Compilation and synthesis of technology transfer activities reported in the fifth National Communications

UNFCCC, Bonn, June 2011

Contents

I. Introduction[1]

1. In accordance with the UNFCCC reporting guidelines, Parties included in Annex II to the Convention (Annex II Parties) are required to provide details of measures taken to implement their commitments under Article 4, paragraphs 3, 4 and 5, of the Convention. This includes: indicating what "new and additional" financial resources have been provided under Article 4, paragraph 3, and how the resources have been determined as such; reporting on the assistance provided to developing country Parties that are particularly vulnerable to the adverse effects of climate change for the purpose of assisting them in meeting the costs of adaptation to those adverse effects; and providing information on financial contributions made to the Global Environment Facility (GEF) and other multilateral institutions, as well as on financial contributions made through bilateral and regional channels. Annex II Parties are also required to report information on steps taken by governments to promote the transfer of environmentally sound technologies and to support the development and enhancement of endogenous capacities and technologies of developing countries.

II. Overview of technology transfer

2. All Annex II Parties provided information on practicable steps to promote, facilitate and finance the transfer to other Parties, or other Parties' access to, environmentally sound technologies and know-how to give effect to their commitments under Article 4, paragraph 5, of the Convention. They also provided examples of their technology transfer programmes and projects. In providing this information, almost all of them followed the UNFCCC reporting guidelines. Almost all Annex II Parties included a separate section on transfer of technology in their NC5, and relevant information was provided also in their descriptions of multilateral and bilateral cooperation. Many Annex II Parties consider partnerships between various stakeholders as an effective channel for the successful transfer of technology to developing countries.

3. In reporting their technology transfer activities, many Annex II Parties differentiated between activities undertaken at the bilateral level and activities undertaken at the multilateral level. Many of the technology transfer activities undertaken by Annex II Parties at the bilateral level focus on the provision of technology assistance through development programmes and projects in developing countries, in particular the least developed countries. Some Annex II Parties have increased their bilateral collaboration with emerging economies.

4. Many Annex II Parties engage bilaterally with both developed and developing countries at all stages of the technology cycle, including research and development, demonstration, deployment, diffusion and transfer of technology, in support of action on mitigation and adaptation. **Work with developing countries focuses on the latter stages of the technology cycle**, usually in the form of efforts to share knowledge and foster enabling environments in order to transfer technologies, while many of the **efforts with other developed countries tend to focus on the early stages of the technology cycle**, in the form of collaborative research, development and demonstration in relation to new technologies.

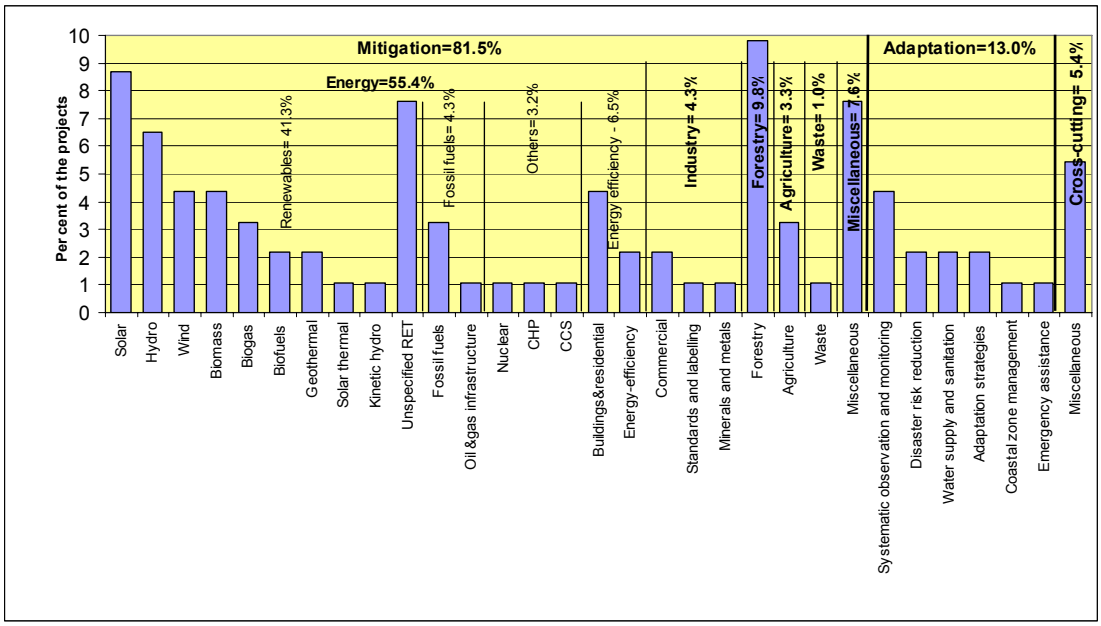
5. **Many of the programmes and projects reported by Annex II Parties were implemented through multilateral cooperation**. Some of these focused on the development of specific technologies, such as particular renewable energy technologies, while others had a clear focus on fostering appropriate enabling environments for the deployment and diffusion of particular technologies.

[1] This section is an excerpt of the Compilation and synthesis of fifth national communication (document FCCC/SBI/2011/INF.1/Add.2)

6. Nine Annex II Parties presented various examples of cooperation at the regional level, aimed at promoting the exchange of knowledge and experiences within the regions and addressing specific regional technology needs. Examples include the regional cooperation on environmental protection within the Organization of the Black Sea Economic Cooperation, the Ibero-American Network of Climate Change Offices and the International Centre for Integrated Mountain Development.

7. All Annex II Parties reported activities related to technology transfer, including success stories. Fifteen Annex II Parties provided, in the relevant table, information on a total of 93 programmes and projects that promoted practicable steps to facilitate and/or finance the transfer of, or access to, environmentally sound technologies. **The majority of these programmes and projects targeted mitigation and involved technology transfer in the energy sector, in particular related to the deployment and diffusion of renewable energy and energy efficiency technologies** (see figure 1). This is in line with the findings reported in the compilation and synthesis report of NC4. Most of the programmes and projects reported by Annex II Parties were implemented in Africa and Asia and the Pacific (see figure 2).

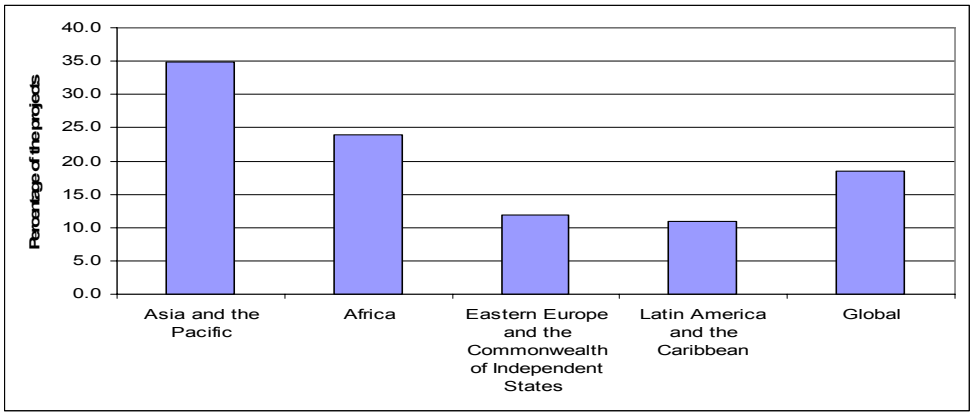
Figure 1 Distribution by sector and technology of selected technology transfer programmes and projects reported by Annex II Parties



Abbreviations: CCS = carbon capture and storage, CHP = combined heat and power, RET = renewable energy technology.

8. Twelve Annex II Parties reported on **success stories related to selected technology transfer programmes and projects**, and, in addition, highlighted factors which contributed to the successful implementation of these programmes and projects. The importance of **capacity-building and cooperation with local stakeholders** was frequently reported by Annex II Parties. Other success factors reported by Annex II Parties include: an integrated project approach; an adequate project preparation process, such as the preparation of feasibility studies; favourable enabling environments; the relevance, impacts and benefits of the project; access to information; replicability; and the market potential of the project.

Figure 2 Regional distribution of selected technology transfer programmes and projects reported by Annex II Parties



9. Eight Annex II Parties made explicit reference to **hard and soft technologies**. However, most of the Annex II Parties implicitly referred to both types of technologies, by providing information on hard technologies being transferred, as well as information on activities relating to soft technologies, such as local capacity-building, training programmes and information networks, such as the Livestock Emissions and Abatement Research Network, established by New Zealand.

III. Partnerships and cooperation between key stakeholders

10. **Most of the technology transfer activities reported by Annex II Parties are managed by a number of government agencies and implemented by specialized agencies for development cooperation through partnerships with local stakeholders**, such as: the Energy and Environment Partnership with Central America (see box 2), which was launched with the support of the Finnish Government in coordination with the Central American Integration System and the Central American Commission for Environment and Development to promote renewable energy in Central America; and the Asia-Pacific Partnership on Clean Development and Climate (APP), an effort established by Australia, Canada, China, India, Japan, Republic of Korea and United States to accelerate the development and commercialization of clean energy technologies and practices (see box 3).

11. **Many Annex II Parties consider partnerships between various stakeholders as an effective channel for the successful transfer of technology to developing countries**. Stakeholders reported by Annex II Parties include developers, owners, suppliers, buyers, recipients and users of technology; financiers and donors; governments; international institutions; and non-governmental organizations (NGOs) and community groups. The majority of Annex II Parties provided details on networks and programmes built in partnership, in order to facilitate the transfer of technology and know-how, to support developing countries in their efforts to mitigate or adapt to the adverse impacts of climate change. Some Annex II Parties stated that many of their adaptation, mitigation, capacity-building and technology cooperation programmes are administered **through bilateral partnerships**. In addition, Annex II Parties provided examples of **partnerships between two or more Annex I Parties** for the implementation of specific technology transfer projects in developing countries. For example, the Government of Norway collaborated with the Government of Denmark in supporting off-grid electrification using renewable energy technologies in Nepal.

Box 2

Energy and Environment Partnership with Central America [This line should be 0 pt before, 6 pt after]

The Energy and Environment Partnership with Central America, initiated by the Finnish Government, aims at finding support for public and private investments, developing effective and consistent strategies within the national energy policies of each country in the Central American region, and improving the sustainable development of renewable energy on a small scale. Other goals include strengthening effective rural electrification programmes and developing capacity in the areas of financing and technical engineering at the regional level.

So far, partial funding has been granted to about 200 projects. These include feasibility studies and research, pilot and demonstration projects in all fields of renewable energy and energy efficiency. The public and private sectors are participating in the programme, which has increased international banks' and funding institutions' interest in co-financing. Factors which have contributed to the programme's success include: the wide participation of the private sector, universities, donors and research institutes; the inclusion of capacity-building and training; and the conduct of studies on financing models, energy markets and energy resources.

Box 3

Asia-Pacific Partnership on Clean Development and Climate

The Asia-Pacific Partnership on Clean Development and Climate (APP) is an effort established by Australia, Canada, China, India, Japan, Republic of Korea and United States of America to accelerate the development and commercialization of clean energy technologies and practices. Partner countries work together and with their private sectors to meet goals related to energy security, the reduction of national air pollution, and climate change, in ways that promote sustainable economic growth and poverty reduction. Using a sectoral approach that breaks climate and clean development related challenges down into more manageable task forces helps APP Partners to take advantage of readily available opportunities to increase energy efficiency and reduce greenhouse gas emissions. In addition to their carrying out of such targeted, immediate actions, the sectoral focus enables APP Partners to lay the foundations for long-term market transformation. The Partnership has endorsed 175 individual cooperative activities, including 22 flagship projects that exemplify its goals.

12. Some Annex II Parties highlighted the **increased participation of civil society organizations** in development cooperation related programmes and projects. These Annex II Parties consider strategic, programmatic cooperation with civil society organizations as an effective channel through which to enhance technology transfer to developing countries.

13. Many Annex II Parties reported on their provision of support for the development and enhancement of endogenous capacities and technologies in developing countries. Capacity-building activities reported by Annex II Parties include education and training to enhance skills in the design, installation, operation and maintenance of specific technologies, and project development skills, and the strengthening of the capacities of national institutions relevant to technology transfer. **Capacity-building forms an integral part of many of the technology transfer programmes and projects reported by Annex II Parties, at both the individual and the institutional level**. Examples of these programmes and projects are the Seventh Framework Programme for research and technological development of the European Commission (EC), the Asia-Pacific Network for Global Change Research and the US–China Clean Energy Research Center.

IV. The role of the private sector in enhancing the transfer of technologies

14. Ten Annex II Parties included in their NC5 a separate section on the prominent role of the private sector in enhancing the transfer of technologies, while ten other Annex II Parties included information on the private sector's major role in the description of their activities related to technology transfer. Some Annex II Parties noted that, while public-sector funding for climate change activities is continuing to grow, it is private-sector investment that continues to lead, in terms of delivering resources, to addressing climate change in developing countries.

15. The following initiatives to facilitate private-sector participation in the transfer of environmentally sound technologies were most often reported by Annex II Parties:

(a) Providing assistance to governments in developing countries in creating enabling environments to ensure that the private sector can operate in an environment conducive to private-sector investment;

(b) Supporting investment-promotion activities, including market studies, feasibility studies, job-related training and temporary management, clean energy information systems and trade missions;

(c) Setting up networks between businesses in developed and developing countries;

(d) Providing financing and business development services in developing countries;

(e) Providing financial incentives for projects and programmes, including grants, soft loans, export credit guarantees, equity investments and venture capital.

16. Some Annex II Parties highlighted programmes in which **partner countries cooperate with the private sector** to meet energy security and climate change resilience related goals in ways that promote sustainable development and poverty alleviation. These partnerships aim to strengthen the presence of the private sector in developing countries. Examples include the Business-to-Business Programme initiated by Denmark, the Private Sector Investment Programme of the Dutch Government and APP.

17. Some Annex II Parties reported that financing for technology transfer is channelled through special funds, such as the Access to Energy Fund (see box 4). This fund was initiated by the Dutch Government and the Netherlands Development Finance Company and collaborates with local companies that provide consumers access to renewable energy.

Box 4
Access to Energy Fund

The Access to Energy Fund (AEF) is a vehicle initiated by the Dutch Government and the Netherlands Development Finance Company (FMO) to make it possible to fund private-sector projects that create sustainable access to energy services. FMO is targeting at least 75 per cent of the total capital of AEF for sub-Saharan Africa and/or the least developed countries and a maximum of 25 per cent for other emerging markets.

AEF provides financial leverage for renewable energy projects. It can provide equity financing up to an amount of USD 10 million or 75 per cent of the total transaction costs. Subordinated debt/senior loans of up to USD 20 million or 75 per cent of the total transaction costs can be made. AEF can offer longer grace periods and tenors, which are often necessary to launch such projects. It can also play a role in the development of new projects by providing grants.

By providing financing for projects in the areas of the generation, transmission and distribution of energy, AEF hopes to ultimately connect 2.1 million people to energy services in developing countries by 2015.

Annex- Examples of bilateral projects/programmes, as reported in the fifth national communications

<table>
<tr><td colspan="4">Donor country
Australia</td></tr>
<tr><td colspan="4">Project/programme title
Pacific Vulnerability and Adaptation Initiative</td></tr>
<tr><td colspan="4">Purpose
The aim of this initiative is to enable Pacific island countries to adapt to the future impact of climate change, climate variability and sea-level rise. Consistent with the objectives of the Pacific Island Framework for Action on Climate Change, Climate Variability and Sea Level Rise, the initiative aims to contribute to adaptation at the community level.</td></tr>
<tr><td>Recipient country
Tuvalu, Vanuatu, Fiji, Samoa, Solomon Islands and Tonga</td><td>Sector
Adaptation strategies cross-cutting</td><td>Total funding
$2.8 million</td><td>Years in operation
2005 to 2009</td></tr>
<tr><td colspan="4">Description
The initiative is focused on funding community adaptation projects in Fiji, Samoa, Solomon Islands, Tonga and Vanuatu and enhancing water catchment and storage facilities in Tuvalu.</td></tr>
<tr><td colspan="4">Indicate factors that led to project's success
The initiative has funded practical activities such as the replanting of coastal mangroves to protect shorelines, the construction of rainwater tanks on islands affected by seasonal drought, the trialling of versatile crop varieties and the recording of traditional knowledge about disaster preparation.
Education/building awareness
Information support to communities through education and awareness programs.
Institutional strengthening
Relevant government ministries, such as national planning, finance and environment and local organisations and community groups involved in vulnerability assessment and adaptation..</td></tr>
<tr><td colspan="4">Technology transferred
Human resources development/training: targeted training in a range of adaptation techniques, including impact assessment, risk management and the integration of these techniques within national development planning and the wider community.</td></tr>
<tr><td colspan="4">Impact on greenhouse gas emissions/sinks
Not quantified</td></tr>
</table>

Donor country
Australia

Project/programme title
Indonesian National Carbon Accounting system

Purpose
Australian support to the Indonesian National Carbon Accounting System aims to increase forest carbon monitoring and accounting capacity in Indonesia. This support is part of Australia's International Forest Carbon Initiative

Recipient country	**Sector**	**Total funding**	**Years in operation**
Indonesia	Forestry	$2 million	July 2007 – ongoing

Description

As part of the International Forest Carbon Initiative, the Australian Government is assisting Indonesia to design and implement the Indonesian National Carbon Accounting System (INCAS) and the related Forest Resource Information System (FRIS). Both systems will support Indonesia's ability to monitor and curb greenhouse gas emissions from deforestation and forest degradation.

The INCAS is being modelled on Australia's National Carbon Accounting System (NCAS), but is being developed to suit Indonesia's unique circumstances. The Government of Indonesia has completed designs and work plans for the INCAS and FRIS with technical and financial support from the Government of Australia.

To implement the INCAS and FRIS, Australia is supporting Indonesia to complete wall-to-wall land cover change analysis. Landsat data from various sources, as well as assistance to Indonesia to utilise its extensive Landsat archive, have been provided. Computer hardware and software required for processing the data have been supplied and training in scene selection and image processing has been successfully conducted. Future work will focus on completing data procurement, scene selection and image processing.

Australia is also assisting Indonesia to undertake research and analysis to relate land-use change to biomass and carbon stocks, which will enable estimates of greenhouse emissions over time.

To date, technical support has been provided to collect primary and secondary literature on forest biomass and allometric equations from multiple sources. Further data and literature review will be undertaken with a view to determining additional data collection requirements..

Indicate factors that led to project's success

The project is being led by the Government of Indonesia and addresses its specific priorities.

Technology transferred

Expert systems, databases, monitoring and reporting analysis

Impact on greenhouse gas emissions/sinks

Donor country
Australia

Project/programme title
Pacific Islands Climate Prediction Project

Purpose
The aim of the Pacific Islands Climate Prediction Project (PI-CPP) is to expand and enhance the prudent use of information derived from climate prediction software into the meteorological services of ten Pacific Island countries. The software is based on the statistical operational system employed by the Australian Bureau of Meteorology (BoM) to produce seasonal climate forecasts for Australia. BoM is enabling Pacific meteorological services to provide climate information, including predictions, to help decision-making processes within stakeholder agencies of participating countries

Recipient country	**Sector**	**Total funding**	**Years in operation**
Samoa, Papua New Guinea, Solomon Islands, Vanuatu, Kiribati, Tuvalu, Fiji, Tonga, Niue and Cook Islands	National meteorological services (NMSs)	$5.3 million for both phases ($3 million for Phase 2 only)	2005 to 2009

Description

The project has four parts:

• develop and install PC-based climate prediction software

• train NMS personnel in the use of the climate prediction software and the establishment of a climate prediction service

• facilitate linkages between NMS staff and clients making climate sensitive decisions

• train clients in the effective use of prediction information.

The uptake and effective use of the seasonal climate prediction information by key climate-sensitive sectors are fundamental to the success of the project.

Achieving this requires careful and comprehensive training so that both the benefits and limitations of the prediction information are clearly understood. Tailoring of prediction services to the specific needs of users in each country will also help ensure the optimal use of the predictions.

The benefits of climate predictions in practical situations relevant to Pacific countries are being demonstrated by a small number of pilot schemes. These will assist in developing industry-specific climate predictions and appropriate management responses. Virtually all training activities are carried out in-country.

Indicate factors that led to project's success

Since the PI-CPP was implemented in the beginning of 2005, the value of climate prediction information has been demonstrated through a number of pilot projects and demand for customised sector specific climate information has increased.

PI-CPP Phase 1 focused almost entirely on building capacity in NMSs to deliver generalised seasonal rainfall predictions. Phase 2 has seen greater engagement and development of partnerships between the NMSs and their clients/stakeholders, for the routine provision and uptake of customised predictions. The uptake of customised rainfall outlooks and their utilisation by specific climate-sensitive industries has been successfully demonstrated through a number of pilot projects initiated in Phase 2. There is considerable potential to extend projects to other islands and sectors.

PI-CPP has been successful in enhancing NMS understanding of the strengths and limitations of current seasonal prediction capabilities, enabling them to provide climate services with more confidence.

Technology transferred

Provision of and training in climate prediction software, human resources development.

