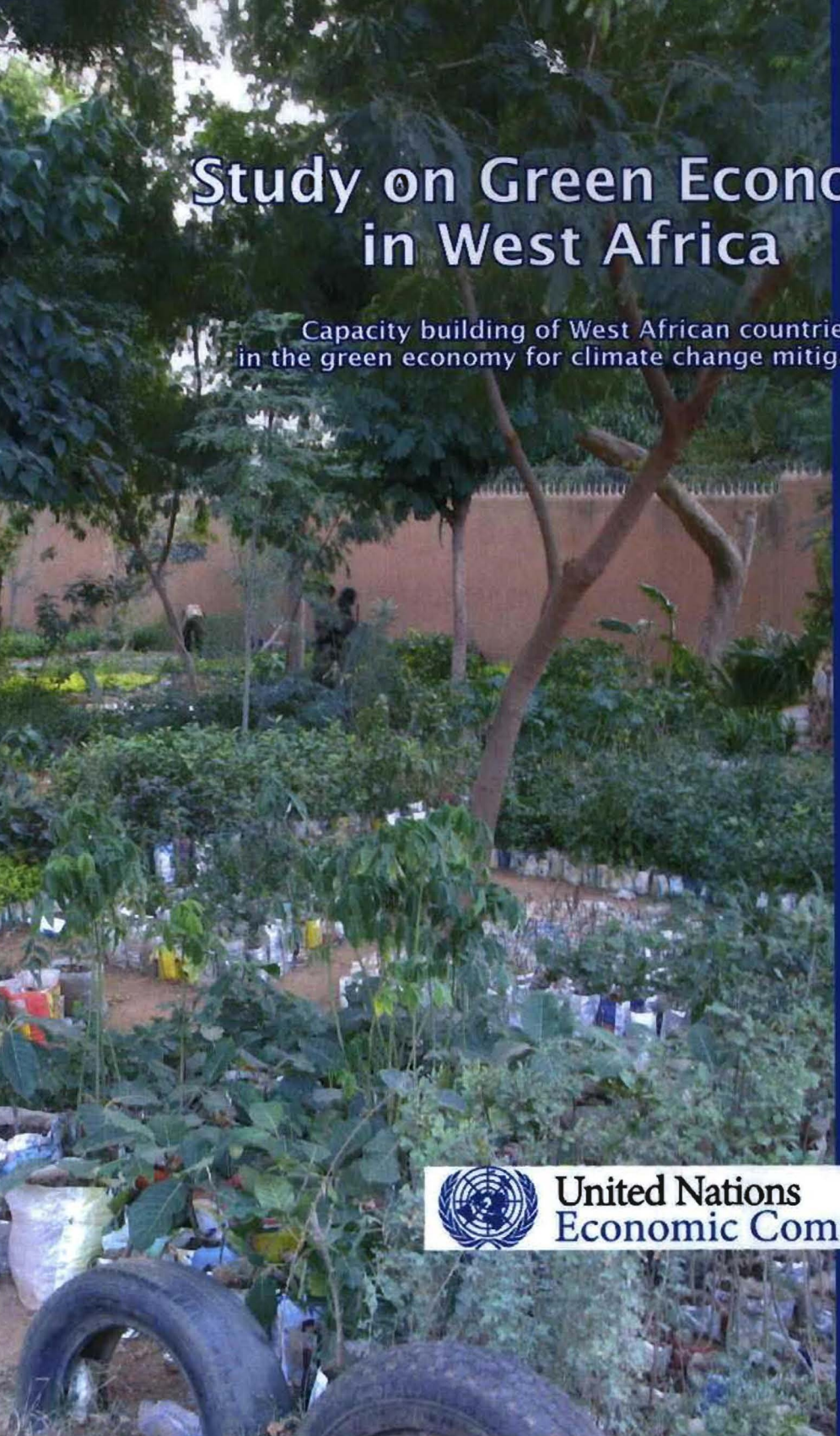

Study on Green Economy in West Africa

Capacity building of West African countries in the green economy for climate change mitigation

United Nations
Economic Commission for Africa

WEST AFRICA
SUBREGIONAL OFFICE

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INTRODUCTION

The green economy, a concept controversial in its definitions, is considered to be a tool for the promotion of sustainable development. It remains at the heart of debates, both at national and the international levels, in the fight against climate change and for the mass creation of environmentally friendly jobs. The concept of green growth[1] attracts more and more interest amongst policy makers and development practitioners to deal with the model of the world economy. The Rio+20 Summit held in June 2012 was an opportunity for the international community to reinvigorate political commitments towards sustainable development and to address emerging development challenges. The meeting focused on two specific themes: green economy in the context of the eradication of poverty and sustainable development, and the institutional framework for sustainable development.

The first decades of this new millennium have seen the predominant global economic development model faced with multiple crises simultaneously, the depletion of natural resources and market failures. It has proven ineffective in generating productive employment and decent work. This type of traditional economy, under the auspices of the "brown economy", exacerbates the impact of climate change, the depletion of natural resources, and various crises related to biodiversity, energy, food security and most recently the financial system. These effects are characteristic of an exponential increase in greenhouse gas emissions, migration of peoples, increasing social disparities, underemployment, etc., which constitute the major development challenges faced by humanity.

Meanwhile, investments were poorly oriented towards mass job creation and environmentally friendly jobs. The current economic model does not allow for sufficient creation of decent jobs, and has led to an inefficient financial system whose costs stay high for both businesses and employers in the real economy. Those derivatives were favored by a misallocation of resources. According to the United Nations Environment Program (UNEP), recent decades have seen significant capital being invested in real estate, fossil fuels and financial products incorporating derivatives. However, investments were relatively weak in the areas of renewable energy, energy efficiency, public

1. In its report "Towards Green Growth: Monitoring Progress. OECD Indicators", OECD proposes the following definition: "Green growth is about fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being depends. To do this it must catalyze investment and innovation which will underpin sustained growth and create new economic opportunities."

transport, sustainable agriculture, protection of ecosystems and biodiversity, and conservation of soil and water, which are all niches for green economy. On the contrary, most strategies around development and economic growth promoted the rapid accumulation of physical, financial and human capital at the cost of exhaustive and excessive degradation of natural resources, in particular the subsistence agriculture, upon which nearly 1.3 billion people depend.[2]

The consequences of the global development crisis severely affected world economies. Most affected are the vulnerable economies of developing countries, and especially those in sub-Saharan Africa. In this subregion, the natural capital forms that are the basis of food security and wealth creation undergo a steep deterioration. In the same time, African countries face increasing demands for energy, water, food, and health, as well as the imperative to reduce poverty and stimulate economic activity that leads to job creation and increases income levels.

However, Africa has experienced rapid economic growth over the past decade with annual growth rates of countries averaging 5-or 6 per cent, and regularly exceeding those of other regions. Important levers for growth are due to a strong demand and competitive prices for raw materials. Jointly, the macroeconomic reforms, associated with greater political stability and increasing urbanization, resulted in the strengthening of the services sector, and the emergence of a "middle class" and pan-African entrepreneurship.

Despite these remarkable growth rates, there is a growing inequality between regions, between countries and, within countries, between rural and urban areas. Poverty, unemployment and food insecurity are persistent problems. The lack of universal access to energy, health, education, and infrastructure aggravates social vulnerability. Weaknesses in the economy tend to materialize in small and often informal businesses with low investment capacity, limited skills, and inefficient technologies, which cause their lack of competitiveness in the global market.

The urgency for Africa is to guarantee to its working-age population, estimated at about half a billion people in 2020 (BAD), a socially-inclusive growth that can create economic opportunities for all, in labor-intensive sectors. Given that African economies are deeply dependent on natural capital, green economic growth should permit a more judicious exploitation of natural resources through more effective and productive investments.

A transition to a more viable and more environmentally-friendly economy is necessary for the reduction of poverty and the development of means of subsistence for millions of youths and women, who depend on natural resources such as land, forests, fisheries, and other types of natural capital. The adoption of more sustainable modes of consumption and production should raise African economies in terms of competitiveness, wealth creation, employment, and eradication of poverty.

Green economy, which proposes a clear break with the current development model, with a move towards more sustainable patterns of development, is characterized by low-carbon growth, and a rational and inclusive use of natural resources. Green growth is also aimed at fighting climate change, while green technologies and industries drive the engine of national economic growth.

2. 2011, PNUE : « Vers une économie verte : pour un développement durable et une éradication de la pauvreté-Synthèse à l'intention des décideurs ».www.unep.org/greeneconomy

UNEP defines green economy as "an economy that leads to improved human well-being and social equity while significantly reducing environmental risks and the lack of resources." In operational terms, in this type of economy, revenues streams and creation of employment must come from public and private investment in low-carbon, low-polluting, efficient resource use, including energy, and towards preserving biodiversity and environmental services.

Box 1: Concepts of green growth and green economy

The comprehension of the green economy concept must be based on understanding the concept of economy. The economy generally refers to production, processing, distribution, consumption, and the management mechanisms related to these activities within a geographic area. The green economy therefore refers to, on the one hand, modes of existence which do not call into question the environmental sustainability, and on the other hand, a process of wealth distribution ensuring a reduction of social inequalities.

Due to its complexity of the concept, various organizations have attempted to characterize the green economy in order to give it an operational content.

UNEP defines a green economy as "an economy that results in improved human well-being and social equity, while significantly reducing environmental risks and the lack of resources". At the operational level, a green economy is one whose income and jobs are generated by investments that reduce CO2 emissions and pollution, enhance the performance/resource efficiency, and prevent the loss of biodiversity and ecosystem services.

The OECD discusses the concept of green growth as "growth that promotes economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being depends. To do this, it must catalyze investment and innovation which will underpin sustained growth and create new economic opportunities."

Thus, the green economy is accompanied by multiple types of innovations: in economic activities of production, processing, and distribution; in social domain in terms of gender and geographic equity, participation and organizational system; in technology in terms efficiency and sobriety; and in the environment in considering various ecosystem functions. The concept of the innovation characterizes, therefore, the green economy.

Source : OECD & UNPE, 2011.

In the West African context, the sectors considered a priority in substantially transforming modes of production towards a green economy are: agriculture, construction, energy, fishing, forestry, industrial, tourism, transport, cities, waste and water.

The objective of this study, in accordance with the terms of reference, is to analyse the potential of green economy in West Africa, with an emphasis on the opportunities and challenges of promoting green growth in the agriculture and industrial sectors, towards mitigating and adapting to climate change.

The study also proposes to review:

– challenges to green economy governance at regional and national levels, related to the gap in competences, public finance, and private investment in the sectors of green growth;

– constraints of implementing policies and national and regional strategies of green economy, and the weakness of financial partnerships that accentuate the economic crisis in underdeveloped countries. The study will also gauge the states of preparedness of African countries in the transition towards a green economy and its socio-economic implications.

Chapter 1

ANALYSIS OF THE POTENTIAL AND CHALLENGES OF THE GREEN ECONOMY IN WEST AFRICA

The green economy is a new paradigm necessary for the implementation of sustainable development, which remains a vital human development project. Its implementation necessitates taking into account the strengths of each African region. The West African context shows that the sectors based on **natural resources such as agriculture, forestry, mining, fisheries, renewable energy, water control, and other areas of transport and waste** are the largest niche for job creation and green growth. The agriculture, forestry, mining, and fisheries sectors generate 80 per cent of jobs in Africa (UNECA, 2012). The industry and manufacturing sectors, although providers of the green economy potential, are still embryonic and not diversified enough to produce a wide range of intermediate and finished products. Within ECOWAS, the manufacturing sector is dominated by agro-industry and represented only 7.36 per cent of GDP in 2006.[3]

The importance of the green economy based on specific sectors

The majority of African economies depend on their inherent natural resources, which are highly vulnerable to climatic hazards. Despite the importance of the services sector, activities driving the economy of the ECOWAS states are either primary or industrial focused. On the one hand, the primary sector absorbs more than two-thirds of the labour force and consists of agriculture, fisheries, aquaculture and forestry subsectors. On the other hand, the industrial sector consists of small-to-medium enterprises (SME) and small-to-medium industries (SMI), in the subsectors of mining, manufacturing, and agro-industry.

3. National Accounts of ECOWAS - 1995 to 2006 - Table 9.1, Page 39

The agriculture sector

Agriculture is the largest employer in West Africa with more than 70 per cent of the active population. The sector contributed 33 per cent to GDP in 2009 (ADB, 2011) and employs a large number of low-paid farm workers and subsistence farmers (mostly women). Revenues of cultivable land occupy a large part of all the riches of the subregion. Agricultural products are mainly for own consumption and domestic markets. However, the sector is marginally connected to the international market. Only a number of products such as coffee, cotton, cocoa, peanuts are widely exported and often raw. In terms of food security, agriculture plays a crucial role in sustaining livelihoods at the household level, given its importance in household-level consumption and in local markets that serve to satisfy national demand. Within ECOWAS, approximately 80 per cent of the food needed by the population is met by regional agricultural production. Between 2002 and 2004, the value of agri-food exports amounting to $US5.96 billion gave a surplus balance $US522 million in agri-food trade. Even though the region imports significant quantities of food (worth $US5.44 billion in 2002-2004), the region remains fairly dependent on imports to meet its food needs.

