



A Green Economy in the Context of Sustainable Development and Poverty Eradication: What are the Implications for Africa?



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First printing May 2012

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Edited, designed and printed by the ECA Publications and Conference Management Section (PCMS).

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Acknowledgments

This report was produced by the United Nations Environment Programme (UNEP) in collaboration with the United Economic Commission for Africa (UNECA), as part of the Africa preparatory process for the United Nations Conference on Sustainable Development (Rio+20). Moustapha Kamal Gueye (UNEP) and Isatou Gaye (UNECA) coordinated the production of the report. Colleagues from a range of national, regional, and international organizations provided substantive contributions. They included: Paxina Chileshe (African Development Bank), Vincent Oparah (NEPAD Planning and Coordinating Agency), Alessandra Sgobbi, Charles Akol and Fatma Ben Fadhl (UNECA), Desta Mebratu, Simon Lobach, Patrick Mwesigye, Kofi Vondolia, Serban Scriciu, Martina Otto, Djaheezah Subratty and Serge Bounda (UNEP), Charles Gore, Bineswaree Bolaky, Milasoa Chérel-Robson and Robert Hamwey (UNCTAD), Samson Samuel Ogallah (Nigerian Environmental Study/Action Team), Helen Marquard (SEED Initiative), Huzi Mshelia (International Centre for Energy, Environment and Development, Nigeria). The report was finalized based on comments provided at the Africa Regional Preparatory Conference for Rio+20 (Addis Ababa, Ethiopia, 20-25 October 2011).

I. Introduction

A green economy can be defined as one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities (UNEP 2011). In a green economy, growth in income and employment is driven by public and private investments that reduce carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services. These investments need to be catalyzed and supported by targeted public expenditure, policy reforms and regulation changes. This development path should maintain, enhance and, where necessary, rebuild natural capital as a critical economic asset and source of public benefits, especially for poor people whose livelihoods and security depend strongly on nature.

What does this mean in the context of Africa? African countries are highly dependent on natural resources. Natural capital assets are thus critical to the economic activities and the livelihood of millions of people who depend on fertile soil, forest, fishery and other resources from nature. The exploitation of these resources has fostered rates of economic growth, which in recent years have been among the strongest in the world. Notwithstanding such economic performance, African countries continue to face persistent poverty and unemployment and underemployment, particularly among the continent's fast growing young population.

At the same time, the potential for future economic growth and development itself is put at risk, as a result of environmental degradation, climate change, desertification, and other environmental risks and resource scarcities, which are driven by internal and external factors. The natural capital, an essential basis for wealth creation, faces mounting pressure at a time when African countries need to meet the growing demand for water, food and health, whilst reducing poverty and stimulating economic activity to create employment and raise income levels.

How can Africa's vast natural resources create more wealth for the African people in a more resource-efficient and beneficial manner? What are the pathways to industrial growth which can create greater employment, produce higher outputs with lower inputs, and enhance competitiveness for African economies? How can vulnerabilities created by climate change, desertification and external shocks in the world economy be tempered, if not eliminated? What challenges will African countries face in the transition to a green economy and how could such challenges be overcome? What experiences within and outside Africa offer lessons that could be built upon? These are questions that this report seeks to address. The report is meant to stimulate further discussion, aiming to contribute to articulating African views and perspectives on the theme of green economy in the context of sustainable development and poverty eradication for the United Nations Conference on Sustainable Development (Rio+20) in 2012.

II. How can a Green Economy Contribute to Sustainable Development in Africa?

“We, the African ministers of environment agree that a green economy should be underlined by national objectives, social and economic development imperatives and the attainment of the Millennium Development Goals”¹

African countries are at a critical juncture in their development trajectories. Confronted with internal challenges of persistent poverty and unemployment, the resource basis of many productive sectors is facing threats of environmental degradation, including deforestation, soil erosion, desertification, loss of biodiversity, depletion of fish stocks and effects of climate change. At the same time, these challenges represent opportunities for change.

A green economy may offer considerable opportunities for mobilizing resources toward a low-emission, climate-resilient development pathway. However, the combination of tackling poverty, accelerating growth and development, and addressing climate change, is likely to involve trade-offs and policy choices between mutually supportive, but equally important priorities toward the improvement of welfare and quality of life for Africa’s citizens. This will entail an increase in food, energy and water consumption. Policies and investments to sustain and enhance natural capital assets – the soils, forests and fisheries on which many poor communities depend for their livelihoods – can be instrumental. At the same time, the economic system needs to develop to enable Africa to improve its terms of trade and increase its productive activities. The pathway to a green economy will require the mobilization of new financial resources from public and private sources. This implies a realignment of policy goals and priorities and related allocation of capital, while addressing the immediate and pressing development concerns and short-run poverty alleviation objectives.

1. *Inclusive growth and poverty eradication*

Despite remarkable rates of economic growth in recent years, the African continent still faces challenges of persistent poverty and low human development. In 2010, six of the world’s ten fastest-growing economies were in Africa and seven African countries are expected to be in the top 10 over the next five years (The Economist 2011).

¹ “Green economy in the context of Africa”, Decision adopted at the 4th Special Session of the African Ministerial Conference on the Environment, 15-16 September 2011, Bamako, Mali.

Table 1: World's 10 fastest-growing economies*. Annual average GDP growth, %

2001-2010 a		2011-2015 b	
Angola	11.1	China	9.5
China	10.5	India	8.2
Myanmar	10.3	Ethiopia	8.1
Nigeria	8.9	Mozambique	7.7
Ethiopia	8.4	Tanzania	7.2
Kazakhstan	8.2	Vietnam	7.2
Chad	7.9	D. R. Congo	7.0
Mozambique	7.9	Ghana	7.0
Cambodia	7.7	Zambia	6.9
Rwanda	7.6	Nigeria	6.8

Sources: The Economist, IMF, 2011

Note: * Excluding countries with less than 10 million population and Iraq and Afghanistan; a: 2010 estimate; b: IMF forecast

This notwithstanding, the level and speed of lifting a vast majority of the African people from poverty remain low, in comparison to progress achieved in other world regions. Achieving inclusive growth and making economic growth more responsive to poverty eradication objectives are among the priority concerns that a green economy must address.

A key question, therefore, is how the transition to a green economy can improve prospects for economic development, support the structural transformation of the economy to achieve more productivity and value addition, and address distributional impacts.

2. *Employment creation*

Employment creation continues to be a major challenge for sustainable development in Africa. Even with the high rates of economic growth, employment creation has been limited, especially among the youth and women. This reveals a weak correlation between economic growth and employment creation in Africa. Studies have pointed to the fact that economic growth in the last decades has been led by capital-intensive enclave sectors, with a low employment elasticity of output growth (ECA and AUC 2010). Economic transformation in Africa must address the fundamental challenges of employment.

A closer look at employment in Africa indicates that natural resource-based sectors such as agriculture, the mineral sector, forestry and fisheries continue to remain the largest job providers. Together, these sectors account for 80 per cent of employment. Tourism, which relies primarily on the continent's natural and cultural wealth, employs 6.3 million people (World Travel & Tourism Council, 2006). A green economy should maintain and enhance the natural capital that will constitute an important source of jobs, income and livelihoods for the vast majority of the African people.

3. *Food security*

Food security is one of the most pressing needs of the African population. In sub-Saharan Africa, 33 to 35 per cent of the population is malnourished, especially in rural areas. Soil productivity is decreasing due to environmental degradation, which is caused by poor soil and water management, inappropriate fertilizer use; decline in the use and length of fallow periods; overgrazing and logging; and population pressures that push farmers to less favorable lands. In addition, an important share of the harvest is lost due to pests, diseases and poor handling and storage. All these are being exacerbated by the effects of climate change.

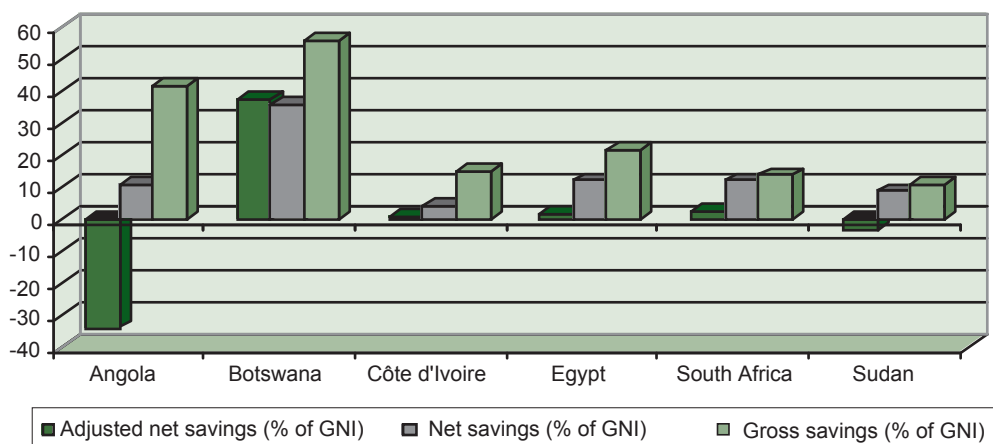
Capacity-building, education and knowledge transfer are essential for improving food security and enhancing sustainability. The green economy has the potential to render positive returns on sustainable agriculture, provided that not only the short-term revenues of agriculture, but also the social and environmental costs which will lead to decreasing revenues in the long run, are taken into account. This cost-benefit analysis can only be performed in constant dialogue with the communities themselves (Mwaniki, 2006). Farmers can adopt sustainable farming methods, which will counter environmental degradation and increase production and, hence, food security in the long run. There is growing evidence for the positive effects of sustainable farming on production and food security, and there is already a series of successful experiences of the adoption of sustainable farming practices across the continent. These are discussed in greater detail in the section on agriculture below.

