

Chapter 7



FINANCING

Aviation and Financing of Emissions Reduction Measures Overview

By ICAO Secretariat

Climate financing is one of the key elements of the international discussions addressing climate change in the medium and long term. The scale and size of the challenge that is associated with sustained reductions of greenhouse gas (GHG) emissions on a global scale requires rigorous solutions and robust financing mechanisms that will be needed to develop and deploy mitigation technologies and to adapt to the impacts of climate change. In particular, significant financial and human resources will be required to ensure that developing countries are able to meet the challenge of climate change while growing their own economies in a sustainable manner.

Background

According to the United Nations Framework Convention on Climate Change (UNFCCC), the current levels of funding available for climate change-related initiatives will be insufficient to address the future financial flows estimated to be required for adaptation and mitigation measures under a strengthened future climate change agreement, post-2012¹. Developing countries currently receive only 20 to 25% of the investment they need for climate change mitigation and adaptation, which only represents approximately 46% of the total that will be required by 2030.

While several States have been able to undertake initial actions to combat climate change using their own financial resources (as a result of their own economic growth), the energy demand in developing countries is projected to increase immensely, which will require additional resources. Nonetheless, the resulting emissions reductions expected to be achieved by developing States by 2030 is estimated to be about 68% of global emission reductions (see article *Climate Finance – Challenges and Responses: World Bank Perspective*, Chapter 7 of this report).

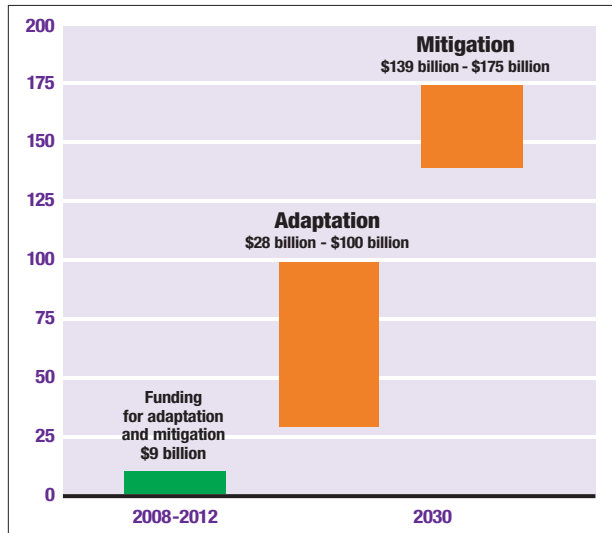


Figure 1: Additional investment needs in developing countries, by 2030 (World Bank presentation at the ICAO Colloquium on Aviation and Climate Change, Montreal, May 2010).

Climate Change Financing Mechanisms

Several financial mechanisms to address climate change are currently in place, including the following:

Global Environment Facility (GEF²) was established by UNFCCC to operate the financial mechanism under the Convention on an on-going basis, subject to review every four years to provide funds to developing countries.

Special Climate Change Fund (SCCF³) was created in 2001 to complement other funding mechanisms to finance

projects relating to:

- Capacity-building⁴;
- Adaptation (for more information on adaptation please see Chapter 6 of the report);
- Technology transfer;
- Climate change mitigation and economic diversification for countries highly dependent on income from fossil fuels.

Least Developed Countries Fund (LDCF) is intended to support a special work programme to assist the LDCs.

Clean Development Mechanism (CDM⁵) allows a developed country with an emission-reduction or emission-limitation commitment under the Kyoto Protocol to implement an emission-reduction project in developing countries. Such projects can earn saleable certified emission reduction (CER) credits, each equivalent to one tonne of CO₂, which can be counted towards meeting Kyoto targets.

Adaptation Fund became operational with the first commitment period of the Kyoto Protocol in 2008 to finance practical adaptation projects and programmes in developing countries and support capacity-building activities. It is funded from an adaptation levy of 2% on CDM projects.

Climate Investment Fund (CIF⁶) was established in 2008 by several multilateral development banks. The CIF has balanced and equitable governance with equal representation from developed and developing countries. The objective is to influence climate investments in the following areas:

- **Clean Technology Fund:** Finances demonstration, deployment, and transfer of low carbon technologies.
- **Strategic Climate Fund:** Targeted programs to pilot new approaches and improvements.

