



EUROPEAN REPORT ON DEVELOPMENT 2012

Draft Outline
March 2011

**Effective natural resource management for inclusive and sustainable growth in the context of increased scarcity and climate change:
*what role for the public and private sector?***



Overseas Development Institute
111 Westminster Bridge Road
London SE1 7JD
UK

Tel: +44 (0)20 7922 0300 Fax: +44 (0)20 7922 0399
www.odi.org.uk

Table of Contents

| | |
|--|----|
| Introduction | 3 |
| 1. Introduction and overview | 3 |
| Part 1. Context and methodology | 7 |
| 2. A new global context for natural resource management: climate change and resource degradation and depletion | 7 |
| 3. Major transitions required to promote inclusive and sustainable growth..... | 14 |
| 4. A framework for understanding the role of public and private sector in natural resource management | 18 |
| Part 2. Case studies to illustrate the major transitions | 26 |
| 5. Managing scarcity: investment in land | 26 |
| 6. Managing scarcity: investment in water | 30 |
| 7. Addressing climate change: Investment in energy efficiency and renewable energy ... | 33 |
| Part 3. Policy implications | 37 |
| 8. Private sector initiatives: implications for business policies | 37 |
| 9. Governance: implications for national policies | 38 |
| 10. EU and global policies | 40 |
| References | 42 |

Introduction

1. Introduction and overview

Climate change and increased resource scarcity provide a new context for effective natural resource management. Global incomes are increasing, technologies are spreading, poverty is decreasing and a new global middle class is emerging, but at the same time demand for natural resources is growing rapidly and carbon dioxide emissions and other levels of pollution are increasing. It is expected that by 2030, the demand for energy will have risen by 40%, for water also by 40% and for food by 50%. This will have a corresponding impact on pressures on land acquisitions and on the environment. The global economy will need to undergo a number of transitions to tackle these new challenges. A variety of actors, ranging from business to governments, civil society and international organisations, will need to work together to manage the new pressures on land, water and energy use and ensure that natural resource rents contribute to development. The European Report on Development 2012 (ERD 2012) will examine appropriate roles for the public and private sectors, as well as the relationship between them, in seeking to ensure that these transitions occur with the best possible contribution towards inclusive and sustainable growth in developing countries so that natural resources are managed equitably and sustainably for a better future.

Businesses recognise that such global risks challenge the world economy and in particular have emphasised the existence of a food-water-energy nexus (WEF, 2011). Moreover, some businesses have also put in place various schemes to save energy and water beyond the requirements of regulation. Businesses will also be at the forefront of innovation, e.g. in becoming more energy-efficient. They demand that their governments and the international community take action to provide a clearer incentive structure for doing things differently. We also know that governments remain crucial in governing natural resources, establishing the right institutions, setting the right framework for markets to allocate resources more efficiently, establishing property rights, engaging in well-managed public-private partnerships and ensuring that natural resource rents are distributed equitably and contribute to development.

The public sector needs to ensure that market and coordination failures in relation to the use of natural resources and climate change are addressed appropriately and decisively. These issues cannot be solved by governments or business in isolation, or within the confines of their own country borders. The new context is one in which a wide variety of actors need to work together to address the scale of the issues and where global issues manifest themselves locally. Certain types of relationships between the state and business will be more conducive to addressing these issues than others. With its clear commitment to policy coherence for development, the EU, that is the EC and the member states, is well placed to facilitate the process of change. It is the world's largest donor, working with many partner governments, and a leading investor and major trading partner for developing countries. At the same time, it is also a major user of resources and source of pollution.

The key research question guiding this outline is: *what does the evidence tell us about the appropriate roles of the public and private sector, and their interactions, in managing natural resources for inclusive and sustainable growth in the context of increased scarcity and climate change.* To answer this question, the European Report on Development 2012 (ERD 2012) will be divided into three main parts: (1) context, concepts and frameworks; (2) case studies; and (3) policy implications.

Part 1 will comprise three chapters. In chapter 2, we will discuss how a growing population, higher income levels (with a newly emerging global middle class) and global environmental

change (particularly climate change) are combining to create a new context for natural resource management. These processes lead to new pressures on the regeneration capacity of renewable natural resources and on the absorptive capacity of the earth's regulation systems. Rockström et al. (2009) suggest that in the case of the global climate, freshwater use and biodiversity, human activities are already beyond or very close to the boundaries of a safe operating space. The new resource scarcities reveal very clearly the interconnectedness of natural resources, and between local and global processes of resource use. Developing countries are affected directly by new scarcities (e.g. the increased foreign interest in access to land and water in developing countries) and by climate change (e.g. the availability of freshwater and agricultural productivity). For these reasons, the empirical part of the report will focus on the management of those resources that illustrate most clearly the land-water-energy nexus. Our broad hypothesis is that countries, and vulnerable groups within them, will be winners or losers in managing these resources depending largely on the innovative capacity and actions of the public and private sector, and also on the effectiveness of the relationships between them .

Chapter 3 will describe a number of broad transitions the global economy must make in order to move forward. We focus on two: the need to cope with increased scarcity and the need to cope with and avert climate change. Others include the need to manage the rents from natural resources in an equitable manner. Chapter 3 will also clarify the key terms used in the report and situate these in the context of other concepts such as sustainable development, green economy, low-carbon development, poverty reduction and sustained growth. For example, the term 'inclusive and sustainable growth' embodies several aspects: whether incomes in the economy are growing, whether growth is inclusive or benefits only a few social groups, whether growth is environmentally sustainable, and finally whether the growth process has a long-term basis in effective institutions. These are mutually reinforcing in some cases, but clash in others, which in turn requires an explicit analysis of the trade-offs. The chapter will also review conceptual efforts to go beyond thinking in terms of trade-offs, for instance proposals for new concepts of prosperity (Stiglitz et al., 2008; Jackson 2009; Schor 2010) and efforts to include sustainability and happiness issues in the conventional measures of GDP (Stiglitz et al. 2008).

Chapter 4 will draw on the academic literature to provide a framework for assessing the roles of the public and private sector, and the relationship between them, as these transitions take place. This chapter presents an overarching research framework using a range of analytical tools and approaches depending on the particular situation and the specific resource in order to assess the effects of public and private policies on the economic, distributional and environmental aspects of inclusive and sustainable growth. The report will also address the diverse nature of the private sector, the diversity of public actors and the diversity of country contexts.

Chapters 5–7 will apply the analytical framework to three case studies of land, water and energy and illustrate how the interconnections among increasingly scarce resources and regulation systems for degraded earth play out at country level. The selection of the resources in the case studies has been motivated by the importance of the land-water-energy nexus featuring in the debate on resource scarcity. The case studies will illustrate the main transitions described in Chapter 3 and assess the roles of the public and private sectors within these. We have selected a range of contexts on the basis of criteria including relevance to the debate on scarcity and climate change, relevance to EU policies and relevance to the analysis of the interactions in the role of the public and private sectors.

Although we have not made a definitive selection of the contexts to be examined in the report, we propose to focus on a selection of topics within this land-water-energy nexus:

- investing in land for agricultural purposes (Chapter 5)
- investing in expanding access to water for productive uses (Chapter 6)
- investing in energy efficiency and renewable energy (e.g. solar and hydro power and biofuels) (Chapter 7).

In each of these resource-specific case studies we will assess the roles of various private initiatives and public policies regarding the private sector in promoting inclusive and sustainable growth. Civil society involvement and initiatives will be considered in terms of how they affect the public–private sector interactions.

In Chapters 8–10 we will consolidate the policy implications to be drawn from our analysis of the specific contexts. The private sector is increasingly promoting its own sustainability initiatives, often through multi-stakeholder processes (including with civil society), and we expect to review good practices in each context (Chapter 8). At the same time the public sector needs to put in place adequate and forward-looking governance institutions, improve coordination between the public and private sectors, address the sustainability of the resource base and ensure that benefits from natural resources are sustained and that rents are distributed equitably (Chapter 9). We will examine how developing countries, global initiatives and the EU can help this process, and specifically how they can best interact with the private sector to promote inclusive and sustainable growth. This will be set in the context of current policy debates (e.g. the Rio+20 conference, EU policy developments, G20), in Chapter 10.

Much has been written on natural resource management and there are several relevant initiatives (apart from EU initiatives which we have surveyed separately), see Box 1. The ERD2012 will build on these initiatives but it will also be unique and differ from them because it will combine (1) a new context for natural resource management with a particular focus on the land-water-energy nexus; (2) an analytical focus on the roles of the public and private sector, and their interactions; (3) a focus on the effects on inclusive and sustainable growth; and (4) examine the implications for policy and the EU in particular.

Box 1: Examples of other initiatives and major events

- ‘Rio+20’ UN Conference on Sustainable Development (UNCSD) in 2012 ([link](#))
- World Economic Forum ([link](#))
- World Business Council for Sustainable Development ([link](#))
- 2011 Human Development Report on equality and sustainability ([link](#))
- World Water Forum in 2012 ([link](#))
- UN Global Sustainability Panel ([link](#))
- UN International Year of Sustainable Energy for All in 2012
- G20 on managing commodity price volatility ([link](#))

The key points for discussion on the basis of this outline might include:

- Have we identified the right elements in the new context for natural resource management?
- Have we made an appropriate selection of natural resources?
- Do we use the right concepts and definitions?
- Do we focus on the right issues in analysing each resource? What other issues are relevant in the intersections of the land-water-energy nexus? How can we sharpen our hypotheses?
- Do the transitions we have identified provide a useful framework for the report?
- Is our research framework appropriate?
- How can the value of the actor-focused approach be enhanced?
- How can we best distinguish between the different types of actors, especially with respect to the private and public sectors, but also civil society?
- Is the distinction between business policy, governance and national policy (public policy, rules and institutions), and EU and international policies helpful?
- Are we operating at the right level: local, national, or global; developing, emerging or developed countries?
- Have we identified the right potential background research papers, and how can we make these more specific?

Part 1. Context and methodology

2. A new global context for natural resource management: climate change and resource degradation and depletion

Natural resources

Natural resource management is a well-established discipline. Natural resources are the basis for social and economic activities and thus for human wellbeing. Many livelihoods are based on goods produced from natural resources. Examples include the role of renewable energy in providing poor people with access to energy, forestry activity in countries such as Cameroon and Indonesia, fisheries in the Pacific, nature-based tourism across several developing countries, soil and water resources and food production and agriculture, oil and minerals in countries such as Democratic Republic of the Congo (DRC) and Botswana. Natural capital is particularly important in developing countries. It is estimated that it accounts for 26% of the total wealth in low-income countries, 13% of wealth in middle-income countries and only 2% of wealth in industrialised or OECD countries (World Bank, 2006).

Society relates to the natural environment in two fundamental ways: on the one hand, it draws on raw materials such as minerals, fibres or food, processes and uses them to satisfy human needs, and then discards the waste back into the environment; on the other hand, society's very existence depends on the ability of the environment to sustain the right conditions for life, to replenish (at least some of) the raw materials, and to recycle waste so that it is not harmful to human life (Hertwich et al., 2010; Martinez-Alier et al., 2010). There are different ways to classify resources, and box 2 describes a number of natural resources.

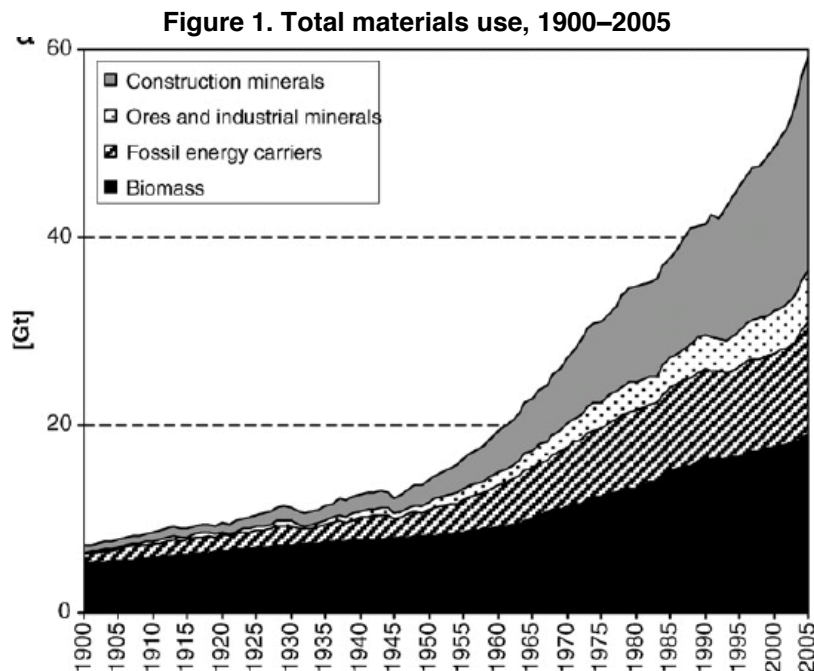
Box 2: The spectrum of natural resources

1. *Raw materials.* Non-renewable raw materials are found in the earth's crust and have reproduction cycles of several millions of years: they include minerals, oil, and metals. These resources are finite and their stock diminishes with use. Renewable raw materials are located in the biosphere, related to living organisms and have reproduction cycles of one to ten years: they include agricultural crops, timber and other biological resources. These resources may be depleted and eventually exhausted if they are used up more quickly than they are renewed.
2. *Environmental media such as air, water and soil.* These natural resources sustain life and produce biological resources. Unrestricted use leads to degradation.
3. *Biodiversity.* This includes both the diversity of species within a certain ecosystem and the genetic diversity within a population. Biodiversity is the basis for the stability of ecosystems and their resilience, i.e. the capacity to adapt to changing conditions such as global warming.
4. *Flow resources.* These include wind, geothermal, tidal and solar energy. These resources cannot be depleted but require other resources to exploit them.
5. *Space (land).* Physical space is needed to produce, protect and use all resource types. Land is used for human settlements, agriculture, infrastructure and industry, and mining. Land scarcity leads to competition among different uses and space requirements.