Impact on greenhouse gas emissions/sinks

Not applicable

Donor country Austria			
Project/programme title Sustainable Natural Resource Management Programme, North Gondar Zone			
Purpose Improved sustainable management of natural resources and alternative livelihoods promotion			
Recipient country Ethiopia	**Sector** Agriculture	**Total funding** > US$ 7.68 million	**Years in operation** Since 2008
Description North Gondar Zone is suffering from degraded lands. Local biodiversity and ecosystem services are at risk, including from the effects of climate change The project works towards sustainably managing watersheds to increase agricultural productivity and the development of opportunities for increased income from livestock development and tourism. Important components include reforestation and rehabilitation of degraded lands, pasture management and the promotion of sustainble forest management and biogas for cooking.			
I**ndicate factors that led to project's success** Learning from experiences of previous projects in the agricultural sector; continuity; Intensive involvement of local inhabitants in planning and implementation			
Technology transferred know-how regarding pasture management, manure management, biogas equipment, handling of biogas energy			
Impact on greenhouse gas emissions/sinks			

Donor country Austria			
Project/programme title Geothermal System Kocani			
Purpose Use of geothermal energy in order to supply the population with renewable heating energy			
Recipient country Macedonia (Former Yugoslav Republic of)	**Sector** Energy supply (geothermal)	**Total funding** > US$ 2.30 million	**Years in operation** Since 1998
Description The geothermal field in Kocani is one of the major geothermal fields in Europe. In a depth of 350 to 500 meters, which is easy to reach from a technological point of view, comparatively high temperatures of about 75-78 degrees Celsius are reached. The geothermal water is used for energy supply and heating since 1987. Austria is involved to increase efficiency particularly with regard to long-distance community heating.			
I**ndicate factors that led to project's success**			
Technology transferred Know-how concerning combined heat and power and long-distance community heating			
Impact on greenhouse gas emissions/sinks			

Donor country Austria			
Project/programme title Bhutan: Hydropower plant Dagachhu			
Purpose Supply of energy from renewable sources for Bhutan in order to improve health and life standard of the population; reduction in the consumption of fire-wood in order to safeguard forests and avoid deforestation			
Recipient country Bhutan	**Sector** Energy supply (Hidropower)	**Total funding** US$ 6 million	**Years in operation** Since 2004
Description Hydropower plant (run-of-river type) with a capacity of 114 MW is planned and installed in Bhutan, located in the South-Western part of the country on the left bank of the Dagachhu river . Work is carried out by local contractors. Austrian support consists of technical assistance and capacity development for O&M.			
I**ndicate factors that led to project's success** Emphasis on capacity development and training; close collaboration in a true partnership with the Department of Energy			
Technology transferred Hydropower plant			
Impact on greenhouse gas emissions/sinks			

Donor country Austria			
Project/programme title Environmentally sound technologies and cleaner production for SMEs in Nicaragua			
Purpose Enhancing the competitiveness and productivity of industry in Nicaragua, promoting sustained social advance in a way compatible with environmental protection			
Recipient country Nicaragua	**Sector** Small and medium Scale enterprise development (solar energy)	**Total funding** US$ 0.94 million	**Years in operation** Since 2006
Description The project will foster the development and diffusion of Environmentally Sound Technologies (ESTs) with a special focus on solar energy in order to enhance the quality and productivity of the national industries providing them with the necessary tools that will facilitate access to national and regional markets with environmentally sound products and improving the ability of national enterprises to successfully negotiate their position in the global markets. The project will rely upon the experience of the Nicaraguan National Cleaner Production Center in Nicaragua with companies mainly from the food, metalmechanic and tourism sectors, in which the CPC has already gained significant experience through the implementation of CP (Cleaner Production) and EST measures. The activities of the project will focus on capacity building in the development, EST development and promotions, policy advice and implementation of demonstration projects.			
I**ndicate factors that led to project's success** Up-scaling of pilot activities of the partners; tailor made approaches involving comprehensive support packages.			
Technology transferred Solar thermal systems			
Impact on greenhouse gas emissions/sinks			

Donor country Austria			
Project/programme title Rural water supply and sanitation in Sofala Province			
Purpose Improved water supply and sanitation in a fragile and natural disaster prone livelihood context			
Recipient country Mozambique	**Sector** Water supply and sanitation	**Total funding** US$ 6.80 million	**Years in operation** Since 1999
Description ADC supports the provincial government of Sofala and the district and local administrations in the implementation of water supply and sanitational infrastructure and the design of respective development strategies and plans. The living conditions of the local population could be considerably improved through access to clean water. The project focuses on investments in the construction of wells. Where appropriate climate-friendly solar powered water pumps are installed. The region is repeatedly plagued by extremely heavy rainfall and tropical cyclones leading to devastating floods, as in the year 2000. These events are likely to increase in frequency and intensity as a result of climate change. At the same time, however, periods of drought are likely to be longer and more frequent. Planning for water supply and sanitation will have to take all these risks into account and ensure that sufficient access to clean water is improved even under these changed conditions			
I**ndicate factors that led to project's success** District administration is leading the planning and implementation; participatory planning together with communities; appropriate technology for local context			
Technology transferred Sustainable sanitation infrastructure; solar powered water pumps			
Impact on greenhouse gas emissions/sinks			

Donor country
Canada

Project/programme title
CFS Carbon Knowledge and Tools Available to Stakeholder

Purpose
To transfer knowledge and expertise in the use and application of the Carbon Budget Model of the Canadian Forest Sector (CBM-CFS3) to national and international forestry community

Recipient country	**Sector**	**Total funding**	**Years in operation**
International	Forest	$300,000	2001-2009

Description

In 2002, the carbon accounting team of the CFS (CFS-CAT) and the Canadian Model Forest Network (CMFN) responded to the forest industry's need for an operational carbon accounting tool. The tool would help forest managers meet criteria and indicator reporting requirements for sustainable forest management as well as reporting requirements for forest certification. It would help managers understand how their actions affect the net carbon balance of their forest estate. The CBM-CFS3 is a stand- and landscape-level modeling framework that simulates the dynamics of all forest carbon stocks required under the UNFCCC. It is compliant with the Good Practice Guidance for Land use, Land-use Change and Forestry (2003) report published by the IPCC. The freely available operational-scale CBM-CFS3 is the most widely-used forest carbon model in Canada. It is used by industry, governments, ENGO's, and academia in Canada.

In 2005, NRCan began a bilateral project with the Russian Federal Forest Agency to share knowledge and approaches to forest carbon accounting with scientists in Russia where the model has been used for regional- and national-scale analyses. More recently, the CFS-CAT began a collaborative project with CONAFOR (Comisión Nacional Forestal), the Government of Mexico's Ministry of Forests, to assess and test the suitability of the CBM-CFS3 in the wide range of forests and climates of that country. The aim of the project is to determine whether the model could contribute towards Mexico's GHG accounting system and towards Mexico's efforts to account for the effects of reducing emissions from deforestation and degradation (REDD). More recently, the CFS-CAT has also begun collaborating with individuals in Spain, China, Italy and potentially, Korea.

Indicate factors that led to project's success

- Partnership between the organization developing the science and technology (NRCan, CFS), and a nationwide organization with an established network of partners in the operational forestry community (the CMFN).
- Knowledge and expertise of the teams involved.
- Use of the CBM-CFS3 as the main model in Canada's National Forest Carbon Monitoring, Accounting and ReportingSystem (NFCMARS).
- Promotion of published scientific research using the CBM-CFS3.
- National and international promotion of the CBM-CFS3.
- Successfully executing several training workshops for national and international participants at low cost to participants.
- Free model, documentation, and technical support for model users.
- Web resources facilitating information exchange (project website, NRCan FTP sites, Canada National Forest Information System website)

Technology transferred

- **The CBM-CFS3 software and supporting documentation (user's guide and tutorials)**. over 500 individuals in 42 countries have obtained the software to date, and it is being used by individuals around the world.
- **Knowledge and expertise in the use of the CBM-CFS3**. 9 training workshops have been held in Canada to date,training 223 participants, 33 from foreign countries (including the Russian Federation and developing countries like Madagascar, Uganda, Thailand, Philippines, Mexico, and China). 3 training workshops were held between February 2006 and February 2009. 2 more training workshops were held after February 2009. A mini-CBM-CFS3 training workshop (1/2 day) was also presented at the International Model Forest Global Forum (IMFN) in Hinton, Alberta in June 2007.

- **Information and assistance**. Between February 2007 and February 2009, the project extension forester provided free technical support to CBM-CFS3 users, responded to nearly 600 requests for assistance and guidance from around the world.
- **Collaboration with Russia**:. in March 2005, a member of the Russian Academy of Sciences attended a CBM-CFS3 training workshop. In 2006, the Russian Academy of Science sent one of their staff to work with the CFS-CAT for 2 months to learn how to use and apply the CBM-CFS3 to forests in Russia. The same individual met with the team again at PFC in February 2009, to finalize a project involving the application of the CBM-CFS3 to Russian forests at the national scale, as Canada does under NFCMARS. Collaboration, information exchange and use of the CBM-CFS3 continues.
- **Collaboration with Mexico**:. A workshop was held between NRCan, CONAFOR and ECOSUR in Mexico in June 2008 to exchange information on forest carbon accounting and carbon accounting technology. In March 2009, 6 individuals from the above Mexican organizations and the Colegio de Postgraduados, participated in a CBM-CFS3 training workshop at the Pacific Forestry Centre, followed by a one-day meeting to exchange information on forests, carbon accounting and modeling issues, etc. Collaboration, information exchange and use of the CBM-CFS3 continues.
- **Collaboration with Spain**:. As a result of the CBM-CFS3 mini-workshop in Hinton in 2007, 2 individuals from the Spanish Dirección General de Medio Natural y Poltica Forestal and 1 individual from CESEFOR attended the CBMCFS3 training workshop in March 2009. All three individuals also participated in an additional day of forest and carbon accounting information exchange with the CFS-CAT. In July 2009, the individual from CESEFOR returned to Pacific Forestry Centre for almost 2 months to work with the CFS-CAT to test applying the CBM-CFS3 to Spanish forest data. Collaboration, information exchange and use of the CBM-CFS3 continues.
- **Collaboration with China**: . In January 2007, an individual from the Chinese Academy of Sciences attended a CBMCFS3 training workshop. This individual sent a colleague to the March 2009 CBM-CFS3 training workshop, and she also participated in an additional day of forest and carbon accounting information exchange with the CFS-CAT. Further collaboration, information exchange and use of the CBM-CFS3 continues.
- **Collaboration with Italy and Korea**: . In July 2009, one individual from the Joint Research Centre (Italy), and one individual from Kookmin University (Korea), attended a CBM-CFS3 training workshop. Both participated in an additional half-day of forest and carbon accounting information exchange with the CFS-CAT. Although preliminary, further collaboration and information exchange will likely occur, and the individual in Italy has begun testing the model with their data.

Impact on greenhouse gas emissions/sinks

Donor country
Canada

Project/programme title
Global Observation of Forest and Land Cover Dynamics (GOFC-GOLD)

Purpose
The GOFC-GOLD Implementation Project provides leadership and support to ensure a systematic long-term program of space-based and on the ground observations of land cover and forest change, including the role of fire.

Recipient country	**Sector**	**Total funding**	**Years in operation**
International	Forest	CAD 900K/year contributed by 6 international sponsors (incl. $300K/year from CFS and CSA)	1999-present

Description

GOFC-GOLD is a coordinated international effort to ensure a systematic long-term program of space-based and on-the-ground observations of land cover and forest change, including the role of fire. It is designed to help provide the data needed for global monitoring of terrestrial resources, study of global change, and improved natural resources management. As a panel of the Global Terrestrial Observing System (GTOS), GOFC-GOLD interacts with several United Nations bodies and numerous international and national scientific and technical organizations. It develops contributory products at regional and global scales in two thematic areas: Land Cover Characteristics and Change; and Fire Monitoring and Mapping. A new biomass mapping theme is being developed.

By promoting and supporting participation on implementation teams and in regional networks, GOFC-GOLD provides the international coordination to articulate user needs, specify requirements for products, assess algorithms and data assimilation procedures, and develop harmonization protocols and standards. It also provides information to support international assessments and protocols. Capacity is strengthened by working with regional networks, which provide guidance on regional needs and promote the transfer of technology and experience in South East Asia, Central, Western and Southern Africa, Northern Eurasia, Latin America, and East Asia. GOFC-GOLD also acts as an independent forum to advocate for the continuity of observations and their validation and availability.

GOFC-GOLD initially focused on defining the requirements for observational products and their specifications. More recently, GOFC-GOLD has also directed its efforts towards addressing the needs for terrestrial observations for the following initiatives:

- International environmental conventions such as United Nations Framework Convention on Climate Change (UNFCCC), including methods and procedures for monitoring, measuring and reporting on reducing greenhouse gas emissions from deforestation and degradation in developing countries.
- Implementation Plan for the Global Climate Observing System (GCOS IP).
- Land theme of the Integrated Global Observing Strategy Partnership (IGOL).
- Societal benefit areas of the 10-year work plan towards a Global Earth Observation System of Systems (GEOSS).
- Proposed international land earth observation satellite network composed of multiple satellites with 30-m (or better) capabilities.

The GOFC-GOLD Project Office is located in Canada and is hosted by Natural Resources Canada's Canadian Forest Service and the Canadian Space Agency

Indicate factors that led to project's success

During the 2006-2009 project period there were 92 cumulative GOFC-GOLD sponsored and co-sponsored events including technical seminars, workshops, missions, meetings and training courses held internationally and in Canada. In addition, with CFS Project Office support, the Implementation Teams and Regional Networks produced and released 40 documents during the reporting period. The events and document production mentioned above provided opportunities for GOFC-GOLD outreach to approximately 4765 people during the reporting period. The

Implementation Project engaged 55 Canadian specialists and officials from nine organizations with an interest in the Earth Observation functions of GOFC-GOLD.

Technology transferred

Collaboration with China: As part of a 2007 APEC Summit commitment, China is leading the development of the Asia-Pacific Network on Forest Monitoring. In support of the GOFC-GOLD East Asia Regional Network, the Project Office is supporting the Chinese State Forest Administration in developing the Asia-Pacific Forest Monitoring Network as a contribution to the China-led Asia-Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet). The Project Office has co-organized a series of workshops in China, providing technical presentations and providing travel support for participants from Southeast Asia to attend. Results of the workshops are included in the APFNet progress reports delivered by China at APEC Ministers meetings.

Forest Carbon Tracking task of the international Group on Earth Observations (GEO): The Project Office is collaborating with the Canadian Space Agency (CSA) to support this task to improve global monitoring of reducing emissions from deforestation and forestation (REDD). The task is demonstrating that Earth observations can be acquired in a planned and systematic manner and be used for forest carbon tracking in the post 2012 framework of the UNFCCC. The forest carbon tracking task will be highlighted at the 2009 GEO Plenary at Washington, DC. The White House Office of Science and Technology Policy (OSTP) is following the task closely in relation to the forest offset component of new energy and climate bill now being debated in the senate. The Project Office will attend as part of Canada's delegation led by EC.

Task collaboration with Mexico - Specifically, the Project Office acts as a task co-lead and is collaborating with the Mexico REDD Committee to support Mexico's involvement in the task as a national demonstrator. The effort compliments the CFS Carbon Accounting team's collaboration with Mexico to transfer the Carbon Budget Model of the Canadian Forest Sector (CBM-CFS3). Activities include meetings and workshops with the Mexico REDD Committee. The Project Office has presented information on the GEO forest task and held technical discussions on Mexico national demonstrator activities. Task collaboration with international space agencies - With Project Office support, the CSA is providing its Radarsat 1 and 2 data to seven national demonstrator countries, including Mexico. As well, it is leading the data acquisition coordination for the radar data to be provided by several space agencies (CSA, ESA, JAXA, etc.)

. **Task collaboration with international organizations** - Several task meetings and workshops were held in 2008 and 2009 in partnership with several international organizations including the Prince's Rainforest Project, Google Foundation, UN-REDD Programme and Clinton Foundation. The events reviewed strategies for the implementation of forest carbon monitoring, reporting and verification, and identified collaborative opportunities. The Project Office has provided technical presentations and travel support for participant to attend from developing countries.

Collaboration with Argentina: The Aquarius/SAC-D satellite mission involves Argentina, the United States, Italy, Canada, France and Brazil, to launch a satellite observatory. A series of workshops were help during the reporting period to bring together the International Aquarius/SAC-D Science Team. Canada's Wildland Fire Information System (which produces annual estimates of Carbon emissions from forest fires) will benefit from the mission by receiving thermal infra-red data from one instrument, the New Infra-Red Sensor Technology (NIRST).

Sourcebook of measurement and monitoring methodologies for REDD: Provides a consensus perspective from the global community of earth observation and carbon experts on methodological issues relating to quantifying the green house gas (GHG) impacts of implementing activities to reduce emissions from deforestation and degradation in developing countries (REDD) (http://www.gofc-gold.uni-jena.de/redd/index.php). Based on the current status of negotiations and UNFCCC approved methodologies, the Sourcebook aims to provide additional explanation, clarification, and methodologies to support REDD early actions and readiness mechanisms for building national REDD monitoring systems. It emphasizes the role of satellite remote sensing as an important tool for monitoring changes in forest cover, and provides clarification on applying the IPCC Guidelines for reporting changes in forest carbon stocks at the national level. The Sourcebook includes a description of Canada's CBM-CFS3. The Project Office supports the

GOFC-GOLD Sourcebook working Group. It is printing a brochure and CD of the new version of the Sourcebook for distribution at side events and forest learning days at the UNFCCC CoP-15, Copenhagen.

Central Africa Regional GOFC-GOLD network: OSFAC (Observatoire Satellital des For'ts d'Afrique Centrale, http://osfac.umd.edu/index.htm) works to improve the quality and availability of satellite observations of forest and land cover in the Congo Basin and to produce useful and timely information products for a wide variety of users. An OSFAC Regional workshop and Carbon REDD meeting is planned for late 2009 at Kinshasa. The event will involve the OSFAC member countries including Cameroon where the CFS IMFN Secretariat is supporting an African Model Forest Initiative. The Project Office is providing technical presentations and travel support for participants from OSFAC network countries and GOFC-GOLD Implementation Team specialists to attend.

Africa Pilot of the GOFC-GOLD Regional Network Data Initiative: The Initiative has a developing country emphasis and takes advantage of the data recently made available through the opening up of the USGS Landsat archive. Its goals are to: 1) disseminate Landsat data to the international science community in regions where currently available distribution methods are not effective; 2) compile regional and country-level data sets relevant to land cover and fire observations and make them freely available to the community of users in the regions; and 3) engage regional science expertise in the global data set development, evaluation, and validation. The first initiative took place in 2008 and involved data specialists from the regional networks: OSFAC (Central Africa Regional Network); SAFNET (Southern Africa Regional Fire Network); WARN (West Africa Regional Network); East Africa Regional network (emerging, initiated by Sudan); and Miombo (Miombo Regional Network). Based on the results of the Africa pilot, further initiatives will be undertaken for the other GOFC-GOLD regional networks, including NERIN (Northern Eurasia), SEARRIN (Southeast Asia), RedLatif (Latin America) and emerging networks in Amazon and East Asia.

Impact on greenhouse gas emissions/sinks

Donor country
Canada

Project/programme title
Developing Critical Mass for micro Combined Heat and Power Systems – APP Project

Purpose
This project will consolidate current field trials experiences in Japan, U.S. and Canada and extract lessons learned on energy and GHG impacts of micro CHP, and diffuse to other APP countries.

Recipient country	**Sector**	**Total funding**	**Years in operation**
Canada, Japan, and United States	Energy	$500,000 over 3 years (GoC Contribution) Private Sector Leverage: $3M	2009-2012

Description

The objectives of the project are to:

- consolidate the current field trials experiences in Japan, the US and Canada and extract lessons learned and energy and GHG impacts of micro CHP.
- transfer these experiences to other APP countries

These experiences will be documented through a combination of workshops on the subject to share current experiences and future activities. A "lessons learned" of Canadian, US and Japanese experiences report for consumption by APP member countries will also be produced.

Based on these experiences, a limited field trials demonstration will subsequently be undertaken in those APP countries where micro CHP is still immature. Priority countries will include India and China. Primary technologies will be drawn from Japan, combined with value-added technological input from Canada and the US. The objective will be to help other APP countries reach the same level of sophistication with regard to micro CHP as that of Canada, US and Japan

Indicate factors that led to project's success

This project has just been initiated.

Technology transferred

Cogeneration allows the end user to participate directly in the decision to invest in electricity production, which can serve both the customer and the utility in terms of demand side management, emergency power, reliability, and energy conservation.

For Canada, and its goals for improvements in the supply and delivery of energy, a distributed power strategy that involves distributed micro-cogeneration systems offer Canadians several important benefits, including:

Reduced primary energy consumption

Reduced GHG and CAC emissions, especially when coal is displaced

Reduced electricity distribution system losses Contribution to improved power quality/reliability

Contribution to avoidance of demand charges and peak pricing Support for conservation and demand side management programs

These benefits are applicable to all APP member countries.

Small scale CHP (residential or light commercial) are receiving significant attention in Canada, Japan and the US. Japan is one of the leaders in developing the small scale CHP market, with products now reaching a degree of maturity in Japan making them ready for larger scale deployment.

The US is already scaling up for limited field trials of a natural gas based micro CHP unit (1kW) based on a Honda CHP platform from Japan. Honda has partnered with Climate Energy of the US who has provided value-added engineering to adapt the product for North American market.

Enbridge have also committed to field trials of a similar unit in Ontario and Saskatchewan Energy is now exploring a field trial project of CHP for Saskatchewan. Entrepreneurial Canadian companies are beginning to explore the development of the business model for providing value-added components for Canadian adaptation (controls, cold temperature inverters, grid connections, thermal storage, ability to automatically start when the grid fails).

Japan is also now launching market ready deployment initiative for residential scale fuel cells.

Ballard, a major supplier of fuel cell stacks to Ebara, a Japanese fuel cell company, is now looking at the market potential for residential fuel cells in Canada and other markets. Through existing bilaterals Canada, the US and Japan have identified the area of residential scale combined heat and power (CHP) as a theme of mutual interest to both countries. Technologies under this theme include both conventional natural gas engines and fuel cells.
Impact on greenhouse gas emissions/sinks

Donor country
Canada

Project/programme title
International Net-Zero Energy Homes (NZEH) Coalition Project - APP Project

Purpose
Establish an Industry led International NZEH Coalition to support member's national efforts and accelerate the adoption of NZEH.

Recipient country	**Sector**	**Total funding**	**Years in operation**
Australia, Canada, China, Japan, Korea and the United States	Housing, Energy	$500,000 over 3 years (GoC), $24 M private Sector Leverage	2009-2012

Description
This project seeks to establish an International Net Zero Energy Home Coalition (NZEH) or an International NZEH Dialogue. As part of this project, Partners will initiate a collaborative dialogue to establish a formal international partnership that will map the path to achieving NZEH.

