

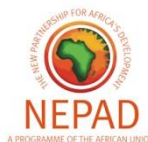


Accelerating reform in Africa: Mobilising investment in infrastructure and agriculture

Africa Investment Initiative

Climate-compatible growth: Seizing the opportunity for Africa

This information note is distributed as part of the official documentation for the 5th Ministerial Meeting of the NEPAD-OECD Africa Investment Initiative on 26-27 April 2011 in Senegal. This information note has been prepared by the Secretariat of the OECD Development Assistance Committee (DAC) Network on Environment and Development Co-operation (ENVIRONET). The views contained within the information note do not necessarily represent those of NEPAD, the OECD or their member governments.



- **Climate-compatible growth is both a risk-management strategy and a cost-effective investment for Africa.**
- **Many countries in the region are already taking steps and acting together to combat climate change.**
- **The indirect benefits of climate-compatible actions require further quantification and assessment and a financial mechanism should be established to cover the time lag in benefit realisation.**
- **International donors and communities are already supporting African countries with both financial and technical support.**
- **The private sector also has a significant role to play given clear policy signals by governments to incentivise private sector players.**

Some Facts about Africa

(1) 587 million people in Africa are currently without access to electricity, with 585 million living in Sub-Saharan Africa. To electrify the whole African continent would require 463 TWh incremental electricity output (equal to 1.5% of the global electricity production) by 2030. The untapped renewable energy potential, ranging from hydro, to solar, wind, geothermal and biomass will be needed to ensure access to electricity to the hundreds of millions of African (IEA, 2010).

(2) More than 60 per cent of people in Africa depend on farming for their livelihood and 50 per cent of all exports are agricultural products. IPCC warns projected reductions in yield in some African countries could be as much as 50% by 2020 and crop net revenues could fall by as much as 90% by 2100 (IPCC, 2007).

(3) Based on IPCC's estimation, about 25% of Africa's population (200 million people) currently experience high water stress. The population at risk of increased water stress in Africa is projected to be between 75-250 million and 350-600 million people by 2020s and 2050s, respectively (IPCC, 2007).

Africa is acting to combat climate change

Africa is one of the most vulnerable continents and climate change is already reducing crop yields, causing food insecurity and contributing to ecosystem collapse. At the same time, increasing energy demand and deforestation are accelerating climate change effects. Although greenhouse gas emissions from Africa are small compared to other regions, it makes economic sense for Africa to pursue a climate-compatible path from today onward.

Climate-compatible growth has two key elements.

- *low-carbon growth*, which aims to minimise the level of greenhouse gas emission from economic growth;
- *climate resilient growth*, which aims to reduce the risks from climate change – such as floods, droughts and sea-level rise – by ensuring the resilience of key economic assets to any consequences of climate change.

Climate-compatible growth is currently being considered as a new development paradigm by many African countries to secure a sustainable future for the millions on the continent. To date, 18 countries have already affiliated themselves with the Copenhagen Accord and 31 countries drafted their adaptation plans (Table 1).

Table 1 African Countries with plans to pursue climate-compatible growth

Plans for Low-carbon Growth (UNFCCC NAMAs) ¹	Plans for climate resilient growth (UNFCCC NAPAs) ²
18 countries as of March 2011: Benin, Botswana, Cameroon, Central African Republic, Chad, Congo Republic, Eritrea, Ethiopia, Gabon, Ghana, Ivory Coast, Madagascar, Mauritania, Morocco, Sierra Leone, South Africa, Togo, Tunisia	31 countries as of March 2011: Benin, Burkina Faso, Burundi, Cape Verde, Central African Republic, Chad, Comoros, Democratic Republic of Congo, Djibouti, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Sudan, Tanzania, Togo, Uganda and Zambia
<i>(Some Parties have noted the need for international support when describing their actions.)</i>	

¹ These countries responded to the Appendix II of the Copenhagen Accord on Nationally Appropriate Mitigation Actions (NAMA) of developing country Parties and indicated strong support to the Copenhagen Accord and their individual pledge in mitigation, technology and capacity development.

² These countries prepared National Adaptation Programme of Actions and indicated their priority actions and policies to adapt to the changing climate.

