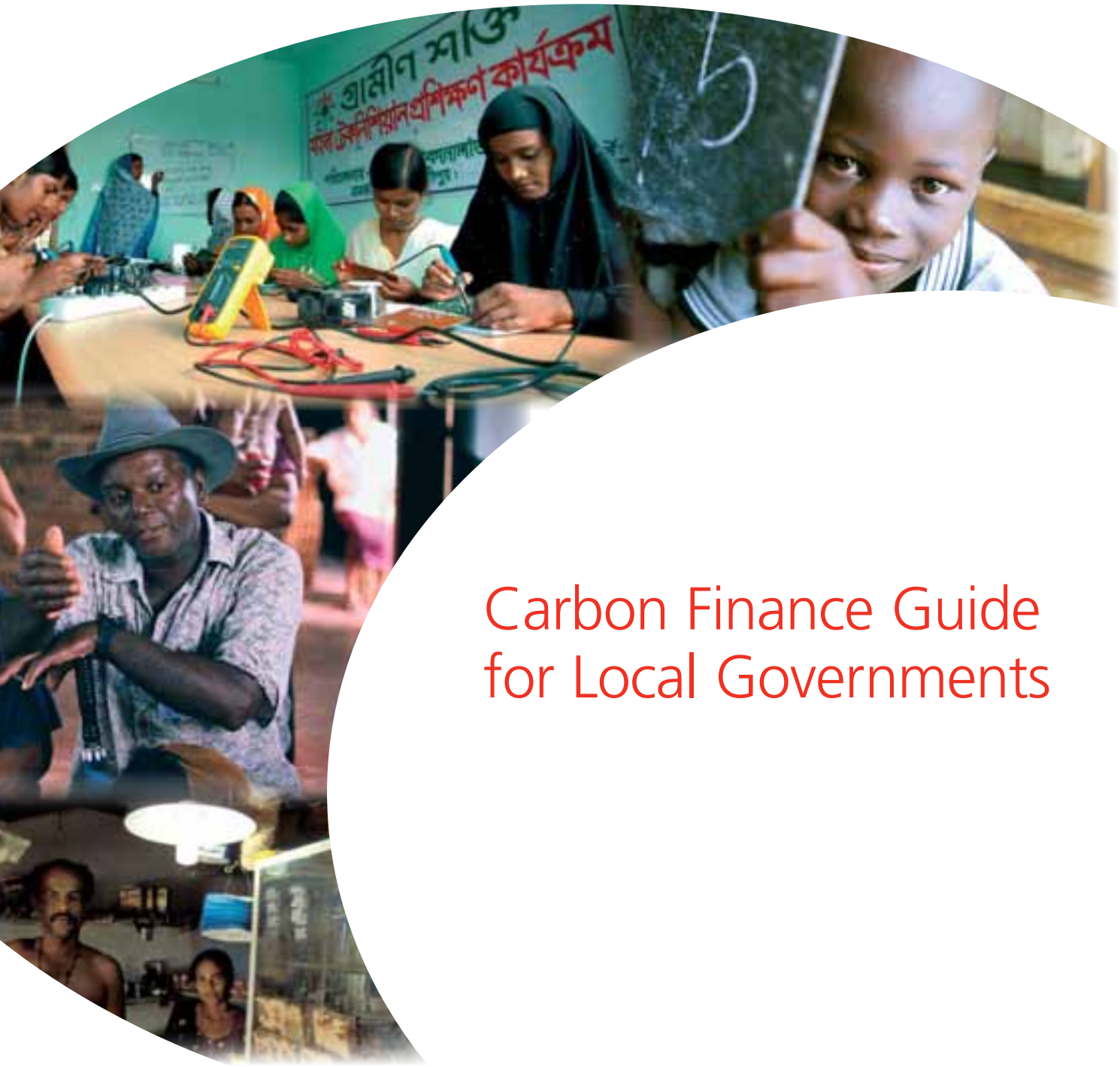



# Carbon Finance Guide for Local Governments

Coordinated by
Haddy J. Sey
Task Team Leader, World Bank

Written by
Maryanne Grieg-Gran, IIED
Muyeye Chambwera, IIED
Barry Kantor, South*South*North
Thais Corral, South*South*North

COMMUNITY DEVELOPMENT CARBON FUND

# Carbon Finance Guide for Local Governments

Coordinated by
Haddy J. Sey
Task Team Leader, World Bank

Written by
Maryanne Grieg-Gran, IIED
Muyeye Chambwera, IIED
Barry Kantor, South*South*North
Thais Corral, South*South*North

Carbon Finance Unit
World Bank
1818 H Street, NW
Washington, DC 20433 USA
Tel: (202) 473-1000
Fax: (202) 477-6391
www.carbonfinance.org

Acknowledgements
This guide was produced by the International Institute for Environment and Development (IIED) and SouthSouthNorth (SSN) for the Community Development Carbon Fund (CDCF). The main authors are Maryanne Grieg-Gran and Muyeye Chambwera of IIED, and Barry Kantor and Thais Corral of SSN. Thanks are due to Maryke Steffans for her editorial work, Eileen Higgins for layout and design, and Kate Lee of IIED for coordinating the production of the whole toolkit. We are also grateful to Andre Pinna former CDCF Manager, Jorge Gastelumendi former CDCF Analyst, Brice Quesnel the current CDCF fund Manager, and to all the World Bank staff that reviewed the toolkit drafts.



Design: Eileen Higgins email: eileen@eh-design.co.uk
Print: Park Communications web: www.parkcom.co.uk

# Contents

# Acronyms

| | |
|---|---|
| CDCF | Community Development Carbon Fund |
| CDM | Clean Development Mechanism |
| CER | Certified emission reduction |
| COP | Conference of the Parties |
| DNA | Designated National Authority |
| DNV | Det Norske Veritas |
| DOE | Designated Operational Entity |
| EB | Executive Board |
| RET | Renewable-energy and energy-efficient technology |
| ETS | Emissions Trading Scheme (European Union) |
| IPCC | Intergovernmental Panel on Climate Change |
| MOP | Members of the Parties |
| NGO | Non-governmental organisation |
| PDD | Project Design Document |
| PDT | Project Design Team |
| PIN | Project Idea Note |
| PP | Project participants |
| UNDP | United Nations Development Programme |
| UNFCCC | United Nations Framework Convention on Climate Change |

## List of figures, boxes and table

1

# Introduction

As concern increases over the impacts of climate change, policymakers are seeking cost-effective ways to reduce greenhouse gas emissions, which do not undermine the achievement of development objectives. The carbon market, which equates to over US$100 billion annually, is an important part of this quest as it allows those with high costs of abatement to pay others with lower costs to undertake emission-reducing activities. In this way, the overall costs of reducing emissions at a global level can be considerably lowered. As many of these low cost emission reduction opportunities are in developing countries, carbon projects could be beneficial for development as well as for addressing climate change. Carbon projects could offer a way of tapping into additional funds to finance development programs.

Many local government programs offer opportunities for building in emission reduction activities. But developing carbon projects that involve or benefit poor communities or poor countries can be challenging, because, as in most markets, large-scale projects without complicated institutional arrangements are likely to be more competitive. Small-scale projects implying high transaction costs, and operating in high-risk environments have difficulties in attracting buyers.

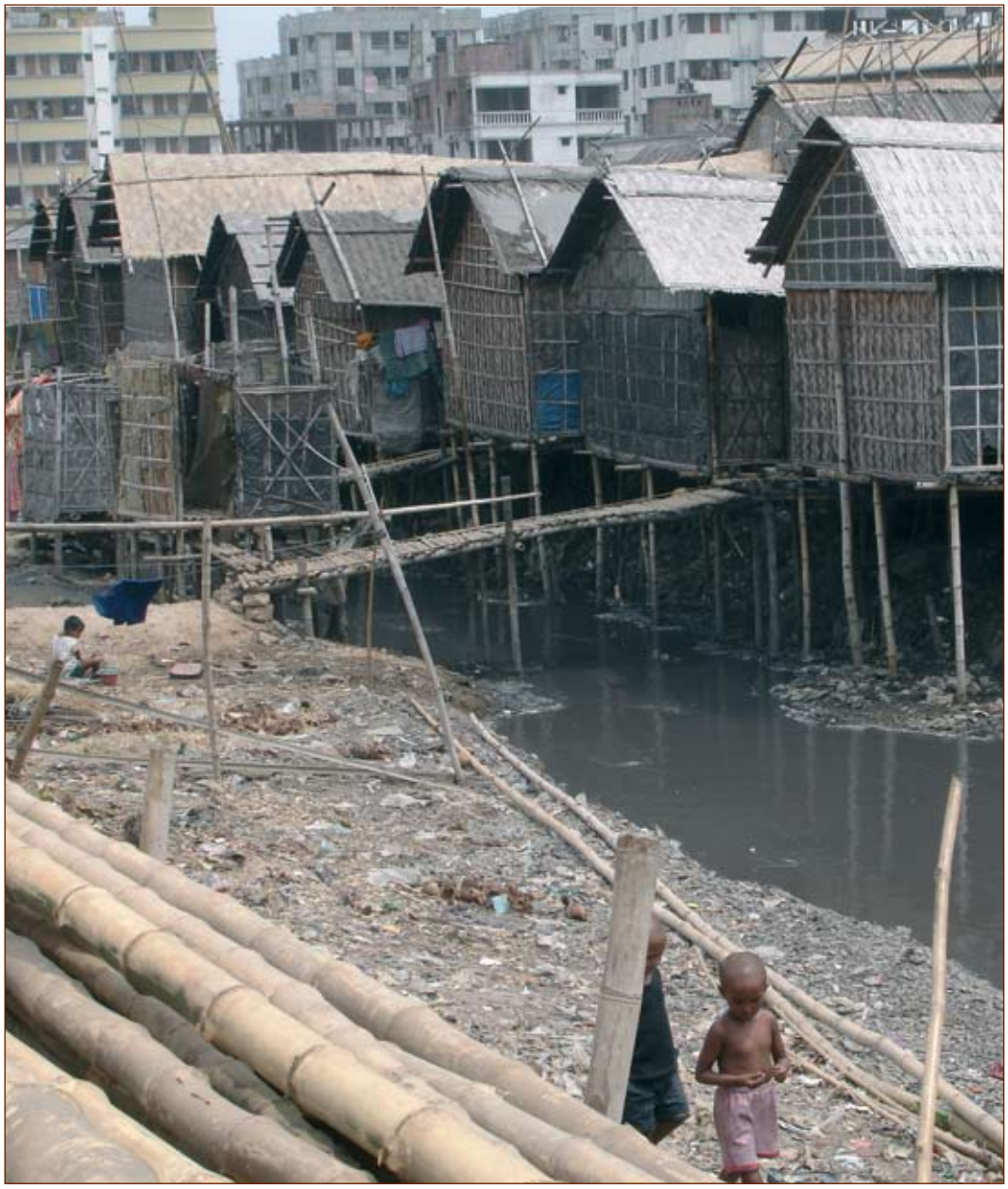
The Community Development Carbon Fund (CDCF), one of 10 World Bank carbon funds, has gained valuable experience in addressing these challenges and showing how carbon projects can benefit poor communities. The CDCF was created to extend the benefits of carbon finance to the poorest countries and poor communities within them. It supports projects that measurably benefit poor communities as well as generating Kyoto-compliant emission reductions.