Community Development Carbon Fund provides carbon reduction financing to small scale projects in the poorer rural areas of the developing world. The Fund, a public/private initiative designed in cooperation with the International Emissions Trading Association and the UNFCCC, became operational in March 2003.⁷

The World Bank and the International Finance Corporation have also developed carbon funds with (co-)funding by States (see article *Climate Finance – Challenges and Responses: World Bank perspective*, Chapter 7 of this report). Similar carbon-financing initiatives are currently being developed by various other international financial institutions. The World Bank and regional development banks provide financing for investment in mitigation and adaptation measures to developing countries. This includes loans to support projects and initiatives in the transport sector (see article *The African Development Bank and Climate Change Mitigation in Africa* and article *Financing Biofuels in Latin America and the Caribbean*, Chapter 7 of this report).

A number of nationally-based financing instruments also exist, including: the Carbon Trust in the United Kingdom, the Green Financing in the Netherlands, and the Energy for Rural Transformation in Uganda. It is notable that the World Bank Group has developed various instruments to trade greenhouse gas (GHG) emission rights among States (see article *Climate Finance – Challenges and Responses: World Bank Perspective*, Chapter 7 of this report). These financing models and financing instruments have been specifically designed for climate change projects. Other funds are also available or currently under development. For instance, the United Nations Environment Programme (UNEP) is working to create a policy and economic framework in which sustainable energy can increasingly meet the global energy challenge.

Recently, the Secretary General of the United Nations established the High-Level Advisory Group on Climate Change Financing (AGF) to study potential sources of revenue for financing mitigation and adaptation activities in developing countries. This funding is expected to tap into a wide variety of sources. In relation to international aviation, the AGF will also consider options relating to fiscal instruments that could apply to this sector.

Financing Mechanisms for Aviation

International aviation currently has no dedicated financial mechanism related to climate change. Because international aviation is not covered by the Kyoto Protocol, it has no access to any of the Kyoto flexible financing instruments such as CIF or CDM. The absence of a structured mechanism does not mean that there are no initiatives or specific examples of financial contributions to support aviation climate change actions.

In the context of the current debate on the possible inclusion of international aviation in a future UNFCCC international agreement, ICAO is actively investigating the appropriate market-based measures and hence mechanisms to meet the goals associated with the aviation sector (see the articles *The African Development Bank and Climate Change Mitigation in Africa* and *Financing Biofuels in Latin America and the Caribbean*, Chapter 7 of this report).

Although international aviation is prepared to implement measures for reducing its climate change impact, it should not be singled out or treated in a discriminatory manner. Any aviation financing mechanism should primarily serve the interests of the sector. This would ensure equity and non-discrimination since international aviation would be responsible for its real impact on climate change.

The ICAO High-level Meeting on International Aviation and Climate Change in October 2009 agreed on, “further elaboration on measures to assist developing States and to facilitate access to financial resources, technology transfer and capacity building”. ICAO is the appropriate institution to deal with aviation financing, as it can adapt the financial instruments to aviation specific goals and at the same time assist developing countries, not only financially, but also through technology transfer and capacity building. ■

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2 www.thegef.org/gef/

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4 *Capacity building is a process which seeks to build, develop, strengthen, enhance and improve existing scientific and technical skills, capabilities and institutions in Parties other than developed country Parties, and other developed Parties not included in Annex II, particularly developing country Parties, to enable them to assess, adapt, manage and develop environmentally sound technologies*

www.unfccc.int

5 cdm.unfccc.int/index.html

6 www.climateinvestmentfunds.org/cif/

7 wbcarbonfinance.org/Router.cfm?Page=CDCF

Climate Finance Challenges and Responses: World Bank perspective

By **Ari Huhtala**, World Bank



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He joined the World Bank in 2009 and before that he spent most of his life in development work, first in the field of industrial development and technology/investment promotion and then specializing in environmental financing issues. His experience includes UNDP in Hanoi and Dhaka, UNIDO headquarters in Vienna in charge of programs in Asian LDCs, UNIDO Representative in Bangkok, manager for cleaner production financing at UNEP Paris, environmental advisor to the Finnish Foreign Ministry and Team Leader for a KfW environmental credit line in Indonesia. Ari holds a Masters of Economics from Finland.

