the volume of waste generated increases, but the waste sector also becomes more varied and complex.[213] Paper, plastics and the special waste streams are present in greater proportions in developed countries. Finally, the fastest growing segment of the waste sector is e-waste. This growth is particularly challenging for both developed and developing countries as e-waste is an heterogeneous waste stream that comprises increasing amounts of new and complex hazardous waste.[214]

Rapid growth in quantity and complexity of the waste sector also increases the risks of damage to human health and ecosystems. Even in developed countries, where collection and treatment methods are well established and progress in sanitary landfill technology and incineration have been effective in controlling the direct human exposure to waste, epidemiological studies have shown the existence of waste-disposal-related syndromes, such as higher incidence of cancer, mortality, birth defects, low birth weight and stress.[215]

In developing countries, the situation is made worst due to the lack of adequate collection and treatment of waste as well as inappropriate disposal infrastructures, limited financial resources and weak law enforcement capacities. Consequently, the most common method of waste management is open, uncontrolled, and unsecured dumps. Studies have shown links between these dumps and harmful health effects, such as skin and eye infections, respiratory problems and vector-borne diseases.[216] Hence, in the face of an expanding volume of waste generation and the growing hazardous component of all waste streams, the current waste-management infrastructures, especially in developing countries, constitute an imminent and severe risk to environmental quality and public health.

207 United Nations Human Settlements Programme, *Solid Waste Management in the World's Cities: Water and Sanitation in the World's Cities 2010* (Earthscan Publications 2010) 6

208 United Nations Environment Programme, *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication* (2011) 292 <www.unep.org/greeneconomy> accessed 30 October 2011

209 Ibid, 292

210 Ibid, 294

211 Elizabeth Thomas-Hope, Solid Waste Management: Critical Issues for Developing Countries (Canoe Press 1998) 2

212 United Nations Environment Programme (n 207) 297

213 Ibid, 294

214 Ibid, 297

215 World Health Organization, *Population health and waste management, Scientific data and policy options*, (29-30 May 2007) Report of WHO workshop, Rome, Italy <www.euro.who.int/__data/assets/pdf_file/0012/91101/ E91021.pdf>

216 United Nations Environment Programme (n 207) 299

The waste sector is comprised of numerous actors. National, regional and municipal governments may all be involved in waste management in different capacities, alongside the private sector, which includes formal activities as well as the participants of the informal services sector.[217] Scavenging and recycling waste can be a dangerous venture, especially in unsanitary conditions. Waste-pickers are highly vulnerable to intestinal, parasitic and skin diseases as well as heavy metal poisoning, and their presence in the landfill can physically disrupt the landfilling process and the workers risk being injured or killed by trucks, bulldozers or compacters. However, waste-pickers provide a substantial percentage of waste management, primarily in developing countries, but also in developed countries and, thus, ought to be recognized and integrated into waste management strategies.[218]

The challenge is to bring all these actors together under an umbrella framework that ensures coordination. Only a well-functioning and integrated system can effectively address and mitigate the health and environmental risks associated with waste generation.

Promising and Effective Laws & Policies

To address the increasing volume and complexity of the waste sector, waste minimisation ought to be the policy priority. Laws should reflect the overall vision of a global circular economy, in which material use and waste generation are minimised, any unavoidable waste is recycled or remanufactured, and any remaining waste treated in manners least harmful to the environment and human health, or used to generate energy. Policy frameworks should encompass regulations of the waste management industry, notably licensing requirements for waste handling, storage, treatment and final disposal, recycled materials standards and facilities standards, as well as a comprehensive policy strategy to regulate land-use.[219] Thus, in planning for the waste sector, national, regional and municipal governments need to adopt an integrated approach to waste management, which prioritizes resource conservation and waste reduction and ensures proper collection and separation of waste to maximize recycling and revalorization. This approach also facilitates appropriate treatment of the residual waste. Without effective means to minimise waste at the source, governments will be stuck in a never-ending race to find more and more space to dispose of the ever-growing volume of waste generated.

Solid waste management constitutes a heavy burden for municipalities. To reduce this burden, economic instruments and policy frameworks can be used to promote costs and responsibility sharing among all stakeholders, including users. Solid waste management is a public service in the sense that addressing public health, environment and resource management are tasks that are considered responsibilities of the governmental sector.[220] Moreover, different responsibilities fall to different levels of government. The municipal authorities are generally in charge of establishing the legal, regulatory and financial frameworks for solid waste management in cities.

Provider inclusivity measures are effective in reducing fiscal pressure on government budgets. By legalizing and enabling non-government stakeholders to initiate waste-related activities, the private-sector can take its share of the cost and responsibility for waste management. Furthermore, informal service providers extract valuable materials from the waste streams and engage in upgrading and trading the materials with the industries.[221] Their expertise is a valuable resource for municipalities. Hence, laws can be used to foster cooperation with the public sector. Facilitating the creation of waste-picker co-operatives, developing occupational health and safety training programs for the workers, securing fair compensation for their labour and subsidizing equipment are necessary steps to ensure the equitable participation of the informal sector.

Cost recovery strategies, such as volume based waste fees, can be used as incentives to encourage waste minimisation at the level of users as well as a means to generate funding for investment in greening the waste sector. Moreover, through public education campaigns, users can learn how to bear their share of the responsibility in waste management by separating the waste they generate and facilitating waste collection.[222]

Finally, to facilitate the transition to a green waste sector in developing countries where institutional capacities are limited and where the implementation of command and control policies might be challenging, the use of economic instruments can help to foster the development of a sustainable waste market.[223] The waste sector presents a number of opportunities for economic development. In the face of increasing scarcity of resources and the rising

217 Elizabeth Thomas-Hope (n 211) 6
218 Ibid, 16-17
219 United Nations Environment Programme (n 207) 318-319
220 United Nations Human Settlements Programme (n 206)141-142
221 Ibid, 144
222 United Nations Development Programme (n 207) 317
223 Ibid, 320

cost for the extraction of raw materials, the demand for the waste market is growing fast. Additionally, increasing public awareness about environmental issues, and the related change in consumer demand for recycled and waste-derived products, are significant factors enhancing the attractiveness of the waste market. Moreover, recent breakthroughs in technologies required for collection, reprocessing and recycling waste, extracting energy from organic waste, and efficient gas capture from landfills, facilitate the greening of the waste sector. Consequently, the waste market provides a number of interesting opportunities for economic growth and poverty reduction. Laws and policies, such as job creation in municipal recycling facilities, and micro-financing schemes to support the emergence and sophistication of waste businesses, can be used to facilitate the emergence of a green waste market.[224]

3.7.1

Case Study: Zero Waste in Adelaide, Australia

Adelaide is the capital of state of South Australia and the fifth largest city in Australia. The population of the Adelaide Metropolitan Area is about 1.1 million and the population growth rate 3.3%.[225] As the commercial and governmental centre of South Australia, numerous governmental and financial institutions are situated in Adelaide. According to *The Economist,* Adelaide is among the top 10 of the World's Most Liveable City Index, 2010.[226]

The acute water shortages in the state have contributed to the development of the environmental consciousness of South Australians. Consequently, the population's expectations of industries and governments in terms of environmental protection are high. Since the adoption of container deposit legislation 30 years ago, resource management has been a major policy priority.[227] In 2003, Zero Waste South Australia (ZWSA) was established. This new government body is responsible for waste reduction, recycling, reusage, sustainability and waste avoidance. The mission of ZWSA is the following: "Through collaboration, advocacy, financial incentives and education, we are working towards meeting the target to reduce waste by 35% by 2014 with a milestone of 25% by 2014 as set out in South Australia's Strategic Plan".[228]

The Zero Waste SA is an example of a new legislative framework where state and local government work together under an integrated waste management strategy. This legislative framework enables coordinated implementation of institutional structures, financing mechanisms, organizational capacity, and actions to support a major drive towards the 3Rs.[229] The ZWSA follows closely the guiding principles of the 'waste management hierarchy' in prioritising waste management practices with the objective of achieving optimal environmental outcomes. Users are active participants in the ZWSA programs. All households in Adelaide receive a high quality kerbside waste collective service on a weekly basis. Waste separation occurs at the level of the households, who manage a three-bin system for collection of recyclables, green organics and residual waste.[230]

Moreover, user consultation, communication and involvement are integral to ZWSA strategic planning. The *Draft South Australia's Waste Strategy 2010-2015 was* available on the ZWSA website for public comments on the upcoming efforts to maximise the value of local resources, to reduce the amount of waste going to landfill and to foster sustainability and community engagement.[231] The private sector is also involved, providing 70 per cent of the kerbside collection services, and the remaining 30 per cent is provided by a public company set up by a group of local councils.[232] Other partners of the ZWSA include the Waste Management Association of Australia and the University of South Australia's Research Centre for Sustainable Design and Behaviour. These partnerships provide the ZWSA with insights into the waste industry's perspective as well as resources for long-term capacity building and for research on waste, second-life materials and behaviour change.[233] Finally, the finances of ZWSA are linked to the landfill tax revenue receipts of state government. "The Waste to Resources Fund is made up of 50% of the levy paid by waste depot licence holders under the Environmental Protection Act 1993". In other words, for each dollar charged for landfill use, 50 cents goes to the ZWSA for initiatives diverting waste from landfill.[234]

224 Ibid, 299-301
225 United Nations Human Settlements Programme (n 206) 46
226 Gulliver Blog, 'Liveability Ranking : Where the livin' is easiest' *The Economist* (21 February 2011) <www.economist.com/node/21016172> accessed 2 Novembre 2011
227 United Nations Human Settlements Programme (n 206) 46
228 Government of South Australia, *Zero Waste SA website* (Last Updated 4 October 2011) <www.zerowaste.sa.gov.au> accessed 2 November 2011
229 United Nations Human Settlements Programme (n 206) 46-47
230 Ibid
231 Government of South Australia (n 228)
232 United Nations Human Settlements Programme (n 206) 46-47
233 Government of South Australia (n 228)
234 Ibid

3.7.2

Case Study: Composting Market in Dhaka, Bangladesh

Dhaka is the capital of Bangladesh, with an official population of 7 million and a daily population reported to exceed 12 million. Its population density of 19,178 persons/km2 renders Dhaka one of the most densely populated cities in the world. Poverty is endemic: over 3 million people live in slums, and more than 55% of people live below the poverty level.[235] Hence, Dhaka's residents live in an immensely challenging urban environment. Increasing urbanization and rapid population growth contribute to the generation of 3,500 tonnes of urban waste per day, of which 80 per cent is organic.[236] Consequently, the effective implementation of integrated sustainable waste management is an immense challenge that the Dhaka City Corporation struggles to meet. Only 50% of the waste is collected, transported and disposed using taxpayer money. The remaining uncollected waste is piled up on the roadsides or dumped in open drains and low-lying areas. Nonetheless, "Dhaka offers an excellent example of a waste management plan being prepared to a high standard and then being implemented in management cycles with the support of development partners".[237] Dhaka's greatest achievement is the establishment of a composting market financed through public-private partnerships and carbon credits.

