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A Green Economy in the Context of Sustainable Development:

What are the implications for Africa?

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Panel Discussion 1 - The Green Economy

I. Overview

1. The General Assembly decided in Resolution 64/236 to convene the United Nations Conference on Sustainable Development in 2012 (Rio+20), 20 years after the Rio Earth Summit, to review progress in the implementation of the outcomes of the major summits on sustainable development, deliberate on new and emerging challenges and reinvigorate the political will for sustainable development. The two themes of the conference are “*A green economy in the context of sustainable development and poverty eradication*”, and “*The institutional framework for sustainable development*”.

2. The concept of the green economy is one of the several closely related constructs that have emerged in recent years to enhance convergence among the three pillars of sustainable development. According to the UNEP Green Economy Report, a green economy is defined as an economy that results in improved human well-being and reduced inequalities over the long term, while not exposing future generations to significant environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is low carbon, resource efficient, socially-inclusive, and that protects and enhances biodiversity and ecosystem services.

3. The green economy is as much about developing an economic system that builds and enhances the earth’s natural capital as it is about maximizing economic benefits and minimizing social inequalities. Ultimately, the green economy is an outcome-oriented concept that aims at improving human well-being without undermining the resource-base that current and future generations depend on for their livelihoods. It serves to link economic performance with efficient resource utilization and a just distribution of the benefits within and across generations.

4. African leaders have already embraced the green economy concept as exemplified in several declarations and resolutions, namely: the 3rd African Ministerial Conference on Financing for Development (May, 2009); the 13th Session of the African Ministerial Conference on the Environment (AMCEN) of June 2010; the 1st Pan African Biodiversity Conference (September 2010); the 7th African Development Forum (October 2010), and most recently, the 18th Ordinary Session of the Executive Council of the African Union (January 2011).

5. This issues paper generally outlines some elements of the green economy debate, and in particular, those that are relevant for Africa. It identifies challenges and opportunities, as well as the role of governance and the use of policy instruments that could ensure a smooth and effective transition. It highlights opportunities in key sectors of the African economy, namely: energy; agriculture and land use; water; environmental goods and services, forestry and fisheries, and mineral resources and manufacturing. It concludes by highlighting some key questions that could guide the panel discussion on the green economy in the context of Africa’s sustainable development.

II. The green economy in the context of development

Sustainability will remain elusive if we do not design ways to live within the means of one planet and sustainability will remain equally elusive if there is no hope for all for a better life on that one planet

6. Africa needs to develop, but it is increasingly clear that business as usual in Africa and around the world is no longer an option: on average, we are living beyond the carrying capacity of our planet. According to the Living Planet Report (2010), August 21 of 2010 was earth overshoot day. This means that, we exhausted our ecological budget for the year. Today, it is estimated that we use the equivalent of 1.5 planets to provide us with resources and absorb our waste. If current trends in population growth and consumption patterns continue, by 2030 we would need two planets to support us. Even if most of this capacity is used by people outside of Africa, overshooting the earth's carrying capacity tends to have a disproportionate impact on the poor, who are the least equipped to deal with the associated challenge.

7. A new approach to economic growth is thus necessary. We need to find ways of integrating environmental sustainability with economic growth and welfare by decoupling growth from environmental over-exploitation and social inequities and inequalities. “Environmental sustainability”, “sustainable consumption and production”, “green growth”, “climate resilient, low emission strategies”, “inclusive growth” and “decent jobs” can be seen as ways to reconcile the demands for economic growth with the increasing scarcity of natural resources, and the challenges of poverty. This will require significant transformation of the socio-economic system as we know it. The 2008/2009 global financial and economic crisis presented an unprecedented opportunity to bring about the necessary transformations, thus lending even more momentum to these concepts. The idea of a Green New Deal was thus put forward by several institutions (A Green New Deal, 2008). Using the economic recovery packages as leverage, the green new deal focuses on ways to bring the world back on track from a combination of economic, environmental and social crises. The call has been heard by many governments: the Obama administration, for instance, included in the stimulus package significant spending on environmentally-friendly projects aimed at creating “green-collar jobs” and saving energy, and longer term measures to safeguard the environment.