The livestock subsector plays an important role in the West African economy, with a contribution of 44 per cent to the agricultural GDP. In 2009, ECOWAS is estimated to have more than 60 million cattle, 160 million small ruminants, and 400 million poultry. The subsector produces 20.35 million tonnes of meat and 2.05 million tonnes of milk, annually. Thus, animal-related production contributes directly to improving food and nutritional security in West Africa.[4]

The forestry sector occupies a vital role in subregion's local economies, with a capital contribution to sustaining livelihoods and providing wild resources and environmental services. African forests represent 23 per cent of the total land area of the continent, and nearly 17 per cent of the world's forests. The sector contributes 6 per cent of Africa's GDP. In 2005, according to the FAO, forestry activities have generated jobs for an estimated 571,000 people in Africa (FAO, 2010). Beyond their function of production of goods and ecosystem services, forests play a fundamental role in the development of eco-tourism. However, the tourism sector contributes, both directly and indirectly, 8.3 per cent towards GDP and 5.9 per cent towards job creation in Africa.

The fisheries sector is capital in the creation of value added production, and one of the sectors demanding high-intensity labour, particularly in the coastal regions of West Africa. About 10 million Africans earn an income from fishing, and the sector provides a major source of daily food, including animal protein intake, for thousands of African households. In 2006, the fishing industry employed about 7 million people and contributed to 15-17 per cent of West African GDP.

Despite the importance of the agricultural sector, there are cases of severe malnutrition in certain areas in the subregion. The sector suffers from environmental hazards and climate change, attacks from parasites, and soil degradation. This explains some of the challenges faced by sector, and reduces its ability to ensure food security and achieve food sovereignty at national and regional levels.

4. CEDEAO 2009; Note adoptée d'orientation pour le développement de l'élevage dans l'espace CEDEAO & OCDE 2013.

The energy sector

The subsector of fossil energy (oil, gas, electricity) remains very important, contributing to over 20 per cent of regional GDP, due to oil production in Nigeria, which on its own accounts for 19.9 per cent of GDP of the West Africa. The contribution of new and renewable energies to the GDP is almost non-existent.

Nevertheless, the renewable energy sector presents a large and underexploited potential to boost economic development for West Africa. The access to renewable energy, taking into account energy efficiency, can enhance the profitability of productive activities for all economic sectors. For households, this will significantly reduce their energy bills and thus contribute to raising their standard of living. Renewable energies also offer important opportunities for job creation, value-added processes, and the improvement of national export earnings.

Access to energy, including modern services, constitutes a real vector of economic growth and social development. It contributes to improving core services of basic health, education, and water supply. Modern cooking, using improved energy sources and tools, greatly facilitate women's daily lives, who spend a lot of time fetching wood for cooking on highly polluting traditional stoves.

Access to renewable energy and modern energy services plays an essential role in environmental protection and the fight against climate change, as well as in dealing with the challenges of adaptation. Effective policy options for developing renewable energies and energy efficiency can be an entry point to promoting the transition towards a green economy.

The industry sector

In 2009, the West African industry sector (manufacturing, mines, energy, and construction), which employs only 2 to 10 per cent of the working population, depending on the country, contributed 36 per cent of the GDP. In 2006, the industrial productivity of the West African countries place Nigeria at one end of the spectrum with 40.7 per cent of the GDP, and at the other end, The Gambia and Sierra Leone with respectively 8.9 and 8.6 per cent[5] of GDP. This low contribution to GDP reflects the low value-added production activities. The manufacturing industry contributed only 7.4 per cent to the regional GDP, demonstrating that the region's natural resources, including agricultural production, are little valued.

Analysis of the potential of development of the green economy

As stated in the introduction, the engines of green growth in West Africa lie in the following sectors: **agriculture, construction, energy, fishing, forestry, industrial, tourism, transport, cities, waste and water. Furthermore, given population growth and the rapid pace of urbanization in the subregion, the sectors around sustainable cities, waste management and eco-construction**

5. CEDEAO : Politique Industrielle Commune de l'Afrique de l'Ouest, 2010.

present important opportunities for low carbon development. This section explores the potential of the agriculture, industry, and energy sectors for developing the green economy.

Natural resources generate economic profits and annuities if they are properly exploited. These profits can be an important source of development. Countries such as Botswana and Malaysia have registered economic success through the exploitation of natural resources (diamond mining) and primary commodities (oil palm, rubber, cocoa, gas, copper, bauxite). The economy of Côte d'Ivoire is dominated by the exportation of agricultural cash crops, especially cocoa and coffee, which places the country among the top exporters across the world.

The agricultural sector

In West Africa, the potential of farmland remains very important. According to the FAO, the region has approximately 236 million hectares of cultivable land, equivalent to about 0.9 ha per capita in 2005 and 1.5 ha per rural inhabitant. About 55 million hectares are put to use each year, representing only 24 per cent of the total potential. The sector has also a potential for rearing cattle, with some 119 million ha of pasture. The spatial distribution of this available land suggests the significant potential in the forest fringes, particularly in three countries (Nigeria, Côte d'Ivoire, and Ghana), which, with some variations, contain no less than 37 per cent of the subregion's unexploited land. These are also the three most populous countries, with more than 64 per cent[6] of the total subregional population.

A better use of agricultural sectors' potential, which allows for the adoption of green economy, requires massive investment in human resources, rural infrastructure, the organization of the sector, in order to enable small farmers to adopt agricultural practices that are more productive and more respectful of the environment.

In the Comprehensive Africa Agriculture Development Program (CAADP), African Governments have already committed themselves to allocating a 10 per cent share of their national budgets to the agricultural sector, towards achieving an agricultural growth rate of 6 per cent (OECD & CEA, 2012).

In the forestry sector, the development of a green economy must include the optimisation of the ecosystem benefits from forests, and the minimization of, and compensation for, ecosystem losses produced by these same forests (IOF).

The agricultural sector presents important niches in the creation of green growth:

- Sustainable agriculture allows for an increase in production, and an enhancing and commercializing of agricultural produce. It is organized around the activities related to the following systems: organic manure, use of plants as green manure, seed selection based on the characteristics of the different agro-ecological zones, improved fallowing, crop rotation, crop diversification, integration of livestock rearing and forestry with agriculture, water conservation, bunds, contour farming, crop recycling – all of which are in line with the intensification of production systems. During the next decade, sustainable agriculture could see a global increase in employment by 4 per cent (UNEP, 2011).

6. FARM : les Potentialités Agricoles de l'Afrique de l'Ouest, CEDEAO, 2008.

Box 2: Concept of organic farming

There are many definitions referring to an effort to preserve the environment while allowing agriculture to improve the living conditions of farmers. Organic farming is a production method that finds its originality in the use of cultural practices and friendly livestock natural balances. Thus, it excludes the use of synthetic chemicals, GMOs, and limits the use of inputs. It addresses the recycling of organic materials, crop rotation and biological control. Extensive farming uses alternative medicine and respects animal welfare.[1]

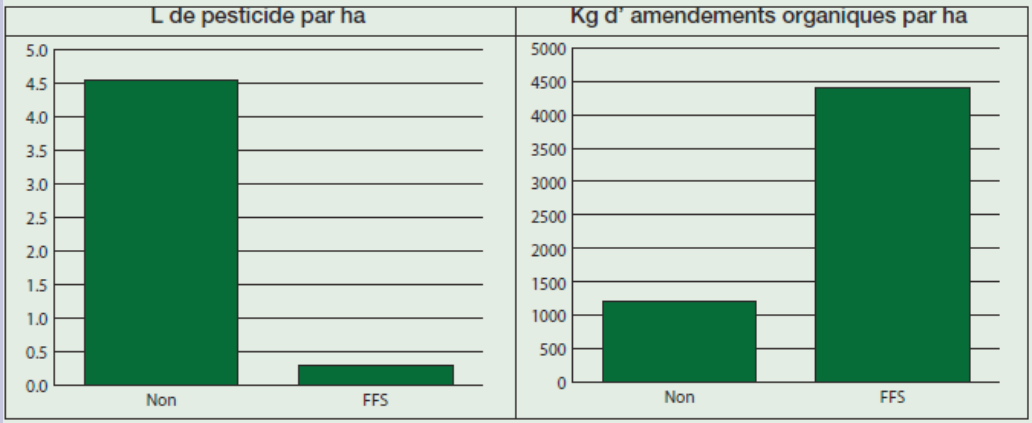
In other terms, organic farming is an agricultural system which focuses on rational management of natural resources (use, conservation and renewal of soils, waters, forests, biomass, fisheries, and animal resources). It seeks to work with nature, instead of trying to dominate it. To achieve its objectives, organic farming follows a number of techniques and practices which maintain a healthy environment and respect natural ecological balances. Maintaining a good quality of the soil, establishing a balance in soil fertility, and promoting biodiversity and a healthy ecosystem form the basis for market gardening, farming, fruit growing, floriculture, medicinal, and agro-forestry. The plots produce fruit and vegetables. Next to them, farmers can grow organic food for human and animal consumption. The search for new sources of protein for organic, and even conventional, animal breeding provides an opportunity to develop non-timber forest products (NTFP), such as straw for protein. Long since reserved to certain consumer groups (vegetarians and ecologists), organic produce is now more accessible to the general public, and continues to increase its market penetration. The development of this market is due to three reasons: concern for health, a guarantee of safe produce, and increased ecological or environmental concerns, especially amongst young people (consumers of tomorrow). This breakthrough of organic produce indicates good commercial prospects for investment in agriculture. Although enticing, the "organic" market faces an unavoidable constraint: the certification,[2] since countries must present agro-ecological and economic conditions that are compatible with organic farming.[3]

1. *Definition drawn from the dictionary of the environment, www.dictionnaire-environnement.com*
2. *Definition drawn from the dictionary of the environment, www.dictionnaire-environnement.com*
3. It represents the set of procedures that guarantee the conformity of a product to a technical reference.

- Developing processing activities that transform agricultural produce into high-value products. Supporting the creation of agricultural enterprises, especially by youth and women entrepreneurs, in rural areas, would better secure the local workforce.
- Promoting cleaner agricultural techniques by developing sustainable practices in agricultural enterprises, productivity of family farms, and successful adaptation to climate change. Current agricultural practices actually consume more than 70 per cent of the fresh water resources available on the planet, and are responsible for more than 13 per cent of greenhouse gas emissions. This is also believed to lead to 3 to 5 million cases of pesticide-related poisoning and more than 40,000 deaths per year.[7]

7. "Towards a green economy for sustainable development and poverty eradication , UNEP 2011

Box 3 : Low input Agriculture in Mali and in Senegal[1]



Program supported by FAO on integrated production and pesticides management in the Sahel show that farmers were able to reduce the use of toxic pesticides, increase yields and incomes, and diversify cropping systems. Data from Senegal and Mali show a 90 per cent reduction in the use of chemical pesticides, one to two years after farmers' training. The net value of crops for 80 vegetable farmers in Senegal has increased by 61 per cent in two years, while a 92 per cent reduction in the use of conventional pesticides has led to substantial cost savings as well as an increase in income. In Mali, a survey conducted in 65 villages of cotton farmers showed an increase of 400 per cent with the use of organic materials such as compost and manure, substances that can reverse the decline in soil fertility.

Reduced use of pesticides and increased use of organic fertilizers in cotton production in Mali[2]

Note: A field survey after a training (FFS) of cotton farmers in 65 villages where farmers training took place in 2007 and 2008. The difference in pesticide use is on average 4.5 L / ha compared with 0.25 L / ha or 94 per cent less for trained farmers (FFS). The difference in the use of soil amendments is between 1.2 t / ha against 4.3 t / ha, or nearly four times more than the use of compost by farmers FFS.

Source: FAO, 2009.

1. PNUE, CEA 2012, « L'économie verte dans le contexte du développement durable et de l'élimination de la pauvreté: Quelles sont les implications pour l'Afrique? »

2. PNUE, CEA 2012. – *Idem.*

- In the forestry subsector, it will be about guaranteeing security of land rights accompanied by agricultural intensification policies in land already cleared for farming and in agro-forestry or agro-pastoral systems.
- Developing non-timber forest products and facilitating their distribution in local and international markets. Implementing participatory forest management regimes and disseminating modern and improved stoves that consume less energy should address the over-exploitation of forests.
- Regenerating forest ecosystems and supporting low-carbon options allows for the voluntarily enrolment in the dynamic Nationally Appropriate Mitigation Actions (NAMAs). Conservation and forestation could boost formal employment by 20 per cent in the forestry sector by 2020 (UNEP, 2011).

