



# THE ECONOMIC SIGNIFICANCE OF NATURAL RESOURCES: KEY POINTS FOR REFORMERS IN EASTERN EUROPE, CAUCASUS AND CENTRAL ASIA





**EAP Task Force**

**THE ECONOMIC SIGNIFICANCE OF NATURAL RESOURCES:**

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Caucasus and Central Asia**



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*This report is also available in Russian under the title:*

### **ЭКОНОМИЧЕСКОЕ ЗНАЧЕНИЕ ПРИРОДНЫХ РЕСУРСОВ: КЛЮЧЕВЫЕ СООБРАЖЕНИЯ ДЛЯ РЕФОРМАТОРОВ СТРАНАХ ВЕКЦА**

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## FOREWORD

Natural resources, both renewable and non-renewable, and ecosystem services are a part of the real wealth of nations. They are the natural capital out of which other forms of capital are made. They contribute towards fiscal revenue, income, and poverty reduction. Sectors related to natural resources use provide jobs and are often the basis of livelihoods in poorer communities. Owing to this fundamental importance of natural resources, they must be managed sustainably. Government plays the essential role in putting into place policies that ensure that resources contribute to the long-term economic development of nations, and not only to short-term revenue generation. High-quality institutions in the present, and planning for the future, can turn the so-called “resource curse” into an opportunity.

The current paper discusses both the economic importance of natural resources and how, by creating an adequate incentive framework, governments in Eastern Europe, Caucasus and Central Asia (EECCA) can contribute towards maintaining the economic benefits of natural resources use in the long-term. The raising demands to establish institutions that reconcile economic and environmental objectives of natural resources use in a way that does not marginalise the poor was the starting point for developing this document. Its preparation was part of a project in Georgia though the results of work on synthesising international experience will clearly benefit other Eurasian countries in transition and emerging economies more generally. Decision-makers in environmental, economic, and sector-specific ministries in EECCA are the main target audience for this document. Being a capacity development tool by its nature, the document responds, among other things, to the need of permanently re-investing into individual capacity building against the background of high staff turnover within public administration bodies in EECCA.

The paper is one of the outcomes of the OECD work to support the integration of environmental and economic policies in the Eurasian transition economies, which is carried out under the umbrella of the Task Force for the Implementation of the Environmental Action Programme (EAP Task Force). It draws from several OECD publications, including, most importantly, two OECD Environmental Outlooks, the OECD Green Growth Strategy and the “Natural Resources and Pro-Poor Growth” book, published as part of the OECD’s Development Assistance Committee’s “Guidelines and Reference” series.

The EAP Task Force was established at the Lucerne “Environment for Europe” Ministerial Conference in 1993 in order to assist the “environmental reconstruction” of transition economies based on sound economic, governance, and financing principles. OECD, with its significant experience of policy integration, was considered well placed to provide such assistance. The main mission of the EAP Task Force since its establishment has been: (i) promoting the integration of environmental considerations into the processes of economic, social and political reform; and (ii) upgrading institutional and human capacities for environmental management.

The paper was developed in early 2011 by a team of experts put together by Prospect C&S s.a., Belgium. The lead author was Alexios Antypas (Central European University, Budapest, Hungary), supported by Robert Atkinson, Remo Savoia (Prospect C&S) and Stephen Stec (Central European University). Angela Bularga from the OECD secretariat provided general guidance as part of this process.

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## KEY POLICY MESSAGES

*Sustainable natural resources management is as much a question of sustainable economic development as it is of environmental protection.*

While being the foundation of economic activity and development, natural capital (encompassing natural resource stocks, land and ecosystems) is often undervalued and mismanaged. This imposes costs to the economy and society, which may sometimes be considerable, shaving off several digits of annual increase in the gross domestic product of a country. Limited possibilities of substitution between natural and physical capital and the fact that the quality of natural capital can change abruptly also introduces the potential for bottlenecks which can substantially reduce growth. Sustaining renewable resources largely concerns conserving the stocks of resources and their quality, as well as maintaining a quantity of steady flows over an indefinite period of time. Even though non-renewable resources cannot be sustained because of their finite stocks, countries using these resources can achieve sustainability by investing the revenues derived from them into other forms of capital.

*Natural resources have proven to be both opportunity and curse for nations endowed with them.*

Many nations have experienced a resource “curse” associated with poor development outcomes, though the causes have differed. Poor economic performance in many natural resource-rich economies may have been caused by weak resource management institutions and imperfect structures of ownership and control in particular. Besides economic repercussions, the resource curse may also lead to governance problems by manifesting itself through rent seeking and corruption.

*Proper public policies and appropriate institutions can ensure that natural resources serve the function that they should – of providing revenue for long-term development. Sustainable natural resources management, and by extension sustainable economic development, depend on institutions and practices of good governance.*

Proper valuation and accounting of natural resources are necessary for robust development planning. Just as necessary are transparent institutions and good governance. Decision-making that is inclusive helps provide not only legitimacy for resource management policies, but ensures that the range of knowledge and social interests and values are considered in policy-making. Managing natural resources generally entails also managing competing demands and multiple resources and values as well as providing for environmental protection, which requires an integrated approach. High-quality institutions that promote economic growth are at the heart of good governance. This includes regulatory authorities that are reliable and free of corruption, transparent and accountable; reliable property rights and functioning markets; the absence of harmful subsidies that interfere with sustainable resource use; the rule of law and adequate legal recourse.

***“Getting prices right” for natural resources is of utmost importance for more sustainable management and long-term benefits from resource-related wealth.***

Internalizing the environmental costs of natural resources extraction and use in the prices of resources is a powerful mechanism for creating incentives for sustainable natural resources management and consumption. “Full-cost accounting” seeks to use market instruments such as taxes and tradable permits to ensure that renewable resources such as fish and timber are harvested sustainably, and that resource use trends towards greater efficiency. Getting the prices right includes accounting for the costs of depletion, as well as the costs that go into extraction and restoration of land, where necessary, after resources have been removed.

***Multi-stakeholder participation processes improve the robustness and legitimacy of decision-making and are more likely to lead to sustainable outcomes.***

Effective governance for natural resources requires an understanding of social, economic and ecological factors, and is therefore inherently complex. One of the functions of stakeholder participation is to develop a holistic understanding of preferences and values on the one hand, and knowledge and understanding on the other. Stakeholder participation processes can themselves be learning processes in which more complete and knowledge and mutual understanding takes place, leading to the formulation of new or modified preferences and values. In other words, stakeholder participation can be a means of further social development.

***Transparent and effective mechanisms for revenue management are essential instruments for ensuring that natural resource wealth translates into sustained economic development.***

Maximizing the value of natural resources for sustained growth and development, and avoiding the resource curse, requires policies that formalize and codify revenue management procedures. Such laws are being put into place in countries around the world, and typically involve the creation of a fund that receives resource revenues and that is overseen by a specialized administrative unit. Such funds allow countries to invest wisely when commodity prices are high, and supply funds when commodity prices, and therefore government revenues, fall. Oversight bodies should operate transparently and protect resource revenues from short-term political interests.

***Knowledge, social and economic conditions are in constant flux, which means that institutions and policies are more likely to succeed over the longer term if they are able to respond and adapt.***

An adaptive approach governing natural resources treats management interventions and policies as experiments subject to both positive and negative outcomes. Monitoring and evaluating the outcomes of management practices and policies is essential in ensuring that objectives are met and mid-course corrections can be made. Managing resources sustainably is an ongoing process, one that becomes less *ad-hoc* and more intelligent when the capacity for learning and adapting is built in from the start.



## CHAPTER 1. THE ECONOMIC SIGNIFICANCE OF NATURAL RESOURCES

The economic significance of natural resources depends upon the magnitude of two basic variables: current flows of income and potential future flows of income. The first is largely a function of production costs and market demand, and the second of natural resource endowments and management planning. In order to understand the true importance of natural resources, both current and future flows of income must be taken into account. The former can be a deceptive indicator of how natural resources will contribute to economic development over time if income is derived from the depletion of the natural capital<sup>1</sup>. Managing natural resources sustainably - in the case of renewable resources - and as sources of revenue for investment in future growth - in the case of non-renewable resource - allows resource rich countries to establish the foundation for long-term development and poverty alleviation.

### 1.1 Contribution towards fiscal revenue, income and poverty reduction

The wealth embodied in natural resources makes up a significant proportion of the wealth of most nations, often more than the wealth embodied in produced capital, therefore making natural resources management a key aspect of economic development (World Bank, 2006). Many countries have seen significant rises in *revenues* from natural resources due to the rise in commodity prices. Natural resources such as oil, gas, minerals and timber are expected to continue to play a significant role in resource abundant economies, as demand from rapidly growing economies increases, and as supplies of non-renewable resources decline and renewable resource harvests approach maximum sustained yield levels. Not surprisingly, countries richly endowed with natural capital have the potential to derive significant current income from resources.

In addition to providing revenues to resources rich countries, natural resources can play a central role in *poverty reduction efforts*. The poor generally depend upon natural resources directly for their livelihoods, especially the rural poor. Consequently, policies that improve natural resources management can have immediate and meaningful poverty reduction impacts. Pro-poor natural resource management policies include, among others (OECD, 2008):

- Projects that improve the capacity of community based organizations to manage resources;
- Assuring access to resources by providing clear land tenure and resource use rights;
- Promoting tools such as participatory rural appraisal, strategic environmental assessment, and poverty and social impact assessment.