Sources: Scholz et al. (2011); European Commission (2003).

The new context for natural resource management

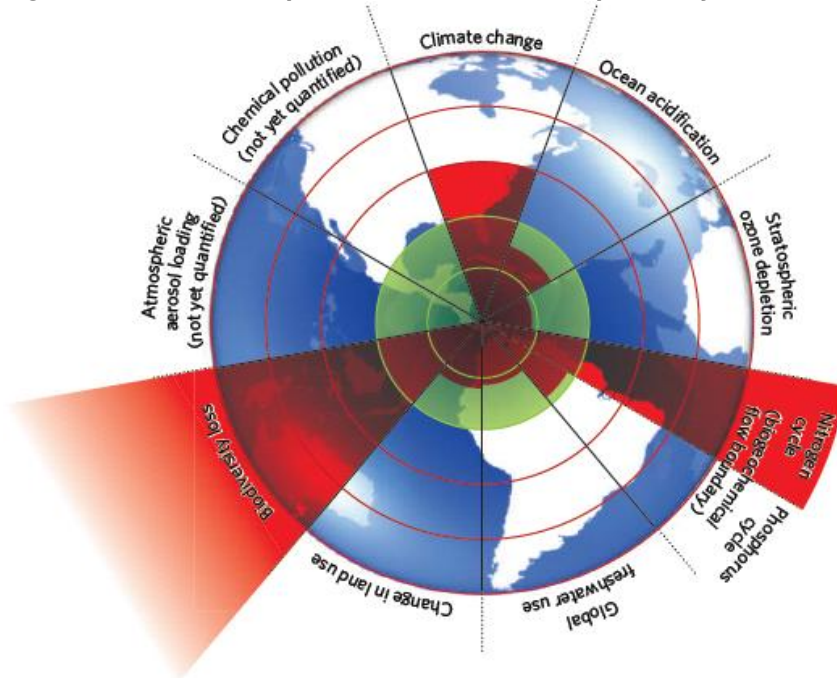
The relationships between the human and the natural systems are increasingly challenged. The combination of population growth, expected to rise from the current 6.8 billion to over 8.3 billion by 2030, and increased incomes in emerging economies (particularly in India and China with associated rise in middle classes), will place new demands on resources. It is expected that by 2030, the demand for energy will have risen by 40%, for water also by 40% and for food by 50%, which will have a corresponding impact on land acquisitions (te Velde, 2011). Current and anticipated levels of consumption of biological and mineral resources threaten future access to key natural resources and have led to renewed discussion of scarcity (Box 3). At the same time, the scale of human consumption and waste production is altering the natural flows of energy and materials, with the risk that the earth's regulation systems will cease to function adequately. More human beings are enjoying higher living standards than ever before, and millions more are expected to escape from poverty. Historically, improving the incomes of a large part of the population in industrialised countries has relied on the increasing consumption of materials and energy, owing in part to urbanisation and industrialisation (Figure 1).



Source: Krausmann et al., 2009

The consumption of natural resources has historically been very unequal. This is reflected both between and within countries. In industrialised countries inequality has often been addressed by economic growth – that is, by increasing the size of the pie so that even the small slices are larger. However, as shown in the red areas in Figure 2, increasing the overall size of the economic pie is increasingly constrained by environmental issues (Rockström et al., 2009). This chapter will provide an overview of the broad trends in the use of natural resources at the aggregate level using three measures: (i) materials consumption; (ii) materials and energy intensity; and (iii) human appropriation of primary production (HANPP) (Behrens et al., 2007; Krausmann et al., 2009; UNEP, 2007; Steger and Bleischwitz, 2011; Haberl et al., 2007).

Figure 2. Schematic representation of the nine planetary boundaries



Source: (Rockström et al., 2009)

The proposed focus of ERD 2012: the land-water-energy nexus

The proposed focus of this report will be on three critically important resources that are likely to be under great pressure in the near future: land, water and energy (see also WEF, 2011). This chapter will discuss trends in the availability of and interconnections among these resources.

The consumption of different types of resources and energy is linked. Food consumption is a good example: the demand for food requires land, water, a range of metals to produce agricultural and transport machinery, minerals for fertilisers, as well as energy to fuel machines, irrigation systems and the chemical synthesis of fertilisers. It is impossible to separate land issues from water issues, and these are at the same time affected by the availability of energy. Sustained population growth, the growing demand for biofuels, the shift towards a meat intensive diet, and the likely changes in temperature and rainfall as a result of climate change, all highlight the complex interplay between resources and economic and physical changes.

The literature review prepared as a background for this outline suggested that land, water and energy are three closely interrelated resources that are of critical importance, and are particularly likely to come under increased pressure in the near future. These three resources are closely connected to the production of food and other agricultural products, but they are also linked to consumption and emission processes that are external to agriculture. Decisions about land use, for example, will be shaped by concerns about deforestation and the loss of biodiversity, but also by the incentives to use forests as carbon sinks. We will explore this land-water-energy nexus, which offers a powerful tool with which to analyse the effects of global socioeconomic, demographic and environmental changes. Given their importance and linkages, we propose that the empirical case studies of the ERD focus on each of these in turn, but always within the broader context of the nexus among them.

Box 3: Resource scarcity

The debate about whether there are enough resources to satisfy growing human needs began centuries ago. Thomas Malthus famously predicted in 1798 that population growth would outstrip the ability to produce food. He was proved wrong, but the scale of current levels of consumption – not just of food, but also other resources – is unprecedented, and this has again put resource scarcity on the agenda (Millennium Ecosystem Assessment, 2005a; Krausmann et al., 2009; Rockström et al., 2009; Beddington et al., 2011).

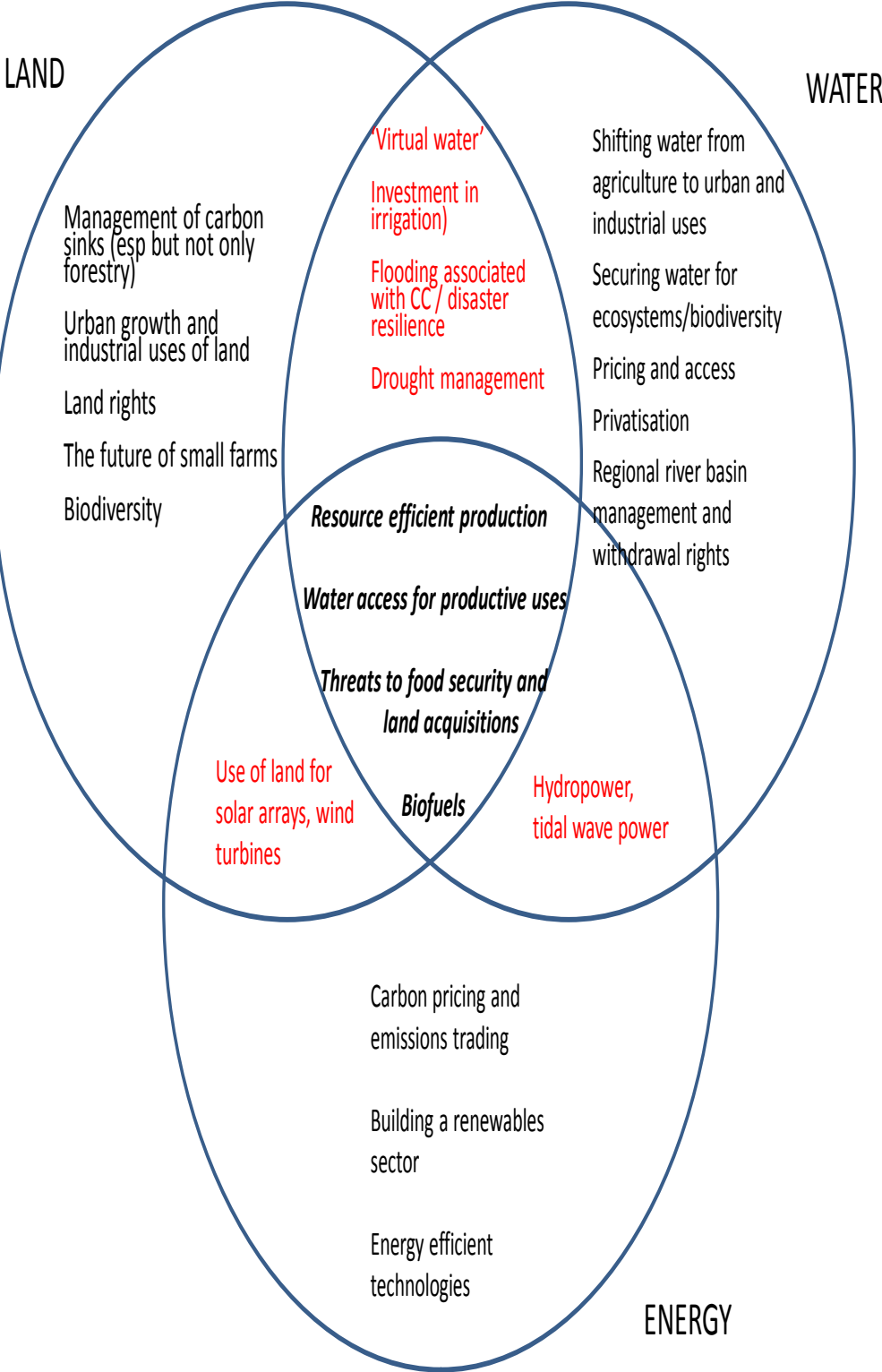
Scarcity is a complicated concept there are differences between physical, economic and social scarcity (Daly, 1990; El Sarafy, 1991; Endres and Querner, 1993; WWDR, 2009). Scarcity may refer to absolute physical quantities, but it generally refers to how and to whom resources will be available in the future assuming current levels of technical efficiency. Some resources such as land are finite. Yet we do not use the term ‘land scarcity’ to mean the absolute lack of space. Only about a quarter of the earth’s surface is used for agriculture. But expanding the agricultural frontier by cutting down forests, for example, affects the scarcity of land and at the same time destroys habitats, reduces the availability of water and increases carbon emissions (Schubert et al., 2010).

Economic scarcity relates to the economic costs of extracting a resource. In theory, the known stocks of many minerals and metals are sufficient to meet demand for centuries to come. But as the most easily accessible reservoirs are depleted, the cost of mining less pure or more remote stocks – using current technologies – can make extraction economically unviable. Pricing systems would be expected to address such scarcities.

Some resources are socially scarce. Given the great inequalities in the distribution of wealth, certain social groups may be excluded from access to essential resources, such as food, whose production is economically and technologically feasible. The economist Amartya Sen (Sen, 1981), for example, demonstrated that famines rarely arise from an absolute shortage of food, but rather due to their lack of entitlements meaning that people cannot afford to buy it.

Figure 3 provides a number of examples of how the natural resource nexus manifests itself in policy debates at global or local levels. The figure presents a circle for each resource and lists a number of key policy debates relevant to the resource. It also shows where the policy debates overlap over the three resources. For example, overlapping circles relate to the current threats to food security which have led to more demand for land, water and energy; resource efficiency, as companies are increasingly seeking to use water, land and energy resources more efficiently; biofuels provide energy but use land and water that could be used for other processes; and water access for productive uses can be used for agriculture (land) and energy production. Finally, a number of policy debates cover two resources: for example using large areas of land (for large concentrated solar power plants) or water (hydropower) to provide energy services. Irrigation is linked to land, and as some areas of the world will not have enough water to sustain adequate levels of production, there is an increased importance for trade in foodstuffs, and hence the ‘virtual water’ that is embedded in food (Hoekstra, 2011). How some of these interconnected policy debates play out at country level will be the focus of Chapters 5–7.