Indicate factors that led to project's success
This project has just been initiated.

Technology transferred
Energy efficiency, indoor air quality, and ventilation and building envelope durability. Emerging themes of mutual interest include net-zero housing, residential scale combined heat and power, and district energy systems.

Through a series of workshops and collaborative sessions, Partners will also seek to set a precedent for housing performance optimization by bringing together the fragmented supply chain involving this sector and discuss issues and industry barriers. The workshops will prominently feature industry, case studies, R&D and demonstrations. This holistic approach will differentiate Partners as global leaders in the design and development of energy-efficient housing. Collaboration will accelerate the identification of optimal solutions and improve conditions for innovation.

For example, the Canada-Japan Housing Research and Development (R&D) Workshop is a longstanding housing technology bilateral agreement between the Building Research Institute (BRI) of Japan and CanmetENERGY (NRCan). Participants are from industry, universities and other government research departments including the National Research Council's Institute for Research in Construction and the Canada Mortgage and Housing Corporation, and organizations such as the Institute for Building Energy Conservation in Japan.

Impact on greenhouse gas emissions/sinks

Donor country Canada			
Project/programme title Investigation for Demonstration of Plasma Ignition System - APP Project			
Purpose This project aims to implement plasma systems for the Canadian power sector in order to enhance energy efficiency and reduce emissions.			
Recipient country Australia, Canada, China, India, Japan, Korea and the United States	**Sector** Energy generation	**Total funding** $350,000 over 3 years (GoC contribution), Private Sector Leverage: $755,000	**Years in operation** 2009-2012
Description In this activity, China will host a series of site visits to demonstrate plasma ignition technology, which can directly ignite pulverized coal, thereby replacing fuel oil and ensuring ignition and stable combustion for pulverized-coal boilers in an energy-efficient manner.			
Indicate factors that led to project's success This project has just been initiated.			
Technology transferred China Guodian will host a series of site visits regarding the plasma ignition technology to highlight reliable energy conservation and environment protection technology and its application in China. The goal of the project is to help power generators learn the benefit of the plasma technology. *Plasma Ignition and Combustion Stabilization System*: Directly igniting pulverized coal, the system can replace fuel oil and ensure ignition and stable combustion for pulverized-coal boilers. This system has found successful application in 270 of pulverized-coal boilers, with coals covering lean coal, bituminous coal and lignite; unit capacity of 50MW-1000MW, both tangential-fired and wall-fired types; milling systems including indirect-fired and direct-fired types; mills including spheroidal roller mill, ring-roller mill, ball race mill with double inletsand outlets, roller pulverizer, and fan mill, etc.			
Impact on greenhouse gas emissions/sinks			

Donor country Canada			
Project/programme title Magnesium Front End Research and Development Project			
Purpose The objective of this five-year, three-nation undertaking is to develop a magnesium-intensive front end for an automobile. Lightweight materials technologies play a crucial role in efforts worldwide to increase energy efficiency and reduce emissions from automobiles.			
Recipient country Canada, People's Republic of China, United States of America	**Sector** Minerals and Metals Sector	**Total funding** US$22 million	**Years in operation** 2007-2012
Description The Magnesium Front End Research and Development project, or MFERD, is a multi-task research effort involving Natural Resources Canada (NRCan), China's Ministry of Science and Technology, and the United States Department of Energy. NRCan's CANMET Materials Technology Laboratory (CANMET-MTL) is the Canadian coordinating organization for the MFERD project, which involves three Canadian companies, the National Research Council of Canada, and five universities.			
I**ndicate factors that led to project's success** Collaboration among government, academic, and private-sector partners is the principal reason for the ongoing success of the MFERD project. During Phase I of the project, a magnesium-intensive front end was designed that is 38 kilograms lighter (45 percent) than a typical front-end steel structure. A demonstration front end will be built and validated during Phase II, which begins in 2010			
Technology transferred High-vacuum die casting, sheet forming, and technologies for joining dissimilar metals. The mechanism of transfer is through workshops held on an annual basis for researchers and engineers from the three countries.			
Impact on greenhouse gas emissions/sinks			

Donor country Canada			
Project/programme title Development of next generation of nuclear power reactors			
Purpose R&D collaboration to accelerate development of the next generation of nuclear power reactors			
Recipient country Partners include Canada, U.S., France, EU, Switzerland, China, Korea, Japan, South Africa	**Sector** Energy (nuclear power)	**Total funding** $4,800,000	**Years in operation**
Description The Generation IV International Forum is a multi-lateral organization for R&D to develop the next generation of sustainable nuclear energy systems for commercialization in the 2025-2030 timeframe. All leading nuclear nations participate including: U.S., France, Japan and the EU. 20 Canadian universities are also involved and have leveraged additional funding.			
I**ndicate factors that led to project's success** This project is not yet completed. Through cooperation, the participating countries are looking to share costs and accelerate the timelines of the R&D so that secure and sustainable nuclear technologies will be available sooner.			
Technology transferred Next generation nuclear energy systems, specifically, the Supercritical Water-Cooled Reactor (SCWR) and the Very-high Temperature Reactor (VHTR). New reactors are hoped for post 2030.			
Impact on greenhouse gas emissions/sinks			

Donor country
Canada

Project/programme title
VLH turbine collaboration

Purpose
To demonstrate the economic viability, energy efficiency and fish friendliness of the Very Low Head turbine technology for very low-head small hydro applications (heads less than 3 meters) in Canada and the United States of America.

Recipient country	**Sector**	**Total funding**	**Years in operation**
U.S., Canada	Energy (hydro power)	$610,000 (GoC, includes in-kind) $2,190,000 (CDN project partner leveraging) $1,180,000 (US contribution)	2009-11

Description

Under the Security and Prosperity Partnership, Canada and the United States of America are collaborating on research aimed to advancing very low head hydropower technology and its applications. The Very Low Head Turbine, owned by MJ2 Technologies S.A.R.L. of France, is an innovative and cost-effective technology that allows the development low head hydro sites with very limited impact on environment. This clean, renewable technology was collaboratively developed by Canada and France.

Although Canada and USA have significant very low head hydro potential (over 1100 MW), only a small percentage of it has been developed, mainly because the sites are not economical to develop with existing low head technology. In addition, the lack of development of the technology is associated with two other key challenges: the environmental mitigation and regulatory requirements associated with all hydropower projects. This project will focus on: 1) the demonstration of the VLH technology on a Canadian site with about 500 kW of installed capacity, and, 2) the engineering studies for the VLH turbine system and selected sites in Canada and USA. In Canada, the project team has identified several sites that have good potential for the demonstration purpose and will determine a best one for the demonstration purpose; in the USA, a site identified on the Mississippi River will be used for the engineering studies purpose. The information and experience accumulated throughout the implementation of the VLH turbine technology in Canada, as well as the results of engineering studies will be shared with engineering firms, sites developers and participating government agencies in Canada, USA and Mexico through regular meetings and a final trilateral workshop for the project.

I**ndicate factors that led to project's success**

This project is ongoing

Technology transferred

Very Low Head Hydraulic Turbine

Impact on greenhouse gas emissions/sinks

Donor country
Canada

Project/programme title
TEAM (Technology Early Action Measures)

Purpose
Transfer greenhouse gas reduction technologies to other countries. TEAM brought 140 technology demonstration projects to reality in Canada and around the world.

Recipient country	Sector	Total funding	Years in operation
Various	Various	$128 M	1998-2009

Description

TEAM supported the transfer of innovative Canadian GHG reduction technologies to other countries, particularly developing nations. TEAM has demonstrated that the best opportunities for benefiting from new technologies in international development require risk sharing among business and government partners in developed and developing countries.

A number of projects occurred in the 2006-2008 timeframe and are listed below, with total project costs in brackets: **Hydropower in Nepal ($8.30 M)** Development of a small-hydro plant at a site on the Khudi River 150 kilometres from Kathmandu, Nepal, that will generate over 25,000 MWh a year. The plant replaced thermal generation and extended electricity distribution to a population that relied on wood fuel and residues for its energy.

Natural gas vehicle flagship project in India ($8.33 M)

- Demonstration of Canadian natural gas vehicle technologies in India.
- Conversion of 250 commercial fleet light duty vehicles to natural gas; low emission natural gas engines and low weight natural gas storage on six transit and intercity buses
- This project also documented the feasibility of GHG credit repatriation to help meet Canada's Kyoto commitments.

Energy-efficient chiller systems for Cuba ($2.3 M) This project involves installing 8 to 10 high-efficiency Smardt chillers as an alternative to older, inefficient chillers in Cuban hospitals, office buildings and commercial buildings. These chillers consume significantly less energy than conventional centrifugal chillers and do not use chlorofluorocarbons.

Demonstration of EcoSmart Concrete in Dubai ($2.4 M) A high-profile international demonstration project for EcoSmart concrete technology in the booming United Arab Emirates construction market. In EcoSmart concrete, ordinary Portland cement is partially replaced by supplementary cementing materials, which creates a more durable concrete and reduces solid waste and GHG emissions.

Small Scale Biogas Utilization in Argentina ($4.4 M)

- Demonstrate use of remote monitoring and control system on two biogas utilization and conversion projects in Argentina: a wastewater treatment facility and a landfill site. The biogas will be used to generate electricity and produce heat
- Innovation consists of using a telemetry system to reduce operations & maintenance costs for small & medium scale biogas systems, via use of telemetry-based control system.

Transportable Plasma Waste to Energy System ($7.6 M) Demonstrate innovative 10 ton-per-day transportable plasma resource recovery system at a US military facility. System uses a wide range of waste streams - including municipal solid waste, hazardous waste and hospital waste - to generate electricity, heat, aggregate for construction, and metals for recycling.

Indicate factors that led to project's success

Innovative reporting tools An important element of the TEAM program is the commitment to report the technical performance and GHG mitigation potential of all TEAM-funded projects. TEAM's pioneering work in the development of tools and methodologies for measuring and reporting GHG reductions has resulted in the System of Measurement and Reporting for Technologies (SMART). SMART provides a basis to evaluate the project proponent's processes and documentation so that the technological performance claims and the GHG mitigation potential can be substantiated. Since 2004, all TEAM projects followed the SMART process. TEAM staff have continued to play a leading role in providing internationally accepted standards in GHG measurement and reporting. For example, TEAM's SMART protocol led to the creation of ISO 14064 Part 2. These ISO standards will help GHG programs ensure global credibility and consistency.

Leveraging funding TEAM has funded 140 climate change and clean energy projects since its inception in 1998. However, the federal government investment represents only a small portion of the total funding required for these projects. For every dollar invested by TEAM and the Canadian federal government, five dollars are invested by TEAM's partners, including small and large companies, both in Canada and abroad, and other federal, provincial, municipal and foreign government agencies. In more than 60 Canadian cities and 15 countries, TEAM has partnered with approximately 350 private companies and organizations, and with more than 100 government programs and research institutions.
Technology transferred Hydropower in Nepal: small hydro generation Natural gas vehicle flagship project in India: compressed natural gas technologies for vehicles Energy- efficient chiller systems for Cuba: energy-efficient, CFC-free chillers Demonstration of EcoSmart Concrete in Dubai: EcoSmart concrete Small Scale Biogas Utilization in Argentina: remote monitoring; telemetry-based control system Transportable Plasma Waste to Energy System: plasma waste to energy technology
Impact on greenhouse gas emissions/sinks

Donor country Canada			
Project/programme title IEA GHG Weyburn-Midale CO2 Monitoring and Storage Project			
Purpose To develop and demonstrate carbon capture and storage technology.			
Recipient country Partners include: Japan and the US	**Sector** Construction	**Total funding** $12.75	**Years in operation** 2000-2011
Description Launched in 2000 and scheduled to be completed in 2011, this 11-year $80 million international project studies CO2 injection and underground storage in conjunction with two commercial CO2- enhanced oil recovery operations at Weyburn-Midale. Currently in its Final Phase (2005-2011), the project is building on the successes of the First Phase (2000 - 2004) to deliver the framework necessary to encourage implementation of CO2 geological storage on a worldwide basis. The Final Phase will deliver comprehensive science and engineering data, which will be used for the development of publicly accepted, regulatory-approved, site-insensitive and cost-effective industrial protocols for site selection, design, operation, risk assessment, monitoring, and qualitative and reliable verification of CO2 storage volumes. These protocols will be the main elements of the Best Practices Manual, which will be the key deliverable of the project. In parallel and in close integration with the above, policy activities will be undertaken comprising the development of a public communications plan, advice on regulatory frameworks, and advice on the economic environment and market/fiscal incentives.			
I**ndicate factors that led to project's success** This project is ongoing			
Technology transferred Long-term subsurface storage of carbon dioxide. Development of state-of-the-art CO2 measurement, monitoring and verification technologies.			
Impact on greenhouse gas emissions/sinks			

Donor country
Canada

Project/programme title
Transferring Small Hydro Technologies to China Project

Purpose
To demonstrate the effectiveness of Canadian small hydropower technologies in providing and enhancing small hydropower as a viable alternative to other energy sources in China.

Recipient country	**Sector**	**Total funding**	**Years in operation**
China	Energy (small hydro)	$2 Million	2002-06

Description

The "Transferring Small Hydro Technologies to China" project was a collaborative public-private project, including 5 Canadian industry partners and one international organization.

Natural Resources Canada worked bilaterally with China's Ministry of Water Resources. The project demonstrated the effectiveness of Canadian technologies in providing and enhancing small hydro power as a viable alternative to other energy sources in China, such as coal. This project focused on introducing Canadian technologies into rural Chinese small hydro plants to demonstrate effectiveness, efficiency gains and economic returns. In turn, this enhanced viability results in an increased and more stable supply of clean electricity to communities to drive sustainable economic development.

I**ndicate factors that led to project's success**

Funding provided under Canada's Climate Change Development Fund (CIDA).

- Cooperative science and technology exchange relations between Canada and China, as illustrated through a Memorandum of Understanding signed between Natural Resources Canada and China's Ministry of Water Resources in 2005.

Technology transferred

Technologies transferred include small hydro automation, river basin optimization systems, enhanced turbine design, and mini and micro hydro systems. Capacity building complimented the technical work.

Impact on greenhouse gas emissions/sinks

Donor country Canada			
Project/programme title Marine Energy: Optimization of Next Generation Commercial Kinetic Hydropower System			
Purpose To develop an optimal electricity generation and interconnection subsystem for next-generation commercial kinetic hydropower systems			
Recipient country USA, Canada	**Sector** Energy (Marine)	**Total funding** $460,000 (GoC contribution), $274,800 (CDN partners leveraging)	**Years in operation** 2009-2011
Description Under the Security and Prosperity Partnership, Canada and the United States of America are collaborating on research aimed to advancing marine renewable energy technology and their applications. Natural Resources Canada is supporting a partnership between Verdant Power Canada (VPC) and the University of New Brunswick that undertakes a critical examination and development of the electricity generation and interconnection subsystem to VPC's next-generation kinetic hydropower system (KHPS). This project aligns with Verdant Power's project to optimize the design of their KHPS in collaboration with the National Renewable Energy Laboratory, Sandia National Laboratory, and the U.S. Department of Energy. The KHPS is designed to generate clean, renewable energy from the currents of rivers and tides without the use of dams.			
I**ndicate factors that led to project's success** This project is ongoing.			
Technology transferred Kinetic Hydropower Systems and components Electricity generation and interconnection subsystems			
Impact on greenhouse gas emissions/sinks			

Donor country
Canada

Project/programme title
Reduction of Emissions from Coal-Based Power Generation

Purpose
An international partnership between Canada and China was established to reduce emissions from coal-fired utility boilers. A well-tested CFD modeling tool was used to identify the improvement strategies for 11 selected units ranging from 200 to 600 MWe, to realize the reduction of coal consumption, NOx and CO2 emissions and the increase of availability. The study results could potentially be extended to 23% of the units in China to achieve significant GHG reduction prior to implementing advanced clean coal technologies like IGCC and oxy-coal combustion with CO2 capture.

Recipient country	**Sector**	**Total funding**	**Years in operation**
China	Energy - Power Generation	$2,000,000 (CIDA)	2003 to 2006

Description

The project was a multi-year, bilateral project between CanmetENERGY and the Chinese power generation sector to investigate the extent of improvement that can be made to existing (and not ready to be retired) coal fired boiler units to upgrade existing coal-based power generation units both in Canada and abroad, The novel development of this project was the use of CFD (computational fluid dynamics) via the creation of a user-friendly modeling tool for coal-fired utility boiler, named “CoalFire". Through a graphical user interface, a user can input the physical dimensions of the unit, specify the burner geometry, select the coal type and submit the air and fuel flow rates. Then the software with built-in “artificial intelligence" will automatically generate the computational grid, initiate and complete the computation, and generate a simulation report in a HTML format ready to be issued to power plant operators for diagnostic or performance improvement purposes. “CoalFire" was jointly developed by CanmetENERGY and ANSYS Canada, based on commercial CFD code ANSYS CFX-TASCflow and the experience of CanmetENERGY in coal-fired boiler modeling.

Indicate factors that led to project’s success

Long established relationships between key CanmetENERGY staff and the Thermal Power Research Institute (Xi’an, China) the North China Electric Power University (Boading, China) and Northeastern Electric Power Research Institute (Shenyang, China)

Technology transferred

A user friendly CFD tool for analysis of coal-fired utility boilers to reduce diagnostic time and costs, optimize power generation while reducing GHG, NOx and other emissions. This tool is a key component in aa dedicated program to develop clean coal technologies for near zero emissions through an international partnership focusing on improving the performance and reducing the emissions from a representative sample of the current Chinese coal-fired boiler fleet, with the intent to have more replications completed by the Chinese partners.

Impact on greenhouse gas emissions/sinks

Donor country
Canada

Project/programme title
Distributed Energy Resources Program

Purpose
Improving the economics and conversion energy efficiency in distributed energy systems including related storage, hybrid, and systems technologies

Recipient country	Sector	Total funding	Years in operation
Canada	Residential and Commercial	$5.2 M	2008 – 2010

Description

The program of activities can be divided into two major themes:

- Combined Heat and Power (CHP)
- Energy Conversion and Storage

The scale of interest for both themes is:

- Residential applications (approximately 1 to 6 kWe)
- Commercial/Institutional applications (approximately 250 to 500 kWe)

The major themes and scale of interest were chosen based on the growth potential for these technologies in the 5 years from program inception and the long term potential impact if fully deployed in Canada

Indicate factors that led to project's success

Funding from PERD, ecoETI, MDIP

1st International Conference and Workshop on Micro-Cogeneration Technologies and Applications, Ottawa May 2008 (98 delegates; 14 countries); part of our participation in IEA Annex 42.

Collaboration with partners in various levels of government, OGD's, private sector industry and utilities, academia, and associations, internationally and in Canada.

Case studies, pilot and prototype tests and demonstrations through contribution agreements, contracts.

Technology transferred

- IEA Annex 54: Analysis of Micro-generation and Related Energy Technologies in Buildings
- IEA Annex 42: The Simulation of Building Integrated Fuel Cells and Other Cogeneration Systems
- IEA Annex 34: Thermally Driven Heat Pumps for Heating and Cooling
- 1st International Conference and Workshop on Micro-Cogeneration Technologies and Applications
- 14 peer reviewed papers (11 CanmetENERGY, 3 OGD's)
- 16 non-peer reviewed papers CanmetENERGY
- 17 International presentations (12 CanmetENERGY, 5 OGD's)
- 8 client reports; 11 internal technical reports
- Small enterprise in Bells Corners adapted and integrated imported technology for testing and subsequent demonstration project in Saskatchewan

Impact on greenhouse gas emissions/sinks

Donor country Denmark			
Project/programme title Energy Sector Support Programme			
Purpose Increase access to sustainable energy in rural areas			
Recipient country Nepal	**Sector** Energy	**Total funding** 191 Mill. DKK	**Years in operation** 1999-2007, 7 years
Description The Programme has assisted in developing sustainable energy solutions with micro-hydro installations (off-grid), solar PV home systems and energy efficient household cooking stoves. The support has been both in terms of subsidies and technical support. The programme in its first phase also succeeded to develop a renewable energy policy for Nepal. In total 1.5 million people benefitted from the assistance – despite the difficult political situation. The households equipped with improved cooking stoves have experienced significant improvement in health conditions in households equipped with improved cooking stoves as well as 30% reduction in requirement for firewood due to more efficient stoves. A new phase of support has been initiated in 2007 with support from Denmark, Norway and the government of Nepal with a total budget of approx. 300 Mill. DKK.			
I**ndicate factors that led to project's success** Decentralised approach, working through locally based NGOs and other partners including private business. Combining subsidy packages, quality assurance system and capacity building.			
Technology transferred Micro hydro power plants, PV solar panels, quality assurance system. End-user ownership and maintenance responsibility.			
Impact on greenhouse gas emissions/sinks Reduction in use of firewood. Reduction in use of kerosene lamps.			

Donor country Denmark			
Project/programme title Zafarana Wind Farm Project, Component III			
Purpose Increase production of wind power to benefit economic growth in a sustainable manner			
Recipient country Egypt	**Sector** Energy	**Total funding** 319.4 Mill. DKK	**Years in operation** 2005-2010, 5 years
Description The project is the grant contribution to a mixed credit loan for the extension of the Zafarana Wind Farm at the Gulf of Suez. The project owner is the New and Renewable Energy Agency (NREA) in Egypt The extension of 120 MW is the third part of Danish support to Zafarana Wind Farm. The first component of 30 MW was financed by grant funds, the second phase of additional 30 MW was partly grant partly mixed credit. The 120 MW will together with support from other bilateral donors bring the total capacity of the farm up to 545 MW. The development of Zafarana Wind Farm is a result of efforts initiated in 1997 with development of a wind map for Egypt and with detailed wind mapping of the Zafarana site, as well as institutional support to NREA. The electricity produced is fed into the national electricity grid and off set use of natural gas for electricity production. The total cost of the project is approximately 956 Mill. DKK.			
I**ndicate factors that led to project's success** Significant wind resources. Step by step experiences gained with the location and the organisation.			
Technology transferred Wind turbines, operation and maintenance skills. Tariff structures.			
Impact on greenhouse gas emissions/sinks Reduction in C02 emissions due to avoided use of natural gas for electricity production.			