The Dhaka municipal government is involved in an unconventional public-private partnership with Waste Concern, a private-sector social business enterprise founded on the motto "waste is a resource".[238] The municipal government, through the Dhaka City Corporation, has granted a concession to the private company WWR Bio Fertilizer Bangladesh Ldt, a joint venture between Waste Concern and World Wide Recycling BV, a Dutch company, to collect and process organic waste free of charge from the markets, using its own transportation network.[239] The refuse from households and vegetable markets are taken to community-based composting plants where it is turned into organic fertilizer. Profit is generated through the sale of compost fertilizer, which is sold to farmers at a cheaper price than chemical fertilizer. Thus, poor farmers are able to improve the health of their cultivable soil and increase their yields.[240] Moreover, to ensure the sustainability of the system, Waste Concern gives communities assistance in product marketing by contacting and negotiating with fertilizer companies to purchase and nationally market the 'bio-fertilizers'. As a result, the fertilizer industry was expanded and new businesses provided jobs to the urban poor.

Because the system is not fully mechanized, employment opportunities for the informal sector workers are created and compensated with salaries and working conditions similar to those offered by the local government. For the municipality, the advantage is that its fiscal burden is diminished substantially, because the organic waste collected through the private sector reduced substantially the amount of waste that needs to be dealt with by the Dhaka City Corporation. Finally, using the Clean Development Mechanism of the Kyoto Protocol, Waste Concern was able to capitalize on foreign direct investment to develop a city-scale composting project to reduce GHG emissions while improving the environmental condition of the disposal site.[241] Thus, by capitalizing on its main source of waste, namely green organic waste, and turning it into a resource, Dhaka was able to bring together multiple stakeholders to develop its waste market and overcome technological and financial barriers in waste management. By using the carbon-financing scheme and by enabling public-private cooperation to reduce its financial burden, Dhaka has successfully developed a pro-poor, pro-environment waste management system that responds effectively to the challenges faced by cities in developing countries, where population growth and density are high, and challenges are exacerbated by poverty.

235 United Nations Human Settlements Programme (n 206) 60
236 Ibid, 118
237 Ibid, 61
238 Waste Concern, *Waste Management and Recycling in Bangladesh* (Last Updated 19 July 2011) <www.wasteconcern.org/index.php> accessed 2 November 2011
239 United Nations Human Settlements Programme (n 1) 119
240 Ibid, 121
241 Ibid, 118

3.7.3

Case Study: Integrated Waste Management in Belo Horizonte, Brazil

Belo Horizonte is the third largest metropolitan area in Brazil and the capital city of the state of Minas Gerais. Since 1900, public health concerns have driven waste management initiatives in Belo Horizonte. However, it wasn't until the 1990s that the city considered waste management from a socio-environmental lens. Concerns over the upgrading of existing systems and the generation of income for the poor led to the establishment in 1993 of an integrated system which included upgrading of operations, implementation of recycling programmes for construction waste and organics, environmental education, upgrading working conditions of formal workers and integration of informal recyclers within the formal system. Belo Horizonte's solid waste management model focuses on the promotion of segregation at the sources in order to minimize the harmful environmental impact caused by waste and to maximize the social and economic health of the society.[242]

The Superintendência de Limpeza Urbana (SLU) is a governmental body operating at arms length from the municipality, endowed with a corporate entity, its own patrimony, and with administrative, financial and technical autonomy.[243] Established by municipal law, the main objective of SLU is to conduct the exclusive execution of all solid waste management services for the entire city, includes its 140 *villas* and *favelas* (urban slums). The autonomy enjoyed by SLU is created by municipal law and guarantees independence over decision-making and budgets, in such a way that enables the SLU to implement long-term strategic modernisation planning for the waste sector despite the numerous changes in mayors. The SLU structure is divided between a central planning unit and decentralized operational units, which facilitates both the process of modernization and the provision of services across the entire city, even in more remote or marginalized areas.[244]

Another noteworthy element of the waste management strategy in Belo Horizonte is its leadership in the movement for the inclusion of the informal recycling sector. The municipal Organic Law and other related legislation include recycling, social inclusion, job creation and income generation as the four main pillars of solid waste management.[245] Moreover, in 1990, the municipality amended the Organic Law to include a clause stating that the collection of recyclables would preferably be done by co-operatives of waste-pickers, who would benefit from all collected recyclables in exchange for their work.[246] Since 1993, Belo Horizonte partners with waste-pickers' co-operatives in the implementation of its municipal recycling scheme. Furthermore, since 2003, the waste-picker's co-operatives have joined the solid waste management stakeholder forum, Belo Horizonte Waste and Citizenship Forum, a platform where interests and concerns from civil society actors and public officials are brought for public debate.[247] The municipality also supports organizations of waste-pickers through the SLU budget and through the municipal secretariat for social assistance. Finally, Belo Horizonte's efforts to implement a participatory and inclusive approach to solid waste management have influenced policy development at the national level. In 2001, waste-picking was officially recognized as a profession in the Brazilian Occupation Classification.[248] The direct effect of this recognition is that waste-pickers are now entitled to a nationally established minimum wage in their negotiations with municipalities. And, in 2003, an Inter-Ministerial Committee for Social Inclusion of Waste-Pickers was created with the task of devising and coordinating policies for integrating informal recyclers.[249]

242 Ibid, 50-51
243 Ibid, 192
244 Ibid

245 Sonia M. Dias, 'Recycling in Belo Horizonte, Brazil – An Overview of Inclusive Programming' (May 2011) WIEGO Urban Policies Briefing Note No. 5 <http://www.inclusivecities.org/research/BN5_Dias.pdf> accessed 2 November 2011
246 United Nations Human Settlements Programme (n 1) 51
247 Sonia M. Dias (n 39) 2
248 Ibid
249 United Nations Human Settlements Programme (n 1) 162

3.8
LEGAL PREPAREDNESS FOR GREEN BUILDINGS & CONSTRUCTION

The building sector is the largest single contributor to GHG emissions, accounting for 40% of overall energy use and projected to reach 60% in 2050.[250] Buildings are highly dependent on the energy sector, from pre-construction to post-construction; with over one third of CO2 emissions emanating from embodied energy and over one-third from operational energy.[251] Moreover, building activities have repercussions on the socio-economic aspects of economic growth, employment, health, security and quality of life. In developing countries, the 'challenge of slums' and resource scarcity also impact sanitation, health security and informal economies.

The overall urbanization of developed countries is slowing down and a vast majority of buildings will still be in use by 2050.[252] On the other hand, most developing countries will have to rely on policies which take into account the required emergence of a new building stock.[253] Industrialized countries now present a higher need to retrofit existing structures, while developing countries should favor an approach based on urban upgrading and stronger performance standards for new constructions.[254] This is especially true for the residential sector, which uses the majority of floor space in buildings.[255]

Green buildings allow the use of a holistic approach that is socially inclusive and encompasses processes of implementation, the building's life cycle and how energy efficient it will be in the long term, whether using "passive" (low-tech) or "active" (high-tech) green design. Green buildings also promote the valorization of natural resources, the reduction of waste, pollution, and environmental degradation.[256] Improved lighting, ventilation, proper sanitation systems and interior design have benefits on health and enhance work productivity.[257] Beyond significant energy savings,[258] they can help achieve a better quality of life and sustainable economic growth.[259]

Greening the building sector requires investments in new technologies, ecologically responsible materials and processes, design and expertise. It is supported by a change in consumption habits as well as education of the public and professionals to counter the "green myth," which sees sustainable buildings as less affordable and flexible.[260] With many different actors in the building sector, such an approach calls for policies and regulations that allow flexibility and transparency of sustainable building initiatives.

Currently, several bodies and tools are associated with the legal and regulatory framework of sustainable building design. On the energy level, cap-and-trade schemes have shown some promise, for instance with the Energy Performance Contracting and Carbon Credit Trading Scheme in OECD and EIT countries, which guarantees profitable energy investments and savings.[261] International, national and municipal building codes play a predominant role in managing standards of construction, backed up by green building rating systems. Public leadership programs, through green procurement, allow for innovation, education and greater environmental responsibility.[262] Financial incentives are already in place in some regions to help achieve a transition towards the greening of buildings with government tax credits, grants and subsidies to purchase green houses.[263]

Unfortunately, laws and regulations relating to energy and land-use regimes, employment, building permits or home ownership are rarely coordinated. Policymakers can elaborate advanced institutional structures to coordinate the different stakeholders involved in construction, especially in the energy sector.[264] Such institutions can also monitor, evaluate and frequently update regulatory mechanisms, to align them with technological advances and market demand.[265] At the local level, policies should reinforce audit

250 United Nations Environment Program, *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication*, UNEP 2011 328, 345 <www.unep.org/greeneconomy> accessed 21 October 2011 [*Towards a Green Economy*]

251 Embodied energy relates to natural resources use, transport, manufacture, construction, demolition, waste disposal; operational energy to water, electricity, HVAC, appliances; *Towards a Green Economy*, (n 250) 351

252 Ibid, 342

253 *See* Cities chapter

254 *Towards a Green Economy,* (n 250) 342

255 Ibid, 338

256 The Environmental Protection Agency defines green building as "the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life-cycle from siting to design, construction, operation, maintenance, renovation and deconstruction". EPA, 'Definition of Green Building' (EPA, December 2010) <http://www.epa.gov/greenbuilding/pubs/about.htm> accessed 27 October 2011

257 *Towards a Green Economy,* (n 250) 343

258 Greening the building sector could help reduce GHG emissions by 29% by 2020; *Towards a Green Economy*, (n 250) 340

259 Ibid, 314

260 David Johnston, 'The 4 Myths of Green Building' (GreenBuilding.com-Building the Future with Intention, 2010) <http://www.greenbuilding.com/knowledge-base/4-myths-green-building> accessed 27 October 2011

261 *Towards a Green Economy,* (n 250) 362

262 Ibid, 364

263 Ibid, 365

264 Ibid

265 Ibid, 364

programs, green building codes; encourage R&D, voluntary labeling, adequate education and training.[266]

The benefits of investing in sustainable buildings exceed by far the initial cost, allowing for greater energy savings and better quality of life. However, green design still faces financial constraints owing to the affordability of upfront costs, the ability of households to pay, split incentives and a fragmented industry.[267] There is also a lack of data regarding modes of occupation, cultural habits and lifestyle preferences, presenting the risk of enacting regulations that are not socially inclusive.[268] In parallel to ensuring access to new knowledge on technological advances, energy-efficient solutions and expertise, developing country policymakers can encourage affordability and appropriateness of sustainable constructions.

Policymakers can also offer an equitable and adaptive combination of regulatory instruments, applied incrementally in developing countries. In developed countries, mandatory certifications for public buildings and voluntary labeling could be coupled with fiscal incentives. In developing countries, green certifications and demonstration projects would have to be combined with grants and socially inclusive housing subsidies to help mitigate upfront costs.[269] At the global level, international bodies can focus on promoting fairness in access to sustainable design for developing countries, with greater flexibility in regulations, R&D subsidies and support capacity building.

266 Ibid, 360-361
267 Ibid, 359
268 Martin Khor, 'Challenges of the Green Economy Concept and Policies in the Context of Sustainable Development, Poverty and Equity' in *The Transition to a Green Economy: Benefits, Challenges and Risks from a Sustainable Development Perspective*, Report of the Second Preparatory Committee Meeting for the United Nations Conference on Sustainable Development, UN 2011 <http://www.uncsd2012.org/rio20/content/documents/Green%20Economy_full%20report.pdf> accessed 21 October 2011 1, 72 [*The Transition to a Green Economy*]
269 *Towards a Green Economy,* (n 250) 366

3.8.1

Case Study: Drawing on the Sustainable Development Testing Site Act of New Mexico to Spark Innovation

Building codes and permits control the type of housing that is available at the local level, and usually constrain access to lending from the banks when resale value is uncertain. This case study explores the role of testing site permits in facilitating research and development of sustainable practices, to avoid the failure to meet accepted standards.