Figure 3. The natural resource nexus: examples of policy debates



Emerging powers and natural resource rents

There are further issues that set a new context for natural resource management. Issues of resource scarcity (Box 3) have risen up the agenda with the increased demand for land, water and raw materials by the rise of the emerging powers. For example, China's growing engagement in sub-Saharan Africa has focused in particular on access to natural resources. This has strengthened the position of resource-rich countries, which can now expect substantial foreign investment in their economies seeking to exploit the available resources. So, although we face global scarcity in a range of interconnected resources, individual countries are expected to increasingly receive revenues from exploiting their natural resources (Collier, 2010). The key question for them is how they can best manage these rents to promote inclusive and sustainable growth and avoid the 'resource curse' of wasting natural resource revenues that has affected so many resource-rich countries in the past.

Climate change

The effects of climate change have become increasingly visible and contribute to the new context for natural resource management. For example, climate change directly affects the use of land and biodiversity. It is expected to affect agricultural productivity (Figure 4), through changes in water availability in arid regions, and to increase the rate of species extinction. Some regions are expected to see higher agricultural productivity and others lower so the ability to trade products across regions is important; climate change also has indirect effects, e.g. changing the global incentive structure for trade in goods and services, including those based on natural resources.

Conclusion

Increased resource scarcity, which exacerbates the interconnectedness among natural resources and between local and global processes of resource use, the rise of emerging powers and a new global middle class, and climate change together create a new context for natural resource management and inclusive and sustainable growth in developing countries. Whether they, and particular disadvantaged or vulnerable groups within them, become winners or losers will depend largely on the innovative capacity and actions of the public and private sector and their interaction, which will also be affected by civil society. There are direct effects: there will be changes in agricultural productivity and scarcity of interconnected sets of resources such as land, water, and energy. We will discuss this in Chapters 5–7. Indirectly, the new context will provide opportunities for increased rents for countries that have scarce resources, such as land, water and raw materials (Ellis et al., 2010); countries that export products and services that are based on scarce resources such as water and renewable energy will experience increased demand; and countries whose exports depend on fossil fuels or fuel-intensive forms of transport will suffer decreased demand. There will be high values attached to countries that have low carbon sinks, such as forests. There will be fundamental changes in international economic relationships such as trade, private investment, migration and development finance.

This chapter will provide mappings and indices designed to provide insights into the new scarcities, the effects of climate change, and the presence of rents at country and regional level.

3. Major transitions required to promote inclusive and sustainable growth

The analysis in Chapter 2 presents a key challenge: at current growth rates, the majority of the world's population will not be able to achieve higher living standards if we pursue business as usual (BAU), because resource degradation and climate change will compromise the achievement of future inclusive growth (see e.g. Stern, 2006). This analysis suggests that two main transitions will shape natural resource management in developing countries in the future:

1. Moving from a situation of relative abundance towards dealing with the relative scarcity of some key resources – such as land and water – as a result of shifting wealth and consumption patterns and global environmental change.
2. Moving from a high-carbon development path towards one dealing with and averting climate change through low-carbon development, in particular the move towards a global green economy – while also providing sufficient access to energy in the poorest countries.

ERD2012 will focus on these transitions and specifically on the roles of the public and private sectors and their interactions to promote inclusive and sustainable growth during these transitions. Of course, there are other transitions such as urbanisation, economic diversification, and demographic change. We will refer to them in the two transitions above as and when appropriate.

This chapter will set out a number of options on how developing countries can best manage their natural resources in the transitions described above. The complex challenges of and opportunities provided by natural resource management will require various actors at different levels to make decisions that will promote inclusive and sustainable growth. Developing countries, for example, can manage scarcity rents efficiently and equitably, or they can squander them; they can define property rights well or weakly and consequently risk conflict; they can promote technological change and energy efficiency or they can fail to do so. These challenges will also have to be met by the combined efforts of a range of private and public actors. Conventional expectations about the roles of the state or business, and perhaps also of civil society, need to be transformed into more creative solutions to match the complexity of the challenges, and this is precisely the focus of this ERD 2012.

Different types of transitions and different combinations of public and private actions will have different effects on inclusive and sustainable growth. The term 'inclusive and sustainable growth' is not easily defined¹, and Box 5 suggests one possible way of framing it. The term resonates with European (and other) values because while economic growth is a key concern for the EU, there is also a strong social and environmental strand in European thinking and values. These are enshrined in the Treaty of Lisbon, which stresses the importance of both poverty eradication and sustainable development as two objectives of the Union (Art 2.5 TEU).

¹ We have reviewed many key publications from the World Bank, European Commission, OECD and other sources but they do not provide a consistent view. One promising definition from a climate change angle is the term "climate compatible development" used by the CDKN (Climate and Development Knowledge Network), see www.cdkn.org.

Box 5: ERD use of the term ‘Inclusive and sustainable growth’

Inclusive and sustainable growth is a complex concept which combines economic growth, its social inclusiveness, and its environmental sustainability. Growth is not a static concept and involves processes which are long-term and dynamic in nature, and which depend on effective institutions.

Inclusive and sustainable growth has a strong basis in economic growth, but goes beyond it in important ways. Sustained *economic growth* is a fundamental driver for better living standards and poverty reduction in developing countries, but if this growth is not sufficiently *inclusive*, poverty could still continue to rise. Too much inequality hampers both growth and environmental sustainability and is a source of social tension and conflict. Further, natural resources are increasingly scarce and the global climate is warming, so it is important to consider growth paths that also have the potential to deliver benefits for (and meet the needs of) future generations and hence to generate growth that is *sustainable*.

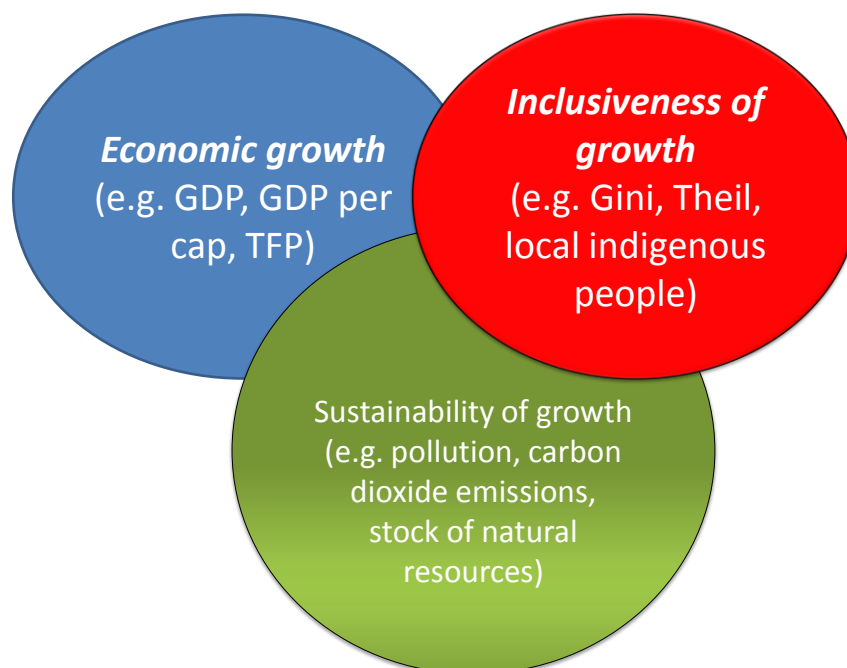
The term ‘sustainability’ implies that the economic use of natural resources and biosphere services needs to account for the harmful effects of irreversible environmental change. Irreversibility has two meanings: a deep disturbance to or interruption of the reproduction cycles of renewable natural resources (which leads to physical scarcity); or an exhaustion of the absorption capacity of the biosphere and the atmosphere for pollutants (which leads to new equilibria in the ecosystems and adverse living conditions for many people). While technological innovations and investment in human-made capital may substitute for exhausted reserves of non-renewable resources, options for substituting ecosystem services and reproduction cycles of renewable resources are rather limited.

How might we put into practice and measure inclusive and sustainable growth? There are several ways to measure the three components of inclusive and sustainability of growth (Figure 5).

- *Economic growth* could be measured by GDP growth, GDP per capita growth, total factor productivity growth coupled with factor endowments. These could be measured at national or local level.
- *Inclusiveness of growth* could be measured by standard inequality measures (e.g. Gini, Theil) unemployment levels or other effects on specific groups (e.g. unemployed youth, local indigenous people).
- *Sustainability of growth* could be measured by its environmental effects (e.g. level of pollution, stock of natural resources; carbon dioxide emissions, biodiversity). We need to distinguish between weak and strong sustainability (Daly, 1990; El Sarafy, 1991), depending on the substitution possibilities among various types of capital (e.g. Hartwick, 1977).

Many studies already provide different measures of indicators in each of these sub-components. We do not aim to add to such studies. Rather, we would make it explicit that different activities and policies can be assessed at different levels.

Figure 5. The components of inclusive and sustainable growth



There are conceptual challenges in relation to links, feedback effects, and weighing the effects of the various components. For example, a high level of economic growth may contribute to inclusive and sustainable growth, all other things being equal, but when economic growth is associated with the depletion of natural resources and high emissions of carbon dioxide, the sustainability of growth may be compromised through the feedback effects of these emissions. Conversely, capping the use of natural resources may protect the environment but would also limit economic growth that depends on those natural resources. Another example relates to large mining and oil companies or large land buyers: without them, natural resources may not be exploited, but if the process of exploitation takes no account of the inclusiveness of the growth process, the livelihood of the local population may be affected and force the company to shut down.

There are further challenges in terms of the level and time framework of analysis. For instance, do we mean the next five or the next 100 years? Are we interested in the local, national or international level? From the perspective of securing biosphere services and natural resources, a long-term vision is essential: as scientific analyses of climate change and other dimensions of global environmental change make clear, development pathways within the confines of BAU would lead to irreversible and possibly dangerous changes in the natural environment. The window of opportunity for averting these is short – therefore speed of action is crucial. Time is another fundamental feature: long-term benefits require the sacrifice of some short-term gains (as pointed out by Stern, 2006).²

Our concept of inclusive and sustainable growth cannot be divorced from the wider dynamic context in which this takes place. For example, there is a strong role for the state and its

² An example is the shift to renewable energy sources and low-carbon economies in general: a forthcoming report of the German Scientific Council on Global Environmental Change (Schellnhuber et al. 2011) shows that low-carbon transformation needs to happen within the next decade in order to achieve the 2°C target and to keep the economic costs of transformation under control. By 2050 the global economy will have to be decarbonised. Their analysis shows that to avoid dangerous climate change this transformation will have to occur in parallel in industrialised, emerging and developing countries. Transforming the global energy system and the global land-use systems are two key facets of this transformation process.

institutions (and governance more widely) to set the framework for inclusive and sustainable growth. Economic policies and institutions can facilitate the growth process and set the framework in which the private sector operates. Complementary policies and objectives are needed to ensure that growth is inclusive and sustainable. Complementary policies range from social policies and the provision of public services to make growth inclusive, to environmental and innovation policies to make growth sustainable and resource-efficient. Our concept of growth thus involves a strong governance and institutional component which could be measured by process and governance indicators.

Recently, a number of economists have questioned whether we need to think mainly about complementary policies for sustainability and inclusiveness, or whether there is a need to change more fundamental parameters of economic policy (Jackson, 2009; Schor, 2010). The chapter will review what such studies say about the roles of the public and private sectors in the management of natural resources for inclusive and sustainable growth.

Box 6: Green GDP measures

Conventional GDP measures look at economic outputs in terms of the value of production, taking into account the value of the inputs necessary to achieve those outputs. This is a partial picture of the national accounts, because it ignores the costs associated with resource depletion and environmental degradation.

A growing number of scholars (e.g. Victor, 2010) advocate a more holistic or integral measurement of GDP that includes the cost of environmental degradation and thus provides a much more accurate picture of the real costs of growth. Other scholars have suggested other concepts for measuring progress in societal development such as 'gross national happiness' and the Human Development Index.

Joseph Stiglitz, Amartya Sen and Jean-Paul Fitoussi suggest in the *Commission on the Measurement of Economic Performance and Social Progress* (2008) that GDP is an insufficient metric by itself and that additional measures of sustainability and human well-being should be included when assessing economic progress. Adjusted net savings (also known as genuine savings) is a sustainability indicator building on the concepts of green national accounts. Net savings are derived from gross national savings with four adjustments. First, estimates of capital consumption of produced assets are deducted to obtain net national savings. Then current expenditures on education are added to net domestic savings as an appropriate value of investments in human capital. Next, estimates of the depletion of a variety of natural resources are deducted to reflect the decline in asset values associated with their extraction and harvest. Finally, global pollution damages from carbon dioxide emissions are deducted.

Box 7: Potential background research paper

Explore the concept of inclusive and sustainable growth in more detail in the context of new concepts of prosperity and limits to growth.