This guide draws on the CDCF experience to help local governments understand carbon finance and to identify opportunities for developing carbon finance projects that benefit communities.

It gives a basic overview of climate change in Section 1, followed in Section 2 by an explanation of the carbon market and a review of the opportunities for promoting development and, in particular, community benefits through the carbon market. Section 3 sets out the different ways in which carbon finance is relevant to local governments, leading into an overview in Section 4 of technologies that are likely to be relevant to small carbon projects. Section 5 sets out the steps needed to develop a carbon project that can benefit or involve communities and the final Section 6 indicates some useful sources of information to get started. Throughout, the guide draws heavily on the experience of the World Bank's CDCF in promoting carbon projects that benefit poor communities.

This guide forms part of a set of three aimed at different audiences. One guide is targeted at Task Team Leaders in the World Bank and the other is aimed at communities and organizations working with communities. A separate technology manual gives information on a number of technologies that would be promising for the carbon market.

More vulnerable communities are more likely to suffer from the impacts of climate change.



© IDavid Dodman, IIED

2

# Understanding climate change

## What is climate change?

There are a number of signs that the world's climate is changing and that these changes will intensify over the coming years. The earth's average temperature is increasing, while droughts, storms and hurricanes are occurring more frequently. The increase in temperature is leading directly to a rise in sea levels and also indirectly through more rapid melting of icecaps and glaciers.

As climate is inherently variable, these changes are not always noticeable in the short-term. But when we look at trends over a long period the changes are clearer. Measurements dating back over 100 years show that the average temperature of the earth has increased by nearly 1°C since the late 1800s and that the average sea level has risen by 10 to 20 centimeters. Scientists in the Intergovernmental Panel on Climate Change (IPCC) predict that the earth's average temperature will increase by a further 1.8 to 4°C by 2100 and average sea level will rise further by 8 to 59 centimeters.

## What is the cause of climate change?

Most scientists agree that human activity is the main cause of these changes in the climate. Over the last 100 to 150 years, as countries have industrialized, they have been burning more coal, oil and gas to provide energy for manufacturing and transport. These activities release large amounts of carbon dioxide ($CO_2$) into the air.

Carbon dioxide is one of the main so-called greenhouse gases, along with methane and nitrous oxide. These gases get their name because they form a layer around the earth, acting like the glass roof of a greenhouse, trapping heat from the sun and preventing it from bouncing back into space. In smaller quantities these greenhouse gases are useful because they prevent the earth from losing too much heat and becoming too cold for humans to survive. The problem now is that these gases are building up in the atmosphere and trapping too much heat and therefore increasing the temperature of the earth.

## What are the expected impacts of climate change?

Higher temperatures and more frequent droughts will mean farmers in most tropical and sub-tropical countries and some temperate countries will have poorer harvests. Higher temperatures will also mean that insects carrying diseases such as malaria will be able to spread over larger areas. Rising sea levels and an increasing frequency of severe storms will threaten some low-lying islands and coastal areas and could damage infrastructure, housing, industry and agricultural production. Water supplies will also be affected by rises in sea level as saltwater makes its way into underground freshwater sources. This is already happening in Thailand, in various small islands in the Pacific and Indian Oceans and in the Caribbean. Because some areas will become uninhabitable, the people living there will need to migrate.

Developing countries are particularly vulnerable to the impacts of climate change because they are often located in drought- and flood-prone areas and because they rely heavily on activities that are sensitive to variations in climate, such as agriculture and fishing.

If emissions continue to increase, the impacts of climate change could make the earth uninhabitable in the long-term.

## What does climate change mean for local government?

Climate change has serious implications for local governments both now and in the medium- and long-term. As the impacts of climate change begin to take effect it will become harder for local governments to provide infrastructure and services such as water and sanitation. Securing access to water is already a problem for many local governments and climate change could make this worse.

It will become harder for local governments to improve living conditions for the poorest communities in their areas. These communities often live in precarious conditions in shanty towns on the outskirts of urban areas and are the most vulnerable to storms and flooding.

More generally, climate change will slow down development because it will reduce the ability of a region to be productive. Because of the damage it can cause, it will divert resources away from investments to be used in repairing the damage. If local residents lose their livelihoods or if local industry is no longer viable, the tax base and revenue of local governments will be reduced.

Local governments need to begin improving their capacity to adapt to the impacts of climate change now. They need to design new infrastructure, housing and services to withstand changes in climate. For example, the physical structure of buildings and bridges can be strengthened, early warning systems can be established and alternative income-generating activities can be promoted to reduce dependence on climate-sensitive activities. But this will cost more for local governments and will not immediately increase their revenues.

## What is being done about climate change?

Because many countries are responsible for causing climate change, international agreement is necessary to tackle it. As of April 2008, at least 180 countries had signed up to the Kyoto Protocol. This protocol requires developed countries to reduce their emissions of carbon dioxide and other greenhouse gases so that by 2012 the amount that they emit each year on average is lower than in 1990. Developed countries are being asked to take this action because they have greater financial resources and because their emissions are so much higher than those of developing countries, and have been over the last 100 years.

In order to reduce their greenhouse gas emissions, developed countries are trying to use energy more efficiently and switch to energy sources other than fossil fuels such as coal and oil. At the moment, developing countries do not have to reduce their emissions. However, developed countries are allowed to meet part of their emission reduction requirements by investing in emission reduction projects in other countries, including developing countries. This takes place through an arrangement called the Clean Development Mechanism (CDM) and offers an opportunity for developing countries to benefit from these investments.

Most people agree that these targets are only a start and we will need to make greater cuts to emissions to slow down global warming and prevent more serious damage from climate change. Because of this, the follow-up to the Kyoto Protocol will most likely call for further reductions in emissions.

3

# What is carbon finance?

## What is the carbon market?

The carbon market refers to the buying and selling of reductions in greenhouse gas emissions, called 'carbon credits'.

The market exists because the Kyoto Protocol allows developed countries to be flexible in how they meet their emission reduction targets. If they find it difficult or expensive to reduce emissions in their own country/territory, they can buy emission reductions from other countries or invest in emission reduction projects in developing countries to receive carbon credits. This means they do not have to cut back as much on carbon dioxide emissions in their own country. Because reducing emissions usually costs less in developing countries, the total cost of meeting the Kyoto targets is also reduced. This is good for developing countries because it allows the cost of cleaner technologies to be reduced, and usually improves the local environment.

Apart from carbon trading between developing and developed countries, some countries have established their own domestic or regional carbon trading systems. These systems usually focus on the biggest emitters, typically power producers and manufacturing companies. The government works out how much these companies can emit and still allow the country to meet its national commitment under the Kyoto Protocol. They then assign the company an emission target, and allow them to trade with other companies to buy and sell carbon credits. Companies for which reducing emissions would be expensive can pay others with lower costs to cut back more. An example of this type of system is the European Union (EU) Emissions Trading Scheme (ETS). The CDM is the most relevant system for developing countries.

## What is the CDM?

The CDM is the main means by which developing countries can participate in the carbon market. It was set up with two main aims:

- To assist developing countries to achieve sustainable development through benefits from greenhouse gas emission reduction projects.
- To assist developed countries to meet their emission reduction commitments by allowing them to use emission reductions from projects in developing countries to meet part of their targets.

Under the CDM, developers of emission reduction projects, such as renewable energy or energy efficiency projects can sell carbon credits to buyers in developed countries. The developers of CDM projects can be private companies, particularly those involved in energy generation, energy conservation or those using significant amounts of energy, both national and local governments, and in some cases non-governmental organizations (NGOs) and community-based organizations. Sometimes one or more of these stakeholder groups work in partnership to develop a CDM project.

The buyers of CDM carbon credits are either governments of developed countries, as mentioned above, or private companies, for example, those that participate in the EU's ETS. Governments and private companies can also pay a third party – called a carbon fund – to buy carbon credits on their behalf.

In order for buyers to have confidence in the carbon credits they buy from CDM projects, the Executive Board (EB) of the CDM must approve these projects. The EB makes sure that the project meets the necessary criteria and that the carbon credits on offer are genuine and will be accepted by others. (See Section 6 for details of the steps involved in getting approval for a CDM project.)

The CDM, as of June 2009, had registered 1,665 projects and expects to generate 1.6 billion tons[1] of certified emission reductions (CERs) from currently registered projects by 2012[2].

## What is the voluntary carbon market?

Some individuals and private companies are not required by law to reduce their carbon emissions. However, they are prepared to buy carbon credits from projects in both developed and developing countries. This is because they feel responsible for the damaging impact of their emissions and want to do something about it. Sometimes companies buy carbon credits because they believe this is good for their reputation. As buyers are not responding to a government requirement, this market is called the voluntary carbon market.

The voluntary market is small in comparison to the CDM but it has developed rapidly over the last few years. A recent review[3] identified 182 suppliers operating in 28 countries and estimated the size of the market at 123 million tons of carbon dioxide equivalent ($CO_2e$)[4], up by 87 per cent from the previous year.

## What does a country need to effectively participate in the carbon market?

For a developing country to effectively participate in CDM, it must have policies to support CDM projects that both reduce emissions and contribute to the country's development. This may require promoting CDM projects that have significant developmental benefits and including CDM projects in country and local development plans.

A favorable investment climate is important for prompting project developers, including the private sector, to undertake CDM activities in a country or region. Establishing clear laws and regulations is an essential part of this; without this framework, project developers will feel they have little security as they will not know what activities will be approved and supported and what regulations they have to meet. Property rights such as land tenure must also be well-defined. This is not only necessary for reducing the risk to investors, but also to ensure that projects continue to reduce emissions in the long-term.

Government incentives such as tax concessions and import tariffs can play an important role in promoting or hindering CDM projects. For example, Indonesia offers exemptions on import duty for renewable energy as well as loans and subsidies for energy efficiency. On the other hand, the availability of cheap coal-fired electricity in South Africa, and incentives to stimulate national oil production in Indonesia make it hard for renewable energy projects to compete.

1. A metric ton is used here to describe 1000 kilograms
2. http://cdm.unfccc.int/Statistics/index.html (viewed on 15 June 2009)
3. State of the Voluntary Carbon Markets 2009 – Ecosystem Marketplace and New Carbon Finance.
4. Carbon dioxide equivalent is a measure for describing how much global warming a given type and amount of greenhouse gas may cause using carbon dioxide as a reference. For example 1 ton of methane emitted would be equivalent to 21 tons of carbon dioxide.

### What are the key capacity needs?

For a developing country to effectively participate in the CDM and run successful climate change mitigation projects, stakeholders such as the government, the private sector, communities, and NGOs must have the skills and resources to manage CDM registration and other procedures, which are often complex and lengthy. Depending on their role, they must be able to develop, implement and run a CDM project, as well as monitor and evaluate it.

At the national level, the experts and planners who are responsible for identifying strategic opportunities in certain sectors or regions must have a good understanding of the Kyoto Protocol. These players need to be up-to-date with developments in United Nations Framework Convention on Climate Change (UNFCCC) negotiations.