The agricultural sector presents at potential to mitigate and adapt to climate change. Options for adaptation and mitigation can clearly mobilize different types of funding – National, FDI, private sector, REDD+, Adaptation Fund, NAMAs, CDM, etc.

The industrial sector

West Africa is estimated to have a market of over 400 million consumers in 2020, and a socio-economic profile defined by considerable cultural and economic diversity. The potential of the industrial sector of the ECOWAS states (Annex 1 of the Framework Convention on Climate Change) is primarily in manufacturing in the form of the agro-food industry. The giants in value-added manufacturing are Nigeria, Côte d'Ivoire, Ghana and Senegal. In 2006, they contributed 39.7, 23.4, 10.0, and 9.3 per cent respectively to the GDP of the manufacturing sector[8].

West Africa also holds an enormous mineral wealth, which is under exploited and poorly processed at the local level. The subregion is home to large global reserves of bauxite (Guinea, Ghana, Guinea-Bissau), high-grade gold deposits (Burkina Faso, Ghana, Guinea, Liberia, Sierra Leone, Mali, etc), uranium (Niger), rich iron deposits (content of 65 per cent in Guinea, Liberia, etc.), diamond (Guinea, Liberia, Sierra Leone, etc.), oil and natural gas (Côte d'Ivoire, Ghana, Niger, Nigeria, etc.), and phosphates (Senegal, Togo, etc) and significant quantities of many other mineral resources (coal, limestone, manganese, marble, platinum).

In order to enable the transition of the industrial sector to the green economy, it would be useful to reconcile environmental constraint and economic performance of industrial units. A good understanding of techniques that help decision-making, based on cost-benefit and cost-advantages analyses should prompt companies to adopt sustainable modes of production.

The niches of green growth for the industrial sector:

- Energy efficiency in industry, the adoption of technologies and low-carbon industrial processes are all niches of wealth creation. Activities carried out by manufacturing

8. Comptes Nationaux de la CEDEAO- 1995 à 2006- Tableau 9.1, Page 39

industries are the cause of 17 per cent of health problems, related to air pollution, which in turn causes losses equivalent to 1-5 per cent of global GDP (UNEP 2011). The mining industry is also at the root of conflicts, environmental degradation and air pollution.

- Important niches of green growth, related to renewable energies, energy efficiency, and waste recycling are also found in agro-industries, fisheries, construction, transport, and waste.
- The involvement of companies, especially a large number of SMEs and SMIs, in West Africa in the international standardisation processes can positively affect the competitiveness of enterprises.

The energy sector

The total consumption of primary energy in ECOWAS countries is approximately 155 Mtep per year.[9] The main sources of energy are wood and charcoal, representing 77 per cent of primary energy consumption in 2008. Hydrocarbons, ranked second among final consumption, are mainly imported in most countries, and represent more than 40 per cent of countries' export revenues. Natural gas reserves in WAEMU countries (Côte d'Ivoire, Ghana, Niger) are estimated at 23 300 million m^3, corresponding to 0.23 per cent of electric capacity of 0.84 GW African reserves. Significant oil reserves are also found in countries such as Côte d'Ivoire, Ghana, Mali, Niger and Nigeria.

The West African subregion has significant energy resources to support green growth. Important niches for green growth can be identified in the access to sustainable energy services through the use of renewable energy from the point of view of the offer and energy efficiency in terms of demand management.

The hydroelectric potential is quite large in area but rather unexploited. The Republic of Guinea has a potential of 6,000 MW, of which only 2 per cent are used. Within WAEMU, despite the great potential of about 5860 MW (Burkina Faso, Benin, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, Togo), hydropower development has focused primarily on large power plants whose electricity production is targeted at urban areas and industries. Micro and small hydropower plants, which can be used to cover the electricity needs of municipalities and villages, have been almost ignored in all countries.

9. Source : Les consommations d'énergie des pays de la CEDEAO et de la CEMAC, ADEME ; ECREE : Politiques sur l'efficacité énergétique de la CEDEAO

Box 4 : Hydroelectric potential of ECCAS

The hydroelectric potential of the Economic Community of Central African States (ECCAS) concentrates the majority of water resources with nearly 60 per cent of the reserves of the continent. The Democratic Republic of Congo (DRC) and Cameroon rank first and second on the list of African countries' hydroelectric potential. The hydroelectric potential of the region is estimated at over 1,000 TWh of which about 1 per cent is used. The hydroelectric potential of the DRC could be a solution to the energy deficit beating down the continent's economic growth. This potential is estimated at 106,000 MW, or 37 per cent of the total potential of the African continent, and nearly 6 per cent of the global potential. The Inga site alone accounts for 44 per cent of this potential. Construction projects of Inga III (4,500 MW) and Grand Inga (39,000 MW) [1] raise new hopes to the energy crisis of the continent.

1. http://www.agenceecofin.com; Wikipedia.org

The subregion shows enormous potential for developing the solar energy sector, with levels of radiation between 5 to 7 kWh/m^2/day. Encouraging results with photovoltaic (PV) systems have been recorded in countries like Ghana, Senegal, Mali, and Niger. Despite the constraints of access, photovoltaic technology is adapted to the energy needs of rural households that are far from the main grid. In several countries, the rural electrification program incorporate PV solar systems.

Bioenergy including biofuels and wind turbines are other sources of renewable energy that bring green jobs and potential wealth generation.

The urgency for Africa is to ensure peoples' access to modern energy supplies in order to establish a more sustainable development. This urgency cannot be discussed without pointing out the problems caused by global warming, the effects of which are already known to greatly compromise the continent's development efforts, including its energy infrastructure and, subsequently, any chance of satisfying people's needs and enduring energy insecurity.

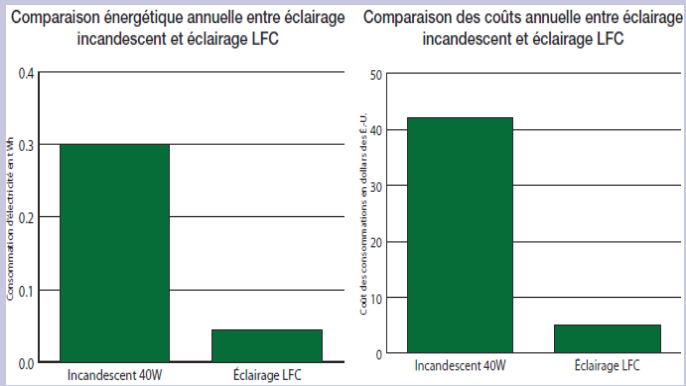
Niches for green growth:

- Renewable energies present a key niche for creating green jobs and for climate change mitigation. It can provide an important and qualified labour force in the manufacturing, distribution, installation, maintenance and operation etc, of materials and equipment.
- Promotion of energy efficiency: the experience of different countries has shown that concerted public effort to promote energy saving can provide improved services with less energy consumption. These measures can have a return on investment in less

than three years, and generally save up to 30 per cent of energy consumption. The World Energy Council and the ADEME believe that economies in West Africa could be even higher, going up to 40 per cent of current energy consumption.[10]

Encadré 5 : Energy Efficiency[1]

The promotion of energy efficient technologies offers significant opportunities to reduce energy consumption. In Senegal, it is estimated that 100 per cent replacement of incandescent bulbs with compact fluorescent bulbs (small projects) would lead to annual energy savings of about 73 per cent savings (about $US30 million annually).

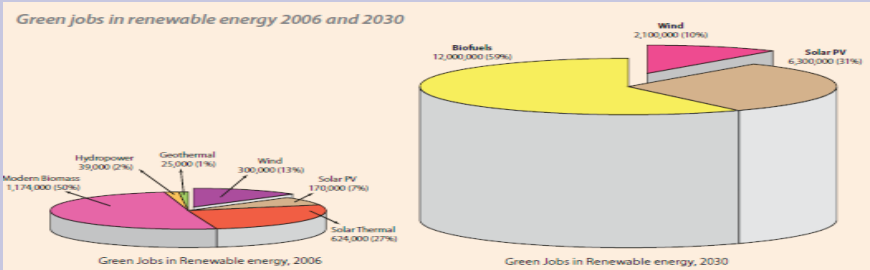


1. PNUE, CEA 2012, « L'économie verte dans le contexte du développement durable et de l'élimination de la pauvreté: Quelles sont les implications pour l'Afrique? »

- Promoting access for marginalized populations to modern energy services for their basic needs (cooking and lighting) with a focus on simple carbon options to enrol in the voluntary NAMAs dynamics.
- Adaptation options can be found in the promotion of alternatives (such as LPG, biogas, and biocharcoal) to wood and charcoal, but also in the sustainable forestry management through effective community forest management.

10. ECREE, " Politiques sur l'efficacité énergétique de la CEDEAO".

Box 6 : Green Economy Opportunities



Overall, 20 million new jobs could be created by investing $US630 billion in renewable energy by 2030.

Source : Green Jobs report, 2008.

Analysis of challenges

The economies of West Africa are faced with multiple challenges of extreme poverty, the employment of youths and women, degradation and depletion of natural resources on which they are heavily dependent, negative effects of climate change, food insecurity, good governance, and transparency.

Challenges of persistent poverty

West Africa is one of the poorest regions in the world, and most of the least developed countries (LDCs) are concentrated here. More than one in two people live on less than a dollar a day. The diagnosis of the social and economic situation, according to countries' statistics, shows that poverty affects less than one third of the population in Benin, Ghana, and Togo, and more than a third of the population in Cape Verde and Côte d'Ivoire. About half of the population lives below the poverty line in Burkina Faso, Gambia, Guinea, Nigeria, and Senegal. Nearly two-thirds of the population were poor in Guinea-Bissau and Niger, and over two-thirds in Mali and Sierra Leone. Overall, the human development index of countries rarely reaches 0.6.

The beginning of 21st century remains marked by an increase in regional disparities of poverty levels between rural and urban areas, exacerbated by: declining agricultural yields; lack of work opportunities, especially in rural areas; low access to finance and energy sources by poor and vulnerable populations; and limited competence of young people and women of the working age.

Challenges of political and institutional governance

Many least developed countries have worked on a national strategy for poverty reduction (PRSP) to achieve their sustainable development priorities and the MDGs, which have proven rather ineffective. At the same time, national strategies for sustainable development (NSSD) that were adopted within the framework in the implementation of Agenda 21 have not achieved their ambitious economic, social, and environmental objectives around intra- and inter-generational equity from both national and local perspectives. At regional level, although ambitious programs such as the Community Development Program (CDP) of ECOWAS, the Regional Economic Program (REP) of the WAEMU offer good prospects, expected results are slow to emerge.

The promotion of good governance, one of the major development challenges, should focus on strengthening the public administration, on the emergence of local communities that are economically strong, and gender equality. Public authorities should also seek to overcome the lack of involvement of the private sector in the implementation of sustainable development, in particular through the deployment of Corporate Social Responsibility (CSR).

Challenges of limited capacity

The subregion's limited capacity is a major challenge in the implementation of sustainable development. Economic sectors experience bad governance, low quality of labour (low training and qualification of human resources), and the lack of managerial skills among other challenges.

Challenges of climate change and degradation of natural resources

The prospects for the coming decades show that a large number of mineral resources will be exhausted, and that the stock of natural resources is likely to be severely depleted due to population pressure and adverse effects of climate change. West Africa's economic activities are highly dependent on agriculture, fishing, and forestry, which are vulnerable to the effects of climate change.

Challenges of access to energy services

The final energy consumption per capita (0.45 toe) within ECOWAS is relatively low compared to the average for Africa (0.50 pet) and the world (1.14 pet)[11]. West Africa has the lowest access to electricity rates, not only in Africa but in the world. National averages are at 20 per cent, with large disparities among and within countries.

Firstly, some countries have a electrification rate of over 50 per cent (Ghana, Senegal, Côte d'Ivoire, Nigeria, Benin) compared to less than 15 per cent for most countries, and less than 10 per cent in countries such as Sierra Leone, Guinea, Guinea-Bissau and Niger.

Secondly, the differences noted between the rural and the urban areas are between 8 and 20

11. SIE-Sénégal 2010

per cent on average. This has resulted in low electricity consumption per capita. For example, the consumption per capita of electricity in Sierra Leone is only 24 kWh (Energy Policy of Sierra Leone, 2009) and 76 KWH in Benin, against 176 KWH in Côte d'Ivoire.