As a result of architect Michael Reynolds' Earthship initiative, the New Mexico Sustainable Development Testing Site Act (SDTSA)[270] was signed in 2007 and encourages counties statewide to define new sets of standards for approved sustainable development sites. Under the SDTSA, projects should document their research to demonstrate the use of renewable resources, proper sewage treatment systems, the development of organic food and the reuse of materials in order to obtain testing permits. These permits are valid for up to ten years, and later facilitate the conformity of constructions to building codes.[271]

Earthship technology, known as Biotecture, has gained recognition in the US and abroad for post-disaster recovery projects in New Orleans, Haiti, India and other countries.[272] Starting as low as 5000$ for a single unit studio, an Earthship is an earthquake-resilient, radically sustainable home with little or no utility bills, functioning on ecosystemic principles. Earthships use earth rammed tires and recyclables to create thermal mass. They rely on off-grid energy supplies powered by passive solar design and rainwater harvesting. Earthships also feature autonomous sewage systems for greywater reuse, as well as food production on site to help reduce pollution and reach thermal

270 Bill HBO269. Justia US Law, '2009 New Mexico Code Chapter 71 - Energy and Minerals. Article 8 - Sustainable Development Testing Site Act, 71-8-1 through 71-8-8' (Justia.com, n.d.) < http://law.justia.com/codes/new-mexico/2009/chapter-71/article-8/> accessed 27 October 2011
271 Matthew van Buren, 'Taos County to Pioneer New Rules for Sustainable Building Test Sites' (The Taos News, July 2009) <http://www.taosnews.com/news/article_6f72ac56-e81f-577e-804b-8aa9fb4d6ec4.html> accessed 27 October 2011
272 *Garbage Warrior*, Oliver Hodge (dir), Open Eye Media UK, ITVS International & Sundance Channel, Mongrel Media (Toronto, 2008)

equilibrium[273] while staying versatile enough to allow retrofitting of existing structures.[274]

The SDTSA has allowed the Earthship village to grow steadily in Taos and to set a precedent in net zero carbon alternatives. Homeowners were able to access a wider array of financing instruments, as Earthships features qualified for the Obama Stimulus Tax Credit, Nova Home Loans and local green mortgages.[275] New Mexico has a statewide policy, while other states might act on a county by county basis.[276] To successfully serve an untapped market for passive green housing and promote innovative alternatives on a greater scale, policymakers could design a legal harmonization of SDTSA at the national level. At the state level, they could encourage the delivery of green mortgages and tax credits for sustainable development testing sites, backed up by green building ratings, like the Living Building Challenge or LEED[277] for new construction.[278]

In developing countries, legislation such as the SDTSA could offer groundbreaking advances to implement small and medium scale slum-upgrading projects. This could be done at the local level by updating building codes and third-party green certifications. Regulations can also be enacted to promote research and innovation, through national bills concerned with renewable energy, with the inclusion of sustainable development testing sites in poverty reduction schemes.

273 Earthship Biotecture, 'Earthship Construction Materials' (EB, 2010) <http://www.earthship.net/construction-materials> accessed 27 October 2011

274 EB, 'Earthship Buildings' (EB, 2010) <http://earthship.com/buildings> accessed 27 October 2011

275 EB, 'Financing Earthships' (EB, 2010) <http://earthship.com/financing> accessed 27 October 2011

276 EB, 'Codes, Regulations & Laws' (EB, 2010) <http://earthship.com/codes-a-laws> accessed 27 October 2011

277 Leadership in Energy and Environmental Design

278 Peter Sinclair, 'Beyond LEED. Living' (Climate Denial Crock of the Week, October 2011) <http://climatecrocks.com/2011/10/05/beyond-leed-living/> accessed 27 October 2011

3.8.2

Case Study: An Integrated Green Building Rating System in Japan

Green Building Rating Systems rely on readily available advanced technology in their guidelines and score sheets.[279] Usually meant for formal detached buildings, they are little adapted to low-cost housing or integrated urban strategies.[280] In 2001, the Japanese Green Building Council (JaGBC) launched its Comprehensive Assessment for Building Environmental Efficiency (CASBEE) program, an ensemble of complementary assessment tools to evaluate the environmental impacts and the quality of life of the built environment at different scales, from a single house to an entire city.[281]

The project was a cooperative endeavour between industry, government and the Japan Sustainable Building Consortium (JSBC).[282] The Ministry of Land, Infrastructure and Transport's 2004 Action Plan promotes the development and diffusion of CASBEE at the national level.[283] At the local level, all new constructions must submit a CASBEE evaluation report to the Building Centre of Japan (BCJ) to obtain a green building permit.[284]

279 In LEED for example, the majority of criteria are targeted at uncontaminated sites, sustainable materials, highly efficient energy appliances and innovative design. US Green Building Council, *LEED for New Constructions and Major Renovations with Alternative Compliance Paths for Projects Outside the US*, USGBC 2011 <http://www.usgbc.org/ShowFile.aspx?DocumentID=8868> Accessed 6 February 2012

280 Meyer, A.S., Hogan, S.F. & Liu, F., *Mainstreaming Building Energy Efficiency Codes: Lessons from Early Adapters*, World Bank Working Paper 204, World Bank 2010

281 Japan Green Building Council/Japanese Sustainable Building Consortium (JaGBC/JSBC), *Comprehensive Assessment System for Built Environment Efficiency*, Institute for Building Environment and Energy Conservation (2011)

282 The JSBC is administered by the Institute for Building Environment and Energy Conservation (IBEC). Shuzo Murakami, *Assessment Tools for Building Performance to Promote Energy Efficiency in the Building Sector*, Building Research Institute, Keio University (2009) <http://www.iea.org/work/2009/standards/Murakami.pdf> accessed 6 February 2012

283 Asia Business Council, 'Energy Efficiency Building Standards in Japan', Asia Business Council, Hong Kong (2012) <http://www.asiabusinesscouncil.org/docs/BEE/papers/BEE_Policy_Japan.pdf> accessed 6 February 2012

284 IBEC certifies evaluations of the built environment under CASBEE through its Building Centre of Japan (BCJ): the BCJ has been designated by the government under the Building Standard Law and the Housing Quality Assurance Act as a fair body to evaluate and approve sustainable buildings. The Building Centre of Japan, 'Evaluation' (BCJ, 2009) <http://www.bcj.or.jp/en/what/evaluation.html> accessed 6 February 2012

The reliability of CASBEE for evaluation and voluntary certification of built environments rests on three innovative principles: CASBEE ratings are based on the Built Environment Efficiency (BEE) indicator, which measures the overall sustainability performance by confronting the inputs and outputs of GHG emissions in energy efficiency, resource efficiency, indoor environment and local environment.[285] When combined with the Life Cycle Assessment tool,[286] CASBEE can monitor the environmental impacts of an urban ecosystem throughout its life. Lastly, CASBEE is tailored to regional characteristics, taking into account climate, hazards, local resources and zoning regulations.[287]

At the metropolitan level, CASBEE for Cities and CASBEE for Urban Development can help evaluate the efficiency of planning policies.[288] CASBEE for Cities has been developed with the cooperation of the Promotion Council for Low Carbon Cities (PCLCC) under the Eco-Model Cities Project.[289] Since its inception, 16 municipalities have introduced CASBEE in their regulations or promoted incentives to report CASBEE evaluations.[290]

In 2004, CASBEE-Nagoya and CASBEE-Osaka established a reporting system encouraging future owners to submit a planning document of environmental performance for new constructions and renovations. The City of Tokyo adopted a Green Building Labeling Program that allows consumers to quickly identify sustainable buildings. Kitakyushu and Yokohama promoted the construction of durable zero-carbon houses in large-scale urban developments by offering municipal subsidies and lower property taxes to houses that met or exceeded CASBEE standards.[291] CASBEE ratings have also encouraged banks to offer better interest rates to consumers who buy high performance residential units. With CASBEE for Property Appraisal, real estate companies will be able to measure the impact of Design for the Environment on the property appraisal value, using factors such as expense characteristics, marketability and profitability to evaluate improvements.[292]

Empowered by strong institutional support and the flexibility of its assessment tools, CASBEE sets higher standards for sustainability but also for the cooperation of all stakeholders. With innovative features under development, such as CASBEE-BIM[293] or CASBEE for Vernacular Architecture,[294] it can be applied in developed and developing country contexts, provided that assessment methods are clarified in the future and that adequate training is encouraged.[295]

285 The BEE balances the environmental quality (Q) and the environmental load (L) of a delimited built environment: CASBEE ratings are based on BEE = Q/L, sustainable buildings are those who achieve higher environmental quality with lower environmental load (BEE > 1).

286 The LCA measures the environmental footprint of all building processes during the design phase, the actual life of a building and its disposal; it can help determine if a building will need retrofitting or design performance; *Towards a Green Economy*, (n 250) 341

287 Frank Schultmann, 'Global Performance Assessment of Buildings: a Critical Discussion of its Meaningfulness', 3rd International Conference on Smart and Sustainable Built Environments, Rotterdam (2009) 5 <http://www.irbnet.de/daten/iconda/CIB14086.pdf> accessed 6 February 2012

288 The assessment methods use GHG reduction targets on the principles of the emitter-pays and the beneficiary-pays, where GHG emissions are moderated by relocating their output to consuming areas. JaGBC/JSBC Committee for the Development of Environmental Performance Assessment Tools for Cities, *CASBEE for Cities*, Institute for Building Environment and Energy Conservation (2011) 10

289 Eco-Model Cities began in 2008 and promote a multi-sector approach that integrates transportation, energy waste and forest conservation. The project includes a total of 13 cities aiming at a 30% reduction of GHG by 2020 and a 50% reduction by 2050. Japan External Trade Organization, 'Japanese Green Building Technologies: New Innovations and Policy' (JETRO, 2012) <http://www.jetro.org/content/815> accessed 6 February 2012

290 Japan Green Building Council/Japanese Sustainable Building Consortium (JaGBC/JSBC), *CASBEE for Urban Development*, Institute for Building Environment and Energy Conservation (2008)

291 Woodrow W. Clark, *Sustainable Communities* (Springer 2010) 257

292 Japan Green Building Council/Japanese Sustainable Building Consortium (JaGBC/JSBC), *CASBEE for Property Appraisal*, Institute for Building Environment and Energy Conservation (2009)

293 CASBEE-BIM could allow for the instant evaluation of buildings in Building Information Modeling technology to accelerate the process of certification. Kazuo Iwamura, 'CASBEE in Progress for Market Transformation in Japan', *Green Buildings and Green Growth: the Enabling Role of Standards and Trade, Session 4*, Asia-Pacific Economic Cooperation USA 2011

294 A study of the performance of vernacular architecture with CASBEE for Home confirmed the efficiency of the BEE indicator, but also that vernacular architecture was equal if not superior to modern housing in the way that its low environmental load maximizes its environmental efficiency. Ikaga, T. & Murakami, S. (JaGBC/JSBC), 'Evaluating Environmental Performance of Vernacular Architecture through CASBEE', Institute for Building Environment and Energy Conservation (2008)

295 Abramson D.B. & Tanaka, T., 'Rating the Sustainability of Urban Development: Comparing LEED for Neighborhood Development and CASBEE' (n/d) <http://www.china-up.com:8080/international/case/case/1307.pdf> accessed 6 February 2012

3.8.3

Case Study: Establishing a National Authority to Regulate the Construction Sector in Kenya

This case study looks at the constitution of a central body to harmonize regulations in the construction sector. 50% of Kenya's population is MPI poor[296] and the building sector is most affected by a scarce and inadequate housing stock: only 8% of the urban population can currently afford to buy a home.[297] In addition to a shortage of 120 000 housing units per year,[298] the construction industry faces socio-economic challenges with regard to informal employment and approval procedures.[299] A multiplicity of uncoordinated institutions further contributes to a high level of conflicting policies between the local and the national levels.[300]

Environmental building policies relating to materials, technologies and energy-use have existed in Kenya since the 1990's.[301] Most are relevant in terms of determining appropriate building materials and innovative design strategies, and yet have achieved little impact at the local level.[302] Similar to the Environmental Management and Coordination Act,[303] the National Construction Authority (NCA) Bill 2011 aims at a better coordination of the construction industry.[304] The NCA mandates are to enforce the certification of skilled labor, improve construction techniques and materials, and provide consultancy or advisory services to local and national authorities.[305]

The NCA is a state-owned enterprise expected to replace the National Housing Corporation.[306] It will therefore coordinate the activities of the Ministry of Housing, the Ministry of Roads and the Ministry of Public Works.[307] In addition, Board members include groups of interest and are nominated by public bodies and professional associations from the architecture, engineering, surveying, building and legal sector.[308] The NCA will be able to delegate powers to subcommittees,[309] can propose and enact new regulations,[310] in addition to promoting and establishing construction companies.[311]

The NCA also focuses on provisions for trading as a contractor.[312] The NCA bill attempts to regulate the registration of contractors to ensure quality workmanship, accountability and to consolidate approval procedures under local authorities. At the institutional level, this would ensure a strategic coalition to implement comprehensive building policies and decentralized governance of the building administration.