Needs

Additional needs in developing countries to limit global mean temperature rise to +2°C above pre-industrial levels will grow over the next decades and could, according to the recent World Development Report, reach US\$139 to 175 billion per year by 2030. These numbers are estimates of net additional costs of low-carbon interventions over their lifetime, capturing in particular their future benefits (such as fuel savings, local health benefits, etc.). Upfront incremental investment needs at the same time are much higher, ranging from US\$265 to 565 billion per year (more than 1% of Gross Domestic Product (GDP) in major emerging economies and other developing countries), and may act as a barrier to climate action given financing constraints. As a reminder, today about 1.6 billion people lack access to electricity. Universal electricity access could be achieved with additional power-sector investment of US\$35 billion (International Energy Agency 2009¹) per year in 2008-2030.

In addition, about US\$75 to 100 billion (Economics of Adaptation to Climate Change study, world Bank 2009) could be required annually over the next 40 years to support adaptation to the inevitable impacts of climate change in developing countries. These estimates correspond to the costs to cope with future climate change impacts, over and above the development baseline. One should also consider financing needs for research, development, demonstration and deployment of new technologies as well as capacity building and facilitation of enabling policies, regulatory frameworks, institutions and markets in support of adaptation and mitigation.

The following table summarizes the challenges and possible resources and instruments related to financing mitigation action:

| Barriers | Resources and Instruments |
|--|---|
| <p>Low awareness, capacity and experience of climate risks, of costs and benefits of low-carbon opportunities and adaptation options, of access to climate finance resources and instruments.</p> | <p>Building an enabling environment</p> <p>Global Environment Facility (GEF)² Trust funds Bilateral Donor Funds Development policy operations</p> |
| <p>Misaligned, weak or absent regulation and incentives, e.g. absence of an adequate, long-term and predictable price for carbon; counter-incentive subsidies; lack of regulatory framework for renewable energy expansion...</p> | |
| <p>Chronic lack of long-term funding, e.g. high cost of capital or low liquidity in domestic financial markets.</p> | <p>Addressing additional costs and risks and leveraging other sources of finance</p> <p>GEF Least Developed Country Fund (LDCF)³ and Special Climate Change Fund (SCCF)⁴ Adaptation Fund</p> |
| <p>High (perceived) risks, such as strategic, country, commodity price, technology, or operation risk...</p> | <p>Climate Investment Fund (CIF)⁵ Carbon Finance (revenue enhancement)</p> <p>CIF (partial risk guarantees) World Bank Group (WBG)⁶ guarantees and structured finance International Finance Cooperation (IFC)⁷</p> |

Table 1: Examples of Resources and Instruments to Overcome Barriers to Climate Action.

Response

Developing countries are already taking action by using their own resources. With currently available climate financing covering only 5% of the needs, the political commitment in Copenhagen from developed countries to provide a “new and additional” \$30 billion by 2012, and mobilize \$100 billion per year by 2020, is a welcome step. These resources must be delivered in full. Combating climate change will require tremendous efforts and ingenuity to mobilize resources at scale, to coordinate their delivery through a combination of policy and finance instruments, and to maximize their leverage on much larger amounts of public and private investments to catalyze a shift towards climate-smart development.

Given the size of the resource gap and the diversity of needs, both public finance (from domestic and international sources) and market instruments (particularly carbon markets) will play an important role. Both will help address the additional costs and risks of climate action, making low-carbon and climate-resilient options more attractive and accelerating transformation of development pathways. In addition, public finance will help build momentum for climate action by piloting innovation and generating experience, and by creating an enabling environment and building capacity.

Drawing on its experience in economy-wide support to governments on sustainable development and policy reforms and in emerging climate finance instruments, the World Bank Group (WBG) has responded to a growing demand from developing client countries in climate-smart investments as well as institutional and policy measures. This includes in particular:

- Strategic policy support including contributing to creating an enabling environment for climate-friendly action;
- Investing in climate resilience and low carbon growth;
- Mobilizing, and facilitating access to, the resources of climate finance;
- Pursuing innovation in carbon finance for larger impact on sustainable development;
- Exploring innovative application and combination of instruments to maximize the leverage of both development and climate finance; and
- Strengthening knowledge and capacity base.

Instruments

Recognizing that transformative changes in the way development interacts with climate would require resources at a larger scale and greater flexibility, several multilateral development banks worked together to establish the **Climate Investment Funds (CIF)** in 2008. The idea was to **leverage climate smart investments at a scale** that has not been possible before.