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<sup>1</sup> The natural capital comprises three principal categories of assets being natural resource stocks, land, and ecosystem that all occur in nature and provide environmental functions and services. The term "natural resources" designates renewable and non-renewable resource stocks that are found in nature, such as mineral resources, energy resources, soil resources, water resources and biological resources. Renewable natural resources are resources from renewable natural stocks that, after exploitation, can return to their previous stock levels by natural processes of growth or replenishment. Examples of renewable resources include timber from forest resources, freshwater resources, land resources, wildlife resources such as fish, agricultural resources. Non-renewable natural resources are exhaustible natural resources whose natural stocks cannot be regenerated after exploitation or that can only be regenerated or replenished by natural cycles that are relatively slow at human scale. Examples include metals and other minerals such as industrial and construction minerals, and fossil energy carriers (OECD 2011 – Towards Green Growth: Monitoring Progress).

Natural resources and intact, functioning ecosystems provide a “safety net” for the poor, particularly in times of financial crisis, providing food in the form of plant and animal wildlife and fertile soils for subsistence agriculture, and fuel wood. In order to benefit be able to rely on such “safety nets” the poor must have access to resources and should also be involved in resource management decision-making, thereby gaining a stake in using resources sustainably and avoiding tragedies of the commons. Moreover, the revenues from natural resources, can contribute to the *development of human capital* through investments in education and job training. Especially during times when commodity prices are high, countries have the opportunity to use a portion of the additional profits realized from the sale of natural resources to support poor policies and investments.

## 1.2 Employment and job creation potential

Policy makers must generally choose between *competing values in designing policies* for natural resources management. If jobs are the highest priority, allocating quotas or harvesting rights to a large number of small harvesters may be the preferred option. If maximizing exports are the highest priority, a strategy of maximum sustained yield with a smaller number of large firms may be preferable. This “trade-off” often occurs with fisheries, where larger but fewer boats may be more efficient for harvesting fish for export, while a larger fleet of smaller boats will employ far more fishermen.

In such decisions, social considerations such as the value of communities and rural livelihoods must also be taken into consideration. Natural resources generally form the backbone of rural economies in low and middle income countries and, if managed wisely through sound policies and institutions, can be used to generate growth that benefits the most vulnerable parts of the population (OECD, 2008). Indeed, studies show that non-farm income from natural resources plays an important role in sustaining rural livelihoods in transition countries. Growth of rural economies can be promoted by governmental policies aimed at supporting small and medium sized enterprises, based in many cases on use of local natural resources (for example, see the literature survey by Bright et al., 2000).

A synthesis of objectives - growth, employment and long-term economic stability - can be found in adopting policies that put countries on the path towards green growth. Natural resources have the potential to provide a significant number of jobs. Even while the number of people employed in traditional extractive industries has declined steadily around the world due to mechanization and economies of scale, employment in the renewable energy sector has risen and has the potential to continue to rise over the long-term (UNEP, 2008). In Germany alone, for instance, jobs in the renewable energy sector have risen from 66,600 in 1998 to 259,100 in 2006. In 2007 renewable energy related industries provided nearly a million jobs (UNEP, 2008). According to some estimates, environmental protection in Germany employs 1.8 million workers (BMU, 2008). Similarly, Sweden have had a large and rapidly growing environmental industry for over a decade, which employed about 1.5% of the country’s labour force already in 1998 (OECD, 2004).

Green jobs in agriculture are also on the increase, with studies showing that organic farms provide more jobs per unit of production and sales than conventional farms. Sustainable, organic agriculture requires smaller scale farms and less reliance on machines, and therefore generates more employment. And while the prospects for job growth in the forestry sector are more mixed, forestry provides steady employment for some 1 to 2% of the world’s workforce, while over a billion people derive their livelihoods from forests. Aforestation initiatives linked to increasing demands for wood fibre as well as carbon sequestration to mitigate climate change will provide additional jobs in the coming decades (UNEP, 2008).

The potential synergies between policies to promote a transition to green growth and policies to promote employment became clear during the recent global financial and economic crisis. A number of governments have emphasised the sizeable impact on employment resulting from some of their green stimulus measures. For example, the United States Council of Economic Advisers estimates that the approximately USD 90 billion of Recovery Act investments will save or create about 720 000 job-years by the end of 2012. The recent report by UNEP, ILO, IOE and ITUC suggests that by 2030, given the increasing interest in energy alternatives, up to 20 million jobs could be created worldwide: 2.1 million jobs in wind energy production, 6.3 million in solar photovoltaic and 12 million in biofuels-related agriculture and industry (UN, 2008). It has to be noted that these estimates represent the potential for gross job creation but do not take account of the fact that renewable energies will develop, to a considerable extent, at the expense of more polluting energy sources. In other words, green growth will involve new opportunities for workers, but also potential adjustment difficulties. However, the potential adjustment associated with greening growth is likely to be concentrated on a small portion of the total workforce.

### 1.3 Value of ecosystem services

Ecosystem services are the services provided by the functioning of natural systems that we often take for granted, but that provide much of the necessary foundation for the economy and society. Properly functioning ecosystems provide a range of services that include waste absorption, water and nutrient cycling, seed dispersal and pollination, controlling agricultural pests and providing food and habitat for species (Box 1). These services allow ecosystem goods otherwise known as natural resources - to be produced and maintained. Timber, fish and wildlife, clean water and air, and agricultural production all require the provision of ecosystem services.

#### Box 1. What services ecosystems provide?

- **Purification services:** for example, wetlands filter water and forests filter air pollution.
- **Ecological cycling:** for example, growing vegetation takes in (“fixes” or “sequesters”) carbon dioxide, and stores it in the biomass until the death of the vegetation, the carbon then being transferred to soil. Since carbon dioxide is a greenhouse gas, growing biomass reduces those gases in the atmosphere.
- **Regulation:** natural systems have interacting species such that pests are controlled through natural processes, reducing the need for artificial controls. Ecosystems may regulate watershed and weather behaviour, reducing risk of floods.
- **Habitat provision:** habitats are stores of biological diversity which in turn may be linked to processes that reduce the risks of ecosystem collapse (“resilience”), even apart from providing sources of food, scientific information, recreational and aesthetic value.
- **Regeneration and production:** ecosystems “grow” biomass by converting light, energy and nutrients. This biomass provides food, raw materials and energy. Ecosystems ensure pollination and seed dispersal take place, ensuring that the systems are themselves renewed. It is estimated that some 30% of the world’s food crops are dependent on natural pollination.
- **Information and life support.** Ecosystems are the products of evolution and hence embody millions of years of information. This information has scientific value but is also a source of wonder and life support.

Source : OECD (2006).

As a general rule we fail to appraise the value of ecosystem services, but certainly feel the economic impacts of degraded ecosystems when fisheries decline, soil loses its fertility, and deserts spread. Ecosystem services also provide recreation and opportunities for culturally valued activities, such as aesthetic enjoyment, education, and scientific research.

While there is no sure way to value ecosystem services monetarily, Robert Costanza and colleagues (Costanza *et al.* 1997), in a well-known study published in *Nature*, estimated the yearly value of ecosystem services (for 17 key services) globally at between \$16 and \$54 billion, with an average value of \$33 billion, which the authors considered highly conservative. The average constituted almost twice the value of global GNP at the time. In the meantime, UNEP estimates that the carbon storage service provided by forests is worth \$3.7 trillion, while insect pollination contributes roughly \$190 billion to agriculture each year and that between a quarter and a half of the \$640 billion global pharmaceutical market depends upon the genetic diversity provided by ecosystems (UNEP, 2011).

#### **1.4 Losses from poor natural resource management**

The costs of weak natural resources management worldwide are high, disproportionately affecting less developed countries and the poor, who are more likely to depend directly upon resources for their livelihoods. Poor resource management includes failing to manage renewable resources on a sustainable basis - such as when fish stocks collapse due to overharvesting - as well as failure to properly invest the revenue from the sale of non-renewable resources, and the failure to collect proper rents from resource concessions, thereby allowing most of the gain from resources to go to private actors at the expense of the public.

Maximizing short-term rents amounts to liquidation of natural capital, such as when fish stocks are harvested until fisheries collapse. It should be noted that in the case of fisheries in particular, strategies of maximum sustained yield often fail due to incomplete knowledge and inaccurate estimations of the rate at which the resource replenishes itself. In such cases the yield turns out not to be sustainable and the resource is depleted. Some resources such as fisheries suffer from threshold effects, meaning that populations below a certain level crash and the entire economic value of the resource is lost.

Poor outcomes also occur when potentially competing uses of resources are not taken into account and integrated in a strategic manner. This can be especially difficult in a transboundary context. For instance, water related issues represent significant natural resources management and international cooperation challenges in the Central Asia region. Demand for water is growing even while co-operation mechanisms between upstream and downstream countries remain inadequate. Deserts are growing as a result of poor agricultural practices, fisheries are declining due to damming on the Syr Darya and Amu Darya, and climate variability is making water supplies unpredictable. Energy production from dams is also affected. At the same time, rising food and fuel prices are causing significant human security challenges, especially in the poorer countries of Tajikistan and Kyrgyzstan (Asia Development Bank, 2010; Fumagalli, 2008).

As a rule, poor natural resource management represents lost opportunities for sustainable economic development, and costs to human beings and the environment. While aggregate losses of missed opportunities are difficult to quantify, the costs to people and the environment of poor resource management practices and policies are clearly evident. From the loss of fisheries and associated income in the Aral Sea due to unsustainable irrigation projects to the abandoned mine tailings throughout the region that poison people, streams and groundwater with lead, arsenic, mercury and other heavy metals, poor resource management has direct, often devastating impacts. Such losses can be averted only when governments put policies to manage resources into place that consider long time horizons, the full cycle of resource extraction in the case of mining (that is, “mining for closure” so that toxic wastes are not left behind, and balance current revenue generation with future resource production. The lost opportunities that poor resource management leads to are often the result of poor decision-making that values higher than sustainable current growth over long-term economic development.