8. A transition to a green economy presents both challenges and opportunities. But is the concept of green growth relevant in all economies in different stages of development?

9. For developed countries, a green economy fuelled by green growth requires radical changes in behaviour and shifting public opinion. It requires strong and clear signals from the government, but also from individuals – citizens and consumers – to prioritize environmental and social sustainability. The greatest challenge thus lies with changing behaviours and transforming institutions to enable the adoption of sustainable patterns of production and consumption. Public policy changes at all levels – local, regional, national, and international – are necessary to make private and civic action easier and more attractive.

10. Indeed, the green economy can also be successfully pursued in the developing world, including in Africa. It can lead to economic growth which is socially-inclusive and environmentally-sustainable in the medium to long term. Africa's level of development means that it can take a very different development path from other regions - a strategic advantage that Africa must exploit. Africa can leap-frog dirty and inefficient technologies and products, thus skipping the most polluting and less sustainable production and consumption processes. These technologies should harness indigenous and local knowledge, and include a mix of low-tech solutions (e.g. cleaner, more efficient burning stoves), medium-tech solutions (e.g. green infrastructure), and high-tech solutions such as solar energy technology. Conversely, Africa needs to avoid technological lock-ins where polluting technologies are used, as they are cheaper in the short term.

11. Developing countries also have the greatest potential to expand the ranks of consumers: a large part of the population still lacks even the most basic livelihood requirements, and satisfying basic needs will lead to expanding consumption and production. Given these facts, advocating for development through resource intensive, polluting technologies and unsustainable approaches will further undermine sustainability and poverty reduction in the long-term.

12. Both established and emerging economic and societal set-ups have to be transformed to become "sustainable", without precluding improved welfare and an acceptable development level for all. A high level of human development — where people have the ability to reach their potential and lead productive, creative lives in accordance with their needs and interests – is clearly essential for all individuals.

III. Challenges and opportunities

13. The green economy can offer considerable opportunities for mobilizing resources towards a low-emission, climate-resilient development pathway. But there will be major challenges in ensuring that green economies contribute to sustainable development and poverty reduction objectives, improving welfare and the quality of life for Africa's citizens. This will necessarily entail an increase in consumption, in particular food, energy, and water. Policies and investments to sustain and enhance the natural capital assets – soils, forests, fisheries – on which many poor communities depend for their livelihoods, can be instrumental. At the same time, the economic system needs to develop to improve Africa's terms of trade and increase its productive activities. The pathway towards a green economy may be costly in the short-term. This may go against institutional priorities for addressing more immediate and pressing development concerns and short-run poverty alleviation objectives.

14. However, in the long run, a green economy will lead to economic growth which is sustainable and reduces poverty. The transition needs to be handled to safeguard the poorest segments of society. It should also be coupled with policies that focus on improving equity and reducing poverty. In the short term, actions must focus on exploiting the already existing opportunities for no or low-cost, win-win transformation possibilities. Embarking on the green economy can and must be a win-win strategy to pursue economic development without repeating

the same paradigm of “Grow first, and clean up later”, which has proven unsustainable and ultimately more costly, in particular, when externalities such as impacts on health and irreversible damages are considered. Investment strategies should distinguish between broad sectors, such as resource-intensive consumption, investment and energy-intensive infrastructure. Government spending in environmentally harmful subsidies should be regulated or limited. Sectors where investments should be expanded include health, education, cultural activity and services. Decent jobs should be created and resource and energy-efficient investments should also be promoted.

15. It is for this reason that sustainable consumption and production must be critical elements of the green economy for Africa, focusing on more efficient, better informed and less resource-intensive consumption, providing opportunities for job creation and equitable growth and development to meet basic needs and improve the quality of life of its ever-increasing population. At the same time, as production and consumption in one country can have a negative impact in other countries through activities such as dumping of waste or pollution from second-hand and used electronic products, policies are needed to ensure that cross-border exchanges do not undermine Africa’s efforts towards sustainable growth.