Donor country Denmark			
Project/programme title Danish-Chinese Wind Energy Development Programme			
Purpose To promote winder energy in the overall energy supply.			
Recipient country China	**Sector** Energy	**Total funding** 45 Mill. DKK	**Years in operation** 2006–2008
Description 1) Wind energy planning; 2) Support to Institutions; 3) Training of Stakeholders. 1) The Wind Energy Planning element had the following immediate objectives: (a) National regulations and standards are established, which will guide the implementation of the 2020 targets for wind energy, (b) provincial authorities to provide planning framework for sustainable development of large scale wind energy at provincial level; 2) The Support to Institutes of Excellence had the following immediate objectives: (a) Centres of excellence have the capacity to be a driving force in the wind energy development, (b) institutes of excellence understand the concept of MESO-scale wind models and can use output as input for the WAsP (Wind Atlas Analysis and Application Programme) model and conduct training in wind energy measurement techniques, wind data analysis, preparation of wind atlases and micro-siting; 3) Finally the Training of Stakeholders had the immediate objective: Wind farms in North-eastern provinces are better developed managed and operated. The WED programme was originally anchored in the National Development and Reform Committee (NDRC) with China Electric Power Research Institute (CEPRI) as implementing agency assisted by the three Provincial Development and Reform Committees and China Meteorological Administration as key partners. A new phase was committed in 2008 to be implemented from 2009.			
I**ndicate factors that led to project's success** High level interest in wind energy and timely intervention coherent with the approval of the Chinese Renewable Energy Act. Assistance modality adjusted to Chinese conditions and programme refined after some implementation experience.			
Technology transferred Wind mapping, integration of wind energy into transmission system, feasibility format for wind farm development, wind farm management skills.			
Impact on greenhouse gas emissions/sinks Positive effect due to improved conditions for wind energy.			

Donor country Denmark			
Project/programme title Sustainable utilisation of fire wood			
Purpose A socio-economic sustainable utilisation of renewable energy and local energy resources based on decentralised self administration of these resources.			
Recipient country Burkina Faso	**Sector** Energy/NRM	**Total funding** 6 Mill. DKK	**Years in operation** 2000-2008, 8 years
Description Support to fuel wood was included in the Danish energy support from 1999. Groups of woodcutters have been trained in forest management, fuel wood cutting and storing and in management including price negotiations. The fuel wood activity is performed by men in the otherwise inactive dry season. The forest area is managed in 12 slots, one a year for harvest and 11 for regeneration. The collected fuel wood is gathered at a loading place assessable to a dealer and his truck. Half of the income from the fuel wood is going to the collector himself. Forest management and forest assistance is taking 40 % and the remaining 10% is given to the village management fund. The cash income reduces the villagers' vulnerability to draught as it makes them able to buy food. Cash is also used for medicine and village improvements. Several other villages have expressed keen interest in being trained in fuel wood management, as they have seen the direct benefits to the participants – whom themselves say "We have fallen in the honey and the animals are even coming back to the forest".			
I**ndicate factors that led to project's success** Local ownership and possibility for cash income. Time of work load coherent with season with minimal traditional work load. Appropriate capacity building methodologies based on learning by doing and adjusted to the base knowledge of the trainees.			
Technology transferred Forest management tools, small scale business development.			
Impact on greenhouse gas emissions/sinks Increased forest cover			

Donor country
Denmark

Project/programme title
Mangrove Management Information System as tool for mitigating the effects of climate change

Purpose
To establish and operate an environmental information system monitoring changes in the mangroves along the coast of northern Vietnam on a yearly basis, and facilitating the expansion of these areas as buffers against rising sea-levels and more frequent storms that are resulting from climate change.

Recipient country	**Sector**	**Total funding**	**Years in operation**
Vietnam	Coastal Zone Management	3 Mill. DKK	2006-2009, 2 years

Description

The project contained the following elements:

• A "Mangrove Management Information System" (MMIS) integrated into the Ministry of Agriculture and Rural Development/Dyke Management Department's computer network.

• A core team of 5 personnel are trained in GIS/EIS and spatial analysis and to take action on the results. Other staff are trained in accessing the MMIS in support of their job responsibilities to take appropriate action accordingly.

• Digital maps of mangrove areas based on satellite imagery are completed for 2005/2006 and 2006/2007.

•Case study report on critical areas for 2006/2007 and 2007/2008 are written.

•Policy recommendation report is written for 2006/2007 and 2007/2008.

•Draft action plan detailing the activities that will be taken to implement the recommendations is written for 2006/2007 and 2007/2008.

Indicate factors that led to project's success

Sea level rise is a crucial issue to Vietnam due to its long and low laying coast line and this fact has high political awareness. Conservation and monitoring of the coastal mangrove is essential as a tool to mitigate the impact of climate change. The project activities are therefore in great demand. The close cooperation between the responsible ministry and the resource base at a university has proven beneficial, however not always easy.

Technology transferred

GIS monitoring technology and Monitoring Information System knowledge.

Impact on greenhouse gas emissions/sinks

Indirectly effect on sink

Donor country European Union
Project/programme title Development Support for a new fuel, substituting charcoal, based on biomass from household waste collected in the Rugenge sector in Kigali, 2005
Project duration 36 months (2006-2009)
Main proposer Ingénieurs Sans Frontières and Ingénieurs Assistance Internationale Belgium
Main objectives and brief project description • Contribute to socio-economic improvements in the town of Kigali, by means of improved waste management and waste value attribution • Develop and distribute simple and appropriate technologies which can easily be replicated • Avoid deforestation • Make available to the wider population more affordable cooking and heating fuels.
Technology transfer element During this project, private sector parties will be able to increase their revenue streams as well as improve their management and organisational capacities. This initiative aims to build the local capacity for the development and production of alternative fuel based on biomass collected from household organic waste. This new fuel would contribute towards reducing charcoal use, bringing significant improvements in the areas of health, gender equality and sanitation. This project also provides financial and specific technological knowledge support for local engineering and mechanical companies

Donor country European Union
Project/programme title Community-based Natural Resource Management (CBNRM) Enterprise Support - 2005
Project duration 48 months (2007-2011)
EC contribution to Project budget €0.75 million
Main proposer Consortium of Namibian governmental agencies
Description Namibia's CBNRM Programme seeks to improve the quality of life of rural Namibians by empowering people to care for their natural resources and to derive benefits from these resources. The CBNRM Programme is: A natural resource management and conservation programme - it promotes wise and sustainable management of natural resources, and encourages biodiversity conservation by creating the necessary conditions for sustainable use. A rural development programme - it seeks to devolve rights and responsibilities over wildlife and tourism to rural communities, thereby creating opportunities for enterprise development and income generation.
Technology transfer element An empowerment and capacity-building programme- it encourages and assists communities and their local institutions to develop the skills and experience to sustainable develop and pro-actively pilot their own futures.

Donor country European Union
Project/programme title Village Tree Enterprise project, Region West Africa – 2005
Project duration 60 months
EC contribution to Project budget €2.4 million
Main proposer UN Food and Agriculture Organisation
Technology transfer element This project helps villagers analyse and develop options for income generation sustainable management of forest resources, building on their existing knowledge of resources and markets. It puts the local people at the centre of this process, facilitating strategic alliances and forging market linkages, bringing together local organisations rooted in the community and key government agencies with mandates covering natural resources, rural development, private sector activation and promotion of gender equality. Community owned enterprise development plans are an intermediate output, and the project will provide support to implement these plans, to optimise the long term 'survival rate' for small-scale community-based enterprises.

Donor country European Union
Project/programme title Mobilisation and reinforcement of the capacity of SME's involved in forest related products in Central Africa, 2005.
Project duration 36 months
EC contribution to Project budget €3 million
Main proposer UN Food and Agriculture Organisation
Main objectives and brief project description This project aims to build the private sector capacity if small and medium enterprises that are active in the forestry sector and forest related products and services.
Technology transfer element The project specifically aims to strengthen companies along six thematic lines: • Improved knowledge sharing to allow better decision making for investments. This especially relates to local resource knowledge and evaluation. • Improved packaging techniques to improve exportability of products, which in turn is likely to benefit the local employment opportunities. • Increased productivity and associated reduced production costs to enable companies to provide a continuous supply of products of good quality, which is important for private sector development. • Improved management and organisational skills to lead to better market analysis and interpretation. Further benefits to be achieved with increased use of certification process for forest products. • Additional institutional support to be provided to both the public and private sector on topics such as certifications, permits, law in order to avoid possible obstacles for commercial development. • Facilitated access to credit, capital and machinery.

Donor country European Union
Project/programme title Installation of a steam engine powered generation set at Charter Sawmill - Zimbabwe
Project duration 24 months
EC contribution to Project budget €0.5 million
Main proposer Borders Timbers Limited
Description The project proposes to purchase and install a suitable steam engine powered generator to run off of the existing boilers installed at Charter Sawmill. The heat source for the boilers is waste wood and sawdust that is produced within the sawmill itself. There is a surplus quantity of wood waste produced in the process that is currently incinerated to waste. This wood waste is a renewable resource. The steam engine aims to harness this renewable waste heat and produce electricity from it that can be utilised by the surrounding rural community through an interconnection with the grid.

Donor country European Union
Project/programme title Capacity building on business opportunities for CDM projects in China - 2004
Project duration 20 months
EC contribution to Project budget €0.18 million
Main proposer CIRPS - University of Rome "La Sapienza"-Italy In partnership with: GEI - Global Environmental Institute – China IST - Instituto Superior Tecnico – Portugal HELIO International – France
Technology transferred This project aims to deliver local level capacity building activities in carbon trading for private stakeholders in China. It aims to meet the objectives of the Pro Eco programme with the achievement of high environmental standards and the facilitation of local implementation of international environmental agreements in the context of GHG. Through the exchange of good practices, policies, systems and technologies for GHG emissions reduction, the cooperation between countries of the EU and China can be strengthened. The thematic priority of this capacity building programme is addressing GHG, developing awareness of the private sector, local institutions and NGO's dealing with environmental issues, particularly in urban areas and in carbon trading system (Project Purpose). The project aims to improve access to know-how and international assistance of Chinese stakeholders. The project aims to gather information into an accessible medium including a database and handbook, combining the DNA (national Chinese authority) data, Chinese experience and EU know-how, experience and expertise. A series of training/workshop/seminars aimed at capacity building of interested private sector and conducted in full cooperation with the DNA are planned for promotion of CDM and using the carbon trading system.

Donor country European Union
Project/programme title EU-China CDM Facilitation Project - 2005
Project duration 36 months
EC contribution to Project budget €23.5 million
Main proposer The Project Partners Swedish Environmental Research Institute (IVL), Sweden; Policy Research Centre for Environment and Economy (PRCEE) of the Ministry of Environmental Protection (MEP), China; DEVELOPMENT Solutions, China; TÜV Rheinland, Germany; CDM Project Management Centre (CDM-PMC) of the National Development and Reform Commission (NDRC), China; Research Centre of Urban Development and Environment of the China Academy of Social Sciences (CASS), China.
Description The project will strengthen the Clean Development Mechanism (CDM) as a central pillar within China's path to sustainable development. Until January 2010, the focus will be on China's policy and regulatory regime and quality management for CDM development. It will bring together a wide range of stakeholders at public and private sector levels involved in CDM projects. On the national level, the project will assess effectiveness of technology transfer through CDM, and analyse CDM market development. The consortium implementing the project has finished a needs assessment and also established an inventory of all CDM capacity building projects in China. This project implements one of the seven first joint activities of the EU-China Rolling Work Plan on Climate Change agreed in October 2006. The EU-Chi na CDM Facilitation Project is being implemented by Chinese and European partners and associates with grants from the European Commission and is the largest European-funded project addressing CDM-related activities in China.
Technology transferred Specific objectives include • Strengthening the capacity of China's Designated National Authority (DNA), the National and Regional CDM Centres, and Chinese Organisations applying for Designated Operational Entity (DOE) status; • Introduction of European and International Standard in Quality Management of the CDM development process; • Increasing awareness of CDM opportunities and enhance the CDM framework conditions in the Chinese CDM market.

Donor country European Union
Project/programme title Microfinance & Renewable Energy: Using microfinance to increase access to Renewable Energy in rural areas - China 2006
Project duration 24 months
EC contribution to Project budget €0.27 million
Main proposer Chinese government
Main objectives and brief project description The project's main objective is to speed up the adoption of these RES technologies by providing local farmers with access to the financing necessary for biogas installations and household modifications. This financing will reach a total of 8 villages. In the case of the 3 sponsored-villages, the financing will supplement the un-subsidized costs. In the 5 other villages, it will cover the entire amount. In those 8 villages, it is expected that a total of 400 households will benefit from this financing. Another 32 villages will be involved as part of a road show where waste management will be the focus point. The following results will be met: Rural households' revenues will increase and their living conditions will improve. • Farmers have access to a financing scheme to invest in biogas installations. • Farmers will have significantly decreased their commercial energy and kerosene budget. • Health risks linked to breathing in wood and coal smoke will be reduced in Tong Wei County. Tong Wei rural households are more aware of environmental protection issues and the environmental and economic potential of RE. Tong Wei farmers develop new crops with higher market prices and increase crop yield through the application of treated biogas waste fertilizer. A microfinance delivery network in Tong Wei rural villages has been developed in an area not previously served. Capacities are strengthened (including partner, microfinance human, financial, and institutional capacities) through the transfer of competences.

Donor country European Union
Project/programme title Capacity building of Thai food industries on "Carbon footprint labelling" to promote the development of low-carbon trade between EU and Thailand for climate change mitigation – 2007
Project duration 5 months
EC contribution to Project budget €0.2 million
Main proposer Kasetsart University, Thailand King Mongkut's University of Technology Thonburi, Thailand Institut National de la Re cherche Agronomique, France University of Santiago de Compostela, Spain University of Surrey, United Kingdom
Main objectives and brief project description The food sector is of a particular interest in this project because it is one of the key strategic industries contributing significantly to foreign revenue and providing numerous job opportunities, both directly and indirectly to the food sector to Thailand. Having recognized the importance of maintaining the exporting markets of Thai foods in EU as well as other countries that may require products with carbon label in the near future, it is critical for the Thai food industry to acquire the knowledge on carbon labels both in principle, methodology and practice. The carbon footprint can be used as an environmental management tool to evaluate the carbon profile of food products so as to derive management strategies to reduce the carbon footprint (i.e. reduction of energy use as well as cost savings).
Technology transferred Specific objectives include: • To transfer the knowledge on carbon footprint measurement standards as well as their applications in food products from EU to Thailand to enhance the knowledge and practical experiences of local experts as well as to build up the local capacity in competiveness of Thai food industry • To provide technical supports to three demonstration projects to conduct the carbon footprint analysis and management of 3 food products. This will build capacity to anticipate the demand of products with carbon label to facilitate the development of low-carbon economy between Thailand and EU • To disseminate the knowledge and practical experiences on Carbon Footprint & Carbon Label to wider audiences by writing and distributing a guidebook on “Carbon footprinting & labelling”.

Donor country European Union
Project/programme title Forest livelihoods for the poor : certification, market development and an enabling economic and policy environment for sustainable forestry in Central America – Region Central America - 2005
Project duration 36 months
EC contribution to Project budget €2.2 million
Main proposer Just World Partners (JWP)
Main objectives and brief project description Overall objective: improved livelihoods and reduces vulnerability in participating countries through the sustainable use of forest resource. Project purpose: improved structures and processes relating to the socially, economically and environmentally sound use of forest resources. The following results are expected: ▪ 15 forests Enterprises per country strengthened ▪ National and regional structures strengthened ▪ improved and diversified production of forest products by rural communities ▪ a more enabling economic and policy environment for small forest enterprise development ▪ market entry facilitated

Donor country European Union
Project/programme title Improving the productivity of SME's in the industrial forestry sector, 2004 Argentina
Project duration 48 months
EC contribution to Project budget €3.8 million
Main proposer Secretaria de Agricultura, Ganadería, Pesca y Alimentos. (SAGPyA)
Technology transfer element This Project aims to provide the technical assistance, capacity building and equipment needed to improve the competitiveness, environmental performance and skills base of companies operating in the forestry sector. These objectives are all targeting an improvement of the standing of Argentinean companies in the international market and are complemented by a certification scheme. In order to achieve these objectives, the following measures were put in place: y Improve the competitiveness of the small and medium enterprises. Strengthening of relevant institutions and technological centers. Developing the professional bodies and associations. Implementation of a certification system for forest products and the encouragement of sustainable practices.

Donor country European Union
Project/programme title Pro-diversity Business in the steppe zones of the Eurasia region – 2006
Project duration 30 months
EC contribution to Project budget €0.6 million
Main proposer The European Community, represented by the Commission of the European Communities, is the Contracting Authority
Main objectives and brief project description During the initial project phase, an assessment of the biodiversity and small business environment in each country will be carried out. The aim will be to identify regions of high natural value land where SMEs show the potential and interest in creating a so-called "Pro-Biodiversity Business". The relevant national sectors and designated sites will be defined, and a list of potential pro-biodiversity SMEs created through consulting the relevant commercial registers. In the first six months of 2009, a pro-biodiversity integrated investment platform for all project steppe areas will be elaborated to devise the most effective way to channel investments towards SMEs. The project will develop indicators of net ecological benefit to help measure and track potential investments that could be made in steppe ecosystem based SMEs. Towards the second half of 2009, two to three integrated investment studies will be carried out from two or three of the six project sites resulting in the production of SME and upstream secondary and tertiary business plans. The end goal of the project will be to put in place a structure and procedures through which SMEs can be engaged in delivering economically viable biodiversity conservation activities in the Eurasian Steppes.
Technology transferred The project seeks to put in place a structures through which SMEs can be engaged in delivering economically viable biodiversity conservation activities in the Eurasian Steppes. Working in close collaboration with the EC TACIS EuroSteppe project "Sustainable Integrated Land-use of the Eurasian Steppes", the aim is to identify financial structures and instruments that will provide the market mechanism necessary for long-term sustainability of the selected SMEs in the steppe ecosystem

Donor country European Union			
Project/programme title China-EU Biodiversity Programme, 2004			
Purpose Focusing on balancing economic development and environmental protection and biodiversity conservation			
Recipient country China	**Sector** Biodiversity and Protected Areas	**Total funding** €30 million	**Years in operation** 2005-2010
Description The EU-China Biodiversity Programme is a joint initiative between the EU, United Nations Development Programme (UNDP) the Chinese Ministry of Commerce (MOFCOM) and the Chinese State Environmental Protection Administration (SEPA) that combines policy dialogue and development, institutional strengthening and awareness raising with a set of field projects focusing on site-specific activities. EU contributes €30 million, of which €21 is earmarked for field projects. Field projects will require a minimum of 50% matching funds and will involve consortiums including at least one international and one domestic organization.			
I**ndicate factors that led to project's success** The approach of EU-China Biodiversity Programme has: Addressed "upstream" drivers of biodiversity loss, where potential impact is highest, such as through policy development and implementation and awareness raising; Strengthened linkages and feedback mechanisms between national level initiatives and local implementation; Built partnerships and cooperation, e.g. among sectoral agencies, between national and international organizations; . Improved the monitoring of biodiversity impacts			
Technology transferred Protected areas management, sustainable management of natural resources, development of participative approaches			
Impact on greenhouse gas emissions/sinks A positive impact has been made through this project but it is currently not measurable			

Donor country European Union			
Project/programme title Euro-Asian Research and Training in Climate Change Management (CLIMA), 2005			
Purpose To enhance the capabilities of professors and researchers to create an international thematic network on Climate Change and Sustainable Development, to relate scientists, policy makers and stakeholders from the EU and Asia on the issues of global impacts determined by local development practices.			
Recipient country Regional Asia	**Sector** Capacity building, research	**Total funding** €0.73 million	**Years in operation** 2006–2009
Description The overall objective of the project is to create a knowledge system on climate change and sustainable development linking Asia with Europe as well as to contribute towards the Millennium Development Goals			
I**ndicate factors that led to project's success** The project intends to achieve this objective by ▪ implementing a modular training programme for scientists, ▪ initiating joint and interdisciplinary research groups on different topics, ▪ elaborating a curriculum for a prospective online master course on climate change and sustainable development, ▪ disseminating of promotional material to a wider community.			
Technology transferred Capacity building, research			
Impact on greenhouse gas emissions/sinks A positive impact has been made through this project but it is currently not measurable			

Donor country European Union			
Project/programme title EURO-SOLAR, solar systems and ICT for remote regions, 2006			
Purpose The objective of the Programme is to contribute to the sustainable development of isolated communities through the use of renewable energies. Furthermore, it will help generate income and, by strengthening local organisations, promote education and skills development as well as communication with the outside world. The rural communities identified will be supplied with the necessary infrastructure to generate electrical energy.			
Recipient country Latin America (Guatemala, El Salvador, Honduras, Nicaragua, Ecuador, Peru, Bolivia and Paraguay)	**Sector** Renewable Energy Technology	**Total funding** €27.8 million	**Years in operation** 2006-2010
Description The Euro-Solar Programme will supply communities, identified and selected on the basis of objective criteria, with 600 electrification systems. These systems, combining solar and wind energy, are also composed of a charger of batteries, a refrigerator for the conservation of vaccines, a water cleaning system, computers, a projector to disseminate information at the local community level and a Internet connection for educational and productive use. These systems will be used by the communities in a broad range of applications; in telephony, education, health and in accessing information to promote the sustainable development of these rural communities.			
I**ndicate factors that led to project's success**			
Technology transferred Renewable energy technology, capacity building, communications			
Impact on greenhouse gas emissions/sinks A positive impact has been made through this project but it is currently not measurable			