## CHAPTER 2. ESTIMATING THE TRUE VALUE OF NATURAL RESOURCES

The Natural Capitals Approach (NCA) is a way of evaluating the true value of natural resources so that resource management contributes meaningfully to the economic and social *development* of a country, rather than to mere short lived growth based upon unsustainable sources of income. The NCA seeks to give decision makers and stakeholders reliable tools to understand the role of renewable and non-renewable resources in an economy, thereby facilitating communication, collaborative decision-making, and rational policy for sustainable development.

### 2.1 Overview of the Natural Capital Approach

The Natural Capital Approach (NCA) applies the concept of capital to the natural environment, conceiving of the natural environment as the basis for all human activity, including economically productive activity. Traditionally, “capital” has referred to man-made assets, including built capital, knowledge, and of course money and securities. Capital serves as the foundation for further wealth creation by providing a flow of income or economically useful activity. Investment of capital is understood to be necessary in order for development and growth to occur, while liquidation of capital is understood to be constitute a loss of wealth either in the long-term, regardless of what revenue it might bring in the immediate moment.

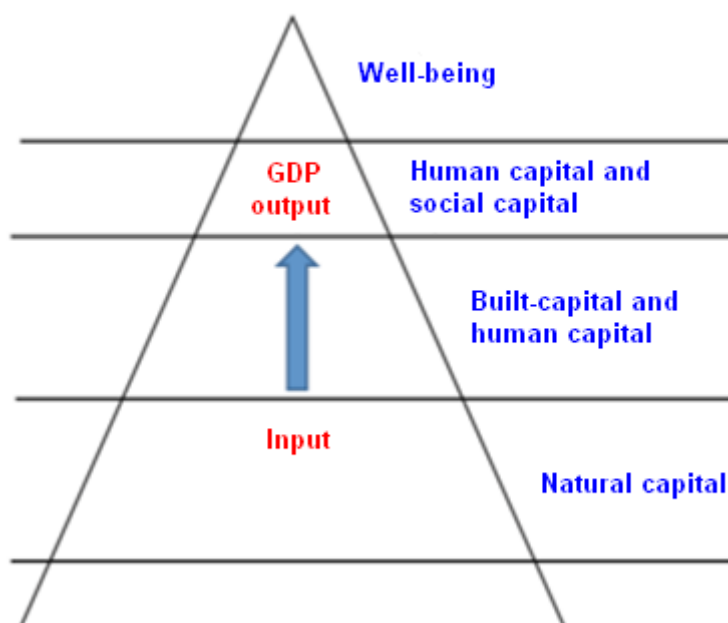
The NCA seeks to provide the basic concepts with which decision makers and stakeholders understand the value of natural resources for social and economic development. It provides the conceptual basis for accounting for resources as either capital stocks or flows that produce income, thus making it impossible to confuse the two. When capital stocks themselves are converted into revenue - such as when more timber is harvested in a given period of time than is replaced by natural growth - the NCA allows all stakeholders to realize that such revenue cannot be counted as income, but rather as capital depletion. Mining capital results in windfalls in the present but declines in income in the future unless mitigating measures are taken. As noted by the World Bank, “Exhaustible resources, once discovered, can only be depleted. Consuming rents from exhaustible resources is, therefore, literally consuming capital...” (World Bank, 2006).

Thus, in conjunction with sound, multi-stakeholder decision-making processes and good science and accounting measures, the NCA provides tools for determining how both resources can be managed to contribute rather than undermine sustained growth and development.

The economist Herman Daly and others argued that human societies can be understood as an ascending order, or pyramid, of various forms of capital, with human well being as the ultimate goal or product of the interaction between the forms of capital. At the very foundation of all forms of capital lies natural capital.

Figure 1. The Pyramid of Capitals

**Herman Daly's Pyramid**



Source: <http://www.tosca-life.info/sustainability/definitions/>

Natural capital can be understood as “the stock that yields the flow of natural resources” (Daly 1996, 80) into the future. Flows of natural resources can be harvested or extracted and converted into revenue. In the broadest sense, natural capital captures all of the elements of ecosystem that provide for the development of other forms of capital. Thus, natural capital “includes both mineral and biological raw materials, renewable (solar and tidal) energy and fossil fuels, waste assimilation capacity, and vital life support functions (such as global climate stability) provided by well-functioning ecosystems (Envisioning a Sustainable and Desirable America Network, 2001, quoted in IISD, 2008). In short, natural capital is composed of both the stock of natural resources and vital ecosystem services. To understand this is to understand the basis for the development of sustainable natural resources management that serves the development of long-term economic benefits to society.

Daly also adds another form of capital, which he terms “cultivated natural capital.” Cultivated capital falls between natural and built capital and is composed of such things as plantation forests and fish farms.

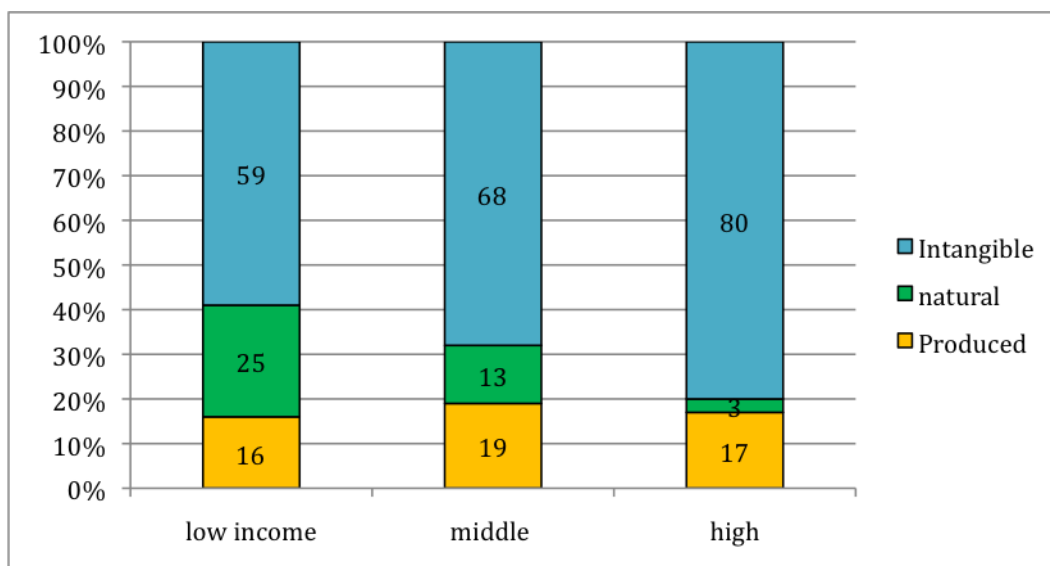
Natural capital provides the foundation for other forms of capital, which taken together comprise the productive capacities of human society. The other forms of capital that are developed from natural capital are built capital, human capital, and social capital. Built capital, or human-made capital, is composed of the processed raw materials, tools, factories and other technologies created by humans. Human capital resides in people themselves and is comprised of the various competences and capacities that individual people have. Human capital is increased by investments in education, health, worker safety and so on. In contrast to human capital, which is embodied by the individual, social capital is comprised of the various connections and bonds between people. Robert Putnam, a leader in the field of social capital research, famously defined it as “featured of social organization such as networks, norms, and

social trust that facilitate co-ordination and co-operation for mutual benefit.” It is social capital that allows people to work with each other towards common goals. In societies where social capital is high, trust in institutions and collective action for the benefit of the public good is more common and more easily achieved than in societies where corruption and strife prevent the formation of strong bonds between people and trust in institutions.

In “*Where is the Wealth of Nations,*” in which the Millennium Capital Assessment is presented (World Bank, 2006), the World Bank notes that natural resources play two fundamental roles in development - where fundamental is to be understood as both “important” and “foundational”: The first, mostly applicable to the poorest countries and poorest communities, is the role of local natural resources as the basis of subsistence. The second is a source of development finance. Commercial natural resources can be important sources of profit and foreign exchange. Rents on non-renewable, renewable, and potentially sustainable resources can be used to finance investments in other forms of wealth. In the case of non-renewable resources, these rents must be invested if total wealth is not to decline (World Bank, 2006: 8).

Figure 2 below shows aggregated results of the World Bank’s Millennium Capital Assessment. The Bank measured three forms of capital: Intangible, natural and produced. Intangible capital comprises the middle sections of Daly’s Pyramid - labour and human capital as well as social capital and also governance factors such as the quality of institutions. Produced capital is equivalent to built capital in Daly’s scheme. As one can see, as a proportion of total capital, natural capital decreases from low to high income countries, with middle income countries also occupying a middle position in terms of the proportion of natural capital to the other forms. Produced capital is nearly constant across income ranges and intangible capital rises with income.

**Figure 2. The proportion of natural capital to the other forms in low-income, middle-income, and high-income countries**



Source:  
<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTEEI/0,,contentMDK:20487828~menuPK:1187788~pagePK:148956~piPK:216618~theSitePK:408050,00.html>

While, as countries grow wealthier, the proportion of natural capital to intangible capital declines the importance of natural capital as a foundation for economic ‘well-being’ by no means decreases. Rather, it is that human and social capital grows even while the value of natural capital remains central to the development of the society. On a *per capita* basis, high-income countries maintain an average value of \$9,531 *per capita* in natural capital, while middle-income countries have an average value of \$3496 *per capita* and low-income countries only have an average of \$1,925 *per capita* (World Bank, 2006). In other words, intangible capital - which is the engine of innovation - rests upon a large foundation of natural capital that supplies the biophysical basis for development—agricultural products, fertile soils, flows of timber and other resources, clean air and water, and so on.