4. *Resource scarcities and environmental risks*

African economies are highly dependent on natural resources which, in many countries, form the basis of economic activity. While the exploitation of such resources generates economic benefits in the short term, resource depletion decreases the potential for economic growth and development in the long term. Studies have shown that when GDP growth is adjusted to account for the loss of natural capital, growth is often very low, and in some cases even negative.

When resource depletion is taken into consideration, national savings reveal a negative trend in a number of African countries. On average, the genuine wealth growth in sub-Saharan Africa is estimated to be negative (Arrow *et al.*, 2004). Adjusted net savings measures are defined as net national savings plus education expenditure, minus energy depletion, mineral depletion, net forest depletion and carbon dioxide and particulate emissions damage from carbon dioxide and particulate emissions. It gives an indication of the net saving rate when national accounting frameworks account for resource depletion and environmental degradation. Figure 1, picturing the level of savings in a selection of a few African economies, shows that the adjusted national savings of some countries are radically below their net national savings when resource depletion is accounted for. This indicates that short-term gains provided by resource extraction do not necessarily translate into overall gains in terms of savings to support future economic growth.

Figure 1: Adjusted net savings, net savings, and gross savings as percentages of the gross national income in selected African countries (2005)

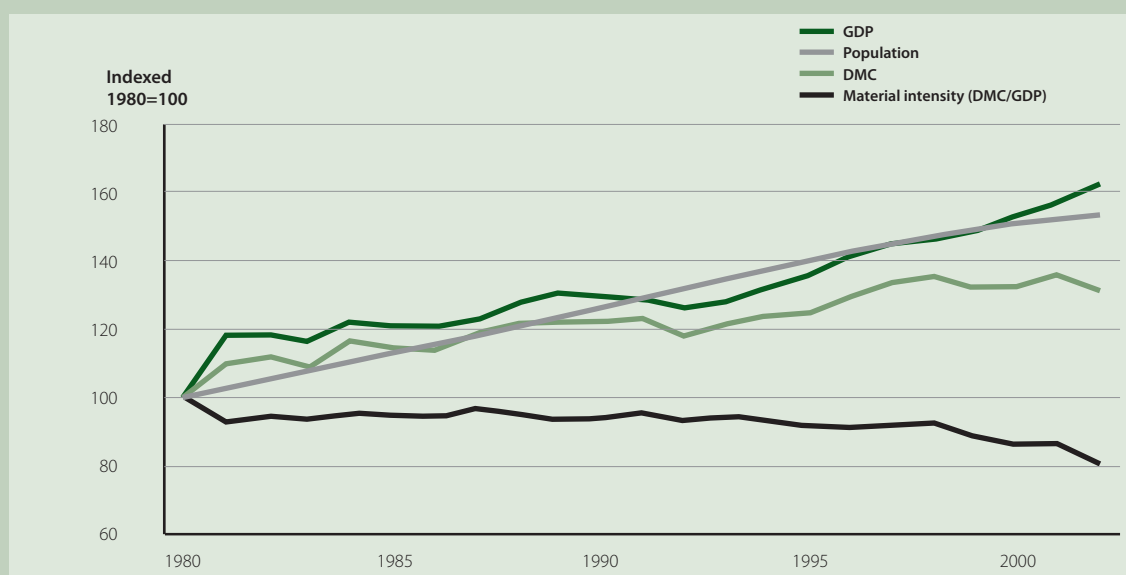


Sources: Data from the World Bank and the World Resources Institute databases.

A key challenge for African countries, therefore, is to find ways to stimulate and sustain growth while achieving positive adjusted savings. This entails greater efforts to decouple resource use from economic growth. The challenge is not specific to African countries. It is common to economies in many other world regions.

Box 1: African Success Stories – Decoupling economic growth from resource use

The figure below, picturing GDP, population, the domestic material consumption of natural resources, and the material intensity from South Africa over time, shows an example of decoupling economic growth from consumption and use of natural resources. While South Africa experienced rapid economic growth from 1980 to 2000, its material intensity declined over the same period. Exports of raw materials are not included in this graph (UNEP, 2011).



Source: UNEP (2011a)

Climate change is heavily felt in Africa and its intensity is expected to increase over time. There is evidence that temperature rises on the continent have been consistently higher than the global average. As a result of the geographical differences within the continent, impacts vary greatly, with some regions becoming dryer, others wetter, and some experiencing more frequent droughts and floods. A general tendency is the increase of the incidence and severity of droughts, floods and extreme weather events. Rising sea levels threaten densely populated coastal areas and small islands, and cause additional risks of seawater intrusion into coastal areas and river estuaries.

Africa is especially vulnerable to the effects of climate change, making adaptation efforts critical for sustaining national economies and improving human well-being. However, large parts of the population of Africa do not have the means to adapt to these effects. Arid and semi-arid lands are likely to expand, and growing seasons will become shorter. This has important consequences for agriculture, as many African crops are grown close to their limits of thermal tolerance, on the desert frontier, or on the edge of not being economically viable even for subsistence farming. In some cases, crop adaptation or substitution can offer solutions, but information, expertise and technology are often lacking, while access to markets is limited (IPCC, 2007; Collier, Conway and Venables, 2008; Gueye, Bzioui and Johnson, 2005). A green economy aims to reduce such environmental risks by promoting investment in resource conservation and enhancing natural capital stocks and their resilience.

III. Pathways to a Green Economy in Africa

Most African economies depend highly on natural resources, aim to achieve industrialization and economic diversification, and face challenges of poverty and unemployment. Therefore, a pathway to a green economy requires action on three fronts: capitalizing on Africa's natural capital, exploiting opportunities for industrial growth and establishing enabling policies and institutions.

First, the economic importance of natural capital in wealth creation, employment, livelihoods, and poverty reduction in Africa needs to be recognized. Africa's natural resources support its social and economic systems. They provide a basis for livelihood to the poor and most vulnerable, who depend primarily on nature for survival. Natural capital assets sustain much of the tourism and associated service industries, which have become essential pillars of external trade, foreign exchange revenue generation and employment creation in African countries.

Second, Africa's early stage of industrialization offers avenues for an industrial development supported by the deployment of clean, efficient, and resource-saving technologies. Such technologies would increase energy and resource efficiency in the exploitation of the continent's natural resources, whilst avoiding wasteful consumption, undue economic costs and risks of resource depletion. While the technological and financial requirements of green industrialization are considerable, there are indications that existing opportunities for leapfrogging yield very high potential returns, as can be observed in the African aluminum industry.

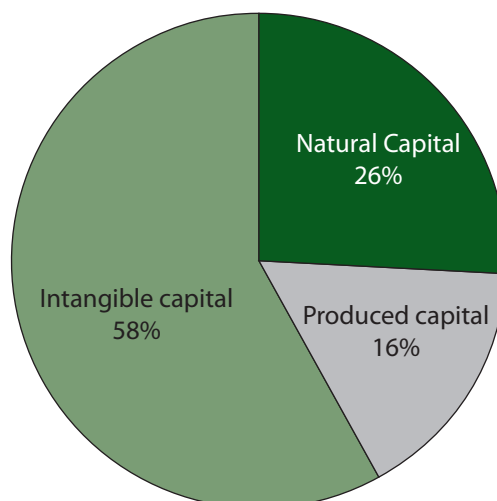
Lastly, driving green economic transformation will require a set of enabling policies and institutions that imply a critical role for the State, through public investment, fiscal policies, regulations, government procurement, and market creation at national, regional and international levels, as well as the facilitation of an active participation of non-State actors. These three points are discussed in the next subsections.

1. *Building on natural capital assets*

Natural capital assets, both renewable and non-renewable, are estimated to account for 24 per cent of sub-Saharan Africa's total wealth. This includes sub-soil assets (39 per cent), cropland (36 per cent), timber resources (9 per cent), pastureland (8 per cent), non-timber forest (5 per cent) and protected areas (3 per cent) (World Bank, 2006). A number of studies have underscored the larger gains to be made by expanding investments to enhance natural capital (Millennium Ecosystem Assessment, 2005; The Economics of Ecosystems and Biodiversity, 2010).

