

MULTIPLE PATHWAYS TO SUSTAINABLE DEVELOPMENT:

FURTHER EVIDENCE OF SUSTAINABILITY IN PRACTICE



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**MULTIPLE PATHWAYS TO SUSTAINABLE DEVELOPMENT:
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LIST OF ACRONYMS

EC	European Commission
EU	European Union
FONAFIFO	Fondo Nacional de Financiamiento Forestal (Costa Rica)
GDP	Gross Domestic Product
GNH	Gross National Happiness
IWR	Inclusive Wealth Report
MFDP	Ministry of Finance and Development Planning (Botswana)
NGO	Non-governmental Organization
PES	Payments for Ecosystem Services
PSA	Pago por Servicios Ambientales
REDD+	Reducing Emissions from Deforestation and Forest Degradation
Rio +20	United Nations Conference on Sustainable Development
SEEA	System for Environmental and Economic Accounts
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
WAVES	Wealth accounting and Valuation of Ecosystem Services

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Foreword



In 2015, the United Nations Environment Programme (UNEP) published *Multiple Pathways to Sustainable Development: Initial Findings from the Global South*, a report that highlighted a number of innovative concepts for working

towards sustainable development. Building upon that effort, UNEP has identified – in this follow-up report – additional paths towards sustainable development.

By learning from countries implementing these approaches, we can create a rich tapestry of different visions, tools, and experiences that can inform and inspire policymakers, businesses and civil society in their efforts to deliver on the 2030 Agenda for Sustainable Development.

The report examines four examples: Natural Capital Accounting in Botswana, Gross National Happiness in Bhutan, Payments for Ecosystem Services in

Costa Rica, and the Circular Economy in Europe. While each national context is unique, the four approaches all seek to decouple economic growth from environmental impacts and ensure inclusive distribution of the benefits of such growth. Together, they offer a powerful set of tools for leaders and policymakers to enhance sustainable development and to achieve the Sustainable Development Goals.

I hope this report will stimulate debate among the international community and inspire countries to adopt green inclusive approaches to development that fit within their own national contexts. By embracing opportunities, we can create the conditions for prosperity in a resource constrained world.

A handwritten signature in black ink, reading 'Achim Steiner'.

Achim Steiner

United Nations Under-Secretary-General
and Executive Director,
United Nations Environment Programme

Introduction

In June 2012, twenty years after the landmark Earth Summit in Rio de Janeiro, world leaders gathered there again at the United Nations conference on Sustainable Development (Rio+20) to renew their commitment to reducing poverty, advancing social equity and ensuring environmental protection on an increasingly crowded planet.

The conference concluded with an outcome document entitled *The Future We Want*, which recognized the existence of a number of "...different approaches, visions, models and tools available to each country, in accordance with its national circumstances and priorities, to achieve sustainable development...", and identified Green Economy as an important tool (UNGA, 2012).

In February 2013 the United Nations Environment Programme (UNEP) Governing Council took note of Rio+20's emphasis on the different pathways leading to inclusive and sustainable economies. The Governing Council acknowledged the plurality of approaches and requested that UNEP "collect such initiatives, endeavours, practices and experiences on different approaches, visions, models and tools including green economy in the context of sustainable development and poverty eradication and to disseminate them, and facilitate information sharing among countries, so as to support them to promote sustainable development and poverty eradication" (UNEP, 2013).

In 2013, following the UNEP Governing Council Decision and with the support of the government of China, UNEP began work to share the South's various experiences and national-level initiatives for transitioning to sustainable and socially inclusive economies. This work culminated in 2015 when UNEP published a report, entitled *Multiple Pathways to Sustainable Development: Initial Findings from the Global South*¹, that highlighted four unique national initiatives: Living Well in Bolivia, Ecological Civilization in China, Green Economy in South Africa, and Sufficiency Economy in Thailand.

This report serves to build on that earlier publication by examining four additional approaches that have been adopted at the country or regional level: Circular Economy in the European Union (EU) and Germany, Natural Capital Accounting in Botswana, Payment for Ecosystem Services in Costa Rica, and Gross National Happiness in Bhutan. The purpose is to show that there is no "one size fits all" approach to sustainable development, but rather a range of concepts, methodologies, and tools that can be used, depending on the specific context.

Three of the four approaches to sustainable development show how global level tools and concepts can be applied successfully at the national level, while the fourth, Gross National Happiness, serves as an example of a unique national approach gaining wider acceptance and being incorporated into other countries' thinking on sustainable development, including as a possible alternative or complement to Gross Domestic Product (GDP).

As with the approaches covered in the previous *Multiple Pathways* publication, the case studies reflect unique national contexts and worldviews, and together they demonstrate how different countries use different tools to achieve their goals. They offer valuable lessons for other countries wishing to embark on their own sustainability pathways. By emphasizing common economic, environmental and social aspirations, as well as challenges and available resources, this report aims to serve countries by sharing experiences that they may find relevant to their own particular sustainable development priorities. In addition to providing concrete examples, such exchanges can empower countries to share and learn from home-grown solutions for sustainable development.

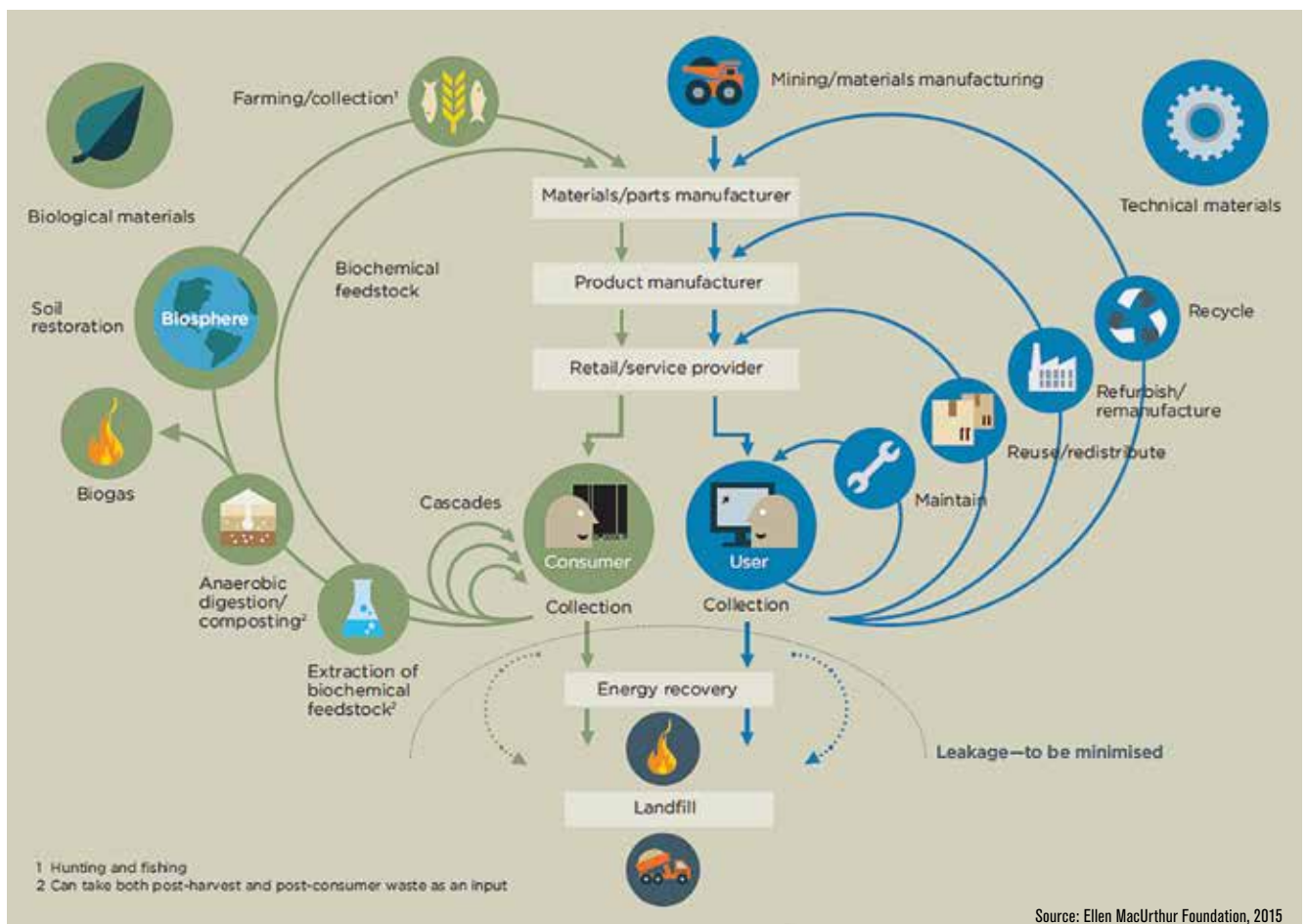
CIRCULAR ECONOMY

Context and rationale

The concept of a circular economy emerged in the late 1970s as a reaction to the increasing resource consumption of modern economies. It has deep-rooted origins in traditional agriculture and natural cycles. In the mid-1960s, for example, Kenneth E. Boulding hypothesized a “spaceman” economy of the future that would exist as part of a “cyclical ecological system which is capable of continuous reproduction of material” (Boulding, 1966) and in the 1970s Nicholas Georgescu-Roegen used the law of entropy, borrowed from thermodynamics, to describe the way that the existing linear economy degrades

the resources on which it depends, and argued that for an economy to be truly viable in the long term, it must be able to support itself without depleting these stocks of critical economic inputs (Gowdy and Mesner, 1998). The practical application of such concepts to modern industrial economies has since been shaped by thought-leaders from the fields of economics, architecture, environmental science, chemistry, business, and design. The ideas of Performance Economy, Industrial Ecology, Cradle to Cradle, Biomimicry, Blue Economy, and Regenerative Design have had a particular influence on the development of the circular economy approach (Ellen MacArthur Foundation, 2012).

Figure 1: Circular Economy System



Circular Economy has been gaining increased interest in European politics in recent years, especially since a series of reports by the Ellen MacArthur Foundation outlined its economic opportunities. In this context, it is being promoted as a solution to resource constraints in Europe, which are linked to economic challenges such as price volatility and environmental problems such as pollution, biodiversity loss, ecological degradation, and climate change (EEA, 2015). Circular Economy is seen, most promisingly, as a concept that can not only decrease ecological pressures, but also modernize the economy, create jobs and boost economic growth (EC, 2015a).

Definition and concept

In order to decouple prosperity and well-being from the consumption of finite resources, it is critical that we transform the current linear 'take, make, dispose' economic model into a circular system with minimal waste. Instead of manufacturing goods from raw materials which are discarded or incinerated afterwards, a circular economy is a system where products, components and resources are maintained, reused, remanufactured, recycled and used in cascades. It aims for a virtual elimination of waste through the superior design of materials, products, systems and business models (Ellen MacArthur Foundation, 2015).