IV. Governance, policy instruments and mechanisms to promote transformation

16. Strategies to kick-start the process and involve key actors and leading figures are urgently needed to ensure that the long term benefits outweigh the short term transitional costs involved in the transformation of the whole socio-economic system.

17. Certain components are required to ensure the successful implementation of green economy policies in the longer term. Good governance and adequate institutional and human capacities are essential to realizing the effective implementation of policies. Strong political support would provide much needed policy and financial leverage, and help create confidence in the green economy issue. Furthermore, the engagement of business groups would help generate additional resources and facilitate markets for specific interventions in the green economy. Improving budgetary allocation, fighting corruption and inefficient use of public resources, will necessarily play a key role in the transition. Public participation and wide buy-in of the concept is also necessary. The green economy agenda will struggle in the absence of meaningful participation by the people, as citizens, and as consumers. In this respect, it is extremely important to strengthen governance in order to improve accountability, participation, and transparency in decision-making.

18. Governments, regional and international organizations and development cooperation agencies have a critical role to play in setting the process in motion and accompanying it through clear policies. Significant investments in capacity-building of all relevant actors (government institutions, the private sector and experts), institutional innovation and strengthening, as well as targeted financial support will be needed for the development of a green economy and poverty reduction to achieve the sustainable development objectives of Africa. In this context, it is important to understand the role of governments (from different ministries and at different levels) and other actors (businesses engaged in both the formal and informal economy, trade unions, civil

society, universities, research organizations, etc.) that make up national and regional economies, along with the incentives and disincentives that drive their behaviour. Without such knowledge, it is not possible to decide whether proposed interventions are suitable or likely to work in any particular African economy.

19. However, what policy tools can be employed to foster the transformation? The policies must be conducive, and must include transformational tools like fiscal policies, public and private investments, procurement rules, trade rules, and research and development. There should also be specific sectoral policies such as industrial development, transport and employment creation. Progressive taxes or tariffs on energy, water, and other natural resources, can ensure that the market price reflects their true costs to society. The removal of environmentally-harmful subsidies that promote excessive use of resources or chemicals, for instance, would lead to better environmental protection *and* free budgetary resources that could be invested in economic transformation or social protection. Governments can also introduce the Ecological Tax Reform (ETR) as an important tool of initiating greening of the economy without increasing the tax burden on the economy. Governments may even aim to reap double dividends from reduction of carbon emissions, while increasing employment and growth. However, further study is required on the applicability of ETR in developing countries and concrete policy options to introduce it in developing countries.

20. While markets and market-based instruments can and should play a key role in fostering the transition, it is clear that they will be necessary but not sufficient. Government interventions will still be needed in areas such as public goods and research and development, with societal benefits and safety nets to cushion the transition. There should be significant institutional innovation to accompany and implement these measures as well as an enabling environment to support all relevant actors such as businesses, research institutions and consumers to fulfil their role. Bottom-up individual initiatives should be capitalized upon and scaled up, and facilitated by top-down initiatives and the creation of an enabling environment. The informal sector still plays an important role in the economies of African countries; new policies and institutions should thus address ways to harness its potential. Lastly, international cooperation that fosters technology transfer and deployment, financial support for critical interventions, and capacity-building and support for institutional reforms will be crucial.

Energy

21. Energy and energy access are critical for the development of Africa's economies. While the region has great potential for renewable energy, it still has huge gaps in investments in energy infrastructure. This situation presents significant opportunities for promoting green energy to lead towards a green economy. One such opportunity will be to increase the proportion of renewable energy sources, and also promote the most appropriate mix of scale for both production and distribution (large-scale production and grid systems, coupled with small-scale grids or even decentralized, community/household level energy production and use).

22. Investments in renewable energies have to be made commercially viable by internalizing ecological costs into market price of non-renewable energy sources, while at the same time ensuring that economic growth is not hampered. Increasing reliance on renewable energy sources also has important (political) co-benefits, such as increasing energy security

23. Improving energy efficiency also has a very large potential in both distribution and final use. Final use in particular can have significant co-benefits in terms of improving the conditions of households and health, as well as slowing down environmental degradation - deforestation in particular. It is thus critical that both the supply side and the demand side are addressed in a holistic and integrated manner to transform the energy system.