Donor country European Union			
Project/programme title Leña, renewable energy for the conservation of native forests in the south of Chile, 2006			
Purpose To promote a sustainable exploitation of the existing primary/native forest in the south of Chile.			
Recipient country Chile	**Sector** Renewable Energy Technology	**Total funding** €3.4 million	**Years in operation** 2006-2011
Description 93% of the wood exploited from primary forest in the south of Chile is used as firewood. This situation is causing fast degradation and loss of native forests (both in area and biodiversity). The project aims to tackle the problem through four activities: ▪ Consolidation of a national system for firewood certification, ▪ Promotion of sustainable management practices for the native forest (providing specialized training to farmers and arranging logistical networks to distribute the firewood), ▪ Regulation to encourage the access to the certification system and to formal markets to small producers.			
I**ndicate factors that led to project's success**			
Technology transferred Capacity building, best certification practices			
Impact on greenhouse gas emissions/sinks A positive impact has been made through this project but it is currently not measurable			

Donor country European Union			
Project/programme title Regional Programme for the reduction of environmental degradation and vulnerability (PREVDA)			
Purpose To contribute to the integration of institutions and policies of the Central American region regarding water and environmental risk management.			
Recipient country Central America	**Sector** Adaptation	**Total funding** €20 million	**Years in operation** 2006-2011
Description The target of the project is to strengthen the capacity of existing regional institutions to plan and to link territorial planning and basin management as tools for environmental management. The project aims to create synergies to increase risk identification and mitigation capabilities to diminish the impact of socio economic impacts threats on vital resources.			
I**ndicate factors that led to project's success**			
Technology transferred Capacity building, best practices in basin planning and protection			
Impact on greenhouse gas emissions/sinks A positive impact has been made through this project but it is currently not measurable			

Donor country European Union			
Project/programme title Hydro-Biopower in Ethiopia			
Purpose Livelihood improvement in rural areas through collaborative development of renewable energy sources in Oromia and Southern Nation Regional States of Ethiopia.			
Recipient country Ethiopia	**Sector** Renewable Energy Technology	**Total funding** €0.74 million	**Years in operation** 2007-2010
Description The aim of the action is to improve the living conditions of the people living in the above un-served areas through the implementation of renewable energy schemes, i.e. pico-hydropower plants and low cost biogas system s at household level. An important component of the project is devoted to capacity building targeting regional and district offices (WEREDA), as well as local cooperatives and associations. The involvement of local communities in the implementation and management of the energy schemes contributes to increase local ownership and empowerment.			
I**ndicate factors that led to project's success** This project is still in progress so all project aims have yet to be achieved, but include: Construction of 5 pico-hydro and 5 micro hydro schemes at the village level Installation of 1400 household-based biogas schemes Capacity building for users, maintenance operators and local construction firms			
Technology transferred Renewable energy technology, capacity building,			
Impact on greenhouse gas emissions/sinks A positive impact has been made through this project but it is currently not measurable			

Donor country European Union			
Project/programme title Regional Weather Radar Warning System			
Purpose Building a network of early warning radar systems in the Caribbean.			
Recipient country Caribbean Region	**Sector** Disaster Risk Reduction	**Total funding** €13.2 millio	**Years in operation** 2006-2011
Description The weather radar which is under installation in Trinidad & Tobago is part of a €13.2 million Caribbean weather radar network project funded by the EU and implemented by the Port of Spain-based Caribbean Meteorological Organization (CMO). The weather radar at Brasso Venado is a sophisticated state-of-the-art system built by the Selex-Gematronix company of Germany, which has been placed on a five-storey 20-metre reinforced concrete tower that will house the related equipment. The CMO is also installing similar new weather radars in Guyana, Barbados and Belize. These four radars will be linked with other existing radars in the Caribbean to form a modern network of nine radars that will be a key component in the Caribbean Early Warning System for predicting and monitoring severe weather conditions.			
I**ndicate factors that led to project's success** This project is still in progress so all project aims have yet to be achieved, but include the following: The weather radar will provide complete coverage of both islands and out to a distance of 400 km, enabling meteorologists to provide more accurate and timely information on all kinds of severe weather, such as approaching tropical storm and hurricanes, heavy rainfall events, etc. Information from the radar will be made available by the Meteorological Services to the public, national disaster preparedness and emergency agencies and other users in Trinidad & Tobago and throughout the Caribbean via the Internet and the media.			
Technology transferred Weather monitoring technology, disaster risk reduction			
Impact on greenhouse gas emissions/sinks A positive impact has been made through this project but it is currently not measurable			

Donor country
European Union

Project/programme title
Regional Solar Programme

Purpose
Reduction in environmental deterioration in the Sahel Region by increased used of solar energy.

Recipient country	**Sector**	**Total funding**	**Years in operation**
Region West Africa	Renewable Energy Technology and Water/Sanitation	€65 million (PRS1+2)	PRS1:2006-2006 PRS2:2006-2010

Description

A. Principal objective

Contributing towards reduced environmental degradation by promoting the use of renewable energy

B. Specific Objectives

- Improved quality of life and sanitation of rural populations as well as improved water resource management.
- Improved water distribution infrastructure.

Indicate factors that led to project's success

This project has contributed to poverty reduction by improving economic, financial and social conditions of the community. Approximately 2 million people have been affected, focusing on women and children.

- Improved access to drinking water and energy: 30 % of all households benefited from solar equipment.
- Income generated from water sales is estimated at €1.52 million. Mechanisms have been put in place to increase returns on savings and thereby leading to more general quality of life improvements.
- Renewable energy technologies have led to considerable savings on conventional fossil fuel consumption.
- Protection and restoration of the natural environment as well as biodiversity protection.
- **Institutional improvements**: increased intervention capacity ; improved water access policies ; identification of barriers to water access
- **Private sector strengthening:** Organised via the Association Africaine des Industriels et Installateurs Solaires (AFRIISOL) and leading to increased and improved information and knowledge sharing.
- **Technology development**: Improved skill base focusing on solar technology and installation.
- **Income generation**: Price of water varying between €0.25 and €0.3 per m3

Technology transferred

Renewable energy technology (solar); water access and water purification

Impact on greenhouse gas emissions/sinks

A positive impact has been made through this project but it is currently not measurable

Donor country
European Union

Project/programme title
(TEP) Adding value to renewable energy technologies as well as knowledge and experience transfer, 2006

Purpose
The main objective of improving livelihood opportunities of the rural and isolated areas of New Caledonia, French Polynesia and Wallis and Futuna, through the promotion of renewable energy sources.

Recipient country	**Sector**	**Total funding**	**Years in operation**
French Polynesia, Wallis, New Caledonia, Futuna	Renewable energy technologies	€10.3 million	2006-2009

Description

This initiative focuses on solar and wind energy. Several wind farm projects have been implemented in the past few years in New Caledonia. One of these is located in the North of New Caledonia's main island, with some 22 windmills already erected. The farm eventually aims to provide some 11 Megawatt to the three main towns of the area, Koné, Voh and Pouembout.

The wind-generating units span 32 metres and reach a height of 55 metres on a mast. They start producing power when winds reach 10 knots, but can also easily be dismantled in case of cyclone. They are also equipped with a self he two rotors to maximize wind production, according to the winds direction and strength. The longer term plan is to install a total of 42 units on the same site, called Kafeate. However, for the whole of New Caledonia, the plan is to build wind-generated electricity to 60 Megawatts (an estimated 15 % of all of New Caledonia's electricity consumption) by 2010. Wind-generated production is directly connected to the existing power distribution network, which is operated by French company Enercal.

I**ndicate factors that led to project's success**

- Improved rural electrification in order to improve quality of life.
- Improved electrification of public services such as schools, hospitals as well as commercial properties.
- Increased energy independence and security for island inhabitants.
- Encourage co-operation and solidarity between islands concerned.
- Transfer of acquired knowledge and skills between the islands.

Technology transferred

Renewable energy technologies

Impact on greenhouse gas emissions/sinks

A positive impact has been made through this project but it is currently not measurable

Donor country European Union			
Project/programme title Renewable Energy Policy and the Rehabilitation of Small Scale Hydropower Plants			
Purpose To support the Russian Federal Government and regional administrations in the development of legal and regulatory framework to facilitate and encourage the use of renewable energy in the Russian Federation.			
Recipient country Russia	**Sector** Renewable energy technologies	**Total funding** €2 million	**Years in operation** 2005-2009
Description To develop justifiable and attainable national and regional RES/RES-E targets and national and regional policies and action plans, in 3 selected regions, to reach these targets, which then become integral part of national and regional RES/RES-E programs.			
I**ndicate factors that led to project's success** Result 1: A proposal for a Federal policy framework to promote RES and RES-E. (Federal RES/RES-E Policy Proposal) Result 2: National RES/RES-E Action Plan, including the formation and monitoring mechanism of RES/RES-E federal targets to be achieved within an established time. (National Action Plan to Set, Monitor and Achieve RES-E Targets) Result 3: Technical and economic feasibility studies of using RES as a primary energy source in each of the three regions. (Regional RES Feasibility Studies). Result 4: RES/RES-E Action Plan in Three Regions, including proposals for a policy framework permitting the implementation of RES and RES-E in these regions.(Regional RES/RES-E Action Plans)			
Technology transferred Renewable energy technologies, capacity building			
Impact on greenhouse gas emissions/sinks A positive impact has been made through this project but it is currently not measurable			

Donor country European Union			
Project/programme title Energy Efficiency in the Construction Sector in the Mediterranean (MED-ENEC)			
Purpose To enhance the establishment of cost effective energy efficiency measures by the countries and the application of renewable energy solutions by the respective service providers.			
Recipient country All Mediterranean countries	**Sector** Renewable Energy Technology, Energy Efficiency	**Total funding** €4 million	**Years in operation** 2005-2008
Description The objective of this project is to develop or improve: ▪ Regional and sub-regional information, communication and cooperation networks among the MEDA countries and with the EU-member countries are established; ▪ Policy measures, regulations, standards and incentive instruments are available for adoption by policy makers; ▪ New services and business and technology cooperation between European and MEDA countries to support communities, real tate developers and building owners with comprehensive cost effective services, are established; ▪ Best practices and new technologies as well as integrative approaches are demonstrated and documented through pilot projects. ▪ Increased public awareness a n civil society participation.			
I**ndicate factors that led to project's success** The proposed project design is very flexible: it entails the elaboration of national work-plans, which will address the local needs and priorities, as they derive from the national baseline studies, the national consultation days, and the national market and capacity assessment studies. Business development is a project key issue. In Tunisia the PP is consistent with the Government's policies and project activities are in line with on-going projects financed by other donors as well as a good knowledge of the region.			
Technology transferred Renewable energy technologies, capacity building			
Impact on greenhouse gas emissions/sinks A positive impact has been made through this project but it is currently not measurable			

Donor country
European Union

Project/programme title
Sustainable Integrated Land Use of the Eurasian Steppes

Purpose
The project is designed to provide viable responses to the current pressures on steppe ecosystems and their biodiversity by addressing the key threats and negative trends hampering the sustainable development in the steppe zone of Moldova, Russia and Ukraine.

Recipient country	**Sector**	**Total funding**	**Years in operation**
Moldova, Russia, Ukraine	Forestry, biodiversity	€2.5 million	30 months (2007-2009)

Description

The project will develop and test a regional approach at trans-boundary level to both protect existing steppe areas and restore steppes for fauna and flora conservation as well as to provide more sustainable livelihood Since the project cannot solve all problems, TACIS inputs are meant to provide "seed-money" with which good initiatives can be funded and best international practices demonstrated, in pilot manner, in trans-boundary pilot demonstration areas. Replications of successful examples will be invited as a follow-up by new and additional funding.

The specific objectives of this project are:

- to increase sustainable land use in wetland, steppe and forest steppe ecosystems;
- to restore and use abandoned land, and improve management of privatised areas;
- to mobilize financial resources through, e.g., carbon sequestration and greenhouse gas emission reduction through the provision of alternative energy;
- to mainstream biodiversity concerns into rural land use policy and practice at the regional, national and local levels; and
- to encourage cross border cooperation between states.

Indicate factors that led to project's success

The overall results of the project are two fold:

1. The sustainable use of biodiversity assets that contribute to rural poverty reduction and increase economic growth is in place. This result will have the following outcomes: i) holistically managed steppe landscape; ii) local economic benefits, linked to sustainable steppe use and rural poor livelihood generation; iii) appropriate alternative agricultural practices, based on increased land productivity; iv) viable rural populations; v) sustainable, ecologically friendly community business activities; vi) harmonised policy development; vii) increased uptake of opportunities at government level; viii) a shift towards commercial pro-biodiversity business taking out loans.

2. The conservation and restoration of a globally significant ecosystem at a regional level is taken up. This result will have the following outcomes: i) restored and managed natural wetland, steppe and forest-steppe complexes; ii) maintenance of key species; iii)increased biodiversity and reconnected migratory species routes; iv) a regional ecological network at strategic level; v) reduced threat of desertification; vi) less biodiversity-destructive practices; vii) harmonised policy development; and viii) increased financial incentives for steppe maintenance and restoration.

Technology transferred

Renewable energy technologies

Impact on greenhouse gas emissions/sinks

A positive impact has been made through this project but it is currently not measurable

Donor country
Finland

Project/programme title
Energy and Environment Partnership with Central America

Purpose
To promote the use of renewable energy sources and sustainable development

Recipient country	**Sector**	**Total funding**	**Years in operation**
Central American countries	Energy/mitigation	EUR 7,000,000	2003–2009

Description

The partnership was launched at the Johannesburg Summit for Sustainable Development in 2002 to promote the use of renewable energy sources and clean technologies in the Central American region, to combat climate change and to make energy services more accessible to the poor. The partnership aims at finding support for public or private investments, developing effective and consistent strategies in the national energy policies of each country as well as improving sustainable development of renewable energy on a small scale. Other goals are strengthening of effective programmes of rural electrification and developing capacity in the areas of financing and technical engineering on a regional level.

The goals are in conformity with the EU Energy Initiative, which is a new type of partnership model for multi-donor development cooperation to support sustainable development through utilisation of renewable energy resources. Public and private sectors are participating in the programme, which has increased the co-financing interest of international banks and funding institutions. The countries involved are Belize, Guatemala, Honduras, El Salvador, Costa Rica, Nicaragua, Panama and the Dominican Republic. Austria joined the Partnership as donor in 2007.

So far, partial funding has been granted to about 200 projects. These include feasibility studies, research projects and pilot and demonstration projects in all fields of renewable energy and energy efficiency. Thematic seminars have been organised twice a year to disseminate the experiences and best practices. To date 13 such seminars have been organised, with more than 2,500 participants.

A similar partnership programme has recently been launched in South Africa, the Mekong river area in Thailand, Vietnam, Cambodia and Laos, Indonesia and Columbia. Finland is providing EUR 6 million for the third phase of the partnership in 2010–2012.

Indicate factors that led to project's success

Wide participation of the private sector, universities, donors and research institutes in the programme. A regional coordination office is located in San Salvador in the building of the General Secretariat of the Central American Integration System (SG-SICA). Capacity building and training (including CDM). Programme includes developing financing models, energy market development work and energy resource surveys and studies.

Technology transferred

Demonstration projects e.g.:

- Installation of solar systems for a vaccination programme in Honduras
- Photovoltaic systems for two Kuna communities in Panama
- Solar electrification in Guatemala and solar pumping system in El Salvador
- Use of sawdust, coffee residues and sugar cane bagasse as biomass suitable for energy co-generation in Belize, Costa Rica, El Salvador and Nicaragua
- Support for ecological stove programmes in Honduras and Guatemala
- Feasibility studies and equipment for small hydroelectric power plants in Guatemala, El Salvador and Nicaragua. Support for Jatropha curcas plantations in several countries.

Central American Carbon Finance Guide was published in 2004 and updated in 2008

Impact on greenhouse gas emissions/sinks

A number of CDM projects have been supported.

Donor country Finland			
Project/programme title VIETAUDIT			
Purpose To develop energy auditing practices in Vietnam and to conduct pilot audits			
Recipient country Vietnam	**Sector** Energy/mitigation	**Total funding** EUR 1,000,000	**Years in operation** 2008–2009
Description Energy auditing procedures, where specialists analyse the energy use and energy efficiency of buildings and production processes and make proposals for cost-effective improvements, are key methods in finding the most effective measures to improve energy efficiency. The overall objectives of the project, implemented by VTT (Technical Research Centre of Finland) and MOTIVA (governmental agency promoting energy efficiency) are to help Vietnam to: • Strengthen the national policy framework and integrate energy efficiency and renewable energy use into national sustainable energy strategies • Enhance national capacity for energy auditing and implementing cost-effective measures proposed by the audits.This will require: • Ensuring Vietnam has access to technical assistance for energy auditing and financial products. • Wider dissemination of information, knowledge and best practices that support accelerated market development of energy efficiency and renewable energy. Pilot energy audits have been carried out for industrial facilities, buildings and in the transport sector.			
I**ndicate factors that led to project's success** Vietnam has established an Energy Efficiency Office, but no budget funding will be available for 2–3 years. This provides Motiva and VTT with an excellent opportunity to provide capacity building and technical assistance and/or technology transfer during the transition period. The first results of the audits have shown substantial saving potential.			
Technology transferred The objective is to offer a whole range of energy audit expertise, from general to simple and including more complex cases. Target groups are (managerial) personnel of the ministries involved (Construction, Industry, Transport), especially selected persons from the Energy Efficiency Office, personnel of the regional offices of different ministries and plant management. Another important target group is the personnel of SMEs that want to increase their auditing expertise and/or want to develop into ESCOs (Energy Service Company). The pilot audits are conducted in close collaboration with local experts. With a particular view to sustainability, high level technology transfer will be targeted at the Hanoi University of Technology.			
Impact on greenhouse gas emissions/sinks A CDM component is included for the purpose of estimating the CDM potential and to develop PDDs.			

Donor country Finland			
Project/programme title SUFORD, Sustainable forestry for rural development project			
Purpose To promote sustainable forest management			
Recipient country Lao PDR	**Sector** Forest/mitigation	**Total funding** Phase I: EUR 6,000,000 Phase II: EUR 9,000,000	**Years in operation** Phase I: 2004–2008 Phase II: 2009–2012
Description Specific objectives are to: • Improve the policy, legal and incentive framework enabling the expansion of Participatory Sustainable Forest Management (PSFM) in the whole country • Bring the country's priority natural production forests under the PSFM • Improve well-being and livelihoods in villages through benefits from sustainable forestry, community development and development of viable livelihood systems • Support the development of new and innovative methodologies for REDD monitoring.			
I**ndicate factors that led to project's success** The project is comprehensive in scope and covers the national policy, field implementation and capacity development.			
Technology transferred Participatory forest management could provide a sound base for further development of the REDD concept. The SUFORD project has supported the Lao PDR government in piloting new and innovative tools for forest carbon assessment. High resolution satellite images and airborne laser scanning (LIDAR) have proved to be cost-effective tools for the assessment.			
Impact on greenhouse gas emissions/sinks			

Donor country Finland			
Project/programme title Post-Emergency Reconstruction Programme in the Field of Meteorology			
Purpose To reconstruct and rehabilitate the Meteorological Institute of Mozambique			
Recipient country Mozambique	**Sector** Meteorology/mitigation	**Total funding** EUR 4,200,000	**Years in operation** 2000–2006
Description After the most devastating floods in the history of Mozambique, the Finnish Government pledged EUR 4.2 million for the reconstruction programme of the Meteorological Institute of Mozambique (INAM). After the reconstruction a new project was established to rehabilitate the institute to serve the needs of society better. The assistance was implemented in two phases: 1) an instant rebuilding of some lost observation facilities in 2001 and 2) a larger project (FINAM) with technical assistance and a significant amount of new equipment in 2002–2006. The project produced significant results leaving the national meteorological service much better prepared for future challenges. The overall aim of FINAM was to decrease the vulnerability of Mozambican society to adverse weather, climate variability and global change by improving the working capacity of INAM. The enhanced capacities of INAM will improve the country's disaster management system and thus help avoid future casualties and support the sustainable development of Mozambican society. As a result of the project the national meteorological service is much better prepared for future challenges.			
I**ndicate factors that led to project's success**			
Technology transferred			
Impact on greenhouse gas emissions/sinks			

Donor country
France

Project/programme title
Projet VIGIRISC Afrique - Appui à la mise en place de systèmes de vigilance face au risque climatique en Afrique

Contexte
La vulnérabilité qui caractérise les sociétés et les économies africaines, largement liée à la pauvreté, nécessite d'entreprendre de manière urgente des démarches d'adaptation, afin que les efforts déployés pour l'atteinte des Objectifs du Millénaire pour le Développement ne soient pas remis en cause par les impacts du changement climatique.
Le quatrième rapport du Groupe Intergouvernemental d'Évaluation du Climat (2007 – Groupe II) met l'accent sur les effets du changement climatique en Afrique, qui se traduisent d'abord sur ce continent par un accroissement de la **variabilité climatique.** Le développement de systèmes de vigilance répond aux préoccupations immédiates des décideurs et participe à l'effort d'adaptation dans les secteurs sensibles au climat (eau, agriculture, alimentation, santé, infrastructures, etc.). Le projet VigiRisC doit être considéré comme une composante du programme ClimDevAfrica, qui tarde à démarrer, et un précurseur de sa mise en œuvre à l'échelle du continent.

Objectifs
L'objectif spécifique du projet VigiRisC est de tester dans différentes régions d'Afrique des produits et des services de vigilance (systèmes d'alerte précoce, plans de prévention, cartes de vulnérabilité, etc.) adaptés à différents secteurs socio-économiques pour renforcer les capacités des pays africains dans leur prévention des risques et des impacts liés à la variabilité climatique.
Le projet cherche à stimuler et à alimenter le dialogue entre la communauté des services météo et les communautés politiques, scientifiques et techniques en charge du développement économique durable, et à donner à ces dernières des moyens de dialogue interactif avec les populations. VigiRisC a essentiellement une vocation démonstrative. Il doit déboucher sur le développement de produits et services de vigilance transférables et réplicables aux différentes échelles en Afrique.