However, too little is known at this stage on how the NCA intends to fulfill its mandates. Questions have been raised with regards to Kenyan shareholders part in the construction industry, the place of indigenous workmanship and tools for dispute resolution that are not covered by the bill.[313] To address some of these issues, NCA can draft new regulations that explicitly promote the use of local contractors, effectively counter corruption[314] and discourage speculations that are impediments to the affordability of construction services to the poor.

296 The Multidimensionnal Poverty Index (MPI) has been developed by Oxford University Department of International Development; it combines indicators measuring living standards, health and education. Oxford University, *OPHI Country Briefing 2011: Kenya*, Oxford Poverty and Human Development Initiative 2010 <http://www.ophi.org.uk/wp-content/uploads/Kenya.pdf> accessed 29 October 2011

297 The Kenya Homes Guide, 'Prices Lock Out Many from Home Ownership' (KHG, February 2011) <http://www.kenyahomesguide.com/548/prices-lock-out-many-from-home-ownership/> accessed 29 October 2011

298 Building Kenya, 'Building in Kenya' (Building Kenya, May 2011) <http://buildingkenya.com/340/building-in-kenya/#> accessed 29 October 2011

299 Patrick Thuita, 'Kenya's Construction Sector Slows in First Half of 2011' (Construction Business Review, September 2011) <http://www.constructionkenya.com/2286/kenyas-construction-sector-slows-in-first-half-of-2011/> accessed 29 October 2011

300 Kimani, M. & Musungu, T., *Reforming and Restructuring the Planning and Building Laws and Regulations in Kenya for Sustainable Development*, 46th ISOCARP Congress 2010 1,8 <http://www.isocarp.net/Data/case_studies/1813.pdf> accessed 29 October 2011

301 UN, 'Resource-rich Africa Well Placed to Transition to "Green Economy" – UN Official' (UN News Centre, March 2011) <http://www.un.org/apps/news/story.asp?NewsID=37911&Cr=green+economy&Crl=> accessed 29 October 2011

302 Paul M. Syagga, 'Promoting The Use Of Appropriate Building Materials In Shelter Provision In Kenya', Habitat International 17:3 (1993) 125-136

303 National Environment Management Authority, 'Environmental Act' (NEMA, 2011) <http://www.nema.go.ke/index.php?option=com_content&task=view&id=44> accessed 29 October 2011

304 National Construction Authority Bill 2011, s 5(1)

305 Ibid, s 5(2) through s 5(3)

306 Maina Njiha, 'New Bill to Regulate Construction Industry' (Construction Business Review, March 2011) <http://www.constructionkenya.com/1896/new-bill-to-regulate-construction-industry/> accessed 29 October 2011

307 (n 304) s 7(1) through s 7(5)

308 Ibid, s 7(1)(f)

309 Ibid, s 11

310 Ibid, s 40(1)

311 Ibid, s 6(1)(c)

312 Ibid, s 14 through s 24

313 Kenya National Assembly Official Record (Hansard), May, 25th 2011

314 Ibid

3.9
LEGAL PREPAREDNESS FOR GREEN TRANSPORTATION

Green transport is defined as "one that supports environmental sustainability through e.g. the protection of the global climate, ecosystems, public health and natural resources."[315] According to the OECD, sustainable transport cannot exceed international standards of output in the environment, and it should not create more ecological problems than there already are.[316]

The UNEP Green Economy Report indicates that several aspects of transport policy need to be addressed to make the whole sector more sustainable. Transport accounts for more than 80 percent of developing countries' air pollution, is the cause of traffic accidents, and affects people's lives by decreasing their productivity levels.[317] The growing demand for cars and individual transport has created problems ranging from air pollution and traffic noise to accidents.[318] If current trends continue, vehicles roaming the streets will increase to an impressive 2 to 3 billion by 2050. These issues are particularly acute in emerging economies, where the rate of development is leading to an increase in individual transport use.[319]

Laws and policies that are effective in terms of the transition to a green transport sector could be categorized, as Green and Wegener have done, as relating to transport technology, transport supply and transport demand. Policies that relate to transport technology are useful to counter the polluting effect of some transport methods. For instance, hydrogen-powered fuel cell vehicles are considered to be a breakthrough in sustainable transport. Policies that, on the other hand, relate to transport supply will usually focus more on the creation of new or alternative sustainable transport routes, in order to reduce the use of motor vehicles. Finally, policies that relate to transport demand aim at reducing the need for transportation by diminishing the physical space that needs to be traveled.[320] Following are some initiatives that policymakers could consider in order to prepare for a sustainable transport system:

- Domestic governments can set time and place restrictions on vehicle use, parking policies and land-use policies.
- National governments can draft policies regarding taxation on transportation, regulation of vehicle emissions, urban planning to minimize the need for vehicle transportation, investment in public transport.[321]
- In order to decrease congestion and the negative impact it has on the environment and on society, governments at all levels can implement policies in order to levy fees on individual car users.[322] These policies would discourage the use of private transportation and encourage more sustainable modes of transport, such as walking or public transportation.
- States can emphasize the importance of sustainable transport when it comes to employment creation and employment opportunity:[323] individuals would be more likely to support sustainable transport if they realized that new sources of income would be available to them.
- Governments should enforce more Win-Win Transportation Solutions (WWTS). These are defined as "market reforms that help solve transportation problems by removing distortions, increasing consumer options, and encouraging more efficient travel behavior". A good example of a WWTS is the Pay-As-You-Drive Insurance, which would provide an incentive for drivers to use their vehicle less since their insurance prime would increase.[324]

315 UNEP, *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication*, (2011) www.unep.org/greeneconomy, 380
316 Organization for Economic Cooperation and Development, *Environmental criteria for sustainable transport: Report on Phase 1 of the Project on Environmentally Sustainable Transport (EST)*, (1996)
317 *Towards a Green Economy* (n 315) 404
318 David L. Greene and Michael Wegener, "Sustainable Transport", *Journal of Transport Geography 5,* (1997) pp. 177-190
319 *Towards a Green Economy* (n 315) 378
320 David L. Greene and Michael Wegener, "Sustainable Transport", *Journal of Transport Geography 5,* (1997) pp. 177-190
321 Barbara C. Richardson, "Sustainable Transport: Analysis Framework", *Journal of Transport Geography 13* (2005), pp. 29–39
322 Eva Kassens, "Planning for Sustainable Transportation: An International Perspective", http://web.mit.edu/dusp/dusp_extension_unsec/projections/issue_9/issue_9_kassens.pdf, accessed 20 November 2011
323 Ibid
324 Victoria Transport Policy Institute, "Win-Win Transportation Solutions: Cost-Effective, Market-Based Strategies To Encourage Efficient Transport", *TDM Encyclopedia*, < http://www.vtpi.org/tdm/tdm52.htm>, accessed 20 November 2011.

3.9.1

Case Study: An Overarching Policy Agreement in Victoria, Australia

The *Transport Integration Act 2010,*[325] enacted by the state of Victoria in Australia, is an interesting example of a successfully implemented sustainable transport policy in the domestic area. Before this act was proclaimed, the transport system in Victoria was uncoordinated, and the policies enforced by the Minister of Transport almost never mentioned sustainability as a principle or objective to attain.[326] The 2010 Act has overarching authority over all other Transport regulations and policies. As the preliminary part of the act explains, the vision of the Transport Integration Act 2010 is to make the transport system in Victoria more sustainable and accessible to all.

The Act sets up to accomplish several key improvements in the transport area. Socially speaking, it calls for greater accessibility to the public transit system for a greater number of people. It also aims at creating more jobs and openings in the market. The Act also calls for the protection of the environment through the use of less harmful means of transportation and combustion mechanisms, as well as through the promotion of sustainable transport. Urban planning is a key aspect targeted by the Act, for instance by trying to reduce travel time and individual transportation.

This law also lists principles for decision-making, which are to guide the transport agencies in making more sustainable choices. Principles include integrated decision-making among all levels of government, equity and transparency. The Act also integrates the precautionary principle, which is applied in order to avoid causing irreversible ecological damage without prior scientific risk assessment.

The Act is a stepping-stone towards sustainable policy-making in the state of Victoria. Policy development must be coherent with the vision of the Transport Integration Act. All transport agencies must work in unison and adhere to sustainable principles. Further monitoring of the impact of the Act on the transport system in Victoria is necessary to assess its continued success in greening the transport system.