A true circular economy builds on the three principles depicted in Figure 1: preserving and enhancing natural capital, optimizing resource yields, and fostering system effectiveness. An important difference is made between consumable (single or few times usage) and durable (years of usage) products (Horbach et al., 2015). Consumable products principally consist of non-toxic biological ingredients that can be easily returned to the biosphere. They are used efficiently in cascades to keep consumption below the regeneration rate of renewable resources. Durable products are mostly made out of non-regenerative materials that are designed to be reused with minimal energy and highest quality retention. They are shared, maintained, reused, remanufactured, and otherwise recycled to reduce extraction of finite materials. Both cycles optimise

resource yields to minimise leakage and negative externalities (Ellen MacArthur Foundation, 2015).

Circular Economy is a holistic concept that goes beyond waste management; it is a complete redesign of the economy that includes product and service design, material and energy inputs, production and supply chain processes, and consumption patterns (EC, 2014a). Numerous elements are required to achieve a circular economy (EC, 2014b), including:

- Increasing the length of time over which products deliver their service before coming to the end of their useful life (durability);
- Reducing the use of materials that are hazardous or difficult to recycle (substitution);
- Creating markets for recycled materials (standards, public procurement);
- Designing products that are easier to repair, upgrade, remanufacture or recycle (eco-design);
- Incentivising waste reduction and high-quality separation by consumers;
- Incentivising separation and collection systems that minimise the costs of recycling and reuse;
- Facilitating industrial clusters that exchange by-products to prevent them from becoming waste (industrial symbiosis);
- Encouraging wider consumer choice through renting or leasing instead of owning products (new business models).

Circular Economy policy process in the EU

While member states like Germany have traditionally been the innovators in Circular Economy measures, in recent years the initiative has been taken up at the European level. The Landfill Directive, Waste Electrical and Electronic Equipment Directive, Waste Framework Directive, Ecodesign Directive and others have driven

change towards more progressive resource policies in many EU member states. In 2011, The European Commission (EC) made 'Resource Efficient Europe' one of the seven Europe 2020 flagship initiatives and adopted a detailed roadmap (EC, 2011). In December 2015, the EC released a revised proposal for a Circular Economy package that emphasises the design and production side of the cycle. It includes new recycling targets of 65 percent of municipal waste and 75 percent of packaging waste by 2030, a binding landfill target of maximum 10 percent of all waste by 2030, measures to promote re-use and stimulate industrial symbiosis and economic incentives for producers to put greener products on the market (EC, 2015b). After negotiations with the European Parliament and the European Council, the final package is expected for 2016, which will then be implemented by all EU member states.

Circular Economy in Germany

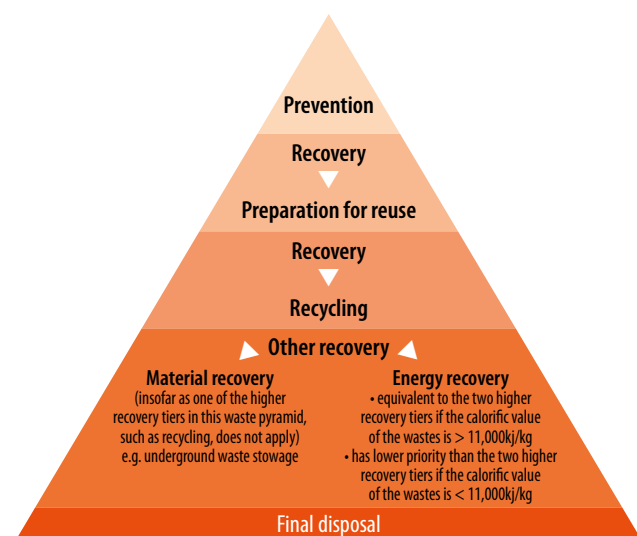
Since the 1990s, German waste legislation has incorporated Circular Economy principles by aiming to reduce and recycle waste. The Waste Management Act² – adopted in 1996 and fully revised in 2012 to implement new EU guidelines – is based on two core principles: producer responsibility, which means that those responsible for the generation of waste have

to bear the costs of its recycling and disposal, and a five-step waste hierarchy that gives waste avoidance the highest priority and the disposal the lowest [see Figure 2 below] (UBA, 2014).

To implement these principles, producer-financed separate collection systems for a wide range of waste materials have been introduced, including for paper, packaging, glass, electrical and electronic appliances, batteries and, increasingly, biowaste.³ For residual waste, many regions use pay-as-you-throw schemes that financially incentivise households to produce less waste (BMUB, 2012). The recycling rate of domestic waste grew from 50 percent in 2000 to 64 percent in 2013 and the amount of domestic waste has remained virtually constant over many years (UBA, 2015a, 2015b).



Figure 2: Waste hierarchy in Germany



Source: BMU, 2011

From 2002 on, the National Sustainable Development Strategy expanded the focus from waste to the decoupling of economic growth and material consumption. It sets out targets for sustainable resource use, and in particular a doubling of resource productivity by 2020 compared with 1994 (Federal Government, 2011). By 2014 a 48.8 percent increase had been achieved. Raw material consumption decreased, primarily due to lower use of construction raw materials, whereas use of fossil fuels and ores increased. This means that although the trend is going in the right direction, the rate of increase during the last five years would not be sufficient to achieve the 2020 target (Destatis, 2016).

The National Resource Efficiency Programme was adopted in 2012 in order to integrate efforts along the entire value chain (BMUB, 2015). It includes measures for providing to small and medium-sized enterprises with advice on how to increase efficiency, supporting environmental management systems, taking resource aspects into account when developing standardisation processes, placing greater focus on the use of resource-efficient products and services in public procurement, strengthening voluntary product labelling and certification schemes, enhancing closed cycle management and increasing the transfer of technologies and knowledge to developing countries and emerging economies (BMUB, 2015).

As a result of its policies, Germany has achieved increasing resource efficiency, high recycling rates, and stable waste levels and created more than 250,000 jobs in the waste industry (BMU, 2011). However, despite being a frontrunner in the field, much is left to do to achieve a true circular economy, as the vast

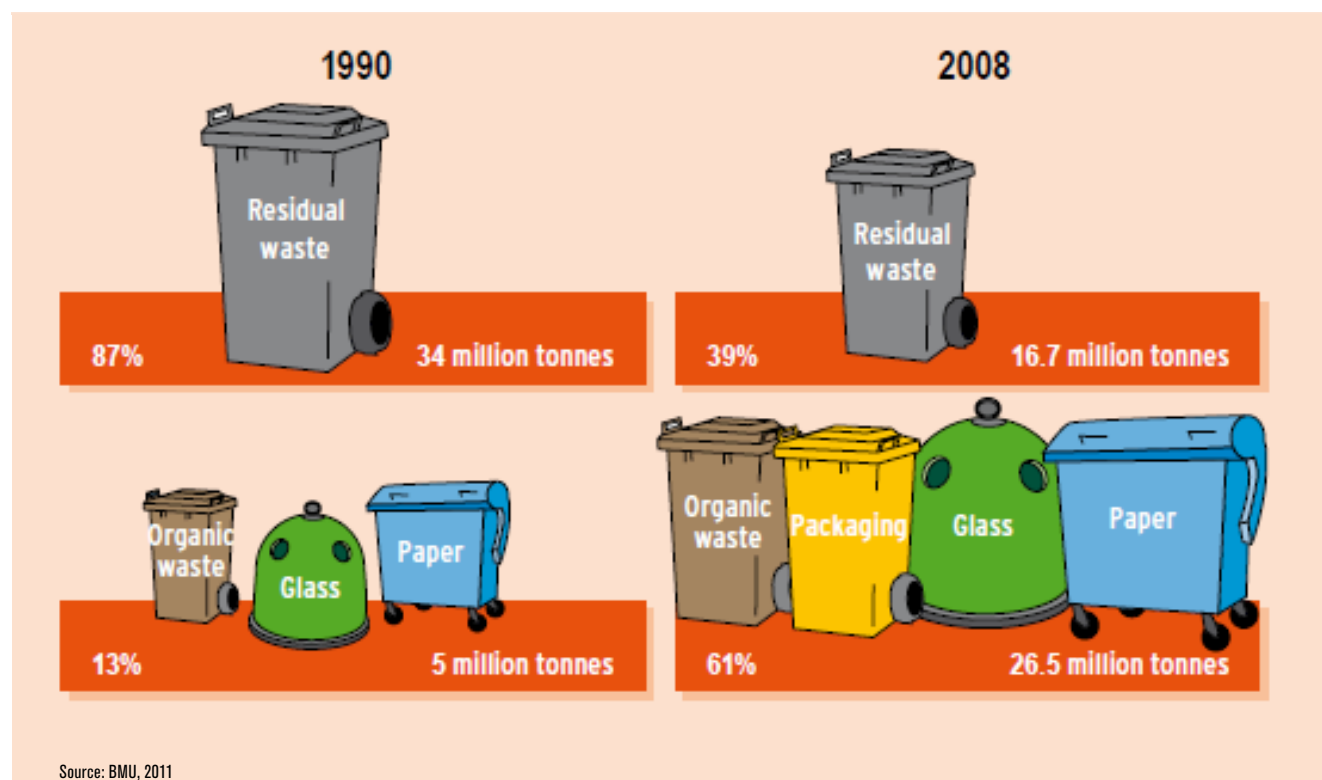
majority of raw materials used by German industry continues to be virgin materials (around 14 percent derives from recovered waste) (GTAI, 2013).

Way forward

The concept of Circular Economy has the potential to guide the transformation of the European economy, but it still needs to be implemented more comprehensively. Traditionally, there has been a strong focus on the waste management side of the cycle. However, as Circular Economy is about much more than recycling and waste management, more efforts have to be directed towards the top of the waste hierarchy – on waste prevention and re-use through design and technological innovation.

The Flanders Materials Programme described in the box on the opposite page is a good example of a systematic regional approach to promote the circular economy. Beyond that, an effective enabling framework

Figure 3: Development of recoverable materials and residual waste in Germany



Flanders' Materials Programme, Belgium

The Flanders' Materials Programme is a public-private partnership aimed at transitioning the region of Flanders to a circular economy by bringing together expertise from government, industry, research, and civil society (OVAM, 2016).

The Flanders' Materials programme extends the scope of action from waste management to the entire materials cycle, and has a strong focus on sustainable design, better collaboration of actors along the value chain, and models of shared use of products. It works with partners in the academic and private sectors and has promoted a number of measures including the development of sustainable design curricula, minimum standards for reusability and recyclability, a Sustainable Innovation System toolkit for SMEs, grants for businesses, a government procurement policy, and a platform that helps to identify matches among businesses where one company's residues can serve as another company's raw materials (OVAM, 2016).

that incorporates the true environmental, social and economic costs of resources also needs to include measures to support eco-design, product durability, environmental taxes, leasing and renting business models, and re-use and repair (FoEE, 2015).