Figure 2 shows that natural capital is essential to wealth creation, accounting for 26 per cent of wealth creation in the poorest countries. Meanwhile, it accounts for only 2 per cent of wealth creation in the world's richest countries.

Figure 2: Natural capital and wealth creation in sub-Saharan Africa



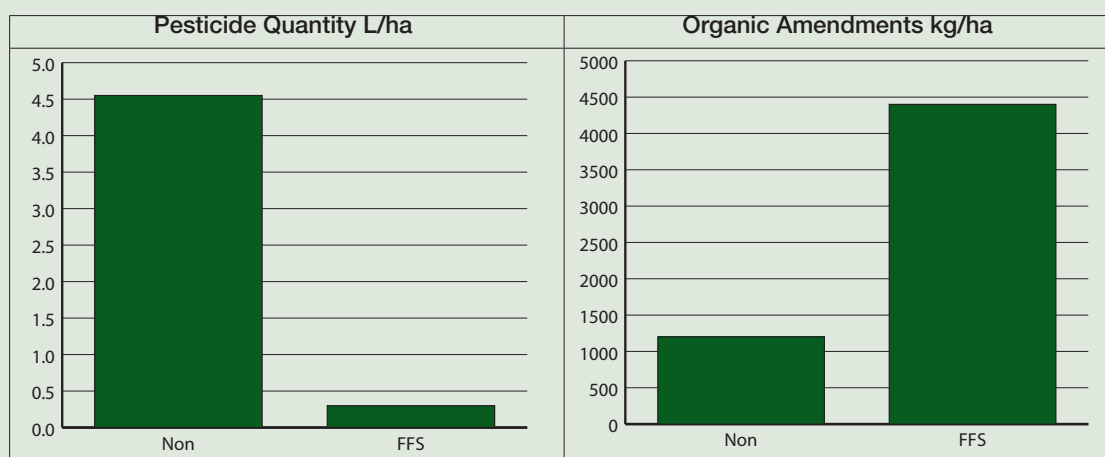
Source: Adapted from World Bank, 2006.

Agriculture, land use and fisheries

Agriculture is extremely relevant to African economies, owing to its importance in sustaining livelihoods, reducing poverty and contributing to economic growth and development. It accounts for 34 per cent of the Gross Domestic Product of sub-Saharan African countries and employs about 70 per cent of the population. Addressing sustainable development challenges in this sector is therefore of paramount importance to Africa. Of particular concern are the expected consequences of climate change and ecosystem degradation that will adversely affect agriculture, and cause a decline in the productivity of rain-fed agriculture.

Enhancing natural capital in agriculture entails new approaches to production that reduce externalities such as water pollution and soil erosion, maximize the use of organic inputs and deliver high productivity and better incomes for farmers. Despite many challenges, the present characteristics of African agricultural production systems, to a certain extent, lean towards what could become a model for sustainable farming in the future. Small-scale ecological farming systems, limited use of chemical fertilizers and pesticides, and labor-intensive production systems could provide a basis for a green transformation of African agriculture. Although more research is required to better understand the potential for such models, country experiences in Africa suggest that sustainable forms of agriculture — including low-tillage farming, organic fertilizers and natural pesticides, re-use of farm water and agroforestry — are yielding environmental gains and major financial benefits, besides offering the potential of enhancing social and economic inclusiveness.

Box 2: African success stories – Low-input agriculture in Mali



Programs supported by FAO on integrated production and pesticides management in the West African Sahel show that farmers have succeeded in cutting the use of toxic pesticides, whilst increasing yields and incomes and diversifying farming systems. Data from Senegal and Mali reveal a 90-per cent reduction in the use of chemical pesticides among farmers, one to two years after training. For 80 vegetable farmers in Senegal, crop net value increased by 61 per cent in two years, while a 92-per cent reduction in the use of conventional pesticides resulted in high cost-savings and income increase. In Mali, a survey conducted in 65 villages of cotton farmers showed a 400-per cent increase in the use of organic material such as compost and manure, substances that can reverse the decline in soil fertility.

Lower use of pesticides and greater use of organic fertilizers in Mali cotton production

Source: FAO, 2009

Notes: Post Farmer Field School (FFS) survey of cotton farmers in 65 villages where FFS took place in 2007 and 2008. Pesticide difference in use is an average 4.5 L/ha compared with 0.25 L/ha or 94 per cent less for FFS farmers. The difference in use of soil amendments is between 1.2 T/ha compared with 4.3 T/ha or almost a four-fold increase in use of compost by FFS farmers.

Similarly, fisheries directly and indirectly support local communities and international trade. They provide animal protein and food to millions of people. In Africa, 10 million people or 1.5 per cent of the continent's population depend directly on fishing, fish farming, fish processing and fish trading for their livelihoods. Fish is also a highly traded commodity, one of the leading export commodities for Africa, with an annual export value of nearly US\$ 3 billion. However, these benefits are at risk, as the exploitation of natural fish stocks is reaching its maximum and aquaculture production has fallen short of achieving its potential (African Development Bank, 2010).

Fish supply in Africa is in crisis. Per capita consumption in sub-Saharan Africa is the lowest in all world regions and it is the only part of the world where consumption is declining. Development of the fishery and aquaculture sector is an important aspect of improving the livelihoods of millions of Africans. Specifically, the policies required to green fisheries comprise the establishment of marine-protected areas, consumer awareness raising through eco-labeling, removal of subsidies for fisheries, habitat restoration, introduction of market-based policy instruments, effective cooperation among different countries to manage trans-boundary fisheries, and elimination of illegal, unreported and unregulated fishing. Efforts to improve phyto-sanitary standards and processing can lead to long-term sustainability and improved terms of trade.

Most of the above instruments and a range of other relevant measures for enhancing the green credential of African agriculture are already incorporated into the Comprehensive Africa Agriculture Development Programme (CAADP), which is an African Union Commission-New Partnership for Africa's Development (AUC-NEPAD) agency-led framework for transforming African agriculture. This framework, which enjoys the support of Africa's Heads of State and Government, is organized around four major priority themes (also called CAADP Pillars): (a) extending the area under sustainable land and water management; (b) improving market access through improved rural infrastructure and trade-related interventions; (c) increasing food supply and reducing hunger; and (d) improving agricultural research and systems to disseminate appropriate new technologies. So far, some 24 countries have used the CAADP Framework to reorient their agricultural strategies and signed multi-stakeholder commitment documents called CAADP Compacts.

Water

In 2000, governments committed to a wide range of Millennium Development Goals (MDGs) that rely on access to water, and made a specific commitment to halve the number of people without access to clean water and adequate sanitation by 2015. At the current rate of investment and progress, the MDG for sanitation will be missed by one billion people, mostly in sub-Saharan Africa and Asia. Poor access to clean water remains a cause of child mortality in African countries. In eastern Nigeria and northern Cameroon, every one per cent increase in the use of unprotected water sources for drinking purposes is directly associated with a 0.16 per cent increase in child mortality (Ward, Kaczan and Lukasiewicz, 2010).

Growing water scarcity can be mitigated by introducing policies aimed at improving water supply and efficiency. The provision of sufficient and good quality freshwater is a basic ecosystem service. In order to reduce risks of water scarcity, floods, or water pollution, it is essential to effectively manage ecosystems and attract investments for that purpose, which will enhance water security for people and ecosystems. Business as usual is projected to lead to a large and unsustainable gap between global supply and water withdrawals, which can only be addressed by investments in infrastructure and water policy reform, in other words, greening the water sector.

In a green economy scenario, all MDGs related to water and sanitation could be reached by 2015, according to the UNEP Green Economy Report (UNEP, 2011). Several issues are related to water, but may offer different opportunities and require different approaches; for instance, water supply and sanitation versus basin management. Integrated water resource management can offer an appropriate framework to promote a more sustainable use of water and policies of water protection, ensuring that water scarcity is tackled for sustainable economic development.

Policies must address both water supply and water demand. Securing water through ecosystem protection should be an essential component of the green economy, along with non-traditional investments in green infrastructure for water protection. Specific policy instruments may include removing environmentally-harmful subsidies and improving water pricing, while protecting low-income water users and promoting alternative technologies, such as the design and location of water tanks and irrigation systems. Appropriate technologies, such as water harvesting, dams, groundwater, household design and re-use of grey and brown water will have to be identified. Behavioral changes will also be crucial. These can be influenced by education and awareness

raising, but also through the creation of appropriate and effective incentives and disincentives, or through water pricing policies.

Biodiversity-based industries

Biodiversity-based industries can make a major contribution to expanding output by enhancing natural capital. The direct benefits from biodiversity are already significant in several African countries, particularly in the forest- and tourism-related industries.