Some countries have also set ambitious voluntary targets at the sectoral level, such as:

- **South Africa** has committed to achieve a 34% deviation below the 'business as usual' emissions growth trajectory by 2020, and a 42% deviation by 2025.
- **Nigeria** has set a target to move 20% of the country to off-grid renewable energy sources by 2012, to increase total renewable capacity to 16 GW by 2015, and to increase its forest coverage from the current 6% of national land to 15% by 2020.
- **Tunisia** has a renewable electricity generation target of 10% by 2011, **Morocco** of 20% by 2012 and **Egypt** of 20% by 2020.
- **Cape Verde** called for 25% of all energy to be produced from renewable sources by 2010 and 50% by 2020. The country will also aim to achieve 100% of electricity production from renewables by 2020.

Climate-compatible growth – a risk management strategy for Africa

Pursuing a climate-compatible growth pathway will help many African countries to reduce the impacts of a changing climate, help make their development climate-resilient and therefore reduce the risk of seeing their development opportunities being undermined by climate change.

Climate risks and risks of “maladaptation”

Some may argue that the best way to adapt to climate change is simply to continue with “development as usual”, building up each country’s resources and capacity to adapt. Unfortunately, the solution is not so simple. Continuing development as usual, without giving due consideration to climate-associated risks, can actually increase vulnerability. For example, large-scale planting of drought-sensitive crops can backfire if climate change increases the frequency of droughts. This is referred to as “maladaptation”. In order to avoid maladaptation, development policies must integrate climate change considerations.

As recommended in recent literature (DFID and Stockholm Environment Institute, 2010), an optimal climate-resilient pattern at the macro-economic level implies a need to encourage sectoral shifts away from climate-sensitive activities. At the national policy level, it requires long-term planning and policy setting in areas such as spatial planning to reduce vulnerability. At the local level there is continued need to increase the capacity of economies to cope with future climate variability by investing in local communities and building their knowledge and skills, noting that this will also have benefits for reducing current risks.

Energy risks

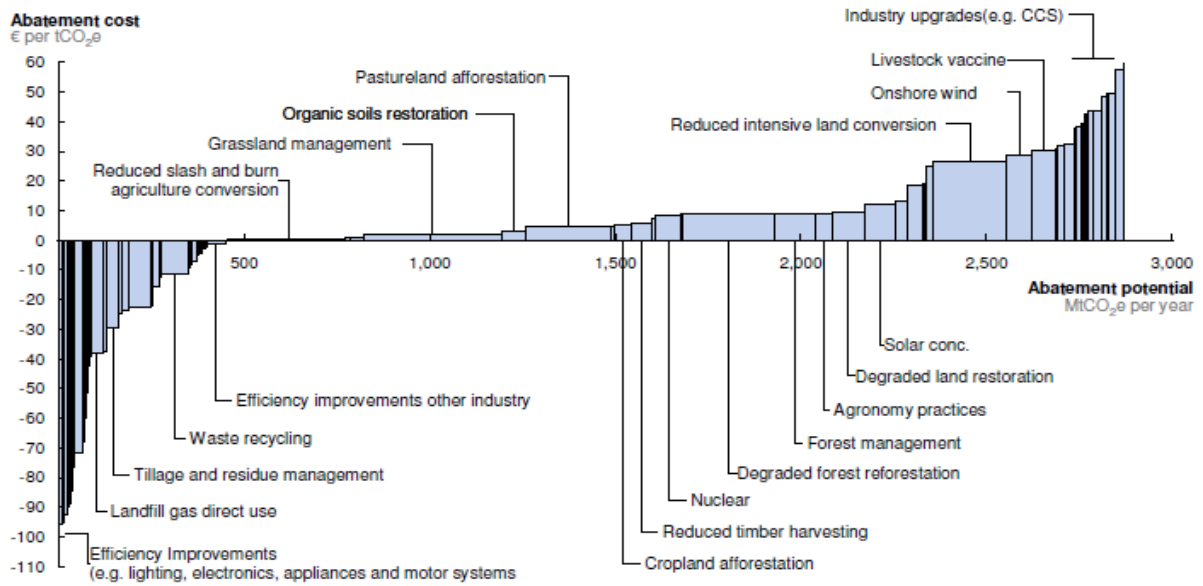
Climate-compatible growth can help increase energy access. Today, 585 million people in Sub-Saharan Africa lack access to electricity, and some 85% of those without access live in rural areas (IEA, 2010). Clean and efficient technologies can help scale up energy access to many rural locations by leap-frogging traditional technologies. For example, the deployment of off-grid power generation in rural areas can avoid the significant costs of establishing and maintaining power grid infrastructure. Access to modern energy can also avoid over-use of traditional biomass which contributes to high deforestation rates in African countries.