Designed through extensive consultations, the CIF is governed by a balanced representation of contributing and recipient countries, with the involvement of UN agencies, GEF, the Adaptation Fund, bilateral development agencies, the private sector, and civil society. Thirteen investment plans have already been endorsed under the CIF’s Clean Technology Fund (CTF⁸) resulting in a total financing envelope of about \$40 billion, leveraging the CTF contribution nine-fold, of which one-third is private sector resources. The other CIF component, the Strategic Climate Fund, comprises the Pilot Program for Climate Resilience (PPCR⁹) and the two newest programs: the Forest Investment Program and the Scaling up Renewable Energy Program for low-income countries.

Given the size of the resource gap and the diversity of needs, both public finance and **market instruments** will play an important role. Having pioneered the carbon market and managing US\$2.5 billion in **carbon funds**, the World Bank Group continues to test innovative approaches. The Forest Carbon Partnership Facility (FCPF¹⁰) assists with country readiness and provides incentives for reduced emissions from deforestation and forest degradation (REDD¹¹). Much of the focus in our carbon finance work is on equity and facilitating access by poorer countries: while Africa accounts for only 2-3% of all Clean Development Mechanism (CDM¹²) projects in the world, it represents 20% of projects in the World Bank’s carbon finance portfolio. The Carbon Partnership Facility (CPF¹³) that was launched in Copenhagen last December is designed to support programmatic and sector-wide interventions and broaden the impact of carbon finance on climate-friendly investment choices.

In addition to dedicated financing, **risk-mitigation tools** can help mobilize additional long-term capital and lower borrowing cost. This is by increasing investor and lender confidence. The International Finance Corporation (IFC), the private-sector arm of the World Bank Group, facilitates investments in clean technologies through several risk-sharing products, as well as via an integrated investment-advisory platform.

It is vital to share lessons of successful innovations for wider replication adjusting to national and sectoral circumstances. The **Climate Finance Knowledge Platform**, currently being developed jointly by UNDP¹⁴ and WBG, in close collaboration with the UNFCCC¹⁵ Secretariat, is such an example: the platform seeks to provide comprehensive information, knowledge and guidance to investment planners and project managers in developing countries on enabling policies, examples of successful combination of different instruments, information on such funds and tools to improve the quality of decisions.

Conclusion

Whatever future climate finance structure emerges, it should **support recipient country priorities**. It should channel resources quickly and efficiently, tailor financial products to project needs, and maximize synergies between development and climate finance. Dedicated climate funds are not the full solution to the problem of financing climate change mitigation, but an important way of filling gaps, supporting the overall development efforts of developing countries towards lower emission paths and catalyzing finance from public and private sources.

Increasingly, reliable, comprehensive and transparent **reporting** is needed to demonstrate that new climate finance instruments are not introduced at the expense of those targeting other objectives. Exact and comparable figures on additional contributions to fund incremental expenses will probably not be possible, but there is scope in developing and improving the OECD DAC Rio¹⁶ Markers and portfolio monitoring tools in Multilateral Development Banks. The World Bank is currently developing a system to monitor adaptation and mitigation co-benefits in its portfolio.

The Secretary General of the United Nations has established a High-Level Advisory Group on Climate Change Financing (AGF¹⁷) which is currently reviewing a wide variety of options (including possible indirect taxes on international aviation and maritime activities) for further consideration by the Parties in future climate negotiations, with a view to finding sustainable **international climate finance architecture**. In this process, the experience by the multilateral development banks in delivering and leveraging finance and supporting implementation is worth looking at to clarify what works, when, and why. ■

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Financing Biofuels in Latin America and the Caribbean

By **Arnaldo Vieira de Carvalho**



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Introduction

Latin America and the Caribbean (LAC) region has one of the cleanest energy matrices in the world. The region relies on renewable energy for 30% of its total primary energy demand, compared with a figure of 13% for the world and 7% for the OECD countries¹. Renewable energy is responsible for 70% of the region's total net electricity generation, compared with 18% for the rest of the world and 15% for the OECD.

The Inter-American Development Bank (IDB) is the oldest regional development bank and the main source of funds for the LAC region. Over the last 50 years the IDB has contributed more than US\$26 billion in loans and guarantees for the energy sector across the region, including biofuels, which amounts to about 14% of IDB's total lending for all sectors. Financing of hydroelectric projects makes up the bulk of its cumulative energy loans portfolio, accounting for about one third of IDB's total energy lending.

Nevertheless, there is still plenty of room for a much improved renewable energy scenario for the region, motivated by climate change pressures combined with the abundance of competitive renewable energy sources, including biofuels. To support these kinds of projects, the IDB has several funding mechanisms available that can be used; in particular, it has loans and guarantees (US\$15.5 billion in 2009, for all sectors), as well as its non-reimbursable technical assistance program (US\$530 million in grants in 2009, for all sectors).

