



## Climate Financing by Sweden<sup>1</sup>

### Contents

1. Introduction .....	2
2. Objective and funding.....	2
2.1 Governing policies and priorities .....	2
2.2 Forms of cooperation and instruments .....	4
Specially targeted initiatives .....	5
Support through non-governmental organizations.....	5
Support through Swedish authorities to institutions in developing countries.....	6
Cooperation with the private sector.....	6
3. Multilateral contributions .....	6
4. Bilateral and regional contribution .....	8
4.1 Initiatives specially focused on the least developed countries .....	10
5. Technology development and diffusion .....	11
6. Capacity building.....	13

---

<sup>1</sup> Sweden (2009). Sweden's Fifth National Communication on Climate Change, under the United Nations Framework Convention on Climate Change, Ministry of the Environment, 156 pp.

## **1. Introduction**

Tackling climate change in developing countries is, from a Swedish perspective, closely linked with poverty reduction and attaining development goals such as the Millennium Development Goals (MDGs). A large proportion of development projects are in danger owing to climate change, and several development goals will not be attained unless measures are taken and further funding is injected. The objective of Swedish environmental development cooperation is to contribute to environmentally sustainable development, in order to enable poor people to improve own their living conditions. Women, men, girls and boys living in poverty have to be given an opportunity to adapt to the adverse impacts of climate change and also in the long term be able to take action to limit greenhouse emissions in accordance with their national objectives on sustainable development. This support is guided by principles such as ownership, harmonisation and alignment to the country's systems and processes. On this basis, Sweden is working towards integrating climate change considerations into a broader spectrum of poverty reduction, for instance in sectors such as water and sanitation, agriculture and forestry, food security, energy, infrastructure, health and education.

Under Sweden's Policy on Global Development (PGU), reduced environmental and climate change impact is a key element in the country's development cooperation. Development cooperation is, however, just one of the instruments needed to work proactively on climate change issues in developing countries. Initiatives by other Swedish public institutions, non-governmental organisations, the private sector and other actors in Swedish society are also of great significance. A number of different instruments and forms of cooperation are used to channel development cooperation. The funds channeled through development cooperation only represent a small proportion of the total sum of climate change related finance required in developing countries. Resources therefore need to be mobilized from other sources, both private and public. Cooperation with other Swedish and international actors in this context is judged to be of great value and provides better leverage of the resources invested and ensures that the comparative advantages of the different institutions are benefited from.

## **2. Objective and funding**

Sweden works broadly on the climate change issue in developing countries. In line with the Swedish policy on Swedish global development, a large number of actors such as ministries, government agencies, state-owned companies, non-governmental organizations, universities and the private sector in Sweden assist in climate change-related cooperative actions and activities with regard to financial support such as technology development, research and various forms of capacity development in developing countries. There are a number of different forms of cooperation, policy instruments and forms of support, and finance is provided from both public and private sources.

### ***2.1 Governing policies and priorities***

#### **Policy on global development**

The current policy on global development (PGU) was adopted in 2003 and specifies that all policy areas are to contribute jointly to a fair and sustainable global development. The overarching objective of development cooperation remains to enable people living in poverty to improve their living conditions. PGU represents the framework in which Swedish development policy is to be pursued and includes other policy areas and actors in society in order to clarify that Sweden speaks with one voice and strives to attain the same development goals. To put PGU into practice, work for the period 2007-2010 is presented as six global challenges, of which climate change and environmental impact is one. The Swedish Government has identified those challenges as being of key importance in attaining the objective of the policy and where Sweden is deemed to be in a position to make an effective contribution.

### **The thematic priority environment and climate change**

With the aim of moving away from the clear trend to prioritize a large number of policy areas in development cooperation, the Swedish Government has decided to focus on three thematic priorities during the 2007-2010 parliamentary term: equality, democracy and human rights, and environment and climate change. With regard to the latter it is stipulated that work on environment and climate change has to be intensified and permeate the whole of development cooperation and that efforts in relation to environment and climate change are to be concentrated on four areas closely linked to climate change: climate change adaptation, energy, environment and safety, and water. This priority with its strong emphasis on environment and climate change provides increased weight and political guidance so that development cooperation can be focused on these issues. A close look at the cooperation strategies drawn up in 2008 also shows that the issues of environment and climate change have had a greater impact on Swedish priorities in partner countries. Most cooperation strategies indicate the thematic priorities of environment and climate change as overarching goals, a priority area of cooperation or as a dialogue issue.