Climate-compatible growth also reduces the dependency on fossil fuels through higher energy efficiency and increased use of renewable resources. Dependence on fossil fuels results in a carbon lock-in effect with carbon intensive infrastructure and high energy consumption. Such dependence exposes countries’ growth pathways to both economic and political risks arising from the price volatility of fossil fuels. Reducing the fossil-fuel dependency also reduces the fiscal burden of providing fossil fuel subsidies.

Climate-compatible growth – a cost effective investment for Africa

A key question for policy makers when designing any policy is how much it will cost and what the benefits will be. It is also a critical question to be answered when designing climate-compatible growth in Africa. Research by McKinsey has shown a significant potential for no-regret low-carbon mitigation measures as options with relatively low costs and high benefits. This means that some measures – such as improving energy efficiency, use of landfill gas and recycling (Figure 1) are economically rational and do provide net benefits in the short run. Other measures are more costly but many are feasible.

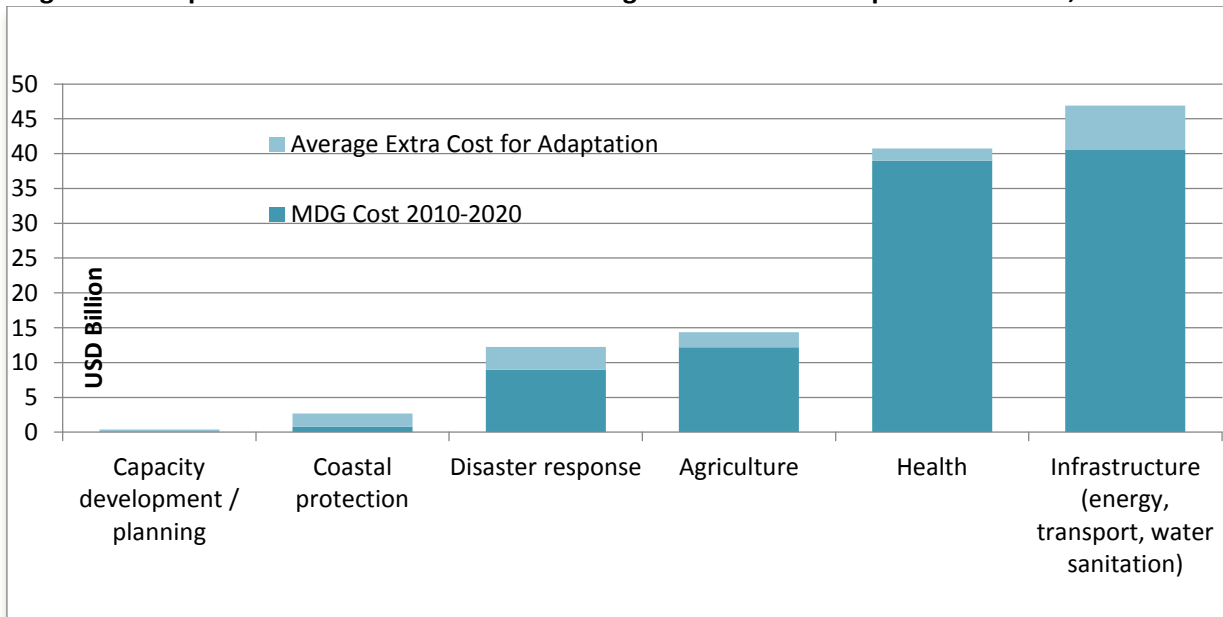
Figure 1
Africa GHG abatement cost curve 2030 beyond business-as-usual



Note: The curve presents an estimate of the maximum potential of all technical GHG abatement measures below €80 per tCO₂e if each lever was pursued aggressively. It is not a forecast of what role different abatement measures and technologies will play.
Source: McKinsey & Company: Pathways to a Low-Carbon Economy – Version 2 of the Global Greenhouse Gas Abatement Cost Curve, 2009

In terms of the cost of climate-resilient strategies, a recent study on projecting the costs of climate-proofing the Millennium Development Goals (MDGs) in Africa (Fankhauser and Schmidt-Traub, 2010, summarized in Figure 2) indicated that the extra cost for the adaptation of existing planned development actions are rather small.

Figure 2 Comparison of MDGs cost and the average extra cost for adaptation in Africa, 2010-2020



Source: Fankhauser and Schmidt-Traub, 2010.