Forests are essential assets to economic activity and livelihoods in Africa. African forests account for 23 per cent of the continent's total land area - close to 675 million hectares - and represent about 17 per cent of global forest area (FAO, 2010). They provide significant timber and non-timber forest products, thus supporting both local communities, and national and international trade. Forestry contributes 6 per cent of GDP in Africa on average, and up to 13 per cent in tropical African countries (Gumbo, 2010). Forest resources are important export commodities, with timber products alone accounting for 60 per cent of export earnings for Gabon and about 50 per cent for the Central African Republic (Gumbo, 2010). In Eastern and Southern Africa, the average annual forest income is about 22 per cent of household income (Vedeld *et al.*, 2004). Fuel wood supplies form a significant proportion of the energy that is used for cooking and heating by the vast majority of African households, particularly in rural areas. In 2010, Africa accounted for 33 per cent of global fuel wood removals. In 2005, approximately 571,000 people in Africa were involved in the production of goods made from primary forest resources (FAO, 2010). Furthermore, forests are important providers of ecosystem services such as climate regulation, carbon sequestration, watershed protection, and habitat for species that provide bush meat, and opportunities for tourism. Well-managed biodiversity and proper use of its vital supporting functions can therefore yield real economic benefits for Africa and have knock-on effects on poverty. Yet, forests are being degraded at a rapid rate because of over-harvesting and pressures from other land uses, including crop farming and livestock husbandries.

New types of forest-related opportunities need to be strengthened, through community involvement and the use of new policy tools. These opportunities include those linked to carbon sequestration services, which provide livelihoods and local revenue generation. In 2010, Africa contributed 21 per cent of the global total of carbon in forest biomass, with Central Africa containing the largest amount of carbon in forest biomass (FAO, 2010). The advantages of community forest management include employment and income generation from forest protection and the sustainable exploitation of timber and non-timber products. Additional economic benefits can be gained in terms of securing fuel wood supply, which contributes to a significant proportion of household energy needs. Nature conservation can also significantly benefit from community-based forest management. Certification schemes to ensure the sustainability of timber products and the initiative to combat illegal logging can help achieve sustainability in this sector.

Tourism, which relies primarily on the continent's natural and cultural wealth, directly and indirectly contributes an estimated 8.3 per cent to GDP and 5.9 per cent to employment in Africa (World Travel and Tourism Council, 2009). In the Great Lakes area, about US\$ 20 million is generated annually from tourism based on gorilla viewing and other activities (Gumbo, 2010). As discussed above, travel represents a key component of Africa's trade in services, accounting for more than half of the continent's commercial services exports.

Governments are increasingly recognizing the importance of sustaining and possibly enhancing the natural and cultural assets, as these create new income, employment and growth opportunities. Translating such recognition into action requires new investments in protected areas, reforestation efforts and rehabilitation of valuable ecosystems. In Kenya, for example, resource valuation efforts that assigned a value to the Mau forest complex — including tourism, hydropower, agriculture and the tea industry — of possibly as much as US\$ 1.5 billion a year (Nellemann and Corcoran, 2010), triggered a multi-million shilling restoration initiative to reverse the trend of decades of deforestation.

At the regional level, African governments are spearheading new initiatives to send signals to markets and to renew their commitments to strengthen, individually and collectively, the frameworks of governance and management of forest resources. At the Summit of the Three Rainforest Basins, that took place in Brazzaville between May 31 and June 3, 2011 at the initiative of the Republic of Congo, leaders of more than 35 nations sharing the world's three major rainforest regions – the Amazon, the Congo and the Borneo-Mekong forest basins – agreed to prepare an action plan on sustainable management of forests for signature next year at the Rio+20 Summit meeting in Brazil. The recognition, at the highest political level, of the facts that forests contribute to the livelihoods of more than one and a half billion people, and that forests function as a cross-sectoral service utility for carbon sequestration and storage, for water and pollination services essential for food production, and for the provision of sustainable construction material and renewable energy, amongst others, provides a new momentum to national, regional and global efforts for the conservation and sustainable use of vital forest resources.

Box 3: African success stories – Woodlot management for climate change adaptation in Tanzania

In the Makete District of the United Republic of Tanzania, forest, woodland and grassland resources are essential to the local economies. They also play a crucial role in protecting the watersheds that are vital for the conservation of the environment for agriculture and livestock production. Tanzanian authorities and local communities, working together and sustained by international support, have improved smallholder livelihoods through woodlots management practices as a strategy for climate change adaptation, while creating a new stream of income for local communities and revenues for the city. Following an assessment of smallholder woodlot management practices and the marketing of timber, user groups were assisted in developing their own woodlot operational plans and harvesting rules, in setting rates and prices for products, and in determining how surplus income would be distributed or spent. This produced significant improvements in the conservation of woodlots in terms of area and density, and also helped enhance soil and water management.

This improved knowledge has allowed producers to increase their incomes, and it has enabled the Makete District government to achieve a 64-per cent increase in council revenue for 2009/2010, following the collection of royalties from timber sales. The creation of new sources of income triggered the setting-up of community savings and credit societies that provide financial credits to low-income earners, using their woodlots as collaterals. This has promoted inclusive growth, enhanced the number of savings and credit operations among members, and enabled the provision of loans to finance income-generating activities. What is more, the concrete evidence of these benefits has increased the national government's interest in expanding climate change adaptation measures that improve rural livelihoods and the economy as a whole.

Source: UNEP/UNDP Climate Change Adaptation and Development Initiative (CC DARE). ccdare.org.

Mineral resources

Africa is endowed with significant mineral resources, including precious and rare metals, gemstones, oil and natural gas. Yet, the industries in the mineral sectors are not well developed, and there is a clear lack of downstream processing to add value. Furthermore, the industry is often artisanal and small-scale in nature, or run by international companies with limited multiplier effect for national economies. As a consequence, Africa has so far been unable to reap all the benefits from its mineral resources. In many countries, the sector contributes less than 15 per cent of GDP. While some African countries, such as Botswana, South Africa and Namibia are making efforts to add value to their mineral resources, most countries are yet to exploit these resources to their full potential.

The sector could bring about significant economic benefits such as foreign direct investments, government revenue; and it could be a source of foreign currency. Key challenges to ensuring that mining can contribute to the growth of Africa's economy in a sustainable manner include addressing institutional weaknesses (including those related to legislation and royalties), improving public participation in decision making, developing regional guidelines and best practices for mining exploitations, ensuring environmental sustainability, reforming subsidies to mining companies and improving transparency in their operations, with a view to reducing corruption. Governments must take a leading role in ensuring that the mineral resources of their countries are exploited for the sustainable benefit of their citizens.

Box 4: African success stories -- Examples of greening mineral production

Gas flaring refers to the burning of natural gas associated with crude oil extracted from the earth. It is estimated that, in 2010, gas flaring resulted in about 360 million tons of carbon dioxide (CO₂) emitted into the atmosphere – roughly 1.2 per cent of the world's CO₂ emissions. In Africa, three examples of efforts to reduce gas flaring stand out. **Nigeria**, which is the world's largest flaring country after Russia, recorded a remarkable decrease in gas flaring, with a reduction of one billion cubic meters of gas per year, on average, from 2006 to 2010 (Global Gas Flaring Reduction 2011). In 2008, **Equatorial Guinea** and ExxonMobil signed a Memorandum of Understanding to capture and monetize otherwise flared gas.* The greening of hydrocarbon production in Equatorial Guinea contributed to increased production of liquefied natural gas (LNG) and methanol, supplying international markets and strengthening domestic and regional energy security. Still in progress, **Angola's** LNG is expected to become the largest gas flaring reduction project in the world, using gas associated with crude oil production as primary source of supply during the early years of operation, as opposed to other LNG projects around the globe where supplies originate from non-associated gas fields.

Mine sites rehabilitation and closure is increasingly used to address concerns for environmental sustainability. In many developing countries, the law usually requires mining companies, at mine closure, to restore the area affected by mining and related activities to the status quo ante. Literally, it entails the removal, demolition and rehabilitation, not merely of the mining infrastructure but also of the support infrastructure. Many rehabilitated mines have been converted into new businesses, or have been used for carbon capture and sequestration (collecting carbon dioxide that is released from combustion and putting it safely in geologic storage). In **South Africa**, for example, mining companies are required to set aside funds during the life of the mining operation, to cover all closure costs at the end of its economic life. Examples of post-closure uses of reclaimed mine sites in the country include De Beers' Kimberly project using underground mine tunnels as a cool and dark place to grow mushrooms. The AngloGold Fish project where fish are raised in old mine ponds constitutes another example of successful mine rehabilitation.

* The MoU was signed during UNCTAD 11th Oil conference held in Malabo, Equatorial Guinea, in November 2008.