The concept of a circular economy has traction outside of Europe, too. Japan, for example, started promoting a 'sound material-cycle society' in 1991. Facing natural resource constraints and limited landfill

space, the Japanese government has introduced a comprehensive system centred around consumer-friendly collection, extended producer responsibility, and recycling infrastructure owned by the manufacturers themselves. As a result of its policies, Japan has reduced waste generation, increased resource efficiency considerably,⁴ achieved very high recycling rates and greatly decreased landfilling, while providing 650,000 jobs in the reuse and recycling economy (MOE, 2010, 2014).

Plastic recycling, PET bottles and plastic rubbish are shredded and pressed, North Rhine-Westphalia, Germany.



NATURAL CAPITAL ACCOUNTING

Background and Context

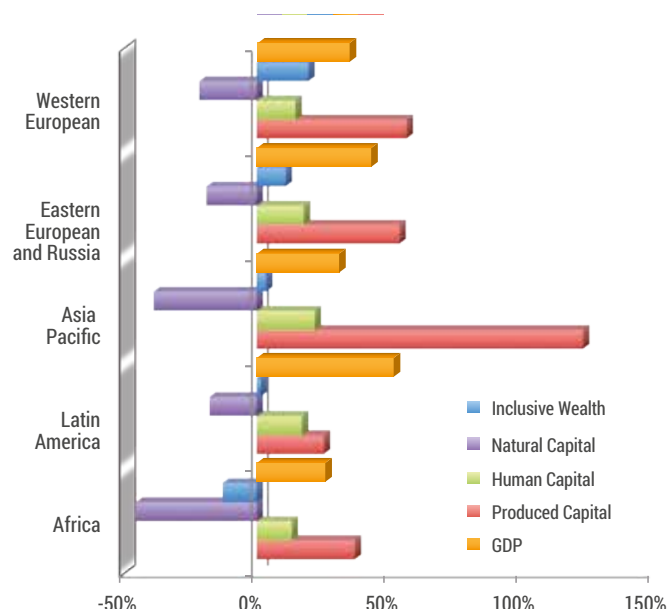
Natural Capital Accounting (NCA) is based on the understanding that nature provides essential goods and services to societies and their economies. The term natural capital is used to describe stocks of natural assets, which include geology, soil, air, water and all living things. It is from this natural capital that societies derive a wide range of benefits, including what are often called ecosystem services. Ecosystem services include not only material resources such as food, water and minerals, but also many less visible services such as the natural flood defences and climate regulation provided by forests, the carbon stored by peatlands, or the pollination of crops by insects (WFNC, 2015).⁵

Figure 4: Natural, Economic, and Social Capital



These critical ecosystem services, however, are often not accounted for in national planning and policymaking processes. The most common measure of economic success and socioeconomic well-being, GDP, is problematic in part because it fails to capture the total value of natural capital in an economy. Indeed, the 2014 Inclusive Wealth Report (IWR) argues that the current System of National Accounts does not reflect the factors that have the biggest impact on human development and well-being –

Figure 5: Percentage change in wealth 1990-2010 (per capita)



human capital and natural capital. The IWR also demonstrates that in many countries, when natural and human capital are taken into account, growth in inclusive wealth⁶ has fallen well short of GDP growth over recent decades [see figure 5], mainly due to depletion of natural capital (UNU-IHDP and UNEP, 2014).

The idea of including natural capital in economic accounts has been around for over 30 years, but has only started to be applied in recent years (WAVES, 2016a). It received considerable attention at the 1992 UN Conference on Environment and Development in Rio de Janeiro, but most follow-up efforts to measure the economic value of natural resources did not progress beyond the pilot stage (Obst & Vardon, 2014). Rio+20 gave new impetus to the idea, and in the same year the UN Statistical Commission adopted the System for Environmental and Economic Accounts (SEEA), which was seen as a major step towards broader implementation (Henninger et al., 2015). The SEEA is an internationally agreed-upon framework to account for material natural resources like minerals, timber and fisheries (UNSD, 2016).

Definition and Concept

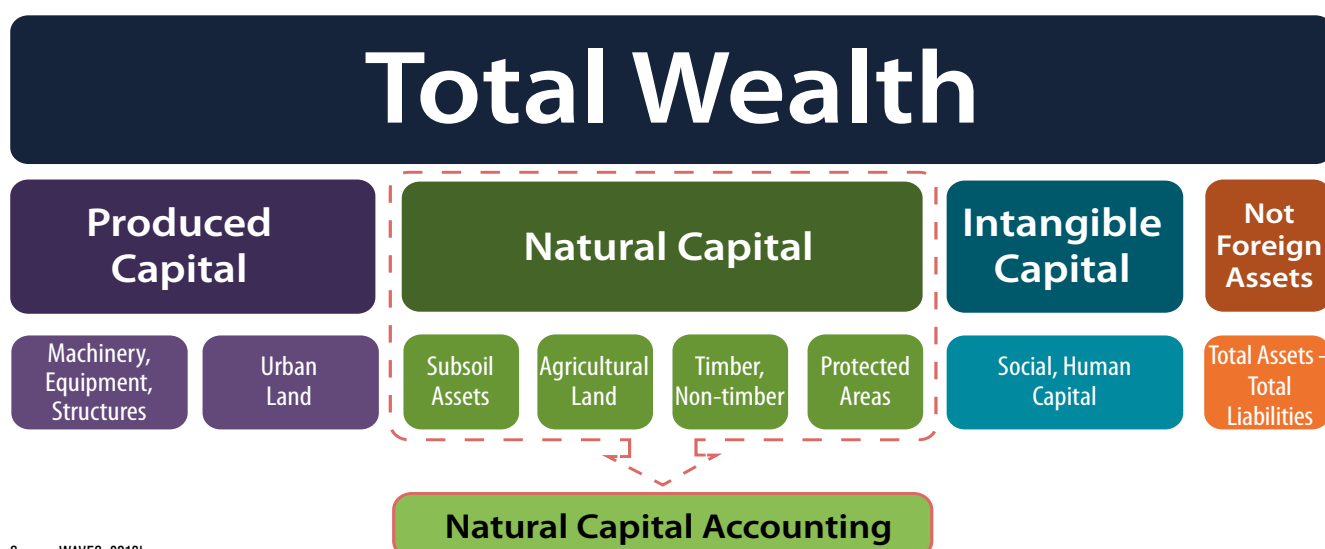
Natural Capital Accounting is the process of systematically calculating the stocks and flows of natural resources and measuring their contribution to a country's economy (Milligan et al., 2014). Accounting may be limited to material resources like water and timber, but can also include ecosystem services such as the flood protection provided by wetlands, which are not traded or marketed and so are harder to measure (WAVES, 2015a). It may be expressed in physical terms, such as km² of forest and m³ of groundwater, or convert those into monetary values using economic valuation methods. The accounts may present a dashboard of natural capital indicators next to each other, an aggregated single number of natural capital, or a 'green' GDP adjusted for changes in natural capital (Milligan et al., 2014). The common element of all of these methods is that they measure and communicate how natural resources contribute to the economy and how the economy in turn affects natural resources (WAVES, 2015a).

The goal of NCA is to provide statistics that promote longer-term thinking, support a sustainable management of natural resources, and raise the profile of the environment in macro-economic decision making. Natural capital is often neglected because standard economic measures such as GDP do not account for

its full economic benefits, and thus do not capture its value. This results in ecosystems being managed for short-term gain at the expense of longer-term societal benefits, such as when soils get over-used for short-term production increases that degrade soil fertility (Henninger et al., 2015). NCA helps to change this in a number of ways:

- It promotes longer-term thinking in economic decisions by drawing attention to unsustainable economic growth that occurs at the expense of natural assets, which form the basis of future economic performance. For example, NCA shows that while a country may increase GDP by decreasing its fish stocks through overfishing, it is actually depleting its wealth (WAVES, 2016b);
- It provides detailed statistics of the true economic costs and benefits of policies that help decision makers identify sustainable management strategies (Allebone-Webb et al., 2013). For example, NCA can support biodiversity-rich countries to design management strategies that maximize the economic contribution of biodiversity while balancing trade-offs between various sectors such as ecotourism, agriculture, subsistence livelihoods, and other ecosystem services like flood protection and groundwater recharge (WAVES, 2015a). This includes strategies like Payments for Ecosystem

Figure 6: Comprehensive wealth composition



Source: WAVES, 2016b

Services (PES) programmes, which NCA can inform by providing information about the wealth and monetary value that is generated by a country's ecosystems, as well as about the supply and demand of such resources across different sectors (WAVES, 2016e);

- ✎ By integrating natural capital into national economic accounts, NCA makes it more relevant to macro-economic planning. This gives environmental concerns a more equal footing when weighed against short-term economic benefits.

Partnership for Wealth Accounting and Valuation of Ecosystem Services

The global partnership for Wealth Accounting and Valuation of Ecosystem Services (WAVES) is a programme, led by the World Bank in partnership with the United Nations Development Program (UNDP), UNEP, national governments, NGOs and academics, whose goal is support partner countries in the implementation of NCA. Since WAVES was launched in 2010, Botswana, Colombia, Costa Rica, Guatemala, Indonesia, Madagascar, the Philippines, and Rwanda have started NCA programmes with high-level government backing and extensive technical support from WAVES (WAVES, 2016c).

All eight WAVES countries have established national steering committees, carried out stakeholder consultations, identified policy priorities and designed work plans that are now being implemented. The work plans include compiling accounts for natural resources included in the SEEA framework, such as timber, water, and minerals, but also experimental accounts for ecosystems like watersheds and mangroves (WAVES, 2015a).

WAVES in Botswana

NCA is an important tool in Botswana's efforts to diversify the economy because natural capital plays a key role in its rapid economic growth, which has been built largely on limited diamond resources. Botswana's

vast stock of natural resources – a combination of minerals, protected areas, crops, pastureland and non-timber forest products – accounts for one-third of the country's total wealth. They form the basis of many important economic activities such as mining, nature-based tourism and agriculture (WAVES, 2016d).

Botswana is a leader on NCA in Africa, and in the late 1990s it became one of the first countries to pilot national environmental accounting. Physical natural capital accounts were constructed for water and livestock, and physical as well as monetary accounts for minerals (Lange, 2004). Since then, Botswana has also promoted NCA at the international level. The government was one of the drivers behind the 2012 Gaborone Declaration for Sustainability in Africa – a concrete set of proposals that recognized the role of natural capital in development – and Botswana President Khama's COP 21 address reinforced high level political support for NCA (The Gaborone Declaration, 2012; Khama, 2015).

The WAVES partnership provides support to Botswana in advancing its previous work and building its own capacity to regularly construct natural capacity accounts. The project started with water accounts in 2012, which were identified as the highest priority due to the significant consequences of water scarcity. In the second phase of WAVES, which started in 2013, Botswana is updating and expanding the water and mineral accounts, developing energy accounts and a tourism component of land and ecosystem accounts, and working on macroeconomic indicators that include natural capital (WAVES, 2015b).