Chapter 2

EVALUATING THE POTENTIAL IMPACT OF THE TRANSITION TOWARDS A GREEN ECONOMY IN WEST AFRICA

Impacts on poverty and employment

Impacts of green economy on poverty

Similar to the rest of the African continent, poverty in all its forms remains a plague in West Africa. According to statistics, the average per capita income is between $US305 and 340. Extreme poverty affects 40 to 45 per cent of the population of West Africa, with fairly significant variations depending on the country as indicated in the previous chapter. Considering the absolute number of poor people, in Africa between 1990 and 2008, in terms of annual average, poverty rates fell by only 0.5 per cent in comparison to 2.3 per cent in East Asia and the Pacific, and about 1 per cent in South Asia.[12] There is still a great disparity between urban poverty and rural poverty. Indeed, rural areas are more affected than urban areas with 70 per cent of the poor living in extreme conditions of poverty.

Faced with this situation, the West African states have, in recent years, deliberately promoted national and regional policies that strive to reduce poverty with a view to achieving the Millennium Development Goals (MDGs), of which poverty reduction constitutes the first objective. A Regional Poverty Reduction Strategy Paper (RPRSP) has been produced to coordinate and improve the effectiveness of the various actions being implemented to reduce poverty.

It is from this perspective that, since the emergence of the concept of "green economy", many states are directing their efforts in the fight against poverty and achieving the MDGs around the promotion of the green economy.This is attested by the numerous declarations and resolutions ratified by African leaders for which identify the green economy as a vehicle for growth. These

12. Rapport OMD 2012, "Évaluation des progrès accomplis en Afrique dans la réalisation des objectifs du Millénaire pour le développement".

documents include the third African Ministerial Conference on Financing for Development (May 2009), the Thirteenth Session of the African Ministerial Conference on the Environment (June 2010), the first Pan-African Conference on Biodiversity (September 2010), the Seventh Forum for Africa's Development (October 2010) and, more recently, the Eighteenth Ordinary Session of the Executive Council of the African Union (January 2011).

Green economy presents an opportunity for the West African countries to design national strategies and regional programs that reinforce various sectors and aim to accelerate growth and substantially reduce poverty. It is therefore important for States to develop green activities through targeted policies around key sectors that represent the base of economy, and the sole means of subsistence of their population.

To have a lasting impact on poverty, green economy initiatives should have clear and measurable objectives. These initiatives could be in different sectors of importance to the poor populations, including:

- In the context of food security: The development of the agricultural sector upon which the poorest strata of the population depend. To do this, support to small farmers through the promotion and dissemination of sustainable practices is required. According to UNEP, a study of 286 projects on "best practices" gathered from 12.6 million farms across 57 developing countries found that adopting resource protection approaches (such as integrated crop pest management, integrated nutrient management, minimum tillage, agro-forestry, aquaculture, integrated water resource and livestock management) resulted in an increase of yield by 79 per cent on average, and improved the supply of essential environmental services.
- In the context of access to social services and basic infrastructure such as access to drinking water and sanitation: In West Africa, the poorest populations have very limited access to clean or drinking water. The majority of rural populations have inadequate sanitation services. Therefore, it appears that the development of green businesses around access to both safe drinking water and adequate sanitation would significantly influence poverty reduction and would also contribute to the achievement of MDGs on access to water by 2015. Since 2008 a major program of building boreholes with hand pumps has also been established at the level of UEMOA countries, to improve access to drinking water and develop income-generating activities such as gardening. Other activities promoting sanitation have also been initiated and should be developed. The direct impact of these activities would be on the health of populations with improved living conditions and ensuring a satisfactory level of health.
- In the context of access to energy services: The transition to a green economy in the energy sector must be made through developing strategies that allow for access to modern energy services to a larger population, in order to help improve the lives of people, and also promote business development and local economic structures. Biomass waste and agricultural residues can be used to supply electricity and domestic fuel. Systems and power generation units can be adapted to meet the needs of

both small villages and peri-urban areas. Systems applications have been successfully decentralized in many developing countries, but investments are lacking. Their large-scale replication in West Africa requires addition of the appropriate regulatory systems, innovative financing mechanisms and private sector involvement.

- In the context of building human resources: West Africa has a young population (60 per cent of the population is younger than 35 years) and poorly qualified. Training young people and developing their skills around green jobs will improve their level of training and reduce the unemployment rate.

Impacts of green economy on employment

Job creation is a major challenge for all West African countries, despite the strong regular economic growth recorded in recent years. Unemployment rates remain high, especially among youth and women. Nevertheless, the sectors based on natural resources such as agriculture, forestry, and fisheries are the main providers of jobs.

The transition to a green economy also has the ambition of scaling up the number of employment opportunities by creating new jobs in the medium and long term.

Box 7 : The concept of green jobs

"The world of work is sensitive to environmental changes. As climate change prevails in the world, more workers and employers are faced with increasing disorders and should look for ways to limit the impact."

"The Green jobs reduce the environmental impact of enterprises and economic sectors, down to sustainable levels. (...) "Green jobs" are defined as employment in agriculture, industry, services and administration that contribute to preserving or restoring the quality of the surrounding environment."

"Decent work sums up the aspirations of people at work - their aspirations for access to employment and fair wages, to enjoy rights, means of expression and recognition, justice and equality. These various dimensions of decent work underpin peace in communities and society. Decent work is at the heart of efforts to eradicate poverty, it is a way to achieve a sustainable, equitable and unifying."

Source: Green Jobs Initiative ILO / ENDA / UNDP 2011.

Several sectors of the economy have been identified as "green jobs" providers, in that many activities within the green economy can be developed, including:

- Agriculture sector: promoting activities around agriculture and agro-forestry can constitute a niche of employment generation.
- Waste management: the development of businesses related to the collection, transportation, processing, and recycling of waster offer an important potential for jobs.
- Water and sanitation: activities related to the provision of water and sanitation services such as production, control, distribution, management, as well as maintenance works, have a high impact on employment.
- Building construction: from design to construction of buildings there are a number of potential uses relevant to eco-construction and ecological sanitation systems.
- Transport: some states have affirmed their commitment to develop modes of transport with low CO2 emissions that should generate innovative jobs.
- Energy: Different sectors around developing renewable energies, and energy efficiency, both in providing solutions as a consultant, and in the supply and maintenance of equipment are a major reservoir of jobs.

According to UNDP's study on "Opportunities for green jobs in renewable energy in Côte d'Ivoire, September 2012", the biomass subsector offers the greatest opportunity for creation of green jobs in West African countries, and the following three examples were proposed:

- The production of biomass briquettes as cooking fuel or for the production of electricity: for cooking, this production is part of a strategy of substitution by wood pellets or biomass briquettes from agricultural residues, non-food wood waste, and agro-industry. Furthermore, depending on the availability of waste, biomass can be converted to the production of steam and electricity in industrial systems. Direct jobs can be created through the whole chain: gathering and transporting raw biomass, feeding, maintenance and operation of the unit, pelletizing, bagging, handling and transport of granules, and finally marketing.
- Charcoal substitutes can come from carbonised agricultural residues sold as charcoal briquette. The goal is the same - adding value to wood residue stocks to reduce deforestation and produce improved coal with better performance.
- Local biofuel production for electrification and mechanization of agriculture is a strong source of job creation: agricultural production is integrated into the technical aspect of its transformation. Nonetheless, there are potential threats in the competition over the use of land (land grabbing) and water, especially for industrial production to be considered.

Box 8 : Local biofuel production for electrification and mechanization of agriculture is a strong source of job creation: agricultural production is integrated into the technical aspect of its transformation.

The example of the village community Garalo, in southern Mali, shows the development of three value chains. The agricultural sector integrates improved seeds and nurseries, planting and harvesting crop combinations or hedgerows (bocage growing and / or erosion control); adding value to jatropha meal as biofertilizer and jatropha oil as bio-pesticide. The mechanised part of this sector is limited to pressing, extracting and filtering of pure jatropha vegetable oil, modification and maintenance of diesel engines and kerosene lamps to burn this pure oil. Related activities are also observed for the recovery of oil for the production of local soap (in combination with other oils and local plant species), the use of platforms of multifunctional tools (saw, welding, chargers batteries) supplied by a generator, or services of agricultural mechanization and processing of local products.[1]

Source: UNDP, 2012.

1. UNDP, « Les opportunités d'emplois verts dans les énergies renouvelables en Côtes d'Ivoire », September 2012

This transition, in view of creating jobs, must: be accompanied within a strategy; benefit from a strong political will of decision makers at national and local government levels; and be an interesting opportunity for the private sector.

Given that young people constitute the majority of unemployed people in West Africa, one of the avenues to explore would be the experiences carried out in other countries including Kenya, Tanzania, and Uganda, where a partnership with the ILO encouraged the promotion of a "green" entrepreneurship for the youth. The first initiatives undertaken have yielded significant results including the establishment of a network of entrepreneurs, which can help young companies and supports the creation of companies in the sector of the green economy through training.

Even so, it should be noted that a transition to the green economy should not entail the loss of some existing jobs. It will be imperative to put in place policies that protect those who may be adversely affected by these developments, for example, opportunities for retraining and reinsertion assistance.

Impacts/effects of the promotion of the green economy on sectors

Impacts on agriculture

Despite its importance for the regional economy, the agricultural sector in West Africa is

Box 9 : Possible evolution paths for today's employment due to the green revolution1

Some jobs will be created, especially due to the development of new equipment;

Some jobs will be replaced, for example, in changing from fossil fuels to renewable energy;

Some jobs will cease to exist when the production of certain goods is strictly prohibited;

Many technical jobs (labourers, electricians, plumbers, etc.) can be transformed and adapted to the new requirements of green markets.

Source: Asbl Pour la Solidarité, May 2012.

1. Source: « Les Emplois Verts. Une nouvelle opportunité d'inclusion sociale en Europe », Asbl Pour la Solidarité, mai 2012

characterized by low productivity, and faces strong environmental constraints. It also faces the risk of a decline in productivity as a result of climate change and ecosystem degradation.

To promote a real green economy that impacts this sector will require several important changes in practices, especially unsustainable practices by farmers, such as: the use of large quantities of water polluted by pesticides, deforestation activities, and activities that contribute to biodiversity loss. This change in approach will bring about a substantial increase in productivity, and an improvement in farmers' incomes. The transition to a green economy should encourage the development of irrigated agriculture, the adoption and use of appropriate technologies such as efficient (drop) irrigation systems, and mechanization.

The development of the agricultural sector in various countries of West Africa is particularly hampered by the partitioning of different ministries (agriculture, livestock, fisheries, environment). At this limit, the lack of coordination between the various structures is making investments in the sector inefficient. To this end, ECOWAS and the African Union, in collaboration with development partners, has set up the National Strategic Analysis and Knowledge Management System (SAKSS) whose objective is to inform and guide the process of implementation of National Agricultural Investment Programs (NAIP). This also includes questions around the sustainability of the sector and the different actions relevant to the green economy.

In addition, ECOWAS states have widely recognised the importance of additional investment for a transition to a green economy in a sustainable manner to meet the future growth. The analyses of sustainable production systems often bring forth advantages, in terms of increasing farmers' incomes and improving the environment. It may take several years before a system of sustainable agricultural production ceases to produce benefits, especially if it restores degraded ecosystems, as is the case in most West African countries. To do this, there must be heavy investments in social capital.

In some African countries, several governments have begun to help farmers make the transition to more sustainable production methods. For example, the Zambian Government has made conservation agriculture one of its priorities, towards the end of 1999, to improve the productivity and sustainability of agriculture. It created a department for conservation agriculture, which now provides extension services to 170,000 farmers scattered in 17 districts, in order to support the adoption of conservation agriculture. Related technologies have been particularly successful in the semi-arid regions, because they reduce the effects of drought on agricultural productivity, without compromising performance. These experiences seem interesting towards capitalising this transition in West Africa.

Finally, public systems of research, development and extension, combined with capacity building, can reduce transaction costs and increase incentives to invest in sustainable production methods. To make the transition to sustainable production systems, there will be the need to change the allocation of current investments, public and private, towards programs with greater sustainability. Similarly, agricultural research will play a key role in providing support to sustainable agricultural production methods.

Box 10 : The Great Green Wall Project for promotion of green economy in the Sahel[1]

The transcontinental program of the "Great Green Wall", a belt of planted trees to be extended from West to East on the Dakar-Djibouti axis, for nearly 7,600 km long and 15 km wide, fully responds to the challenges set out by the development of the green economy. The program's main objectives are to contribute to the fight against desertification and to the development of Sahara-Sahelian zones through sustainable management of natural resources and the fight against poverty (AU/NEPAD, PCN Great Green Wall). This program provides an ideal framework for the development of the green economy.

The range of planned actions to achieve its goals can promote a series of economic activities within the scope of the green economy: the recovery, development and diversification of agriculture and livestock activities, the improvement of viable production systems and sustainable development activities and reasoned holdings of forest resources, the development of eco-tourism.