### **The Paris Declaration and the Accra Agenda on aid effectiveness**

The principles contained in the Paris Declaration from 2005 and the Accra Agenda from 2007 are of key significance to Swedish development cooperation. These principles are relevant regardless of whether or not development cooperation (ODA) is concerned and should also guide initiatives relating to climate change. National ownership should also guide climate change-related initiatives, as are external actors (including donors) should ensure improved coordination and alignment to national systems and processes of developing countries and ensure better reporting of results and mutual accountability.

### **The Commission on Climate Change and Development**

Against the backdrop of a strong wish to integrate consideration of climate change in development cooperation and to link together climate change and development issues, the Swedish Government in 2007 took the initiative to establish an international Commission on Climate Change and Development with the aim of preparing recommendations for ways in which adaptation and risk could be integrated into development cooperation. The final report was issued in May 2009 and underlines the need to

prevent vulnerability, manage risks, strengthen the local level where a large part of the adaptation will take place and improve the functioning of ecosystems, emphasizing at the same time that successful development in future will depend on how well climate change risks and other risks are managed. Moreover, the Commission advocates that USD 1-2 billion urgently be committed to climate change adaptation while waiting for a new financial architecture resulting from an agreement in Copenhagen in December 2009 to be put in place. The Commission's report is expected to play a major role in shaping Swedish development cooperation.

## ***2.2 Forms of cooperation and instruments***

Swedish development cooperation has received 1 per cent of Gross Domestic Income (GDI) since 2006, and Swedish ODA to developing countries is thus at a level that surpasses the agreed 0.7 per cent target, which only a few other OECD countries have fulfilled. The Swedish climate change-related initiatives therefore ought not to have occurred at the expense of other development goals. From the Swedish point of view there is no reason to distinguish between climate change financing and development financing, as consideration of the environment and climate change so clearly is essential to sustainable development. On the other hand, it is clear that increased sums over and beyond present-day levels of assistance will be required to fund adaptation and mitigation in developing countries.

Sweden considers it very important to ensure that environmental and climate change aspects, including disaster risk reduction, are integrated into development cooperation. Environmental and climate change analyses, environmental impact assessment (EIA) and strategic environmental assessment (SEA) are existing tools already used in Swedish development cooperation to ensure integration and maximize outcome with regard to adaptation and mitigation. It is important to take a broad approach to the climate change issue, and Sweden therefore engages both in integration and specially targeted initiatives that complement one another.

Half of Swedish development cooperation is channeled as bilateral aid through the Swedish International Development Cooperation Agency (Sida), to developing countries and countries with economies in transition. In the area of climate change, Sida works on capacity building, technology cooperation and research cooperation related to adaptation and mitigation in developing countries, and in doing so collaborates with non-governmental organisations, Swedish authorities, the private sector and research institutes. In 2007 Sweden decided to reduce the number of countries involved in development cooperation with the aim of improving efficiency and quality. The number of countries has been reduced from 67 to 33, and the countries have been divided into five categories distinguishing between the forms of cooperation used. The range is wide and extends from countries with traditional long-term development cooperation to countries where there is greater focus on new cooperation partners and creating platforms for collaboration as traditional development cooperation is no longer needed. There is also to be a clearer focus on results in all development cooperation.

The other half of development cooperation is made up of multilateral aid, which is channeled through the Ministry of Foreign Affairs, Sida and the Ministry of the Environment, including regular and voluntary funding of the UN Framework Convention on Climate Change and the Kyoto Protocol. Dialogue and

advocacy are important in relation to multilateral aid, and Sweden attaches great importance to other forums, in addition to UNFCCC, where the climate change issue of is great relevance, such as UNDP, UNEP, the World Bank, FAO, ISDR etc.