3.9.2

Case Study: High-Capacity Bus Transportation in Bogotà, Colombia

Bogotà's *TransMilenio* is a high-speed and high-capacity bus system initiated in 2000, which is modeled after Brazil's comparable bus system in the town of Curitiba. This transport system focuses both on accessibility and mobility. To better understand the change *Transmilenio* brought to the transport industry in Bogotà, it is important to note before its establishment, all bus operators were privately owned and unregulated, and services offered were often below standard. The bus system was considered unsafe and composed of subpar infrastructure.[327]

TransMilenio, on the other hand, is a public-private partnership in which the government invests into the required infrastructure and *TransMilenio* S.A. takes care of the ticket sales and the bus fleet functionality. The project complied with the environmental legislation of Colombia, which is enforced by the Department of Environmental Affairs (DAMA). In order to assist in the accomplishment of the sustainability goal set out by the *TransMilenio* project, the government implemented several adjacent policies: the city improved the control of illegal public transport, restricted the use of private cars on specific time periods (days or hours), and created a public awareness campaign on the benefits of using public transport as opposed to individual transport.[328]

325 Transport Integration Act 2010

326 "Towards An Integrated and Sustainable Transport System – The Transport Integration Act: Frequently Asked Questions", <http://www.thinkingtransport.org.au/sites/www.thinkingtransport.org.au/files/Transport%20Integration%20Act%20-%20Fact%20Sheet%20-%20TIA%20Q%26A.pdf> accessed 7 November 2011

327 Charles Rivasplata, "Public Transport Integration in a Privatised Market : Recent Policy Lessons from Abroad", http://codatu.org/francais/conferences/codatu13/CodatuXIII-CDrom/codCD-Rivarplatta.pdf

328 United Nations Framework Convention on Climate Change, *BRT Bogotà, Colombia : TransMilenio Phase II-IV*, <http://cdm.unfccc.int/filestorage/E/6/L/E6LUMUUAQA83IUZAPO9XWBMS6BTSAB/PDD%20version%206-09-06.pdf?t=MEJ8bHV6djNlfDBEFm2hyQICQpW54eeujEpN>

The *TransMilenio* system was transporting 800 000 passengers a day only after two years of existence. In 2005, the bus line was carrying about 30 000 people per hour each way, at an average of a million people per day. This is a significant portion of the city's population, which was approximately 7 million inhabitants in 2005. Other than considerably alleviating traffic, this system also made the city more accessible. In fact, because the location of bus stations was strategically planned, with parks and bike paths in the surrounding, most of the riders reach the bus station by bicycle or by foot, further increasing environmental and social benefits.[329] The success of this transport policy is well illustrated by the following figures: 637 passengers in peak hours for August 2011; 318 neighborhoods served by August 2011;[330] 93% decrease in accidents; 11% of vehicle owners switching to the public transport system; 40% drop in air pollution levels; 38% drop in commuting times.[331]

3.9.3

Case Study: The First African Bus Rapid Transit System in Lagos, Nigeria

A trend towards accessible public transport has emerged in several developing countries. For instance, the example of Bogotà outlined in the previous section, inspired development in Lagos, Nigeria. Lagos' situation is different from Bogotà in terms of the challenges it presents: Lagos is the sixth largest city in the world, with a population of around 17 million inhabitants. Highway traffic had reached unmanageable levels and the public transportation system was disorganized, relying mainly on fleets of low-quality mini-buses and taxis. The roads were also inadequate for travel, while car ownership was booming. However, Lagos experienced a first in the history of African Countries: its own Bus Rapid Transit (BRT) system.

The BRT system was launched in 2008 and has provided inhabitants of the densely populated capital with a clean and affordable means of transportation. The positive changes it has brought to society, the environment and the economy are no small feat. Although the commuter number is lower than in the case of the older and better-established *TransMilenio* transit system, the BRT system in Lagos has been used, so far, by an average of 200 000 people per day. The main issues involving public transit system in the past, such as wait times, pick pocketing in the bus and length of journey times have considerably diminished. This change has been made possible thanks to different policies adopted to create actual bus routes and schedules, as well as to increase the buses' speed limit.

The BRT is a Lagos' State Authority (LSA) initiative. The LSA employed an integrated approach to ensure the functionality and sustainability of the BRT system. The Lagos Metropolitan Area Transport Authority (LAMATA), established in 2002, and the Lagos State Traffic Management Authority (LSTMA) have also participated, together with the LSA, in regulating the BRT system. On an institutional level, this supervisory framework has encouraged stricter regulation of the BRT operators. Among other endeavours of the LSA, LAMATA and LSTMA, the bus industry was modified and improved, significant investments in time and money were put into the BRT project, new institutions and regulations were implemented to support the system, and people were hired and trained to operate and manage every aspect of the system.[332] The regulations that have put the system in place and maintained its functionality were approved by the Lagos State House of Assembly and have been signed into law by the Governor of the city. Such regulations include the restriction of yellow buses and other vehicles on the free separated lanes reserved especially for the use of BRT buses.[333]

329 Ibid

330 Estadisticas TransMilenio 2011 : Datos Generales <http://www.thinkingtransport.org.au/sites/www.thinkingtransport.org.au/files/Transport%20Integration%20Act%20-%20Fact%20Sheet%20-%20TIA%20Q%26A.pdf> accessed 7 November 2011

331 Robert Cervero, *Accessible Cities and Regions : A Framework for Sustainable Transport and Urbanism in the 21st Century* (UC Berkeley Center for Future Urban Transport 2005)

332 Dayo Mobereola, *Africa's First Bus Rapid Transit Scheme: The Lagos BRT-Lite System* (Sub-Saharan Africa Transport Policy Program 2009)

333 Lagos Metropolitan Area Transport Authority, *BRT (Bus Rapid Transit)*, < http://www.lamata-ng.com/brt.htm>, accessed 20 November 2011

3.10
LEGAL PREPAREDNESS FOR SUSTAINABLE TOURISM

Tourism plays an important role in poverty alleviation by providing employment, diversifying income-generating opportunities, and raising cultural awareness.[334] According to the United States Institute of Peace, tourism is actually the fourth-largest industry in the global economy.[335] It is also the world's largest employer.[336]

While economically beneficial, tourism practices can also have a harmful effect on the environment leading to the degradation of ecosystems and biodiversity, water overuse and urban problems like congestion and overcrowding.[337] Additionally, tourism remains driven by transnational corporations and can lead to significant financial leakages from the communities and governments that should be benefiting.[338] It can also be linked to unwanted cultural transformation and issues like child prostitution.[339]

2002 was the UN International Year of Ecotourism, which underlined the importance of sustainable approaches in the tourism industry.[340] Sustainable tourism has been defined by the World Tourism Organization as "tourism which leads to management of all resources in such a way that economic, social, and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems."[341]

Sustainable tourism advocates an approach to tourism that supports and promotes the very resources upon which the industry is built: the natural and cultural environment. By protecting the environment, governments can ensure long-term benefits from the tourism industry. This approach requires robust and innovative regulatory frameworks and policies on a local, national, and international level. In particular, governments should focus on ensuring that marginalized and poor communities benefit equally from the tourism industry.

The following points comprise a non-exhaustive list of issues and best practices in sustainable tourism that can be considered by governments developing new legislation and policies promoting sustainable tourism:

- National governments should recognize that several areas of legislation affect sustainable tourism. This includes legislation dealing with employment, environmental sustainability, health and safety regulations, and business licensing. In enacting or amending legislation, the impact of these laws on the practice of sustainable tourism should be evaluated.[342]

- Policies implemented at the local level should foster collaboration between authorities and communities. Through this process, authorities should focus on mitigating the effects of inequitable distribution of tourism revenues and financial leakages, by developing, for example, legislation that secures a portion of the market for community-based tourism programs.[343]

- National government should carefully develop and implement Pro-Poor Tourism (PPT) strategies. PPT aims to simultaneously promote poverty eradication and environmental sustainability.[344] PPT can help expand the type and scope of sustainable tourism activities and ensure that additional communities and regions receive direct benefits.[345]

- In addition to PPT, national governments should promote Community-Based Resource Management (CBRM). CBRM policies focus on helping communities develop the necessary mechanisms to ensure sustainable and profitable tourism. Studies have shown that communities are more likely to conserve resources if they can enjoy direct profits from their efforts.[346]

334 Martha Honey and Raymond Gilpin, 'Tourism in the Developing World: Promoting Peace and Reducing Poverty' (2009) Special Report United States Institute of Peace < http://www.usip.org/publications/tourism-in-the-developing-world> accessed 20 October 2011 1, 1 (Tourism in the Developing World).

335 Ibid.

336 Towards Earth Summit 2002, 'Economic Briefing No. 4: Sustainable Tourism – Turning the Tide' (*Earth Summit 2002*, August 2002) <http://www.earthsummit2002.org/es/issues/tourism/tourism.pdf> accessed 21 October 2011 1, 1.

337 Ibid 3.

338 Ibid 4.

339 Ibid 5-6.

340 World Ecotourism Summit and International Year of Ecotourism 2002, 'Québec Declaration on Ecotourism' (*Global Development Resource Center*, 22 May 2002) <http://www.gdrc.org/uem/eco-tour/quebec-declaration.pdf> accessed 21 October 2011.

341 Ibid.

342 Economic and Social Commission for Asia and the Pacific, *Regional Study on the Role of Tourism in Socio-Economic Development*, ESC March 2007, 63d Sess, UN Doc E/ESCAP/63/14 1, 12 (Regional Study).

343 Ibid 9.

344 Frederico Neto, *A New Approach to Sustainable Tourism Development: Moving Beyond Environmental Protection*, ESA March 2003, UN Doc ST/ESA/2003/DP/29 1, 8.

345 Ibid 10.

346 Joseph E. Mbaiwa and Amanda L. Stronza, 'Changes in Resident Attitudes Towards Tourism Development and Conservation in the Okavango Delta, Botswana' [2011] Journal of Environmental Management 92 1950,1951 (Changes in Resident Attitudes).

- National governments should establish national tourism strategies and implement laws to protect tourist sites and those working in tourist industries.[347] These laws should be developed in close consultation with stakeholders by implementing PPT and CBRM policies. A national body should also be appointed and should have as its sole responsibility the management of the tourism industry.[348]

- Taxes and levies on goods, services and transactions in the tourism industry can be applied to provide funds for local and national governments.[349] These funds can be used for broad development goals like education and health,[350] or to facilitate the implementation of PPT and CBRM by providing local communities with access to credit or technical training.

- Official eco-tourism practices should be encouraged through the implementation of rigorous eco-labels and certification schemes.[351] They should be regulated on an international level to ensure consistency and global significance among certification standards.[352]

3.10.1

Case Study: The Implementation of Community-Based Resource Management in Botswana

This case study demonstrates how community-based resource management (CBRNM) policies can help to promote positive attitudes towards tourism among local populations, while ensuring sustainable practices.

The CBNRM approach gives communities the rights to make rules and to develop mechanisms to enforce them, in addition to enjoying "ongoing incentives in the form of benefits that exceed the costs."[353] Essentially, CBNRM decentralizes the management of resources and "implies a transfer of responsibilities from the central government to rural communities" in the resource management process.[354] Traditionally, issues like institutional capacity and corruption have undermined the enforcement of legislation aimed at regulating the environment at the local level. CBRM mitigates this cost by offering incentives for communities to implement and use sustainable practices in a communal fashion.[355]

CBRNM has been practiced in Botswana for over 12 years, although the projects are limited to the boundaries of Controlled Hunting Areas, a zoning system developed by the government to manage hunting quotas.[356] Communities participating in CBRNM have to form legally recognized Community Based Organizations that can then acquire permits for commercial activities.[357] The CBO must also prepare a natural resource development and management plan. Once completed, they gain control over natural resources in their area for 15 years and become the sole authority with the capacity to negotiate hunting contracts and other tourism activities.[358]

Collective action involving resources has led to a number of direct benefits. For example, communities have enforced respect for rules concerning tourism development and conservation on behalf of their communities.[359] Local control over resources has also led to more positive attitudes towards the practice of tourism generally, which in turn promotes conservation practices.[360]

347 Tourism in the Developing World (n 1) 9.
348 Ibid 10.
349 Regional Study (n 9) 12.
350 Ibid.
351 Ibid 11.
352 Nigel Jarvis, Clare Weeden, and Natasha Simcock, 'The Benefits and Challenges of Sustainable Tourism Certification: A Case Study of the Green Tourism Business Scheme in the West of England' [2010] The Journal of Hospitality and Tourism Management 17 83, 84.

353 Changes in Resident Attitudes (n 13) 1951.
354 Ibid.
355 Ibid.
356 USAID, 'Chapter 2: Community-Based Natural Resource Management' (ENCAP Africa, March 2009) <http://www.encapafrica.org/EGSSAA/cbnrm.pdf> accessed 22 October 2011 1, 6 (Community-Based Natural Resource Management).
357 Ibid 6.
358 Ibid.
359 Changes in Resident Attitudes (n 13) 1958.
360 Ibid.