2. *Green opportunities for industrial growth*

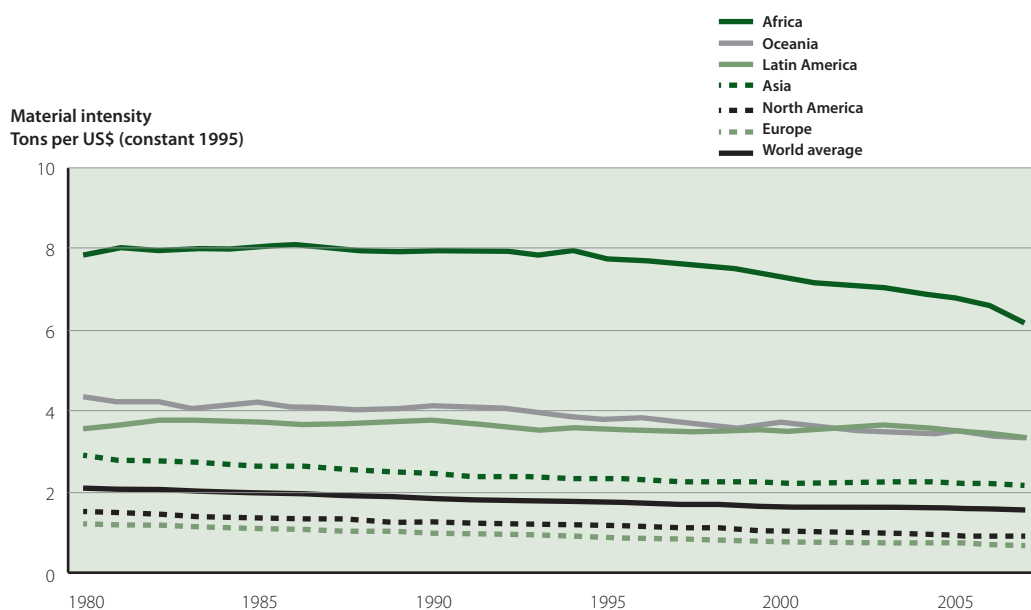
With regard to sustainable industrial development, there is concern that sustainability will impose limitations to the industrialization process of developing countries. However, there is growing evidence that this is not the case. Taking advantage of the early stage of industrialization, African countries can freely choose between available technology paths to “leapfrog” industrial development. Sustainable industrial growth does not only mean limiting the environmental, social and economic costs of industrialization, but also increasing the efficient use of energy and material input, and thereby achieving greater international competitiveness.

Manufacturing

While the manufacturing sector may not be very developed in many parts of Africa, it is crucial for the future of the continent. The sector is also linked to agricultural policies and offers alternative employment and value addition opportunities. The industrial sector will need to absorb a greater proportion of the future workforce in Africa, and promote value-addition in Africa’s traded goods. Opportunities for economic diversification are of key importance to African countries. As pointed out earlier in the paper, industries in several countries are highly concentrated in a narrow range of mineral products, exposing countries to internal and external volatile demand and prices.

At present, high energy and material intensities characterize most African industries. This adds undue costs to production and ultimately undermines global competitiveness by locking countries into inefficient modes of production. Key challenges to ensuring the sustainable growth of Africa’s manufacturing sector include: (a) pollution – where, from the outset, clean technologies can be promoted to lessen or avoid pollution of air, water, and other environmental media; (b) waste - where the concept of the three R’s (reduce, reuse, and recycle) can be promoted; (c) production processes, which can be retrofitted with cleaner technology and pollution control measures; (d) the necessity to improve productivity and competitiveness of the sector and its active role as engine for growth; and (e) the need to ensure that trade policies play their full potential in promoting the development of green industries and products.

Figure 3: Material intensity of the world economy: Domestic extraction of materials per unit of GDP, by world region

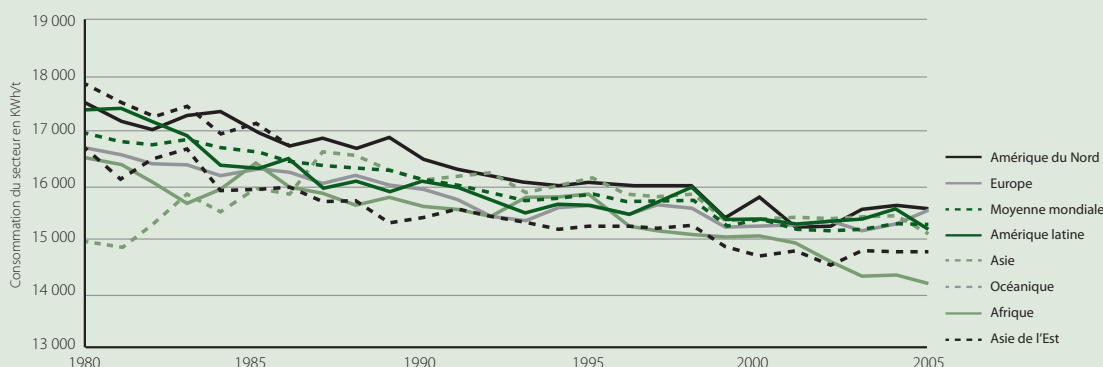


Source: Behrens et al, 2007

Box 5: African success stories – Energy efficiency in the aluminium industry

The use of outdated technology, smaller-scale plants, and inadequate operating practices are factors causing energy efficiency loss in production processes. There is enormous potential for improving efficiency in the production and use of energy, which could bring economic gains, improve competitiveness and reduce green house gas emissions. Industrial policies geared toward leapfrogging and the adoption of modern, yet adapted, technologies can contribute to greening industrialization in this context. The experience in electricity-intensive industrial sectors such as the aluminum industry demonstrates the possibilities for efficiency gains in Africa. African aluminum smelters use, on average, 14,337 kilowatt hours (kWh/t) per ton of aluminum produced compared to 15,613 kWh/t in North America, or a world average of 15,268 kWh/t. With large-capacity plants in South Africa and Mozambique, Africa has the most efficient smelters in the world due to new production facilities that have the latest technologies in the field (International Energy Agency, 2007).

Figure 5: Regional specific power consumption in aluminum smelting

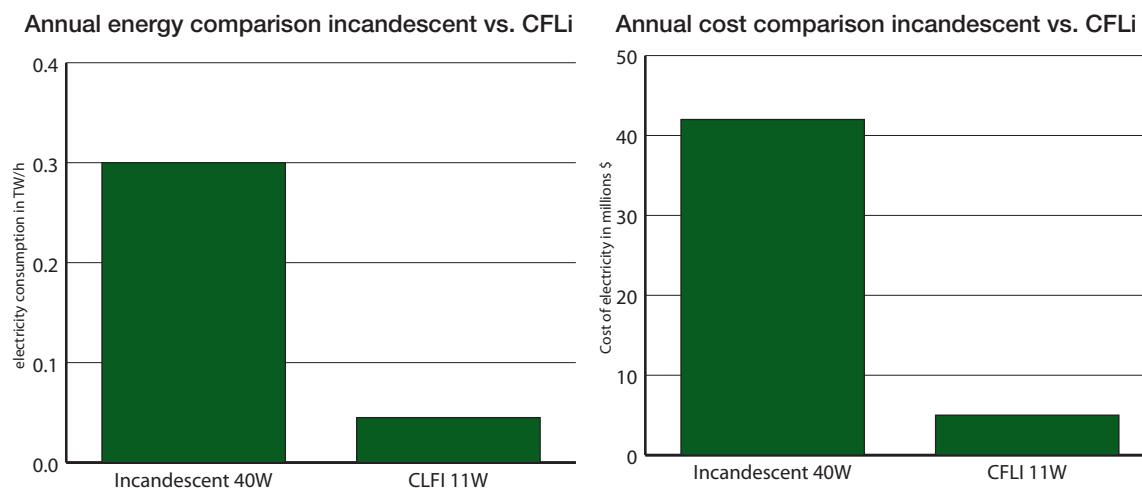


Source: International Aluminium Institute, 2003.

Enhancing energy efficiency

Policies aimed at increasing energy efficiency are often the easiest and cheapest means of achieving greater energy security, particularly in countries with diminishing marginal reserve capacity in electricity generation, where short-term demand-side management is often quicker and cheaper than investing in new energy supply capacity. Such policies include targets for reducing energy consumption, flexible financing mechanisms, energy labeling, performance standards, and awareness-raising campaigns among potential investors and consumers.

Figure 4: Estimated cost saving of a 100% shift to efficient lighting in Senegal



Source: en.lighten

Technologies such as efficient lights offer significant potential to cut back energy consumption. Nigeria, for example, could lower its electricity consumption by over 15 per cent this way, while reducing carbon dioxide emissions (from fuel combustion) by close to 5 per cent. South Africa could save US\$ 280 million a year and remove CO₂ emissions equal to 625,000 cars annually by following a similar path.