Addressing key economic sectors in climate-compatible growth

Energy, forestry and agriculture are three key economic sectors which offer opportunities to pursue climate-compatible growth. These three sectors contribute significantly towards Africa's development and poverty reduction goals through providing access to energy, food security and ecosystem services. At the same time, they are also the sectors which are most vulnerable to the impacts of climate change.

Energy Sector

As burning of fossil fuel is the major cause of greenhouse gas emission, decarbonisation of the energy sector is critical for climate-compatible growth. But at the same time Africa faces the major challenge of combating energy poverty by providing universal energy access and scaling up clean energy deployment, this in particular includes the agenda of improving access to electricity and reducing reliance on the traditional use of biomass for cooking. Africa is a highly diversified region. From the energy sector perspective, Africa can be grouped into the following categories (Table 2).

Table 2 African countries grouping according to its energy sector characteristics

Countries	Primary source of energy	Energy Access	Use of modern energy, including clean cooking facility
Northern Africa	Oil and gas	High	Moderate
South Africa	Hard coal	Moderate	Moderate
Sub-Saharan Africa	Traditional biomass	Low	Low
Island States	Oil (imported)	High in Mauritius and Seychelles, low in other island states	Low

In Sub-Saharan Africa, the electrification rate is 31% and the share of people relying on biomass is 80% (IEA, 2010). Although the existing energy consumption in Africa is relatively low, most of the household energy consumption is from traditional biomass, and in particular from the use of low-efficiency cooking stoves. These cooking stoves have a high dependency on biomass harvested from forestry and other natural waste residues which cause adverse health impacts (e.g. indoor smoke causes respiratory diseases). These impacts fall disproportionately on women and children.

Given the large diversity of countries' interests on the continent, implementing climate-compatible options in the energy sector should aim to achieve the objectives of (1) improving energy access, (2) reducing reliance on traditional fuel sources such as biomass and fossil fuel dependency, and (3) understanding the co-benefits related to health, as well as potential job creation. These objectives can be reached by implementing a range of initiatives, including investing in renewable energy and energy efficiency technologies, promoting mini-grid and off-grid power generation modes and ensuring the long term sustainability of production programmes such as sustainable biofuel plantation.

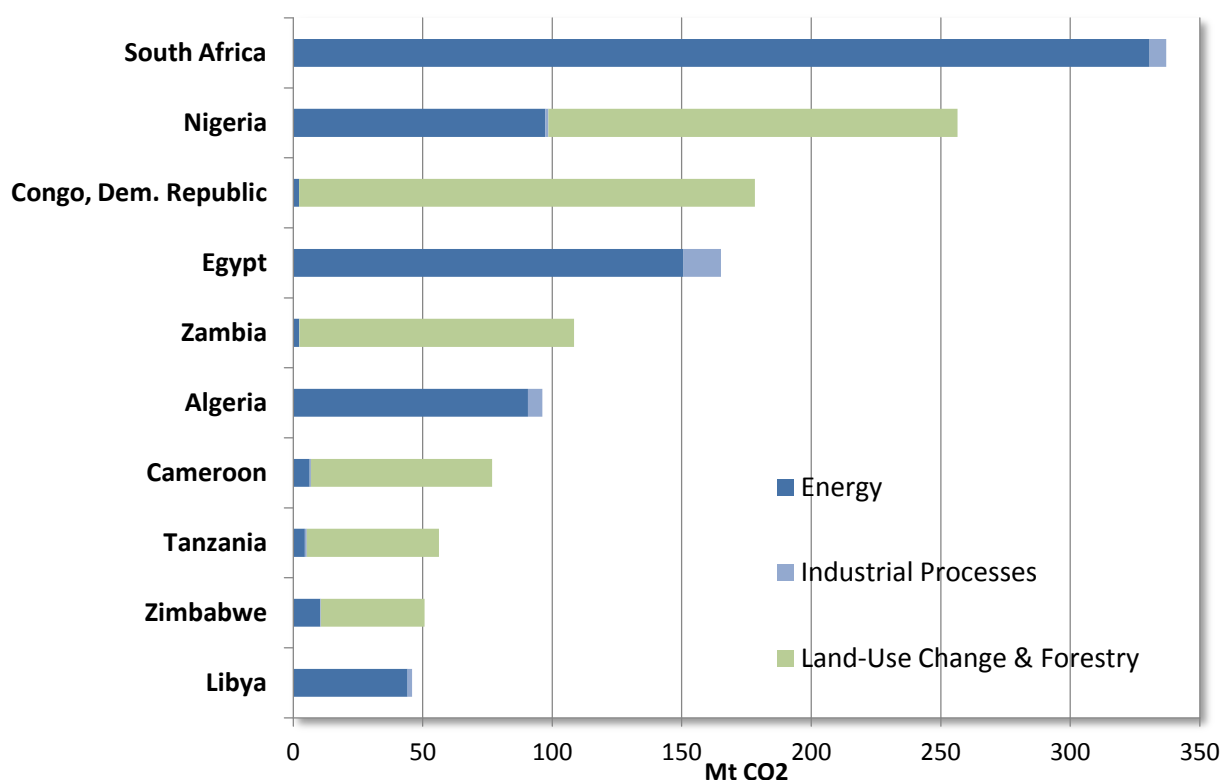
Climate-compatible growth in the energy sector – some specific actions