24. Several instruments can be employed to promote greening of energy supply and use. These include addressing tariff and non-tariff barriers, improving production and processing standards, promoting eco-labelling and energy efficiency in domestic appliances, putting in place a system of incentives and disincentives (e.g. feed-in tariffs to promote the development of renewable sources).

Feed-in tariffs in Kenya.

A feed-in tariff (FIT) is a policy instrument aimed at favouring market penetration for renewable energy technologies. It makes it mandatory for energy companies or utilities to purchase electricity from renewable energy sources at a pre-determined price, 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 an FIT include access to the grid, long-term power purchase agreements and a set price per kilowatt hour (kWh).

In January 2010, Kenya revised the FIT policy, adding three new renewable energy sources: geothermal, biogas, and solar energy resource generated electricity. In addition, the revised policy extended the period of the power purchase agreements from 15 to 20 years and increased the fixed tariffs per kilowatt-hour for pre-existing wind, biomass and small-hydro power under the FIT. It is expected that the FIT policy in Kenya could stimulate about 1300 MW of electricity generation capacity.

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. Initially covering wind, biomass and small hydro, the policy is planned to include geothermal sources of energy.

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. Indeed, since the announcement of the feed-in tariff policy, some sugar companies have planned to upgrade their biomass-based cogeneration potential in order to benefit from the FIT policy.

For more info: <http://www.unep.org/greeneconomy/SuccessStories/tabid/4652/Default.aspx#panel-2>

Agriculture and land use

25. The importance of agriculture for economic and social wellbeing is without parallel. Agriculture accounts for 34 per cent of the GDP of sub-Saharan African countries and employs about 70 per cent of the population. A green economy in the context of sustainable development and poverty reduction will need to cope with some of the challenges for this sector. For example, climate change and ecosystem degradation will negatively affect agriculture, and cause a decline in the productivity of rain-fed agriculture. The green economy in the African context must embody green farming and sustainable irrigation practices, as a way to conserve soil quality, enhance biodiversity and maintain higher levels of productivity to feed an expanding population.

26. There should be structural transformation of the agricultural sector to achieve more productivity and value addition, as well as policies to support economic diversification. However, all implications of structural transformation should be considered. These include potential negative impacts of leasing large tracts of farmland to foreign companies, and environmental and social impacts.

27. Development and uptake of appropriate and sustainable technologies need to be fostered. These include efficient irrigation, mechanization, improvement of livelihoods, and better ways to measure productivity, taking into account inputs and externalities. There are significant co-benefits such as agro-biodiversity and reduced water pollution through improved use of inputs. These need to be highlighted to promote the sustainable transformation of the sector.

28. Several instruments can be employed in agriculture and land use. These include: increased access to markets for sustainable products, trade policies, addressing tariff and non-tariff barriers, improving production and processing standards, promoting eco-labelling to stimulate the development of new products and introducing incentives and disincentives for more social and environmentally-friendly production.

29. Most of the above-noted instruments and a range of other pertinent measures for enhancing the green credential of African agriculture are already incorporated in the Comprehensive Africa Agriculture Development Programme (CAADP), which is an AUC-NEPAD agency-led framework for transforming African agriculture. This framework, which enjoys the buy-in 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 have signed multi-stakeholder commitment documents called CAADP Compacts.

Organic agriculture in Uganda

Uganda uses among the world's lowest amount of artificial fertilizers. The widespread lack of fertilizer use has been harnessed as a real opportunity to pursue organic forms of agricultural production, a policy direction widely embraced by Uganda. The limited access to chemical input has in fact been turned into a comparative advantage. Uganda has taken major steps to transform conventional agricultural production into an organic farming system, with significant benefits for its economy, society and the environment.