### **Specially targeted initiatives**

The Government took a decision in 2006 on a special climate change initiative for 2007 totaling SEK 100 million with the intention of strengthening Swedish partner countries' knowledge of and capacity to deal with the effects of climate change. The initiative's resources have been shared equally between the areas of climate change adaptation and risk management, sustainable energy and environmental technology and are channeled bilaterally, regionally and globally. Efforts have been made to strengthen institutional capacity at national level as well as targeted efforts in the forest and water areas. In addition, emphasis has been put on reforming the energy sector, sustainable urban development and energy efficiency and the development of sustainable energy systems. These initiatives were also chosen to utilize expertise and resources among Swedish actors and in the private sector.

In international development cooperation the Government has given notice of a special climate change initiative totaling around SEK 4 billion over the period 2009-2012. The primary goal is to contribute effectively to long-term efforts for adaptation to climate change in the poorest countries, but also to contribute to measures in developing countries to limit greenhouse gas levels, for instance through greater energy efficiency, increased access to better technology and alternative energy sources and reforestation projects. Grants are primarily to be made through existing multilateral initiatives but also in bilateral cooperation, focusing on Africa.

In addition, the Swedish Government decided in 2009 on a new unrestricted system of loans and guarantees solely for investments in social development and environment/climate in developing countries. The system's budget is SEK 250 million annually over a 3-year period. The system originates from the fact the large investment needs in infrastructure, environment and climate change in Sweden's partner countries cannot be managed solely with development cooperation or through market actors. Loans and guarantees mobilize domestic capital, strengthen local financial markets and make it easier for partner countries to attract private investments.

### **Support through non-governmental organizations**

Cooperation with civil society in the area of climate change, both in Sweden and in developing countries, is significant to Sweden as these actors focus closely on the local level in developing countries and work with important local partners. Government financial support from Sida is allocated to, among others, the Swedish Society for Nature Conservation, the World Wide Fund for Nature (WWF), the Swedish Cooperative Centre and Diakonia. WWF works actively to strengthen cooperation between donors and the commercial sector, principally with regard to technology transfer, and also assists developing countries in preparing national adaptation plans.

### **Support through Swedish authorities to institutions in developing countries**

Strengthening capacity among authorities in partner countries is an important role for development cooperation, and as well as long-term cooperation with environmental authorities in countries such as Vietnam, Laos, Kenya and Burkina Faso, Sida channels money to and cooperates with several Swedish authorities and universities to enable them to run programmes and project activities in developing countries focused on their particular areas of expertise. The Swedish Environmental Protection Agency assists several countries with economies in transition, for example, in establishing environmental legislation and new environmental institutions. It works together with the country's environmental authority and international organizations such as UNEP. The present-day programme includes several countries in Eastern Europe and China.

### **Cooperation with the private sector**

The dominant global capital flows are private, and to be able to manage climate change it is of the utmost importance to link these flows to efforts both to tackle climate change and to adapt to its negative effects. Sida's new system for environmental loans and guarantees is one component of this work. The development of national and international regulations is a fundamental aspect. An increased focus on both adaptation and mitigation measures additionally signifies increased demand for new products and services. Cooperation between different policy areas – business, environment, research, trade and development cooperation – is important here in order to bring about greater involvement among Swedish innovators and companies.

In addition, Sida and other government actors play an important catalytic role by creating meeting places for an exchange of experience and information, for the development of skills and expertise and also with the aim of preparing for further investments by providing catalytic contributions. The Swedish Trade Council, Swedfund and the Swedish Agency for Economic and Regional Growth assist with support in this context.

### **3. Multilateral contributions**

Nearly half of Swedish development cooperation is allocated to international multilateral development bodies, and a new multilateral strategy was prepared in 2007 to ensure higher quality. The strategy contains guidelines aimed at more strategic actions, better result orientation and advanced accounting and evaluation functions, as well as a clearer sharing of roles between the actors in the Swedish system. Relevance and effectiveness are the principal criteria in prioritizing different multilateral channels.

Sweden provides assistance to the financial mechanism of the UN Framework Convention on Climate Change, the Global Environment Facility (GEF), according to an agreed scale, and most of this is used for climate change purposes. For the fourth replenishment, on which negotiations were completed in 2006, Sweden undertook, in addition to the share decided upon, to make a voluntary contribution of SEK 356 million, and the total budget was SEK 838 million, which will be paid out over a 10-year period up to 2016.