At the local level, local government, communities, the private sector and community-based organizations need to be aware of opportunities that will aid their development and how they can benefit from carbon finance. They also need to have the capacity to manage this source of funds.

## What are the opportunities for community-based carbon projects?

In the CDM it has generally been easier for large-scale projects to attract buyers as they can offer emission reductions at a lower price. This means that opportunities for carbon projects to help communities have been limited. A few years after the CDM started, the World Bank found that many of the poorer developing countries were not becoming involved. Most of the existing CDM projects were large-scale energy projects, and the poorer developing countries could not run these types of large projects because their energy and industrial sectors were too small.

In response to this situation, efforts were made to promote carbon projects that were small-scale or could be adapted to the needs of communities. For example, the World Bank created the CDCF to finance some small-scale CDM projects in developing countries. This fund has enabled some poorer developing countries to participate in the carbon market and benefit from carbon finance; reducing poverty and hunger.

The Gold Standard was introduced to enable projects that were effective in reducing emissions and in providing benefits to the local community to stand out from other projects. This is a set of conditions that carbon projects must meet. Projects applying for Gold Standard status are examined by an independent organization, which checks that they meet all the conditions. Some buyers are prepared to pay more for projects that meet the Gold Standard.

The growth of the voluntary market has also led to opportunities for carbon projects with community benefits. The price paid for carbon emission reductions in the voluntary market is often lower than in the CDM. However, buyers in the voluntary market are often interested in the development benefits of carbon projects and are prepared to support small-scale projects.

## The CDCF experience in promoting community benefits

CDCF has developed and demonstrated an approach to ensure that the carbon projects it supports result in benefits for local communities. This provides valuable guidance for others wanting to design carbon projects that will make a difference to the lives of poor communities.

The fund has typically funded small-scale projects that reduce emissions in the range of 40,000 to more than 1 million tons of $CO_2e$. The technologies used in CDCF projects can be divided into three broad categories: renewable energy, energy efficiency and waste management.

CDCF projects have ensured benefits to local communities either directly or indirectly. In many cases the services provided by the project directly benefits the local community. For example, providing electricity in rural areas using renewable technologies will not only reduce emissions but will also improve people's livelihoods.

Where projects do not generate sufficient direct benefits for the local community, an additional community benefits plan has been drawn up in consultation with the community. This benefits plan involves activities that the communities propose, based on their own assessment of their needs and priorities. The activities do not have to be climate change mitigation-related activities. Typically, the benefit activities that communities choose are building schools and health centers, improving the water supply system or other types of infrastructure. The benefits plan is financed through a premium paid by CDCF for the emission reductions.

A key objective of the CDCF is community empowerment: to ensure that communities are capable of playing an active role in the delivery of services that help improve their livelihoods. It is not considered sufficient that projects simply bring services to local communities. The community must have a voice in decisions about services and the resources to actively participate in the design, implementation, monitoring and maintenance of those services.

4

# What is the role of local government in CDM projects?

Community development and environmental activities, irrespective of who implements them, are part of local area development plans. These are overseen by local government, who helps to harmonize all the activities taking place in their area of jurisdiction, including CDM activities. Local government ensures each activity meets certain minimum standards, contributes to the overall goals of the local authority and meets the needs of the local population.

Local governments are a key stakeholder in CDM projects, and each stage of the project cycle should be conducted in consultation with them. Local government can act as the project developer/implementer or as a promoter of community interests.

## Local government as a CDM project developer/implementer

### What is a CDM project developer?

A CDM project developer is an entity (local government, private company, NGO) that identifies, develops and implements a project that reduces greenhouse gases in a developing country. For example, a developer may own an electricity generator that runs on diesel oil. The project may modify the generator so that it runs using less energy and produces fewer emissions, or replace the generator with alternative technology that generates energy from a renewable source.

A developer may own buildings with inefficient heating and cooling systems that waste energy. The CDM project may insulate the buildings to reduce the amount of energy required to heat or cool them, thereby reducing the amount of emissions produced. In both these examples, the developer can sell emission reduction credits through the CDM.

Local governments can act as the developer of CDM projects by identifying and pursuing projects that reduce greenhouse gas emissions while meeting their development objectives. Examples of a local government acting as a developer include the Moldova heating and energy conservation project and the Salta landfill gas capture project in Argentina (see Box 1).

## Local government as a facilitator of CDM projects

### What is a facilitator?

Because of limited information and capacity, local communities can often be left out of projects in their areas. A facilitator is an entity (which could be a local government or an NGO) that both enables communities to identify opportunities to develop CDM projects and also ensures that they participate in the planning process. Facilitators can also ensure that communities benefit from projects in their areas that are developed or implemented by outside developers.

### What can local government do?

CDM projects often take place in areas under the jurisdiction of local authorities, both in urban areas and rural areas. This gives local government an opportunity to act as a facilitator and ensure

## Box 1. Examples of CDM projects developed by local governments

**Salta landfill gas capture project in Argentina**

The Municipality of Salta reduces greenhouse gas emissions by capturing methane gas generated by its landfill and destroying it by flaring. The municipality manages the landfill operation as part of the overall waste management of the city and in the process generates revenue from selling CERs through the CDM. It also manages the community benefit plan.

**Biomass heating and energy conservation project in Moldova**

This project works throughout the 13 municipalities in Moldova. It aims to improve the heating systems in public buildings that have outdated boilers and deteriorated distribution networks. The project will insulate the buildings and improve the overall efficiency of the heating systems by 80 to 90 per cent, therefore lowering the costs of heat production. The project will also install technology to use biomass to produce heat. The project will sell emission reduction credits while directly generating benefits for the community.

Source: http://wbcarbonfinance.org

that the needs of the communities are met through these projects. Such needs include a clean water supply, energy provision, and the safe disposal of waste. This is especially necessary where community benefits are additional to the CDM project, such as in the Guangrun hydropower Project in China and the Laguna De Bay community waste water management project in the Philippines (See Box 2).

Local government can also promote the participation of the private sector in CDM projects in their areas, directly by inviting them to invest in specific projects and indirectly by creating an environment conducive to private sector investments. Some of the specific roles that local government can play include:

- Ensuring that projects are undertaken within the broader plans of the region, and do not have negative impacts on the environment and social values of the local people. It can ensure that the interests of the needy and minority groups are included in project planning and design.
- Assisting small community projects by bundling them together across dispersed community groups so that they can jointly access carbon finance. This reduces overhead costs for small projects.
- Assisting communities to monitor the delivery of community benefits by ensuring that project developers follow the community benefit plans. Community benefit plans can also be integrated into local government's monitoring and evaluation systems; for example where the community benefit plan includes infrastructure development, health facilities, etc. The local government is also better placed to ensure that the delivery of these benefits follow minimum standards.
- Partnering with communities to develop CDM projects, in which case local government plays the dual role of developer and facilitator, such as in the Laguna De Bay community waste management project in the Philippines.
- Identifying potential investors/developers to undertake CDM projects or to partner with communities.

## Box 2. Examples of CDM projects facilitated by local governments

**Guangrun hydropower project in China**

This project will construct and operate small hydro power stations to supply electricity in Jianshi County, replacing electricity from coal-fired plants and diesel generators. The Jianshi County local government consulted the community on site selection and design during the preparation of the project. They also assisted with the impact assessment through their roles in irrigation, environment, and water supply.

**Laguna De Bay community waste water management project in the Philippines**

This project will implement several small-scale waste management and watershed rehabilitation sub projects that will improve waste management practices and increase forest coverage in the region while reducing the emission of methane. The sub projects will use technologies that reduce methane emissions and collect landfill and wastewater biogas. In the main project, the local government will participate in environmental planning and investments. The local government will receive grants and loans to develop projects with emission reductions and will facilitate the participation of communities in developing and implementing the CDCF project.

Source: http://wbcarbonfinance.org

5

# Choosing the right technology for a CDM project

Choosing the right technology for the right circumstance can greatly assist in reducing emissions. To get it right, local governments must be familiar with the key characteristics of various technologies. Not only must the technology reduce greenhouse gases, it must also address the needs of the community and improve sustainability, as well as be affordable and easy to maintain. The wide range of choice in renewable technologies means governments can be creative and entrepreneurial in their plans, and adapt technologies to suit their specific local needs.

Table 1 compares some good technologies that may be useful to consider. The checklist of questions on the right of the table may be helpful in obtaining a quick glimpse of the advantages and suitability of each technology type.

## Is the technology appropriate for your location and resources?

There is plenty of room for failure when choosing a technology. The developing world is littered with failed and obsolete technologies. Often they fail because they are not properly maintained, or do not operate optimally where installed. For example, machinery may fail to operate in dusty and sandy conditions, may require more water to operate than is available locally, or require regular servicing and maintenance that is not locally available. Perhaps the company or government that owns the technology no longer functions well. Sometimes technology developers and sellers promote technologies that are not appropriate to the particular circumstances in developing countries; for example, waste-to-energy technology that is better suited to cold climates where waste decomposes more slowly, or wind turbines that cannot withstand cyclone-level winds that may occur along the Indian Ocean coast.

These situations can be avoided by making an adequate assessment of the location and the resources available to run and maintain the technology before implementing it.

Resources that must be assessed include the natural resources available, the local capacity and the infrastructure already in place. As mentioned above, natural resources could include the availability of flowing water to produce electricity, sunlight that can be used to provide heating or electricity or biomass that can be burned to generate energy. Local capacity means the availability of local people with the skills to implement and maintain the technology or who have the capacity to learn how. Assessing the infrastructure already in place will help to determine if there are improvements or additions that can be made to what already exists.

Local governments can mobilize resources to help assess and choose the most appropriate technology. In many cases, this may mean contacting institutions such as NGOs that are familiar with the technology market.

| Table 1. CDM technologies | | |
|---|---|---|
| Technology/ Application | Approach to emission reduction | Key questions to determine appropriateness |
| **Biomass** Burning biomass to produce heat and energy. | Renewable energy, energy efficiency. | Is there available biomass that is going to waste?<br><br>Is there an energy need at the same place as the biomass is available, or indeed at the same plant?<br><br>Is there a need for electric energy?<br><br>Is it worth deliberately growing biomass? For example, does the community waste a lot of time collecting firewood; and is there enough available land to grow the biomass? |
| **Biomass** Burning biomass for heating. | Renewable energy, energy efficiency. | Is there available biomass that is going to waste?<br><br>Where available, is this biomass needed more for heating than electric energy.<br><br>Is it worth deliberately growing biomass? For example, does the community waste a lot of time collecting firewood; and is there enough available land to grow the biomass? |
| **Solar power** Thermal solar water heaters. | Renewable energy. | Is there sufficient available sunlight?<br><br>Would the community benefit from having hot water? i.e. more important in cool climates.<br><br>Does the community currently burn fuel indoors to heat water with consequent adverse health impacts? |
| **Solar power** Photovoltaic solar home systems. | Renewable energy. | Is there sufficient available sunlight?<br><br>Would the community benefit from electricity to run small electric appliances, such as radios and cell phones? Perhaps to replace the use of kerosene for lighting or diesel used for off-grid electricity generation. |
| **Micro-hydro power** Photovoltaic solar home systems. | Renewable energy. | Are there available running streams in local hills?<br><br>Does the community need electricity? e.g. is the community remote and far from or inaccessible to the national grid? |

## Is the technology relevant to community needs?

Another critical part of choosing an appropriate technology is making sure the technology meets the needs of the local community. Most communities in developing countries have many unmet needs such as housing, water supply, waste disposal, and electricity and no intervention should take place without careful consideration of these needs in close consultation with the community.