Descriptif du projet
Cinq sous-projets de faisabilité et de démonstration des produits et services pilotes de vigilance, implantés dans cinq régions d'Afrique, auront trait chacun à un secteur économique particulier :

- sécurité alimentaire (agriculture pluviale, pastoralisme transhumant) : la région du barrage de Kandadji, au Niger, (transfert des populations) sera la zone choisie pour ce secteur, avec un cofinancement de la Banque Africaine de développement (BafD) ;
- ressources en eau et risques liés au régime hydrologique des grands fleuves : inondations récurrentes sur le fleuve Congo avec Kinshasa comme terrain d'expérimentation, en partenariat avec la Fédération Internationale de la Croix Rouge ;
- santé : rôle des facteurs climatiques dans l'épidémiologie du paludisme, de la méningite et d'autres maladies émergentes non transmises par des moustiques ;
- surcotes et ondes de tempête : cas des côtes de Mauritanie, en liaison avec le projet AGDL financé par l'AFD ;
- événements extrêmes ou à fort impact (sécheresses, inondations, précipitations intenses, vents forts), excluant les cyclones proprement dits, qui font déjà l'objet de dispositifs spécifiques et largement développés dans les zones australes de l'Afrique de l'Est.

Le montant total du projet est de 4 M€ pour une durée de 3 ans et débute fin 2009. Le financement provient de différentes contributions : FFEM (2 M€), MAEE (0,6 M€), BafD, AFD (projet AGDL), Fédération Internationale de la Croix-Rouge, contributions des services météo du Nord dans le cadre de leur collaboration avec l'ACMAD. La maîtrise d'œuvre du projet est confiée au Centre africain des applications météorologiques pour le développement (ACMAD), qui entretient des relations étroites et une information régulière du Secrétariat conjoint UA-CEA-BAfD, responsable de la mise en œuvre de ClimDevAfrica.
Une information continue des États Africains et de tous les partenaires sur l'avancement des 5 sous-projets est prévue dans le projet, de façon à enclencher un processus de réflexion sur la transposition (hors projet VigiRisC) des acquis de ce projet à d'autres régions ou pays d'Afrique.

Impacts et suites
Le projet VigiRisC doit non seulement déboucher sur le développement de produits et

services de vigilance face au changement climatique, adaptés aux régions dans lesquelles ils auront été implantés. Il doit aussi aboutir à des solutions réplicables à d'autres échelles, nationales ou régionales, dans toute l'Afrique. Cette série de projets ultérieurs qui profiteront de l'expérience des sous-projets de VigiRisC devront être soutenus par des financements plus ambitieux à l'échelle de l'Afrique, comme le projet ClimDevAfrica.

Donor country
France

Project/programme title
Projet d'agroécologie à Mada

Contexte

À Madagascar, le secteur agricole emploie plus de 70 % de la population mais il ne contribue qu'à hauteur de 25 % au PNB. La faible productivité alliée à l'insécurité foncière et à une forte croissance démographique conduit à l a surexploitation des terres, à l'appauvrissement des sols et à la désertification, menaçant ainsi la sécurité alimentaire de l'île. Les bassins versants et les périmètres irrigués des hauts plateaux et de la côte est de l'île sont particulièrement touchés.

L'AFD s'est engagée auprès du gouvernement malgache à combattre cette menace écologique. En prônant l'usage des techniques agroécologiques, l'Agence s'est faite porteuse d'une agriculture innovante, permettant de concilier l'impératif de rentabilité économique avec la préservation de l'environnement.

L'agroécologie, inventée au Brésil, consiste à protéger les sols par une couverture végétale permanente. Elle permet de restaurer la fertilité de la terre et d'accroître son rendement tout en limitant les besoins en irrigation. La méthode est d'autant plus révolutionnaire qu'elle n'implique aucun labour ni engrais et participe de la réduction des émissions de gaz carbonique par la fixation de carbone dans le sol.

L'AFD a fortement encouragé l'adoption par le gouvernement malgache du « Programme national multibailleurs des bassins versants et des périmètres irrigués », qui vise à mettre en œuvre ces techniques nouvelles dans le cadre de la politique générale d'aménagement du territoire. L'Agence avait déjà financé un programme similaire à Madagascar en 2002.

Objectifs

L'enjeu est de concilier développement économique et protection de l'environnement et de lutter contre l'appauvrissement des sols et la désertification au moyen d'une agriculture intensive qui s'appuie sur les techniques agroécologiques. Les objectifs spécifiques du financement apporté par l'AFD sont les suivants :

- développer la production agricole et le rendement par la promotion de techniques adaptées, favoriser la diversification des productions ;
- restaurer la fertilité de la terre, limiter les besoins en irrigation, lutter contre le réchauffement climatique ;
- améliorer durablement les revenus des populations rurales ;
- favoriser l'appropriation des techniques agroécologiques et le renforcement des capacités par la mise en place de formations et la responsabilisation des autorités nationales, locales et des populations bénéficiaires.

Descriptif du projet

L'AFD s'est engagée à financer des sous-projets de mise en valeur des bassins versants et des périmètres irrigués en déclinant des activités dans des domaines multiples :

- promotion des techniques agroécologiques ;
- appui à la structuration des producteurs et des filières de production ;
- appui à la sécurisation foncière ;
- soutien à la formation professionnelle ;
- aide à l'amélioration ou au développement des structures hydrauliques ;
- fourniture, dans un certain nombre de cas, d'équipements agricoles.

L'AFD a souhaité privilégier une approche intégrée, progressive et participative. L'objectif est de transférer rapidement (à l'issue d'une période de trois ans) la maîtrise d'ouvrage aux autorités locales ou à certains partenaires privés ou associatifs.

Impacts

Le programme devrait toucher directement près de 21 000 familles d'agriculteurs, permettre la réhabilitation de 6 000 hectares de périmètres rizicoles et le développement de 3 350 hectares de nouveaux aménagements. Le développement des techniques agroécologiques permet de restaurer la fertilité des sols et d'économiser la ressource en eau. Il contribue également à la lutte contre l'effet de serre (les premiers résultats font ressortir en moyenne une fixation de 1 tonne de carbone à l'hectare par an).

Dates et montants

Démarrage : 2006

Financement : subvention de 15 M€ aux autorités malgaches
Pour en savoir plus, rendez-vous sur : www.afd.fr

Donor country
Germany

Project/programme title
Turbine modernisation, modernisation of power stations

Purpose
Modernisation of turbines in six Chinese power stations

Recipient country	Sector	Total funding	Years in operation
China	Energy	EUR 38 million	Since 2004

Description

Since 2004, KfW Entwicklungsbank, working under commission to the German government, has been financing a range of measures aimed at improving efficiency in 20-year-old Chinese coal-fired power stations. The measures reduce the quantities of coal required per kilowatt-hour, and they decrease sulphur-dioxide emissions. Along with installation of equipment for combustion-gas desulphurisation in numerous power stations, the project's main aims included optimisation of combustion processes in six Chinese power stations. To this end, 15 vehicle-mounted (mobile) measuring units were financed. After helping to increase the amounts of energy produced in the power stations covered by the project, the mobile units were used in additional power stations, for positive results above and beyond the project's original goals. Proper, effective use of the mobile measuring systems is being supported by a development project of Gesellschaft für Technische Zusammenarbeit (GTZ).

Indicate factors that led to project's success

In view of China's rapid economic growth, China is strongly interested in improving resources efficiency in its electricity generation. In addition, the project has been able to build on positive experience with similar technologies in Europe. A total of 75 percent of China's electricity is produced in coal-fired power stations, and most such power stations in China burn coal with a high sulphur content. Much of the sector's equipment is highly obsolete and heavily polluting. China's major cities are heavily polluted with dust and sulphur dioxide – the main cause of acid rain. Many of China's people suffer from respiratory ailments. At the same time, environmental standards for pollutants such as sulphur dioxide and nitrogen oxide have not yet been comprehensively formulated and implemented. The project can thus serve as a best-practice example and pave the way for cleaner electricity generation in China.

Technology transferred

Desulphurisation technology; mobile measuring units for optimisation of resources use and combustion processes; modernisation of low-pressure technology and improvement of resources efficiency.

Impact on greenhouse gas emissions/sinks

The turbine modernisation programme reduces the average coal consumption per turbine by 11 g/kWh. Together, the modernisations on all the turbines covered by the project will yield a CO2 reduction of about 600,000 tonnes per year. In addition, use of the mobile measuring units holds the potential for saving up to 7 million tonnes of CO2 per year. Consequently, the project is making a significant contribution to climate protection.

Donor country
Germany

Project/programme title
Wind energy in China / Xinxiang, Dabanchang

Purpose
Promotion of wind energy, a climate-neutral energy source, in China

Recipient country	**Sector**	**Total funding**	**Years in operation**
China	Energy	EUR 26 million	Since 1999

Description

In 1991, the Federal Ministry of Education and Research (BMBF) established the ELDORADO programme, aimed at promoting wind energy in developing and threshold countries. One of the support projects within ELDORADO led to the first wind energy facility in China. Subsequently, in 1995, KfW Entwicklungsbank, working under commission to the BMZ, financed the construction of five additional wind energy facilities. The first of those facilities was commissioned in 1999. The last of the facilities, a 49.25 megawatt (MW) wind farm in Dabanchang, in the autonomous region Xinxiang, is to be completed by the end of 2010.

At the beginning of the project series, wind energy played no role whatsoever in China's energy mix. The first wind turbines had to be imported from abroad. In 2003, Chinese companies began establishing their own capacities for production of wind turbines. The first systems produced were produced under license to German and Danish companies. For about two years now, the number of wind turbines developed by Chinese firms has been growing continually, however. Nonetheless, German companies, such as Aerodyn Energiesysteme GmbH, are continuing to play an important role in the further development of Chinese wind energy technology.

As of the end of 2008, a total of 12.2 gigawatts (GW) of wind energy generating capacity were in place in China – a result that corresponds to an annual doubling of wind energy capacity for the past three years. Already, China's own capacities for producing wind turbines are hardly able to keep up with the strongly growing demand, and the total potential demand for wind energy in China is estimated to be over 300 GW.

Indicate factors that led to project's success

The project's major success is primarily a result of the time at which the project began. At that time, China formulated ambitious goals for installation of wind energy capacities even though wind energy was still – de facto – playing no significant role whatsoever in the country's energy mix. And the financing provided via German development co-operation, covering five wind energy facilities, played an important role in enabling China to achieve its ambitious goals for introduction of wind energy systems.

Technology transferred

Wind-turbine technology, technical and operational know-how

Impact on greenhouse gas emissions/sinks

Wind energy produces no greenhouse gases in electricity generation. On the average, the energy-amortisation period for a wind turbine is less than three months

Consequently, the project is making a significant contribution to climate protection.

Donor country
Germany

Project/programme title
Geothermal power stations in Olkaria (Olkaria II, III)

Purpose
Safe, reliable electricity generation from renewable energies, in Kenya

Recipient country	**Sector**	**Total funding**	**Years in operation**
Kenya	Energy	EUR 12.8 million	Since 2003,(Olkaria II)

Description

Kenya has great potential for using geothermal energy, but it is not yet making full use of that potential. The first geothermal power station in Kenya (Olkaria I) was ordered in the late 1980s. In 1997, the German government decided to participate, via KfW Entwicklungsbank, in financing of Olkaria II (with a capacity of 70 MW). That power station was ordered in 2003, at a time when the country urgently needed additional electricity generation capacity.

The new power station was built on the basis of experience gained with Olkaria I, and thus it includes a range of technical improvements. In one such improvement, steam and water from the geothermal source are pumped back into the relevant water-bearing ground layers, to provide a closed water cycle.

Via further participation by the Federal Government, a private investor has received a loan for increasing the capacity of an Olkaria III to 48 MW. That plant is able to also tap the thermal energy in the liquid medium, while Olkaria I and II only use the steam from geothermal field.

Indicate factors that led to project's success

Most of Kenya's electrical power is generated hydroelectrically. Geothermal energy is the most suitable source for any expansion of electricity generation, since the country's hydroelectric resources have largely been tapped, and climate conditions are hindering hydroelectric power generation.

Olkaria II was ordered at a time when additional electricity generation capacity was urgently needed.

Technology transferred

Tested, advanced technology, with modern plant control: Olkaria III is a two-phase binary geothermal power station that uses the Organic Rankine Cycle. Expanded plant size for Olkaria II and III; technical and organisational support.

Impact on greenhouse gas emissions/sinks

Operation of a geothermal power station with energy from the Olkaria field produces very low CO2 emissions in comparison to operation of fossil-fired power stations.

Donor country
Germany

Project/programme title
Climate protection programme for Croatia

Purpose
The aim of the programme, which is being carried out with the Croatian energy services company HEP ESCO, is to provide financial and technical support for professionalization and expansion of the company's business model.

Recipient country	**Sector**	**Total funding**	**Years in operation**
Croatia	Energy efficiency	EUR 15 million	Since 2009

Description

HEP-ESCO is a Croatian energy services company that develops, finances and carries out energy efficiency projects on a commercial basis. The company's services comprise modernisation, repair and overhaul of existing systems, to increase energy efficiency. Relevant investments are financed via savings on energy and on maintenance. Currently, the company is playing a key role in the development of an energy services market in Croatia. KfW, under commission to the German government, has granted HEP ESCO a loan of up to EUR 15 million for financing of necessary investments. KfW Entwicklungsbank is also supporting Croatia in the process of harmonisation with the EU in the area of energy efficiency. Finally, the effort is supporting measures to enhance public environmental awareness in Croatia.

Indicate factors that led to project's success

HEP ESCO is a highly professional partner; in 2007, it was honoured by the European Energy Service Initiative as a Best European Energy Service Provider.

- The company's services have proven to be highly attractive for customers (for example, HEP pays for an initial energy audit). That attractiveness makes it possible to develop the real potential of the market for energy services.
- After investments have been made, the relevant savings are reviewed, to increase confidence in the business model.
- In addition, the relevant savings are checked via an annual measurement and verification process.
- A capacity-building component has also proved to be a decisive factor in the project's success.

Technology transferred

Via long-term financing and institutional reinforcement, the programme is supporting HEP ESCO's efforts to expand its business model. HEP installs highly efficient equipment for its customers. That boosts technology transfer to Croatia.

The capacity-building component also strengthens technology transfer, since it helps to acquaint customers in Croatia with state-of-the-art technologies.

Impact on greenhouse gas emissions/sinks

Donor country
Germany

Project/programme title
Support for the Vietnamese biogas-promotion programme

Purpose
Introduction and dissemination of biogas technology, in the interest of assuring the energy supply for rural households.

Recipient country	**Sector**	**Total funding**	**Years in operation**
Vietnam	Rural development	DED support EUR 55,000 / year for 5 years is planned Total: EUR 275,000	DED participation since 2008

Description

1. Via use of biogas reactors, rural families receive cost-effective access to clean energy and organic fertiliser. The population's health situation improves, because gas stoves supplant open fires. 2. The project is aimed at poor families in rural areas, in a total of 50 provinces of Vietnam. The effort is being facilitated by the biogas programme's technical staff, at both the national and provincial levels. A German Development Service (DED) specialist is integrated within the biogas programme's technical department, which currently comprises 5 engineers and other staff. The programme is being carried out by SNV, a Dutch development assistance organisation, for the Vietnamese ministry of agriculture. The DED specialist's contribution consists of refining technical standards, carrying out quality management at the programme level, improving training programmes for technicians in the provinces and carrying out technical backstopping.

Indicate factors that led to project's success

State structure of incentives, via installation subsidies (about EUR 100 /system). Beneficial health effects from lower smoke inhalation during cooking. Use of fermentation residues as agricultural fertilisers.

Technology transferred

Biogas technology replaces use of firewood in food preparation

Impact on greenhouse gas emissions/sinks

Lower CO2 emissions from burning of wood, and lower methane emissions from animal manure.

Donor country Greece			
Project/programme title "SYN-ENERGY"			
Purpose			
Recipient country Albania, Bosnia-Herzegovina, Croatia, FYROM, Moldavia, Montenegro, Serbia, Georgia,Ukraine	**Sector** Energy	**Total funding** Hellenic Aid: 4.000.000 Euro/ USAID: 4.000.000Euro	**Years in operation**
Description ▪ Regional assessment of RES, ▪ E.E. in residential and public buildings, ▪ Strategic planning for RES and E.E., ▪ Capacity building and institutional network development			
I**ndicate factors that led to project's success**			
Technology transferred EE and solar equipment, transfer of knowhow in RES and EE			
Impact on greenhouse gas emissions/sinks			

Donor country Greece			
Project/programme title Applications of Renewable Energy and Energy Saving methods			
Purpose			
Recipient country Lebanon	**Sector** Energy-renewables	**Total funding** 700.000 Euro	**Years in operation**
Description ▪ Promotion of the use of RES in households, decrease of energy consumption, protection of the environment and strengthening of the national/local economy. ▪ Enhancement of business and scientific co-operation between Greece and Lebanon in the sector of RES Technologies.			
I**ndicate factors that led to project's success**			
Technology transferred Solar systems and energy saving lighting equipment for household use in affected regions of South Lebanon, supply and installation of testing and measurement equipment for solar collectors, aiming at the creation of a permanent centre for solar testing.			
Impact on greenhouse gas emissions/sinks			

Donor country Greece			
Project/programme title Renewable Energy Sources – Development and Implementation of Solar Energy			
Purpose			
Recipient country Armenia	**Sector** Energy-renewables	**Total funding** 360.000 Euro	**Years in operation**
Description ▪ Development of a new solar market and cooperation in the sector of RES and EE with Armenia. ▪ Promotion of the use of RES in Public Buildings, decrease of energy consumption, protection of the environment and strengthening of the national/local economy.			
I**ndicate factors that led to project's success**			
Technology transferred Combi solar thermal systems			
Impact on greenhouse gas emissions/sinks			

Donor country Greece			
Project/programme title Action Plan for Cooperation in the Field of Renewable Energy Sources			
Purpose			
Recipient country Turkey	**Sector** Energy-renewables	**Total funding** 456.666 Euro	**Years in operation**
Description ▪ Development of co-operation in the fields of Solar Energy and other Renewable Energy Sources with Turkey, ▪ Support to the harmonisation of the Turkish Legal Framework of RES to the E.U acquis			
I**ndicate factors that led to project's success**			
Technology transferred Installation of solar & energy savings systems			
Impact on greenhouse gas emissions/sinks			

Donor country Greece			
Project/programme title Installation of solar systems for household use in poor households in the region of Monaragala			
Purpose			
Recipient country Sri Lanka	**Sector** Energy-renewables	**Total funding** 290.000 Euro	**Years in operation**
Description Facilitate/finance access to electricity supply through solar systems, for poor, agrarian families for which electricity supply through conventional technologies is not possible			
I**ndicate factors that led to project's success**			
Technology transferred solar systems for household use			
Impact on greenhouse gas emissions/sinks			

Donor country
Italy

Project/programme title
Feasibility study and demonstration project on small scale biomass gasification

Purpose

The main aim of the project, carried out by CREAR (Centro Ricerca Energie Alternative e Rinnovabili), is to study the possibility of creating new business opportunities between Italy and India, through the verification and adaptation of innovative technologies for power generation from solid biomass through gasification. The bioenergy system here under consideration is a complete small scale biomass power generation system aiming at creating income for the farmers. The project aims at developing new opportunities of cooperation between Italy and India in the renewable energy sector, by studying the adaptation to EU standards and to different biomass feedstock of small scale Indian pilot plants for power generation based on biomass gasification. Gasification allows to convert solid biomass into a gaseous energy vector, which can be fed to a modified gas engine to produce electrical energy and heat

Recipient country	**Sector**	**Total funding**	**Years in operation**
India	Agro-bioenergy	311,000 Euros	24 months – starting end 2009

Description

India has a long tradition in gasifers: Indian researchers have developed several different types of small

scale gasifiers in the past decades, mainly for rural electrification, but also for industry.

Among these, one technology seems particularly interesting for future applications in Italy and the EU, where the demand for such systems is increasingly rising, especially after the Common Agricultural Policy reform and the implementation of support schemes (e.g. Green Certificates) for Renewable Energy.

The identified Indian technologies offers very promising features, and the basic concept of the gasifiers are particularly original and well designed.

However, in order to transfer the system to Europe, where favourable conditions exist for bioenergy generation in agriculture (agroenergy), some verifications are needed, and necessary adaptations to EU standards must be identified, as well as emissions assessed. In addition, the type of biomass suitable for the gasifier must be verified. In fact, further than wood chips, other agricultural residues are largely available in EU and Italy, which are ready to be used for energy generation. Also seed cake from oil crops such as sunflower, rape (EU), or Jatropha (India) could be properly investigated. The present project addresses these technical aspects, and aims at creating the base for an effective industrial technology transfer.

Indicate factors that led to project's success

Main biofuels under investigation are wood chips, residues of olive and wineyard pruning, but if possible also residues from sunflower oilseed pressing (i.e. press cake) will be investigated.

Technology transferred

The technology under consideration for the present applications is a small scale open-top twin-fire biomass gasifier developed by IIS (Indian Institute of Science) in Bangalore of 70 kWe.

Impact on greenhouse gas emissions/sinks

The plant materials, chosen as feedstocks, fulfil several socioeconomic and environmental criteria such as availability, cheap price, non-food use, contribution to reduction in GHG, energy efficiency, high yield, low environmental impact, as well local and global environmental relevance.

Donor country
Italy

Project/programme title
Second generation biofuel: cellulosic ethanol

Purpose
This project, carried out by Chemtex – Gruppo M&G (Italy), in cooperation with the relevant Mexican partners (Semarnat and Conafor), will evaluate the roadmap for a innovative solution in the production of second generation bioethanol from Mexican feedstocks, which do not compete with food, at price competitive with fossil fuels.
In particular the project focuses on the feasibility study of the process to produce second generation bioethanol from the best sustainable Mexican biomasses; the identified biomasses on one hand will have to guarantee a high cellulose/hemicellulose yield per hectare and on the other hand will have to allow a high global energy efficiency and a low environmental and social impact.