While the overall structure of CBRNM is believed to have had positive effects, it requires additional efforts. For example, USAID notes that in Botswana, a current lack of clarity in the law "discourages sustainable management, although communities are obtaining substantial income from both wildlife and non-wildlife uses."[361] Additionally, governments do not necessarily have the technical support to offer to CBOs after they obtain their leases.[362] National governments interested in this model could address these issues by developing national networks of CBRNM communities and working with international organizations.[363]

3.10.2

Case Study: Promoting Sustainable Development through Legislation and Tourism Policies in New Zealand

Tourism is New Zealand's fastest growing economic sector[364] and a rapid increase in visitors is leading to an increase in air pollution, household consumption, transport and air traffic, energy use, waste and toxicity.[365] This case study considers the impact of the *Resource Management Act* (RMA) on sustainable tourism and proposes additional measures that should be adopted in conjunction with this legislation.

New Zealand currently regulates environmental issues under the RMA. The goal of the Act is to promote the sustainable management of resources in the country.[366] The Act defines the roles of central, local and regional governments. Regional Councils are set up to identify strategic issues affecting natural resources in their respective zones. The Territorial Local Authorities have the primary responsibility of planning at the local level and are the focal point for tourism developers.[367] Rather than focusing on the management of various activities, the Act tries to mitigate their effects. For example, Resource Consents are required for activities that are not already permitted within Local Plans and enable planners to assess the environmental effects of new activities.[368]

While the RMA provides a statutory framework for preventing environmental degradation, it does not specify the role of tourism.[369] Moreover, while local authorities are charged with developing a plan to formulate policy and guide development in their area, there is no such statutory requirement for tourism plans.[370] Additionally, a majority of authorities fail to make the link between the RMA and sustainable tourism development, choosing instead a "traditional" path based solely on marketing.

In response to these issues, the national government has taken a number of additional measures to promote sustainable tourism. For example, it published two new tourism strategies. The latest strategy, the New Zealand Tourism Strategy 2015, is motivated by two primary principles: the notions of guardianship and responsibility. Local Government New Zealand has also started encouraging local government participation in tourism projects using strategies like 'Postcards from Home,' which "contained specific actions designed to engage local government with tourism issues."[371] The government has also amended the 1974 Local Government Act in order to give Regional Councils more power in sustainable development issues and to increase the "flexibility of local government in decision-making and empowering local community in democratic processes."[372]

The above policies and laws highlight the emphasis that the New Zealand government puts on facilitating the decentralized implementation of national tourism policies. Some of the positive effects of these strategies, which parallel the RMA include local councils, involve engaging more "actively with the tourism sector through development of tourist plans and policies."[373] They also illustrate that governments hoping to implement sustainable tourism development strategies need to adopt a variety of laws and policies and ensure that actors implementing them understand their complementarity. This can be done through a national tourism plan, which consolidates these initiatives and provides guidelines on how to implement them.

361 Community-Based Natural Resource Management (n 23) 7.
362 Ibid.
363 Ibid.
364 Joanne Connell, Stephen J. Page and Tim Bentley, "Towards Sustainable Tourism Planning in New Zealand: Monitoring Local Government Planning under the Resource Management Act" [2009] 30 867, 868 (Resource Management Act).
365 Ibid 869.
366 Ibid
367 Ibid
368 Ibid
369 Ibid 870.
370 Ibid
371 Resource Management Act (n 31) 870.
372 Ibid
373 Ibid 875.

3.10.3

Case Study: Fostering Sustainable Tourism through the Costa Rica Certification for Sustainable Tourism Policy

Environmental conservation and tourism have been at the center of Costa Rican development strategies since the 1990s.[374] Tourism, as the second most important foreign currency earner, plays a key role in the development of the country's economy.[375] The Certification for Sustainable Tourism (CST) approach, which has been touted as a successful way to promote sustainable tourism, was implemented to "turn the concept of sustainability into something real, practical and necessary in the context of the country's tourist competitiveness."[376]

The program is currently being implemented on a voluntary basis. It is comprised of the following levels of evaluation: (1) Physical and biological parameters; (2) Infrastructure and services; (3) External clients; and (4) Socio-economic environment.[377] Each category is broken down into more detailed standards. A hotel or lodge is evaluated in each category and the final rating given is the lowest level achieved in any category.[378] Companies use the CST logo in their promotional materials and provide information on their scoring on the CST website. Performance evaluations are conducted every two years and are free for the company.[379]

Under the physical and biological parameters, as well as the external clients category, the CST program tries to address the "disconnect between tourists' actions and their perceptions" which has a major impact on the success of sustainable tourism.[380] The scoring card focuses on aspects like the education of clients about sustainability and on encouraging them to participate in the process.[381]

Under the infrastructure and services category, the rating draws attention to the role of tourism in degrading existing infrastructure. It also encourages businesses to enable the participation of local community in the tourism industry, although critics believe that it still ignores "the issue of civil society building and empowerment local people to have political control of the community."[382] This has prevented locals from shaping the direction of tourism in the community, which is exacerbated by the minimal role played by government in local tourism.[383] These issues underline the complementary importance of policies and legislation seen in the previous two case studies.

Under the socio-economic environment, the scorecard focuses on how the hotel publicizes and promotes cultural activities and expression and integrates local and regional cultural elements.[384] Unfortunately, as critics note, this approach seems to focus on the 'commodification' of culture, rather than on putting the "decision making power in the hands of local stakeholders and indigenous groups when formulating these policies."[385] In considering the economic impact of a business, the scoring card prioritizes direct economic benefits by requiring that, for example, 60 per cent or more of the employees be local residents, that the administration of the hotel is Costa Rican and that there are provisions for staff training and education.[386] The scoring card also encourages hotels to buy locally and do business with local and national businesses. This is intended to limit the tourism leakage effect.[387]

Overall, the use of certification standards can draw attention to the sustainability of tourism practices and promote them among businesses. The standards used by CST in Costa Rica have had some success in encouraging the implementation of sustainable practices by hotels and lodges.

374 Camelia Monica Tepelus and Rolando Castro Cordoba, 'Recognition Schemes in Tourism – From "Eco" to "Sustainability"?' [2005] Journal of Cleaner Production 13 135, 136 (Recognition Schemes).
375 Ibid
376 Ibid
377 Ibid
378 Ibid (137).
379 Recognition Schemes (n 41) 137.
380 Joshua G. LePree, 'Certifying Sustainability: The Efficacy of Costa Rica's Certification for Sustainable Tourism' [2008-2009] 11 57, 67.
381 Ibid
382 Ibid 68
383 Ibid
384 Ibid 71.
385 Ibid
386 Ibid 73.
387 Ibid

3.11
LEGAL PREPAREDNESS FOR GREEN CITIES

Cities are at the heart of a complex urban system, intertwining human activities, services, trade, landscape, transportation, sanitation, energy and housing networks. The urban poor are at the fore of the urban drift and the most vulnerable to its environmental impacts. In 2050, more than 6 billion people will live in urban areas, and half of them in slums.[388] Within a widespread phenomenon of urban sprawl happening at the global level, housing has become a key element in mitigating future urban crises.[389]

Even though development agencies have incessantly addressed poverty reduction in urban planning strategies, it seems that "the problems keep outpacing any solutions".[390] Security of tenure, access to decent infrastructures and housing are still a significant challenge in many developing countries. The peripheralisation of housing has created a social bridge between developed and undeveloped areas in cities and puts considerable pressure on energy demands.[391]

Cities account for up to 80% of energy consumption and CO2 emissions,[392] with urbanization affecting water supplies, electricity, sewage systems and also mobility, health security and employment.[393] Intra-urban migrations and job scarcity make it particularly difficult for the urban poor to build robust communities. However, cities in developing countries could leap-frog developed ones in their greening process, with the appropriate tools for strategic planning.[394] While cities in emerging economies are most vulnerable to environmental threats, they account for less energy consumption and CO2 emissions than wealthier countries overall.[395]

Sustainable cities feature a variety of environmentally responsive links between physical planning and human activities. They are characterized by the following: energy sensitive infrastructures and utilities, compact sedentary areas with mixity of incomes, activities, and building types, a local network of public and green spaces, an equilibrium in mobility networks, as well as equitable participatory mechanisms to ensure transparent governance, economic fairness and cultural diversity. Green cities benefit from a synergetic approach to their constituents using integrated design strategies to bridge innovative technologies and socially inclusive policies.[396] Sustainable urban development can yield benefits ranging from lower energy and infrastructures costs, the proximity of economic activities and opportunities, to higher employment rates, poverty reduction, improved quality of life and social cohesion.[397]

Greening the economy in cities will require looking attentively at each sector affected, while planning for global changes to take place. Strategic investments will be needed for building technologies, decentralized utilities, multimodal transportation, urban agriculture and resource-efficient strategies.[398] Socially inclusive policies should aim at creating a new form of cross-sectorial urban ecosystem which favours a combination of horizontal and vertical governance networks. This calls for flexible and diverse law and policy instruments.[399] Replicating successful strategies is currently hindered by resistance to change, due to a lack of education and a tradition of 'business-as-usual'. Consumers' preferences are seldom understood, encouraging overconsumption and vested business interests[400] while investments are still locked in accepted practices that are no longer functional.

Planning regulations should work towards smart growth and revitalization; policy tools here include equitable zoning regulations, clean density standards and car-free development incentives.[401] At the metropolitan level, innovative strategies can at times benefit from sidestepping bureaucracy as well as regulations, and drawing on autonomous initiatives to strengthen democracy.[402] However, enabling conditions need to be confronted with the maturity of political infrastructure[403] to allow for more fluidity.

388 UN-Habitat, 'The Challenge' (UN-Habitat, n.d.) <http://www.unhabitat.org/content.asp?typeid=19&catid=10&cid=928> accessed 30 October 2011

389 Mc Leod, R. & Satterthwaite, D., *Why Housing? The Significance of Housing Investment As a Means Of Eliminating Poverty*, Homeless International (n.d.) <http://www.ucl.ac.uk/dpu-projects/drivers_urb_change/urb_infrastructure/pdf_shelter_settlements/HI_McLeod_Satterthwaite_Why_Housing.pdf> accessed 30 October 2011

390 Anil Laul, *Sustainable City Strategies for Developing Countries*, Agenda 21 for Sustainable Construction in Developing Countries <http://www.sustainablesettlement.co.za/docs/a21_laul.pdf> accessed 30 October 2011

391 United Nations Environment Program, *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication*, UNEP 2011: 448, 459 <www.unep.org/greeneconomy> accessed 21 October 2011 [*Towards a Green Economy*]

392 Ibid at 454

393 Ibid at 456

394 Ibid at 474

395 Ibid at 457

396 Ibid at 461

397 Ibid at 462

398 Ibid at 457-461

399 Ibid at 473

400 Ibid

401 Ibid, 477

402 *See* Buildings Chapter, Case Study 1

403 *Towards a Green Economy* (n 1) at 474

Policy frameworks will have to be developed simultaneously at the territorial and at the institutional levels. Green economic development focuses on fostering collaboration between the public and private actors within communities, at the local, metropolitan and federal or national level.[404] Decentralized authorities can rely on synchronized policies and financial instruments.[405] At the national level, governments are concerned with the coordination of building regulations, clean development mechanisms, smart grids, tax and levies. The metropolitan level is responsible for strategic planning, utilities, transportation, infrastructure and operations. At the local level, municipalities and districts participate in hands-on socio-economic development and resource management.[406]

By developing proper training, labelling, public leadership campaigns, open data, greening the academic curriculum and financing community-based demonstration projects, governments play a key role in coordinating cutting-edge partnerships.[407] Incentives and financial instruments should include, but are not limited to, the provision of public services, full-cost energy pricing, environmental taxes, carbon credits, green tax credits and the multiplication of green business partnerships.[408] Affordability rules and financing instrument should therefore be designed to help alleviate upfront costs and expenditures associated with technological advances.[409]

Furthermore, policymakers can support community-driven development to provide decent housing in developing countries. Pro-poor policies can focus on comprehensive land reforms to prevent evictions and displacement of populations; green housing subsidies and mortgages for slum-dwellers and new homeowners, as well as access to good design for all. Effective resource allocation and accountability of the public sector would ensure sustainable development on the long term.[410] In countries where local governments come with general mistrust and corruption, the importance of citizen participation and awareness is crucial to advance green city planning. In this context, regulatory mechanisms should support small and medium scale urban acupuncture projects that involve a lesser complexity of actors and procedures, and are therefore more accessible and affordable.