It is estimated that in a country such as Senegal, a 100-per cent replacement of installed incandescent lamps with compact fluorescent lamps (CFLi) would lead to annual energy cost savings of 73 per cent (nearly US\$ 30 million per year). As a result, the country would not need to invest in a new coal-fired power plant with a generating capacity of 50 MW, which costs approximately US\$ 50 million. Other benefits are annual energy savings of 0.24 TWh, equivalent to the electricity generation of one coal-fired power plant with a capacity of 50 MW and annual savings of 0.2 Mt CO₂, equivalent to CO₂ emissions of 50,000 mid-size cars. The estimated cost of a transition to energy-efficient lighting is a one-time investment of US\$ 52 million.²

Harnessing Africa's clean energy potential

Limited access to energy or "energy poverty" is one of the greatest challenges to achieving the MDGs in Africa. African firms lose an estimated 5 per cent of their sales due to power outages, a figure that rises to 20 per cent for informal firms unable to afford backup generation.

² en.lighten is a UNEP initiative supported by the GEF Earth Fund, OSRAM GmbH, Phillips Lighting, and the French Environment Energy Management Efficiency Agency (ADEME).

The aggregate economic costs of power shortages are 1–2 per cent of GDP (Foster and Briceño-Garmendia, 2010). Yet, Africa has the world's largest technical potential for renewable energy power generation, through its vast solar, biomass and wind resources. Realizing this potential would drive economic growth, with significant job creation and environmental gains.

Bringing sustainable electricity to the rural poor is one of the most important contributions that a green economy can make to African economies. Lack of modern electricity infrastructure in rural regions and the lack of access to the development options that electricity opens are frequent impediments to economic development in sub-Saharan Africa, where 74 per cent of the population is without access to electricity. The worst affected are the 83 per cent of the population of sub-Saharan Africa that lack access to modern fuel, and those that rely on biomass burning as the only source of energy (UNDP and WHO, 2009). In Africa, therefore, rural electricity is critical to improving health, lighting up homes and schools, running information and communication systems, refrigerating food and medicines and powering rural businesses and industries. Extending rural electrification can also help to enhance linkages between rural farming and non-farming activities, which will be a powerful mechanism for growth and poverty reduction.

4Africa will benefit from more affordable access to renewable energy systems in a green global economy. Bringing electricity to the rural poor has been an endless challenge for Africa. For resource-constrained governments, the cost of extending national grids is prohibitive. Moreover, such investments are generally unattractive or entail too high a risk for the private sector. As the transition to a green economy proceeds, high levels of demand for renewable energy technologies in developed-country markets stimulate increasing innovation and economies of scale, resulting in improved performance and falling prices. This makes off-grid rural electrification projects increasingly attractive to private sector investors (considering community-scale hydro, biomass, wind and solar facilities), and to individual businesses and households seeking to install small renewable energy systems.

The barriers to expanding the supply of renewable energy are often the same across countries. These mainly have to do with a lack of financial subsidies or incentives and limited access to appropriate technologies. To encourage large and sustained private investment in Africa's renewable energy resources, a combination of research and development (R&D)-push and demand-pull measures is needed. Studies conducted by the Global Network on Energy for Sustainable Development (GNESD) show that governments should establish dedicated and authorized agencies to promote, initiate and finance renewable energy projects and programs (GNESD 2006). Clearly set government targets are fundamental for bolstering confidence among private investors seeking to develop such projects.

For example, governments around the world have adopted regulations on prices of renewable energy, including renewable energy feed-in tariffs. By guaranteeing the purchase of electricity from renewable energy sources at a predetermined price that is sufficiently attractive to stimulate new investment, feed-in tariffs are an effective policy instrument for stimulating investment in renewable energy generation. Feed-in tariffs have been implemented with impressive results in Kenya and Mauritius, and have stimulated interest in renewable energy development in South Africa, the United Republic of Tanzania and Uganda (AFREPREN/FWD, 2009). However, they need to be applied with care and transparency, ensuring tariff regression, to avoid market distortions and the subsidization of uneconomic electricity generation stations. Feed-in

tariffs are interesting in the case of decentralized systems, such as mini-grids, and for small and medium-sized independent power producers.

Global investments in renewable energy jumped by 32 per cent between 2009 and 2010, to a record US\$ 211 billion. Countries in Africa posted the highest percentage increase of all developing regions (excluding the emerging economies of Brazil, China and India). In Egypt, renewable energy investment rose over the same period by US\$ 800 million to US\$ 1.3 billion as a result of the solar thermal project in Kom Ombo and a 220-MW onshore wind farm in the Gulf of Zayt. In Kenya, investment climbed from virtually zero in 2009 to US\$ 1.3 billion in 2010 across technologies such as wind, geothermal, small-scale hydro and biofuels. Small but significant advances were also made in Cape Verde, Morocco and Zambia (UNEP, Bloomberg New Energy Finance, 2011). In relative terms, however, investments in clean energy remain negligible in Africa, and concentrated in a very small number of very large projects (UNEP, Bloomberg, 2010), pointing to the need to enhance the capacity of institutions and people and to significantly leverage increased financing. Much of the credit for the “mainstreaming” of renewable energy goes to governments that have policies, at the national, regional and local levels, driving investment in renewables forward (UNEP, Bloomberg New Energy Finance, 2011).

Box 6: African success stories – Fostering renewable energy development

Renewable energy feed-in tariffs in Kenya

Kenya adopted a renewable energy feed-in-tariffs (REFIT) in 2008, a policy it revised in January 2010. The REFIT aims to stimulate market penetration for renewable energy technologies by making it mandatory for energy companies or utilities to purchase electricity from renewable energy sources at a pre-determined price. This price is set at a level high enough to stimulate new investment in the renewable sector. This, in turn, ensures that those who produce electricity from renewable energy sources have a guaranteed market and an attractive return on investment. Aspects of a REFIT include access to the grid, long-term power purchase agreements and a set price per kilowatt hour (kWh). Kenya REFIT covers electricity generated from wind, biomass, small hydro, geothermal, solar and biogas, with a total electricity generation capacity of 1300 MW.

The advantages of this policy include: (a) environmental integrity, including the reduction of greenhouse gas emissions; (b) enhancing energy supply security, reducing the country's dependence on imported fuels, and coping with the global scarcity of fossil fuels and its attendant price volatility; and (c) enhancing economic competitiveness and job creation. As Kenya's greatest renewable energy potential is in rural areas, the effects of the feed-in tariff policy are expected to trickle down and stimulate rural employment. Additional investments could be attracted towards renewable energy in Kenya if the feed-in tariff policy in Kenya would acquire a more solid legal status (AFREPEN/WP 2009).

For more information: www.unep.org/greeneconomy/SuccessStories/FeedintariffsinKenya/tabid/29864/Default.aspx.

Loans for solar water heaters in Tunisia

The solar water heater market in Tunisia showed a dramatic increase when low interest loans were made available to householders, with repayments collected through regular utility bills. This reduced the risk for local banks, while simultaneously showing borrowers the impact of solar heating on their electricity bills. Prosol – a joint initiative of Tunisia National Agency for Energy Conservation, UNEP, and the Italian Ministry for Environment, Land and Sea – has helped more than 105,000 Tunisian families get their hot water from the sun, based on loans of over \$60 million, a substantial leverage on Prosol's initial \$2.5 million cost. Its success has led the Tunisian Government to set an ambitious target of 750,000m² of solar panels for 2010-2014, a goal that would represent solar coverage comparable to that in Spain or Italy, countries with populations several times larger than Tunisia. Many jobs have been created, as 42 suppliers and more than 1000 installation companies have sprung up to service the solar market. The tourism and industry sectors are also involved, with 47 hotels engaged by late 2009, and there are plans to encourage the industry sector to make greater use of the sun's energy. A project is underway to make photovoltaic energy available to a further 15,000 households through a similar loan and repayment scheme.

For more information: <http://www.unep.org/unite/30ways/story.aspx?storyID=49>

3. *Enabling policies and institutions*

Enabling a green economy means creating a context in which economic activity increases human well-being and social equity, and significantly reduces environmental risks and ecological scarcities. Changing the economic environment in this way is an ambitious undertaking which requires a holistic set of policies to overcome a broad range of barriers across the investment landscape. This entails a critical role for governments to correct the incentive structures in currently un-

sustainable markets and to alter investment landscapes in the short to medium-term (UNEP, 2011b).

In March 2011, African ministers of economy, finance, planning and economic development, along with ministers of health and ministers of environment, acknowledged that market mechanisms alone are not sufficient for rapid economic transformation and that governments have a central role to play in helping overcome problems of market failure related to information, coordination and externalities. Ministers underscored the need to rethink the role of the State in Africa's economic transformation and development and acknowledged that the role of the State in governing development and achieving economic transformation in Africa entails the planning, formulation and implementation of appropriate development plans and policies based on an understanding of country-specific political, economic, social, cultural and environmental realities.³

Six key areas of policy-making can be identified as relevant for government action: promoting investment and spending in areas that stimulate a green economy; addressing environmental externalities and market failures; limiting government spending in areas that deplete natural capital; establishing sound regulatory frameworks; investing in capacity building and training; and strengthening international governance.