The Ministry of Finance and Development Planning (MFDP) is coordinating the NCA programme as the lead WAVES agency and chair of the multi-sectoral steering committee. It receives strategic guidance twice a year from the Botswana Economic Advisory Council, a ministerial-level group chaired by President Khama (WAVES, 2016d). While the MFDP has a coordinating and supporting role, natural capital accounts are created by the government agencies responsible for the respective sectors of the economy – such as the Ministry of Minerals, Energy and Water Resources. This system ensures the NCA work is driven by the needs of

the agencies that manage the resources, but compiled in a format that is consistent with the national economic accounts (Segomelo, 2015).

Water Accounts

Detailed water accounts have high priority for Botswana, because water has become a scarce resource. Botswana is a semi-arid country that has exploited most of its domestic water resources and increasingly relies on water from internationally shared rivers. With a growing economy and population, as well as increasing uncertainty over supply as a result of climate change, careful management of scarce water resources has become critical to Botswana's continued growth (WAVES, 2015b).

Botswana has developed water accounts that provide detailed information on water stocks and flows in the country. The most important findings include (WAVES, 2015b):

- Water supply: About half of the water used comes from groundwater;
- Water use: Self-providers – predominantly mines, livestock, and irrigated agriculture – use more than half of the total water used in the country;
- Use efficiency: Botswana's total water use increased by a third between 1991 and 2011, but per capita water use decreased by 10 percent in the same period, reflecting efficiency improvements;



The agriculture sector is the highest consumer of Botswana's scarce water resources

- **Water losses:** Water losses were over 25 percent in 2010–2012;
- **Use by sector:** The agriculture sector is the largest user of water, followed by households and the mining sector. The value added per unit of water use is very low from agriculture, compared with manufacturing and services, but agriculture supports a large share of informal employment, providing a critical social safety net.

The statistics derived from the water accounts help Botswana to identify less water-intensive sectors that can be targeted for growth and opportunities to increase water efficiency. For example, the accounts suggest that, from an integrated water management perspective, service sectors can be attractive for economic growth. Both the irrigation and mining sectors, however, need to use water more efficiently and maximize the use of treated wastewater. Another area of concern is high water losses in the distribution system, whose reduction to 15 percent could save about five percent of the country's total water use. To keep potable water affordable, the supply of untreated fresh water or treated wastewater to the construction,

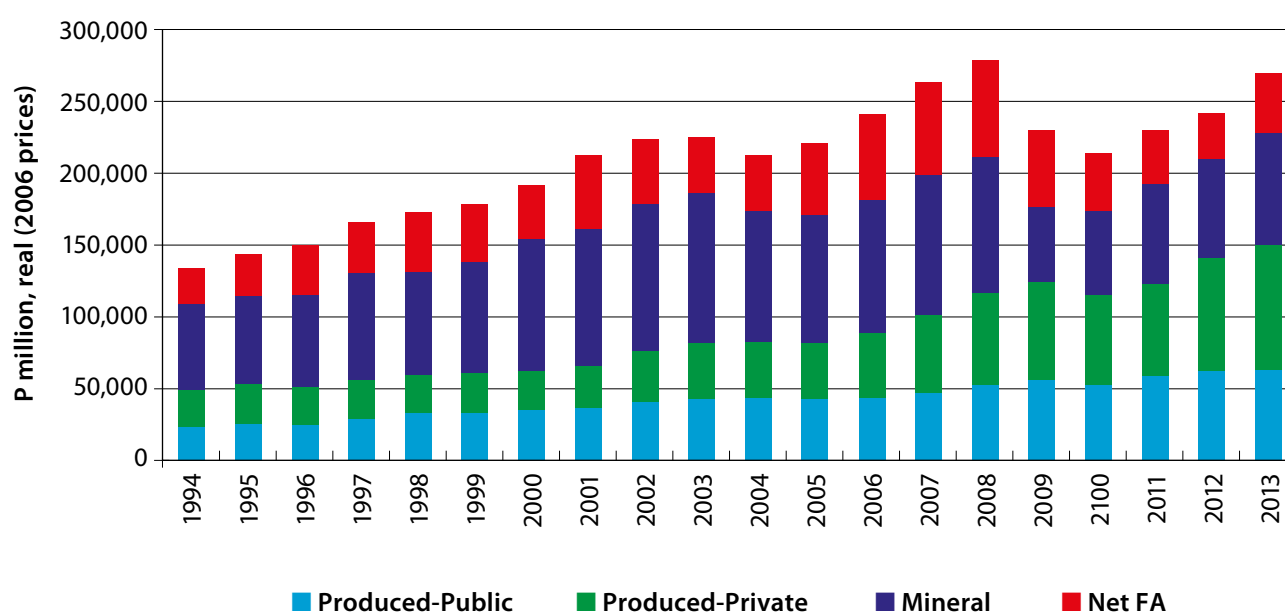
mining and agriculture sectors offers cost saving potentials (WAVES, 2014).

Mineral Accounts

Detailed mineral accounts are also particularly important given the sector's high contribution to the national economy and the expected decline in diamond production over the next 15 to 20 years. Diamond mining alone accounts for one third of GDP, a majority of export earnings, and half of government revenues. In order to diversify the mining industry, it will be essential that Botswana properly understand the potential benefits and impacts of other mining sectors, such as coal, copper, nickel, and gold mining (Allebone-Webb et al., 2013).

Botswana started NCA for minerals in the 1990s in order to monitor the extent to which mineral revenues were being invested into the government budget. As part of its work under WAVES, it has updated and extended stock and monetary accounts to cover diamonds, copper-nickel, coal, and soda ash. The most important findings include (WAVES, 2015b):

Figure 7: Components of National Wealth, 1994-2013 (real Pmn)



Source: WAVES, 2015b

Natural Capital Accounting in Rwanda

Natural capital plays an important role in Rwanda's economy. With about 80 percent of the country being rural, close to 90 percent of the population depends on natural resources for their livelihood. Land, water, minerals, forests and other natural resources contribute about seven percent of GDP and are increasingly strained by high population growth (WAVES, 2015d).

Rwanda joined WAVES as a core implementing country in late 2013. Based on the relevance for development goals, contributions to growth, and data availability, Rwanda chose to focus on land and water as priority accounts, with additional exploratory work toward minerals accounts. The implementation phase began in 2015 with a three part approach: technical work on land and water accounts, on-the-job training and capacity building workshops, and policy analysis (WAVES, 2015e).

NCA can help to sustainably manage trade-offs and potential constraints as Rwanda grows. Once the land accounts are finished, they will guide land allocation and agricultural policies to use the available land in the most productive way. Land accounts can help to compare economic values generated by competing land uses. The water accounts will help Rwanda to forecast and compare competing water uses in terms of contributions to employment and growth, which will inform infrastructure development and allow for better management of fresh water resources, which are under pressure from population growth and rapid development (WAVES, 2015e).

- Mineral resource rents are declining both in real terms and in relation to GDP;
- The vast majority of resource rents have been derived from diamond mining, with a small contribution from copper-nickel, while the combination of prices and costs of production resulted in negative rents for coal in recent years;
- Fiscal policy has managed to convert mineral revenues into other assets, resulting in an overall growth of national wealth.

Mineral accounts have been crucial for Botswana's economic growth in the past twenty years. They have facilitated the policy of reinvesting a large share of mineral rents into long-term national development, which has been one of the key factors for Botswana's increased wealth (Allebone-Webb et al., 2013). The updated and expanded mineral accounts developed under WAVES will help Botswana to continue the success. In combination with water accounts and energy accounts that are being developed, they can help determine the optimal energy mix for the future

and examine the role of Botswana's coal in a green economy, also taking into account coal mining's large water demand.

Way forward

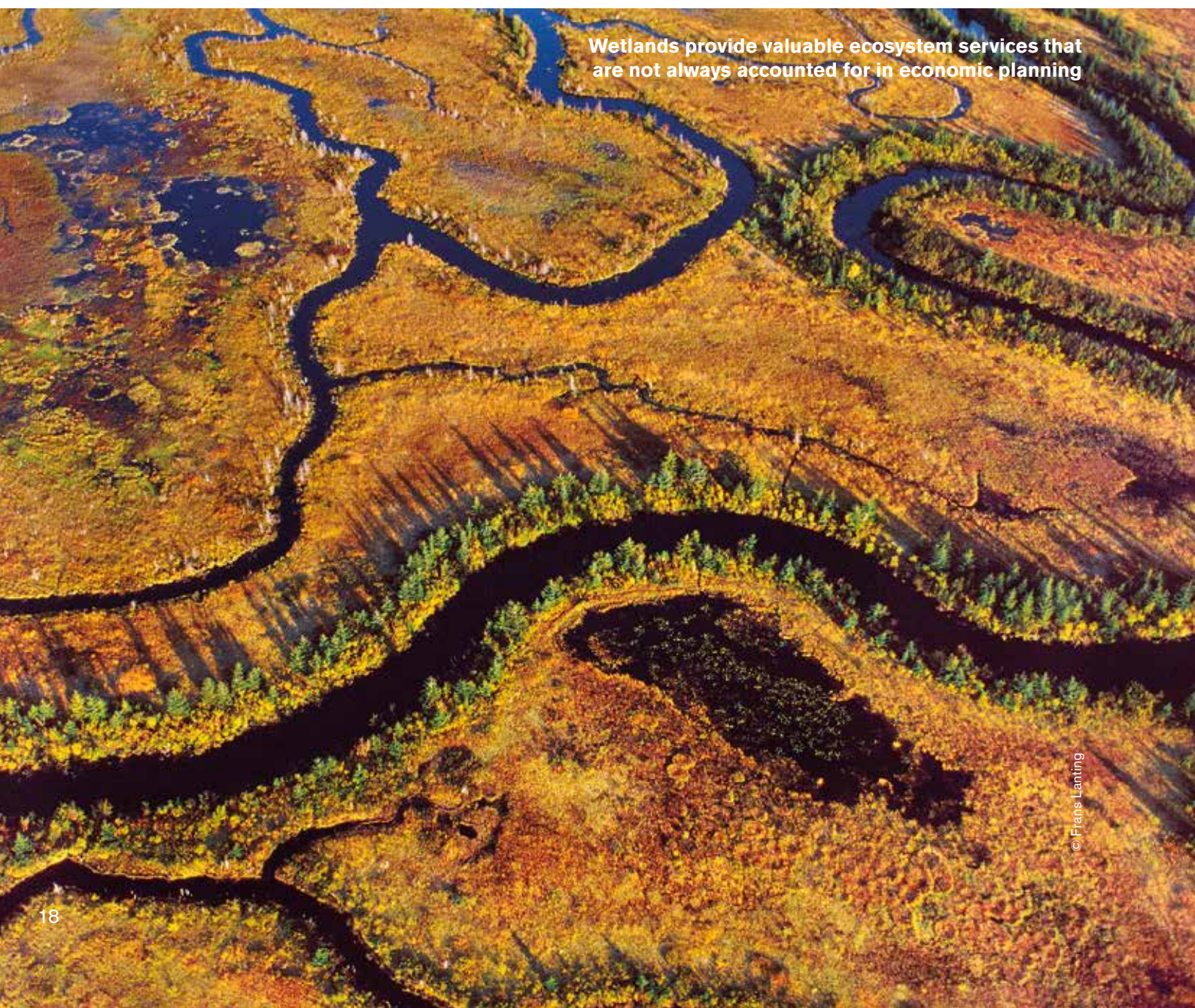
Botswana's experience with NCA shows that it is a useful tool for countries regardless of income level. NCA helps the government to better determine the true contribution of natural resources, optimize their use, and assess how they can be used to diversify the economy and reduce poverty. Such accounts are, of course, no guarantee for sustainable development, but for decision makers they can be a valuable source of important data.