Over the period 2004-2008 Sweden also contributed voluntary assistance to two climate change funds created under the Marrakesh Accords: a total of SEK 40 million to the Special Climate Change Fund (SCCF) and SEK 7 million to the Least Developed Countries Fund (LDCF). Sweden has not contributed to the Adaptation Fund under the Kyoto Protocol, which is not yet operational, but is following its development of the Fund with great interest.

Sweden provides assistance to the core budget of the UN Framework Convention on Climate Change according to the agreed UN scale with an additional charge for the Kyoto Protocol, but also to the fund for participation and the fund for supplementary activities, contributions to which are voluntary. Sweden's voluntary support of UNFCCC increased substantially between 2004 and 2008, reflecting the weight the country attaches to the work of the Convention and also the fact that the increased intensity of work and meetings in recent years demand more financial resources in particular to ensure participation from developing countries. Sweden also provides assistance to the CDM Executive Board, and in 2006 contributed USD 140 000 to the Board's administrative expenses.

In the context of the work of UNFCCC, Sweden has also supported weADAPT, an initiative devised by the Stockholm Environment Institute (SEI) as an 'action pledge' under the Nairobi Work Programme. This is a web-based platform that brings together a broad range of organizations with experience of adaptation in theory and practice. The platform's tools and methods are aimed at supporting the sharing of knowledge of others for example on climate models, projections and instruments and also to pass on personal experience.

In addition to assistance to UNFCCC, GEF and its climate change funds, Sweden considers it important also to operate through assistance to a number of other multilateral specialized bodies and international and regional organizations, banks and institutes in order to influence their climate change work in various sectors. Under several UN bodies, programmes and development banks, Sweden conducts a proactive policy dialogue, and advocacy takes place for instance with regard to climate research, tools, methods and policies for adaptation and mitigation etc. Sweden additionally attaches great importance to cooperation with international research bodies such as the Consultative Group on International Agricultural Research (CGIAR), the Centre for International Forestry Research (CIFOR) and the World Agroforestry Centre (ICRAF) and has also cooperated over a long period with the Asian Institute of Technology (AIT) in the area of technology and capacity building.

Renewable Energy Technologies (RETs) is a regional research programme focused on renewable energy technology which is assisted by Sida and coordinated by the Asian Institute of Technology (AIT). The third phase of the programme, 2002-2004, was aimed at consolidating and disseminating the experience gained to date. RET packages for different areas have been developed and demonstrated on a commercial basis. Three renewable technologies have been selected: solar energy and biomass drying, biomass briquettes and briquette-fired cookers.

In addition, institutions such as the International Union for the Conservation of Nature and Natural Resources (IUCN), the International Institute for Environment and Development (IIED) and SEI undertake valuable work in the area of climate change with financial support from Sweden.

In 2008 SENSE (Swedish Environmental Secretariat for Asia) together with UNEP and SEI established a regional knowledge platform in Asia for climate change adaptation. The principal purpose, in line with the Nairobi Work Programme and the Bali Action Plan, is to focus on both adaptation planning and experience and adaptation methods and tools. Various actors from governments and authorities to the private sector in the region are to benefit from the platform with a view to interacting, strengthening their capacity and strengthening knowledge of climate adaptation and how it is integrated at national level.

As in the multilateral dialogue and cooperation with other donors, harmonization is significant. Harmonization is one of the principal aims of the European Commission's Global Climate Change Alliance (GCCA). Sweden supports the initiative aimed at creating a platform for dialogue and exchange between the EU and the least developed countries and small island states (SIDS). The overarching objective is to assist the countries most at risk in increasing their capacity to adapt to the negative effects of climate change, while at the same time fulfilling the MDGs. Assistance is to be provided principally through budget support from a donor pool. Sweden contributed a one-off sum of SEK 50 million in 2008. The selected pilot countries are Cambodia, the Maldives, Vanuatu and Tanzania.