The community must also have (or be provided through training) the skills and resources to be able to successfully operate the technology, as well as modify and replicate the technology if it is necessary.

## What kind of CDM technologies can meet your development needs?

The following technologies are suitable as small-scale CDM projects and can be bundled together to reduce costs (see Section 6 for more on bundling). More details on each technology can be found in the Technology Reference Manual.

### Solar

Solar technology includes solar cookers, heaters and driers, and photovoltaic (PV) cells (solar panels). The main advantage of using solar energy is that the technology can be installed anywhere, provided that the available sunlight is sufficient. Solar cookers, heaters and driers protect natural sources of firewood, which can directly benefit communities that rely on forests for

their livelihood and subsistence. Solar panels provide small amounts of electricity for the home or small offices and businesses, and can be used to power communication and entertainment technologies, lights, and other small appliances.

The cost of buying and installing solar panels remains the biggest obstacle to this technology's more wide-scale use. Unless systems are in place to provide credit facilities to people to acquire solar home systems, the technology will not be affordable.

Another important point to consider is that storage of electricity from PV cells is challenging. As long as the sun is shining brightly, PV cells will operate, but using the electricity at a later time is more difficult. For this reason, batteries are often used for storage. But batteries do not last forever and the cost of replacing them, as well as the emissions involved in manufacturing them, should be considered when assessing the emission reductions involved in a solar power project.

### Box 3. Example of a solar home systems project helped by the CDCF

**The Grameen Shakti solar home systems project in Bangladesh**

This project helps poor, rural households not connected to the supply grid to access renewable solar electricity. The project reduces emissions by replacing kerosene used for lighting and diesel used for off-grid electricity generation with solar power.

The target households have no electricity and buy diesel generators to electrify their houses. Grameen has introduced micro-financing to allow the poorer households to purchase solar panels. A total of 198,978 households will be supplied with electricity from solar energy. The availability of new electricity is increasing economic activity in rural businesses. Households and businesses can start to increase their use of technologies such as televisions, computers and radios.

Source: http://wbcarbonfinance.org

## Biomass

Technologies that burn biomass (wood or other vegetable matter) provide energy for cooking or heating. Biomass may also be burned in a furnace to create steam for energy and can be used in large-scale projects, such as the Skeldon sugar modernization project in Guyana (see below). Emissions are reduced when the biomass comes from a renewable and sustainable source. If wood is used as biomass, it should come from a sustainable forest where the trees can re-grow again and replenish the wood that is used. It is even more important to guard against fires, which release greenhouse gas emissions.

Particularly valuable sources of biomass are 'wastes' from harvests that are not useful for food, e.g. the husks of rice after the grain kernel has been removed, or the bagasse that remains after the stalks of sugarcane are crushed to extract their juice. If left to rot, such vegetable matter emits methane, a very harmful greenhouse gas, but if used for heating or to produce electricity, it becomes a renewable source of biomass energy. Note that 4 kilograms of rice husks produces roughly the same amount of energy as 1kg of diesel petroleum oil.

### Box 4. Example of a biomass project helped by the CDCF

**Skeldon sugar modernization project in Guyana**

This is a large industrial project that uses bagasse in a power plant to produce heat and electricity (co-generation) for a sugar mill and for the national grid, displacing the use of light fuel oil in diesel generators. Bagasse is a by-product of sugarcane processing that would otherwise be wasted and rot. Part of the carbon revenue from this CDM project is being used to support a number of community benefits such as assistance to a local hospital, improvements to a community centre, and urban landscaping in public areas. A number of new jobs will be created during construction and operation, both in the new sugar mill and in local farms which will expand sugar cultivation. The community will also benefit from improved electrical services in the region.

See also Box 1 Biomass heating in rural communities in Moldova

Source: http://wbcarbonfinance.org

## Micro-hydro

Flowing rivers have built-in energy that can be collected and used as the water flows downhill. Micro-hydro plants make use of this renewable source of energy and are suitable for small communities. This technology works best where rivers flow continually, and where the water flows quickly, often in hilly or mountainous regions. Micro-hydro power plants are cheap to build, and once in operation, are easy to maintain. Hydropower does not pollute the water or the air with greenhouse gases or waste products. Building, running and maintaining micro-hydro plants provides job opportunities.

### Box 5. Example of a micro-hydro plant helped by the CDCF

**The Nepal micro-hydro project**

With assistance from the Alternative Energy Promotion Centre (AEPC) in Nepal, this project is developing and installing micro-hydro power plants ranging from 5 to 500 kilowatts, with a cumulative capacity of 15 megawatts. These projects will be bundled together to reduce energy waste. While 80 per cent of Nepal's population relies on agriculture for their livelihoods, only 10 per cent of households are connected to the power grid. Most energy comes from traditional fuel such as wood and animal dung. This dependence on wood has contributed greatly to deforestation, resulting in wood scarcity and widespread erosion. Fossil fuel such as kerosene is too expensive for many rural people. The villagers, and in particular women, often spend hours each day collecting wood to cook meals, therefore will benefit from the provision of power through the project activities as it will free up time previously spent collecting firewood.

This new source of power will also reduce the use of dry cells used to operate radios and flashlights. As it will eliminate the need to charge lead acid cell batteries, there will be no need for the continuous transport of the batteries from houses to charging stations. This will reduce the amount of chemical pollution in the local environment and reduce the risk exposure and contact with these chemicals.

Source: http://wbcarbonfinance.org

## Biogas

Methane is a very toxic greenhouse gas that normally escapes from rotting vegetable or animal matter, often from landfill sites, into the atmosphere and into the ground water. This biogas can be captured and used as a cheap fuel for electricity production, space heating, water heating and process heating (e.g. to run pumps and equipment off a gas-powered engine rather than using electricity). If compressed, it can replace natural gas for use in vehicles, where it can fuel an internal combustion engine or fuel cells.

Biogas technologies can be applied at different scales. Towns and cities that generate sufficient waste can harvest biogas from a landfill site. However, capturing methane from a landfill is not the most effective way to harvest biogas because the rubbish gets in the way of the extraction process. A better method is to separate the biomass from the rubbish before it rots, and ferment it in a biogas digester. This approach works for both large-scale municipal projects and small-scale projects run by communities or farmers.

### Box 6. Methane from manure – a biogas support program in Nepal

This CDCF project helps poor, rural households to install small biogas plants that would otherwise be too expensive. These plants use biodigesters to ferment organic waste, including animal dung and human waste. The digester generates gas that can be used for cooking, replacing traditional sources of energy such as wood, kerosene, and agricultural waste.

The use of biogas has decreased the amount of smoke in kitchens, therefore reducing the incidence of respiratory disease among household members. The latrines, installed to feed into the biogas plants, have improved health and cleanliness (people would defecate in the open before). The women no longer have to collect firewood and have more time for other tasks. The community is using the slurry from the plants to increase fish production. In addition, the project has improved social cohesion and created local jobs.

Source: http://wbcarbonfinance.org

Digesters are useful for abattoirs, dairy farms, or to treat wastewater sludge because it reduces the volume and mass of the input material. Small-scale units that run on manure or human waste are simple to build and operate and are appropriate for community use. In India, an estimated 2 million rural households produce biogas in this way.

The energy from small-scale units should be used on-site if possible (for cooking, heating, lighting and absorption refrigeration) because compressing the gas for storage or use in vehicles uses a large amount of energy.

6

# Steps involved in developing and implementing a CDM project

The preceding sections have given an introduction to climate change, carbon finance and the CDM as well as outlining the main features of some technologies that can reduce greenhouse gas emissions. In this section we explain how local governments can make practical use of this information. We give advice on how to identify opportunities and develop CDM projects, going through all the steps involved from project idea to sale of carbon credits.

## Timescales and finances involved

Undertaking a CDM project can be a lengthy process. This raises questions about whether a local government will see any results during its appointed political term.

A CDM project is usually undertaken to run for a period of 10 or 21 years. Upfront funding is often required, but a partnership with a financial institution or with a foreign purchaser of emission reductions could ensure the financial viability of your project early on. Alternatively, the forward sale of emission reductions for delivery at some future date will help you to raise the necessary funds to design and implement your project.

Revenues from the sale of emission reductions will seldom cover all the costs of capital expenditure of a project. But they will provide the necessary additional funds to help your project to be profitable, or affordable. For example, a project which installs solar water heaters for poor households will provide benefits to your community which makes it very worthwhile. The sales value of the emission reductions will only cover a small part of the cost of these units. However, this finance may be just the financial help that your community needs to make the units affordable. It could be used to provide easier micro-finance terms, or to shorten the payback period.

Incorporating carbon finance into the project will increase the time needed for development before the project delivers income. Getting any project planned and implemented can be a long process. Getting your project designed as a CDM project, validated, approved, registered, and finally verified will add considerably to the time involved from planning to implementation. The time required for each stage is difficult to predict. Generally, the time and costs involved will increase with the complexity of the project, the number of technologies that are used together, and the number of stakeholders involved (e.g. where there are numerous individual beneficiaries such as with solar water heaters as opposed to a project which uses biomass for public buildings of the local government itself). Whatever the project type, it is important to allow plenty of time for development.

It must also be borne in mind that preparing a CDM project will help a local government in preparing future projects. Therefore, the first such project undertaken may be relatively costly and time-consuming, but with the experience gained, the demands of subsequent projects can be met more easily.

Finally, local government should initiate community engagement early on so that the support of the community is ensured. This can help the political aspirations for a government, for example, to secure the continued support of voters, but care should be taken not to raise expectations as a project may fail along the way, in which case more harm may be achieved than good.

## Overview of the steps to develop a carbon finance project

There are several important steps that you will need to follow to meet the requirements of a CDM project, which are additional to the normal steps involved in any development project. Your project must have approval from your national government to ensure that it meets the national sustainable development objectives. Your project documents must be publicly available so that others can check that it is consistent with the CDM requirements. This also ensures that your project provides real, measurable, and long-term reductions in greenhouse gas emissions.

### Entities involved

1. The project participants (PP), or project owners, have the right to the sale of any emission reductions from operations and projects related to their activities.

2. The project design team (PDT), plans the project and produces a formal document describing the project fully, i.e. the Project Design Document (PDD).

3. The Designated National Authority (DNA), which is appointed in the developing country where the project will be implemented, must confirm that the project contributes to the country's sustainable development objectives.