As early as 1994, a few commercial companies began making a conscious effort to engage in organic agriculture. At the same time in Uganda, there was a general movement in the agricultural sector towards developing sustainable agriculture as a means of improving livelihoods. By 2003, Uganda had the world's 13th largest land area under organic agriculture production and the largest in Africa. The percentage of land under organic farming practices increased by 60 per cent from 2002 to 2007, reaching 296,203 hectares of land.

As a significant producer of organic products, Uganda benefits from an important source of export earnings and revenue for farmers. Certified organic exports reached US\$22.8 million in 2007-2008. In terms of price premiums and income for farmers, studies commissioned by UNEP and UNCTAD indicate that in 2006, the farm-gate prices of organic pineapple, ginger and vanilla were respectively 300,185 and 150 per cent higher, than conventional products.

Through organic farming, Uganda not only gains economically, it also contributes to mitigating climate change, as greenhouse gas emissions per hectare are estimated to be, on average, 64 per cent lower than emissions from conventional farms. Various studies have shown that organic fields sequester 3–8 tonnes more carbon per hectare than conventional agriculture.

In terms of policy, the government adopted the Uganda Organic Standard (2004) and the East African Organic Products Standards (2007). In July 2009, the government released a Draft Uganda Organic Agriculture Policy, which identifies agriculture as “one of the avenues for delivering self-sustaining growth as it provides mechanisms for individual farmers to improve productivity, add value and access markets which are keys to achievement of the Poverty Eradication Action Plan objectives”. The policy identifies nine areas of intervention: the promotion of organic agriculture as a complementary agricultural production system; the development of a system of standards, certification and accreditation; the promotion of research and dissemination; support to the development of local, regional and international markets for organic products; the generation of information, knowledge and skills through education and training; the improvement of post-harvest handling practices, preservation, storage and value addition; the sustainable use of natural resources; and participation of special interest groups such as women, youth, and the poor and vulnerable.

For more info: <http://www.unep.org/greeneconomy/SuccessStories/tabid/4652/Default.aspx#panel-3>

Water

30. Several issues are related to water, but may offer different opportunities and require different approaches. For instance, water supply and sanitation vs. basin management. Integrated Water Resource Management can offer a good framework to promote more sustainable water use and water protection policies, ensuring that water scarcity is tackled for sustainable economic development.

31. Current practices and tools often undermine sustainability. For instance, water pricing often fails to consider the true cost of water, resulting in inefficient use of the resource. Given that the demand for water will increase, further pressure will be put on an already scarce resource. Climate change will pose increasing challenges for the water sector. This should be taken into

account in the transition to the green economy. For instance, variations in supply, use, storage, management of resources in the environment and the economy should all be considered.

32. The green economy in the water sector would call for policies to facilitate changes in current conditions of water supply and demand. Addressing both sides of the equation is critical. Securing water through ecosystem protection should be an essential component of the green economy, coupled with non-traditional investments in green infrastructure for water protection.

33. It will therefore be necessary to significantly reform water policies. Reform 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. Behavioural changes will also be crucial as will the policies and incentive systems like water pricing and sustainable management and utilization of water.

Environmental goods and services

34. The environmental goods and services (EGS) sector is growing in importance. In OECD countries for instance, the sector made an annual turnover of US\$ 770 billion in 2009.

35. Africa is rich in natural resources like minerals and fossil fuels and biological resources like biodiversity and forests. A huge potential remains to be tapped so as to develop endogenous capacity to sustainably exploit this sector. This would contribute to growth, environmental protection, and employment at the same time. Environment and natural resources provide goods and services to communities, and may also develop into a true engine of growth through services such as payment for environmental services, provision of pharmaceuticals, input into goods produced in Africa and elsewhere, pro-poor and sustainable tourism.

36. Sustainable ways for exploiting EGS can and should be part of the drive towards a green economy. The adoption of an ecosystem-based approach should serve as basis for this exercise, whose first step should focus on getting the price signal right. Creating the right environment and exploiting new market opportunities will also play a crucial role.

Ecosystem Services in Ecuador

The city of Quito offers a leading example of the potential for developing markets that channel economic demand for water to upstream areas from which it is supplied. This is because water availability heavily depends on the conservation of protected areas upstream.