4. A framework for understanding the role of public and private sector in natural resource management

Understanding the challenges for natural resource management in a rapidly changing world, and the innovative actions that are required by the public and private actors, is a complex matter. This chapter presents an analytical framework involving a number of possible analytical tools and approaches that enables a systematic analysis of public and private actors. This framework is used in Chapters 5, 6 and 7 to develop a systematic analysis of the public and private sectors in each of the resources: water, land and energy.

Based on a review of the academic literature, this chapter will present a number of analytical tools for understanding the respective roles of the public and private sector in managing natural resources. Appropriate tools can be applied to the relevant sectors as identified in Chapters 2 and 3: land, water and energy. Table 1 provides a summary.

The chapter will differentiate between different types of private-sector actors (e.g. large companies versus smallholders) and separate public policy from issues of political economy, institutions and public capacity. It will also consider the role of other sets of actors such as civil society actors at appropriate places. The analytical tools will be used to analyse how the actions of the public and private sector relate to inclusive and sustainable growth during the transitions mentioned above. The key challenge is to answer the following question:

What does the evidence show about the appropriate roles of the public and private sector, and their interactions, in managing natural resources for inclusive and sustainable growth?

We aim to answer this question by focusing on four broad sub-questions. In each sector analysed in Chapters 5–7 we will ask:

- What is the context for the resource?
- What are the current roles of the private sector?
- What are the current roles of the public sector?
- What role for interactions between the public and private sectors?

Further details are provided in Box 9. The specific issue will determine the geographical scope of the questions. For example, foreign investment in land will be analysed at country level, but may involve international actors and policy implications. Our broad hypothesis is that countries, and vulnerable groups within them, will be winners or losers in managing these resources depending largely on the innovative capacity and actions of the public and private sector, and importantly, the effectiveness of the relationships between them.

The findings presented in Chapters 5–7 will inform the above question and hypothesis which will then lead to the subsequent policy-related chapters. For example, the questions on the private sector will help in the evaluation of and implications for business policy (chapter 8), government policy the framework for including state-business relations (chapter 9), and EU and international policies (chapter 10).

Box 8: ERD definitions of public, private and other actors

The private sector is made up of large and small businesses (including the informal sector), both domestic and foreign, in the agricultural, manufacturing, extractive and service sectors. It also includes business associations. The public sector is made up of national and foreign governments and government owned institutions such as parastatals. Other actors include civil society, such as academia, think tanks, trade unions, consumers, NGOs and social movements.

Box 9: Analytical questions for each sector (e.g. investment in land, water, and energy)

What is the context of the natural resource?

- What are the economic activities engaged in by the different types of actors (e.g. investment in land, renewable energy)?
- What is the state of technological innovations in the specific context, and what are the projected options?
- What are the main challenges in the use and management of the resource relating to scarcities and competing uses or conflicts over use?
- How do current economic activities in the specific context related to indicators of inclusive and sustainable growth?

What are the current roles of the private sector?

- Is the private sector operating at the frontier of the technological possibilities in using natural resources (e.g. is it using the most energy-efficient technologies)?
- What are the barriers towards introducing new technologies? Do private-sector actors take externalities into account in their decisions on technologies?
- Has the private sector put in place initiatives to manage natural resources better? Why? And what has been the impact on inclusive and sustainable growth? (see Box 10)
- What else is the private sector doing, e.g. developing innovation capabilities?

What are the current roles of the public sector?

- What framework (e.g. rules, institutions) has the public sector put in place to guide the use of natural resources for inclusive and sustainable growth (and with what effect)? e.g.
 - What property rights are put in place?
 - What taxes, subsidies and standards have been introduced to overcome market failures?
 - What types of concessions have been put in place to contract the private sector?
 - What are the public policies and institutions (e.g. innovation systems) for promoting technological innovations?
 - How are scarcity rents managed to promote inclusive and sustainable growth?
 - What is the role of international factors (e.g. what is the role of EU policy)?
- What other roles does the public sector play, e.g. as a producer, owner or spender of public money?

What is the role for interactions between the public and private sectors?

- Can we map the wide-ranging interests and capacities of different actors relevant to managing the resource?
- How can we characterise the institutional setting (broadly defined) in which state and business interact? Is there trust, transparency, reciprocity? Or collusion?
- What are the effects of different interactions? Are the incentives and capacities in place for the public and private sector to promote inclusive and sustainable growth?
- What is the role for other actors such as expressions of civil society in conditioning this interaction?

Context

The context will start with an examination of the current challenges in the use and management of the resource with respect to scarcities and competing uses or conflicts over use, using country examples. In which countries and localities are the physical, economic and social scarcities occurring? And what are the drivers of this? We will then describe the economic activities engaged in by the different types of actors (e.g. what are the flows of investment in land, or in renewable energy)? The private sector is more prevalent in some resources than others.

We will then discuss the state of technological innovations in the specific context, and ask what are the projected options? Technology has improved the ability to use resources more efficiently. Technological change, however, has its limits. Current projections suggest that, even in the scenarios that include the greatest technological achievements, technology alone is unlikely to provide the solutions to the global challenges to natural resources posed by growing populations, the emergence of a new class of global consumers, and environmental change (UNEP, 2007; Millennium Ecosystem Assessment, 2005; IPCC, 2007; Schellnhuber et al., 2009). A very clear understanding of the role of technology is therefore critical for assessing the different options.

Finally we will examine outcomes, i.e. what are the indicators of inclusive and sustainable growth, and can different outcomes be related to different types of economic actors.

Roles of the private sector

The private sector is involved in using and managing natural resources. After setting the general context for the sector, we will ask a number of questions. First we will examine whether the private sector is operating at the frontier of the technological possibilities in using natural resources (e.g. is it using the most energy-efficient technologies). This might not be the case, and we want to analyse why this is so by examining the barriers faced by the private sector in adopting new technologies. For example, private-sector actors may not have adopted new technologies because they may not take externalities into account when making decisions on investment in technologies. Finally, we would ask whether the private sector has put in place its own initiatives to manage natural resources better. If so, why? And what has been the impact on inclusive and sustainable growth? (See Box 10.)

Analytical tools include:

- Studies examining business development impact and *corporate social responsibility* (CSR) (see Box 11) – businesses need a social license to operate and design projects to improve their impact on development. The incentives are to go beyond regulation.
- *Core competencies of business* – most researchers agree that the main development benefits from business come from their core business activities. It is in the business interest and the social interest to use resources efficiently (WBCSD, 2010).

Box 10: Analysing the impact of the private sector on inclusive and sustainable growth

In order to assess the overall impact on sustainable and inclusive growth of the business activities of the private sector regarding natural resource use, it is necessary to look at the wider socioeconomic impacts as well as environmental impacts. Several methodologies and frameworks have been developed to do this, including the Global Reporting Initiative (GRI), the Global Impact Investing Network (GIIN)'s Impact Reporting and Investment Standards (IRIS), and the World Business Council on Sustainable Development (WBCSD)'s Measuring Impact Framework.

Many businesses are now using these frameworks to report on their activities, and some have commissioned occasional in-depth analyses of their impact in specific locations by experts such as Jane Nelson from the Harvard Kennedy School, and Ethan Kapstein at INSEAD (who has produced socioeconomic impact assessments of Unilever's activities in South Africa, SABMiller in Uganda, and Standard Chartered's impact in Ghana and Indonesia, for example). ODI has itself developed a tool for value-chain 'footprinting', which has been applied in the tourism and agriculture sectors in order to assess the economic impact at each stage of the value chain and provide recommendations on how to enhance economic spillovers for local entrepreneurs.

Impact assessment frameworks often include measures of employment generation, contributions to human capital (through training etc.), increased demand for local input suppliers (which indirectly generates employment), tax revenues, investment in infrastructure etc. Such economic spillovers from foreign direct investment (FDI) are likely to contribute to inclusive growth.

Box 11: Analysing private-sector-led solutions for natural resource management

The private sector has developed numerous initiatives relating to natural resource management and environmental impacts. We will develop an analytical framework to assess the incentives for and potential efficacy of private-sector solutions to natural resource issues. This will vary by sector and will include factors such as:

- The extent to which businesses can benefit from reducing costs by being more efficient or adopting more sustainable practices. The strength of this incentive will depend in part on how competitive the sector is.
- The extent to which the availability of natural resources genuinely threatens the ongoing success of the business – there may be a strong incentive to take action in order to secure sources of supply.
- The extent to which consumers and investors are demanding action. This will vary by sector and by country of ownership.
- The importance of responsible natural resource management for a company's licence to operate reputation and risk management. This will be determined to some extent by the requirements set by the host-country government, and is likely to vary by sector depending on the level of civil society scrutiny.
- The extent to which coordination among businesses is necessary for the initiative to work, and if so how far such coordination is possible and enforceable will also be important, i.e. it will depend on the range of market players, the likelihood of and incentives for them to engage (which may depend on other factors such as size and home country), and how easily non-compliance can be monitored and penalised.

We will also produce case studies on initiatives relating to each of the natural resources on which the report focuses – land, water and energy – in order to examine the underlying incentives, the implementation challenges, and the potential impact of the initiative, with a view to assessing the potential effectiveness of private-sector-led solutions in Chapters 5–7. We could also briefly examine initiatives related to other resources such as forestry and fisheries to draw out any relevant lessons.

Roles of the public sector

The public sector, which is a diverse set of actors, plays several roles. It owns resources (e.g. land), is a provider of resources (e.g. energy or water services), controls public expenditure, and is a regulator. We will describe and analyse the role of the public sector in setting the framework for managing natural resources. In particular the public sector needs to support and strengthen market mechanisms. Markets are driven by price signals, so the core concern of this part of the analytical framework is to describe the circumstances and processes – including incentives, disincentives, taxes, cost structures, institutions – which governments have put in place to influence prices as a means to fostering inclusive and sustainable growth.

If the market mechanism is working well, the private sector can help to foster change in the right direction. But the state needs to set the institutional, regulatory and incentive framework for markets to operate efficiently. Without this there is no guarantee that businesses will want or be able to allocate resources in ways that are socially and environmentally optimal. For example, markets cannot provide answers to the challenges ahead if prices do not signal future scarcities or environmental damage. Public policies play an important role in ensuring that the concerns highlighted in the report (e.g. changing the use of natural resources and biosphere services now in order to avoid irreversible change that will compromise the future) are adequately mirrored by business practices and in their research and innovation agendas.

There are many ways to analyse the role of the public sector. Such analysis will normally start with a description of the existing land, water, energy and other policies. But we will also use a number of analytical models to understand current and foreseeable market performance based on assumptions about individual behaviour and institutional settings. The range of analytical tools and approaches we will use to understand the possibilities of and constraints facing the public sector in framing the context for natural resource management include:

- *The analysis of well defined property rights* – certain structures of property rights would encourage the market to allocate environmental assets efficiently. For this to happen, property rights need to be *exclusive*, *transferable*, and *enforceable*. Well-defined property rights can be exchanged in a market economy (using the price system), which enhances market efficiency. When property rights are poorly defined, natural resources are not used efficiently (Coase, 1960).
- *Analysis of externalities* – markets can fail because of *externalities*, for instance when what one actor does affects the behaviour of others. In this case, decisions taken by individual private actors may not be socially optimal and all benefits and costs need to be incorporated into decision-making (e.g. Stiglitz, 1994).
- *Common pool resources (CPRs)* – markets can also fail in the case of common market pool resources, which are non-excludible but divisible. This is because open access is likely to lead to over-use of the natural resources, unless there is a set of rules and regulations to govern such CPRs (Ostrom, 1990).

- *Global public goods* – a pure public good³ has two characteristics. First, it is non-exclusive: once it has been provided, nobody can be excluded from enjoying its benefits. The private sector will not find this market attractive because it is impossible to prevent non-payers from deriving benefit, which makes it impossible to recover the costs of production. Consequently, there is a role for the public sector in providing public goods, using non-price financing mechanisms. Second, the good must be non-rival in consumption: consumption by one person does not diminish the amount available to others, meaning that ‘extending consumption to more users creates benefits that cost society nothing’ (Kanbur et al., 1999). The tendency of the private sector is to undersupply a non-rival good, so there is a role for the public sector to increase its provision, such as by subsidising production.
- *Governance failure* – the government can use a number of instruments to correct market failures, including tax, subsidies and standards. However, governments can also cause market inefficiency, for instance when they are captured by special interests or lack adequate information to correct market failures.

Interactions between the public and private sectors

Finally we will describe and analyse the interactions between the public and private sector using political economy analysis. We will ask what wide-ranging interests and capacities of the different actors are relevant to managing the resource. The aim will be to characterise the way in which governments and businesses interact to manage the resource within a given social and political context. Is there trust, transparency and reciprocity between public and private sector in managing the resource? Or is there harmful collusion? Such institutional analysis is often crucial to understand why certain policies work while others do not. We will also examine the effects of different interactions and evaluate whether the incentives and capacities at the interface between public and private sectors help to promote inclusive and sustainable growth. Finally, we will examine the role for citizens and other actors in conditioning this interaction. This is an important way in which civil society affects the analysis.