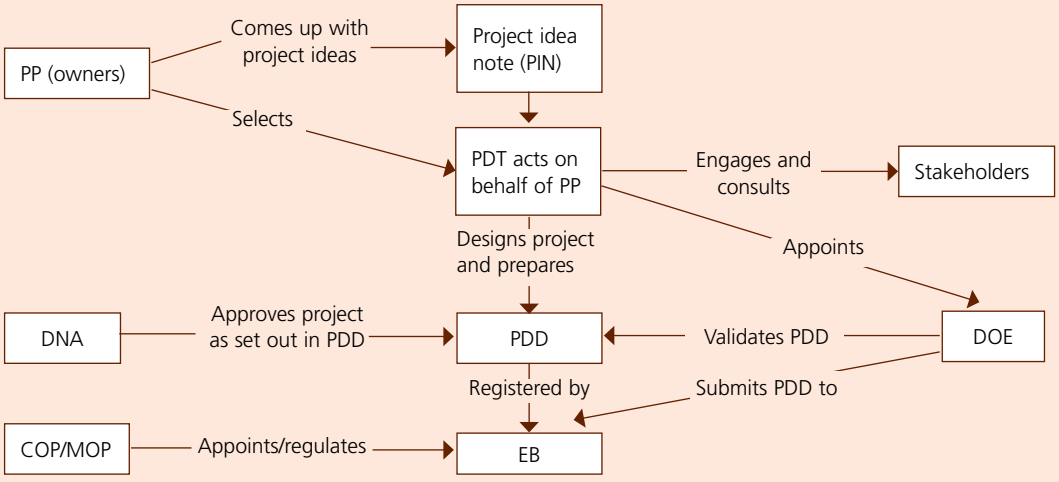
4. The Designated Operational Entity (DOE) examines the PDD and validates it, confirming that all assumptions are given, all calculations correct, and that on paper the project would produce the amount of emission reductions anticipated.

5. The EB, acts on behalf of the UNFCCC, registering of projects, dealing with objections, approving DOEs, and approving new methodologies.

6. The Conference of the Parties (COP) or Members of the Parties (MOP) are the governments who together are the final 'legislators' of the CDM and who appoint the EB.

7. Stakeholders who would be affected by the project including potential beneficiaries of the project, (e.g. a community forum that represents the community that would benefit from a reduction in air pollution following replacement of diesel with a clean energy source).

Figure 1. Overview of entities and their relationships

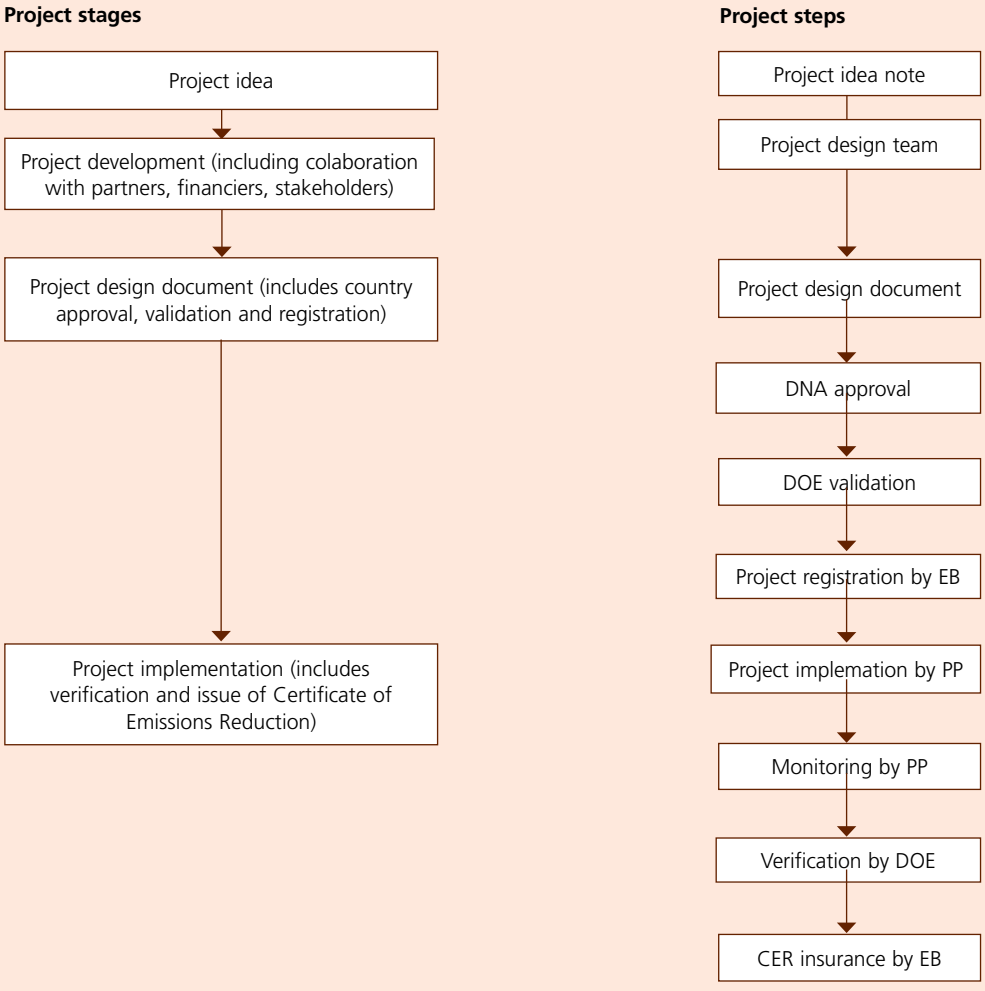


In following the CDM steps, you will need to engage with various professional and official bodies. For example, you will need to have your project validated and verified by DOEs, which are like professional auditors and are accredited by the UNFCCC.

These entities will charge a fee to confirm that your project follows the UNFCCC requirements. As part of this service, they will check whether your project is described in sufficient detail and is in the required format (the project design document or PDD). They will also make sure that your calculated emission reductions (recorded in the PDD) that you anticipate from your project are in order, that your assumptions are reasonable and clear, and that you have given an adequate plan for your project's emission reductions to be measured and verified after the project is implemented. These DOEs will help you to send your document to the UNFCCC EB. The Board publishes all PDDs and they have the right to reject projects that do not satisfy all of the CDM requirements.

Each of these steps will cost you time and money. The UNFCCC regulations set out the time period within which public objections may be made to your project, and the time before your project may be registered. The UNFCCC will also in due course issue your emission reduction certificates, which translate your project's emission reductions into a valuable commodity and which can be sold at any stage, even at an early stage and subject to the successful conclusion of your project. Each professional body that you interact with along the way will charge you a fee. While the EB has set fees, and deducts a set (small) percentage from your project, DOEs are mostly private companies and all charge differently.

## Figure 2. The formal stages in the CDM project cycle and the various steps necessary to fulfill the requirements of the CDM



## Where do I start? – the project idea

Once you have an idea of the technology that you might use (see Section 5), you will begin formulating your project idea. Begin by gathering rough data that is readily available on technology prices, energy performance, etc. Later, when you are more certain of your project and you begin to design it in detail, you will need to find more precise and accurate data.

### Is my project situated in a country that is eligible for the CDM?

Only projects in developing countries are eligible for CDM projects. Countries that have emission reduction commitments under the Kyoto Protocol cannot develop CDM projects except in developing countries that are party to the UNFCCC. Your government's environmental department/office will be able to refer you to the appropriate official to find this out, and advise you how to contact your country's DNA, where someone has been appointed to take care of and approve CDM projects in your country. Alternatively, you can check the status of your country by checking the UNFCCC EB website at http://cdm.unfccc.int/DNA/index.html. Note that most developing countries are eligible.

If your country is not eligible for the CDM it may still be worth developing a project for the voluntary carbon market.

### What will my project be worth?

Your project must reduce emissions, so you should begin by considering how much you are likely to save by using the technology in your project. This figure will be derived from the amount of emissions that are produced in the absence of your project, less the amount of emissions that are produced once your project is implemented over a specified period of time in a specified place. The difference will be measured in tons of carbon dioxide (or its equivalent in other greenhouse gases).

This figure will give you an estimated value of your project from the point of view of carbon finance revenues. Your project may be valuable for many reasons. For example it may provide energy or make energy more reliable, it may improve the air quality for those people living in the vicinity of the project, it may deal responsibly with waste, or create jobs and develop infrastructure. These reasons may justify undertaking the project anyway, but the CDM revenue may make your project easier to afford by assisting with the financing of your project. This revenue may also enable you to undertake the project at a larger scale, may free up revenue which will help you with other development work, or will make it more likely that your project is able to provide additional community or environmental benefits.

At any rate, the CDM activity will not account for all the project activities, and the CDM revenue is not going to pay for everything. For example, the technology may lead to a carbon revenue stream that helps with financing the project, but the revenue stream is unlikely to pay for the whole installation and all the running costs, and it will sometimes not be available until the project has been installed and is actually achieving emission reductions. For example, for power and waste management projects carbon revenues are commonly in the range of only 10 to 50 per cent of total project revenues.

You will also need to find out information about the cost of obtaining, installing and running the technology to give you an idea of whether it is worth undertaking the project in the first place. This will help you decide which technology is best for you in your circumstances and may lead you to consider other alternatives.

As mentioned above, developing your project under the CDM will involve additional expenses, which will reduce its net value. These are called transaction costs and include the costs of obtaining approval, public consultation, validation, obtaining expert assistance with preparing the PDD, and the costs of marketing and selling the emission reductions. Hopefully, the amount that you gain from CDM revenue will make the effort worthwhile. This will not be the case if

### Box 7. Example of calculation of emission reductions

1. Consider what technology is currently or normally used in the location – e.g. diesel fuel in generators.

2. Calculate how much energy that technology would use – e.g. 20 generators in the community running for 4 hours per day for 300 days of the year, requiring 1 litre of fuel per hour: 20 x 4 x 300 x 1 = 24,000 litres of diesel per year.

3. Calculate the amount of greenhouse gases associated with that energy use. Standard emission factors can be used – e.g. each litre of diesel oil fuel burnt will produce 0.00268 tons of $CO_2$. (Note that each type of fossil fuel has its own emissions factor, which must be ascertained.) 24,000 x 0.00268 = 64.32 tons of $CO_2$ per year.

4. Select a timescale for the project – e.g. 10 years.

5. Calculate all the emissions there would have been without the project over the selected timescale.
   10 x 64.32 tons of $CO_2$ = 643.2 tons of $CO_2$ emissions for the lifetime of your project.
   This figure gives the baseline (or without project) emissions. The next step is to calculate the emissions if the project is implemented.

6. Consider the new technology that will replace the baseline technology – e.g. a switch to a renewable energy technology such as micro-hydro, or an increase in the efficiency of the diesel generation technology.

7. Calculate the emissions the new technology of the project will involve. In the case of micro-hydro, the renewable energy has no emissions. But in the case of an energy efficiency project, such as improving the efficiency of the diesel generators that are used, there will still be considerable emissions. These are calculated in the same way as for the baseline emissions above, estimating the energy use and then applying an emissions factor – e.g. 20 generators in the community running for 4 hours per day for 300 days of the year, requiring 0.75 litre of fuel per hour. 20 x 4 x 300 x 0.75 = 18,000 litres of diesel per year e.g. each litre of diesel oil fuel burnt will produce 0.00268 tons of $CO_2$. (Note that each type of fossil fuel has its own emissions factor, which must be ascertained.) i.e. 18,000 x 0.00268 = 48.24 tons of $CO_2$ per year.