Targeted public spending and private investment

Scaling up investments to green the economy implies the mobilization of new and additional resources along with a reallocation of capital from activities that create pollution and increase environmental risks to areas that can stimulate sustainable growth and create employment. There is no comprehensive assessment of the costs of a green economy transition for Africa. On the other hand, recent estimates of the cost of putting Africa on a low-carbon growth pathway are about US\$ 9 to 12 billion per year by 2015 while the incremental cost of adaptation in Africa is estimated at US\$ 13 to US\$ 19 billion, if proper actions are not taken now (African Development Bank, 2011). These are indicative figures only dealing with climate change. More resources would be required to implement green economies as a whole.

In addition to global financing mechanisms, African countries could benefit from new funding instruments that are emerging at the regional level. For example, recent decisions adopted at the African Union Summit held in Malabo, Equatorial Guinea, from 23 June to 1 July 2011, requested the African Development Bank to complete an African Green Fund (AfGF). The Fund is expected to complement existing instruments such as the Sustainable Energy Fund for Africa, the ClimDev-Africa special fund and other financing instruments. AfGF will support the transfer and deployment of low-carbon technologies in Africa.

In the context of Africa, limited financial resources can be a constraint to government action, making it even more crucial to prioritize spending in sectors and areas that can promote sustainable social, economic and environmental gains to society. Public procurement can play an important role in this regard. General procurement represents a large proportion of government

³ Statement adopted at the fourth Joint Annual Meetings of the African Union Conference of Ministers of the Economy and Finance, and Economic Commission for Africa Conference of African Ministers of Finance, Planning and Economic Development, held in Addis Ababa on 28 and 29 March 2011 under the theme "Governing development in Africa: the role of the State in economic transformation" E/ECA/CM/44/6 AU/CAMEF/MIN/Rpt(VI), annex, section B.

spending. Data on public procurement are limited in developing countries, and estimates on public procurement vary largely, ranging from 8 per cent of GDP in United Republic of Tanzania to 30 per cent in Uganda (Odhiambo and Kamau, 2003). Such government expenditure on the purchase of goods and services should be geared toward creating incentives to boost domestic demand and supply of environmentally-preferable goods and services.

Governments can encourage green private investment through incentives and stable and predictable policy and market frameworks. The private sector can play an important role in mobilizing and making additional resources and investment available in areas that can promote a green economy. As seen in the area of energy, where policy conditions have been in place, private investment can be stimulated both from within and outside Africa. Enabling regulatory and financial frameworks would also stimulate the emergence of small and medium sized enterprises, which drive much of the economy. There are signs of the green economy springing up throughout Africa from the grassroots in the form of small and microenterprises that at the outset integrate social and environmental benefits into their business models, as demonstrated by applicants and winners to the annual SEED Awards. Many are not only offering new employment opportunities, but are also strengthening community organization and resilience, training local people, and tackling natural resource pressures. Appropriate policy measures would help to grow the green economy from the ground up.

Recently, investments in Africa from other developing countries and intra-Africa investments have been increasing. These include resource-seeking investments from both private and State-owned players in Asia, and investments in the manufacturing and infrastructure sectors. Investments from India and China, with labor costs comparable to Africa, have been attracted to Africa because of access to the markets of developed countries. In addition, intra-African investments have been increasing, especially in infrastructure, telecommunications, mining and energy. Countries can increase the gross total benefit from intra-African investments by encouraging regional economic integration and lowering eventual restrictions on FDI outflows. As transnational corporations from developing and transition countries have a tendency to invest in labor-intensive manufacturing, their FDI has a high potential for employment generation. Furthermore, other developing countries can often provide African countries with the most appropriate technologies, make additional investments in infrastructure, and increase African access to resources and markets (UNCTAD, 2010).

Policies, regulations and standards

Government regulations and standards will provide the overall policy framework to encourage transition to a green economy. A clear, predictable and stable policy environment can create the confidence required to stimulate private investment, as discussed in the success story on feed-in tariffs earlier. Standards and labels are likely to play an increasingly important role in stimulating sustainable forms of production and consumption, distribution and transport. A proactive engagement of government, industry and consumers would enable African countries to fully participate in shaping the norms for environmentally-sound goods and services. A wide range of policy tools relating *inter alia* to the use of sustainable procurement, labels, standards, sustainable product design, cleaner production, and sustainable consumption, are contained in the African 10 Year Framework Program (10-YFP) on Sustainable Consumption and Production. The African 10-YFP was approved in March 2005 as part of the Marrakech Process on the 10 Year Framework Programs and was facilitated by UNEP and UN-DESA in close consultation with

Box 7: African success stories – African small and micro entrepreneurs in focus

The annual SEED Awards recognize promising, innovative start-up social and environmental enterprises demonstrating the green economy at the grassroots. Nearly two-thirds of all applications and of the SEED Winners have been from Africa.

Case 1: MicroPowerEconomy (2010 SEED Winner, Senegal): Standalone hybrid power systems for electrification of rural villages, microfinance services, and business training

Social impacts	Environmental impacts	Economic impacts
Reliable power supply in rural areas	Reduction in greenhouse gas emissions	Job creation
Enhanced energy security	Reduced dependence on imported fossil fuel	Income diversification
Refrigeration of medicines and vaccines		Reduced urban migration
Better access to education and information		

Case 2: Village Cereal Aggregation Centres (2010 SEED Winner, Kenya): Support for farmers for post-harvest technologies and near-farm cereal storage to increase food security and capacity to trade competitively

Social impacts	Environmental impacts	Economic impacts
New community-level cooperative	Sustainable land and water utilisation	Post-harvest losses reduced by over 25%
Increased food security	Environmental protection practices	Income diversification
Improved social welfare	Reduced use of harmful pesticides	Better returns on investment

Case 3: Assisting indigenous and local communities to develop bio-cultural community protocols that help communities assert their rights to manage and use their natural resources (2009 SEED Winner, South Africa)

Social impacts	Environmental impacts	Economic impacts
Communities understand their legal rights	Contribution to biodiversity conservation by communities' customary use and protection of natural resources	Improved livelihoods, using communities' natural resources and traditional knowledge
Strengthened community organization		Communities can enter into benefit-sharing agreements and biotrade

Case 4: Establishing an environmentally and socially responsible, fair-yet-profitable trade in apiculture products by up-scaling the marketing and production of honey and wax (2008 SEED Winner, Cameroon)

Social impacts	Environmental impacts	Economic impacts
Participation of entire community, including most vulnerable and marginalized (women and youth)	Enhanced environmental awareness in communities	Small-scale honey and wax producers can access more lucrative markets
Percentage of profits returned to communities	Better ecosystem balance	Improved income management and credit access
Opportunities for providers of services such as transport	More environmentally sustainable market chains	Market enhancement and expansion
Training and strengthened community organisation		New opportunities for income generation, including by marginalized groups

the Secretariats of the African Ministerial Conference on Environment and the Secretariat of the African Roundtable on Sustainable Consumption and Production.

Seizing trade opportunities

Trade is a powerful connector between production and consumption for driving transition to a green economy. A wide range of sustainable products and technologies are accessible through national, regional and international trade, making it critical for governments to ensure that markets are open for consumers to access such goods and technologies. Several African countries have showed competitive capabilities in areas such as sustainable agriculture, forestry and bio-energy, and environmental goods and services. This could open new opportunities for serving domestic, regional and international markets.

Box 8: African success stories – Uganda’s growing export of organic agricultural products

Uganda, the African country with the largest area under organic agricultural farming, significantly expanded its exports of organic products despite being classified as a least developed country situated far from its major export markets. Uganda’s certified organic exports increased from US\$ 3.7 million in 2003/2004 to US\$ 6.2 million in 2004/2005, before jumping to US\$ 22.8 million in 2007/2008. Studies commissioned by UNEP and UNCTAD indicate that, in 2006, the farm-gate prices of organic pineapple, ginger and vanilla were 300 per cent, 185 per cent and 150 per cent higher, respectively, than conventional products, making sustainable forms of production highly profitable for producers and local communities. Eighty per cent of the world’s organic agricultural producers are in Africa, Asia and Latin America. The global market for organic foods and drinks reached US\$ 50 billion in 2007 (UNEP, 2009).

In order to ensure that African countries can benefit fully from their comparative advantage in trade in environmentally sustainable goods and services, tariff and non-tariff barriers and market distortions must be removed. In many areas of international trade, the export potential of African countries has been constrained by tariffs, tariff escalation, or technical barriers to trade. In other cases, the competitive advantage of African producers has been undermined by production and trade-distorting subsidies offered to producers in other countries. This is true for agriculture, and in particular the cotton sector, where efficient and environmentally friendly African production could not fully benefit producing countries. In the context of the green economy, an all-out effort is needed to overcome these obstacles.