An important topic in the interaction between public and private sectors is that of value judgements about competing objectives. Environmental impact assessments (EIAs) were introduced as a tool to inform decisions concerning investments that are likely to have negative environmental and social effects. Implicit in decisions based on EIAs are value judgements about priorities, i.e. short-term socioeconomic benefits versus the benefits of protecting the environment for future generations, and local negative impacts versus benefits for national society as a whole, and about necessary action for addressing negative effects. More effective natural resource management means that such value judgements must be explicit. The report will analyse examples of such processes, e.g. with regard to the application of the norms developed by the World Commission on Dams.

The following analytical tools can be used to examine the interactions between the public and private sector:

³ Discussions on public goods were traditionally at the national (or state) or community level – for example, the government would provide security within its borders, or a local community would provide its own street lighting or policing. However, the spillover or spatial range over which benefits (or costs) are meaningful can extend from the local to the global (Kaul et al., 1999, 2003; Kanbur et al., 1999; te Velde et al., 2002). For convenience, the distinction is limited to national and international public goods. The term international public good (IPG) is used when the benefits of a good extend well beyond national boundaries, whether regional or truly global. A national public good (NPG) is one where the benefits are enjoyed only within national borders. As the benefits are international in range, every IPG would represent an NPG to each country.

- *Public–Private Partnerships* – the public sector often sells concessions to the private sector to exploit natural resources (e.g. for forests, land, water distribution, mining), but the concessionaire can renege on the contracts. Principal-agent theory discusses the best way to structure contracts and how the public and private sectors could best interact to ensure that the terms of the concession promote inclusive and sustainable growth.
- *Commitment technologies* – Collier and Venables (2009) suggest that as prospecting and extraction require large, irreversible investments on the part of resource-extraction companies, it is difficult for host governments to commit credibly to a schedule of future taxation of resource revenues. Companies therefore run the risk that once they have made an irreversible investment (Dixit and Pindyck, 1994) the tax regime may be changed in order to capture not just the rents on resource extraction but also the returns on the investment. Companies may anticipate the problem and so discount the value of any extraction rights the government attempts to sell. Or they will not invest sufficiently and resources remain under-exploited. Trust among the relevant parties is therefore critical.
- *Effective state–business relations (SBRs)* – this goes to the heart of much of the debate on natural resource management. Effective SBRs can address market, coordination and government failures through cooperation, and can reduce policy uncertainty (te Velde, 2010). Effective SBRs can promote more efficient allocation of scarce resources, develop a more appropriate policy, remove the biggest obstacles to growth and create wealth more efficiently. Evans (1995) presents an institutional analysis of SBRs and suggests that the characteristics of effective SBRs include reciprocity, transparency, credibility and trust. Bwalya (2009) provides a political economy analysis of budget issues in Zambia with reference to interactions between the government and the mining sector. Using this type of analysis will enable us to focus on specific issues such as the SBRs behind property rights in land, managing rents from forestry, managing water concessions, etc.
- *Scarcity rent, ‘resource curse’ and ‘Dutch disease’* – a key issue in natural resource management is how to manage the rents arising from their exploitation. Scarcity rents reflect a producer’s surplus that persists because of fixed supply or increasing costs. An economic rent represents the excess return to a given factor of production. Rents can be derived by taking the difference between world prices and the average unit extraction or harvest costs (including a 'normal' return on capital). A sudden influx of foreign exchange owing to rents from natural resources may prove a mixed blessing for the country’s economic development prospects (Corden and Neary, 1982; Gelb, 1998) and the government faces the further challenge of upgrading and diversifying the economy. If resources are poorly invested, increased rents will lead to a real appreciation of the currency and challenge competitiveness (the Dutch disease). The presence of natural resources can lead to conflict over their exploitation and hence lower growth and development.

The analytical tools we will use in these four broad areas provide a lens through which to examine a number of case studies in terms of their impact on inclusive and sustainable growth. The evidence will inform our conclusions about the roles of the public and private sectors, and their interactions, and potentially to draw some general lessons and implications. The descriptive part of the case study (on the main economic, social and environmental characteristics) will be followed by an examination of the role of public and private actors, and the institutional chart of their interactions using a common set of questions (Box 9). Table 1 provides a number of examples.

Table 1. Examples of issues and analytical tools

| | Issue (see figure 3) | Analytical tools | | |
|-------------------|--|----------------------------------|--|---|
| | | Private-sector initiatives | National public policies | State–business relations |
| Land | Foreign investment in scarce land | | Property rights | How to manage contracts |
| Forestry | Use of land for forestry | Sustainable forestry initiatives | Managing scarcity rents (e.g. in REDD) | Setting context for concessions |
| Water | Extending access to water in urban areas | | Concessions | Institutional setting for concessions |
| Energy efficiency | Resource efficiency | Own initiatives pay off | Correcting market failures | Discussions between state and business |
| Renewable energy | Hydro, solar and wind power | CSR; innovative capabilities | Correcting informational and environmental market failures | State-business relations, commitment technologies, PPPs |

Box 12: Potential background research paper

Consolidate the methodological frameworks into a research guide for each resource.

Part 2. Case studies to illustrate the major transitions

The second part of the report includes three case studies on land, water and energy in Chapters 5–7. The choice of resources used in the case studies has been motivated in Chapter 2. We will apply the framework developed in Chapter 4. The case studies illustrate the main transitions discussed in Chapter 3 in (1) dealing with resource scarcity, e.g. Chapters 5–7 will be on scarcity of land, water and to some extent energy; and (2) in moving towards a global low carbon world by promoting energy efficiency and renewable energy (Chapter 7).

5. Managing scarcity: investment in land

The ‘perfect storm’ that is gathering for land demand is summarised by Hertel (2010): ‘the global farm and food system is asked to feed several billion more people, fuel millions of vehicles, supply power for electricity, supply fibre to the global textile industry and sequester carbon to mitigate climate change, all at the same time yield growth is slowing, agricultural land is being degraded and/or removed for urban uses, and water is becoming increasingly scarce. This diagnosis reflects the interconnectedness of natural resource use and demand, and it highlights the competition that is likely to exert pressure on scarce land resources. This scarcity must be understood not as an absolute condition deriving from the lack of available space in which to expand the agricultural frontier, but as a result of the trade-off involved in converting more natural vegetation into agriculture.

Competition for the use of land has several drivers. First, more people will need more food. Agricultural production will have to double by 2050 to cope with an estimated 40% increase in world demand. Almost all the growth in production will come from increasing yields, but a significant proportion will come from expanding the agricultural frontier by bringing an additional 120 million hectares into cultivation (Bruinsma, 2009). Second, more people will want more meat, so the demand for land increased through the need for cereals to feed cattle, pigs and poultry (Dickson-Hoyle and Reenberg, 2009). Third, demand for biofuels is likely to increase. Oil prices and concerns about climate change are driving, and will drive in the near future, a push for producing fuel derived from agricultural products (Schubert et al., 2010). The push for greater agricultural productivity, the expansion of large-scale commercial agriculture and the foreseeable demand for energy crops, compounded with the existence of non- or poorly-defined property rights, have increased the concentration of land ownership in many parts of the world. Finally, mining, the expansion of infrastructure and urbanisation will also claim considerable shares of land and reduce the space available for agriculture.

This competition for land has socioeconomic and environmental implications. For instance, large tracts of land in sub-Saharan Africa (and elsewhere) are being purchased or leased by external interests, particularly from Asia, seeking to ensure food or energy supplies for rapidly growing economies (see Figure 6). Lorenzo (2011) and Friis and Reenberg (2010) suggest that land deals in sub-Saharan Africa alone affected between some 51 and 63 million hectares. Often such land is not vacant but used by herders or smallholders with no titles, and private interests therefore come into conflict with traditional small-scale agriculture. The quest for land is often coupled with the pursuit of water, and this is likely to exacerbate water scarcity and desertification in the near future.

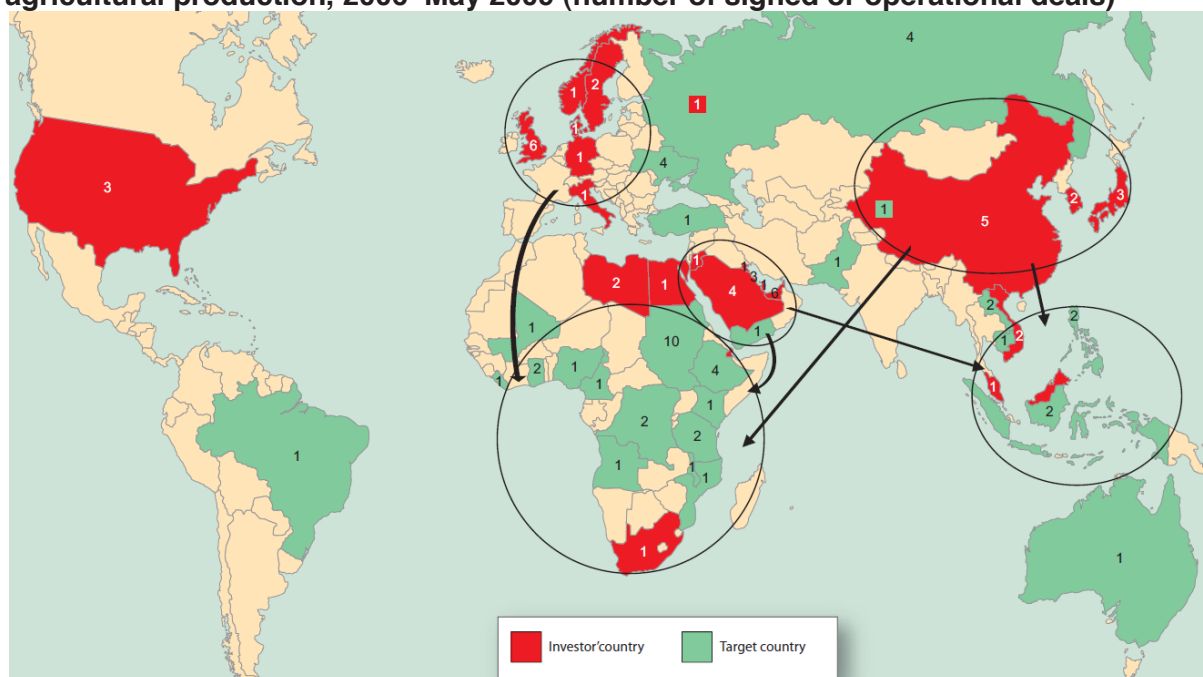
At the same time expectations of the land and water that can be used are challenged by changing weather patterns and unpredictable events such as large-scale flooding or

widespread drought. It is usually the poor who are most affected by these events and find it hardest to re-establish their livelihoods.

The chapter will examine the roles of the public and private sector in managing investment in land for inclusive and sustainable growth. The hypothesis is that countries, and vulnerable groups within them, will gain or lose from investment in land depending on identifiable actions of the public and private sector, and importantly, depending on the effective relationships between them e.g. in enforcing property rights and distributing rents.

Following the questions set out in Box 9, we will analyse a number of points:

Figure 6. Investor and target regions and countries in overseas land investment for agricultural production, 2006–May 2009 (number of signed or operational deals)



Source: UNCTAD World Investment Report (2009)

Context

Land use will be dependent on agriculture, and the possibilities for the sustainable and inclusive use of land will hinge to some extent on the development of agricultural technology (including better irrigation systems) that increases production without requiring more land. The demand for land will also be linked to technological innovation in energy resources, not only because such changes will have an impact on the use of biofuels and other energy crops, but also because many of the current agricultural production activities. In short, land conversion could be avoided to some degree through technological improvements. We are also interested in examining other possible uses of land: sustainable forestry management, which links to the debate on climate change and REDD; and biofuels, which is linked to climate change as it is a form of renewable energy.

We will map current hotspots in land use; address the current scale and types of effects of investment in land, focusing in on foreign investment in a number of different contexts (see Figure 7); and discuss indicators of inclusive and sustainable growth linked to the use of land.