8. Calculate all the emissions for the period of the project.
   Micro-hydro = 0 tons of $CO_2$ emissions.
   Improved energy efficiency: 10 x 48.24 tons of $CO_2$ = 482.4 tons of $CO_2$ emissions.

9. Deduct the emissions in the project scenario from the emissions in the baseline.
   Micro-hydro: 643.2 - 0 = 643.2
   Improved energy efficiency: 643.2 - 482.4 = 160.8
   At a price of, for example, US$20 per ton of $CO_2$ emission reductions, switching to micro-hydro would generate US$12,864, while improved energy efficiency would generate considerably less: US$3,216. Moreover, all the costs involved in designing and implementing the project as well as the 'taxes' involved need to be taken into account. The revenue from the emission reductions associated with the new technology is probably not enough in itself to cover the cost of the project. But the advantages in savings in fuel costs over the lifetime of the technology as well as the reduction in local air pollution may make it worthwhile.

your technology cost is very high or if the amount of emissions reduced is very low. Clearly, it is a balance of these factors that will help lead to a successful project.

## Will my project be additional?

As well as estimating emission reductions according to an agreed approach, the project developer needs to demonstrate that emissions are additional and would not have happened without the project activities ('additionality'). This is a necessary requirement otherwise developers could claim emission reductions from projects which would have happened anyway. Demonstrating additionality requires two types of analysis:

- Investment analysis: this establishes that the returns from the project (without the estimated revenue from the sale of carbon credits) would be less than those of realistic alternatives to the project activity. Without the carbon credits, the project would therefore not be able to compete with alternatives.

- Barriers analysis: this establishes that there are realistic barriers that would prevent the proposed project activity from occurring in normal circumstances but would be alleviated if the project activity were to be registered as a CDM activity. These barriers include:

  - Investment barriers where the risk profile of the country means that no private capital is available.
  - Technological barriers such as a lack of trained labor to operate and maintain the technology, lack of infrastructure, a higher risk of technological failure in local circumstances than for other alternative activities, or unavailability of the technology in the region.
  - Prevailing practice – the project activity is the first of its kind.

## Where can I get more information on additionality?

The CDM EB has developed a tool which provides a set of steps for assessing additionality. It can be found at http://cdm.unfccc.int/methodologies/PAmethodologies/AdditionalityTools/Additionality_tool.pdf.

### Box 8. Demonstrating additionality – La Esperanza, Honduras

A small containment run-of-river hydroelectric project operates in La Esperanza, in the Intibuca region of Honduras, with a total installed capacity of 12.73 MW. It has a contract to sell generated electricity to the national utility company, ENEE, for 15 years.

Additionality was demonstrated on the basis of investment and regulatory barriers. Local banks charge high interest rates, up to 15 per cent for US dollar loans. In addition, the need to obtain various permits requires considerable time. In spite of efforts by the government to promote renewable energy generation in Honduras, only two small hydro projects have been built in Honduras in the last 10 years.

Source: DNV Validation Report No. 2004-0886 rev.01, http://wbcarbonfinance.org

## Does my project meet my country's sustainable development requirements?

Any CDM project must contribute to the sustainable development of your country. It is up to your country to decide what projects it approves. You should check the requirements in your country by approaching your country's DNA. You can find your DNA by checking the UNFCCC's website at http://cdm.unfccc.int/DNA/index.html.

By improving the sustainable development aspects of your project from an early stage, you are also less likely to waste time, effort and costs in securing DNA approval. It can also help to enhance the carbon revenue potential of your project as some buyers of carbon credits, such as the CDCF, are prepared to pay a premium if emission reductions are accompanied by social benefits.

Sustainable development is measured by looking at the economic, social and environmental aspects of your project. The design of the project may affect all these and a checklist of questions is given below[5]. Economic factors include issues such as partners in technology and the use of indigenous technology. Social factors touch on the creation of employment, or, where jobs are being shed in efficiency projects, the absorbtion of those jobs through initiatives to create employment. Environmental factors include improvements to the project to optimize local environmental impacts.

Increasingly, elements such as royalties and concession fees to community trusts and other institutions may be used to enhance local benefits. The community benefits plan of the CDCF is a good example of this in practice, where it applies to projects that would not automatically benefit the local community by themselves.

5.This checklist derives from the SSN Appraisal and Ranking Matrix Tool for Sustainable Development, and has been adopted by the Gold Standard as their Sustainable Development Screen. The full tool, which includes a detailed description of each item in the checklist, may be downloaded from the SSN library page at www.southsouthnorth.org/default.asp?/library.asp? as well as from the Gold Standard website at www.cdmgoldstandard.org/uploads/file/DeveloperManual_GS-CER.pdf.

## Figure 3. Tools for assessing sustainable development contribution

Does your project:

| ECONOMIC INDICATORS | YES | Neutral | NO | |
|---|---|---|---|---|
| 1. Increase investment in a priority sector of your economy? | | | | |
| 2. Introduce cleaner and cost-effective technologies? | | | | |
| 3. Generate local employment opportunities? | | | | |
| 4. Improve the local economy? | | | | |
| **SOCAL INDICATORS** | | | | |
| 1. Improve access to energy? | | | | |
| 2. Build capacity or transfer technical skills? | | | | |
| 3. Reduce wealth disparities? | | | | |
| **ENVIRONMENTAL INDICATORS** | | | | |
| 1. Reduce air pollution? | | | | |
| 2. Reduce water pollution? | | | | |
| 3. Conserve biodiversity? | | | | |
| 4. Reduce soil erosion caused by deforestation? | | | | |
| 5. Improve other local environmental conditions? | | | | |

If the answer to each of these questions is **yes**, your project will most likely fulfill the requirements set by most country DNAs.

If your project scores highly under the social and economic indicators, it will most probably satisfy the requirements of the Gold Standard and be of interest to buyers who are looking for carbon projects with development benefits.

## What are the most important things that I should take into consideration?

At an early stage when you are obtaining rough data to consider the general viability and affordability of your project, you should also be considering what resources you have available in terms of finance, technical support, available infrastructure, and organizational capacity. This will help you to consider what additional support you need and should help you finance, develop and manage the project.

## How can I assess my resources?

**You should consider your ability to finance the project.** This means relying on your own finances or raising the necessary capital. If you are not going to be able to finance the project on your own, a financial or investment partner may be appropriate. Note that relying on official foreign development assistance to finance a project is considered a diversion of this assistance and is not permissible in CDM projects.

**You should consider your institutional resources.** Developing a CDM project will certainly help you to build your internal capacity, which will be a valuable investment in its own right. You may need to rely on expert consultants, but you should be careful that you do not lose all the value of your project in this way. Consultants are expensive, and while some assistance may be necessary, you should try to do as much of the project on your own as possible.

**You should consider the level of your organization's development.** Developing a CDM project will require the usual project development skills, and having a reliable team that functions and communicates well together will often make the difference between success and failure. There are many experts in organizational development who are available to help you in this area.

**You should consider your technological capacity.** A project which involves technological complexity may require additional training or staffing to make it successful.

**You should consider the potential for your project to be repeated in the future, replicated by others and increased in scale.** These may not have a direct impact on the immediate project, but will certainly influence decisions regarding viability and affordability as well as improve the overall value of the project for the future.

All these factors are significant in developing CDM projects, and should be considered when making technological, financial, personnel and partnership decisions.

## How do I plan and present my project idea?

In considering the above factors and roughly assessing the finances of your project, you have begun to plan your project. The best way to be systematic about your planning is to prepare a Project Idea Note (PIN). This is a preliminary document that describes relevant information about your project in a way that will make sense to others. It should include:

1. The name and nature of the project.
2. The choice of technology.
3. How the technology will achieve emission reductions.
4. Where the project will take place and over what period.
5. The names of any partners.
6. How the project could be financed.
7. A rough estimate of the emission reductions expected from the project.
8. The environmental, social and economic benefits of the project.

Your PIN will help you to approach funders, in both the compliance market and the voluntary market. You should not consider this document complete until your project is complete. It represents your best description of the latest plan that you have for your project. Inevitably, the plan will change as your project develops; changing one aspect of your project will mean that other elements change also. For example, if your technology choice is modified, you will also need to reconsider the costs and hence the financing implications and this should be detailed in your PIN.

### Box 9. Project idea stage – checklist

- ❑ 1. Determine the goals of the project:
  - Financial; i.e. sale of CERs, production of cheaper energy for people.
  - Developmental; i.e. job creation, energy provision, freeing up of time wasted in collecting firewood.
  - Environmental; i.e. dealing with local pollution instead of;
  - Greenhouse gas reductions.
- ❑ 2. Determine availability of renewable energy sources; e.g. running water, sunshine, biomass, landfill sites, biogas (organic wastes).
- ❑ 3. Determine possibilities for being more efficient in energy provision or use (improvement of technology or its use).
- ❑ 4. Consider available resources (financial, human and renewable energy sources).
- ❑ 5. Based on 2 and 3, determine the most appropriate technology in your circumstances (consider that locally-available technologies may be easier to afford, but ensure they are adequately tested in either case especially for your circumstances).
- ❑ 6. Roughly assess emissions in baseline and in project to estimate the emission reduction value of the project.
- ❑ 7. Undertake a preliminary feasibility assessment.
- ❑ 8. Determine location and beneficiaries.
- ❑ 9. Prepare short PIN which describes project details and value in broad terms (see following section).

## Who do I need to collaborate with on my project?

Whether or not you have the capacity to successfully plan, develop and finance a project on your own, you should assess the prospects for entering into a partnership, perhaps with other local authorities. This is desirable if they have experience with the technology that you will use and can support you with building your capacity. This also allows you to pool your combined resources, giving you the advantages of scale. For example, you could share the energy the project produces, or you could treat waste together.

### What is a program of activities?

The CDM allows for a program of activities to be registered, and this means that similar projects may take place in separate communities as part of the same registered project. This will help to reduce costs and to increase the impact and the community development benefits. It is also a way to spread the work and cost in developing the project idea, and also in raising funds.

Note that it is possible to group different technologies into the same project. For example, the SSN project near Cape Town in South Africa, known as the Kuyasa low cost housing project, grouped a variety of interventions in one project that targeted houses built by the government for very poor people. These interventions included installing solar water heaters, ceilings, ceiling insulation and compact fluorescent lamps. The project has subsequently expanded its program of activities to reach many communities across South Africa.

### Partnering with community-based organizations

Partnerships with community-based organizations can help you link with and bring benefits to your local community. These organizations can help to ensure that there is sufficient understanding and cooperation within the community where you wish to develop your project. They are also able to help you where you are lacking in institutional or organizational capacity. They can help you with arranging finance and managing micro-financing if necessary.