The World Bank’s data indicate that the challenge for middle- and low-income countries is to further develop their intangible capital - and thus investments in education, health, and good governance are essential. Newer figures (World Bank 2011: 29), showing data from countries with wealth accounts from 1995 to 2005, shows a similar picture, though this is divided further into low income, lower-middle income, upper middle income and high income OECD. Natural capital plays an important role in this as it can supply a source of income for this development. However, as will be discussed at length below, in many cases it fails to serve this role because the revenues derived from natural capital are misspent and not invested in human and social capital, thus short changing the future and strangling economic development. Thus, sustainable management of natural resources can play either a productive or destructive role in the development of a nation.

## **2.2 Renewable and non-renewable natural capital**

There are two forms of natural resource capital, renewable - like forests or fish populations - and non-renewable - like oil and minerals. Renewables—if managed sustainably - yield an increment of resources that can be harvested indefinitely into the future. Non-renewable resources can by definition only be depleted, as they do not regenerate themselves over humanly meaningful time spans. So understood as natural capital, the revenue generated from non-renewable resource depletion should be measured as a loss of capital rather than as income comparable to the income derived from the flows of renewable resources.

In addition to renewable and non-renewable natural resources, natural capital is also composed of ecosystem services, such as the capacity to assimilate wastes and the production of vital life supporting functions, such as water purification and nutrient cycling. Ecosystem services are generally not accounted for in national or firm level accounts. Ecosystem services are essential in maintaining life and economic activity, but are difficult to quantify and therefore have in the past received relatively little attention in policy-making circles. With the recognition that the loss of ecosystem services, such as the capacity of the atmosphere to absorb carbon dioxide without becoming dangerously unstable and threatening to societies and economies, there are now intensive efforts underway around the world to include analysis and accounting of ecosystem services in policy-making (IISD & NEAA, 2010).

## **2.3 Towards environmental and resource accounting**

In order to make the most of the NCA in policy development and decision-making countries need information in regards to their natural capital stocks and flows, in addition to policies and appropriate policy making processes as discussed above. Natural resource accounting provides a quantified rationale for sustainable development in resources sectors. Efforts to develop accounting systems that incorporate the NCA and measure the true wealth and savings of nations



have been lead by the United Nations, the World Bank and Statistics Canada (IISD, 2008), with their System of Environmental and Economic Accounts (SEEA), National Wealth Measurement (NWM) and Adjusted Net Savings (ANS), and the Canadian System for Resource and Environmental Accounts (CSERA), respectively. These provide important resources for policy makers in moving towards incorporating the NCA into national accounting systems.

The UN's Handbook of National Accounting: Integrated Environmental and Economic Accounting (United Nations, 2003) is linked with its System of National Accounts and integrates environmental and economic information to measure the contribution of the environment to the economy, and the impact of the economy on the environment. SEEA can be used by national statistical organizations and the UN has established a knowledge platform on the Internet to assist the user community by providing an archive of hundreds of publications on country practices and methodology, and updates on environmental accounting activities.<sup>2</sup>

The World Bank's NWM estimates the true wealth of nations through this measurement, which incorporates produced capital, natural capital, and what the Bank calls "intangible" capital, which is made up of human capital, the quality of institutions, governance and so on. The Bank published its estimates for the world's nations in 2000, and the accounting for each nation is available online.<sup>3</sup> Building on this measure, the World Bank developed its ANS, or Genuine Savings, indicator, which seeks to measure the true savings of a nation's economy by incorporating investments in human capital, depletion of natural resources, and pollution damage. Its Adjusted Net Savings Manual and net savings data for the world's nations are also published online.<sup>4</sup>

The CSERA is modelled on the SEEA and takes account of natural resource stocks, material and energy flows, and expenditures on environmental protection. The CSERA is an attempt at the national level to provide the information needed to move towards achieving a sustainable economy in which renewable resources are utilized such that natural capital is not depleted and non-renewable resources are used up at a rate that does not exceed new discoveries. The CSERA is now a valuable tool in natural resources planning and development strategies (IISD, 2008).

The World Bank has put forward four main elements if the environmental and natural resources accounting (World Bank, 2006):

- Stocks of natural resources, which are used to adjust the balance sheets of national accounts;
- The flows of natural resources/raw materials as inputs to production, as well as pollution as outputs, which are associated with the supply and use tables of national accounts;
- Environmental protection and natural resource management expenditures;
- Economy-wide indicators of sustainability, such as environmentally adjusted net domestic product (World Bank, 2006: 122).

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<sup>2</sup> <http://unstats.un.org/unsd/envaccounting/ceea/>

<sup>3</sup> <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTEEI/0,,contentMDK:20487828~menuPK:1187788~pagePK:148956~piPK:216618~theSitePK:408050,00.html>

<sup>4</sup> <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTEEI/0,,contentMDK:20502388~menuPK:1187778~pagePK:148956~piPK:216618~theSitePK:408050,00.html>

Developing and putting environmental accounts into place is as yet an aspiration for most countries. However, the efforts made by the international community to move towards a standardized methodology are building momentum for mainstreaming environmental accounting. As of today, some countries, like Canada, but also developing countries in Southern Africa, are using environmental accounting extensively, though comprehensive environmental accounting systems have not yet been put into common usage. Flow accounts are more developed than stock accounts, and accurate accounting of environmental impacts even in countries that have such accounting mechanisms is hampered by an absence of information on the environmental impacts of imported goods (Lange, 2003). It is therefore essential that countries participate in efforts to standardize and make comparable environmental accounting systems.

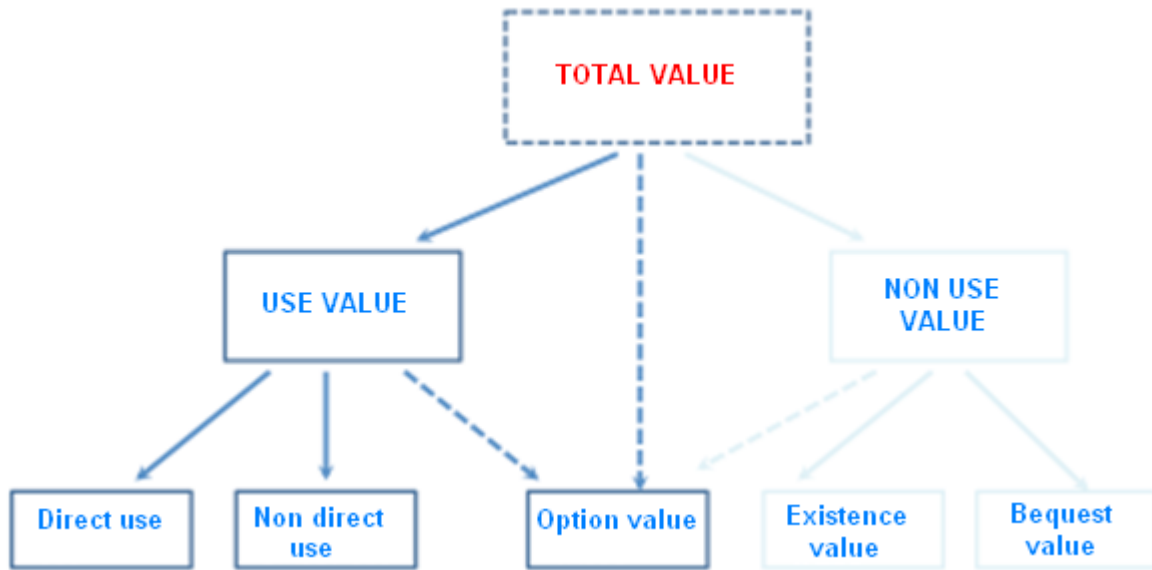
## **2.4 Overview of valuation methodologies**

A number of different approaches to valuing resources exist for measuring the costs and benefits of natural resource management decisions. Cost-benefit analysis (CBA) has been in use for many decades, and though imperfect, attempts to measure costs and benefits of projects and policies remains a key tool for environmental policy. Central to CBA is determining what resources and uses have value, and how to value them (OECD, 2006). The term “value” is used to refer to something that is considered good, whether it can be quantified or can only be described or related to qualitatively. Natural resources are valued for the flow of goods and services they provide society, while ecosystems are valued for the flow of services they provide that enable natural resource flows to continue, among other things. The value resources such as timber, fish and minerals can be quantified monetarily, while public goods that cannot be converted into tradable commodities, such as nutrient cycles and water filtration, cannot be directly monetarily valued. However, even valuing the flows of natural resources requires complex judgments, as current market prices may not reflect losses of natural capital through degradation of ecosystems or mining of non-renewable resources. Moreover, different stakeholders may place competing values upon resources and ecosystem services, thus further complicating attempts at valuation. Economic valuation methods have therefore in recent years been complemented by deliberative methodologies, thus combining and juxtaposing monetary and non-monetary values (OECD, 2002).

The total economic value of a resource is a combination of use and non-use values (OECD, 2006). The easiest value to quantify is the direct use value of a material natural resource, such as fish or timbers, which can command a market price. Economic valuation methods can also be applied to non-traded but directly used goods, such as the use of national parks for tourism, aesthetic enjoyment, spiritual retreat and so forth. The monetary value of such uses can be established through entrance or other types of user fees, which give an indication of how users value the resource.