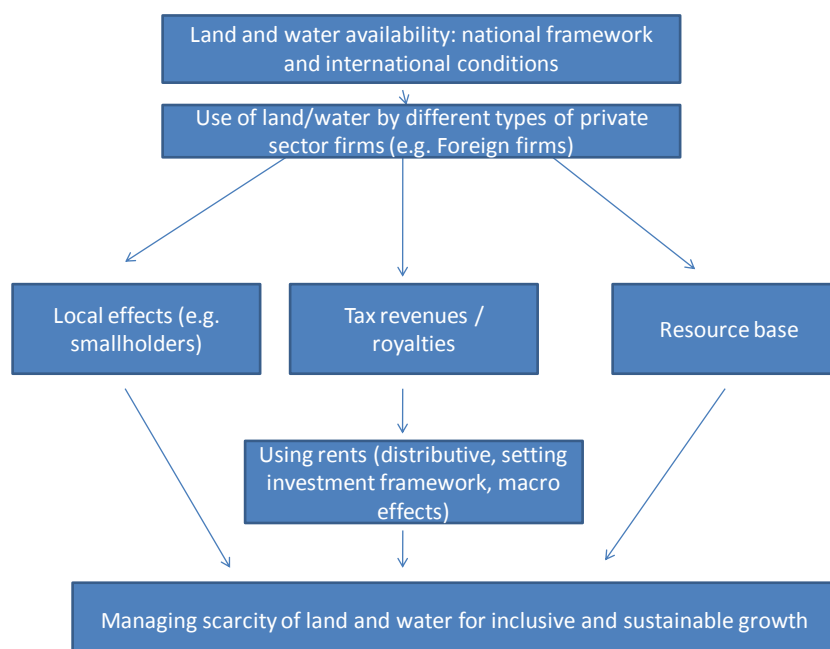
Roles of the private sector

We will discuss the current roles played by the foreign private sector in land acquisition as well as the activities of alternative users (e.g. local private sector). We will assess the broad impact on areas affected by selling or leasing land to foreign interests (Figure 7).

Understanding the potential socioeconomic and environmental benefits and costs that may arise as a result of different forms of private-sector investment and land use is important, and existing impact assessment frameworks will be used to elucidate the types of impacts that should be considered when governments are negotiating land deals.

We will also discuss the potential for private-sector-led initiatives to encourage and ensure responsible land management, including one or two case studies of specific initiatives. One such example is the Sustainable Agriculture Initiative, a partnership of several major food corporations which aims to promote supply-chain sustainability by supporting the development of sustainable agriculture practices involving stakeholders throughout the chain.

Figure 7. Mapping investment in land



Roles of the public sector

The markets for land are complex both because they often involve traditional property rights and customs, and because land use itself is a contested issue. Current investments in land are not always transparent in part because of insecure or unclear property rights. An adequate land market, in which rights are transparent and predictable, could lead to the type of investments that can generate growth while maximising environmental and social benefits. We will therefore need to examine the wider policy context (including land policies, investment policies, etc) within which investment in land is taking place. We would then need to examine more specifically which public policies help investment in land to be beneficial for inclusive and sustainable growth.

Interactions between the public and private sectors

We will map the wide-ranging interests of different actors in the acquisition of land (and other examples where appropriate, e.g. the management of forests), and characterise the way in which the state and business interact. Is this a transparent relationship? Is the interaction working well? Are the incentives and capacities in place for the public and private sector to interact to promote inclusive and sustainable growth? How are other actors affecting this interaction?

Land is often a contentious political issue. As we have seen, property rights are crucial for the functioning of land markets, but the definition of those rights is frequently a political question. Land tenure and land-reform issues continue to be significant, particularly in sub-Saharan Africa and Latin America, where much political power is derived from land ownership.

Another critically important political feature of land management is the question of rents, when governments sell or lease land. How can governments in developing countries effectively manage the rents so as to maximise the benefits for inclusive and sustainable growth? Can we learn from the experience in the extractive industries, e.g. the relevance of models such as the Norwegian government approach to exploiting North Sea oil resources, or the Chilean government approach towards managing copper revenues? How can rents be best captured? What is the role of institutions? How can the public and private sector work together to achieve desirable outcomes of rents? For example, what public- and private-sector policies can ensure that resource rents benefit the country including the poorest people and local populations? Rent management is also central to sustainable forestry management.

Box 12: Possible areas for further research

- Identify hotspots of pressures on land/competing uses from the perspective of inclusiveness and sustainability (and map the linkages with water and energy)
- Examine systematically the economic and social implications of foreign investment in land (which aims to address food security), using a number of case studies
- Examine in detail the lessons from rent management in other sectors (e.g. roles of state and business in managing rents from extractives)
- How can payments for averted deforestation (REDD) help to tackle climate change, land scarcity and be a force for inclusive and sustainable growth?

6. Managing scarcity: investment in water

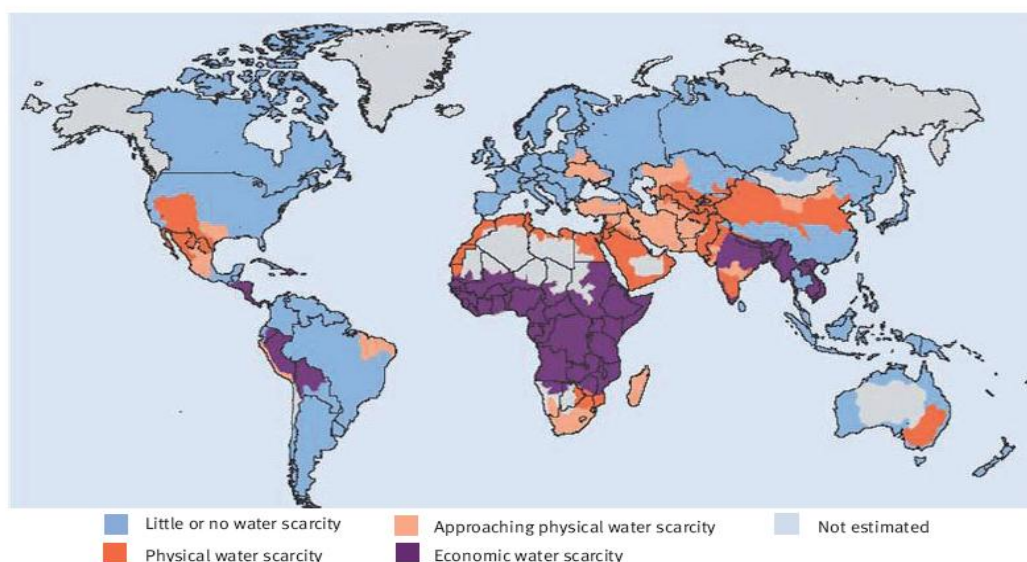
The chapter will examine the roles of the public and private sector in managing water for inclusive and sustainable growth, with a focus on extending access to water for productive use in the context of scarcity. It will analyse a set of questions drawing on Box 9.

Context

For many of the world's poorest people, the problem of water is an issue of access rather than physical availability. The 2006 Human Development Report attributes the water crisis 'to poverty, inequality and unequal power relationships' (UNDP, 2006). The Comprehensive Assessment of Water Management in Agriculture (Molden, 2007) mirrors this assessment for large parts of South and South-East Asia, and almost the entirety of sub-Saharan Africa (see Figure 8).

Figure 8. Water scarcity in major river basins

Physical scarcity: more than 75% of river flows are allocated to agriculture, industry or domestic consumption. Economic scarcity: water resources are abundant relative to human purposes but human, institutional and financial capital limit access to sufficient water and malnutrition in these areas.



Source: (Ludi, 2009), adapted from (Molden, 2007)

Despite some unevenness across regions, increasing population and levels of consumption are likely to place increased pressure on water resources. In the light of current patterns of use and projections of world GDP, the demand for water is expected to increase by around 50% by 2050, from 7,000 to about 10,600 km³ per year (Lundqvist et al. 2007). As a sign of the interconnections amongst the resources, additional demands are likely to arise from the development of biofuels and aquaculture. Fish production from aquaculture, which presently stands at around 40 million metric tonnes, is expected to rise above 150 million metric tonnes by 2030 (de Fraiture et al., 2007). Various researchers have questioned whether aquaculture can fill the gap of diminishing wild fish resources available for the market if aquaculture has to comply with the basic principles of sustainable development.⁴

Meanwhile, according to the latest IPCC assessment, climate change is likely to exacerbate the challenges of water management by increasing variability and reducing availability in

⁴ See studies referred to in contributions to the consultation on the reform of the EU common fisheries policies, such as http://ec.europa.eu/fisheries/reform/docs/ministry_agriculture_netherlands_en.pdf

regions already suffering water scarcity (Kundzewicz et al., 2007). Variability of precipitation, both temporal and spatial, is likely to have an especially severe effect on the majority of the world's poor, who are still predominantly rural and dependent on agriculture for food and livelihoods.

Beyond physical availability, variability and access are thus critical dimensions of water scarcity – especially for the 1.2 billion rural poor largely dependent on rain-fed subsistence farming (IFAD, n.d.) and the 0.9 billion human beings who lack access to safe drinking water (UNICEF and WHO Joint Monitoring Programme, 2010). Adapting to variability, and removing policy and economic barriers to access, are both essential if water management is to support inclusive and sustainable growth.

Beyond ensuring human health, water for 'productive use' – whether for agricultural, industrial or energy production activities – has a vital role in supporting growth. To achieve the type and amount of food production that will be necessary to meet future demand, there will need to be more water withdrawals for irrigation and more efficient use of rainwater. There is thus a need for improved technologies, better water-recycling mechanisms, and institutional and legal arrangements to safeguard access, particularly for small-scale and subsistence farmers. There is also a need to attract more investment in the collection and distribution of water for urban production. However, even if water use becomes more efficient through improvements in irrigation systems and other developments, it remains very likely that some areas of the world will not have enough water to sustain adequate levels of production (de Fraiture et al., 2007). The corollary of this is an ever-increasing importance of trade in foodstuffs, and the 'virtual water' that is embedded in food (Hoekstra, 2011).

A key hypothesis for this chapter is that there are a number of public- and private-sector policies, and a set of effective relations between the public and private sector, which can help to improve the management of water scarcities for inclusive and sustainable growth and extend better access to water for productive use employing a set of improved technologies, better water-recycling mechanisms, appropriate institutional and legal arrangements to safeguard access, and appropriate concessions to attract investment in the collection and distribution of water for urban production.

Roles of the private sector

There is a complex relationship between the private sector and water use. More economic activity increases water use, but much of the greater efficiency in water use will also be driven by the private sector. We will examine to what extent the private sector stimulates innovation to improve water efficiency. In this case, the private sector is not confined to large-scale industrial and commercial interests: innovation can start from the level of a small-scale farmer using zero-tillage techniques for soil and water conservation.

Existing impact assessment frameworks will be used to elucidate the types of impacts that should be considered and encouraged when major investments are being undertaken, and that are likely to generate substantial demands for water in areas where access is a problem.

We will discuss the potential for private-sector-led initiatives to encourage and ensure responsible water management, including one or two case studies of the activities and potential impact of specific initiatives. These could include: (1) the 2030 Water Resource Group, which was formed to contribute new insights into issues of water scarcity and includes the IFC and a consortium of business partners; (2) the UN Global Compact CEO Water Mandate, a public-private initiative designed to assist companies in the development, implementation and disclosure of water-sustainability policies and practices; and/or (3) individual company initiatives, such as Coca Cola's Global Water Stewardship Program.

Roles of the public sector

The markets for water are very closely related to those for land, and in that sense they are subject to similar challenges in relation to insecure property rights. A fundamental difference, however, is that water is a movable resource (i.e. it can behave as a commodity). Given this, one of the most challenging aspects of the water market is the development of pricing or rights-based mechanisms to ensure equitable and sustainable access for productive use. Private interests want to put water resources to use in productive activities such as agriculture, but these must be balanced against competing uses, especially in the context of urbanisation.

A further role for the public sector lies in the significant public finance required for the water-related infrastructure, ranging from increased storage schemes to buffer the effects of variability related to climate change to urban water-management systems that can supply clean water to households and industries, and manage their wastewater. One important role for the public sector is to design concessions for private investors to invest in water. It will be important to see such issues in the existing wider water policy and institutional framework.

Interactions between the public and private sectors

Like land, access to water is a contentious issue and often highlights asymmetries in power. The state clearly has a role to play in regulating water use, given the importance of public policy and the limitations of market mechanisms in ensuring equitable access. While 'productive use' is a critical dimension of water management, it must also be balanced against equity and sustainability concerns – notably water for human consumption and hygiene, and for ecosystems and ecosystem services. Interaction between the public and private sector is fundamental for ensuring that economic growth is both inclusive and sustainable. Much private-sector involvement in water resources has been through private–public partnerships (PPPs) in urban water supply. The success of such initiatives has been rather mixed, as many societies regard water as a public and not a private good. We need to examine whether the failure of many of such large-scale urban schemes for water provision is due to poorly designed public policies, a weak institutional structure including lack of trust credibility and transparency in the state-business relationship, or because we need to pursue other forms of partnership and collaboration which may involve the domestic (and small-scale) private sector: for example the potential for local private enterprise to provide operational and management support for rural water infrastructure.

Box 13: Potential background research papers

Examine the interconnectedness between water and land, e.g. the role of water scarcity in large-scale land acquisitions in developing countries.

Identify ways in which public policy in developing countries can safeguard access for productive and other uses – for example through water rights or well-designed and enforced concessions to large-scale private-sector operations in urban areas.

Understand the role of non-water infrastructure in mitigating the effects of water scarcity and variability: for example, functioning markets, infrastructure and trade policy to facilitate trade between water-poor and water-rich regions (i.e. virtual water trade).