### The role of central government

You may be able to secure financial support from your central government, and your DNA may help you with this. Your country's environmental ministry, department or office should be able to help you locate your country's DNA. You should communicate early on with your DNA so that you understand their requirements and they are aware of your project. They could, for example, put you in touch with and help you develop partnerships with other local authorities who are undertaking similar activities. In the case of a program of activities, you may benefit from participating in a country-wide project in partnership with your central government. Your DNA could also help you to source specialized technology either within your country or abroad. They may also be able to assist you with project implementation.

### Collaborating with donors implementing CDM projects in your country

Many international funds operate through their intermediaries in developing countries with a view to supporting and implementing CDM projects. You should communicate with them, as they may be interested in the development aspects of your project and be willing to partner with you in developing it. Some donors are interested in development, while others are more interested in finding CDM projects to acquire emission reductions for their funders, but both may be useful for you.

### Getting help from carbon financiers

These partners can help you with upfront finance that will allow you to design the project, conduct community participation or secure technology. They can also help you manage micro-finance for projects where there are multiple installations, such as for solar home systems.

**What are carbon financiers likely to require?** All carbon projects will require an emission reduction component. This is subjected to the rules of the CDM or to voluntary standards in the case of the voluntary market.

Some carbon financiers will also be looking for demonstration of community benefits. These may be a direct result of the emission reduction activities, or an additional activity. They may often want to know that the community has been involved in identifying and planning these benefits. Whichever financier you work with, it will be helpful to prepare and submit your PIN, which sets out some key features of the activity.

## How and why should I get the support of the local community?

It is useful and often necessary to ensure that your community understands the new technology and your project. They will, after all, be the ones to benefit from it and you will sometimes require them to change their ways in regard to waste management and energy use. You will secure their support if you engage them early on in the process, explaining your objectives and process. CDM projects which do not have high levels of community involvement do not benefit the community as well as those that do. Calling a meeting to engage with stakeholders is a simple way to help build understanding and support, and is even a means of raising their level of awareness and capacity.

A community reference group could be elected as an outcome of such a meeting, and this will help build institutional capacity within your community, providing you with a forum to engage with the community in the future. However, it will be important that this reference group itself engages with the community on an ongoing basis, and you should consider assisting them in this process. In this way, you should find a supportive and eager community that is keen to try out new technology.

Often, CDM projects provide an advantage to the local community. Sometimes this involves more reliable or cleaner sources of energy, for example. Using their labor at installation, or providing training for selected individuals to help install, monitor, or manage the new technology are examples where the community will benefit.

If there are no direct benefits to the community from the project activities, you could consider providing additional benefits through a community benefits plan, approved by the community. Such a plan should spell out the benefits that the project will provide to them as well as provision for this element to be monitored during the implementation of the project. Without community support, your project will be much harder to implement, and has a greater chance of failure. In all cases of cooperation, respectful communication that leads to a common understanding is the key to success.

## Project development stage

### Why do I need to build a project development team?

As in any project, a project manager is necessary to develop a CDM project, supported by a project management team. The people who comprise this team will depend on the capabilities you have available, and on the kind of project. A leader with a core team is necessary, plus others should be added to the team as needed to take care of specific elements as they arise, and depending on the kind of expertise required. Therefore, if you reach a stage where capability is needed and is not available on the team, this should be found to fulfill this demand as required. For example, you will probably need someone to handle the community involvement aspects of the project. Someone with experience may be found if you do not have this expertise on the team.

| Table 2. Examples of types of community benefits from existing CDCF projects | | |
|---|---|---|
| **Type of activity and project examples** | **Direct benefits** | **Indirect/additional benefits** |
| **Renewable energy**<br>Nepal: biogas. | Reliable energy source replacing firewood and kerosene.<br>Improved treatment of animal and human waste.<br>Provision of fertilizer. | |
| Honduras: La Esperanza micro-hydro (12.7 MW run of river). | Reliable electricity supply for neighboring communities. | Employment in construction (120) and in operation (20).<br>Capacity building to communities to apply for rural electrification grants. |
| Bangladesh: solar home systems (IDCOL). | Reliable energy source replacing kerosene and diesel, enabling use of modern appliances and increased economic activity. Short- and long-term employment in installation and maintenance of the systems. | Short- and long-term employment in installation and maintenance of the systems. |
| **Energy efficiency**<br>Colombia: Furatena energy efficiency project. | Participation in a modern, energy-efficient molasses processing plant. | Training for 300 farmers in improved sugarcane production practices; managerial training for 120 small-scale farms. |
| **Waste management**<br>Argentina: Salta landfill capture. | | Improved working facilities, and bathrooms and sanitary services for communities engaged in recycling at the landfill. |
| Bolivia: wastewater methane capture. | | Extension of the sewerage network to 2,000 households in a poor community near to the plant. |
| **Combined renewable energy and energy efficiency**<br>Moldova: biomass and energy efficiency project. | Improved heating in public buildings such as schools and hospitals leading to health and education benefits. | Income-generating activity (supply of biomass) for local agricultural enterprise. |

If there is no-one available in your council to deal with this, then a community-based organization could help. In that case, it would be important to have a representative from that organization with you on your team. The roles are varied in the process of developing a project and include: project design, managing community involvement, negotiating with any partners, arranging contracts and dealing with lawyers as needed, consulting with experts on technological, institutional and design aspects, preparing the PDD and managing the formal processes such as consulting with a DOE and seeking approval from the DNA in your country. The skills involved include technical, organizational, managerial, legal, networking and cooperative skills.

Your team should include someone to represent each partner and financier involved in the project and you should also consider the advantages of including representatives from the local community in your team.

### Box 10. Project development stage – checklist

- ❑ 1. Select a PDT to design the project and respond to the following elements.
- ❑ 2. Establish project finance. Research the following:
  - Grants for project development from overseas governments, charitable organizations or charitable arms of companies.
  - Countries, companies or organizations that will pay upfront for credits.
  - Countries, companies or organizations that will sign forward sale agreement for credits.
  - Loans from international, national or local banks; with or without forward sale.
  - Loans from your country's development bank; with or without forward sale.
  - Availability of micro-credit facilities for beneficiaries.
- ❑ 3. Design project ownership structure
  - Decide what vehicle will operate the project.
  - Register project operating company, if appropriate.
- ❑ 4. Design project management structure. Ensure:
  - A division of responsibility for both management and decision-making.
  - Adequate familiarity with CDM mechanism steps.
  - Adequate expertise in the chosen technology.
  - Communication skills.
- ❑ 5. Investigate local requirements
  - Determine your country's sustainable development objectives in terms of the projects potential for making economic, social and environmental contributions.
  - Check DNA requirements for CDM projects; obtain letter of approval from DNA.
  - Determine local, regional and national laws and regulations for technology use, energy provision, and plant location use.
- ❑ 6. Select approved CDM methodology with the following considerations:
  - Determine if the project is regular or small-scale. Consider a project composed of bundled small-scale projects if the project to be implemented is in different locations.
  - Examine existing approved CDM methodologies to see if applicable methodology for your technology exists already.
  - Engage DOE to provide preliminary project validation.
- ❑ 7. Undertake social and environmental impact assessments.
- ❑ 8. Establish support from project beneficiaries and stakeholders. Instead of:
  - Hold stakeholder consultations.
- ❑ 9. Test the technology.
  - Determine how the technology will operate in your circumstances.
  - Determine what emissions will be produced by the technology.

## How do I design my project and complete a PDD?

Note that many of the steps involved in considering the project idea, above, will be revisited at this stage, but in more detail and using more precise data. A PDD is a really a more detailed version of your PIN, but must follow a prescribed format. Completing this can be a time-consuming process, depending on the complexity of your project and represents all the work you have done in planning and designing your project.

For this reason you will usually require a PDT to undertake this process, although this is not a formal requirement of the process. Preparation of the PDD should take place after consultation with your community. If no-one on your council has undertaken a CDM project before, you will probably need help on many of the technical aspects. This will depend on the technical skills which you have access to in your government. Either way, the project developer will find it worthwhile to try to complete the formal PDD themselves, following the prescribed format and guidance of the EB of the UNFCCC at: http://cdm.unfccc.int/Reference/Guidclarif/index.html.

Where difficulties remain, a local consultant or NGO specializing in climate change may be able to help. Alternatively, you may be able to find assistance from your country's DNA or from a central government or other local government that has experience in this regard.

The PDD must contain precise project data, including who is involved, what technology is involved, and the scale of the project. It will set out exactly how your project will reduce emissions, show the assumptions you need to make and the context for making these assumptions. It should include all your calculations, the time period over which you have made your calculations and a plan for how you will monitor emission reductions.

The PDD will also show the sustainable development contributions of your project in your country, and prove that the project is additional.

The PDD is needed for:

- Submitting the project for approval to your country's DNA to ensure country support for the project and its sustainable development contributions.
- Validation by a DOE, who will need sufficient data to ensure that the project conforms to all the formal requirements of a CDM project.
- Submitting to the EB of the UNFCCC for registration, a process which the DOE will manage for you.

### Box 11. Preparation of PDDs – checklist

- ❑ 1. Determine baseline and project scenario and methodology.
- ❑ 2. Determine that the project is additional.
- ❑ 3. Select period of project (10 years or three periods of seven years).
- ❑ 4. Calculate baseline scenario emissions, project scenario emissions and deduct the latter from the former to determine emissions saved or avoided by your project.
- ❑ 5. Determine any leakage.
- ❑ 6. Obtain letter of approval from DNA.
- ❑ 7. Obtain validation of PDD from DOE.
- ❑ 8. Obtain registration of the project.

## Why must I appoint a DOE to validate my project?

Once your project has been set out fully in your PDD, you are in a position to apply for validation. Before you appoint a DOE to validate your project, you might consider appointing them to undertake a preliminary review of your PDD. This could help you with the design of your project as it may highlight areas that need further development. This will save you time and cost. DOEs all operate and charge differently, so you should interview and negotiate with them before you make your appointment. It is also useful to find DOEs that operate locally with local experts undertaking the validation, as this can be cheaper than appointing one that is based in a developed country and who will need to send operatives to your country for local inspections.

The DOE will check all the details of your PDD and ensure that the project is described sufficiently to show real, measurable and long-lasting emission reductions.

They will also submit your PDD, along with your registration fee, to the EB of the UNFCCC for registration.

## How do I go about getting approval from my country's DNA?

In some countries, you will first have to have your project validated before your DNA will approve your project. But before the DOE can submit your project to the EB for registration, project approval is necessary. It is a good idea to keep your DNA informed about your project from a very early stage. The DNA will only give approval on the basis that your project contributes to the sustainable development of your country.

## When do I begin to implement my project?

It is possible to begin implementing your project before your project is completed in its design and before the PDD is completed and the project registered. This is permissible as long as you begin your project with the stated intention of developing it as a CDM project that aims to benefit from carbon finance. It is worth considering beginning your project on a pilot scale as this will enable you to test the approach and refine your project before large-scale implementation. For example, in the Kuyasa low cost housing project in South Africa, 10 houses were selected for fitting with insulated ceilings, solar water heaters and two compact fluorescent light bulbs. This enabled preparation of a model to calculate the thermal performance of these interventions. Only once this model established the emissions that could be saved, were the interventions completed in a greater number of houses (around 1000), as a CDM project. It is anticipated that the project will be scaled up in due course, but at the moment the CDM project remains a pilot to test the financing, technology, organizational and partner aspects.