- Create incentives and training programmes to build-up the capacity to deploy alternative energy sources for both household and industrial usages, in particular to tap into the large potential of hydropower;
- Replace traditional cooking stoves with more energy efficient / clean energy cooking stoves;
- Improve energy efficiency at various levels;
- Upgrade grid infrastructure and scaling up off-grid / distributional generation modes.

Forest Sector

Africa has one of the most diverse and unique forest ecosystems in the world. The Congo Basin contains the world's second largest area of dense tropical rainforest after the Amazon and accounts for more than half of Africa's biodiversity resources. Loss of forests is a major contributor to GHG emissions on the continent. According to a recent FAO report (FAO, 2010a), Africa had the highest net annual loss of forests in 2000-2010 at 3.4 million hectares just after South America. It is estimated that nearly half of the forest loss is due to the removal of wood fuel. Changes in land use, notably deforestation, result in diminishing carbon sinks (Figure 3). Climate change exerts great pressure on African forests: estimates indicate that this could lead up to a loss of up to 40% of species habitats by 2085 (UNFCCC, 2006). Rising temperatures are making forests drier and therefore more susceptible to fires, vulnerable to pests and diseases. Furthermore, reduced water availability will also have implications on the forest growth.

Figure 3 Ten highest CO₂ emitters in Africa in 2005



Source: figure is produced based on data from Climate Analysis Indicators Tool (CAIT) Version 7.0, World Resources Institute, 2010.

Sustainable and effective management of forests by providing access rights to local dependent communities, promoting payments for ecosystem services to conserve natural resources, and providing financial incentives through carbon market to restore carbon in the forest will avoid unnecessary emissions. These measures, if taken into consideration with rural community development, can bring about co-benefits by providing employment opportunities, extra income and inclusion of socially disadvantaged people. Sustainable forest management may also promote linkages between forestry and agriculture, as well as benefit the tourism sector in some cases.

Climate-compatible growth in the forestry sector – some specific actions

- Secure access rights for forest-dependent communities and indigenous communities;
- Promote payments for ecosystem services and implement access and benefit sharing agreements at national level;
- Utilise mechanisms designed to encourage reduced emission from deforestation and land degradation (REDD and REDD+).

Agricultural Sector

The agricultural sector is critically important to Africa, both in terms of social and economic development. More than 70% of Africans depend directly on agriculture for their livelihoods, and the types of production range from small-scale subsistence farming to large-scale export oriented farming industries. Agriculture contributes to about 50% of Africa's total exports in value and approximately 30% of its total GDP (Climate Change and Agriculture in Africa website, 2011). However, agriculture development in Africa has the following characteristics: slowest record in productivity improvement worldwide, stagnating technology, declining land availability due to high population growth. Public expenditures on agriculture as a share of agricultural GDP remain low and private investment in technology and skill is far below the global average. The effects of climate change on agriculture vary largely due to highly variable precipitation rates across sub-regions. It is estimated that large areas of the dry sub-humid zone could lose 5-20% of the length of their growing season, and the Sahel region could experience a greater than 20% loss in growing season.

To preserve and enhance food security, production systems have to adapt to the changing weather conditions. Transformations are needed in both commercial and subsistence agricultural systems but with different requirements in capacities (FAO, 2010b). Some suggested efforts in terms of adapting and mitigating climate change in agricultural sector include searching for greater climate tolerant crops, raising the efficiency of soil and water management, sustainable agricultural land management with biological pesticide and fertiliser control, and avoiding mono-cropping, among others. Biofuel plantations on agricultural land should be conducted only on a sustainable basis avoiding aggravating land and water stress, as well as taking into consideration food security issues, notably for the poorest.