Botswana's decentralised model of institutionalisation provides useful lessons for other countries that want to implement NCA. Three elements are crucial: high-level political support; coordination of the NCA programme by a ministry that has convening power and possesses the mandate to coordinate national development planning and budgeting; and sectoral government agencies that take the responsibility of conducting

regular NCA activities, with expert support where required. In addition, the case of Botswana suggests that it can be a good strategy to start with the sub-accounts that are most policy relevant and technically feasible for NCA in order to achieve a relatively quick impact on development policy (Segomelo, 2015).

There has been a growing global commitment to NCA in recent years. In 2012, the World Bank found that at least 24 countries regularly compile at least one type of natural capital account – a number that is likely to be even higher today (Patil, 2012). In addition, 70 countries have supported a communiqué that affirms their commitment to advance natural capital accounting

in their countries since Rio+20 (WAVES, 2015a). There is involvement from the financial sector as well – the CEOs of over 40 financial institutions around the world have signed the Natural Capital Declaration, in which they commit to integrate natural capital considerations into financial products and services (Mulder et al., 2013). The trend towards NCA is also promoted by global initiatives like The Economics of Ecosystems and Biodiversity (TEEB), which supports Bhutan, Chile, Indonesia, Mauritius, Mexico, South Africa, Vietnam, and other countries to advance ecosystem accounting (TEEB, 2016). Such initiatives will help countries to undertake informed policy planning that is based on more complete measures of total inclusive wealth.



Wetlands provide valuable ecosystem services that are not always accounted for in economic planning

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PAYMENT FOR ECOSYSTEM SERVICES

Background and Context

Like NCA, Payments for Ecosystem Services (PES) is based on the concept that the benefits that people obtain from nature should be factored into land use decisions (MA, 2005). Its origins date back to the early 1980s, when beneficial ecosystem functions started to be framed as services in an effort to increase public interest in biodiversity conservation. The concept was mainstreamed in the academic literature during the 1990s, with a growing focus on methods to estimate the economic value of ecosystem services. The Millennium Ecosystem Assessment in 2003 popularized the concept and put it firmly on the environmental policy agenda (Gómez-Baggethun et al., 2010).

Payments for Ecosystem Services itself is a relatively new concept that has been attracting interest as part of a general trend towards the use of market-based instruments in environmental conservation efforts. Similar to environmental subsidies and taxes, it aims to create economic incentives that encourage the conservation of natural resources. While PES-like schemes for agricultural practices that protect water, soil and biodiversity have existed in Europe and the United States for several decades, their formal framing as PES and their widespread promotion as an integrated conservation tool developed mainly in the last twenty years (Gómez-Baggethun et al., 2010).

Definition and Concept

Payments for ecosystem services are payments that are made to farmers or landowners in exchange for managing their land in such a way that it continues to provide ecological services. Most PES schemes aim to protect watersheds, conserve biodiversity or capture carbon dioxide by disincentivizing deforestation and incentivising reforestation and the use of certain agricultural techniques, among other measures. In some cases, the beneficiaries of the ecosystem services make the payments, such as downstream

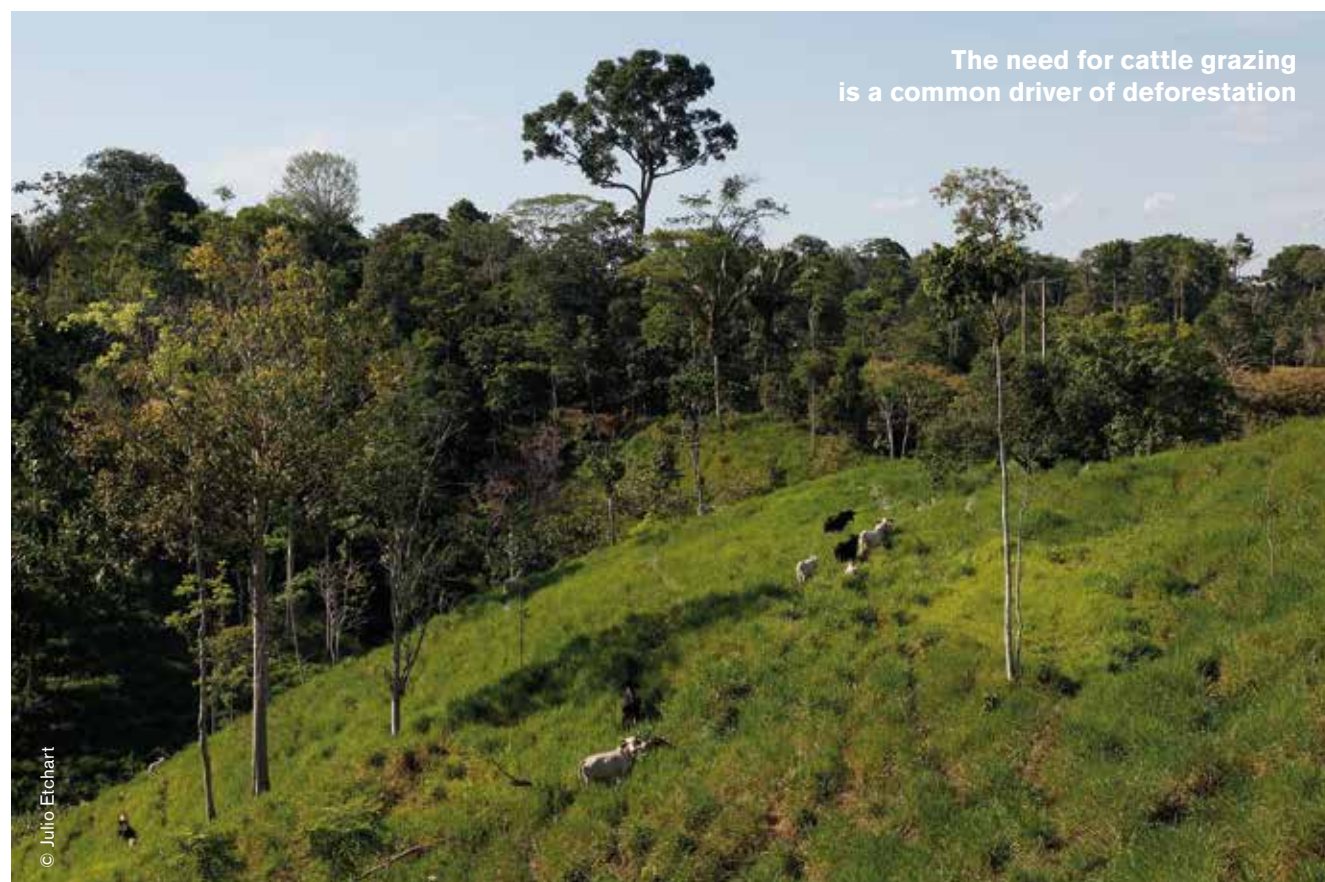
water users and hydropower companies, for example. However, in the majority of cases, national or local governments pay on behalf of their citizens, who are indirect beneficiaries (IIED, 2016).

The rationale of PES is that despite their vital importance, many ecosystem services are not captured by markets and thus are regarded as free by the beneficiaries (so-called positive externalities). As a result, they tend to be both undervalued and under-conserved. In the case of forests, for example, deforestation usually gives landowners higher economic returns than natural forest management, because they get no revenue from their forests' contribution to clean air and clean water (FONAFIFO, 2001). Payments for Ecosystem Services seeks to improve this by paying for these positive externalities through the creation of accurate incentives that reflect the real benefits of ecosystems.

Payments for Ecosystem Services in Costa Rica

Costa Rica was one of the first countries in the world to initiate a nationwide PES programme. During the 1970s and 1980s, it experienced extremely high rates of deforestation, most of which occurred on privately owned lands that were converted to pasture and agriculture. The trend was driven by cheap credit for cattle, land titling laws that rewarded deforestation, and rapid expansion of the road system (Malavasi & Kellenberg, 2003).

In response, the government began to assemble a system of national parks and private reserves, which now cover over 25 percent of the country (Sanchez-Azofeifa et al., 2003). At the same time, the government removed the aforementioned counterproductive policies and began to utilize forestry incentives – mainly tax credits to offset the cost of reforestation activities – to improve land use choices on private property. These incentives gradually evolved



into Costa Rica's Pago por Servicios Ambientales (PSA) programme, which was authorized in Forest Law 7575 in 1996 (Daniels et al., 2010).