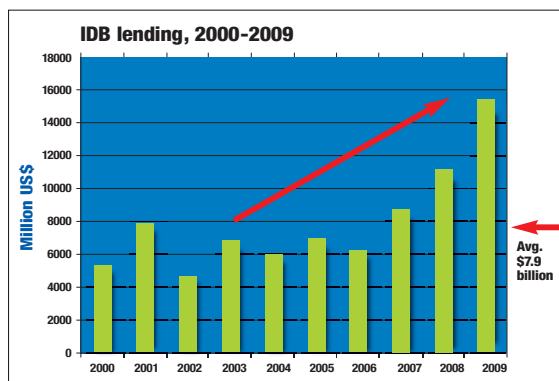


Figure 1: IDB Historical Lending to LAC – 2000 to 2009.

The IDB's Sustainable Energy and Climate Change Initiative fund (SECCI) has dedicated one of its four pillars exclusively to biofuels. This has been extremely useful in promoting the development and use of biofuels in LAC, for both private and public sector clients.

Biofuels Use In LAC

Brazil's ethanol program is world renowned for displacing more than half of the gasoline consumption in that country. In addition, Colombia, Peru, Paraguay, Costa Rica, El Salvador and Jamaica are among the countries that are implementing ambitious plans to expand biofuel production and domestic consumption in the near term.

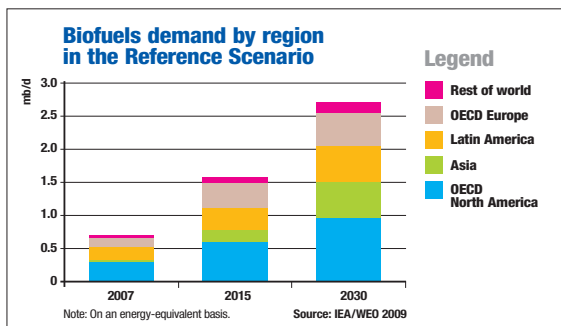


Figure 2: Future relevance of biofuels in LAC, compared with rest of world – 2015 to 2030.


In the longer term, LAC will continue to play a major role in the biofuels world arena, as shown in Figure 2, as published originally by IEA WEO-2009.

Supporting Biofuels in LAC - Lessons Learned

In addition to financing the private sector in building the biofuels production infrastructure — such as the Brazilian CNAA ethanol plants project illustrated in Figure 3 — it is also necessary to support the public sector with grant-financing to help access specialized advisory services. This is especially important for the energy and agriculture ministries of the various countries so that they can make informed decisions about the preparation and implementation of their sustainable biofuels programs.



**Inter-American
Development Bank-IDB**



Press Release
July 23, 2008

IDB lends US\$269 million for three Brazilian ethanol plants

The Inter-American Development Bank will lend \$269 million for three new ethanol plants in south-central Brazil, in the **largest biofuel investment ever made by a development bank**. The Board of the Bank unanimously approved the financing today.

The three plants are being developed by Companhia Nacional de Açúcar e Alcool (CNAA), a joint venture formed by Brazilian sugar producer **Santelisa** Vale, U.S. private equity firms and **Global Foods**, a holding company registered in the Netherlands Antilles.

The three **new plants** are being built in the states of **Minas Gerais and Goiás**, far from the Amazon or any protected areas. Instead of purchasing land outright, CNAA will lease it from owners of medium to small-sized plots who decide they can earn a better return from sugar cane than they can from low-intensity pasture—the area's predominant land use at present.

The new plants will use **mechanized harvesting** for more than 90 percent of their acreage, and they will provide some 4500 high-quality permanent jobs. The plants will produce up to **420 million liters of ethanol** for the domestic market each year, and will generate their own electricity by burning bagasse (**56 MW each**).

Figure 3: Press release – IDB funding of three Brazilian ethanol plants.

When deciding whether to fund biofuel projects, the issue is not whether the biofuels are good or bad, but whether they are sustainable. The IDB is committed to ensuring that biofuel production is socially and environmentally sustainable. To determine this, in addition to its stringent environmental and social safeguard criteria, IDB applies its *Biofuels Sustainability Scorecard*, which was developed in close collaboration with major public and private sector players in the biofuels market (see www.iadb.org/biofuelscorecard).