Climate compatible growth in the agricultural sector – some specific actions

- Improve soil / water management and biological pesticide / fertiliser control;
- Avoid mono-cropping practices;
- Develop and farm more adaptive agricultural crops;
- Promote sustainable biofuel plantation.

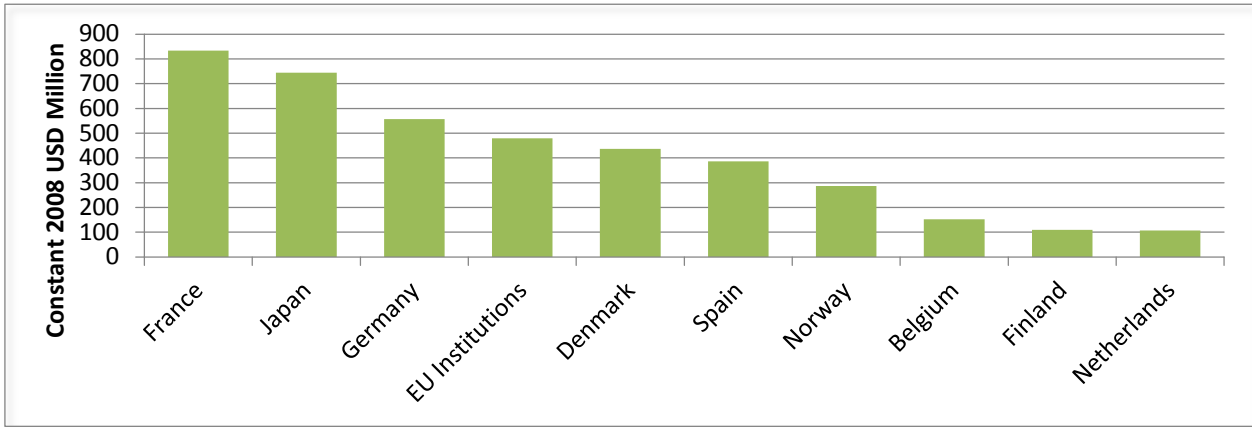
Paying for climate compatible growth – tapping international support

Climate-compatible growth is rational from the economic, environmental and social points of view. However, it would require large scale investment in the short-run. This is despite the existence of “no-regret” policies that make economic sense in the short-run. Therefore, the key challenge is how to finance these large investment needs in the near term.

International donors can play a critical role. Between 2007 and 2009, the amount of bilateral aid targeted for climate purposes in Africa averaged USD 4.2 billion, led by France, Japan and Germany (Figure 3). This number is partial, becoming higher if account is taken of major multilateral donors' support through the World Bank, African Development Bank, and the Global Environment Facility (GEF)³. Such aid has already contributed to the efforts to combat climate change at the regional and country levels. The top three recipient countries are Tunisia, Morocco and Egypt (Figure 4). These countries have relatively large mitigation potentials and have demonstrated both political commitment and domestic capacities to implement longer term environmental programmes. In addition, there is an increasing flow through various climate funds and initiatives, the clean development mechanism under the Climate Change Convention, as well as potential payments for ecosystem services through REDD+, a mechanism to provide financial compensation to avoid deforestation and to undertake reforestation/afforestation actions.