Indirect uses include ecological services (such as the capacity of an ecosystem to absorb waste, i.e. their sink function) can also be monetized, though such methodologies involve inherent uncertainties. Option values pertain to resources that are valued for their potential uses in the future, such as biodiversity that is protected in the present and valued for its potential to yield discoveries and uses in the future. Option values can also be considered non-use values as they are placed in reserve and preserved for an indefinite period of time. More obvious non-use values include existence values, where resources or ecosystems are valued simply for being, such as the value society puts on rare species, rainforests or other resources. Bequest values are those values that current generations wish to pass on to future generations.

Figure 3. Total Economic Value



Source: [http://www.eoearth.org/article/Total\\_economic\\_value](http://www.eoearth.org/article/Total_economic_value)

Techniques for valuing natural resources and environmental services fall into two categories - economic and deliberative techniques. Economic techniques include market based and non-market based techniques. When a market for a good or service exists it is relatively straightforward to derive a monetary value for it, either as a market price, value based on appraisal, or value based on replacement cost. When markets do not exist, estimates must be made on people's willingness to pay, which can be derived from now well-established methods like contingent evaluation, in which value is estimated upon people's hypothetical willingness to pay, and relying on survey methodologies.

Deliberative, or participatory approaches to valuation attempt to capture non-monetary values in non-monetary terms. While methods such as contingent evaluation seek to put a monetary value on non-market goods and services, deliberative approaches are meant to allow stakeholders to develop preferences and form values through the process of deliberation itself. Deliberative and participatory approaches include focus groups, citizen juries, and Q-methodology (Graves *et. al.* 2009). Environmental valuation studies are few in Eastern Europe<sup>5</sup>, the Caucasus and Central Asia, and studies using contingent evaluation and other participatory methods are even more rare, though their use is increasing. For instance, Bartczak *et al.* (2008) used interview-based contingent evaluation to estimate the value of recreational use of forests in Poland, the first national-level study in an Eastern European country attempting to estimate recreational value of forests. The study showed that despite lower incomes, Poles place a higher monetary value on recreational use of forests than do Western Europeans, due most probably to cultural and institutional reasons (Bartczak *et al.* 2008).

<sup>5</sup> See case studies produced for the OECD Handbook of Biodiversity Valuation (2002) and Abaza and Rietbergen-McCracken (eds.) (2000), *Environmental Valuation: A Worldwide Compendium of Case Studies*.

## CHAPTER 3. POLICIES TO AVOID THE “RESOURCE CURSE”

Natural resource abundance should be the basis for the creation of national wealth because of increased exports that allow more capital goods to be imported and because natural resource rents can also be used to make capital investments. However, in many cases and from many regions of the world the reverse has been true. The term the “natural resource curse” refers to the counter-intuitive phenomenon wherein an abundance of resources has often been associated with poor governance, irrational resource exploitation, and poor development outcomes. The explanation for how the resource curse works differs from country-to-country, though a common denominator is a weakness in governance institutions that is exacerbated by the windfall profits from resource liquidation that are directed to governments themselves and economic elites. Of course, it is not natural resources themselves that determine development outcomes; it is what people decide to do with them. Taking lessons from countries that have transformed their resource wealth into sustainable growth and development allows policy makers to turn a potential natural resource curse into an opportunity.

### 3.1 The “resource curse”

The relationship between natural resources and economic development has been a topic of great debate among economists, political scientists and development related specialists and policy makers for many decades. Research shows a consistently negative correlation between natural resource abundance and sustained economic growth. For instance, Sachs and Warner (1995) found a negative relationship between GDP growth and the ratio of natural resource exports to GDP in 97 developing countries between 1971 and 1989. A negative relationship between resource endowments and economic performance has also been found in transition countries (Kronenberg, 2004) and is generally understood to pose a risk for countries that do not take explicit measures to counter this tendency (OECD, 2008a; OECD, 2008b). Increasingly, states are taking steps to learn from experience and put into place policies that ensure that natural resources are converted into sustainable growth and contribute positively to social well being.

The causes of the resource curse are not fully understood, although several factors may be operative simultaneously to bring about economically undesirable consequences of resource exploitation. Explanations for the resource curse include a number of possible effects of natural resource abundance and resource exploitation including:

- Rent seeking and corruption,
- The crowding out of manufacturing and underinvestment in human capital,
- Rising exchange rates and consequent underperformance of other sectors (“Dutch Disease”),
- The unsustainability of non-renewable resource extraction (depletion of natural capital),

- Boom and bust cycles<sup>6</sup>.

Natural resource abundance lends itself easily to **rent seeking and corruption** by governments and elites (Wick and Bulte, 2006), which have significant knock-on effects throughout the economy, impeding growth and development. A possible explanation for the relationship between resource abundance and rent seeking is that natural resource extraction concessions are usually given by governments that control or own the land and resources, and that concessions are usually given to large enterprises, whether governmental or private.

The necessarily large size of firms operating in this sector reduce or eliminate competition for concessions, and firms often end up in monopolistic or cartel positions. Once installed in these positions, firms seek to protect their positions and rents, which may involve bribery of governmental officials. The concentration of control over resources and resource revenues among a small group of firms and governmental officials thus, according to the argument, sets up a situation in which rent seeking and corruption are more likely than in manufacturing or service sectors where market competition is typically fierce.

Analysis by Jeffrey Sachs and Andrew Warner (1997, 2001) has shown that **natural resources may crowd out manufacturing**, which is vital to economic growth. As the revenue from natural resources tends to accrue to small elites who are already among the wealthiest class, the incentive to productively invest these monies is low. Instead, the revenues are more likely to be spend on high consumption lifestyles, which in turn may put upward pressure on the prices of goods and services, including labour, thereby depressing the competitiveness of existing manufacturers in export markets by raising the costs of their inputs.

The **boom and bust cycles** of course also create obstacles to steady governmental investment. Additionally, if countries are dependent upon the exports of only one or two natural resource commodities, demand swings may cause exchange rate volatility, thereby creating a further obstacle to the manufacturers of other exportable goods.

Resource abundance may also lead to **underinvestment in human capital**, specifically in education for similar reasons that it may divert investments into manufacturing. The immediate visibility of revenues from natural resources in comparison to the less clear and long-term benefits of investments in education may cause governments to neglect such investments (Gylfason, 2001).

The resource curse has also been explained as a function of the simple **unsustainability of non-renewable natural resource extraction**. Drawing down natural capital can only a positive long-term effect upon economic growth if the revenues from the draw down are invested in such a way that total income does not fall as the resources are depleted and revenues from their extraction and export fall. As discussed above, those revenues may be best invested in growing renewable natural resources capital, but can also be invested in human capital and built capital.

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<sup>6</sup> The term “boom and bust” refers to a hike in the price of a particular commodity or, alternately, the localized rise in an economy, often based upon the value of a single commodity, followed by a downturn as the commodity price falls due to a change in economic circumstances or the collapse of unrealistic expectations. During a “boom” period, buyers find themselves paying increasingly higher prices until the “bust”, at which time the goods and commodities for which they have paid inflated prices may end up as valueless or nearly so.

### 3.2 Policies and institutions for avoiding the resource curse

As noted in OECD's report, "*Natural Resources and Pro-Poor Growth*" (OECD 2008: 32), "[p]oor economic performance in many natural resource-rich economies may have been caused not by resource abundance as such but by the weak institutions for resource management, structures of ownership and control, notably state-owned or state controlled monopolies." Indeed, the role of institutions may be decisive in either curbing the resource curse - as countries such as Norway, Canada, and Botswana have done - or falling victim to it.

High-quality institutions that promote economic growth are at the heart of good governance, including a "regulatory apparatus curbing the worst forms of fraud, anti-competitive behaviour, and moral hazard, a moderately cohesive society exhibiting trust and social co-operation, and social and political institutions that mitigate risk and manage social conflicts" (Roderik, 2000). Brindley (2003) notes that "Countries that enforce private property rights, and protect their citizens from too much government expropriation, will invest more in human and physical capital and use these factors more efficiently." Unfortunately, in many cases, the windfall of revenues that natural resources often produce is an obstacle to creating and maintaining the very institutions that would counteract the tendency towards succumbing to the resource curse.

Efforts to enact policies that allow countries to escape the resource curse are subject to both intensive discussion (Humphries, Sachs and Stiglitz, 2007) and interventions by international organizations, notably the World Bank. Jeffrey Sachs emphasizes that "transparency and accountability" lie at the heart of policy prescriptions to "cure the curse." Government policy thus has a crucial role in relation to the sustainable development of natural resources. The OECD has previously highlighted several 'needs' in this regard:

- Facilitating the development of property rights and markets;
- Removing subsidies that hamper sustainable resource use;
- Reducing resource degradation and enhancing the provision of environmental services;
- Improving the management of publicly owned natural resources.
- Reducing pollution by natural-resource-based industries;
- Dealing with information shortfalls; and
- Addressing distributive implications of natural resource management policies. (OECD 2001).

This list also demonstrates that governance of natural resources will require adopting policies that have a political scope (such as market-based measures, regulation, co-operation, and information). And, as has been stated in previous OECD publications (OECD 2008) the international context of natural resource management is changing; especially with many emerging economies now becoming major importers of natural resources. This increased demand for natural resources makes improved resources management even more urgent for countries in transition where the features of imperfectly or unevenly developed legislation and governance may be compounded by short-term economic pressures that to draw on natural resources unsustainably.