404 Ibid
405 Ibid, 475
406 Ibid, 474
407 Ibid
408 Ibid, 478-479
409 Ibid, 480
410 Ibid, 475

3.11.1

Case Study: Developing GIS Policies to Understand the Dynamics of Informal Settlements in Tanzania

In terms of density, growth, and velocity; the dynamic nature of informal settlements calls for an equally rapid assessment of their characteristics.[411] Available data acquisition tools are limited by spatial, temporal and thematic deficiencies, and do not create certainty or consensus in policy-making.[412] This case study looks at the institutional framework projected by Tanzania to use Geographic Information Systems (GIS),[413] and specifically Remote Sensing (RS)[414] to reassess land-use in unplanned settlements.

The most dynamic and accurate RS capture is done by satellite, contributing to a timely, multi-dimensional understanding of large-scale urban patterns.[415] In RS, the Basic Spatial Unit (BSU) is not the parcel but the shack, meaning that development strategies no longer rely on the cadastre[416] but on a multifaceted database,[417] with the community as the common denominator.[418]

411 Roshanak Darvishzadeh, 'Change Detection for Urban Spatial Databases Using Remote Sensing and GIS', International Archives of Photogrammetry and Remote Sensing XXXIII: B7 (2000) 313, 320
412 Richard Sliuzas, *The Role of Knowledge and Opinions in Understanding the Dynamics of Informal Housing in Dar Es Salaam*, ESF/N-Aerus Annual workshop, Leuven-Brussels, 23-26 May, 2001
413 GIS is generally defined as a computer based tool for mapping and interpreting spatially referenced data. Quan, J., Oudwater,N., Pender, J. & Martin, A., 'GIS and Participatory approaches in natural Resources Research.' *Socio-Economic Methodologies for Natural Resources Research. Best Practice Guidelines*, Natural Resources Institute, Chatham, UK, 2001 <http://www.nri.org/publications/bpg/bpg09.pdf> accessed 3 February 2012
414 Land observation by RS is a GIS aimed at capturing, storing and analyzing data on land and human settlements remotely, using satellites, aircrafts or helicopter images.
415 L.L. Mollel & Japhet M. Werema, *Application of Space Technologies for Disaster Mitigation or Poverty Relief in Tanzania*, United Nations Office for Outer Space Affairs (UNOOSA) 2003 <http://www.oosa.unvienna.org/pdf/publications/st_space_20E.pdf> accessed 3 November 2011
416 Traditionally, the cadastre defines land divisions according to land titles; in unplanned settlements, such divisions seldom exist. Hundreds of families can live on a single plot, so cadastral units are unfitted to truly translate the socio-economic mosaic of activities in informal settlements. Usually more expensive and lengthy than GIS, cadastral surveys create a serious information gap in setting adequate planning policies. Shack/Slum Dwellers International, 'Solving the Land Information Gap through GIS' (SDI, 2011) <http://www.sdinet.org/blog/2011/02/21/solving-the-land-information-g/> accessed 3 February 2012
417 John Abbott, 'An Integrated Spatial Information Framework', International Archives of Photogrammetry and Remote Sensing, XXXIII:B2 (2000) 9
418 Ibid at 11

In Dar-Es-Salaam, 80% of residents live in slums, which make it particularly difficult to monitor urban growth at the city level in a conventional manner. RS mapping for informal settlements encouraged the drafting of new policies at the government level on the benefits of RS in land management. In 1999, a SPOT satellite study was carried out by the Netherlands Remote Sensing Board to determine the levels of consolidation of informal settlements, using roof area coverage extracted from high-resolution digital mapping to measure density.[419] Currently, Tanzania depends on regional aerospace survey centres for GIS[420] and on international funding for access to technology. At the institutional level, RS techniques fall under the Information and Communication Technology (ICT) policies of the Tanzania Communications Regulatory Authority (TCRA)[421], with little or no focus on geo-information.[422]

However, the Tanzanian government is aware of the benefits of GIS in regulating land tenure and monitoring slum-upgrading. As part of the Strategic Plan for the Implementation of the Land Laws (SPILL),[423] the Ministry of Lands, Housing and Human Settlements Development (MLHHSD) identified land-use as a priority sector of the Poverty Reduction Strategy and issued two key policies for the use of GIS in surveying informal settlements.

The first one is the creation of a comprehensive Urban Land Property Register for Unplanned Settlements in Dar es Salaam, using satellite imagery to classify dwellings in urban areas[424]. The second one concerns the regulation of GIS for land registry. The MLHHSD commissioned several studies which showed the need for improving survey and mapping infrastructure in priority areas, with the modernization of the Surveys and Mapping Division, the creation of a geo-information centre and the establishment of a National Spatial Data Infrastructure (NSDI)[425]. The latter would be a Land Administration Infrastructure (LAI) that manages the survey and parcellation of urban land so that property rights are updated in accordance with the official land tenure system of Tanzania[426]. The NSDI works conjointly with Executive Agencies at the local level to collect data and disseminate information[427]. These new regulations would enable slum-dwellers to reconfigure parcels in urban settings and increase security of tenure for organized groups of households. In addition, the local authorities could better monitor illegal squatting and thus considerably reduce forced evictions in slums while planning for new subdivisions to house squatters.

The NSDI initiative is still at its infancy, but was part of the sectors targeted by the government in its 2010/11 medium term plan and budget, emphasizing the need to finalize the NSDI legal and institutional framework.[428]

419 Sliuzas, R. V., M. Brussel, Gorte, B.,Dekker, R. & Mtalo, E.G., *Urbanisation in Dar es Salaam: The use of SPOT and ERS for monitoring urban development and terrain modeling,* Delft, Beleids Commissie Remote Sensing (BCRS) (1999) 47

420 The Regional Centre for Mapping of Resources for Development (RCMRD) is part of the UNECA sponsored institutions and provides Geographic Information Technology to its 18 contracting members in Africa. Regional Center for Mapping of Resources for Development, 'About Us' (RCMRD, 2011) <http://www.rcmrd.org/index.php?option=com_content&view=category&layout=blog&id=34&Itemid=53> accessed 3 November 2011

421 Tanzania Communications Regulatory Authority, 'Policies and Legislation' (TCRA, 2010) <http://www.tcra.go.tz/display.php?type=policies> accessed 3 November 2011

422 The National ICT Policy was drafted before the Committee on Development Information (CODI) recognized that geo-information was not prioritized enough, funding from the CODI-geo established under UNECA being directed mainly on ICT. United Nations Economic Commission for Africa, *Report of the Fourth Meeting of the Committee on Development Information (CODI),* UNECA 2005: 42

423 Ministry of Land and Human Settlements Development, *Strategic Plan for the Implementation of Land Laws*, MLHSD 2005

424 Dar es Salaam Institute for Land Administration & Policy Studies, 'A Comprehensive Inventory of Activity Needs of the Lands Sector in Tanzania', DILAPS 2009: 15. < http://www.nlupc.org/images/uploads/s_Lands_Sector.pdf> accessed 3 February 2012

425 Ibid, 20

426 Ibid, 6

427 Jonas Johansson, *Improving Access to Geographic Information: Exploring the National Spatial Data Infrastructure Initiative in Tanzania*, thesis for the C-Seminar in Peace and Conflict Studies, University of Umeå, Sweden (2005) 19

428 Ministry of Finance and Economic Affairs, *Guidelines for the Preparation of Medium Term Plan and Budget Framework for 2008/09 –2010/11. Part 1*, MFEA 2008: 67

3.11.2

Case Study: Sustainable Slum-Upgrading in Cape Town

Participatory GIS (P-GIS) combines GIS mapping with Community-Based Participatory Research (CBPR). P-GIS create transversal data integrating vernacular knowledge and scientific perspectives, transferring spatial and socio-economic data onto maps that can be scaled up quickly. PGIS has been used in South Africa to legitimize

customary land claims[429], in post-disaster mitigation[430] and more recently, in slum-upgrading programmes.

With a target of 400 000 upgraded informal settlements by 2014, the South African government partnered with community organizations to launch slum-upgrading replicable projects using P-GIS. At the national level, a Memorandum of Understanding (MoU) was signed in May 2006 between the National Department of Human Settlements (NDHS), Shack/Slum Dwellers International (SDI), the South African Alliance and the Federation of the Urban Poor (FEDUP), to eradicate informal settlements.[431] This MoU ensures the delivery of 1000 government subsidies by each provincial Housing MEC[432] in support of the national community-led housing fund uTschani.[433] Following the MoU's objectives, the SDI's Informal Settlement Network (ISN) implemented P-GIS in several Cape Town neighbourhoods: the ISN's initiatives benefited from an advanced institutional framework with the NDHS' National Upgrading Support Program, the City of Cape Town's Informal Settlements Upgrading Program and received technical assistance from the University of Cape Town (UCT).

In 1996, the GIS Group within UCT collaborated with 3000 families in Kanana and New Rest' slums, to gather and exchange data on informal settlements.[434] The social database was collected by communities, using mapping and enumeration to establish the socio-economic profile of each dwelling.[435] Spatial and social databases were then transferred onto maps for each shack and multiple queries could be made on households using image-generated data.[436] The university's pilot project enabled researchers to address the multidimensional character of the slums on a large scale, introducing a new way of mapping that was determinant in the success of ISN's P-GIS initiatives in slums like Lwazi Park, Europe, Barcelona, or Sheffield Road.[437]

The transfer of GIS data to communities and their involvement in the surveying process empowered residents beyond the ownership of knowledge. The maps provided basis for discussion between slum-dwellers and researchers, creating highly accurate socio-economic data and a better understanding of the inter-relationships of shacks, surroundings and segmented modes of occupation.[438] In turn, G-PIS has allowed communities to gain leverage in negotiations with local authorities for the provision of basic services and upgrading[439]; by releasing control of their data to local bodies, residents have been able to play a greater part in shared decision-making for further physical planning.[440] With the assistance of ISN, FEDUP and the uTschani Fund, SDI communities should collaborate directly with the municipality to implement the pilot program in another 22 areas.[441]

There is still a need for the local government to formalize specific incentives for G-PIS, to promote governance that is really empowering the poor and not a tool for active monitoring and marginalization.[442] In future policies, the NDHS would have to ensure transparency regarding the fair exchange of data between municipalities and communities.