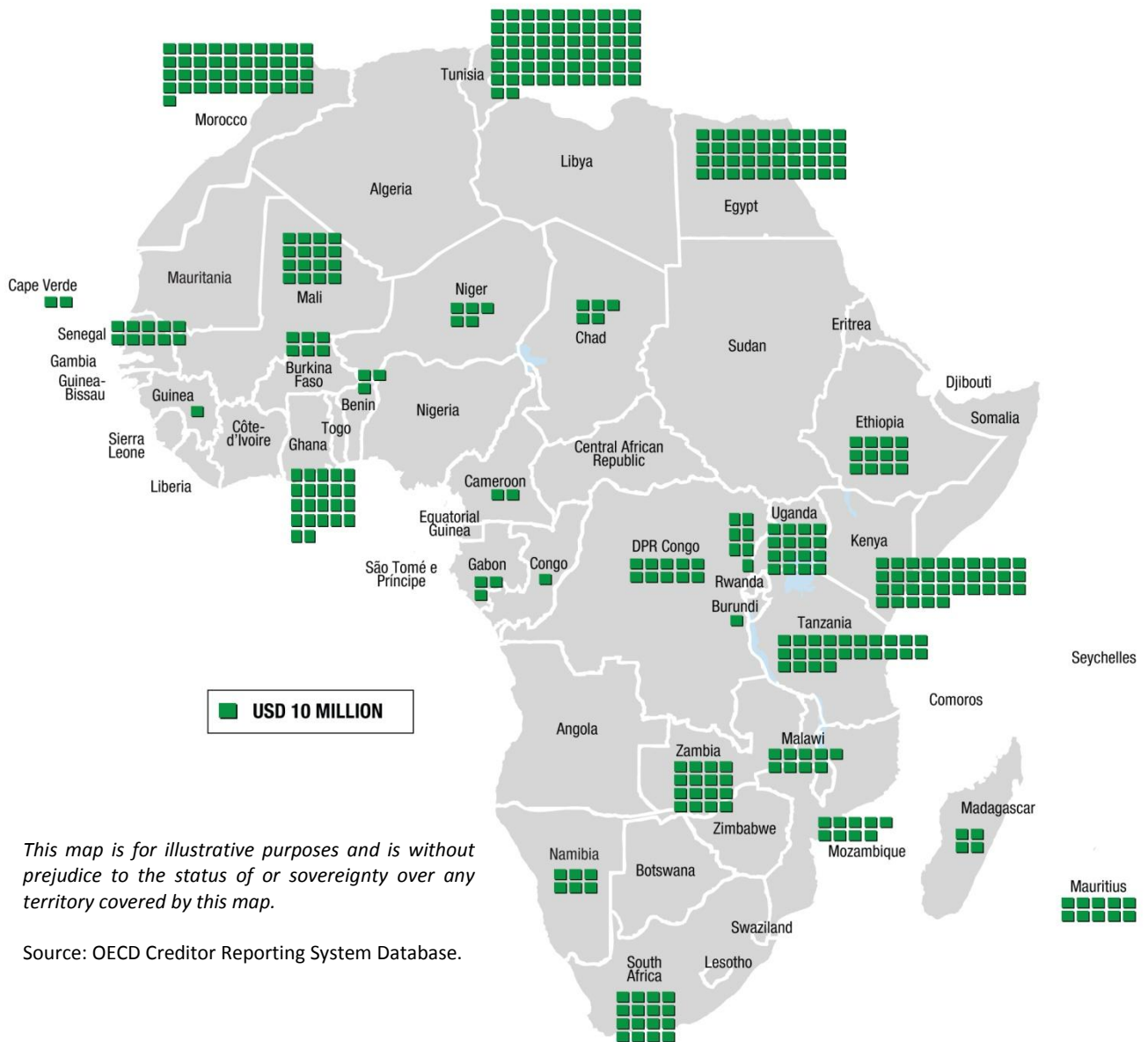
³ For more information regarding the existing multilateral funds to support climate change mitigation and adaptation, refer to OECD (2011), Development Perspectives for a Post-2012 Climate Financing Architecture. OECD: Paris.

Figure 3 Climate Mitigation-Related Aid to Africa - Top 10 Bilateral Donors (2007-2009 commitment)



Source: OECD Creditor Reporting System Database.

Figure 4 Climate Aid to Africa – Mapping the Bilateral Flows



In general, donors have used four main channels to provide bilateral financial support to African countries. These channels should be chosen according to national circumstances, particularly, the partner government's capacity to manage unearmarked funding.

Instruments	Characteristics	To be used when...
General Budget Support	Unearmarked funding is provided to the national budget, while donors and partner countries agree on a framework to assess the progress to certain targets.	<ul style="list-style-type: none"> ○ The Government has a strong capacity to implement its national policies, such as with a national mechanism for tracking climate influx financing. ○ Long-term commitment is assured.
Sector Budget Support	Unearmarked funding is provided to the sectoral budget, while donors and partner countries agree on a framework to assess the progress to certain targets.	<ul style="list-style-type: none"> ○ Sectoral Ministry (particularly energy, forestry, agriculture and transport) has the capacity to implement its sectoral plans.
Basket Funding	Funding is limited to specific expenditure categories within a sector. Basket funds are usually managed outside the national public financial management (PFM) system and have their own rules and procedures.	<ul style="list-style-type: none"> ○ The government's PFM framework is weak and accountability cannot be ensured.
Project support	A specific project is supported through financial or technical assistance.	<ul style="list-style-type: none"> ○ Partner country governments have already identified the need for project-specific support.