### **Box 2. Strategies to avoid the resource curse: examples from Norway and Chile**

Countries that have successfully avoided the resource curse include Norway and Chile (OECD, 2008b), which have economies heavily dependent on oil and copper, respectively. These countries have been able to take advantage of oil and copper booms to achieved sustained economic growth and development by adopting proactive policies specifically designed to counteract the tendency towards economic unsustainability in resource dependent economies. Among the actions they have taken are:

- Limiting fiscal spending and keeping budgets generally in balance, thereby holding down inflation;
- Establishing resource funds for future generations, in which resource revenues are invested internationally;
- Investing budget surpluses in human capital (education) and infrastructure and innovation;
- Establishing policies to diversify their economies, including (especially in the case of Norway) policies that favoured the development of small- to medium-sized local enterprises in underdeveloped resource related industries;
- Ensuring sound institutions, including high quality civil services and low levels of corruption, sound regulatory bureaucracies, secure property rights, independent judiciaries and transparent checks and balances in the decision-making system.

Source: Havro and Santiso, 2008

Strategies for avoiding the resources curse and deriving the greatest sustainable benefits to society of resource endowments in some cases overlap and otherwise generally are compatible with the principles of good governance that have been propagated throughout the world over the past two decade by the World Bank and other international organizations (Stapenhurst and O'Brien, ND; World Bank, 1994). The World Bank has identified six aggregate indicators of good governance for nations, which are correlated with positive development outcomes:

- Voice and accountability, including fair elections, an active civil society, and an independent media;
- Political stability, including the absence of violent conflict, ethnic conflict, a fractionalized political spectrum and intense social conflict;
- Government effectiveness, including institutional stability and a non-politicized civil service;
- An appropriate level of regulatory burden that does not stifle the private sector;
- The rule of law, including protection of property rights and an independent judiciary; and the
- Absence of corruption (Kaufman and Kraay, 1999).

The need to shift from “government to governance” has also been recognized in the field of natural resources management, where policy and management problems often resist swift or easy solution. Traditional policies and management practices that place decisions in the hands of narrow groups of technical experts, industry, and decision makers have proven insufficient in the context of declining resource bases, competing demands by multiple stakeholders, and increasing knowledge of the complexity of natural systems and their interaction with human systems. Designing new governance arrangements for natural resources is a time consuming process in which principles for good natural resources governance play a central organizing role.

### 3.3 Getting prices right

Internalizing the environmental costs of natural resources extraction and use in the prices of resources is a powerful mechanism for creating incentives for sustainable natural resources management and consumption. “Full-cost accounting” seeks to use market instruments such as taxes and tradable permits to ensure that renewable resources such as fish and timber are harvested sustainably, and that resource use trends towards greater efficiency. Getting the prices right includes accounting for the costs of depletion, as well as the costs that go into extraction and restoration of land, where necessary, after resources have been removed.

Natural resources tax revenues are an important instrument in internalizing the costs of resource extraction and use. Taxes as well as prices for concessions to exploit resources ensure that governments and societies capture their share of the value of resources. Deciding how to use revenues from natural resource taxes is also central to their effectiveness. Taxes can simply be added to the state budget, but they can also be put into natural resource management and environmental protection, or invested in research and development that promotes innovation and value added industries.

Tradable permits are understood to be an efficient and flexible instrument for managing natural resources such as fish and water sustainably. Tradable permits create cap on resource withdrawals, and allows quota permit holders to trade the permits, with the market setting the price (OECD, 2001; OECD 2002). In a competitive market, permits flow towards users who can derive the greatest value from the resources, thereby benefiting both sellers and buyers. However, getting the prices right for permits also means that the full costs of resource extraction must be incorporated into the price of the permit. For instance, fishermen trading permits to catch particular species may keep harvests within the bounds of the total cap on the catch, but if they use fishing gear and methods that destroy parts of the marine ecosystem without internalizing the costs of that destruction, the costs to society will not be reflected in the prices of the permits.

### 3.4 Enabling the shift towards more value adding activities

Shifting from reliance on exporting primary commodities to producing processed and manufactured goods should be a priority for resource rich countries. Whether it is the processing of minerals such as gold, turning iron into steel, or timber into tables, countries benefit economically and socially by adding value to their natural resources. Conversely, export of raw materials supports manufacturing in other countries, but deprives exporting countries of much of the economic benefit of their resources.

Developing domestic processing and manufacturing capacity takes time and investment. Key conditions for developing processing and manufacturing capacity include:

- An appropriate education and skills base for workers;
- Commensurate investments in education and skills training;
- Appropriate levels of credit, including micro-credit for small, local entrepreneurs;
- Policies aimed at supporting small and medium sized enterprises;
- Policies aimed at supporting research, development and innovation; and
- Supporting small to medium size companies, research partnerships, etc. for innovation.



### 3.5 Introducing payments for ecosystem services

Payments for ecosystem services (PES) provide incentives for owners of natural resources such as farmers and forest owners to manage resources in order to provide ecological services. PES are defined as voluntary transactions in which a well defined environmental service is bought and sold by at least one buyer and one seller, provided that the seller actually ensures that the ecosystem service is provided (Wunder, 2005). Key environmental services such as carbon sequestration, biodiversity protection, watershed protection, and landscape beauty may be targeted in a PES scheme (Wunder, 2005).

In order to be effective, then, PES systems must target a well-defined ecosystem service and ensure that payments add to the ecosystem service that would be provided under a business as usual scenario. Moreover, they must be able to monitor the provision of the ecosystem service. PES policies would in most instances complement other policies. The voluntary nature of PES means that they enjoy high legitimacy among participants. Payments are typically calculated on the basis of foregone revenue from resource use as well as costs incurred in providing the ecosystem service. PES systems are thus intended to maintain livelihoods while valuing, and paying for, the wider social benefits derived from ecosystem services.

PES schemes are not particularly easy to design and implement and require a substantial amount of initial effort. Baselines for ecosystem services must be established in order to determine if PES provide additional value. PES schemes also depend upon social capital embodied in the trust between buyers and sellers, and may require an intermediary such as an NGO to develop (Wunder, 2005). Moreover, transaction costs may be high. Incorporating a PES scheme into the policy mix therefore necessitates a careful weighing of the costs and benefits of such a scheme in relation to other policy instrument options.

However, PES schemes are increasing in number around the world, sometimes with the strategic support of the NGO and international communities. For instance, WWF has worked in Moldova, Romania, and Ukraine to identify land uses and environmental services that could trigger payments from the European Union and national agencies, thereby supporting rural residents and protecting the environment (WWF 2006). Based on WWF's initiative, the Global Environment Facility has continued funding work in the Lower Danube Basin to mainstream PES schemes in an integrated river basin management context.

The first PES project in Central Asia was launched in 2008 by the Central Asia Regional Environmental Centre in Kyrgyzstan in cooperation with the Swiss government, the US Forest Service and the Global Environment Facility, and working with local stakeholders, including national and local authorities, the water user and pasture user associations, local experts and the local population. The project aims to improve the ecological health of alpine and sub-alpine ecosystems by making grazing practices more sustainable. The ecosystem services to be paid for are water supplies to the watershed, water quality, biodiversity and forest conservation, with upstream grazing farmers and national forest districts identified as sellers and irrigated agriculture farmers and tourists identified as buyers. Although this PES scheme has run into obstacles in the form of a low ability and willingness to pay for the environmental services and a limited understanding of the relationship between upstream grazing practices and downstream water quality, the project is providing a unique learning environment and is serving as a springboard for further PES schemes in the region (Genina, 2010).

## **CHAPTER 4. GOVERNANCE STRUCTURES AND PROCEDURES TO AVOID THE “RESOURCE CURSE”**

Avoiding the resource curse is in large part a question of implementing practices of good governance to ensure that resources are used sustainably, equitably, and in the public interest. Good governance in natural resources management follows many of the same principles as good governance in general, including transparency in decision-making, inclusiveness, and accountability. Multi-stakeholder participation in decision processes, management and planning often increases the robustness and legitimacy of decisions, while inter-agency cooperation across ministries and vertically, across levels of government, ensures coordination and a nation-wide strategic approach to resource management. Of key importance is ensuring that funds from resource exploitation are managed properly in a transparent and open manner. Investing a portion of resource receipts for the future through stabilization and other resource funds is becoming more common, including in transition economies. Sustainability of resource use is further supported by managing resources in an integrated fashion, thereby working with the ecological and social relationships that tie various resources to each other.

### **4.1 Structures and procedures to ensure transparency, inclusiveness, and accountability**

Natural resources decision-making is often a source of debate and conflicting values. While there may never be complete consensus within a given country on exactly how to put the principles of sustainable resources management into practice in the case of renewable resources, or on how optimally to exploit non-renewable resources and how to invest the revenues, depending on how they are approached, decision making processes can help or hinder sustainability and social and economic development. Natural resources policy is inherently complex, involving scientific uncertainties, complex natural systems, technical considerations and long time frames. At the same time, social and political developments throughout the world, in developed, developing and transition countries alike, have ushered in an era in which public participation and multi-stakeholder participation processes are demanded, expected and required under freedom of information and participation laws such as those implementing the Aarhus Convention.

While it is understood that a diversity of decision making processes is necessary across national contexts as well as policy-specific contexts, some basic principles of decision making, consistent with the principles for good governance in general and for natural resources in particular, will apply to all decision making processes in the context of sustainable development, including:

- Credible mechanisms for reporting outcomes of policy decisions and for fostering accountability of results;
- Coherence across government departments and levels of government; and

- A transparent and inclusive approach to decision-making, so as to confront conflicting interest and points of view and to address policy trade-offs when these arise (OECD, 2001).

The shift from “government to governance” has emphasized the need to include multiple stakeholders in decision-making, knowledge creation and implementation of natural resources and environmental policy. However, government retains the prominent position though establishing legal frameworks and regulatory standards, formulating the strategies through which stakeholders will participate, and supporting stakeholders and communities in meeting priorities. Government needs to have a clear vision and develop guidelines for how to engage stakeholders in policy and management decision making and in establishing programmes to support stakeholders in meeting goals set through decision making processes.