Evaluate the effectiveness of private-sector-led initiatives to increase awareness of, and develop mechanisms for, managing water scarcity.

Identify emerging forms of collaboration between public and private sectors in productive water use, and principles for success.

7. Addressing climate change: Investment in energy efficiency and renewable energy

Climate change is one of the greatest threats to development and makes it essential to move towards a global green economy, which is related to the second transition addressed in chapter 3. The consequences for poor countries may be both direct (e.g. the need to build climate-resilient infrastructure) and indirect (e.g. as a result of mitigation policies in industrialised countries) (see Figure 9). At the same time, energy services are crucial for reducing poverty and high oil prices have led to concerns about the excessive dependence on oil. How can the private sector be encouraged to promote energy efficiency that is also good for development in poor countries, and how can private finance be leveraged to promote renewable energy and low-carbon development? What are the roles of the public and private sectors in promoting energy efficiency and renewable energy for inclusive and sustainable growth? How can the public and private sectors work together to achieve desirable outcomes?

Energy services are also related to the land-water-energy nexus discussed in chapter 2. Biofuels are the clearest example of this. Biofuels are a form of renewable energy, but the production of biofuels requires land and water which could otherwise be used for agricultural production. Further the desire to move towards low-input agriculture and manufacturing pushes the boundaries on promoting energy efficiency.

This chapter will examine the roles of public and private sector in promoting energy efficiency and renewable energy for inclusive and sustainable growth. A key hypothesis is that there are certain public and private sector policies that can help to improve energy efficiency conducive to inclusive and sustainable growth, and that there are effective relationships between the public and private sector which can attract more investment in renewable energy. We will analyse a number of questions following the structure set out in Box 9. Each of the sub-sections will focus on energy efficiency and renewable energy respectively.

Context

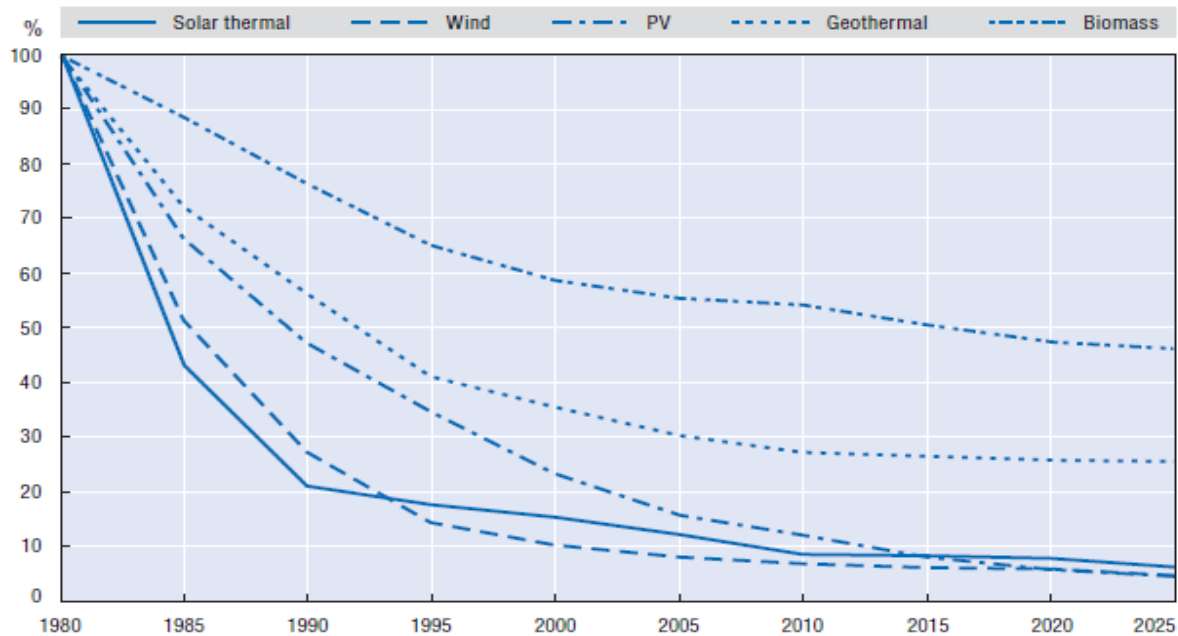
There is a considerable literature on the importance of energy efficiency, including its role in tackling climate change. Energy efficiency can be good both for the investor and for reducing carbon emissions. Based on the McKinsey cost curve, the World Bank (WDR, 2010) suggests that it is often cheaper to invest in energy efficiency in developing countries. Investment in renewable energy is another way to address climate change while ensuring that poor countries have the energy they need.

The use of renewable energy resources is driven by the increasing economic, social and environmental costs of continued reliance on fossil fuels. In principle, global renewable energy resources are abundant. The sun, wind, biomass and the movement of water all produce energy. Various technologies have been developed to harness this energy. These include solar photovoltaics (PV), concentrated solar power (CSP), wind turbines, technologies to convert biomass into gas and liquid fuels, hydroelectric dams, and technologies to use the energy of ocean waves and tides.

Most of these technologies (with the exception of hydroelectric dams) are as yet less developed than technologies that are based on fossil fuels. Consequently, few have reached grid parity, i.e. cost competitiveness with technologies such as coal-fired power plants, although Figure 9 shows some progress. In addition, most countries have acquired the technological skills to run, maintain, repair and adapt fossil-fuel technologies to their local needs. This is not the case for renewable energy technologies such as wind, currently one of the most cost-competitive, and CSP, which is promising both for large-scale, base-load power supply and, assuming economies of scale, cost competitiveness. The OECD (2009)

argues that modern renewable energy technologies such as solar, wind, micro-hydro and geothermal resources, remain largely untapped in developing countries, despite the relative abundance of sunshine, wind, water and underground thermal heat. For example, sub-Saharan Africa accounts for almost half the global potential in solar energy and nearly a quarter of the potential in wind energy.

Figure 9. Renewable energy: Electricity generation costs as a percentage of 1980 levels, historical and projected



Source: UN DESA (2005)

While full conversion to renewable energy is theoretically possible, there are still many constraints on the deployment of this technology. Technological efficiency is a major concern for the private sector, and one of the challenges of conversion to renewable energies is the limited ability of private businesses to produce these technologies cheaply for the mass market. We will identify major opportunities in developing countries for investment in renewable energy.

Furthermore, the market for renewable energies is also determined by scarcity in other sectors of the economy. For example, electrical motors require relatively scarce metals such as platinum, which are becoming scarcer and more expensive. Hydropower, another source of renewable energy, is related to issues of water scarcity and shortages.

Roles of the private sector

The private sector has its own incentives to save energy. Several studies are beginning to link energy efficiency and firm-level productivity. A key question we aim to answer is whether investing in energy efficiency pays, and whether private-sector initiatives to save energy are effective.

We will discuss the potential impact of private-sector-led initiatives to encourage energy efficiency and investment in green technological innovation, including one or two case studies of the activities and potential impact of specific initiatives. These could include: (1) the impact of new approaches to carbon labelling and (2) the Carbon Disclosure Project, against which thousands of companies around the world now measure and disclose their greenhouse-gas emissions and climate-change strategies, with a view to setting reduction targets and improving performance.

Roles of the public sector

The development of an energy market that is sustainable and inclusive is based on the existence of the appropriate market signals. But market failures mean that the full impact of carbon emissions is not accounted for in pricing structures, so fossil fuels continue to appear far cheaper than other sources. The market will need incentives (and disincentives) that will make carbon-intensive energy sources relatively more expensive, which will in turn create business opportunities for investment in renewable energy sources. There are many barriers to investing in energy efficiency (some are mentioned in Table 2) and these are even larger for renewable energy. We will examine public policies that can both help to address the gaps in energy efficiency (Koopmans and Te Velde, 2002) and will also be good for growth and development. What are the key ingredients of innovation systems that promote energy efficient technology (and resource efficiency more generally).

Table 2. Barriers to investment in energy efficiency

| | | |
|--|--|--|
| Informational Barriers | Ignorance of technology availability and benefits | Reddy, 1991; UNDP, 2000; McKane, 2007; Farrell, 2009; Taylor et al., 2008; Praetorius and Bleyl, 2006; WEC, 2008 |
| | Institutional barriers to knowledge flows | Meyers 1998 |
| Financial Barriers | Lack of available funds/absence of credit | Reddy, 1991; UNDP, 2000; Farrell, 2009; Taylor et al., 2008; Meyers, 1998; WEC, 2008 |
| | First-price sensitivity/high capital costs (magnified by the lack of credit markets) | UNDP, 2000; Reddy, 1991; Behrens et al., 2009; Meyers, 1998; WEC, 2008 |
| Technological barriers | Unavailability of efficient equipment (technology available but not produced) | Reddy, 1991; Meyers, 1998 |
| | Focus on efficiency of individual components rather than of whole system | McKane et al., 2007 |
| | Misapplication of efficient technologies | McKane et al., 2007 |
| | Shortage of trained technical personnel to maintain/install new equipment | Reddy, 1991; McKane et al., 2007; Taylor et al., 2008; UNDP, 2000 |
| Discrepancies in discount rate | Uncertainty about future energy prices/economic uncertainty | Reddy, 1991; McKane et al., 2007; Taylor et al., 2008 |
| | High user discount rates | Taylor et al., 2008; Behrens et al., 2009; Meyers, 1998 |
| | Slow rate of capital turnover/ infrequency of capital investments | McKane et al., 2007 |
| | Perceived risk of implementing the new/unfamiliar technology | McKane et al., 2007; Taylor et al., 2008; Meyers, 1998; IEA, 2009 |
| | Indifference to energy costs/relative insignificance of energy costs to total costs | Reddy, 1991; Meyers, 1998 |
| | Below long-run marginal cost pricing and other price distortions | Taylor et al., 2008; Meyers, 1998; IEA, 2009 |
| | High transaction costs | Behrens et al., 2009; Taylor et al., 2008; Meyers, 1998 |
| Diversity of investment criteria and limited resources | Inherited inefficient equipment/indirect purchase decisions | Reddy, 1991; UNDP, 2000; Meyers, 1998; WEC, 2008 |
| | Limited fuel options/supply | UNDP, 2000; |
| | Historically or socially formed investment patterns | UNDP, 2000; McKane, 2007 |
| | Mismatch investment costs and energy savings | Taylor et al., 2008 |
| | Import of inefficiently used plants and vehicles | UNDP, 2000; Meyers, 1998 |
| Policy barriers | Political uncertainty/ policy instability | Taylor et al. 2008 |
| | Weak contracting institutions | Taylor et al. 2008; Meyers 1998 |
| | Absence of effective energy efficiency policy | Behrens et al. 2009; Taylor et al. 2008 |
| | Inappropriate energy pricing and cross-subsidising | UNDP, 2000; Farrell 2009; Meyers 1998 |
| | Government skill shortage | Reddy 1991; Meyers, 1998 |
| | Government without adequate training facilities | Reddy, 1991 |
| | Lack of to necessary hardware and software | Reddy 1991 |

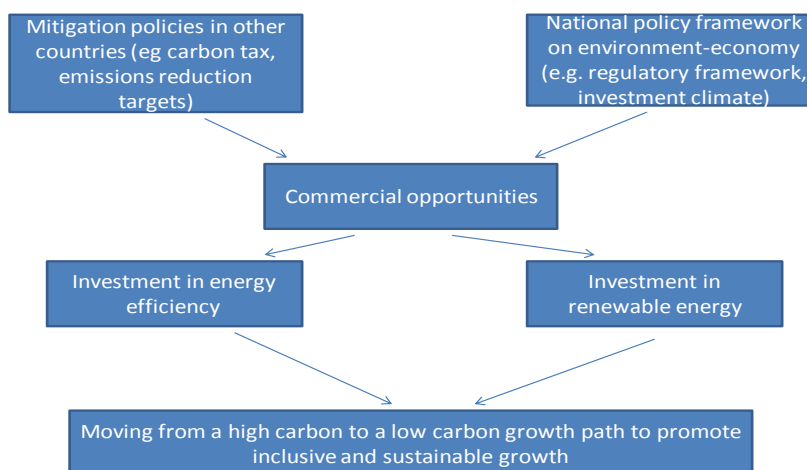
Source: Cantore et al. (2011)

We will examine what public policies have been put in place to attract and govern renewable energy ranging from hydropower dams to solar energy. OECD (2009) distinguishes between creating the right environment for attracting private investment; establishing a pro-poor playing field for decentralised energy technologies; developing policies and measures for the renewable energy sector; installing small-scale financing systems for renewable energy; and bridging the gap between development projects and small local entrepreneurs. Ensuring adequate finance for renewable energy is another important issue.

Interactions between the public and private sectors

The discussion about market possibilities underscores the fact that current energy markets require different types of incentives if renewable sources are to succeed. Yet the design and enforcement of such incentives is a question of political economy, which is affected by both domestic and international actors. The possibilities of collaboration – or confrontation – between public and private actors will thus be critical to the viability of converting to renewable energies, even if the technological road is clear.