429 Weiner, D. & Harris, T.M., 'Community-integrated GIS for Land Reform in South Africa'., URISA Journal 15 (2) 61-73 (APA II) Special Issue (2003)

430 Musungu, Kevin, 'A Participatory Approach to Data Collection for GIS for Flood Risk Management in Informal Settlements of Cape Town', University of Cape Town (2010). <http://www.africa-adapt.net/media/resources/727/2011-04-23%20Kevin_GIS_paper13_reviwed_Aprilx.pdf> accessed 5 February 2012

431 Community Organization Resource Centre, '7400 Houses Project' (CORC, n/d) <http://www.courc.co.za/7400housesproject.html> accessed 5 February 2012

432 Member of the Executive Council of a province responsible for housing matters

433 The SDI's activities in South Africa are funded through the uTschani Fund, the largest pro-poor housing fund in the country. Inter Press Service News Agency, 'South Africa Habitat: They Are Not Waiting for the Government' (IPS, n/d) <http://ipsnews.net/print.asp?idnews=61477> accessed 5 February 2012

434 John Abbott, 'An Integrated Spatial Information Framework', International Archives of Photogrammetry and Remote Sensing, XXXIII:B2 (2000)

435 Ibid

436 Ibid, 12

437 SDI South African Alliance, 'Informal Settlements Upgrading' (SDI, 2011) <http://www.sasdialliance.org.za/projects/informal-settlement-upgrading/> accessed February 5 2012

438 Cities Alliance, 'Slum Dwellers as Professors and Planners' (Cities Aliance, 2011) <http://www.citiesalliance.org/ca/node/2565> accessed 5 February 2012

439 Shack/Slum Dwellers International, 'Souther African Hub learns about GIS Mapping' (SDI, 2011) <http://www.sdinet.org/blog/2010/11/24/southern-african-hub-learns-about-gis-mapping/> accessed 5 February 2012

440 John Abbott, 'The Use Of GIS In Informal Settlement Upgrading: Its Role And Impact On The Community And On Local Government', Habitat International 27 (2003) 575–593

441 SDI South African Alliance, 'Sheffield Road (Philippi, Cape Town)' (SDI, n/d) <http://www.sasdialliance.org.za/project-profile/informal-settlement-upgrading/page/SheffieldRd/> accessed 5 February 2012

442 Abbot et al., 'Participatory GIS: Opportunity or Oxymoron?', Participatory Learning and Action 33, International Institute for Environment and Development (1998). <http://www.planotes.org/documents/plan_03305.PDF> accessed 5 February 2012

3.11.3

Case Study: Urban Acupuncture, Urban Design Policy in Curitiba, Brazil

Sustainable cities are healthy cities. To allow for density and fluidity, cities in developed and developing countries must make do with what they have and look for ways to heal their scar tissue. By using "urban acupuncture" projects since the 1970's, three-time mayor of Curitiba and architect Jaime Lerner envisioned the now greenest city of Latin America.[443] Urban acupuncture is the rapid deployment of small scale interventions to address the immediate needs of residents and propagate positive socio-economic effects, while allowing for long-term strategic planning.[444] Taking into account the proximity, mixity and connectedness of urban areas, Curitiba has achieved a sustainable city design that does not separate the places where residents live, work and play,[445] combining a dense sedentary tissue with a viable transport system.

Lerner's most acclaimed and replicated policy for Curitiba was the creation of a Bus Rapid Transit (BRT) system, which is low-cost and efficient. With little or no budget to shape a new city, planners in Curitiba discarded large-scale infrastructures, in order to finance hundreds of affordable initiatives.[446] In residential areas, small parcels were allocated to build houses and integrate urban agriculture, to allow for greater density, autonomy and mixity of activities. The City offered incentives for smaller houses, free consultancies with architects and the opportunity to access loans to buy durable construction materials.[447]

Education and recycling initiatives were a major component of Curitiba's policies. City dwellers were actively involved in waste management, recycling and landscaping activities during the planning process. Children were the first to be educated on sorting out waste and recyclables, passing on knowledge to their elders. For 20 years, Curitiba has had the highest rate of garbage recycling in the world.[448]

Economic benefits of urban acupuncture can be found at all levels of intervention: low income residents were able to generate earnings by exchanging recyclables for transit tickets or surplus food from urban farmers; low fares for the BRT system acted as an incentive to a car-free city; the presence of trees, plants and food *in situ* created better urban environments, allowed residents to save on food expenses and to foster a local economic network.

Curitiba is the first demonstration of an integrated urban design policy, where good design, mobility and citizen participation are thought conjointly to shape public policy. Urban design is becoming widespread as a policy tool for greening cities in many European countries, the US and Australia.[449] Such policies can and are also implemented in developing countries, and draw on the Curitiba model of urban acupuncture to emphasize, promote and advance green city design.

443 Siemens, 'Latin America Green City Index' (Siemens, 2011) <http://www.siemens.com/entry/cc/en/greencityindex.htm> accessed 4 November 2011

444 Verdexchange, 'Brazil's Jaime Lerner Recommends "Urban Acupuncture" for Cities' (Verdexchange, November 2007) <http://www.verdexchange.org/node/39> accessed 4 November 2011

445 Jaime Lerner, *Acupuntura Urbana*, (Editora Record 2003)

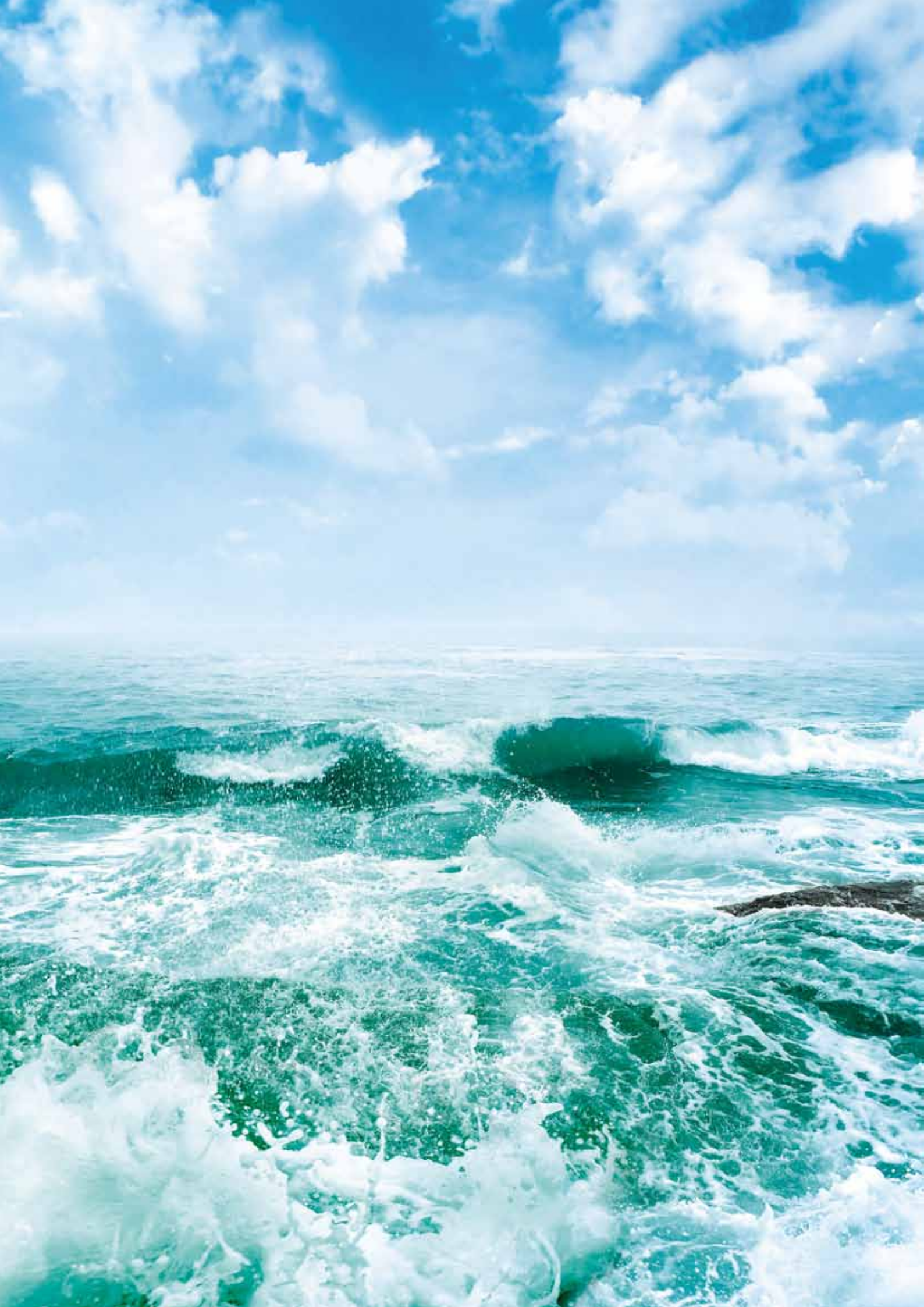
446 Joseph Goodman, Melissa Laube, and Judith Schwenk, 'Curitiba's Bus System is Model for Rapid Transit', Race, Poverty & the Environment, winter 2005-2006 <http://www.urbanhabitat.org/node/344> accessed 4 November 2011

447 Rossana Gaddi, 'Design, Knowledge, Sharing, Creativity, Great Events: Tools for Contemporary Urban Development', REDIGE 1:1 2010 96, 104

448 TED, 'Jaime Lerner Sings of the City' (TED, March 2008) <http://www.ted.com/talks/jaime_lerner_sings_of_the_city.html> accessed 4 November 2011

449 Architect Magazine, 'In Design We Trust' (Architect, April 2011) <http://www.architectmagazine.com/architects/in-design-we-trust.aspx> accessed 5 November 2011

4
CONCLUSION



The transition to the green economy represents an ambitious agenda, involving profound and durable change to the global economy. This process requires legal and institutional reform in order to initiate, support and guide economic change. Legal preparedness for the green economy targets laws and institutions in key sectors, in order to enable sustainable economic growth that promotes social equity and environmental preservation. Legal and institutional solutions will be contextualized, and will build, harmonize and coordinate existing frameworks. While the green economy agenda refers to 11 key sectors, policymakers need not address legal and institutional issues in all of these sectors, or restrict their efforts to these sectors alone. Target sectors will also depend on particular policy objectives and domestic priorities.

Addressing barriers in legal and institutional frameworks requires rigorous analytical methodologies, as well as openness to novel and creative solutions. Different types of analytical frameworks allowing for both rigor and creativity are available in the context of green economy policymaking**.** One such approach is **scenario analysis.** A scenario is an imagined future, in which the drivers of change are both plausible and internally consistent. Exploring various scenarios helps to assess the possible consequences of present actions and initiatives in a consistent, systematic and comprehensive manner, and can involve multiple stakeholders. There are different types of scenarios. **"Business as usual" scenarios** consider the future if current trends and relationships remain constant. This scenario can often serve as an effective comparator or baseline for other scenarios. **Exploratory scenarios** are meant to shake complacency and unsettle expectations. They begin with a narrative element, which describes a future that is qualitatively and imaginatively different from the past. Policymakers can elaborate a variety of contrasting exploratory scenarios in order to consider multiple options and contingencies. Finally, **"back-casting" scenarios** define a set of desirable conditions for the future, and seek to devise models and pathways to arrive at these final goals. Effective approaches to policymaking aimed at facilitating the transition to a green economy should employ an eclectic approach to scenario building, that considers all three types of scenarios.

This compendium of legal best practices offers inspiration and models to policymakers in the context of the transition to the green economy. The case studies presented describe novel and creative legal and policy options, which yielded successful outcomes in a given context. These case studies form a strong basis for policymaking that will foster a departure from "business as usual" economic options.