Source: ENDA/UNEP, October 2011.

1. ENDA/UNEP : « Etude sur la situation socio-économique dans les pays de la GMV et leur capacité d'adaptation aux changements climatiques », Octobre 2011.

Impacts on industry

Agriculture is no longer the main source of monetary income in many rural areas of West Africa. West African countries are strongly committed to industrialization, to better withstand shocks and to build productive capacities that allow a strong and sustainable economic growth, the creation of jobs, and a significant reduction of poverty. However, it should be noted that the industrial sector in West Africa is still in its infancy and not diverse enough to produce a variety of intermediate and finished products.

Despite the state of the sector and its weak contribution to global employment, the greening of industry could help create more jobs.

This is particularly the case in the agribusiness and food processing industries, which can contribute to both food security and the sustainability of the economy.

Agribusinesses in Africa, for example, encounter several difficulties in managing waste. The promotion of recycling in the food industry would significantly reduce waste and pollution, as well as promote a more competitive and employment generating industry in West Africa.

On the other hand, it has also been proved that the mining industry is one of the main avenues of industrial development in West Africa. Emerging industries are increasingly around mining activities. These could directly achieve greener investments, using environmentally friendly technologies and drawing on innovations that are currently available.

To prescribe these companies in a dynamic transition to a green economy, the government should provide special support because they not only have a strong potential for growth and employment, but can also produce goods and services of a strong environmental benefit through a better use of resources (water management, recycling), a reduction of energy consumption (building, "low-carbon" transport), or production emits less energy greenhouse gas emissions. The main focus will be on innovative technologies.

Chapter 3

ANALYSIS OF INSTITUTIONAL AND FINANCIAL BARRIERS TO A GREEN ECONOMY

Analysis of policy and institutional barriers

Policy barriers

To achieve the objectives of the green economy, energy, economic, and social transition is needed. Governments have, in this respect, an important role to play in removing policy barriers and putting in place an enabling environment for the private sector. These barriers are of different kind and at various levels in the West African countries.

First of all, there is the **lack of a coherent and strategic policy framework** that could allow the various actors to evolve in a strategic framework. The Summit on Sustainable Development held in Johannesburg, South Africa, in September 2002, called on governments to develop a National Strategy for Sustainable Development (NSSD) by 2005. West African Countries have also engaged to implement this policy and strategy framework. However, a review of the national sustainable development framework reveals that not all countries have developed their NSSD. Some countries such as Senegal, have developed their NSSD but did not validate them, others such as Burkina Faso (2001) and Côte d'Ivoire took some time to develop their strategies, and others are in the process of developing it. With regard to the status of national green economy strategies specifically in Africa, only South Africa and Ethiopia have developed innovative and ambitious plans to embark on this path.

It must be recognized however that countries have adopted various policies, strategies and plans to deal with issues relating to sustainable development. These include long-term national visions, national and regional development plans, Poverty Reduction Strategy Papers (PRSPs) and sectoral strategies in the areas of agriculture, environment, natural resources, etc. This indicates that a range of planning tools does exist, thus making ownership and mobilization of resources difficult.

For a long time, **political instability and conflicts** have long compromised peace and security in the region. The considerable number of armed conflicts in the 1990s resulted in the displacement and destruction of the socio-economic fabric and resources of the countries. In addition to that, during the past few years, terrorist threats in some countries put further risk on these countries. The uncertainty created by such situations can only alienate investors whether domestic or foreign.

Despite efforts, integration is still a wish since the integration process of these countries remains a challenge. This is closely linked to the political instability and poor governance mentioned above, but also to the non-involvement of people in the process. Integration mechanisms are not suitable.

Poor economic and political governance are enemies of wealth creation. Although significant efforts have been made at national and regional levels, the business environment remains a major obstacle to domestic and foreign investment. Bureaucracy, and the complexity and opacity of judgments increase transaction costs and discourage investors in a context of global economic crisis.[13] Revitalization of the economies of West African countries and especially the industrial sector cannot be done without a strong regional focus. Thus, simplification and harmonization of procedures as well as the fulfillment of commitments and multilateral control are the first steps towards regaining investors' trust.

At the end of the Fourteenth Session of the African Ministerial Conference on Environment, AMCEN, participants have decided to initiate a partnership to embark on the path of the green economy. This commitment to a greener development requires overcoming all the barriers that have traditionally hampered real development in the subregion.

This decision demonstrates the political will of African leaders to proactively engage on the green economy pathway. In the current context of globalization, it is normal that these leaders begin with the needed coordination of their actions in the framework of this economic transition period. The transition to this new paradigm of development requires a regional and continental vision, with the establishment of a supportive framework and enabling environment at national, regional, and continental level.

However, this commitment still needs to be translated into reality in order to concretely demonstrate the political will to embark resolutely into the new world of economic, social and environmental change that the green economy is expected to bring.

Institutional barriers

To ensure its sustainability, the green economy must rely on institutions at different levels. This requires addressing many institutional challenges including coordination problems among actors, coordination of actions at different levels, and problems of good governance of implementation mechanisms. The transition to a green economy must therefore remove all institutional barriers that exist to ensure success in the long term, and reconcile the legitimate objectives of socio-economic development of people and the protection of environment. The intervention of public authorities for the implementation of a coherent and inclusive institutional system is necessary.

13. ECOWAS (2010), " West African Industrial Common Policy", July 2010, 74 p.

A review of national reports related to the Rio+20 summit shows that in most countries of West Africa, an institutional mechanism has been put in place in the context of sustainable development. This includes laws and regulations, agencies, commissions, etc. A number of countries (Côte d'Ivoire, Senegal) have also created ministries of environment and sustainable development. This institutional mechanism is completed by local community bodies with their transferred power.

However, the multiplicity of these structures raises a number of issues and the most common is the lack of coordination, even if, as in the case of Côte d'Ivoire for example, functions are clear. In addition to that, the scope of some ministries and bodies indirectly covers environment and sustainable development, hence the need for coherence in an inclusive manner.

Thus, the following institutional barriers can be listed for West African countries:

- Lack of coordination between ministries and institutions in charge of environmental issues and sustainable development; at different levels and to varying degrees, this usually leads to overlaps, conflicts of jurisdiction and confusion with respect to mandates and responsibilities;
- Not taking into account the principles of sustainable development into national planning frameworks;
- Lack of awareness of the importance and the need to integrate all three pillars of sustainable development from the design phase, a limited understanding of the links between these three pillars; and
- Institutional instability with skills and powers that can change at the whim of reshuffles, preventing effective action and monitoring.

As an example of these problems, Senegal was among the first countries to develop in 2002 the National Strategy for Sustainable Development (NSSD). However, for reasons of institutional change, it was not until 2012 that this strategy has been subject to peer review[14].

In Côte d'Ivoire,[15] a technical assessment of control and environmental monitoring agencies has revealed the ineffectiveness of these institutions due to lack of material and human resources.

At subregional and regional levels, institutions have been put in place since the 70s especially to cope with environmental vulnerability and economic development. Sustainable development frameworks have also been developed within the RECs and regional centers. However, these institutions have not been very active even until recently.[16] This is explained by the fact that initially the mandates of some of these institutions were limited (e.g. CILSS, AGRHYMET regional center). It was difficult for regional institutions to position themselves as leaders in an area that was beyond their competence.

In fact, some of the institutional frameworks have been established to meet the needs of implementing some of the environmental agreements, and not to satisfy the needs of the country.

14. See presentations and the report on the workshop of the peer review organized in November 2012 with the support of IEPF.

15. Ministry of Environment and Sustainable Development (2012), « Rapport national de développement durable dans la perspective de Rio+20 », 45 p.

16. NANASTA, Djimingue (2009), "African Leadership on Climate Change: Challenges and Solutions for African Regional Institutions. Discussion Paper for Lead Africa Workshop", Tunis, 2009, 20 p.

Thus, to meet the objectives of sustainable development and green economy in the West African countries, and try to overcome various institutional barriers identified here, the following recommendations can be suggested:

- Providing consistency and institutionalization of the institutions, skills and actions by adopting a framework law, taking into account all of the concerns related to sustainable development;
- Institutionalization of the integration of sustainable development into national and regional programs and activities;
- Dissemination of texts and rules for awareness raising and effective involvement of all stakeholders and sectors;
- The provision of material and human resources, through capacity building; and
- The establishment of a framework for cooperation and consultation.

The regional and subregional institutions can play an important role in the promotion and implementation of the green economy in West Africa. To fulfill this role fully and effectively, it is necessary to integrate the principles of sustainable development and the green economy in their respective mandates and strengthen partnerships. Indeed, the aim will be to seek to integrate green growth in the government action and not just to develop new policies or to create new institutions.

Analysis of financial barriers

The green economy requires funding in the short, medium and long term depending on the areas at stake. This funding should mainly originate from the private sector but also from the public sector. For the West African countries, the necessary financial resources for the implementation of sustainable development are limited and apart from the state budget, often mechanisms for mobilizing additional resources put in place under the various multilateral environmental agreements (MEAs) (such as the Clean Development Mechanism (CDM), the national environmental fund, the Global Environment Facility (GEF) at a certain time, etc.) are often ineffective, inefficient and not accessible enough. In addition, the financial support from developed countries for the implementation of projects and programs is still weak and poorly operated. In fact, the financial framework is not yet defined and barriers to financing the green economy are numerous. To implement such a framework, many questions need to be raised regarding the kind of investments necessary for the sectors of the green economy, the kind of investors, and the type and scale of investment sources.

Depending on the areas and the scope of action, two levels and types of funding would need to be distinguished:

- public support is needed to build capacity and establish an enabling environment for to attract private investment; and
- private investment is needed to cover important funding needs. In this regard, it will be important to lay the ground for attracting long-term investments.

Barriers related to investment: need for two levels of funding

Public sector investments

Funding strategies for green growth require a high level of investment and long term. This is all the more true that it is a question of putting in place the foundations for changing the patterns of production and consumption, for innovation, behavior change, and the creation of well-being for the people. This implies that we must deal with a number of negative externalities with the support of government. At local and national level, the public sector could direct its intervention towards the following areas:

– Building and strengthening the capacity of national actors and institutions ;

– Strengthening the national economy ;

– Harmonizing sectorial policies and taking clear options for renewable energies and energy efficiency ;

– Introducing incentives to mobilize significant investments for SMEs and VSEs ;

– Promoting greater involvement of local financial institutions ;

– Implementing a strategy for information and communication for the general public and private sector.

The contribution of public funding thus appears as a prerequisite to private investments. Indeed, private investment can be attracted only if an enabling business environment has been put in place. From this point of view, the green economy could be used by public authorities not only as a pretext to harmonize sectorial policies, but also to establish trust with private investors. Public intervention in terms of investment decisions and risk taking therefore remain essential to stimulate the involvement of the private sector. Thus public investment should be focused on capacity building, the strengthening and stimulation of small family businesses that form the basis for large-scale and long term investments.

Private sector investments

Entry points or investment opportunities for the private sector are numerous and cover various areas including climate, energy, biodiversity, waste management, agriculture, industry, infrastructure, transport, and research. The objectives to move towards a green economy are truly ambitious. To achieve these objectives of sustainable development in the long term, these sectors require important investments that need long-term projection, beyond the short-term often sought by private investors to maximize profit. But given the pressure on scarce public finances, private sector involvement is necessary. For instance, for the fight against climate change only, studies and evaluations conducted in recent years to try to determine the amount of funding needed by developing countries reveal that the cost amounts to several billion dollars[17].

For the West African countries, financing the transition to green growth will be hampered by their very limited financial resources especially as the needed investments are often long-term investments. There are virtually no effective instruments for the mobilization of domestic resources

17. World Bank, UNFCCC, PNUD, OXFAM, Christian Aid, etc.

at country level for the environment. The polluter pays principle adopted in the context of codes of environment is generally not applied or encounters malfunctions. This is the case in Côte d'Ivoire and Senegal. Given this structural barrier, a division of roles between the public and private actors is essential according to the comparative advantages of each other. Unfortunately, for the moment, apart from the energy sector where there is a kind of bubbling particularly in Senegal with the arrival of a photovoltaic panel company and the announcement of the establishment in Ghana by 2015 of a solar power station anticipated to be one of the largest of the world, the local private sector still invests only very little in environment and sustainable development.

This is why long-term investors such as insurance companies, pension funds, and sovereign wealth funds – the only funds that can have a vision beyond the immediate financial returns – have a vital role to play[18]. They can fill the substantial funding gap for green growth in the subregion of West Africa. The ClimDev program set up by the AfDB, ECA, and the AU Commission and the African Green Fund should be used to support the implementation of schemes for resource and funding mobilization that would go beyond climate change for which they were created. It is only by aligning interventions and funding in a long term social and environmental profitability perspective that the countries could hope to achieve the ambitious goal of green growth.