Implementation

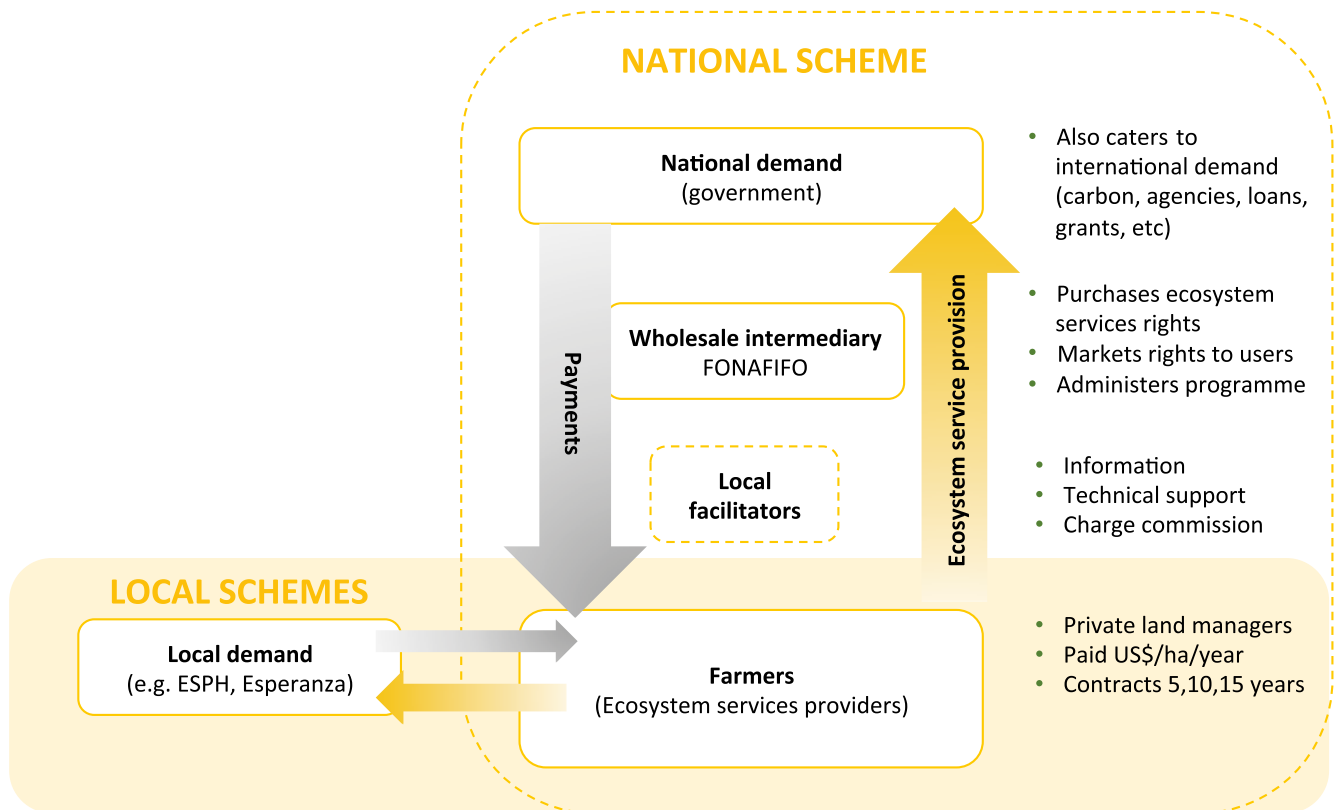
PSA provides compensation for four types of ecosystem services: biodiversity, watershed function, scenic beauty, and greenhouse gas mitigation through carbon storage and sequestration. In order to be eligible for compensation, landholders must engage in one of four types of activities: reforestation through plantations, protection of existing forests, natural forest regeneration, or agroforestry systems (Daniels et al., 2010).

The programme is administered by the Fondo Nacional de Financiamiento Forestal (FONAFIFO), a semi-autonomous public institution that issues site-specific contracts with landowners. All participants have to

present a certified sustainable forest management plan and are obliged to carry out the agreed activities throughout the life of the contract. Management plans include biophysical information on the land, monitoring schedules, and actions for preventing forest fires, illegal hunting, and illegal harvesting (Malavasi & Kellenberg, 2003).

Payments vary according to land use, ranging from around US\$40 to 60/ha per year for regeneration, protection and management up to around US\$200/ha per year for reforestation activities. Within each of these categories, payments also vary depending on economic and environmental factors, such as the extent to which a forest is a biological corridor or home to native species, and if it is in an area that protects water sources (Porrás et al., 2012). Since its creation, the programme has signed nearly 15,000 contracts, worked in over one million hectares of forests,⁷ and distributed over US\$300 million (FONAFIFO, 2015a; FONAFIFO 2015b).

Figure 8: How PES operates in Costa Rica



Source: Porras et al., 2012

Costa Rica funds the programme primarily through a gasoline tax, 3.5 percent of which is assigned to PSA. In addition, FONAFIFO has received donations from the Global Environmental Facility, the World Bank, and the German KfW Development Bank; it created income through agreements with hydro-electric power companies and other water buyers; and it sold 'carbon bonds' on the international market (FONAFIFO 2015b).

Impact on forest cover

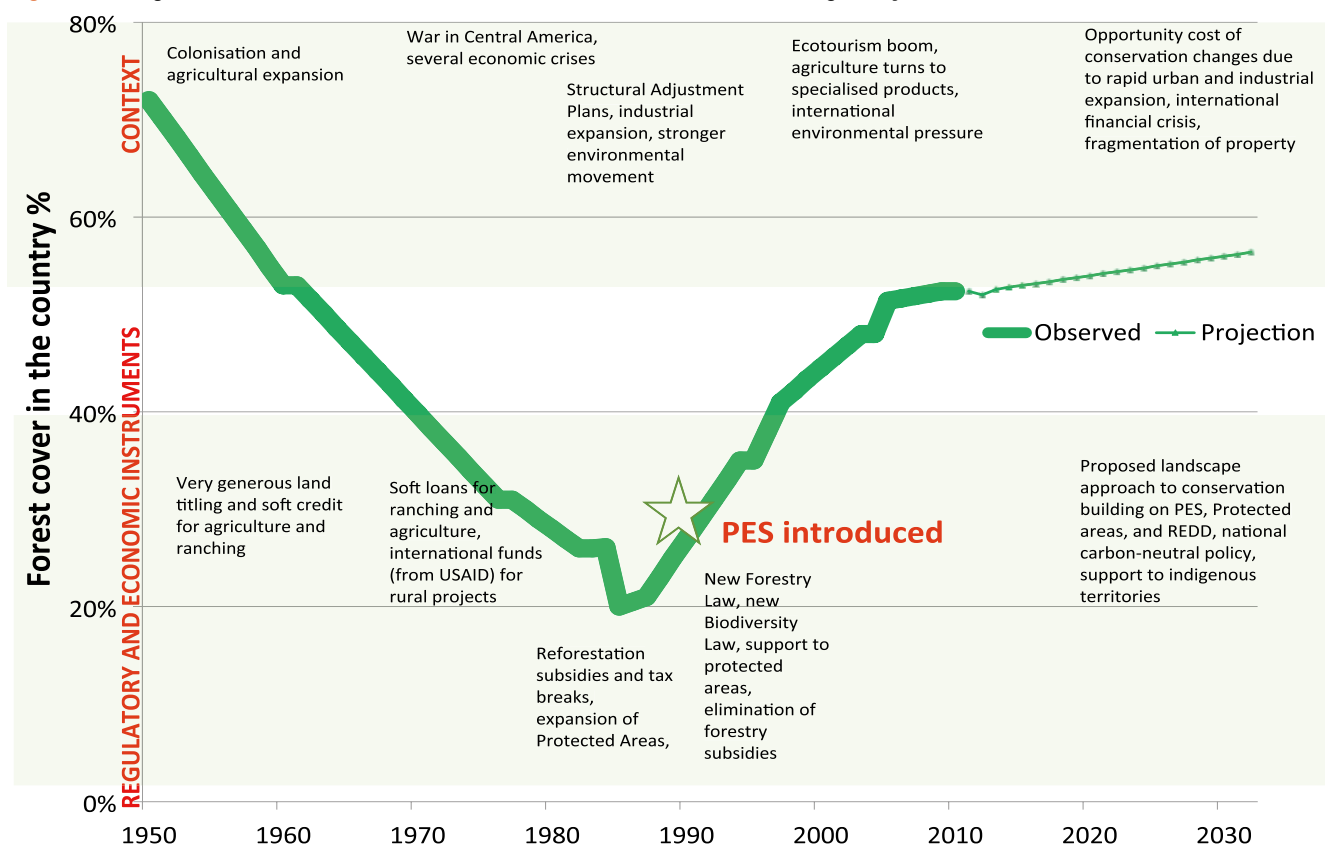
The PSA programme has contributed to stopping and reversing deforestation in Costa Rica. After experiencing one of the highest rates of deforestation in the world during the 1970s and 1980s, by 1987 only 21 percent of the country retained forest cover. From that point on, forests began to recover and reforestation and afforestation resulted in a steady increase in forest area [see figure 9]. Today, forest cover has returned to

over 50 percent of Costa Rica's land area and slowly continues to grow (FONAFIFO & MINAET, 2012).

This success was achieved by a diverse mix of economic and regulatory policies, which included the PSA programme. Key components have been a ban on converting forests on private lands to other uses (Article 19, Ley Forestal 7575), an extensive system of protected areas, and the ban on harvesting forests within national reserves and on state grounds (Article 1, Ley Forestal 7575). PSA contributed to the success in many ways, including by making the ban on forest clearance more acceptable, increasing



Figure 9: Changes in forest cover in Costa Rica in relation to context, economic and regulatory instruments



Source: Porras et al., 2012

public support for landowners to evict landless farmers that used to occupy and cultivate forested land, and by compensating landowners who had land 'expropriated' within National parks until the State can buy their land, which provided additional legitimacy to Costa Rica's protected areas (Barton, 2013).⁸

Social and economic benefits

The benefits of Costa Rica's PSA programme extend beyond conservation. Although poverty reduction is not its main objective, the spatial correlation between low-income communities and areas that supply ecosystem services creates opportunities for PSA to be utilized as a pro-poor instrument. However, despite this, payments have tended to go to relatively large farms and private companies that have the time and capacity to apply to the programme, and more efforts are needed to ensure that the potential poverty reduction benefits of the PSA programme are fully realized (Porras, 2010).

In order to ensure that PSA reaches indigent landowners, Costa Rica has introduced national level priority-setting that favours applications from indigenous territories, areas with low social development scores, and from properties under 50 hectares in size (Barton, 2013). To have genuine social and economic benefits for the poor, the programme should continue to facilitate the participation of the most vulnerable by keeping transaction costs low, providing group technical support contracts, and possibly through regressive payments with lower payment rates for larger property sizes (Porras et al., 2012).

Way forward

The PSA programme in Costa Rica has helped to reverse deforestation and has the potential to help reduce poverty by supporting indigent landowners. While it is still evolving and being improved, the programme represents a significant exercise in learning by doing and offers

Chimpanzee Conservation Corridor in Uganda

The Chimpanzee Conservation Corridor was a pilot PES project to protect chimpanzees in Western Uganda, which are under threat as their habitat is lost to agriculture and human settlements. Between 2010 and 2014, the Chimpanzee Sanctuary and Wildlife Conservation Trust and the International Institute for Environment and Development, in cooperation with Uganda's National Environment Management Authority, set up a payment scheme with funding from UNEP, the Global Environment Facility and the UK's Darwin Initiative. The project focused on an area of private and communal land that forms an important corridor between two forest reserves (Cross & McGhee, 2015).

Residents of all 70 participating villages received capacity building and training on PES, forest management and sustainable forest-use options before the start of the scheme. Then, local landholders could choose whether they want to take part in the programme. They contractually agreed to conserve or restore forest area that serves as chimpanzee habitat in order to be eligible for compensation. After extensive consultation with the local communities, including focus group discussions and a choice experiment, the project partners designed a scheme that pays US\$35 ha/year and provides seedlings for reforestation and enrichment planting (Hatanga, 2014).

Three hundred and forty two landholders with close to 1,500 ha committed to the project scheme – a participation rate of about 53% of the forest owners in the selected villages. Over half of them have less than 1.5 ha of forest, which makes the PES scheme a social success as it has been able to attract the participation of relatively poor landholders. Monitoring results indicate a fairly high compliance rate of 84 percent, suggesting that the participants found the payments beneficial to their livelihood. The Chimpanzee Conservation Corridor project demonstrated that it is possible to increase conservation efforts on private land, while at the same time addressing deforestation threats in areas of declining chimpanzee habitats (Grieg-Gran et al., 2013).

valuable insights for any country attempting to develop its own PES programme. One of the keys to success was the diverse mix of policies and an iterative process of adapting PSA characteristics to fit the international forest conservation agenda, as well as the realities of the local landscape, culture, and livelihoods. The Costa Rican programme has benefitted from a transparent design that is grounded on a solid legal and financial basis with clear rules and a capacity to evolve based on feedback (Barton, 2013; Porras et al., 2013).