Recipient country	**Sector**	**Total funding**	**Years in operation**
Mexico	Agro-bioenergy	100,000 Euros	12 months

Description
The objective of the Project is to select high-yield and sustainable crops for second generation biofuel production, assuring eco-compatible bioethanol production and social-economic development for the interested geographical areas both in the short as well as in the long period. The general objective of this activities is therefore to identify the most interesting crops for second generation bioethanol production

In agreement with the pedo-climatic characteristics of the most interesting areas and the sustainability of the productive cycles. In Mexico, for instance, there is an important research in ethanol production using various plant materials as feedstock, some of them involving local plant species well adapted to marginal water availability of semi arid and arid environments. Most of this research has been done under aims different to biofuel production, but nevertheless the information generated can provide a basis for biofuel production feasibility assessment and give indications as the potential of different plants to provide feedstock for first and second generation ethanol.

Indicate factors that led to project's success
Woody and herbaceous dedicated energy crops are considered as sustainable feedstocks for production of bioethanol. In this Project identification of local biomasses, which fit the Mexican territory and are sustainable from both the point of view of impact on the territory and agricultural remuneration, is a key (such as sorghum, sugar cane bagasse and perennial plants non-food).

Mexico is the fifth larger producer of Sorghum in the world. Roughly seventy percent of the Mexico has a subtropical climate, providing ideal conditions for agriculture, in particular sugar cane; Sugar, in fact, is the first and most important harvest in Mexico.

From the technology point of view, the Italian partner of Project has comprehensive experience in the development, design and installation of ethanol manufacturing systems that are highly efficient and reliable. It has been developing process design and integration features both on first generation (ethanol from cereals) and second generation ethanol production with emphasis on energy efficiency, low environmental and social impact, plant operability and reliability taking also into consideration capital and operative costs for different upgraded solutions.

Technology transferred
Analysis on how the selected energy crops will impact on the logistic chain of the bioethanol conversion process. Transfer of knowledge regarding: energy crops cultivation, storage/harvesting and logistic; second generation plant specification and process description.

Impact on greenhouse gas emissions/sinks
The plant materials, chosen as feedstocks, should fulfil several socioeconomic and environmental criteria such as availability, cheap price, non-food use, contribution to reduction in GHG, energy efficiency, high ethanol/hectare yield, low environmental impact (minimum water and fertilisers requirements), as well local and global environmental relevance.

Donor country
Italy

Project/programme title
Collaboration between the Italian Ministry for the Environment Land and Sea and the United Nations Industrial Development Organization – Investment and technology Promotion Office Italy (UNIDO ITPO Italy) for the identification and development of investment projects within environmental sector in Egypt and Morocco.

Purpose
To implement a joint programme aimed at fostering industrial co-operation and technology transfers among private companies active in the environmental sector in Egypt, Morocco and Italy.

Recipient country	**Sector**	**Total funding**	**Years in operation**
Egypt, Morocco	Industrial – Different Environment and energy sub-sectors (renewable energies; water treatment; waste treatment and recycling)	470,000 Euros	2006-present

Description

The Programme is aimed at implementing a platform integrated by the MATTM and UNIDO ITPO Italy for the identification and promotion of environmentally friendly investment and/or technology transfer projects. Several activities are implemented and offered to private companies, such as: environmentally friendly project ideas scouting and formulation, technical and financial evaluation of the most interesting identified projects; promotion of the most interesting investment opportunities within the Italian entrepreneurial community and consequent matchmaking; technical assistance during the negotiations; and research of suitable financial facility/ties to implement the projects. Furthermore, promotional activities, such as organization of entrepreneurial delegations to fairs and exhibitions, implementation of study tours, organization of thematic seminars, are also implemented, in order to foster the industrial co-operation among the involved environmental companies. Finally, capacity building activities, such as training courses and workshops, are also provided and addressed both to the institutional counterparts as well as to private companies. In this framework, more than 460 Egyptian, Moroccan and Italian companies have been scouted and 76 concrete environmental friendly project have been formulated and inserted in the Programme portfolio, out of which 12 are currently under negotiations among potential partners. Tens of negotiations have been followed and more than 10 international technology transfers have been concluded among private companies for an estimated value of 6 million euros roughly.

Indicate factors that led to project's success

The importance of private sector's role for the successful implementation of environmental policies.

The MATTM technical skills have been integrated with the UNIDO ITPO Italy 25-year experience and own methodology for investment promotion.

Technology transferred

Several technologies have been transferred through Joint Venture or Technology Transfer agreements concluded between private companies active in the above-mentioned sectors (renewable energies; water treatment; waste treatment and recycling)

Impact on greenhouse gas emissions/sinks

Not available

Donor country
Italy

Project/programme title
Biomass substitution of fossil fuels in cement kiln of Italcementi Group plant in Thailand

Purpose
Reduce the use of fossil fuels in cement kiln by substitution with Rice husk which is carbon dioxide neutral.

Recipient country	**Sector**	**Total funding**	**Years in operation**
Thailand	Cement industry	700,000 Euros	4 years

Description

The Thailand economy is heavily based on agriculture and rice cultivation is a major practice both for local consumption and exportation. Rice husk constitutes more than 20% of the milling process output which has historically been considered waste and dumped in open fields with subsequent emission of methane from their anaerobic decomposition.

This project implements the use of rice husk as alternative and renewable fuel, substituting highly carbon intensive coal and lignite used in the cement kiln of the Pukrang plant. The year 2006 marked the start of the gradual substitution process which attained 10% total fossil fuel substitution in 2008.

At first a series of tests in the laboratories of the Group's Technical Centre (CTG), in Bergamo- Italy, were carried out to evaluate the properties of the rice husk thus establishing its suitability as fuel in kilns. Then an industry standard storage transport and feeding system for biomass was designed and installed.

Leveraging the Group's technology in processing alternative fuels, a new very efficient way to increase the rice husk substitution of fossil fuel was developed and implemented by the Group engineers at the end of 2007. Currently local engineers have fully acquired the new technology and handle the whole process independently.

I**ndicate factors that led to project's success**

- **Country specific conditions**: Rice husk is locally sourced contrary to coal and lignite which is imported into the country from Indonesia involving availability and shipping constraints. The widespread rice cultivation and the high number of rice mills in the region made it possible to create a reliable supply network which is fundamental for success in the substitution process.
- **External technical assistance**: Technical barriers of the burning of rice husk in cement kilns usually include reduced cement production and out of schedule maintenances often requiring a stop of the entire production process. Acquired experience in the similar practice at the Group's plants enabled implementation with limited adverse effects.
- **Environmental aspect**: Many environmental concerns related to the use of fossil fuels advocates a switch to biomass especially in a fast growing economy like that of Thailand. The quality of emissions was in compliance with existing environmental standards. Furthermore, the more than 300.000 tCO2 emission reductions achieved by the switching process in the space of 4 years constitute a valid contribution to the fight against climate change in a country considered to be highly exposed to the impacts of climate change

Technology transferred

- Biomass feeding and burning technology from Group engineers
- Technical assistance and training of local engineers

Impact on greenhouse gas emissions/sinks

Operation year	**Rice husk LHV as received (MJ/ton)**	**Rice husk energy substitution (TJ)**	**Fossil fuel emission factor (tCO2/TJ)**	**Emission reduction (tCO2)**
2006	13,000	187.17 (1.5%)	98.9	18,511
2007	12,000	553.25 (4.2%)	97.40	53,886
2008	12,000	1,398.71 (10%)	96.20	134,556
2009 (to September)	13,000	1,154.29 (10.6%)	96.30	111,158
				318,111

Donor country
Italy

Project/programme title
Eni Flaring Down Program (exploration & production division)

Purpose
The objective of the plan is to eliminate the practice of gas flaring in the Countries where Eni operates. The recovery of associated gas would contribute to the economic development of the producer Countries while simultaneously reducing impacts on the global climate change

Recipient country	**Sector**	**Total funding**	**Years in operation**
Tunisia, Libya, Congo, Algeria, Nigeria	Oil & Gas	3,664 million euros in the 2009-2012 period	2009-2012

Description

Tunisia: "Gaz du Sud" Project

The "Gaz du Sud" integrated project foresees to reduce gas flaring activities within the concessions of Adam, Oued Zar and Djebel Grouz by increasing the gas supply to the STEG National gas transmission system. The project aimed to the recovery of associated gas within the Djebel Grouz field, was completed in 2008. With regard to the project Adam – Gaz du Sud, only the first phase has been completed, while the second phase, foreseeing the installation of back up facilities at the Adam field, is on-going. However, it can be said that the flaring reduction target, defined by the first phase only, has already been achieved.

Libya: Bouri Gas Recovery project

The Bouri field is placed in the Libyan offshore, 120 km far from Tripoli. At the moment the associated gas is completely flared. The Bouri Gas Recovery project objectives are to preserve natural resources and to reduce the emission of pollutants/GHGs into the atmosphere. The first phase of the project foresees to separate the acid gas from the natural gas stream on platform DP4 and to lay down 20km sealines from DP4 to Sabratah platform where the purified gas will be blended with Sabratah produced gas and then delivered to Mellitah processing center. The gas arriving to on-shore Mellitah site will be exported to European market by Greenstream pipeline. Subsequently, in the second project phase, the acid gas stream separated on platform DP4 will be re-injected thus reducing the sulphur content of the flared gas.

Congo: M'Boundi Gas Valorization

The integrated project 'M'Boundi Gas Valorization includes the implementation of three different projects aimed to recover the associated gas previously flared at the M'Boundi oil field: M'Boundi Gas Gathering, CED (Centrale Electrique du Congo) re-powering and IPP Congo. The first two projects have already been completed. The M'Boundi Gas Gathering has foreseen the construction of a pipeline aimed to transport the recovered gas from M'Boundi to Djeno area where the Power Plants are located. The CED re-powering has foreseen the doubling of the existing power plant from 25MW to 50MW with the installation of a second simple cycle gas turbine. The new IPP Congo of 300 MW will be placed in the Djeno area near the existent CED. The startup of the new open cycle thermo-power plant is scheduled for the end of 2010. Both the power plants will be fed initially with M'Boundi field associated gas. However, the CEC, during the last part of its operational life will be fed by natural gas. The considered projects have a social value as well as an environmental one because they will allow to increase the power production in Congo, contributing to the economic development of the Country.

Algeria: Zero flaring in 2012

ENI Algeria will achieve its strict flaring reduction target, which is 'zero flaring' by 2012, thanks to the following projects. The MPP (Multiphase Pumps) project will enable to recover the associated gas, otherwise flared, coming from ZEA, ZEK and ROM oil fields, located in the Algerian desert. The project includes the installation of multiphase pumps (MPP) at M7 site (Phase 1 - completed) and ROM (Phase 2) + one new 12" pipeline of 37km from ROM to M7. This pipeline will allow the transport in multiphase of oil and gas to BRN (T1-T2) for the final treatment (separation-stabilization). The associated gas separated at BRN will be reinjected in BRSW field. MPP is part of the larger ROM project including a GOSP (Oil/Gas/Water Separation Plant) and the debottlenecking of BRN CPF (BRN Central Processing Facility) in order to increase the treatment capacity of BRN plant.

Nigeria: Flaring down projects

Nigeria flaring down program continues with the implementation of several projects proposed

by NAOC JV aimed to the maximization of gas utilization in its operational areas, for example the construction and upgrade of pipelines gas network, compression stations, gas treatment plants and as injection facilities. The target is the reduction of the ratio between gas flaring and gas production, in order to maximize the associated gas recovery to collect toward the LNG (Liquefied Natural Gas) Terminals..

Moreover, in 2006 the "Recovery of associated gas that would otherwise be flared at Kwale oil-gas processing plant, Nigeria" project was registered as a CDM with the aim of reducing the GHG emissions of about 15 MtCO2e in the 10 years.

Italy: flaring/venting reduction initiatives;

- Compressors sealing gas recovery at Barbara T1-2 platforms;
- Flaring reduction in Pineto gas treatment plant;
- Long Production Test (LPT) Cerro Falcone started in 2002 until January 2009 with renewal temporary authorization issued by UNMIG and Environmental Regional Department. In 2008 the LPT greenhouse emission was 166.659 ton and the gas flaring was 74.864.600 Sm^3. In January 2009 the LPT has been closed, the GHG reduction in the year 2009 is 94% and gas flaring reduction is 99% vs 2008..

Indicate factors that led to project's success

Eni signed Memorandum of Understanding (MoU) with many national authorities (i.e.: with Nigeria, Congo, Angola, Italy) to facilitate the development of this types of projects.

Moreover, it is foreseen to require the registration as CDM for some GHG reduction projects in order to generate Carbon Credits which could be used for compliance within the European Emission Trading Scheme.

Technology transferred

The flaring down projects in the considered Countries will require the construction of costly infrastructures such as new gas pipelines, highly efficient electrical plants and gas liquefaction facilities, thus the projects' implementation will be able to promote the transfer of advanced technologies to the local communities.

Impact on greenhouse gas emissions/sinks

Greenhouse gas emission reduction Target:

- Flaring Down Program 2009-2012: about 14 MtCO2e by 2012, equivalent to a reduction of 70% 2007 flaring emissions;
- CDM-Kwale, Nigeria: expected emissions reduction of about 15 MtCO2e by 2015.

Donor country Japan			
Project/programme title Yen Loans for Climate Change Countermeasures - (1) New Haripur Power Plant Development Project, (2) Central Zone Power Distribution Project			
Purpose			
Recipient country Bangladesh	**Sector**	**Total funding** (1) 22.21 billion yen (2) 9.715 billion yen	**Years in operation**
Description (1) New Haripur Power Plant Development Project (Phase II) This project is for the construction of and technical assistance for a highly efficient combined-cycle thermal power plant (360 MW) in Narayanganj Town, located in the suburbs of Dhaka, which will control CO2 emissions. Increased power generation paired with streamlined operations and maintenance will contribute to stable power supply. Thus CO2 emissions are expected to be reduced significantly compared to traditional power generation facilities. (2) Central Zone Power Distribution Project. This project will construct and revamp a new power distribution network in central Bangladesh in the Greater Mymensingh and Sylhet districts. It will also provide assistance in developing the organizational infrastructure of the state-run power distribution network so as to decrease power loss during distribution, thereby cutting CO2 emission levels.			
I**ndicate factors that led to project's success**			
Technology transferred			
Impact on greenhouse gas emissions/sinks			

Donor country Japan			
Project/programme title Grant Aid for Environment Programs. The Programme for Improvement of Solid Waste Management in Dhaka City toward the Low Carbon Society			
Purpose Development of Human Resources, Capacity Development of Dhaka City			
Recipient country Bangladesh	**Sector** mitigation	**Total funding** 1.215 billion yen	**Years in operation**
Description **Development of Human Resources** Environmental education for Drivers etc.(Awareness on Global Warming) **Capacity Development of Dhaka City:** Provision of Waste Collection Vehicles - Change to CNG Vehicles → CO2 Reduction			
I**ndicate factors that led to project's success**			
Technology transferred			
Impact on greenhouse gas emissions/sinks			

Donor country Japan			
Project/programme title Grant Aid and Loan Assistance, Seamless Assistance- Cyclone and flood countermeasures, emergency assistance, rehabilitation and reconstruction assistance			
Purpose Cyclone shelters. Shelters (grant aid): A total of 81 cyclone shelters were constructed cooperatively in response to damage incurred during the 1991 cyclone. These shelters are utilized as primary schools during normal times. This project helped to equip these shelters against damage from the high tides that accompany cyclones, while also improving school facilities.			
Recipient country Bangladesh	**Sector** Adaptation measures	**Total funding**	**Years in operation**
Description [Emergency Assistance] - Provision of emergency relief supplies <grant> (November 2007): tents, blankets, water, etc. - Provision of emergency grant aid assistance <grant> (November 2007): assistance through international organizations [Rehabilitation Assistance] - Emergency rehabilitation project for disaster damage <loan> (February 2008): The necessary funds were provided for importing goods vital to sustainable activities, such as agriculture. Also, roads, levees and other facilities were promptly restored. [Assistance for reconstruction and countermeasures against future disasters] - Needs assessment survey on cyclone disaster reconstruction assistance (December 2007): An assessment was conducted to consider mid- to long-term assistance needs. - Project for Construction of Multipurpose Cyclone Shelters in disaster areas of Cyclone Sidr <grant> (June 2008): Under this project, there are plans to build 36 additional shelters in four provinces that were particularly damaged from the cyclone.			
I**ndicate factors that led to project's success**			
Technology transferred			
Impact on greenhouse gas emissions/sinks			

Donor country Japan			
Project/programme title Programme Grant Aid for Environment and Climate Change The Project for Community-Based Flood Disaster Management to Adapt to Climate Change in the Nyando River Basin			
Purpose			
Recipient country Kenya	**Sector** Adaptation measures	**Total funding**	**Years in operation**
Description This project is consist of construction for basic infrastructure (e.g. culvert bridge, weir, evacuation center, etc.) and promotion of public awareness for prevention of flood disaster in the 24 villages in Nyando River Basin in Kenya, based on the adaptation programme to climate change.			
I**ndicate factors that led to project's success**			
Technology transferred			
Impact on greenhouse gas emissions/sinks			

Donor country
Japan

Project/programme title
Development Survey - Grant Aid
Comprehensive Agricultural Development of Prek Thnot River Basin,
Project for Improvement of Roleang Chrey Headworks

Purpose

Recipient country	**Sector**	**Total funding**	**Years in operation**
Cambodia	Adaptation measures		

Description

Prek Thnot River Basin is a major rice-producing area. However, production is unstable as the ratio of irrigated land remains low.

Droughts in the dry season and flood damage in the rainy season are frequent, making this a region vulnerable from low production and self-sufficiency.

< Comprehensive Agricultural Development of Prek Thnot River Basin>

Between July 2005 and August 2008 a development survey was conducted in the basin with the objective of 1) considering measures for better agricultural production through the effective use of water resources (draft of the master plan), 2) providing project assistance for upgrading existing irrigation facilities that carry a high level of priority and urgency (FS survey), 3) establishing a flood warning plan and considering measures to reduce the damage incurred from flooding, 4) drafting plans for partner country counterparts and improving the technology related to irrigation management, spreading agriculture, etc. (employing a pilot project).

In the future, if climate change leads to greater fluctuations in rainfall and to the increased intensity and frequency of disasters such as drought and flooding, there is concern that the region will face a more serious level of production decline. However, based on the results of this survey, if irrigation facilities are developed and water resources are utilized effectively, it is anticipated that the resistance capacity against flooding and drought will increase. Furthermore, if the flood-warning plan proposed in this survey is actually drafted, it is expected to prevent flood disasters resulting from climate change from growing more serious.

< Project for Improvement of Roleang Chrey Headworks>

Under this project, assistance will be provided via grant aid for constructional improvements to facilities that have deteriorated and show marked decline in functional performance after a development survey is conducted 34 years following their construction (June 2009 EN). This will accordingly lead to reduced damage from flooding as well as proper and stable water supply in downstream irrigation areas

Indicate factors that led to project's success

Technology transferred

Impact on greenhouse gas emissions/sinks

Donor country Japan			
Project/programme title Mitigation Measure Assistance using Japanese ODA Loans (CDM Project) Zafarana Wind Power Plant Project			
Purpose Registered as CDM project in June 2007 (The first large-scale ODA project in the world to become a CDM project). GHG reductions resulting from this project: Approx. 250,000 tons annually. These reductions are comparable to the volume of CO2 absorbed by a forest roughly the size of Tokyo's 23 wards			
Recipient country Egypt	**Sector** Wind energy	**Total funding** 13,497 (million JPY)	**Years in operation** Redemption period -40 years/ Deferment period 10 years
Description A wind power plant is being newly constructed in the Zafarana area, 220km southeast of the Egyptian capital of Cairo, on the coast of the Red Sea (With 120MW output, this plant will generate roughly twice the power of Japan's largest-scale wind power station at Soya [57MW])			
I**ndicate factors that led to project's success**			
Technology transferred			
Impact on greenhouse gas emissions/sinks			

Donor country
Japan

Project/programme title
Yen Loans for Climate Change Countermeasures Climate Change Program Loan

Purpose

Recipient country	**Sector**	**Total funding**	**Years in operation**
Indonesia	Cross-sectoral		

Description

Policy talks were held between the governments of Japan and Indonesia on climate change, whereafter a Policy Action Plan that contributes to climate change countermeasures was established and agreed on between the two governments. The plan is based on the National Action Plan Addressing Climate Change, which was drafted by the Indonesian Government. This program provides yen loans to Indonesia after an assessment of disbursements for the aforementioned action policy actions, which will be implemented by the Indonesian Government. Approximately 30.8 billion yen was provided in 2008, and during the aforementioned assessment, progress management monitoring was conducted on the agreed policy actions, while advice was offered relating to areas that need improvement. This program can be utilized as a base for clarifying the issues that require attention for policy actions and to achieve urgent objectives, while also incorporating the proper assistance in a timely fashion. The Agence Francaise de Developpement (AFD) of France, a co-financer for the program, is also participating in monitoring activities.

Policy Actions in Indonesia (examples)

Forest sector: 1) A pilot project will be launched ahead of a new market mechanism to prevent the decline of forests (Reducing Emissions from Deforestation and Forest Degradation (REDD)). 2) Efforts will be made to strengthen CO2 absorption capacity through the forest sector by firmly managing forested sites, including preventative measures against forest fires and the recovery of peatlands.

Water resources sector - The following measures will be implemented in order to enforce optimal management of water areas so as to adapt to the impacts of climate change.1) Drafting integrated water resource management plans.

Energy sector - Improvement of systems relating to reusable energy development, including geothermal power development. <Industrial, domestic (household), and commercialsectors> 1) Related laws and ordinances will be developed aimed at improving energy efficiency. 2) Efforts will be made to improve data collection for energy consumption in the major industrial sectors (steel, cement, etc.). A roadmap will also be created aimed at cutting CO2 emissions. CO2 emission reduction regulations will be established that include targets for each sector.

Other - Policies and systems relating to CDM, co-benefits approach, early weather warning systems, etc. will be constructed and upgraded as part of cross-sectoral efforts in the agricultural sector, for national land use plans, and for other issues.

Indicate factors that led to project's success

Technology transferred

Impact on greenhouse gas emissions/sinks

Donor country
New Zealand

Project/programme title
Loss Reduction Project: Tuvalu

Purpose
To help the Tuvalu Electricity Corporation (TEC) provide a higher quality of electricity services at lowest cost to consumers.