However, to achieve this, support measures at regional and international levels should be taken to overcome obstacles to attracting foreign investment: access to markets that are limited, recovery or improvement of the business climate and governance, risk sharing through public-private partnerships, and strengthening the capacity of local businesses to enable them to build partnerships. Banking institutions at continental or regional level, such as the African Development Bank (AfDB) and the West African Development Bank (BOAD), who have invested so far in the oil could help countries to engage in green growth expanding their range of green products and services, and create long-term investment leverage. Once again, the intervention of public sector will be essential to open markets, improve governance, and set up standards.

Barriers to disbursement modalities

One of the reasons to the low or inefficient use of the financial resources made available for the implementation of the Rio conventions relate to the delays in the disbursement of funds. This has been one of the major critics to the Global Environment Facility (GEF), known as the financial mechanism of the Rio conventions and it has led to many reforms during the last four to five years. Thus the GEF's project cycle has been shortened and the list of its agencies has been expanded.

The delays in the disbursement of funds are also one of the major critics raised about the African Development Bank too[19]. The review of past evaluation of the AfDB reveals lengthy delays in signing loan agreements, loan effectiveness and long delays in first disbursements for projects. These are recurrent bottlenecks constraining the performance of most operations launched by the bank. These are just two examples related to this barrier of disbursement effectiveness that is likely

18. BARON,Richard, et. al. (2010).- Le financement de la croissance verte.- Paris : CEDD, October 2010.- 120 p.

19. NKAMLEU, Guy Blaise et al.- Always Late: Measures and Determinants of Disbursement Delays at the African Development Bank, AfDB, Working Paper N^{0} 0141, December 2011, 24 p.

to extend to the funding of the green economy.

In view of these constraints, it would be difficult for the African countries, and more especially for the West African countries to easily and successfully engage in the green economy pathway without a move towards effectiveness by regional financial institutions. The West African countries would need modalities to access funds to be simplified. They would also need support through capacity building that goes beyond the needed reforms by financial institutions to simplify their project cycles and disbursement rules and procedures.

Barriers related to the absorption capacity

Despite the availability of funds to support environment and ensure global environmental benefits, African countries face a major challenge in terms of capacity to access these funds. This is the case for climate change funds (GEF, the Adaptation Fund, CDM, etc.) that are under-exploited by the African countries. In addition, considering the estimation of the costs of adaptation to climate change that is in the order of billions of dollars, and if by 2050 an annual totaling $US1,300 billion[20] (2 per cent of world GDP) would be necessary in a business-as-usual scenario to ensure "green" economic growth in the world, then African countries will need to increase their absorptive capacities.

To allow these countries to take advantage of future funding towards a green growth, it will be necessary to help them:

– Build or reinforce their capacity to develop projects ;

– Strengthen governance and transparency in fund management ;

– Invest in research and development and innovation.

Analysis of barriers related to adaptation and mitigation of CC

Climate change adaptation and mitigation are gateways to a green economy. Climate change impacts have been recognized by companies as a risk to their products and services. Climate change mitigation actions and measures constitute therefore an opportunity for the private sector. And any obstacles to climate change adaptation could constitute a barrier to the green economy objective.

Analysis of barriers related to adaptation to CC

Adaptation to climate change has become a major focus of international negotiations on climate change and the major concern of African countries. Many initiatives have been launched in Africa to respond to the vulnerability of the continent. Financially too, efforts have been made since the

20. UNEP (2011).- "Towards a Green Economy - Pathways to Sustainable Development and Poverty Eradication", cited by VERREAULT, Lucy in "L'émergence de l'économie verte : quel role pour les acteurs publics? '', ENAP: Montreal, 2011, 22 p., p. 8.

creation of the LDC Fund to support the development and implementation of National Action Programs for Adaptation (NAPA), or the establishment of the Adaptation Fund. However, studies have shown that billions of dollars are necessary to successfully build resilience in developing countries, and the amounts available are well below the estimated needs. Thus, despite the prominence of the theme, the availability of funds to a point and the implementation of a number of activities in West Africa, there are still some obstacles or rather major constraints for the satisfactory implementation of adaptation.

According to the Fourth Assessment Report of the IPCC, the following ''barriers to adaptation'' can be noted[21]:

– The uncertainty of scientific knowledge, which is significant enough to interfere with the decision-makers (Schneider, Lane, 2006; Dessai, van Sluijs, 2007);

– Unavailability of appropriate technology, making any adjustments in some cases impossible (Hulme, 2005);

– The cost-benefits of adaptation measures are not always favorable to public action (ECA, 2009);

– The lack of economic resources (Global Environmental Facility (GEF), 2010, or

– The weakness of state institutions (Yohe et al. 2006).

Thus, barriers to the implementation of adaptation to climate change can be classified into several categories: political, technological, economic, financial, and institutional matters.

With regard to West Africa, the major constraints can be identified through the identification of major gaps in capacity. A number of factors make it difficult to fight against climate change at the subregion level.

West Africa has many political, financial, technical and scientific organizations, as well as networks of civil society organizations. All of these organizations should be a perfect base for the implementation of adaptation options in the subregion, and in a way, they have begun to do so for some years now.

There was however a kind of duplication and lack of clarity in the mandates and in the comparative advantage of each organization. The constraints that these organizations face include:

– Slowness in decision-making at the regional level, especially when it comes to projects involving several countries;

– Initiatives are often developed in a top-down approach, with insufficient participation of target populations;

– Limited access to finance (e.g. CDM, Adaptation Fund Project);

– Lack of effective networking between academia, civil society and government departments;

– Lack of experience implementing field activities;

– Lack of information on future scenarios, costs, cost-profits, etc.;

– Limited availability and reliability of data, knowledge and information;

21. See the 4th Assessment Report of the IPCC, WGII.

– Lack of synergies between environmental programs, for example, biodiversity, climate change and land degradation;

– No subregional organization is a party to the Convention.

Analysis of Barriers related to climate mitigation

Africa is the continent least responsible for the emissions of greenhouse gases, and yet remains the continent most vulnerable to climate change. The early actions related to the implementation of the Framework Convention on Climate Change, African countries have focused their interventions in the area of mitigation, including with many studies and capacity building on GHG emissions inventories, CDM, etc. However, the fight against climate change in developing countries, especially in Africa in terms of reducing GHG emissions is also a development challenge. In view of the very low level of consumption of energy, the use of sources of clean energy is needed to contribute to the avoidance of emissions and hence development.

Indeed, an African generates 13 times less carbon than a North American. This position is explained by energy poverty and the continent in general result and from the combination of several factors. The most notable are:

– Low installed capacity of energy production due to lack of investment in the sector;

– Decrepit facilities, lack of service and political instability in some regions;

– Adverse weather circumstances including droughts; and

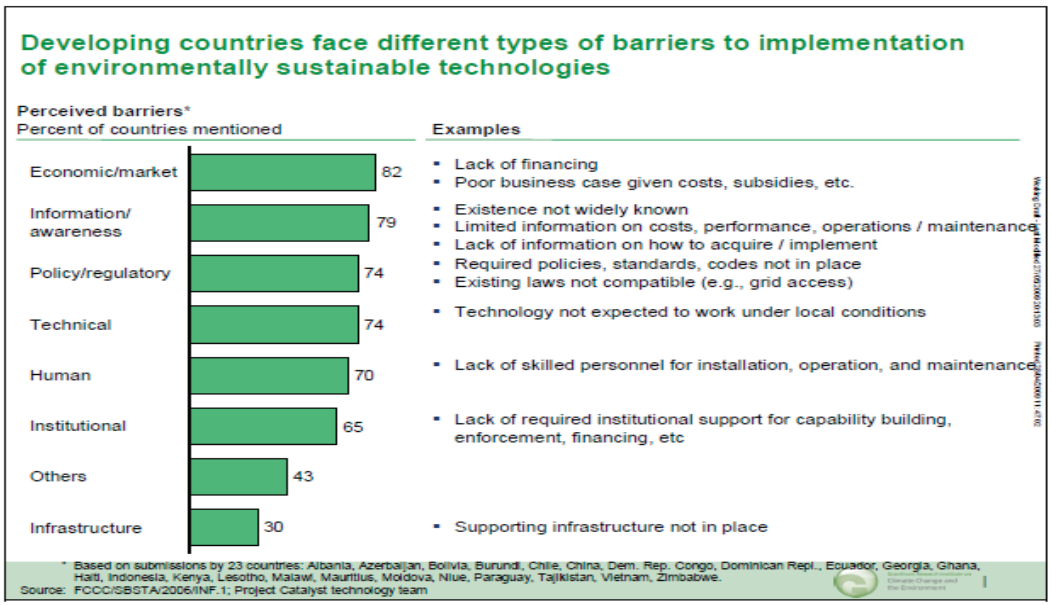
– Diversification of the energy mix.

Mitigation of greenhouse gas emissions, so far, is the responsibility of polluting countries, as shown in Annex I of the Framework convention. The integration of developing countries in general in the collective effort to reduce GHG emissions begins to manifest itself within the new dynamics of the negotiations on the post-2012 regime. For developing countries this logic of participation in the collective effort should be marked by the revival of a mode of low-carbon development. For African countries, there are many niches including a mobilization around renewable energies, energy efficiency, forestry, agriculture, etc[22]. For the West African countries as well as other African countries, the constraints are political, institutional, technological, organizational, informational, infrastructural, regulatory, and related to the business environment. However, the major obstacle is finance, as shown in the table below.

Funding of mitigation options in Africa is still cited as the major obstacle that prevents the continent from embarking on the path of low-carbon development. From this point of view, it is necessary to find innovative solutions to overcome this obstacle and the significant potential available to the continent, especially sub-Saharan Africa may just be the solution to this barrier

22. IEPF (2009), Etude préliminaire d'adaptation aux changements climatiques en Afrique : Energie, Etude préparée par ENDA, Montreal : IEPF ; PNUE, 2009, 60 p.

financing[23]. The total mitigation potential in Africa is estimated at 2,800 MtCO2e and could thus serve as a basis for the financing of low-carbon growth. It is estimated that the cost of financing may well be covered by mitigation costs, especially for the forestry, agriculture and energy of up to $US41 billion per year by 2030.



However, due to rapid urbanization and population growth, a long-term planning is necessary. The option taken by ECOWAS to integrate energy planning strategies for long-term development at local, national and regional levels is from this point of view an essential step in optimizing investments.

Both for adaptation and mitigation, policymakers have a lot to do in terms of engagement at all levels. The public sector needs to build a foundation for private sector investment, disseminate information, and help establish a strong collaboration. For financial institutions, there is also a need to rethink their criteria for green business, since green economy is all about how to change the way of doing business.

23. Grantham Research Institute (2009).,Possibilities for Africa in Global Action on Climate Change",. 86 p.

Chapter 4

PROMOTING THE GREEN ECONOMY TO MEET THE CHALLENGES OF CLIMATE CHANGE ADAPTATION AND MITIGATION

The question focuses on the link between the green economy and adaptation and mitigation to climate change. Can the green economy be reconciled to adaptation and mitigation to climate change in West Africa? In other words, can promotion of the green economy meet the requirements needed to adapt to and mitigate climate change? How?

Box 11 : Conceptual framing of adaptation and mitigation

Adaptation: Adjustment in natural or human systems in the face of a new environment or changing environment. Climate change adaptation refers to adjustment in natural or human systems in response to climatic stimuli present or future or their effects, which moderates harm or exploits beneficial opportunities. We distinguish different types of adaptation, including anticipatory and reactive adaptation, private and public adaptation, and autonomous and planned adaptation.

Mitigation: human intervention to reduce the sources or enhance the sinks of greenhouse gas emissions.

Source : GIEC, 2007.

The conceptual analysis shows that there exists a linkage between the green economy and climate change adaptation or mitigation. The analysis of the vulnerability of sectors with regard to climate change can be useful to highlight the opportunities they can offer to the green economy.

Vulnerability of the agricultural sector

Agriculture is considered in the broad sense and covers the activities of farming, livestock, forestry, and fishing.

Vulnerability of the farming sector

These farming activities in West Africa depend primarily on weather conditions. This dependence on climate is a major source of vulnerability of this key economic sector. Productivity and production of agriculture are particularly sensitive to climate variability. The main feature of the climate in West Africa for 50 years is the increase in rainfall variability and the frequency and intensity of extreme weather, particularly droughts, strong winds and torrential downpours.

These climatic events have a direct impact on agricultural production activities. They destroy crops, degrade vegetation, including mangrove, which is home to a variety of species exploited in the fisheries sector and reduces both forage resources and water resources (surface and groundwater).