Some bilateral and multilateral supported climate change programmes in Africa

The Central African Regional Programme for the Environment (CARPE) was developed by the **USAID** in 1995 as a 20 year programme with the objective to reduce the rate of forest degradation and loss of biodiversity through increased local, national and regional natural resource management capacity in Central Africa. As a result of the programme, the landscape-level land use plans and natural resource management plans of Protected Areas have been diversified, their management has been strengthened and illegal logging has been reduced. This has allowed an increase from zero to 4.5 million hectares of timber being certified by the Forest Stewardship Council. One result emerging from CARPE is the Congo Basin Forest Partnership which was supported by 29 governments, international environmental associates and interested business. The CARPE mechanism has been selected by the U.S. government to serve as the primary implementation mode for its activities.
(summarised from CARPE website, <http://carpe.umd.edu/>)

The CC DARE Initiative is funded by DANIDA and jointly implemented by UNEP and UNDP. The objective of this initiative is to provide timely technical and financial support on a demand basis to countries in Sub-Saharan Africa and Small Island Developing States for flexible and targeted actions for climate change adaptation. To date, it has supported many African countries in strengthening their adaptation capacities. For example, it has helped the authorities and communities of the Savanne District in Northern Togo to improve their understanding of climate change adaptation, undertake the rehabilitation of selected water reservoirs, and then use the information and expertise gained to develop a proposal for the rehabilitation of all water reservoirs in Togo. In Rwanda, the availability of an updated Land Suitability and Land Use Map and Plan for the Gishwati Area of Nyabihu District is the biggest opportunity created by the implementation of the CC DARE Programme. The successful implementation of this programme has enabled the Ministry of Agriculture of Rwanda to secure USD 15.9million from the GEF's Least Developed Countries Fund (LDCF).
(summarised from the CC DARE website, <http://ccdare.org/>)

Lessons learned from development co-operation practices

Based on existing experience and lessons learnt from development co-operation practices in supporting partner countries combat climate change, below are some key elements to enhance the role played by OECD development co-operation in promoting climate-compatible growth in African countries:

Development Co-operation could help African countries in:

- Utilizing existing international established mechanisms such as CDM and REDD (REDD+) to tap into the benefits of low carbon growth in the near term;
- Supporting further research, data collection and knowledge development of climate science and developing climate-compatible policies;
- Building institutional and human capacities for adopting climate resilient and low carbon measures;
- Supporting governments to establish a sustainable investment climate by developing incentives to attract private sector investment and FDIs, such as through public private partnership to mitigate investment risks.

Climate compatible development in Africa – final remarks

The key to successful climate compatible growth strategies is how effectively such actions and policies can be implemented. Key elements in implementing the strategies and their associated actions and policies include:

- **Assess and recognise both the direct and indirect benefits of climate-compatible growth**
There is no globally accepted or widely applied methodology to quantify in monetary terms the benefits of climate-compatible growth. For most economic activities, only the direct costs and benefits are considered in making policy and investment decisions. Medium and long-term indirect costs and benefits need to be properly identified and quantified in order to correctly value the benefits of policies and the costs of inaction.
- **Set up financing mechanisms to bridge the gap between investments and the accrual of associated benefits**
Financial mechanisms could be designed to help foster economic and social development while at the same time promoting climate-compatible growth. However, such mechanisms are not widely developed or used to date. In the long run, they could promote decisions that result in higher and more balanced development (climate resilient and low carbon) compared with conventional economic development policies. However, the social and economic benefits brought about by these climate measures may be longer term and it may take time until they are fully materialised. The creation of financing mechanisms to cover or accommodate this time lag is critical for effective policy making and investment decisions.
- **Benefit from financial and technical assistance from international cooperation**
International cooperation has an important role to play in providing support to African countries with the transition to a climate-compatible pathway. Technology transfer and financial assistance can become the keys to successful implementation of climate-compatible development measures, whether through grants, concessional loans, policy dialogue, training or other approaches. Furthermore, policy coordination at country and regional levels is essential to provide support to countries during the transition period when some sectors may be adversely affected by climate-compatible growth.
- **Recognise the critical role of the private sector**
Governments have the responsibility to provide clear signals by pledging a longer term policy commitment in order to incentivize the private sector to play its role in the transition to climate-compatible investment. This role could range from investing in clean production decarbonising supply chains, increasing research and development spending, and promoting clean technology innovation. The private sector could also inject financing through the clean development mechanism.

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