## How do I get my project verified, certified and the emission reductions issued?

During the life of your project, you will need to gather data on the performance of your technology in reducing emissions according to a specific plan set out in your PDD. This is called a monitoring and verification plan and it is used by a verifier to check that your project has resulted in emission reductions. You will thus need to engage another DOE who is qualified to verify your project, and they will also submit your project to the EB for project certification and the issuance of emission reduction certificates to which your project is entitled. These certificates can then be sold or handed over according to any sales agreements that you have made with purchasers, investors or financiers.

### Box 12. Project implementation – checklist

- ❑ 1. Raise finances required (conclude agreement of sale/obtain grant).
- ❑ 2. Install plant/technology.
- ❑ 3. Monitor project details according to Monitoring and Verification Protocol.
- ❑ 4. Appoint DOE to verify project.
- ❑ 5. Request issue of CER.

7

# Where to get help

## General guides to the CDM

A number of general guides, applicable to a range of sectors, were produced in the early years of the CDM. These guides work systematically and in detail through the various steps required to develop a CDM project. Though there have been some changes in certain aspects of the CDM since these guides were published, much of the information they contain is still valid.

**The SouthSouthNorth Clean Development Practical Guide for Practitioners**
www.cdmguide.org
This is also available from SouthSouthNorth's website together with other useful materials on the CDM and descriptions of CDM projects.
www.southsouthnorth.org

This guide reflects SouthSouthNorth's capacity-building experience of actual CDM projects in Brazil, South Africa, Indonesia and Bangladesh. These projects were selected because of their potential to make a significant contribution to sustainable development. The guide gives considerable emphasis to tools for appraising the sustainable development of projects. It is intended for use by a wide range of actors with an interest in CDM projects with sustainable development benefits, whether project owners, consultants, engineers, or government policymakers. The guide can be downloaded and referred to according to the phases of the project cycle. Alternatively, a search facility on the website enables users to search for the topics that are of most interest to them.

**The Clean Development Mechanism: A User's Guide**
**UNDP/BDP Energy and Environment Group, 2003**
www.energyandenvironment.undp.org/undp/indexAction.cfm?module=Library&action=GetFile&DocumentAttachmentID=1032

This guide was designed as a reference tool primarily for United Nations Development Program (UNDP) Country Offices to learn more about the opportunities and challenges of the CDM and implement projects efficiently and equitably in a variety of national and sectoral contexts. However, the topics it addresses are of interest to other organizations developing carbon projects. This document addresses issues of climate change and sustainable development including UNDP's CDM strategy, the CDM project cycle, development of the PDD, procedures for small-scale projects, governance and transaction costs, CDM transactions, and the carbon market.

**CDM Information and Guidebook**
**Lee, M.K. (ed.) UNEP CD4CDM, 2004, Second Edition**
www.cd4cdm.org/Publications/cdm%20guideline%202nd%20edition.pdf

This guidebook gives particular emphasis to the CDM project cycle and the preparation of the PDD. Each step of the CDM project cycle is explained from project design and formulation to the issuance of CERs. Chapter 5 shows how to fill out the PDD. In addition there are more general chapters on the CDM, sustainable development and project financing.

## Preparation of PDDs

The CDM template for the PDD is available at:
http://cdm.unfccc.int/Reference/PDDs_Forms/PDDs/PDD_form04_v03_2.pdf

Guidelines for completing a PDD are available at:
http://cdm.unfccc.int/Reference/Documents/Guidel_Pdd/English/Guidelines_CDMPDD_NMB_NMM.pdf

However, the best guide to preparing a PDD is to refer to documents that have already been successfully validated and registered. The UNFCCC website outlines the PDDs of all the CDM projects registered so far.
http://cdm.unfccc.int/Projects/registered.html

**CDM PDD Guidebook: Navigating the Pitfalls**
**UNEP Risø Centre and DNV 2008 Second Edition**
www.cd4cdm.org/Publications/PDDguidebook2ndEdition.pdf

This guidebook identifies 38 common pitfalls that CDM proponents encounter in the validation and verification of their PDDs and provides detailed guidance on how to avoid these pitfalls. It draws on the experience of Det Norske Veritas (DNV) an accredited DOE, which has validated and verified a significant proportion of CDM projects to date. The aim is to improve the quality of PDDs and so reduce transaction cost time. This guidebook does not give a detailed description of how to design a CDM project nor how to prepare monitoring reports.

## Estimation of emission reductions

**CER Estimation Toolkit Version 2**
**Global Environment Centre, Japan 2007**
http://gec.jp/gec/gec.nsf/EN/Publications-Others-CER_Toolkit

This toolkit aims to assist project proponents in the initial assessment of expected CER generation. Indicative estimates of emission reductions are made at different scales and in some cases for different regions for the following technologies:
1. Increasing the blend in cement production.
2. Substitution of fossil fuels with alternative fuels in cement plant.
3. Methane avoidance by anaerobic wastewater treatment.
4. Landfill gas recovery and flaring.
5. Methane avoidance through composting.
6. Electricity generation from biomass residues.
7. Electricity generation from waste heat recovery.

## Sectoral guides and experience

### a. Energy

The **RETScreen Clean Energy Project Analysis Software**
www.retscreen.net/ang/home.php

This is provided free-of-charge and can be used worldwide to evaluate the energy production and savings, costs, emission reductions, financial viability and risk for various types of renewable-energy and energy-efficient technologies (RETs). The software (available in multiple languages) also includes product, project, hydrology and climate databases, a detailed user manual, and a case study based college/university-level training course, including an engineering e-textbook.

**Wind power and the CDM. Emerging practices in developing wind power projects for the Clean Development Mechanism**
**Painuly, J.P., Clausen, N., Fenhann, J., Kamel, S. and R. Pacudan.**
**Energy for Development Risø National Laboratory, Denmark 2005**
www.cd4cdm.org/Publications/WindCDM.pdf

This provides an overview of wind power technology and the steps involved in developing a CDM project based on wind power.

### b. Transport

**The CDM in the Transport Sector. Module 5d Sustainable Transport: A Sourcebook for Policy-makers in Developing Cities**
**GTZ 2007**
http://siteresources.worldbank.org/EXTAFRSUBSAHTRA/Resources/gtz-cdm-transport-2007.pdf

This is intended for policymakers and their advisers in developing cities and forms part of a sourcebook on various aspects of sustainable transport. This module analyses the CDM potential of different types of transport projects and sets out the major components that need to be covered when preparing a CDM transport methodology. A case study of the TransMilenio CDM project, the first registered CDM transport project is presented with details of the path towards registration, results, costs and benefits.

## Financial aspects

For more assistance with project financing, visit the SSN CDM Toolkit at www.cdmguide.org or the Financing and Transaction Guide SSN available at:
www.southsouthnorth.org/default.asp?/library.asp? under the SSN team publications section.

**Guidebook to Financing CDM Projects**
**EcoSecurities and UNEP CD4CDM 2007**
www.cd4cdm.org/Publications/FinanceCDMprojectsGuidebook.pdf

This guidebook aims to:
1. Guide project developers on obtaining financing for the implementation of activities eligible under the CDM.
2. Demonstrate typical approaches and methods to developing country financial institutions for appraising the viability of CDM projects and for optimally integrating carbon revenue into overall project financing.

One of the main challenges facing CDM projects, particularly in the least developed countries is to secure financing for the underlying emission reduction activities. Most financial intermediaries in the CDM host countries have limited or no knowledge of the CDM modalities and procedures. Developing country financial institutions are unable to properly evaluate the risks and rewards associated with investing or lending to developers undertaking CDM projects, and therefore have, by-and-large, refrained from financing these projects. In addition, some potential project proponents lack experience in structuring arrangements for financing a project. The guidebook addresses these barriers by providing information aimed at both developing country financial institutions and at CDM project proponents.

## Small-scale technologies

For a full list of approved small-scale methodologies see http://cdm.unfccc.int/methodologies/approved.html

## Programmatic CDM

**Potential and barriers for end-use energy efficiency under programmatic CDM**
**No. 3 CD4CDM Working Paper Series**
**Hinostroza, M., Cheng C.C., Zhu, X, and J. Fenhann with Figueres, C. and F. Avendano 2007**
www.cd4cdm.org/Publications/pCDM&EE.pdf

This examines the scope for programmatic energy efficiency activities. It reviews the evolution of the programmatic approach, explains the rules and modalities, examines current methodologies and project pipelines that could accommodate programmatic energy efficiency activities and investigates new potential project areas. It concludes with a case study in Peru to illustrate the methodological issues in designing and implementing energy efficiency programs under the CDM.

## Assessing sustainable development contribution

**The SouthSouthNorth Appraisal and Ranking Matrix Tool for Sustainable Development**
www.southsouthnorth.org/default.asp?/library.asp

This brief document sets out an approach for appraising and rating energy projects for their sustainable development impact at the time of project design and approval. It is targeted at project developers and host country governments. Indicators of sustainable development contribution and a suggested scoring system are set out in a table. This is followed by a short explanation of each indicator. This tool was later incorporated into the Gold Standard.

**Gold Standard procedures**
**Gold Standard Toolkit 2.0**
http://cdmgoldstandard.org/fileadmin/editors/files/6_GS_technical_docs/GSv2/GSV2_Toolkit.pdf

Step-by-step explanation of the procedures to follow to develop, validate and monitor a Gold Standard project. It is designed for multiple users: project proponents, validators and verifiers, as well as other carbon market actors. It gives detailed explanation on how to conduct a stakeholder consultation and assessment of the project and how to examine the sustainable development impact.

The Community Development Carbon Fund (CDCF) provides carbon finance to projects in the poorer areas of the developing world. The Fund, a public/private initiative designed in cooperation with the International Emissions Trading Association and the United Nations Framework Convention on Climate Change, became operational in March 2003. The first tranche of the CDCF is capitalized at $128.6 million with nine governments and 16 corporations/organizations participating in it and is closed to further subscriptions. The CDCF supports projects that combine community development attributes with emission reductions to create "development plus carbon" credits, and will significantly improve the lives of the poor and their local environment.

The World Bank Carbon Finance Unit's (CFU) initiatives are part of the larger global effort to combat climate change, and go hand in hand with the World Bank and its Environment Department's mission to reduce poverty and improve living standards in the developing world. The CFU uses money contributed by governments and companies in OECD (Organization for Economic Co-operation and Development) countries to purchase project-based greenhouse gas emission reductions in developing countries and countries with economies in transition.

The International Institute for Environment and Development (IIED) is one of the world's top policy research organisations focusing on sustainable development. With partners on five continents, IIED is helping to tackle 21st-century challenges ranging from climate change and cities to the pressures on natural resources and the forces shaping global markets. The institute works with some of the world's most vulnerable people to ensure they have a say in the policy arenas that most closely affect them – from village councils to international conventions.

SouthSouthNorth (SSN) is a network-based non-profit organisation sharing two decades of experience in the fields of climate change and social development. SSN directly pursue structural poverty reduction in Sub Saharan Africa, Asia and Latin America by building Southern capacity and delivering community based mitigation and adaptation projects.