When produced in a sustainable way, biofuels are an economic alternative to gasoline and diesel fuel. They are an effective means to: reduce emissions of pollutants and greenhouse gases, create jobs and reduce rural poverty. Consequently, the development, production and use of sustainable biofuels is an excellent way to contribute to the LAC's social and economic sustainable development.

For that reason, the IDB is working with more than half of its borrowing Member Countries, (i.e. Argentina, Brazil, México, Colombia, Chile, El Salvador, Honduras, Guatemala, Dominican Republic, Haiti, Guyana, Suriname and Paraguay), to help them make informed decisions about their biofuel programs. They are advised by experts financed by IDB on the most effective ways to: attract investments, identify alternatives that generate new jobs, reduce poverty and improve quality of life in rural areas, while contributing to the reduction of greenhouse gases emissions.

In parallel, the IDB collaborates closely with the US and Brazil on their Biofuels Initiative for third countries program, which specifically benefits Haiti, Honduras, Guatemala, El Salvador and the Dominican Republic. The development of information such as that indicated in Figure 4 was funded by IDB to guide the decisions of participating countries on where to grow different biofuel energy crops.

Next-generation Biofuels

In addition to supporting activities to develop first-generation biofuels with long-term prospects, the IDB has started promoting next-generation biofuels initiatives as well. Grant-financing is being used to support ForEnergy S.A., a public-private partnership of ENAP Refinerías S.A. and Consorcio Maderero S.A. from Chile. In association with a local R&D institution, they have put together the Biocomsa Consortium to build a facility for producing hydrogen and steam from woodchips and biomass residues via gasification.

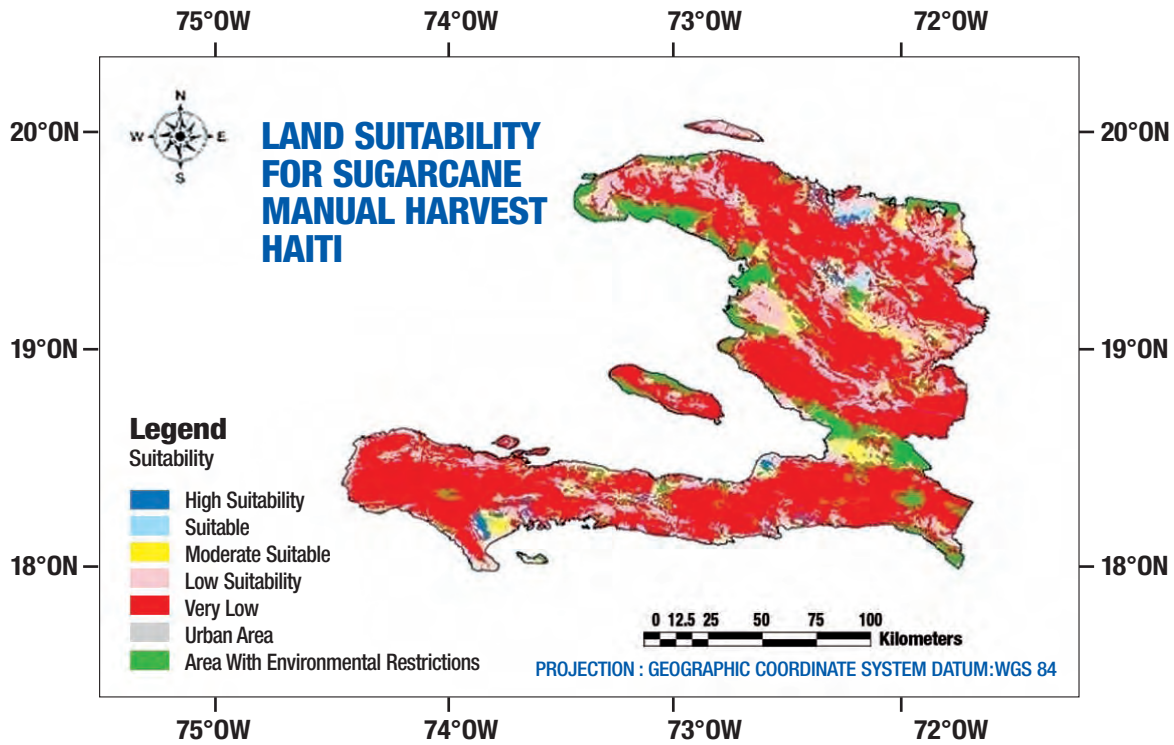


Figure 4: Land suitability map for biofuel crop development. (ref. Fundação Getúlio Vargas - FGV).