Partly inspired by Costa Rica's example, PES has become an increasingly popular conservation and resource management tool in developing countries. However, context-specific design and implementation are crucial for PES schemes to successfully overcome common challenges such as the insecure land tenure of

many poor people and complex and often bureaucratic project procedures. Notable programmes have been developed in Bolivia, Brazil, Ecuador, Indonesia, Uganda, and Vietnam, amongst others (IIED, 2016).

The international community has embraced PES, most prominently with the 'Reducing Emissions from Deforestation and Forest Degradation' (REDD+) mechanism set up by the international climate negotiations. REDD+ can be seen as an international PES scheme that compensates developing countries for forest management efforts that reduce greenhouse gas emissions (UNFCCC, 2016). The UN-REDD programme supports REDD+ implementation in its partner countries and promotes the involvement of all stakeholders, including indigenous peoples and other forest-dependent communities (UN-REDD, 2016).

GROSS NATIONAL HAPPINESS

Background and Context

The concept of Gross National Happiness (GNH) originated in, and is most closely associated with, the Kingdom of Bhutan, a small mountainous country in the eastern Himalayas between India and China. For centuries, Bhutan was little known to the outside world. In the 1970s, King Jigme Singye Wangchuck started to develop and modernize the country (Brooks, 2013).

In 1972, the King introduced the idea of GNH as a way to balance Bhutan's gradual shift to modernity with an effort to preserve its traditions. Stating that "*Gross National Happiness is more important than Gross Domestic Product*", the King believed GDP to be an incomplete metric that placed too much emphasis on material growth over spiritual and physical well-being, biodiversity, poverty eradication and sustainability (CBS, 2015). Aware of the experiences of other developing countries, he believed that modernity had to be effectively managed in order to prevent an erosion of Bhutan's culture and its Buddhist spiritual integrity. Television and the internet, for example, only became

widely available in Bhutan in the early 2000s, external values and practices have had limited influence on Bhutan's culture, and environmental impacts have remained low (Brooks, 2013).

Definition and Concept

Gross National Happiness is a holistic concept that defines itself as an alternative to ideas that focus purely on economic development, but that also differs from Western conceptions of hedonistic happiness. It gives equal importance to non-economic aspects of well-being because it is based on the premise that amassing material wealth does not necessarily lead to happiness. Instead of the exclusive focus on economic growth that exists in many conventional development models, GNH aims for an economy that serves the spiritual, physical, social and environmental health of its citizens and natural environment (Ura et al., 2012a). Because it focuses on equitable and environmentally sustainable development, GNH is an inherently collective concept that differs from individualistic happiness in the Western sense.



Figure 10: The nine domains and 33 indicators of the GNH index



For a long time the idea of GNH was not institutionalized and depended on the intuitive internalization of its values, until the concept was formalized with the adoption of four key pillars in the 1990s: good governance, equitable socio-economic development, cultural preservation, and environmental conservation. These pillars have been further classified into nine domains that represent each of the components of well-being for Bhutanese people: psychological well-being, health, education, time use, cultural diversity and resilience, good governance, community vitality, ecological diversity and resilience, and living standards [see figure 10] (Ura et al., 2012b).

Legal foundations

During the 2000s, GNH developed from a philosophical vision into a formal national objective that is written into Bhutan's constitution and shapes

government policies (CBS, 2015). The constitution, which was adopted in 2008, includes GNH in Article 9: *"The State shall strive to promote those conditions that will enable the pursuit of GNH"* and Article 11.2: *"The end result of all development activities should be the attainment of GNH"*. In addition, in Article 5.2, the constitution directly includes environmental protection as a government objective, including the concrete target that *"a minimum of 60 percent of Bhutan's total land shall be maintained under forest cover for all time"* in order to prevent ecosystem degradation (Constitution of the Kingdom of Bhutan, 2008).

Today, GNH is an institutionalized development framework that informs Bhutan's policies by means of mandatory GNH screenings. All proposed policies and projects have to pass a screening that systematically assesses their impact on GNH, similar in nature to the Environmental Impact Assessment required in

many other countries.⁹ The screening tools use a wide range of categories based on all nine GNH domains [see figure 11], and only policies that have passed the screening and been endorsed by the GNH Commission¹⁰ can be submitted to the Cabinet for approval (Royal Government of Bhutan, 2015).

Figure 11: The Nine Domains of GNH (Ura et al., 2012b)

Domain	Indicators
1 Psychological well-being	4
2 Health	4
3 Time use	2
4 Education	4
5 Cultural diversity and resilience	4
6 Good governance	4
7 Community vitality	4
8 Ecological diversity and resilience	4
9 Living standards	3
Total	33

GNH policies

The Economic Development Policy of Bhutan, launched in 2010, has been formulated “to promote a green



and self-reliant economy sustained by an IT enabled knowledge society guided by the philosophy of GNH” (Royal Government of Bhutan, 2010). Its key strategies include: diversifying the economic base with minimal ecological footprint; harnessing and adding value to natural resources in a sustainable manner; promoting Bhutan as an organic brand; and reducing dependency on fossil fuel, particularly in the transportation sector (Royal Government of Bhutan, 2012).

Gross National Happiness in practice

Greener Way is Bhutan’s first waste management and recycling firm, established in 2010. Their business is to monitor the landfill site of Thimphu and recover recyclable waste materials, which they also buy at their recycling centre. In addition, Greener Way’s operations include the collection and disposal of municipal solid waste in parts of Thimphu (Greener Way, 2016).

Happy Green Coop, established in 2009, is a cooperative that is committed to serve the needs of farmers and the youth. To address rural-urban migration, their goal is to create good sustainable employment for young farmers by promoting organic agriculture. Their main project is the production of potato chips (Happy Snacks) in cooperation with local farmers (Happy Farms) (Happy Green Coop, 2015).

Educating for Gross National Happiness is a government programme started in 2009 to introduce the GNH principles into the school curriculum. Alongside mathematics and science, children are taught life skills such as empathy and self-awareness and many schools have incorporated meditation or mindfulness practices into the school day. The initiative also has a strong environmental component. Schools teach basic agricultural techniques and environmental protection, and a new national waste management programme ensures that all material used at schools is recycled (Adler, 2015; Kelly, 2012; Riley, 2011).

The principles of GNH are also manifested in the largest sectors of Bhutan's economy (hydropower, agriculture, and tourism). The majority of Bhutan's hydropower is generated through run-of-the-river production, which has less environmental and social impacts than conventional dams, and the Bhutanese government's new national organics policy aims for 100 percent organic agriculture. In terms of tourism, Bhutan has a high value, low impact approach. In order to minimize environmental and socio-cultural impacts,

tourist numbers are kept low by maintaining high tourist tariffs that generate revenue (Brooks, 2013).

Gross National Happiness Index

Progress is monitored with an index that tracks how GNH is evolving across Bhutan as a whole over time, as well as for different demographic groups, regions and aspects of GNH. The GNH index provides a

Figure 12: The indicators of the GNH index and their respective weights

Domain	Indicators	Weight
Psychological well-being	Life satisfaction	1/3
	Positive emotion	1/6
	Negative emotion	1/6
	Spirituality	1/3
Health	Self-reported health status	1/10
	Number of healthy days	3/10
	Disability	3/10
	Mental Health	3/10
Time use	Work	1/2
	Sleep	1/2
Education	Literacy	3/10
	Schooling	3/10
	Knowledge	1/5
	Value	1/5
Cultural diversity and resilience	<i>Zorig chusum</i> skills (artisan skills)	3/10
	Cultural participation	3/10
	Speak native language	1/5
	<i>Driglam namzha</i> (code of conduct)	1/5
Good governance	Political participation	2/5
	Services	2/5
	Governance performance	1/10
	Fundamental rights	1/10
Community vitality	Donation (time and money)	3/10
	Safety	3/10
	Community relationship	1/5
	Family	1/5
Ecological diversity and resilience	Wildlife damage	2/5
	Urban issues	2/5
	Responsibility to government	1/10
	Ecological issues	1/10
Living standard	Income	1/3
	Assets	1/3
	Housing	1/3

Source: CBS, 2015

comprehensive overview that enables the government to identify trends and adjust policies accordingly. The index consists of 33 cluster indicators with 124 variables under the nine domains of GNH [see figure 12] (Ura et al., 2012b).

Two nationwide GNH surveys based on the index have been conducted up to now, in 2010 and 2015. Both times, a statistically representative number of more than 7000 Bhutanese from all districts was interviewed with an extensive GNH questionnaire.¹¹ A comparison of 2010 and 2015 shows a slight increase of overall GNH, but a very mixed picture among the different domains [see figure 14]. The combined group of deeply and extensively happy people grew from 40.9 to 43.4 percent and the share of unhappy people sank from 10.4 to 8.8 percent in 2015 [see figure 13]. These improvements in GNH were driven by rising living standards, improved access to public services like health care and electricity, and better health. At the same time, happiness decreased in social domains such as psychological well-being, community vitality, and cultural diversity, as people reported, for example, greater anger, fear and jealousy, donated less money, and devoted less time to volunteer work. Across groups, GNH improvements seem to be equalising, because they were stronger than average for disadvantaged groups (women, elders, uneducated, and farmers). On a regional level however, existing inequalities increased, as GNH growth in urban areas outstripped rural improvements (CBS, 2015).

Figure 13: Results of the 2015 GNH survey

2015 GNH	Score Range	Percentage of people who are
Deeply Happy	77%-100%	8.4%
Extensively Happy	66%-76%	35.0%
Narrowly Happy	50%-65%	47.9%
Unhappy	0%-49%	8.8%

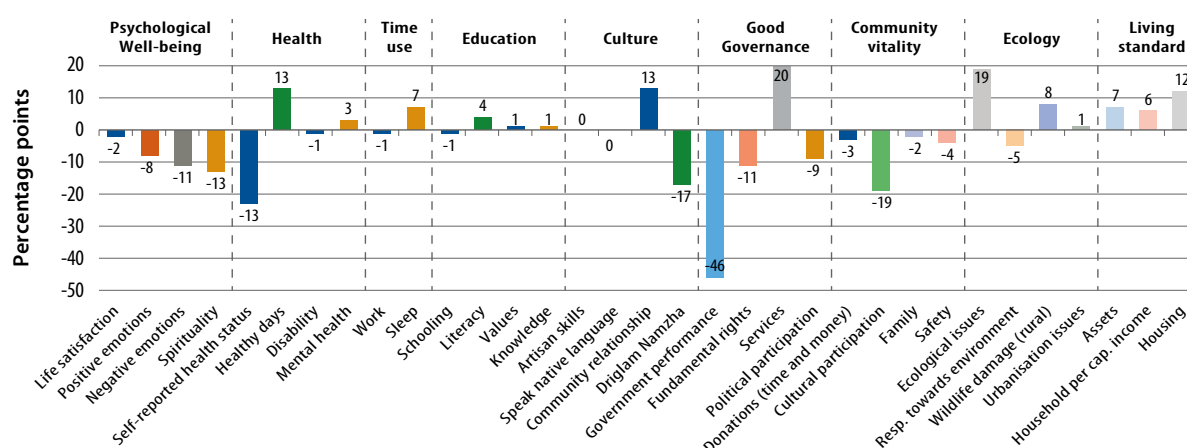
Source: CBS, 2015

Social progress

Although Bhutan still faces some socio-economic and development challenges, it has made impressive progress in recent years. In the last 20 years, Bhutan has doubled life expectancy and enrolled almost 100 percent of its children in primary school (Kelly, 2012). In the last 10 years, it has almost halved maternal mortality rate and more than halved poverty down to 12 percent in 2012 – a unique poverty reduction record in South Asia (World Bank, 2014).