#### **4.2 Principles of multi-stakeholder governance**

Multi-stakeholder governance is meant to support the robustness of decision-making and policy processes by bringing in information and knowledge, interests, values from the larger society. Multi-stakeholder decision-making revolves around specific problems and sectors and aims to result in decisions (e.g. for policy making, standard setting, etc.) that have greater legitimacy, are more thoroughly thought out, and are more easily implemented than decisions made without the participation of and interaction between stakeholders. Multi-stakeholder governance therefore expands the capacity for good governance by distributing responsibility, strengthening interdependence and enhancing competence through practice, building trust and ensuring accountability.

Lockwood *et al.* (2010) have distilled a set of principles for natural resources management in the context of multiple stakeholder claims and demands for participation and the biophysical, economic, and political complexity of making natural resources policy in an increasingly resource scarce world; they can serve as a basic ‘yard-stick’ to check the degree of multi-stakeholder governance:

- Legitimacy, including the legal, democratic validity and stakeholder acceptance of an organization’s authority to govern; authority being exercised at the lowest possible level; and integrity in the exercise of this authority;
- Transparency, including the visibility of decision-making, clear communication of the reasons for decisions and access to information regarding decisions;
- Accountability, including “the allocation and acceptance of responsibility for decisions and actions and the demonstration of whether and how those responsibilities have been met;”
- Inclusiveness, including the right and opportunity for stakeholders to participate in decision-making;
- Fairness, including taking stakeholder views into account, ensuring consistent and unbiased decision-making and considering the costs and benefits of decisions;
- Integration, including coordination across levels of governance and organizations and between priorities and plans;

- Capability, including the various capacities of those with authority to meet their responsibility, such as leadership, knowledge, skills, and resources; and
- Adaptability, including the capacity to take account of new knowledge, responding to threats and opportunities; and reflect upon experience.

The principles are meant to provide guidance in the design of natural resource governance institutions, with the aim of solving complex, cross-sectoral and multiple interest problems in a way that supports social and economic development and respects natural limitations by conserving natural capital. The recognition that legal authority and technical competence alone are not sufficient to confer legitimacy upon management organizations has led to a revolution in stakeholder participation in natural resources governance. Well designed stakeholder participation is at the heart of good natural resources and environmental governance, as recognized by the states that have ratified the Aarhus Convention on Access to Information, Public Participation in Decision Making, and Access to Justice in Environmental Matters. While participation alone is not enough to ensure good decisions, it is a springboard from which to build institutions that take account of other principles of good governance in natural resources management, including legitimacy, accountability, fairness, inclusiveness, and to a certain extent integration and adaptability. For instance, multi-stakeholder governance was introduced for the Komi and Pskov Model Forests in the Russian Federation, leading to expanded economic activities in the forests, greater understanding between stakeholders, and a generally more inclusive and transparent governance environment, due especially to investments in education that put a public spotlight on forest governance. Citizen participation in forest governance increased through participation in public hearings, the creation of forest clubs that served as forums for public deliberation of forest governance issues, and the dissemination of grants for education, ecological festivals, and governance related activities, including forest club meetings (Elbakidze *et al.* 2010).

Sustainable natural resources management distinguishes itself from traditional commodity oriented resources management in part by its incorporation of stakeholders into decision-making processes. By definition, SNRM involves more than commodity production, but also local conservation, ecosystem sustainability across larger spatial scales and time frames, and aesthetic and other amenity values. Economic valuation become complicated by competing economic uses, with non-consumptive uses such as nature-based tourism often competing against commodity production. The various interests and values associated with natural resources and ecosystems are represented by the variety of stakeholders involved, from governmental bodies to a variety of industries, labour, non-governmental organizations, local communities and individual citizens. Where commodity oriented natural resources decision-making might well have been described “management by exclusion,” SNRM has become “management by inclusion” (Kant and Lee, 2004).

### **Box 3. Levels of participation in natural resources management**

Participation in natural resources management can span a spectrum from a low to a high level, and involve a variety of techniques.

- A low level of participation pertains to having knowledge about decisions, and may involve conferences, public hearings, and the dissemination of information.
- An intermediate level of participation pertains to being heard before decisions are made, and may involve task forces and advisory groups.
- A higher level of participation pertains to having an influence on decision-making, and may involve collaborative problem definition and problem solving, interactive workshops, and facilitated meetings.
- A high level of participation pertains to helping to make and agreeing to decisions and may involve mediation and joint decision-making.

Source: Ananda, 2007.

A variety of stakeholder and public participation processes have been developed and practiced in many different social and policy contexts, and while no single participatory tool will fit all situations, a number of best practice principles have emerged for natural resources and environmental management. These include:

- Stakeholder participation should be underpinned by a philosophy that emphasizes empowerment, equity, trust and learning;
- Where relevant, stakeholder participation should be considered as early as possible and throughout the process;
- Relevant stakeholders need to be analyzed and represented systematically;
- Clear objectives for the participatory process need to be agreed among stakeholders at the outset;
- Methods should be selected and tailored to the decision-making context, considering the objectives, type of participants and appropriate level of engagement;
- Highly skilled facilitation is essential;
- Local and scientific knowledge should be integrated; and
- Participation needs to be institutionalized (Reed, 2008).

Effective governance for natural resources requires an understanding of social, economic and ecological factors, and is therefore inherently complex. One of the functions of stakeholder participation is to develop a holistic understanding of preferences and values on the one hand, and knowledge and understanding on the other. Stakeholder participation processes can themselves be learning processes in which more complete and knowledge and mutual understanding takes place, leading to the formulation of new or modified preferences and values. In other words, stakeholder participation can be a means of further social development.

#### **Box 4. The Lake Ohrid Conservation Project (LOCP): Demonstrating the Power of Stakeholder Participation**

Beginning in 1998, the World Bank supported The Former Yugoslav Republic of Macedonia and Albania in establishing integrated, transboundary river basin management in the Lake Ohrid Watershed. The purpose was to provide a basis for economic development by introducing sustainable natural resources management and pollution mitigation throughout the 2000 square kilometre basin.

In order to meet its stakeholder participation objective, the LOCP implemented a strategy developed by the public participation officers in both Albania and Macedonia. The key components of the strategy included: (i) outreach hearings for local authorities in the watershed, enterprises, fishermen, farmers, NGOs, and citizens; (ii) a series of publications; (iii) a media campaign; and (iv) training a 'core group' of stakeholders.

The concept of the core group proved to be decisive in making the LOCP a success and meeting long-term objectives. The core group was comprised of self selected "high interest" stakeholders from a national park, forestry, fisheries, agriculture, business, water management, industry, education, tourism and local NGOs and received extensive training in:

- The basics of the water cycle in the watershed;
- The stages of the watershed management planning process;
- How to develop goals and strategies for a whole watershed; and
- How to hold and organize public meetings.

By training the core group in all essential aspects involved in management—science, the planning process, strategy development and stakeholder relations—the project was able to foster a vibrant community of engaged stakeholders across sectors who could then disseminate and proliferate their knowledge and skills throughout the basin.

The core group then held a series of workshops and public meetings throughout the basin in which they identified the priorities of stakeholders in the basin, bringing more people and forming Watershed Management Committees in both countries composed of various stakeholders. The Committees were charged with coming up with an integrated watershed management programme, including an action plan (in co-operation with the transboundary Watershed Management Board, composed of officials); improving communication among citizens, communities, and authorities at all relevant levels, establishing a programme for continuous citizen involvement in environmental decision making in the basin, supporting socio-economic needs of citizens in the watershed.

The final outcomes of the public participation component of the LOCP included:

- The development of the Lake Ohrid Watershed Action Plan, which included actions to reduce pollution, protect and restore the integrity of natural habitats and populations of threatened and/or economically important species (e.g. the endemic Ohrid Trout);
- Implementation of a small grants programme to catalyze action in priority areas;
- Increased public awareness concerning the state of the environment in the basin; and
- Ongoing transboundary co-operation over environmental management as well as economic development projects.

Source: Avramoski 2002 and 2010.

### **4.3 Effective intra-government organisation and multi-level governance**

Managing natural resources requires cooperation and coordination among governmental organizations within the framework of shared strategic goals that integrate economic and environmental objectives. Given that natural resources provide sometimes competing and overlapping goods and services for multiple users, and that management and policy decisions span both time and geographic scales (e.g. community forests that are nested within a larger forest ecosystem), and that resources often span cross jurisdictional boundaries within countries, both vertical and horizontal co-operation and co-ordination among governmental organizations is necessary.

Intra-governmental co-operation and co-ordination refers to the relations between governmental organizations at the same horizontal scale - for instance between ministries at the national level. Multi-level governance refers to vertical co-operation and co-ordination. In recent decades in many countries authority has been dispersed across jurisdictions, meaning that local, regional, provincial and other sub-national levels of government are often policy initiators rather than just implementers in a traditionally hierarchically organized system (Hooghe and Marks, 2003).

Effective intra-governmental cooperation and multi-level governance require political will, capacity (e.g. appropriate training and resources at all levels), and a deliberative and open culture of power sharing. Governmental organizations have a variety of instruments to choose from in order to achieve effective co-operation and co-ordination. Inter-ministerial co-operation is often achieved through inter-ministerial committees tasked to: develop, and co-ordinate, policies; resolve conflicts and so on. Multi-level governance seeks to achieve both policy cohesion and policy innovation, with the assumption being that policy solutions may originate at any level of government, and that interaction and co-operation are needed for both.