Eventually, the hydrogen produced by this project will be converted into a variety of biofuels using the Fischer-Tropsch process. If the pilot project is successful, Biocomsa will scale-up its plant as the second phase of the project.

The Renewable Jet Fuel Market

The new biofuels aviation fuel niche market will offer an excellent opportunity for LAC to play a leading role in the near future.

One of the options for airlines to meet the CO₂ reduction targets established by ICAO is to develop alternative fuels that would also help the industry be more competitive by reducing jet fuel price volatility. The aviation industry has established groups such as the Commercial Aviation Alternative Fuels Initiative (CAAFI) to promote the development of greener aviation fuels (see www.caafi.org).

This initiative provides LAC with an opportunity to develop competitive value-added products which will contribute to social and economic development and increase the numbers of local jobs. Because feedstock production accounts for about 80% of the total cost of producing alternative jet fuel, such costs will be lower in LAC countries compared with other parts of the world; particularly the OECD countries.

Most importantly, this new biofuel market niche appears to have a much better integrated and coordinated stakeholder support structure than the traditional gasoline and diesel sectors. With its strong environmental component, the biofuel sector is expected to encounter fewer barriers, making it a candidate for rapid development in LAC and elsewhere.

LAC Aviation Industry Is Motivated

LAC-based airlines are currently planning numerous biojet fuel demonstration/test flights for 2010, involving both cargo and passenger aircraft. The various market players are looking forward to these developments as a way to stimulate investment and provide sustainable development for LAC.

For more information on alternative fuels, please see **Chapter 5** of this report. ■

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The African Development Bank and Climate Change Mitigation in Africa

By **Nogoye Thiam** and **Balgis Osman-Elasha**, African Development Bank (AfDB)



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Balgis Osman-Elasha is a Climate Change Adaptation Expert at the African Development Bank. In addition to her doctorate in forestry science; she has more than 10 years of professional knowledge and experience in climate change issues. She was one of the lead authors for the "4th Assessment Report WG II (Vulnerability & Adaptation Assessment)". Dr. Osman-Elasha also functioned as a coordinating lead author collating the "International Assessment of Agricultural Science and Technology for Development (IAASTD)".

Introduction

Africa is responsible for the production of about 4 per cent of the world's greenhouse gases, but it is expected to bear the biggest share of the climate change impacts. The continent's diverse climates and ecological systems have already been altered by global warming and will continue to face more damaging impacts in the years ahead.

In the process of development, Africa will increasingly need energy and under a business as usual scenario, with high reliance on fossil fuels, this will result in the generation of more GHG emissions. Without proper and timely mitigation measures this situation could put Africa among the major future GHG emitters. On the other hand, Africa has a good opportunity to be part of the solution to climate change through following a more sustainable development path leading to the reduction of global GHG emissions.

The transition to a low-carbon future can bring major economic gains and huge benefits beyond climate change impacts for Africa which may be seen in the short as well as the long term. For example, energy efficiency can open up new sources of growth and jobs. Renewable energy sources can free countries from a dependence on imported fossil fuels and cleaner transport means less pollution and better health.

AfDB's efforts to combat climate change

Strategies and action plans

The African Development Bank (AfDB) is currently supporting African governments in integrating climate issues into economic planning and management at both the national and regional levels, not least through high-level inter-ministerial coordination. The response measures by the Bank include inter alia the development of a number of climate change action plans and strategies such as:

- The **Climate Risk Management and Adaptation (CRMA)** strategy, which aims at achieving climate proofed initiatives by developing policy, legal and regulatory reforms; knowledge generation and capacity building.

- The **Climate Change Action Plan**, which guides the implementation of the Bank's climate change related strategies. It will also act as a road map for the Bank's actions related to climate change at different levels from policy and advocacy development to on-the-ground projects in key sectors such as: agriculture, water, energy and transport.
- The Bank is also promoting investment in clean energy projects and therefore, it has developed a **Clean Energy Investment Framework (CEIF)**. The Framework guides the Bank's investments in expanding energy access in Africa, particularly for the poor, and creates a shift in energy investments favoring low-carbon development paths.
- The Bank is in the process of developing a **Green Growth Strategy**, which aims at supporting and promoting low carbon, climate change-resilient investment in African countries. With appropriate financial and technical support, a low carbon growth path could offer great opportunities for Africa to make use of its comparative advantages, such as in forest resources, hydro and solar potential, bio-energy, and improved land use systems

Sustainable transport

According to the Intergovernmental Panel Climate Change (IPCC)¹, the transport sector, in 2004, was responsible for 23% of world energy-related GHG emissions with about three quarters coming from road vehicles. The increase in population and housing growth in the suburbs have contributed significantly to longer journeys for many people and have led to more energy use resulting in further increase in greenhouse gas emissions which contributes to climate change. This phenomenon is also true in Africa, where economic prosperity and population growth have led to an increase in transport activity and car ownership.