Trade rules should prevent countries from using environmental concerns as a pretext for trade protection. While it may be justified to place restrictions on certain imports on the basis of genuine environmental concerns, relevant trade rules and provisions on non-discrimination and unilateral trade restrictions should serve as clear safeguards, in order to prevent further trade restrictions or conditionalities on account of “green economy”. New rules or a paradigm shift may also be required to increase flexibility while at the same time disciplining the use of green subsidies that may create production or trade distortion.

Accelerating and strengthening regional integration can enable African countries to create large markets for intra-African trade and provide incentives for investments to develop a local manufacturing base and spur trade for clean products and technologies. Internationally, African countries could benefit from greater engagement in areas that present potential trade interests in environmental goods and services under the Doha Round.

It is widely recognized that enhanced market access opportunities alone will not be sufficient for Africa to gain a larger share of global trade. This is why financial and technical assistance is provided through mechanisms such as the Aid for Trade initiative and the Enhanced Integrated Framework (EIF) to increase the participation of African countries in international trade, by strengthening their trade-related infrastructure and supply-side capacities.⁴ For the Least Developed Countries (LDC's) in Africa, Aid for Trade could be leveraged to promote the development of productive capacities in green economic sectors and to support sustainable production and process methods. African nations could also request increased support within the EIF, in order to identify which green sectors offer the most promising scope for building export capacities and to analyze the measures that should be put in place to that effect.

Reforming harmful policies

Harmful government subsidies can induce unsustainable patterns of consumption and production in rich and developing countries alike. If not properly designed, these subsidies can cost the economy and society dearly, without necessarily achieving the desired policy objectives such as serving the poor. For instance, studies have shown that fossil fuel subsidies do often not benefit the poor (Sterner, 2011), and that they also undermine investment in renewable energy. A few African countries have attempted, with varying degrees of success, to reform some categories of subsidies, such as fossil fuel subsidies, having realized that targeted groups were not always benefiting from them. For example, in 2005, the Government of Ghana initiated reforms to reduce petroleum subsidies after realizing that they were going mainly to higher-income groups. It also eliminated primary and junior-secondary school fees, and made extra funds available for primary health care and rural electrification programs (IMF, 2008).

Technology transfer

African nations are recipients of technology in many areas, making effective international cooperation a critical enabling factor. There is no comprehensive assessment of the technologies that Africa needs to achieve a green economy transformation. Nonetheless, a number of mechanisms and initiatives have emerged under a variety of international conventions to identify needs and requirements in areas such as climate change, the removal of ozone depleting substances, or chemical and hazardous substances. A review of the Technology Needs Assessments (TNAs) conducted under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC) shows the specific technologies that African nations need to respond to the challenges of climate change. In addition, many such technologies will be critical in order to pursue a low-carbon path of development in Africa, an essential element toward a green economy.

All the TNAs of African countries addressed technology needs in the agriculture, forestry and land use sectors. These sectors were followed by the energy sector, as noted by 93 per cent of the African parties. Lastly, more than 82 per cent of African parties addressed measures in the waste management and industry sectors as priorities (UNFCCC, 2009).

Strengthening institutions and processes

Stronger institutions can play a pivotal role in formulating and supporting the implementation of green economy strategies and policies. A green economy transformation cannot be driven by individual government agencies, but rather by coordinated action involving policy and

⁴ WTO. The World Trade Organization and Millennium Development Goals. Aid for Trade.

decision makers from many segments of government. Institutions in charge of planning will be instrumental in mainstreaming green spending and green policies in national development strategies and policies. In addition, new institutional forms that draw on participation by private and public sectors, community-based local knowledge and collective forms of decision-making could spur wide support for a green economic transformation. For participation in green economic activities to become effective and transformative, it needs to be promoted as a form of active citizenship, alongside accountability (Mohan, 2007). The outcomes of participatory processes then have to be transformed into policies that are feasible to implement, so that public participation can be meaningful (Resnick and Birner, 2010).

Financing and international cooperation

To achieve a green economy, African nations will clearly need external sources of finance through both public funds and private investments. The financial and economic crisis left many African nations with a fragile fiscal condition. Whereas export earnings rebounded strongly in 2010, owing to increased commodity demand and prices, current account deficits widened for many non-oil exporting countries. Additional resources will be required to meet the financing needs of poorer countries.

Overseas Development Assistance (ODA) will remain a critical source of financing despite the uncertainty over budgetary pressures in donor countries. ODA is still an important source of external financing. ODA to sub-Saharan Africa reached US\$ 24.3 billion in 2008. The share of ODA to Africa in donors' gross national income (GNI) was 0.08 per cent, well below the targets of 0.15 to 0.2 per cent in the Brussels Program of Action and MDG 8. The 0.15 target has been exceeded by only 10 of the 33 donors from the Organization for Economic Cooperation and Development (OECD) Development Assistance Committee. If all donors met the higher 0.2 per cent target, ODA to African nations would double (OECD, 2010). The extent to which the current pressure on the budgets of advanced economies will reduce aid flows is still uncertain and remains a concern. More attention should thus be paid to ODA from emerging economies, in the context of South-South cooperation. Apart from attracting new financial resources, efforts should be made to ensure that existing ODA is channeled to investments in green growth.

IV. Conclusions

Through a political process, African countries have already begun to identify opportunities and challenges in the continent's transition to a green economy. At the thirteenth session of the African Ministerial Conference on the Environment held in Bamako, Mali, in June 2010, the African ministers of environment adopted the Bamako Declaration on the Environment for Sustainable Development, in which they recognized the need to take advantage of the opportunities provided by a growth and development trajectory that embraces the green economy model. At the seventh African Development Forum held in Addis Ababa, Ethiopia, from 10 to 15 October 2010, representatives called on African governments to "prioritize and promote green economy as a vehicle for addressing the challenges of climate change impacts on ecosystem sustainability and harnessing the opportunities provided by its vast and diverse ecosystems and natural resources"⁵

At the fourth Joint Annual Meetings of the African Union Conference of Ministers of Economy and Finance and the Economic Commission for Africa Conference of African Ministers of Finance, Planning and Economic Development, held from 28 to 29 March 2011 in Addis Ababa, a declaration was adopted in which ministers committed themselves to, among other things, spearheading "the transition to a green economy in Africa, *inter alia*, by supporting the necessary systemic and institutional transformations to ensure that green economies contribute to sustainable development and poverty reduction objectives, including improving welfare and the quality of life of Africa's citizens"⁶

The African Union Heads of State and Government meeting at the seventeenth session of the African Union Summit, held from 29 June to 1 July 2011 in Malabo, Equatorial Guinea, adopted a decision urging member States to "ensure that Africa's interests on the Green Economy issues within the context of sustainable development and poverty eradication, and institutional frameworks for sustainable development are defined and taken into account"⁷

Recently at the Fourth Special Session of the African Ministerial Conference on the Environment held from 12 to 16 September 2011 in Bamako, African environment ministers adopted a decision on green economy in the context of Africa, outlining African views and perspectives on the subject.

These landmark decisions provide momentum for African decision makers and stakeholders to engage proactively in identifying and articulating Africa's interests and positions in the process toward the United Nations Conference on Sustainable Development and beyond.

It appears from consultations and analytical studies that in Africa, the environment is an important factor for economic growth and development. The green economy offers opportunities for African countries to attract investments in environmental assets and renewable energy, which will, in the long run, benefit development, reduce poverty and create employment.

⁵ Consensus statement, available at www.uneca.org/adfvii/documents/ADF-VII-Consensus-Statement.pdf.

⁶ E/ECA/CM/44/6 and AU/CAMEF/MIN/Rpt(VI), annex I, section B, para 12 k.

⁷ Doc. Assembly/AU/12(XVII) Add.3.

Investments, both from public and private sources, can be made in the areas of sustainable agriculture, fisheries and biodiversity management, as well as in technology, education and infrastructure. Efforts should be made to reallocate existing capital flows toward sustainable economic development. If transformed toward sustainability, the mining, energy and manufacturing sectors can be used by African countries as an engine for growth.

It is essential that governments put the enabling policies and conditions for a green transformation into place. Trade policies can be used to improve African access to green technologies, and to assist African countries in gaining access to world markets for sustainable products. African governments can encourage the transition to a green economy through an overall policy framework, consisting of a coherent set of policies, regulations and standards.

In addition to national policies and financing, external financing and facilitation of access to technology are needed for a green economic transformation to occur. This external financing should be directed especially at capacity-building and institutional strengthening. The international community can play a decisive role in this process.

As African countries seek to maximize opportunities in areas where they possess significant competitive advantage, it is important to ensure that policies adopted in other countries do not result in new or additional barriers to trade, investment or aid.

Although the green economy is a new concept, there are many examples of successful policies and initiatives across Africa in the areas of energy, agriculture and forestry, which prove that green economy-related action is already under way in several of these countries. These countries can share their experiences with other African countries; and Africa, as a whole, can engage in global processes with its own views, perspectives, lessons learned and experiences, including at the local level.

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