Figure 10. Investment in energy efficiency and renewable energy



Box 14: Potential background research papers

What is the potential impact of private-sector-led initiatives to encourage energy efficiency and investment in green technological innovation, using case-study analysis?

Drawing on a literature review, to explore how can public policy (including encouraging innovation systems) promote energy efficiency that is also good for growth and development

How can the public and private sector best cooperate in order to overcome barriers to investing in renewable energy?

What are the best ways to finance renewable energy, and how can the EU help?

What is the trade-off in producing biofuel between a clean, renewable source of energy versus the increased pressure on land, which may reduce food production? How can this be best managed

Part 3. Policy implications

Three chapters on policy implications will draw together the evidence from the case studies, bearing in mind their selectivity but also drawing out their commonalities.

8. Private sector initiatives: implications for business policies

This section will set out possible roles for the private sector. What are best practices in business partnerships for managing scarcity of water and land, managing the transition towards using and investing in renewable energy, and for managing rents from extractives in an equitable and developmental manner? How do the activities of the private sector in these areas score against inclusive and sustainable growth? Does our understanding of the concept of corporate social responsibility (CSR) need to be further improved to reflect these concerns?

This chapter will draw on the findings of the earlier analytical chapters and analyse corporate efforts to invest in saving water and energy, in particular examining their innovation capabilities. The key aim is to pull together evidence on what company efforts work best and why.

In order to do this, we will build on the analysis looking at each natural resource and each related sector in turn, and in relation to different kinds of businesses within that sector, to identify where solutions led by the private sector are likely to work well, what they may be expected to achieve, where the public sector could help to strengthen existing initiatives or create incentives for new ones, and where private solutions are unlikely to be successful and alternative, government-led solutions are probably needed.

Beyond direct regulation, setting property rights, introducing taxes and subsidies (which will be discussed in Chapter 9), options for public-sector engagement to improve private-sector-led initiatives include:

- Overcoming coordination problems by facilitating multi-stakeholder processes to design and implement such company initiatives.
- Helping to establish reporting requirements, or helping to fund bodies that monitor compliance with private-sector-led initiatives to minimise the risk of cheating.
- Policies that require or incentivise responsible business practice in foreign countries, including through procurement policies, as a requirement to obtain funding from development finance institutions, or as a condition of other partnerships.
- The establishment of codes of conduct and/or performance targets and associated monitoring to incentivise new private-sector initiatives;
- Building negotiating capacity in developing country governments so they can more effectively demand responsible behaviour by companies, and assisting them in developing monitoring mechanisms.
- Awareness raising, e.g. in the media, to strengthen civil society scrutiny of company behaviour in certain areas.

We will also examine what global business initiatives have been most effective for natural resource management.

9. Governance: implications for national policies

This key chapter is where we will bring together the policy ideas and lessons learned that have surfaced throughout the earlier chapters and seek to blend them into a set of policy suggestions that can be of more general use in formulating public policy on natural resource management.

Since the Brundtland Report (1987) it has been widely recognised that natural resource management represents a key element of public policy in developing countries. Natural resources are essential for growth and development but they also need to be managed with an eye to future sustainability: *'The efficient use of natural resources preserves opportunities of production and growth for future generations'* (Cantore et al., 2011)⁵. Equally they need to be managed in an equitable manner that maintains access by those who depend on these resources for their production processes and economic livelihoods.

The onus on managing natural resources falls very largely to national governments. External actors can provide support and knowledge, and there may also be certain external aspects they can help to regulate by supporting a conducive international framework, but setting an appropriate framework is the responsibility of national authorities. They have to work with the private sector and other political, economic and civil-society actors to establish a regulatory framework and incentives structure that are conducive to promoting the sustainable exploitation of natural resources, which includes rules, regulations and incentives in the area of trade, investment, land, energy, water and other policies.

National authorities will have to police the system, ensure that all legitimate actors have adequate access to these resources and that those who are licensed to exploit them do so in ways that actively encourage wider local opportunities for economic growth or at least contribute adequately to the mobilisation of domestic resources so that the government itself is able to ensure the necessary redistributive effects.

This chapter is therefore essentially about bringing together lessons learned about public solutions and the governance arrangements driving these, such as good economic and environmental governance, but also governance that promotes development and growth that benefits multiple constituencies. Based on the evidence of Chapters 5–7, we will examine what types of public policies and institutions work best to promote inclusive and sustainable growth in times of increased resource scarcity and climate change.

At the heart of this analysis there will be a discussion of the role of domestic accountability, with governments sensitive to the varying needs of different economic groups within society so that access for one group does not preclude that of another, and that growth and development for some does not pass others by and simply create greater disparities in wealth. The chapter will thus seek to summarise the lessons learned in previous chapters on the role of public policies and institutions, specifically in the way they relate to the activity of the private sector in the area of natural resource management. It will examine examples of different policy approaches in these areas as outlined in the previous chapters and seek to draw lessons and consider what conditions are necessary to provide the private sector with an adequate level of incentives to tackle the exploitation of natural resources.

The chapter will consider the broader institutional context in which this public–private relationship concerning natural resource management could best operate, including such issues as the best institutional settings behind designing and enforcing systems of land and property rights, the rule of law and the satisfactory operation of justice and civil-redress

⁵ Literature review for this chapter of the ERD 2012: Cantore et al., 2011.

systems, as well as taxation and redistributive mechanisms. In other words it will seek to cover all the institutional elements that make up a conducive framework within which the public and the private sector can cooperate in order to promote inclusive and sustainable growth. In all this the aim will be to examine what is an appropriate public–private mix in the key transitions of managing scarcity and managing the move towards using renewable energy. The appropriate mix will be assessed against the three pillars of inclusive and sustainable growth.

The initial literature review for this chapter (Cantore et al., 2011) identified a number of specific issues to be addressed. These included:

1. *There are both commonalities and differences in managing natural resources:* The substantive policy issues can vary from one natural resource to another, but there may also be commonalities.
2. *Policy will require hard choices and trade-offs:* It is apparent from the literature that policy in natural resource management often generates trade-offs, which means that choices need to be made in weighing different policy objectives against each other.
3. *Correcting market failures is crucial:* While the private sector has an important role to play in natural resource management, market mechanisms often fail and state policy measures are therefore vital in correcting outcomes. Positive incentives that encourage environmentally-friendly behaviour in the private sector are an important part of the required policy mix.
4. *International coordination is essential:* In the area of natural resource management international efforts to coordinate actions at the public and private level are key because many of the problems are of a global nature. This needs consideration of the trade and investment implications of domestic policies.

This short list of main conclusions already indicates the complexity of policy formulation in this area. The examples discussed in previous chapters will further enlighten these issues. Crises in natural resource management may also lead to more international, regional and global approaches. European Union and global approaches will be discussed in the final chapter, but here we will also discuss regional initiatives among developing countries to manage natural resources.

A further level of complexity in dealing with natural resources, such as the land-water-energy nexus that are so basic to production and have in general been relatively widely available, is the varying interests of different stakeholders. In an era of increasing scarcity the efficiency with which they each use these resources is under increasing scrutiny. The chapter will therefore take a multi-actor approach to consider how different legitimate interests can best be balanced in natural resource management. Earlier chapters will adopt a political economy approach to analyse the variety of different interests at play.

The chapter will therefore seek to assess to what extent this political economy tool can help us to better understand institutions and to consider what would be enabling institutional set-ups to design, implement and enforce appropriate public policies, taking the interests of various stakeholders into account. This will provide the basis for drawing lessons from the rest of the report on how to devise policies that balance the need to adequately stimulate efficient private-sector exploitation of natural resources but at the same ensure good returns for society in general and promote inclusive and sustainable growth.

10. EU and global policies

This last chapter will turn to how the EU can best support national efforts either directly or by working with its partners to ensure an enabling international framework.

This chapter will discuss appropriate EU and global policies for ensuring an appropriate public–private mix in managing scarcity, managing the transition towards using renewable energy, and for managing rents from extractives. How can external actors such as the EU best support governments in developing countries in promoting national policies? What role should the EU play vis-à-vis its own private sector, which is interested in investing in exploiting natural resources in developing countries?

Policy-making processes at the international and European level differ strongly depending on the natural resources concerned (Keijzer and Koeb, 2011)⁶. Some sectors, such as fisheries, have long been accepted as having international spillovers and/or as international ‘public goods’ and have been the subject of detailed international and European decision-making. Others, like land or energy, are considered the terrain of sovereign member states and therefore tend to lack strong policies at the European and international levels. Different natural resources will therefore require different types of policy. It will also be important to see what best practice and experience in one sector might provide useful lessons in another.

The EU obviously cannot set national policy for other sovereign states. However, it can act at various other levels, by formulating policy and supporting programmes that seek to influence the behaviour of relevant actors. In practice the EU, that is the Member States and the European Commission, can work with other actors on at least six different levels, all of which will be considered in this chapter:

1. *With private-sector companies* based in the EU but active internationally, on formulating codes of conduct, by sponsoring research and encouraging knowledge sharing and good practice as well as by providing an adequate structure of regulation and incentives.
2. *With non-state (not-for-profit) actors* based both locally in developing countries and in the EU, by encouraging best practice and knowledge sharing, with financial support and other incentives and through adequate regulation. Such actors can play an important part both in encouraging local monitoring and accountability and in developing local and national public goods that can have important redistributive effects in society.
3. *With partner country governments and their regional groupings*, by providing support for national (and regional) policies and programmes, sharing knowledge and best practice, supporting policy formulation and institutional and capacity development in order to ensure that national regulatory and domestic resource systems are equipped to operate satisfactorily.
4. *By acting effectively as an EU group involving both Member States and the Commission*, through building consensus and common practice and by encouraging coordination and complementarity in their external action so as to ensure fully harmonised support to actors at the national level in partner countries. Such action could also take the form of harmonised approaches to working with the EU private sector in developing codes of conduct and best practices.
5. *On internal EU policies with external impact* by ensuring in particular that internal policies and practices are coherent with external policy and ideally actively support it. In various sectors, for instance in environmental pollution control and consumption patterns but also in other areas such as food production, internal practice within the

⁶ Literature review for this chapter of the ERD 2011: Keijzer and Koeb, 2011.

EU has a major impact on changes felt at the global level. EU policy-makers therefore increasingly need to ensure that the impacts of their internal policies beyond the Union's boundaries do not undermine the ability of other states to provide adequately for their populations and ensure inclusive growth in their societies. As the world economy becomes increasingly integrated, ensuring the coherence of the EU's internal and external policies becomes ever more vital.

6. *On developing international policy and regulatory frameworks* in multilateral fora where the EU as a whole and its individual members are highly respected for their contribution and can wield considerable influence not only on their own but also through the coalitions they can often mobilise with the support of partner states. As the scarcity of natural resources and climate change are more acutely felt at a global level international agreements and regulatory frameworks will become increasingly important.

As a general practice in formulating policy a major EU concern in all areas is to seek policy coherence, in particular for development (PCD)⁷, and especially in promoting inclusive and sustainable growth. Good practice in PCD already has an established EU-wide framework with Council Conclusion from 2005 and 2009, biannual reports in 2007 and 2009 and a third due in late 2011, and a legal base in the Lisbon Treaty⁸ since December 2009. This requirement applies to both the EU's external and internal policies.

However, while the PCD requirement is now clear and well established and there has been considerable discussion on the practical measures that can be taken to promote it, actual practice is not easy and depends heavily on active political coalitions to support PCD being established at all levels of policy making. The report will therefore identify and explore policy contradictions related to natural resource management as created by policy-making in different fora and sectors and seek to develop thinking on how these can be overcome to achieve higher levels of PCD. This analysis will have to both take account of what the EU intends to promote through its policy statements and regulations, and what it actually promotes in practice as identified by independent research. A necessary part of this analysis has to be the highly compartmentalised and complicated institutional structures for EU policy-making, which leads to many policy actors being neither well-equipped nor stimulated and held accountable for thinking and acting beyond their primary sectoral or 'DG' interests.⁹ Some recent successful attempts at integrating policy-making both in the EU and internationally will be analysed here as a basis for policy suggestions on how to improve such 'joined-up' policy-making in other natural resource areas.

⁷ The term PCD is increasingly widely used in EU and OECD DAC circles and will therefore also be used in this report. It is understood, however, that it relates to 'sustainable development' and therefore policy coherence is required to support environmental issues such as climate change as well as the poverty-eradication and inclusive growth aspects of development per se.

⁸ The PCD requirement in the Lisbon Treaty: *'The Union shall take account of the objectives of development cooperation in the policies that it implements which are likely to affect developing countries* (Art. 188D).'

⁹ A detailed analysis for the pre-Lisbon situation was conducted for the DFID:
<http://www.ceps.eu/files/book/1356.pdf>

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