Aside from climatic stimuli, other biophysical, technical, and political and institutional factors negatively affect the performance of agriculture in West Africa. From the biophysical perspective, the agricultural sector suffers from land degradation (erosion and fertility decline), a deficit in the quantity and quality of water resources and agricultural crops that are poorly adapted to new climate regime.

Agriculture productivity in West Africa is severely hampered by the lack of mechanical inputs, infrastructure and technology packages and a low carbon performance. The weak capacity of producers in planning and management activities is a significant barrier to adaptation to climate change in agriculture. In addition, the West African agriculture suffers from the limited existence of strong institutions capable of transforming this sector's performance, but also of relevant policies and adequate governance.

Existing mechanical equipment, infrastructure and farming techniques are equally rendered unsuitable by changes in climate. This is also linked with institutions, policies and the governance of the agricultural sector. Most institutions will develop strategies and agricultural management regimes that have been designed for a totally different context than the current one, which is largely characterized by climate variability. Given the complexity and magnitude of the impacts, climate change makes the systems of institutions, governance and agricultural policies inadequate.

Vulnerability of the livestock sector

Livestock rearing is directly affected by climate change. Droughts result in declining quantity and quality of fodder and water resources, which results in a high mortality rate and decreased milk productivity. Rising temperatures, strong winds and torrential rains also negatively affects the health of livestock. This ensemble of constraints leads to a significant decrease in the income of livestock farmers.

Moreover, climate change forces livestock farmers who, faced with scarcity of forage grass, feed

with elevated forage, notably from tree layers. This results in cutting of tree branches which in turn, not only releases carbon, but also calls into question the viability of plant species.

Climate change requires an adjustment both in terms of policies, institutions and governance, but also from the point of view of technical agricultural production, livestock, forestry and fisheries.

Box 12

Since 1950, breeding in Mauritania has shown a greater vulnerability to the effects of drought, particularly for cattle, whose numbers have been reduced by about a third between 1969 and 1975. Also, the lack of fodder due to drought caused a decline in cattle performance. If the deficiency is severe, animal growth is hampered, following weight loss. If there is no improvement, meat deficiency will be about 54,000 tons in 2015. [1]

1. « Etude sur la situation socio-économique dans les pays de la GMV et leur capacité d'adaptation aux changements climatiques », UNEP ENDA, October 2011.

Vulnerability of water resources

Groundwater and surface water resources are particularly vulnerable to climate change in West Africa. Droughts and higher temperatures result in a depletion of water reserves and the degradation of water quality. For example, in May 1985, due to drought, flows of the Niger River to Niamey completely stopped. In the Groundnut Basin of Senegal, episodes of droughts have resulted in a salinisation of groundwater resources. In addition to climate, water reserves and surface water bodies are affected by the increase in demand, due to irrigation development and population growth. The use of pesticides and fertilizers, lack of efficient sanitation, sewage and industrial waste systems are also factors of degradation of the quality of surface and ground water in West Africa.

Vulnerability of the fisheries sector

After agriculture and animal husbandry, this sector occupies a very important position of the countries' GDP and is also threatened by climate change for several reasons: the degradation of coastal and marine ecosystems, the advance of the sea and erosion coastal flooding, etc. This is reinforced by weak political institutions and over fishing. This weakness is reflected by the ineffective and unsustainable fishing techniques and technology, poor enhancement in fishery products, the lack of a structured marketing system of fisheries products; and this lack of organization of the market for fish products explains the low producer prices.

Climate change has both direct impacts and negative effects on fishing. Natural disasters are not

without a direct impact on fish nurseries. Coastal countries suffer most from this phenomenon. It has a direct impact on the production of wind regime evolutions and the upwelling, which is an extremely important factor for the enrichment of the coasts at the level of the Atlantic Ocean alongside Africa.

Vulnerability of forestry

Climate change, particularly with drought, reduces the density and diversity of woody plants. This results in the transformation of plant cover into sparse vegetation units, and sometimes a total loss of vegetation cover. In these climatic stimuli, added effects of human action, through agriculture, livestock and forestry destroy vegetation.

Vulnerability of the industrial sector

In West Africa, the industrial sector is generally weak, in terms of GHG emissions, but also the number of jobs provided. Emissions from the industrial sector do not exceed 5 per cent of total CO2 emissions. The industry is dominated by manufacturing, which in turn is highly dependent on agricultural, pastoral, fisheries and forestry resources. To understand the vulnerability of the industry to climate change, refer to the above analysis the vulnerability of these sectors.

Apart from climate change, the industrial sector suffers from an environment of legal and fiscal constraints (difficulty of creating an enterprise, long and costly administrative procedures around money, corruption etc), a lack of corporate culture in West Africa, and the weak competition of industrial enterprises.

Synergy between adaptation, mitigation and green economy in West Africa

Several entry points can reconcile adaptation, mitigation and green economy. Those areas identified as having a high vulnerability to climate change can play an important role in the fight against climate change, degradation of natural resources and the creation of wealth and jobs. These are niches that have interesting potential for the successful concomitant realisation of adaptation, mitigation and green economy. These are the agriculture (including livestock, fisheries, and forestry), industry, energy, building and construction, transport, waste and water resources. Achieving adaptation and mitigation to climate change and the green economy necessitates innovation. This can be in the way of production, processing, marketing and how to organize and manage a sector.

Technological innovation refers to the development of production, transformation and distribution processes, while being more efficient (in terms of execution time required and the quality and quantity of the product) to meet the growing human needs and pressure, and to ensure

regeneration capacity and production of the environment. Technological innovation in the green economy, adaptation and mitigation of climate change refer to new or improved practices. These practices provide greater performance in the stages of production, processing and distribution of goods and services to ensure the integrity of the environment.

Social innovation occurs when there is implementation and ownership by stakeholders of a new or improved practice, or a new or better service. Social innovation implies participation via social inclusion. It is in this sense that the fight is against social inequalities and towards ensuring social inclusion.

Organisational innovation refers to the establishment of institutions, structures, policies and modes of governance that prove more efficient in terms of execution and performance products towards resolving a problem. It supports both technological and social innovations.

Low carbon growth opportunities

Agriculture, while being a victim of climate change, is also one of its main contributors. For agriculture to achieve adaptation, mitigation and green economy, it must become a source of national wealth production, with practices that reduce or avoid GHG emissions and ensure regeneration of soil, water and vegetation. All stages of farming (clearing, ploughing, sowing, weeding, harvesting, threshing) and agricultural inputs (fertilizers and mechanical equipment) must use little or no fossil fuel, prevent or reduce their carbon emissions and assure that natural resources have a regenerative capacity.

Opportunities for climate change adaptation and mitigation for the agricultural and industrial sectors that may also serve as niches for the green economy include:

Sectors	Opportunities
Agriculture	– Integrated approach (water, agriculture and livestock rearing) – Water control pumping systems that use renewable energy – Promoting innovative financing – Promote agroforestry and reforestation – Sustainable land management – Soil restoration
Safe and sustainable agriculture	

Sustainable forestry	– Reforestation – Forest management – Assisted natural regeneration and agro-forestry
Sustainable fishing	– Promotion of energy efficient equipment for fish processing; – Regeneration of mangrove ecosystems – Development of protection works along sandy coasts (seawalls, groins, beach surfacing, artificial beach feeding, massive sand dune replenishment etc.
Industrial	– Develop resilient equipment and processes – Develop industrial processes using renewable energy; – Promoting CSR in companies;

Chapter 5

INITIATIVES AND STRATEGIES TO PROMOTE THE GREEN ECONOMY IN WEST AFRICA

Several initiatives and strategies have been launched in West Africa without considering the green economy as a priority. However, their analysis shows opportunities for green growth and green job creation which constitute niches that corroborate the choice of the sectors in this report.

Initiatives to promote the green economy in West Africa

The typical characteristics of the subregions' development challenges has led West African countries to develop initiatives fully in line with the principles of a good green economy such as:

➢ **Resilience Initiative**

The Global Alliance for Resilience Initiative (AGIR) supported by ECOWAS and UEMOA is aimed, on the one hand, at the implementation of policy and technology options addressing the structural causes of food crises by promoting improved resilience of vulnerable populations and overall sustainable food and nutrition security, and on the other hand, at preparing States to better cope with crises when they occur. This initiative puts the focus on the agricultural sector in its agenda, with the development of:

- A Regional Agricultural Investment Program (PRIA), adopted in 2010 and focuses on three main objectives: (i) promotion of strategic products for food sovereignty and security, (ii) promoting a global environment that favours regional agricultural development, (iii) reduction of food vulnerability and promotion of sustainable access to food
- National programs for Agricultural Investment and Food Security (NIPA-SA) centred on strengthening food production, enabling a market environment and improving vulnerable populations' access to food.
- As part of capacity building and raising awareness, this initiative provides for the

establishment of mechanisms for systems of information, vulnerability analyses, and monitoring and warning, with, as a pillar for the prevention and management of food crises (PREGEC) at the regional-level, the Regional Agricultural Information System (CRMS) of UEMOA and the Agricultural Information System (ECOAGRIS) of ECOWAS, in terms of a unifying framework for all existing agricultural information systems.

➢ The regional initiative for energy efficiency supported by the Regional Centre for Renewable Energy and Energy Efficiency

This initiative focuses the negative environmental externalities (for example, GHG emissions; air, soil and water pollution; and land degradation) of energy use. Furthermore, energy efficiency will contribute to raising living standards of the population within the ECOWAS states by reducing the cost of energy bills and making access to energy more affordable and easier in both urban and rural areas. It will also supply energy to all public services, including education, health and water quality. It aims to establish a solid institutional framework, as the platform for supporting efforts towards change and the shift to a more energy efficient economy.

➢ The Regional Initiative for Sustainable Energy

Following the twelfth Ordinary Session of the Conference of Heads of State and Government of the UEMOA in 2008, a special "Energy" commission was established to provide sustainable solutions to issues related to the energy crisis. The work of this commission made way for the establishment of a regional initiative for sustainable energy (IRED). This initiative has set as its target for 2030, access by the citizens of the Union, to low-cost energy within a large, integrated and harmonized market at the West African subregional level, producing clean energy and based on a dynamic public-private partnership. A roadmap laying out the strategic axes has been established, integrating all activities related to the green economy including: developing a diversified, competitive and sustainable proposition, elaborate a regional master plan for managing electricity consumption and improving energy efficiency, accelerating the emergence of a regional energy trade within West Africa and establish a dedicated funding mechanism for the electricity sector.

➢ The Initiative on safe, affordable, and sustainable cooking

The ECOWAS initiative for safe, affordable and sustainable cooking is to ensure that by 2030, the entire population of ECOWAS will have access to modern fuels and efficient and sustainable cooking. It covers:

- Improving the efficiency and sustainability of traditional cuisine in wood and coal from the energy value chain through sustainable forest management, conversion to improved, clean and efficient charcoal stoves.
- Strengthening local economies through increased production of biomass fuels and stoves through the application of proven business models focused on intensification.
- Development of new forms of biomass energy for cooking
- Promotion of LPG and modern stoves.

➢ Initiative for energy efficient lighting

Lighting, having electricity as its main energy source, is used the most by West African households and forms 20 per cent of electricity consumption in the ECOWAS region. The transition to energy efficient lighting is a simple and cost effective way for the region to significantly reduce electricity consumption during peak periods, and also enabling greater economic growth, social progress, improved rates of literacy, safety and productivity in West Africa. For this reason, ECOWAS decided to launch an initiative for an "energy efficient lighting", as one of the priority initiatives within the implementation of the ECOWAS energy efficiency policy framework on.

Subregional and National Strategies for capacity building on green economy for mitigation

For some years, West African countries have begun to formulate and implement strategies towards promoting a green economy in the context of their regional and national development objectives.

Subregional ECOWAS and UEMOA strategies

It is generally accepted that pathways to green economy and green growth must integrate the pillars of socio-economic and environment of sustainable development, and moreover, be embedded in the national strategies for sustainable development.

In the subregion, the green economy is now seen as an activity leading to poverty reduction and job, wealth and income generation for the benefit of the population. The green economy is well recognized by the States of West Africa as a growth model that can and should be adopted at the level of all sectors of the economy. And so, States reconcile sustainable development and green economy.

In this way, subregional sustainable development strategies have relied primarily on policy axes that make a real transition to a green economy. Among these strategies (see appendix) one may note:

The agricultural policy of regional West Africa

The vision of the West African regional policy is consistent with the principles of sustainable development. It is "a modern, sustainable agriculture, based on the effectiveness and efficiency of family farms and the promotion of agricultural enterprises through private sector involvement. Productive and competitive in the intra-community and international markets, it must ensure food security and provide decent incomes for its assets."

The objective of this policy is to sustainably contribute to satisfying the food needs of the population, towards economic and social development and to reduce poverty in the Member States, as well as, reduce inequalities between territories, zones and countries.