The Fund for the Protection of Water (FONAG) was established in 2000 by the municipal government, together with a non-governmental organization, as a trust fund to which water users in Quito contribute. FONAG uses the proceeds to finance critical ecosystem services, including land acquisition for key hydrological functions. The largest share of payments comes from the Quito water utility (Metropolitan Enterprise of Water and Sewer Systems in Quito – EMMAP-Q) which contributes one per cent of monthly water sales. Hydropower companies make fixed annual payments, as does the Cerveceria Andina brewery. Farmers drawing water through irrigation also contribute.

The Fund then finances both watershed management projects in micro river valleys and longer-term programmes oriented towards communication, environmental education, forestry, and the river basin management training. These projects and programmes are undertaken with the participation of different community actors, local authorities, educational institutions, and governmental and non-governmental organizations.

While contributing to secure water supply, FONAG also has significantly improved upstream watersheds. It also provides support to farmers receive who implement watershed protection programmes. More than 1800 people are estimated to be receiving increased economic benefits from watershed management and conservation activities.

FONAG has inspired the development of similar schemes elsewhere in Latin America and beyond. For example, in South Africa, where water forms one of the greatest constraints to development, a recently-launched initiative in the Maloti Drakensberg Mountains aims to implement a payment for watershed services programmes, with support from UNEP and the BASF Social Foundation. This initiative will use payments from downstream users to support the restoration of dongas, and the improvement of grazing and veld fire management regimes in order to reduce sedimentation and increase the quality and quantity of water flows. In so doing, employment will be generated for local households and the productive potential of agricultural activities should increase.

For more information: <http://www.unep.org/greeneconomy/SuccessStories/tabid/4652/Default.aspx#panel-7>
And: http://www.watershedmarkets.org/casestudies/South_Africa_Maloti_Drakensberg.html

Forestry and fisheries

37. Forests are particularly important for Africa. They provide significant timber and non-timber forest products, thus supporting both local communities and national and international trade. Furthermore, they are important providers of ecosystem services, such as climate regulation, carbon sequestration and watershed protection. 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.

38. New types of forest-related opportunities need to be strengthened. They include those linked to carbon sequestration services which provide livelihoods and local revenue generation. The advantages of community forest management include employment and income generation from forest protection as well as the sustainable exploitation of timber and non-timber products. Additional economic benefits can be gained in terms of secure fuel wood supply, which contribute 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 initiative to combat illegal logging can help achieve sustainability in this sector.

39. Similarly, fisheries directly and indirectly support local communities and international trade. They provide animal protein and food to millions of people. According to FAO, nearly one billion people worldwide rely on fish as their primary source of animal protein. Fisheries can also deliver significant annual profits. However, when the sector underperforms there is a major decline in fish stocks. Research suggests that relatively marginal investments in maintaining the fish stock can produce significant benefits and avoid collapse of the industry. Greening the fishery sector by rebuilding depleted stocks and putting in place effective management systems can increase fish catches significantly, thus contributing to better nutrition and income generation.

40. Tools and instruments for greening the sector include, reforming subsidies and other economic distortions, reducing efforts in fishing to a maximum sustainable yield, where profits are maximised and the fish stock is protected and building effective national and international institutions to improve coordination and monitoring. Efforts to improve phyto-sanitary standards and processing can both lead to long term sustainability and improved terms of trade.

Mineral resources

41. 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 ran 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.

42. The sector could bring about significant economic benefits, from foreign direct investments and government revenue, to being a source of foreign currency. A well developed industry would also contribute to exports, employment opportunities and building the technological and skills base of a country. However, if not well managed, mining exploitation can have – and indeed is already having in some countries – dire environmental and social consequences. All mining operations – from exploration to exploitation and processing – can negatively impact environmental quality and alter ecosystem services, leading to air and water pollution, soil erosion, or de-vegetation. These impacts are not only limited to the environment, but also have heavy consequences on human health and social structures. Mining operations, for instance, may lead to land use conflict, forced resettlement of communities, unbalanced migration, and growing inequalities.