As a result, Bhutan achieved many of the Millennium Development Goals ahead of schedule, while at the same time following a cautious approach that puts preservation of traditional culture and environment ahead of economic growth. In parallel, Bhutan peacefully transitioned from an absolute to a democratic constitutional monarchy, enacted a constitution, and decentralised power in the 2000s (UNDP, 2012).

Figure 14: Change in percentage points of people enjoying sufficiency, 2010-2015



Source: CBS, 2015

Way forward

Gross National Happiness has the potential to guide Bhutan on its sustainable development path, but it will need to address the challenges that modernisation and globalisation bring with them. Gross National Happiness uniquely integrates multi-dimensional well-being into policy making and has enabled cultural and environmental aspects to be discussed on equal terms with economic considerations. However, Bhutan has begun to experience shifting perspectives on tradition, increased materialism and high youth unemployment in the cities as a result of rapid economic development and urbanisation (Zhong, 2015). Bhutan's economy is centred on tourism and hydroelectric exports to India, which could present a serious challenge to its environmental commitment, because it is unclear to what extent it can develop hydropower without causing significant harm to river ecosystems (Harris, 2013). To fulfil its potential, GNH-led development will have to find a way to address these socio-economic challenges while maintaining its underlying social and cultural values in a rapidly changing Bhutan.

“Today GNH has come to mean so many things to so many people, but to me it signifies simply – development with values. Thus for my nation today GNH is the bridge between the fundamental values of kindness, equality and humanity and the necessary pursuit of economic growth.”

King Jigme Khesar Namgyel Wangchuck

Although Bhutan is a very distinct case, the concept of GNH has inspired a growing number of countries around the globe. Particularly since the financial crisis of 2008, GDP has become increasingly criticised as an insufficient metric of progress. Today, government initiatives to guide policy with more holistic measures of well-being exist in Canada, China, France, Germany, and the United Kingdom, amongst others, which demonstrates that the idea of GNH is relevant in wide variety of national contexts (Brooks, 2013).

At the global level, in 2011 the UN adopted a resolution, ‘Happiness: towards a holistic approach to

development’ (UNGA, 2011). Since then, three World Happiness Reports have summarised the wide range of internationally comparable data on subjective well-being. The latest report in 2015 concluded “*happiness is increasingly considered a proper measure of social progress and a goal of public policy*” (Helliwell et al., 2015). The UN Sustainable Development Goals adopted in September 2015 take up these trends by including 17 goals and 169 targets that balance a wide range of economic, social and environmental dimensions. This holistic measure of global well-being marks a new stage in the actions of the world community to achieve a more inclusive and sustainable pattern of global development.

“GNP has long been the yardstick by which economies and politicians have been measured. Yet it fails to take into account the social and environmental costs of so-called progress. We need a new economic paradigm that recognizes the parity between the three pillars of sustainable development. Social, economic and environmental well-being are indivisible.”

UN Secretary-General Ban Ki-moon

DISCUSSION

This paper, building on the 2013 publication of *Multiple Pathways: Initial Findings from the Global South*, brings additional evidence and experience from around the world to bear on the common challenges of putting the concept of sustainable development into practice.

Each of the four approaches outlined in this report has a specific set of values and objectives, and utilizes different tools to work towards environmental sustainability and poverty eradication. Like the four approaches highlighted in UNEP's previous *Multiple Pathways* publication, each of the cases studied in this report is a product of the unique national context in which it has been developed and applied.

However, taken together, the eight approaches covered in the two reports demonstrate that the rich and diverse tapestry of sustainable development concepts have one defining characteristic in common: they all share a view of sustainable development as much more than simply economic growth in the traditional sense, and they all place paramount importance on increased well-being, social equity, sustainable consumption, and the health of the environment.

Two of the four approaches covered in this report – GNH and NCA – are explicit in their emphasis on the identification and quantification of values, both economic and otherwise, that are not always captured in economic decision-making. They involve the development of specific tools that can be used to capture such values in order to inform decision making, with NCA addressing the value of nature and GNH covering a broader range of values (including nature) that contribute to overall well-being, such as culture.

The concept of NCA recognizes that many common methods of economic analysis fail to capture crucial economic values – specifically, those provided to society by nature. By incorporating the value of nature into national accounts, NCA can help to paint a more complete picture of a national economy than can be obtained by looking at GDP alone. Botswana's

experience, among others, shows that NCA can be used effectively to support longer-term thinking in the management of natural resources and ecosystems.

Bhutan's GNH concept was born out of the belief that spiritual and physical well-being, biodiversity, poverty eradication and environmental sustainability are just as important to a country's national development process as economic growth. It is thus a direct recognition of GDP as an incomplete measure of national progress, and the national happiness/well-being indicators provide policymakers with valuable information about a broad range of values upon which to base policy decisions. In the GNH Index, Bhutan has also created a tool for measuring progress towards its development goals, and the case provides an excellent example of how a broad philosophical vision can be effectively institutionalized and turned into a concrete national development framework.

Quantitative methodologies, such as those that form key parts of the GNH and NCA approaches, will be important tools for countries to use to work towards the Sustainable Development Goals (SDGs). Goal 17, in particular, includes a focus on data and statistical tools, and recognizes the need for high quality, timely, and reliable data.

If NCA and GNH are important tools for capturing values in quantifiable terms, then PES provides a logical next step. Whereas GNH and NCA are about capturing the social values of human and natural capital, PES focuses on creating mechanisms through which that value can be transferred from direct and indirect beneficiaries of ecosystem services to the communities who are the caretakers and stewards of their local ecosystems. Such individuals or groups have the power to ensure that ecosystems stay healthy and continue to provide services. In other words, once economic externalities have been identified and quantified, PES is a tool through which they can be redressed, and it does so by transferring the value of ecosystem services in ways that influence behaviour.

When bundled with poverty eradication measures and efforts to ensure equitable benefit sharing and local access to resources, PES can be a powerful tool to address the overall well-being of a society in addition to the health of the environment, as the case of Costa Rica so visibly demonstrates.

Finally, Circular Economy differs from GNH, NCA, and PES in that it is less focussed on the development of a specific tool or framework for measuring or quantifying contributions towards human well-being, or correcting market failures. Rather, it serves as a model for increasing resource efficiency and preserving natural capital while ‘generating’ values from waste at a systems level. It provides a strong example of a system of production and consumption that – like Boulding’s imagined ‘spaceman economy’ – reflects the values recognized by NCA and as a result places more importance on the maintenance of natural and produced capital than on consumption and throughput (as is commonly measured by GDP). In a sense, Circular Economy implicitly ‘transfers’ the value generated from waste to natural capital (since it requires fewer inputs of natural resources) and into broader well-being. It is, in this respect, a viable example of how economic growth and human development can be decoupled from environmental degradation, and is a powerful tool for achieving SDG 12, which is about developing sustainable systems of consumption and production.

Together, the four approaches offer an array of complements to traditional economic measurements and indicators, such as GDP, that can catalyze and measure progress towards sustainable development. Such instruments will help countries to achieve what is widely recognized as being crucial to increasing the overall well-being of their people: development models that recognize and incorporate the social value of human and natural capital. By comparing them to each other, we can see that all approaches to sustainable development can and must be viewed as complementary parts of an all-encompassing, holistic

view of human development and social progress that includes not just economic growth, but also inclusive and equitable distribution of the benefits of this growth and a healthy environment. This is consistent with a concept of inclusive wealth that places equal importance on developing natural and human capital, as well as traditionally produced physical and financial capital.

In the end, by sharing just some of the multiplicity of approaches, visions, and tools that can be used for working towards sustainable development, this report aims to provide pieces of the puzzle that leaders and policymakers can use to develop unique solutions that are relevant to their own countries’ challenges and opportunities for driving development forward sustainably. There is no ‘one size fits all’ approach, and by celebrating the diversity of concepts we hope that this publication will help to inform, inspire, and create innovative solutions and approaches to sustainable development.

With human beings at the centre of the SDGs and the 2030 Agenda for Sustainable Development, the coming decades offer an unprecedented opportunity for leaders and policymakers to embrace transformational change and decouple economic growth and human well-being from environmental degradation. The approaches shared in this publication can form valuable components of the toolkit that countries have at their disposal to help achieve this goal.

NOTES

1. <http://www.unep.org/greeneconomy/Portals/88/documents/GEI%20Highlights/MultiplePathwaysSustainableDevelopment.pdf>
2. Kreislaufwirtschaftsgesetz – KrWG
3. Details of the waste collection system differ between regions.
4. Partly also due to the effects of structural changes in the Japanese industry and economy.
5. For an extensive categorization of the types of natural capital and related ecosystem services, see Milligan et al., 2014, p.23-27.
6. Inclusive wealth is the social value of an economy's total capital assets: manufactured capital (roads, building, machines, and equipment), human capital (skills, education, health), and natural capital (sub-soil resources, ecosystems, the atmosphere).
7. This figure does, however, include contract renewals and is therefore an overestimation of the spatial footprint of forest protection. In comparison, Costa Rica's national park system covers 541,500 ha (Daniels et al., 2010).
8. For a detailed assessment, see e.g. Porras et al., 2013.
9. There are different GNH screening tools for different types of projects and policies, see Ura & Penjore (2008) for more details. The screening is carried out both by the government agency that proposes the policy or project and by the GNH Commission Secretariat (GNHC, 2013).
10. The GNH Commission is the government's planning commission that is charged with ensuring that GNH is mainstreamed into government planning, policy making and implementation. It consists of the Prime Minister (Chairperson), the Cabinet Secretary, all Secretaries to Ministries, the Head of the National Environment Commission Secretariat, and the GNHC Secretary (Member Secretary).
11. In 2015, for example, the questionnaire contained 148 questions and took on average 1.5 hours to complete (CBS, 2015).

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