To tackle this situation and to help African countries to go low-carbon, several AfDB-financed projects and initiatives in the transport sector have been developed. In addition, the bank is supporting the development of bio-fuels projects as substitutes for fossil fuels which are increasingly leading to financial and environmental insecurity.

Specific interventions for reducing pollution and greenhouse gases from the transport sector

Local rail services are vital for creating sustainable communities, as they help boost long term economic prosperity while managing demand for car travel, and hence carbon emissions. The bank supports several regional rail projects (e.g. Dar Es Salam- Isaka-Kigali/Keza-Musongati railway project, Nairobi Metropolitan Transit System, High Speed railway project Tanger-Kenitra etc.).

Increasingly, airport projects at the Bank are accompanied by the implementation of electrical installations powered by renewable sources of energy, largely by solar energy. This is the case in Morocco where renewable energy from solar panels powers the main parts of the airport. In the Democratic Republic of Congo solar panels have been installed to feed the aviation navigation equipment.

The Bank is aware that the aviation sub-sector is a big contributor to carbon emissions and subsequent climate change and therefore, it has put in place a carbon offsetting program to mitigate the negative impacts on the climate. The program presents an excellent tool to raise awareness of the climate change impacts of aviation, and at the same time to help mitigate its impact by supporting other low carbon activity. To this end, the Bank offsets its carbon emissions from most of its recent meetings and conferences (e.g. Bank's annual meetings, participation in Copenhagen COP 15 meeting etc.). During the last annual meeting held in Abidjan, Côte d'Ivoire, the Bank saved 5665 CO₂-eq greenhouse gas emissions. The offsetting payments are invested in supporting projects that encourage low carbon emissions, such as an efficient fuel-wood stoves project in Nigeria, where in certain regions the irrational use of fire-wood has led to severe deforestation and desertification.

Experience with biofuels

Some African regions have comparative advantages for bio-energy development. The Bank has already received several requests from a number of African countries, particularly from the private sector, for project financing and is working to respond rapidly to these. However, the Bank recognizes that what works in some countries may not work for another, which is why it emphasizes the need for policies and regulations to control the production of biofuels, and the Bank should take into consideration:

- Undertaking an assessment of each bio-mass resource based on its merits and demerits as a fuel source.
- Understanding implications of the deployment in the large scale of biofuels for land use and deforestation and also for food security, biodiversity and water resources, and assessing the social risks.
- Establishment of an internationally certified environmental and social safeguards systems and practices to facilitate access to international markets.

In light of these concerns, some projects in Africa are under preparation for Bank financing, such as the Addax bio-energy project in Sierra Leone and, the Markala sugar project in Mali.

The Addax project is developed as an integrated bioenergy project near Makeni in Sierra Leone. The first phase of the project aims at establishing a 10,000 ha sugarcane plantation with an 800 ha outgrower scheme. The plantation is expected to generate roughly 800,000 tons of sugarcane per year that will be used to produce: (i) 100,000 m³ of fuel ethanol for export; and (ii) roughly 20 MW of electricity from biomass, of which 15 MW will be available for sale to the domestic market.

Though Markala is a sugar project, it has an additional component for biofuel production. The project involves establishing a 14,132 ha irrigated cane estate, 275 km northeast of Bamako. The project will have a sugar mill with a cane crushing capacity of 8,000 tons per day, producing 190,000 tons of sugar per annum. It will further produce 15 million liters of ethanol per annum and co-generate 30 MW of electricity.

Conclusion

There is a growing global awareness to this reality, and a good understanding by Africans of the importance of following a sustainable development path with a low-carbon economy. The AfDB is leading Africa's effort in this respect and is increasingly involved in issues related to mitigation of GHG emissions.

The Bank is supporting the development of green projects in Africa as a means to offset and carbon neutralize its emissions resulting from staff's participation in international conferences, and in emissions from big meetings and conferences organized by the Bank. ■

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