From the perspective of massive job creation and sustainable agriculture, this policy enables operating through the green growth niche through:

Sustainable intensification of production systems and

Job creation that guarantees an income that can improve the living conditions of rural populations and services in rural areas.

➢ West African Common Industrial Policy (WACIP)

The general objectives of WACIP seek to promote an accelerated industrialization of West Africa, through a support in favour of endogenous industrial processing of local raw materials, the development and diversification of industrial productive capacities, and strengthening regional integration and export of manufactured goods. Even though, this policy does not announce a clear strategy for greening the sector, its analysis moves along tracks similar to a transition to a green economy, such as:

the development of entrepreneurship and technical competences amongst citizens of the community; and

the promotion of competitiveness of industries, and national and regional industrial sectors, by upgrading and strengthening their technical capacity around corporate financing, technology transfer and innovation.

➢ Conducting an African Ministerial Conference on the Environment (AMCEN) in September 2012 (UEMOA)

This meeting led to the development and launch of flagship programs for the achievement of sustainable development in Africa, taking into account cooperation frameworks. Considered among the envisioned flagship programs, are key strategic meetings for a transition to a green economy, such as:

African Partnership for a green economy;

Sustainable land management and the fight against desertification in Africa;

The development of sustainable energy;

Capacity building for technology transfer and skills development

➢ Establishing an Energy Efficiency Policy for ECOWAS (CCAP) and a Renewable Energy Policy (PER)

ECOWAS is committed to sustainable energy policies as part of the contribution to the Rio+20 initiative on sustainable energy for all.

The ECOWAS Commission strives for a voluntary commitment to the Initiative on Sustainable Energy for All presented at Rio+ 20, by the Secretary General of the UN. At a regional workshop held in November 2012 in Ghana, the Ministries of Energy of ECOWAS countries approved an

accord on the key objectives and pillars of regional policies for renewable energy and energy efficiency for the community. These policies have the following objectives:

Approximately 30 per cent of the electricity consumption in the ECOWAS region will be saved by 2030 through better supply to meet demand and an improvement in efficiency ;

The share of renewable energy sources (including large hydroelectric power) for the electricity production within the region will be increased to 35 per cent in 2020 and 48 per cent in 2030;

The share of new and renewable energy such as wind, solar, small hydro and bio-electricity (excluding large hydro) should increase to around 10 per cent in 2020 and 19 per cent in 2030. These objectives are reflected in an increase in renewable energy installations to 2,425 MW in 2020 and 7,606 MW by 2030;

To ensure universal access to energy services by 2030, it is expected that nearly 75 per cent of the rural population will be served by the extension of the network and approximately 25 per cent by mini-grids powered by renewable energy and autonomous systems.

In 2020, the total population of ECOWAS will have access to more efficient cooking facilities, either through improved stoves or by substituting fuel with other modern forms of energy such as LPG.

The share of ethanol/biodiesel in transport will increase to 5 per cent in 2020 and 10 per cent in 2030.

In 2030, about 50 per cent of all health centres and 25 per cent of all hotels and food industries will be equipped with solar thermal systems to meet their hot water needs.

➢ The Action Plan for the promotion of biomass energy and alternative energy in the context of sustainable development and the green economy in the UEMOA:

The action plan aims to contribute to poverty reduction and sustainable development of the UEMOA member states through coherent policies and strategies for biomass energy subsector. Its primary mission is to undertake actions in favour of bio-energy in an effort to reduce poverty.

➢ AfDB's "Green Growth in Africa" Program

The African Development Bank (AfDB) has a long-term strategy around the program for green growth in Africa that uses a systematic approach to development. The program focuses on strengthening the quality of growth, ensuring that economic growth is sustainable by using resources more efficiently. It is also closely related to inclusive growth by including the transition to the green economy as the basis of its actions. By adopting a multi-sector approach, the green growth program intends to open new opportunities for development in Africa. Africa has the opportunity to leapfrog stages of development by adopting more efficient infrastructure and new technologies. This type of development can be implemented without the added compliance costs of existing infrastructure, with the new standards.

National strategies

After the adoption of a common position on the green economy at various events such as: the third African Ministerial Conference on Financing for Development (May 2009), the African Ministerial Conference on the Environment (AMCEN) in June 2010, the first Pan-African Conference on Biodiversity (September 2010), the Seventh Forum for Africa's Development (October 2010) and, more recently, the 18th Ordinary Session of the Executive Council of the African Union (January 2011), West African states in their respective countries are finding ways and means to a more sustainable development via a transition to a green economy.

As part of the current trend towards implementing sustainable development, several countries have already put in place a national strategy for sustainable development (NSDS) which remains to be operationalized.

The predispositions necessary to move towards a green economy exist in some countries: for example, one can cite Senegal's Program 2 of "Building Capacity for Dynamic Economic and Social Development" of PODES which aims to support the creation of job opportunities, including green jobs, particularly in rural areas; the ten year National Action Plan on Sustainable Consumption and Production Methods (PAN/MPCD) with various of its own production and/or consumption projects, and the creation of its own production centre.

Although the concept of a green economy is not yet sufficiently integrated into national policies around sustainable development, other countries remain engaged in actions promoting a green economy within green growth sectors. One can cite the example of the implementation of components related to the reform and adjustment of forest ecosystems and the National Strategy for putting in place rural markets of wood energy in Benin, adopted in 2009. This constitutes a major new approach in participatory forestry management and the local income generation for poverty reduction in Benin. These actions already comprise the beginnings of the green economy.

For West African countries, the preparation of the national sustainable development reports in the run-up to Rio+20 makes the green economy one of their priorities for the next decade. For example, in Côte d'Ivoire the development of a green economy constitutes the sixth strategic priority, which aims to put in place the conditions for enabling businesses to fulfill their ecological and societal responsibilities, to develop "green industries" and opt for sustainable public procurement.

Further studies on the opportunities for creating green jobs in Mauritania and Senegal have been carried out by the International Labour Office (ILO) in partnership with UNDP and ENDA Energy. These studies aim to lay the foundations for reflection that leads to the implementation of a program linking local development and green job creation through the establishment of national and regional active policies in the field of economics green which, depending on their success, can be extended across the Sahel region.

Box 13 : A Green Agriculture Model in Bamako[4]

A green agriculture model is currently being demonstrated Tambaroua Farming Business in Bamako, Mali, on a farm with an area of about 4 ha (10 acres), where animal husbandry, farming, and planting of fruits and vegetables are practised. It is powered by solar energy and fed by drop irrigation. The water for irrigation comes from groundwater wells that work using solar submersible pumps embedded in elevated tanks.

The operation also includes a research centre for excellence and a school. Thanks to this school, young entrepreneurs learn the art of modern agriculture so they can create their own farms or evolve to act as co-entrepreneurs. The centre of research and training will ensure the adoption of best practices and a code of ethics, including the best seedlings and optimal use of inputs (fertilizers and chemicals). Testing of soil, water and others will be performed to achieve optimal farming conditions for minimal residual inputs in soils and quality products yields. In fact, the best quality products are sold at higher prices in niche markets.

To date, more than twenty types of farming tested show high productivity at a lower cost. The operation, which operates throughout the year through irrigation fed by groundwater, can serve as a model for many African governments and members of civil society. With a little capital, governments, individuals and organizations can get such facilities in collaboration with smallholder farmers. Large farmers can also learn lessons from this experience. Universities will be encouraged to conduct research orientated towards farmers. This is an excellent demonstration of green agriculture able to increase the yield and income of farmers, attract young people to agriculture, create decent jobs, and help eradicate poverty in rural areas.

Source : ECOWAS Commission, 2010.

In conclusion, the reconciliation of adaptation and mitigation with green economy remains a goal for West Africa. Key sectors of the economy still see their performance continue to be undermined by climate change. The need for adaptation and the importance of reducing GHG emissions in the economic activities in West Africa are widely recognized. The green economy is thus a means of promoting climate change mitigation.

CONCLUSIONS AND RECOMMENDATIONS

Demographic issues, food security, energy security, climate change, ecosystem balance, healthy growth and equity in the wealth distribution challenge all stakeholders to West Africa for a transition to sustainable production and sustainable consumption. Thus, in accordance with the guidelines of Rio+20, the green economy is a means to achieve sustainable development and improve the fight against the creation mechanisms of poverty.

The urgency of this zone is to guarantee a strong, socially-inclusive growth, environmentally sustainable and create economic opportunities in all labour-intensive sectors, for its population. The fact that the region's economies are deeply dependent on natural capital, green economic growth should allow a more inclusive and judicious use of natural resources through investments that are more productive, more efficient, and resilient to climate change.

The current climate negotiations, which aimed to achieve a post-2012 agreement, should allow West African countries to be part of this process of a transition towards a green economy and more generally to a low-carbon development and resilience to climate change. Already these negotiations include arrangements for the involvement of non-Annex I of the Framework Convention on Climate Change (developing countries) to meet the goals of reducing GHG emissions defined by the "Climate" Convention, particularly the development of measures to suit the Nationally Appropriate Mitigation Actions (NAMAs), including adjacent funding and technology transfer for the benefit of the country.

Thus, as with any phase of structural transformation, the transition to a green economy requires managers and support services as actors both at the political and the institutional level (instruments, institutional leadership or restructuring), investments, research and development, training or retraining for emerging businesses, information and awareness of "low carbon" or "win-win" strategies. These actions could be real milestones for funding the initiation of the "greening of sectoral and territorial growth", while using a holistic and "step by step" approach.

Political processes in each country should be set up to absorb the gaps that impede a "sustainable development".

The transition to a green economy requires mutations centered on **policy processes, training and research, innovative financing and mechanisms for monitoring and sustainability**:

A) Make consistent the institutional framework through participatory and inclusive political processes

1. The definition of a clear and long-term political vision: Part of the updating of policies in a context of multiple crises, each country should have a long-term vision coupled with a new growth strategy green framed within sustainable development. This vision and strategy must take into account climate change to guide actions towards carbon sobriety and thus stimulate economic growth that contributes to the mitigation of greenhouse gas emissions.
2. **The establishment of participative and inclusive spaces for exchange or dialogue involving governmental actors, the private sector and civil society in order to understand the issues, the concepts and the tools at local, national and regional levels around the green economy and establish national priorities and visions for this transition to a green economy, taking into account the specificities of each country**. As such, it is essential to establish a regional platform to support the appropriation of concepts and their alignment with sustainable development processes, but also to ensure better communication on best practices. This framework should be replicated at national and local community level, especially for countries undertaking a decentralization process.
3. **Designing policies based on best practices involving adaptation and mitigation in sectors with a high labour intensity (HLI).** The synergy between adaptation and mitigation can improve the cost-effectiveness of measures and make them more attractive to stakeholders, including potential funding partners. The sector analysis notes that opportunities around adaptation-mitigation-development synergies are higher in agriculture, forestry, construction and urban infrastructure, renewable energy and associated industries. Thus all these are niches that can create decent green jobs and green growth.

   The numerous initiatives launched within these sectors at the community level reveal the need for **scaling up** and show that there are real possibilities for replication and ownership of approaches and instruments.
4. **Development of a regional and national leadership to support the integration of the green economy into local, national and regional development strategies**: mainstreaming this approach requires the availability of tools (best practice guidelines), legislative measures and economic incentives for a transition to the green economy.
5. **The development of a road map by some NGO leaders in West Africa**: the champions contribute to the advocacy and marketing of "pilot projects". They will also facilitate the formation of a network of organizations and experts in the green economy in the subregion.

B) Capacity building through training, R&D and the development of standards

1. **Education, training and research on the green economy and green growth must be integrated into formal and non-formal education and institutional capacity at regional,**

national and sub-national levels should be reinforced to deliver them. At the national level, challenges around transforming the promotion of eco-industries into real opportunities require the diversification of the supply of education and training into two clearly articulated principles: one of innovation and experimentation and another of stability and sustainability.

2. **West African subregional organizations, with the support of the ECA, AUC, AfDB and other development partners should support and strengthen the capacity of countries in the subregion to succeed the transition to a green economy, in particular through**: i) the production of data and information, especially on indicators of the green economy, based on the framework of environmental statistics ECOWAS; ii) the targeted feasibility studies on the costs and benefits of the green economy; iii) access to finance and toolkits for green economy; and iv) the identification, documentation and sharing of best practices around green economy.

C) Access to finance

The search for innovative financing through flexible and appropriate instruments combined with financial resources, including those of governments, the private sector and local communities. National governments and regional structures should reorient their funding policies taking into account a new paradigm of the green economy.

D) Monitoring mechanisms and sustainability

The establishment of monitoring and impact evaluation mechanisms of the implementation of green economy strategies in order to better assess the actual changes within the political, social, environmental and institutional aspects from a sustainable development perspective.

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