Recipient country	**Sector**	**Total funding**	**Years in operation**
Tuvalu	Energy	NZ$138,500	November 2007 – June 2009

Description

In 2007, energy ministers from the Pacific region met in Rarotonga, Cook Islands, to discuss energy issues facing the region. This resulted in a communiqué highlighting areas for action. To assist in achieving the desired outcomes, New Zealand offered to help the TEC (Tuvalu Energy Corporation) to provide higher quality electricity services at the lowest costs to consumers. The work was administered by the Ministry of Economic Development and was funded through the New Zealand Government Agencies Fund.

The first phase of the project was completed in late 2008 and included:

1. a review of distribution losses, both technical and non-technical
2. identification of opportunities for system design and operational performance improvements
3. a review and identification of demand-side management and renewable energy opportunities.

The second phase implemented the recommendations from phase 1. Phase 2 included:

1. training the TEC staff in the distribution system and in asset management
2. developing methods for the TEC to evaluate solar photovoltaic options
3. feasibility studies on the use of copra oil and wind for electricity generation
4. identification of opportunities for greater energy efficiency, and the setting up of a programme for improvement together with policy options for government
5. recommendations for improved corporate management.

Indicate factors that led to project's success

The training/capacity building component means that the TEC can improve its service itself and be less dependent on external consultants. As well as identifying key renewable energy options for Tuvalu, the project developed methods through which the TEC could evaluate renewable energy options itself.

By considering the overall design of the electricity system, and making recommendations on corporate management, the project may also help to ensure the continued economic viability of Tuvalu's electricity company.

Technology transferred

The project recommended a number of ways that Tuvalu can reduce its reliance on diesel generation through a greater use of wind, copra oil, biogas and energy-efficiency technologies.

Impact on greenhouse gas emissions/sinks

Depending on the outcome of the project, a greater use of renewable energy and energy-efficiency measures will reduce Tuvalu's use of diesel for electricity generation and reduce greenhouse gas emissions.

Donor country Sweden			
Project/programme title Pilot Project Providing Electricity Services Using Photovoltaic Solar Systems through Energy Service Companies in Rural areas in Zambia			
Purpose Develop guidelines for the necessary economic, institutional and governing conditions required for successful development of energy service companies (ESCOs) in rural areas.			
Recipient country Zambia	**Sector** Energy	**Total funding** SEK 12.8m	**Years in operation** 1998-2006
Description The project supports the formation of local "energy service companies" that can supply energy services to the rural population. The companies receive financial support to purchase PV systems, which they lease to the local population and local contractors. The companies install and maintain the system.			
I**ndicate factors that led to project's success** Considerable account was taken of the service life of the system in choosing heating systems and maintenance. To make the systems sustainable, there has been a strong focus on increasing administrative capacity. A maintenance charge for the user has also been introduced. As the system is expensive for the average citizen, a platform has been developed to facilitate grants and loans.			
Technology transferred PV energy technology, leadership and administrative skills, marketing capacity			
Impact on greenhouse gas emissions/sinks (no information available)			

Donor country Sweden			
Project/programme title Asia Sustainable and Alternative Energy Programme			
Purpose Increase the use of alternative and renewable energy sources and improve the efficiency of energy use in Asia			
Recipient country China, Vietnam, Indonesia, India and Bangladesh	**Sector** Energy	**Total funding** SEK 15m	**Years in operation** 2007-2009
Description The project has been implemented in a selection of Asian countries in one million households in order to improve access to renewable energy while promoting energy savings, for instance through information campaigns and documentary films. Other donors are the Netherlands, the United Kingdom and the United States.			
I**ndicate factors that led to project's success** "Innovative Investment Delivery Mechanisms", development of institutional and legal frameworks, exchange of training and knowledge. The programme has also generated additional investments from the GEF, the World Bank and local financiers totalling hundreds of millions of dollars.			
Technology transferred Institutional support in the form of the energy and infrastructure sector, development of energy services for 1.1 million households (coconut oil, wind, biomass, small-scale hydropower etc.), increase in generating capacity of 1 455 MW.			
Impact on greenhouse gas emissions/sinks direct reduction of 2.2 million tonnes/year (indirect reduction 515 million tonnes/year)			

Donor country
Switzerland

Project/programme title
Climate Change Adaptation Programme (PACC)

Purpose
Secure the livelihoods and reduce the vulnerability of poor people by promoting adaptation measures that enhance their capacity to better cope with adverse impacts of climate change.
To strengthen the capacity of the local and regional governments in Cusco and Apurimac, as well as the vulnerable poor communities to cope with adverse impacts of Climate Change by means of providing basic reliable information, policies, strategies and adaptation measures, integrated into sustainable development processes.

Recipient country	**Sector**	**Total funding**	**Years in operation**
Peru	Water Resource Management, Food Security and Risk Management	CHF 4,9 million for programme implementation CHF 1,12 million for scientific Know-How Transfer	2008 - 2011

Description

The programme consists of the following four components:

Assessment of the vulnerability and capacity to cope with adverse impacts to climate change in the regions of Cusco and Apurimac. For this purpose, vulnerability assessments and climate change models will be developed in close cooperation with regional and local authorities, scientific institutions and communities.

Establishment of a regional information system for the collection of data and monitoring of climate variability and change.

Implementation of adaptation measures in the fields of water resource management, food security and risk management.

To manage knowledge and promote public policies.

Strategic partners of the PACC are the Ministry of Environment (MINAM), Regional Government of Cusco and Apurimac and the Province and District

Municipalities of the priority areas. The programme is supported by a consortium of three NGOs (Intercooperation, Libélula, Predes) and receives scientific advise from a consortium of Swiss scientific institutions.

I**ndicate factors that led to project's success**

This programme is a pilot initiative and shall provide insights on:

Linking scientific and traditional Know-how regarding climate change predictions;

Establishing Know-how and capacities at the regional and local level for climate data collection and establishment of information systems;

Develop capacity and demonstrate best practices to cope with climate change in water resource management, food security and risk management;

Integrate adaptation measures into government policies, plans and budgets at different governmental levels (local, regional, national);

Promote coordination of actions among different sector of local, regional and national governments.

Technology transferred

Capacity building in tools and techniques for climate change adaptation in water resources management, food security and risk management;

Know-how transfer regarding climate change modelling and vulnerability assessment as well as data collection and interpretation.

Impact on greenhouse gas emissions/sinks

Focus exclusively on adaptation.

Donor country
Switzerland

Project/programme title
Carbon Finance Assist (World Bank Institute)

Purpose
To contribute to the reduction of CO2 emissions through the flexible mechanisms. Purpose: To contribute to the efficient and effective use of the flexible mechanisms by building up the necessary capacities in developing and transition countries in order to use the new carbon market.

Recipient country	**Sector**	**Total funding**	**Years in operation**
Global	Emission trading	CHF 3 million	2006 - 2009

Description

Switzerland has a more than 10 years track-record of capacity building for climate change mitigation. After a series of over 20 national strategy studies for developing and transition countries financed through the World Bank, in 2006 Switzerland has pooled its funds with other donors in the Carbon Finance Assist trust fund managed by the World Bank Institute.

The programme consists of the following three components:

•Institutional capacity building

•Market development

•Outreach

Strategic partners at the national level are the Designated National Authorities. The programme is also closely cooperating with highly specialized consult-ants, research institutions and the private sector. More recently, the programme has joined forces with the large city grouping C-40 in order to seize CDM opportunities in megacities. Over 50% of the world's population live in urban areas – being responsible for 80% of global power consumption and emissions. However, cities are almost not represented as project owners in the CDM so far. The programme aims at closing this gap..

I**ndicate factors that led to project's success**

Expected added value of the programme:

•Formulation and implementation of the national CDM strategies;

•Establishing and strengthening of the designated national authorities (DNA);

• Demonstration of best practices in the use, incl. regulation and promotion of the CDM market;

•Promotion of South-South know-how (host country committee);

•Delivery of accurate market information, and match-making between CDM supply and demand: Carbon Expo (the world's largest CDM trade fair); annual state of the carbon market report;

•Development of CDM methodologies in strategic sectors where CDM faces difficulties, e.g. transport

Scaling up the CDM by capacity building at the sub-national / municipal level; 80% of the global CO2 emissions are linked to cities – large cities being the "economic powerhouses" of many country; cities are often investors in potential CDM sectors such as public transport, lighting, building, waste management, power plants etc.

Technology transferred

• Transfer of know-how regarding the establishment of DNAs and establishment of CDM/climate units within municipal administrations

• New CDM methodologies

• Capacity and skills development of public authorities at the national and sub-national level, regarding identification, structuring, implementation and marketing of CDM projects

Impact on greenhouse gas emissions/sinks

Not quantified.

Donor country
Switzerland

Project/programme title
Rehabilitation of the district heating system in the city of Iasi, Romania (co-financing with EBRD and Municipality of Iasi)

Purpose
To rehabilitate the most affected parts of the district heating system of the city of Iasi in order to contribute to the reduction of CO2 emissions, to sustainable heating tariffs as well as better service to consumers.
To contribute to the efficient and effective use of the centrally provided district heating; to reduce fuel consumption; to increase service quality and avoid further switches to less efficient heat sources.

Recipient country	**Sector**	**Total funding**	**Years in operation**
Romania	District heating, energy efficiency, global environment	EUR 31.8 million of which EUR 7 million Swiss grant	2006 - 2010

Description

In the Romanian city of Iasi currently more than 230'000 residents or 76% of the entire population rely on heat and hot water from district heating. The overall condition of the district heating system is bad as Iasi has not invested in maintenance in the past ten years but focused only on urgent repairs. The project's objective is to contribute to the rehabilitation of the city's district heating system to improve thereby the living condition of the inhabitants by ensuring a reliable supply of competitive and environmentally sound heat and also lay the basis for better economic development. The project is co-financed by the EBRD and the municipality of Iasi.

I**ndicate factors that led to project's success**

The objective of the project is to contribute to the rehabilitation of the district heating system and thereby improve the living conditions of the local population by ensuring a reliable supply of competitive and environmentally sound heat and hot water.

The project has been approved with the aim to

- Increase energy efficiency by reducing heat losses in the distribution system
- Increase energy efficiency by increasing the efficiency of the thermal stations and to provide demand driven heat
- Thereby contribute to the reduction in emissions
- Provide a better service to customers so as to prevent disconnection and the switch to environmentally less efficient decentralized systems
- Increase the commercial performance of the district heating company to secure sufficient revenues while keeping tariffs affordable so as to guarantee centralised district heating services on a long term basis.

Technology transferred

- First experience with factory assembled automated compact thermal stations
- Modern devices
- Awareness raising and training of optimized operation of the district heating system

Impact on greenhouse gas emissions/sinks

Approximately 100'000 t C02 until 2012

Donor country
Switzerland

Project/programme title
Roundtable on Sustainable Biofuels

Purpose
To contribute to sustainable production and international trade of biofuels
To contribute to the establishment of an international sustainability standard for biofuels

Recipient country	Sector	Total funding	Years in operation
Global	Biofuels	CHF 0.6 million	2005 - 2010

Description

Switzerland has a long-standing experience in the establishment of international sustainability standards for agricultural commodities (tropical timber; soy, cotton, coffee) through multi-stakeholder processes. Such standards base on a broad and systematic inclusion of all relevant stakeholders and aim at a standard which is private sector driven and thus supported by all important market players.

SECO programme for the sustainable use of biofuels consists of the following three components:

- Institutional capacity building for Life Cycle Assessments (LCA) of biofuels
- Structuring of an International Roundtable on Sustainable Biofuels
- Quickcheck tool for biofuel producers to measure their environmental impact

Strategic partners are scientific institutes (including the Swiss Federal Institute for Material Research and Testing EMPA, and the Federal Technical University in Lausanne EPFL), biofuels producers, importers, governments and NGOs.

Indicate factors that led to project's success

- Training of partner countries (e.g. Brazil) in the establishment of an national Life Cycle Data base and the link with the most important European Life Cycle database, ecoinvent;
- Measuring of a concrete pilot case of biofuels, based on biofuel from organic and fair trade soy residues
- Delivery of an easy-to-handle and cost-free software for producers

Technology transferred

- Transfer of know-how regarding the establishment of Life Cycle databases
- Measuring software for biofuels LCA

Impact on greenhouse gas emissions/sinks

Not quantified.

Donor country
Switzerland

Project/programme title
Energy Efficient Building Programme South Africa

Purpose
To contribute to the reduction of CO2 emissions and the alleviation of energy poverty in South Africa.
To contribute to a significant reduction of energy consumption in the building sector through enhanced energy efficiency in the full life cycle of buildings.

Recipient country	**Sector**	**Total funding**	**Years in operation**
South Africa	Building	CHF 16 million	2008 - 2013

Description

The programme consists of the following three components:

Setting, enforcement and monitoring of the policy framework (strategies, regulations, standards, fiscal tools);

Building capacities and develop skills of builders, architects, engineers, labs, institutions, municipalities and others in the area of energy efficient buildings;

Implementation of projects to demonstrate energy efficiency a) in the production of building material (bricks), b) by the design and the construction of the building and c) by the use of energy efficient basic equipments and behaviour during the rest of the building lifecycle.

Strategic partners at the national level are the Department of Minerals and Energy, the Department of Housing, and the Department of Environment and Tourism. The programme will also closely work with training and research institutions and the private sector.

Indicate factors that led to project's success

Alignment with the National Energy Efficiency Strategy;

Linking operational level with policy level: Research results and best practices generated under component two and three are shared with the authorities in order to stimulate policy dialogue and promote policy framework setting;

Demonstration of best practices in the production of building material and use of energy efficient equipment;

Promotion of South-South Know-how and Technology Transfer;

Establishment of partnerships between South-African and Swiss Research Institutes;

Dissemination of best practices developed in South Africa to other South African countries (outreach).

Technology transferred

Introduction of energy efficient technology of the brick sector (Vertical Shaft Brick Kiln) developed in India and Nepal to South Africa;

Transfer of Know-how regarding the production and use of energy efficient materials and technology in the construction of buildings through establishment of partnerships among South-African and Swiss Research Institutes;

Capacity and skills Development of workers of the building sectors.

Impact on greenhouse gas emissions/sinks

The programme will contribute to reach the government's target of a final energy demand reduction of 10% for the residential sector and of 15% for the commercial and public building sector by 2015.

Donor country
Switzerland

Project/programme title
Competence network for Small and Micro Learning Enterprises (CoSMiLE) India

Purpose
Improve the economic, environmental, and social conditions of entrepreneurs and workers of medium, small and micro enterprises (MSMEs)
Increased adoption of resource-efficient technologies and knowledge-sharing to enhance competitiveness of the targeted MSMEs.

Recipient country	**Sector**	**Total funding**	**Years in operation**
India	MSMEs in energy intensive sectors (foundry, glass, brick, thermal and power gasifiers)	CHF 7 million	since 2002

Description

In many energy-intensive industries among MSMEs which use commercial fuels like coal, oil and gas, energy cost accounts for up to 20-50% of the total cost of production. Energy efficiency is at the centre stage for improving the competitiveness and reducing carbon emissions of MSMEs. The overall objective of CoSMiLE is to ensure efficient use of energy in these enterprises by adoption of energy efficient technologies and improvement in operating practices. CoSMiLE is a dynamic and informal grouping of actors consisting of owners and workers of small and micro enterprises, service providers like masons, contractors, fabricators, and local experts, and stakeholder institutions like industry associations, government departments,

NGOs, financing institutions, and academic and research institutions. CoSMiLE provides services in technology development, technology dissemina-tion and capacity building:

Technology development: The technologies in vogue in the small scale sector are usually inefficient, but often require only small changes to transform them into proper designs for saving energy. Under the umbrella of the CoSMiLE initiative, several technologies in different sectors are developed (refer to technology transferred below).

Technology dissemination: The CoSMiLE network provides technical support for implementation of economically attractive, energy efficient and environment-friendly technologies. Regional level workshops/seminars and one-to-one interaction with the target group are organized in order to sensitize the entrepreneurs about the technologies.

Capacity building: Capacity building of partners and providing technical back-up or support to them is one of the major activities under the programme. The programme is developing physical or virtual platforms at different levels for exchanging information and experience among various participants. CoSMiLE provides multi-stakeholder dialoguing platforms on various issues such as technology, policy (e.g. facilitating inclusion of cleaner production initiatives in the

global climate protection framework), and social sensitivity.

Indicate factors that led to project's success

Holistic approach including development and dissemination of technologies and capacity building: Technologies are integrated in a social context and allow multiple benefits (e.g. improved working conditions for the workforce, better quality of life etc.).

Attractivity of disseminated technologies: Most CoSMiLE technologies have a payback period of less than two years, product quality has been good and rate of rejection has gone down in most cases.

Sensibilisation: A large number of entrepreneurs from MSMEs have realized the importance of investing in cleaner technologies.

Learning orientation of the network has allowed formation of partners from different institutions.

Potential for replication: The cleaner technologies demonstrated in various MSME sectors in India have good potential to be replicated in other developing countries (south-south cooperation).

Technology transferred

Holistic package, containing also social and economic components and strong capacity building elements

Foundries: Divided blast cupola for grey iron melting; pollution control systems

Bricks: Setting up of vertical shaft brick kilns Glass: Energy efficient pot furnaces for glass melting Biomass gasifiers for a wide variety of thermal applications
Impact on greenhouse gas emissions/sinks Until 2008 CoSMiLE interventions have achieved cumulative CO2-reductions of 340,000 tonnes

Donor country The Netherlands			
Project/programme title Promoting Renewable Energy Programme (PREP)			
Purpose To enable developing countries to develop and implement policies supporting renewable energy with a focus on poverty reduction.			
Recipient country African countries, Indonesia	**Sector** Energy	**Total funding** Euro 500 million	**Years in operation** 2008-2011
Description The following lines of action are taken in order to achieve the objective: 1. Direct investments in renewable energy installations; 2. Ensuring the sustainability of biomass production for energy purposes; 3. Influencing policy of important actors in the field of energy; 4. Capacity development in the field of renewable energy.			
I**ndicate factors that led to project's success** So far political commitment by the Dutch government has been the main driver for the start-up of this programme. Implementation has just started.			
Technology transferred Renewable energy technology.			
Impact on greenhouse gas emissions/sinks Positive.			

Donor country The Netherlands			
Project/programme title Access to Energy Fund (AEF), FMO (Finance for Development)			
Purpose Promoting renewable energy.			
Recipient country FMO is targeting at least 75% of the total AEF capital for Sub-Saharan Africa and/or Least Developed Countries and a maximum of 25% in other emerging markets.	**Sector** Energy	**Total funding** Euro 70 million	**Years in operation** 2006-2015
Description The AEF is a vehicle initiated by the Dutch government and FMO to make it possible to fund private sector projects that create sustainable access to energy services.			
I**ndicate factors that led to project's success** Providing financial leverage for renewable energy projects. The AEF can provide equity financing up to an amount that is the lesser of €10 million or 75% of a total transaction amount. Subordinated debt/senior loans can be made in the amounts of the lesser of €20 million or 75% of total transaction. The fund can offer longer grace periods and longer tenors often necessary to get such projects off the ground. The AEF can also play a role in the development of new projects by providing grants.			
Technology transferred By providing financing for projects involved in the generation, transmission or distribution of energy, the Fund hopes to ultimately connect 2.1 million people in developing countries by 2015.			
Impact on greenhouse gas emissions/sinks Positive.			

Donor country The Netherlands			
Project/programme title Asia Biogas Programme			
Purpose Introduction of renewable energy and alleviating poverty			
Recipient country Nepal, Vietnam, Bangladesh, Cambodia, Lao PDR	**Sector** Energy	**Total funding** €12.9	**Years in operation** 2005-2012
Description Introduction of biogas technology for cooking and heating at household level.			
I**ndicate factors that led to project's success** Strong integral approach of technology transfer, capacity building and awareness and institutional support.			
Technology transferred By the end of 2008, more than 250,000 households (1.6 million people) have been equipped with biogas plants. Because of these achievements SNV is now, at the invitation of the Asian Development Bank leading a working group on domestic biogas in the framework of the _Energy for All Partnership'. Through this initiative, an additional one million biogas plants are planned across the Asian region by 2015.			
Impact on greenhouse gas emissions/sinks Positive.			

Donor country The Netherlands			
Project/programme title Africa Biogas Partnership Programme			
Purpose Introduction of renewable energy and alleviating poverty			
Recipient country Senegal, Burkina Faso, Ethiopia, Tanzania, Uganda and Kenya	**Sector** Energy	**Total funding** Euro 29.9 million	**Years in operation** 2008-2013
Description Introduction of biogas technology for cooking and heating at household level.			
I**ndicate factors that led to project's success** Strong integral approach of technology transfer, capacity building and awareness and institutional support.			
Technology transferred In cooperation with Hivos, SNV's biogas activities have been expanded to include Africa. Rwanda is the first country of engagement, with another six countries targeted. This Programme took off at the end of 2008 and aims to reach 70,000 households by 2013.			
Impact on greenhouse gas emissions/sinks Positive.			

Donor country The Netherlands			
Project/programme title Preparedness for Climate Change programme of Red Cross/Red Crescent Climate Centre			
Purpose Adapt to climate changes and reduce disaster risks.			
Recipient country 37 countries	**Sector** General Environmental Protection	**Total funding** Euro 1.26 million	**Years in operation** 2005-2009
Description The Centre's main approach is to raise awareness; advocate for climate adaptation and disaster risk reduction (within and outside the Red Cross and Red Crescent); analyse relevant forecast information on all timescales and integrate knowledge of climate risks into Red Cross Red Crescent strategies, plans and activities.			
I**ndicate factors that led to project's success** Strong and capable network..			
Technology transferred The PFCs helps national unions in 37 developing countries to analyse risks and implications of climate change and to develop enhanced disaster management plans. Change is now integrated in the strategy and plans of the International Federation (including regional offices) and in 40 national unions in developing countries.			
Impact on greenhouse gas emissions/sinks None.			