Some instruments that facilitate effective multi-level governance include:

- A strategic orientation document that establishes overall policy aims and objectives and details the distribution of authority and responsibility among levels of government and governmental organizations;
- A strategic impact assessment of policy proposals;
- Regularly scheduled forums for multi-scalar (e.g. local, regional, provincial, national, etc.) dialogue around policies, policy documents, plans, etc.; and
- Multi-level and multi-stakeholder partnerships around particular resources, bundles of resources, and/or projects and programmes.

### **4.4 Structures and procedures to manage revenue from natural resources**

Maximizing the value of natural resources for sustained growth and development, and avoiding the resource curse, requires policies that formalize and codify revenue management procedures. Such laws are being put into place in countries around the world, and typically involve the creation of a fund that receives resource revenues and that is overseen by a specialized administrative unit. Such funds allow countries to invest wisely when commodity prices are high, and supply funds when commodity prices, and therefore government revenues, fall. Oversight bodies should operate transparently and protect resource revenues from short-term political interests (IISD, 2005).

Special resource funds have proliferated around the world in response to the recognition that depletion of finite resources puts countries on track to experience severe drops in income in the absence of new income sources. In addition to using receipts from non-renewable resource extraction to invest in human capital and economic diversification, governments are establishing funds that invest a portion of the income from resources for future generations and to as a buffer against commodity price drops. Permanent funds are thus intended to benefit the citizenry in the future, including future generations, while stabilization funds are held as potential replacements of lost revenues when commodity prices sink. Booms in resource commodity prices therefore represent opportunities for resource rich countries to invest in human capital, infrastructure, and other economic sectors. Countries that have avoided the resource curse, and have succeeded in using resources to increase GDP over time, have also had sound institutions.

Natural resource management revenue laws must fit the institutional and legal contexts in which they are to be applied, in reference to existing laws, institutions and practices, with which revenue laws must be integrated but also possibly separated if there are governance pitfalls that the drafters of the law wish to avoid (Bell and Faria, 2007). Key issues in resource revenue management laws are oversight and transparency - professional oversight and transparency in revenue sources, revenue amounts and how revenues are invested and spent are at the heart of managing resource revenues properly (Bell and Faria, 2007). Traditional legislative oversight, which predominates in developed and well-governed countries, can be complemented by other oversight bodies especially ones that bring in civil society actors with a stake in the public interest. For instance, the oversight board for the State Oil Fund of the Republic of Azerbaijan has members representing the legislature, central bank, the government and the national academy of sciences. Monitoring and regular auditing and reporting for resource funds are necessary aspects of successful revenue management. Auditors general can perform this function, such as in Norway and Alberta, Canada, though outside parties such as recognized accounting firms may also be needed, depending on context (Bell and Faria, 2007).

#### **4.5 Integrated and adaptive decision making**

Natural resources management entails inherent uncertainties, including uncertainty of the outcomes of management decisions, and occurs in constantly changing economic, social, political and ecological environment. Good planning, scientific input, and multi-stakeholder participation processes reduce uncertainty, but cannot eliminate it. When significant changes occur in social, economic or other environments, natural resources managers must be prepared to adapt their plans and management interventions accordingly. Too often, management institutions are unprepared to respond to changes in their environments quickly, thereby incurring various types of costs, including financial losses, losses of legitimacy or other forms of institutional weakening. Adopting an adaptive management approach can allow natural resources managers to monitor and learn from the outcomes of management decisions and prepare for change and respond appropriately when it occurs.

The complexity of natural resources management is increased by the change from single commodity management to the necessity of managing multiple resources—commodities and non-commodities—simultaneously. Traditional, commodity oriented natural resources planning and decision-making is characterized by the aim of maximizing revenues from single resources. For instance, the aim of forestry is to grow as much timber as possible in order to harvest the maximum sustainable yield of wood each year. In order to meet this end, complex forest ecosystems containing many tree species would be simplified and managed by planting and growing only the most commercially desirable species. Loss of biological diversity is thus considered unimportant, and the degradation of ecosystem functions, like soil fertility,



is countered by further management interventions such as the addition of fertilizers. By contrast, sustainable management of forests and other resources, seeks to maintain the biological diversity of the forest while managing for multiple commodities and uses, including timber, non-timber forest products such as mushrooms and berries, and recreation and tourism. Integrating the management of multiple commodities, uses and values requires recognizing the complexity of systems as well as the uncertainty of knowledge. Adaptive management is all the more valuable in a multiple resource management regime in which various outputs, values, and objectives need to be integrated in policy making, management planning and management activities.

#### **Box 5. The Komi Model Forest experience in Russia**

The Komi Model Forest lies in the Komi Republic in the Russian taiga and is a biodiversity rich ecosystem of 800,000 hectares. Over 11% of the forest is old growth, and the forest contains 208 threatened and endangered species. After the collapse of the Soviet Union the forest industry in the Komi Republic went into sharp decline, leading to unemployment, out-migration, social instability, mistrust in government, and depletion of natural resources. In order to reverse these trends, the State Forest Service (SFS) decided to implement a sustainable forest management strategy that included turning the forest into a designated Model Forest, with the aim of making its timber products competitive on the environmentally conscious European market.

To achieve its aims, the forest managers put together a multi-stakeholder partnership with the State Forest Service, other government agencies, academia, the forest industry, environmental NGOs, and local citizens. With achieving sustainable forestry as the strategic goal, the partnership developed:

- A regional Forest Stewardship Council (FSC) standard, was the first forest in the Republic to gain FSC certification, succeeded in disseminating using FSC as a strategy to gain market access (2.2 million hectares in the Komi Republic went on to gain certification), and assisted a neighbouring region in gaining FSC certification for an IKEA project;
- A process for including stakeholders in decision-making that was then disseminated to two other regions in the Republic;
- Practices that met international standards for sustainable forest management that were then adopted by the State Forest Service as a whole;
- An extension programme through which some 1200 individuals from the State Forest Service, industry, education, and civil society were trained in the lessons learned from the Model Forest; and
- Recommendations for policy makers for adopting sustainable forest management standards into the law.

The Komi Model Forest experience shows that sustainable natural resources management can be the route to reviving a declining resource sector, thereby spurring local development while also contributing to the regional and national economies. Komi's integrative approach increased the value of commodities while at the same time protecting ecological values and preserving natural capital. It's inclusive approach empowered stakeholders, encouraged social learning between stakeholder groups, and strengthened decision-making by taking diverse views into account and developing innovative strategies.

Source: Food and Agriculture Organization of the United Nations: [http://www.idrc.ca/en/ev-99602-201-1-DO\\_TOPIC.html](http://www.idrc.ca/en/ev-99602-201-1-DO_TOPIC.html).

An adaptive approach to management is a key component of integrating uses and values of natural resources. Adaptive management can be defined as 'A systematic process for continually improving management policies and practices by learning from the outcomes of operational programmes. Its most effective form - 'active' adaptive management - employs programmes designed to experimentally compare selected policies or practices by evaluating alternative hypotheses about the system being managed'' (British Columbia Ministry of Forests 2000).

The basic principles of adaptive management include:

- Learning by designating natural resource policies and management actions are tested as experiments;
- Monitoring the effects of policies and management actions through indicators;
- Modifying policies and management actions on regular cycles, or mid-course when possible; and
- Synthesizing knowledge of outcomes gained through management cycles (including organizational, social, as well as ecological and economic knowledge) with stakeholders and incorporating this knowledge into the next planning and policy-making process and decisions.

Adaptive management is thus a systematic process for learning from decisions and their outcomes and making adjustments according to this newly developed and organized knowledge. By translating the experimental approach of science into management and policy decision-making, adaptive management seeks to allow decision-making systems and institutions to continuously improve and build upon the past, as science does. In this spirit, policy and management failures are both expected and welcome as opportunities for learning. Expecting the unexpected becomes a part of the decision-making routine in this “learning by doing” approach to managing resources sustainably.

## CHAPTER 5. A CHECKLIST FOR POLICY DIALOGUE

Reforms in the field of natural resource management require an important consensus-building effort. Policy-makers in EECCA may wish to use the following *Checklist* to accompany such a process in their countries.

- What are the long-term economic, environmental and social consequences of current resource management policies?
- Are renewable resources managed sustainably? Are revenues from non-renewable resources invested for the long-term benefit of society?
- How can resource management policies be improved to support sustainable economic development?
- Who currently benefits from natural resource policies and how do they benefit?
- Can benefits be more widely and equitably distributed?
- Is there a poverty reduction strategy, and how if so, how do natural resources fit into it?
- Is the governance of natural resources and governance of revenues from natural resources, transparent and monitored?
- Can opportunities for stakeholder participation in decision-making be expanded and improved?
- Can policies for natural resources better integrate the diversity of resource and ecosystem objectives and values?
- How can policies and institutions for natural resources management be made flexible and responsive to changing economic, social and environmental conditions?

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## **THE ECONOMIC SIGNIFICANCE OF NATURAL RESOURCES: Key points for reformers in Eastern Europe, Caucasus and Central Asia**

Sustainable natural resources management, and deriving the greatest value from natural assets, requires first and foremost understanding the role that they play in social and economic development as natural capital. The proper valuation of resources is also necessary, understanding that valuation is not merely a simple calculation that determines market values, but includes non-market values that are deeply embedded in societies. Institutions and transparent and inclusive decision making processes ensure that resources are utilized optimally for the highest long-term economic value for the entire society rather than for the immediate benefit of a small number of people.

The current document promotes all these messages and thus aims to facilitate the understanding of the economic significance of natural resources so that economic reforms launched by countries of Eastern Europe, Caucasus and Central Asia are better informed. Financing for preparing this document was provided by the government of Norway, as part of their support to governance and environmental reforms in Georgia.

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