43. Key challenges to ensure 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 to further the development of mining exploitations, removing subsidies to mining companies and improving transparency in their operations with a view to reducing corruption opportunities. Governments must take a leading role in ensuring that the mineral resources of their countries are exploited for the sustainable benefit of their citizens.

Manufacturing

44. 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 thus need to

absorb a greater proportion of the future workforce in Africa, and promote value-addition in Africa's traded goods. At present, high energy and material intensities are characteristic of African industries, which add undue costs to economies and ultimately undermine global competitiveness. There is therefore great benefit in promoting the green economy agenda.

45. Key challenges to ensuring the sustainable growth of Africa's manufacturing sector include: (i) pollution – where from the outset clean technologies can be promoted to lessen or avoid significant pollution of air, water, and other environmental media; waste, where the concept of the three R's (reduce, reuse, recycle) can be promoted at the outset. Similarly, existing large and small scale production processes can be retrofitted with cleaner technology and pollution control measures; (ii) improving productivity to ensure competitiveness of the sector and its active role as engine for growth; (iii) ensuring that trade policies play their full potential in promoting the development of green industries and products. The global dimension can also provide incentives to this effort. Indeed, while there may be competitive advantages in "being green", government interventions are needed to ensure that these opportunities are harnessed.

46. One of key aspect is the opportunities for diversification, while recognising the limitations within a green economy. As pointed out earlier in the paper, transformation of the economy implies trade-offs. There may thus be winners and losers (for instance, some sectors will flourish, while others will contract); and policies to cushion the transition will be needed.

Greening industry in Africa – 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 a huge potential for improving efficiency in the production and use of energy, which could bring economic gains, improved competitiveness, and reduced green house gas emissions. Industrial policies geared towards 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 aluminium industry demonstrates the possibilities for efficiency gains in Africa. African aluminium smelters use on average, 14 337 kilowatt hour (kWh/t) per ton of aluminium 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).

V. How can we take the green economy forward?

VI. Questions for discussion

47. The following list of questions intends to provide some directions on topics that could be explored during the panel discussion. Without claiming to be exhaustive, the list attempts to bring out some critical elements of the green economy debate in the context of the African economy.

48. What is the economic, environmental and social case for moving towards a green economy?
49. What is your vision for these sectors (energy, agriculture and environment, forestry and fisheries, water, manufacturing and mining resources) in a green economy in Africa? Can these sectors be the engine for a green growth in Africa? What sectors should be targeted as a priority?
50. Who are the key players in Africa who can make this happen, and what is their role? What partnership agreements are needed? [Government? Business? Civil Society? Universities and research institutions]
51. What institutional innovations are required to support these actors?
52. Does the green economy improve productivity? Does it improve welfare? Does it lead to decent labour – more and/or better employment opportunities? What investments are needed?
53. How can countries increase investments in research and development in support of the green economy? Where should research and development efforts be directed?
54. What trade-offs are necessary for the transformation? Who gains from a green economy and who loses from the green economy? Is this a barrier to implementation? If so, how can it be mitigated?
55. What are good examples from Africa and elsewhere? What helped make this work?
56. Given this, what are the opportunities for global and south-south cooperation and collaboration? What are the possible partnerships between government, business organizations, trade unions, civil society, universities and research institutions?
57. What is the implication of globalization for competitiveness and opportunities in a green economy? How can countries build international and national consensus on the green economy path as an innovative approach towards sustainable development?
58. Development is the best form of environmental protection. As such, there is a need to selectively draw down on Africa's natural capital to ensure development. Natural resource exploitation is a priority above conservation, but this needs to be done within explicit ecological limits. What are the implications of this position?

VII. Useful references and internet resources

A green new deal, 2008, New Economic Foundation, available at http://www.neweconomics.org/sites/neweconomics.org/files/A_Green_New_Deal_1.pdf

BAU not an option blog: <http://oecdinsights.org/2010/10/15/business-as-usual-is-not-an-option/>

IISD case studies on Payment for Ecosystem Services:

http://www.watershedmarkets.org/regions/centralamerica_caribbean.html

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