#### **4. Bilateral and regional contribution**

With regard to bilateral cooperation, the Swedish contribution is based on developing countries' own strategies for poverty reduction, both in the area of climate change and other areas. Common cooperation strategies between Sida and the partner country are being devised to provide guidance for continued cooperation. The climate change issue has had a great impact in recent years thanks to the thematic priority of environment and climate change that emphasises that these issues have to be considered and permeate cooperation, but also a growing need from partner countries. Bilateral climate change support comprises bilateral, regional and global initiatives in adaptation and mitigation, technology cooperation and capacity building, including research cooperation, institutional strengthening and training efforts. In the spirit of the Paris Declaration, development cooperation has increasingly to focus on budget support and sector programme support, reducing Sweden's opportunity to influence in detail how the funds are used and instead putting greater demands on dialogue with the partner country.

The emphasis in the support for adaptation is on interventions in water and agriculture and other sectors containing for example disaster risk management, health contributions, education and research. Contributions to energy and waste management dominate in mitigation. The group of "other" contains initiatives that have promoted implementation of UNFCCC but are not directly linked to adaptation or emission limitation, e.g. institutional strengthening and capacity building, legislation, support for organizations and support for negotiators from developing countries. The greatest share of support has gone to adaptation measures, around SEK 5 billion, while emission reduction-related initiatives have received around SEK 3.3 billion and other initiatives around SEK 850 million. This division reflects the significance Sweden, together with many partner countries, attaches to adaptation measures. The contributions also produce important synergies in the agriculture and forestry sectors between adaptation and mitigation measures.

The individual countries to have received the largest shares of climate change-related aid are Tanzania, Mozambique and Vietnam, which represent countries where Sweden has engaged in development cooperation for many years. From a Swedish perspective it is important that capacity building and technology transfer are integrated in bilateral and regional projects and programmes at sector level, for both emission reduction and adaptation. Because of its interdisciplinary nature, the financial support for these operations is not differentiated in Swedish development cooperation.

**Adaptation in the agricultural sector for AIDS victims in Zimbabwe**

The Swedish Co-operative Centre undertakes operations aimed at households affected by AIDS in Zimbabwe, focused on adaptation in agriculture. The project has been implemented since 2003 at village level with families where one or more members have AIDS, where parents have died and where children are heads of household. Training and advice are given on the cultivation of crops such as sweet potato, cassava and beans, which are less labor-intensive and require less water. The nutritional value is also high, which is important in delaying the progression from HIV to AIDS. The project also runs study circles which are led by the women in the villages to spread knowledge of sustainable development, climate change and adaptation strategies. The support for each district is phased out after 2-3 years when the villages are able to work at full scale without external support.

Bilateral and regional climate change work is undertaken at various levels of society and relates to many strategically important sectors in development cooperation such as water, agriculture, forestry, infrastructure and energy and is integrated with other support. Two examples of adaptation described below are related to water resource management and improved climate information, data and projections.

The programme ZACPRO 6.2 on Integrated water resource management strategy for the River Zambezi area is aimed at improving integration of water source management in the River Zambezi area, promoting social and economic development and protecting against floods, drought, pollution of water resources and environmental degradation. To facilitate joint work to bring about long-term sustainable utilization of water resources, the project is seeking to establish a framework for regular exchange of information and cooperation between the countries bordering the river basin. The programme has developed a joint integrated water resource management strategy for the countries bordering the river area which enables the water resources in the area to be quickly evaluated.

SMHI is cooperating with the Botswana Department of Meteorological Services (DMS) in the establishment of a weather service in Botswana to strengthen capacity in weather-related disaster management and climate change adaptation. The first phase in the project out of two planned was run between 2006 and 2008. The phase was initiated with a detailed inventory of present-day activity to identify the most relevant areas for development. DMS personnel have been trained in meteorological observation stations, data collection, remote sensing, meteorological projection methods etc. The quality of Botswana's weather service has improved through a combination of capacity development among personnel and technical improvements. Sida has supported the project with SEK 3.2 million.

Sweden's work on climate change in developing countries also includes contributing to decreased greenhouse gas emissions to the atmosphere. Sida is therefore working with its partner countries to enable them to invest in technology and know-how that is both environmentally and economically sustainable. Regulatory instruments that encourage more efficient use of energy and renewable energy sources are supported. Access to sustainable and modern energy is crucial from a development perspective.

Since 2007 the Swedish Energy Agency has working with support from Sida on a capacity building project for CDM (Clean Development

Mechanism) in Tanzania, Kenya and Uganda. The number of CDM projects in Africa to date has been very low, and a problem in many African countries is the shortage of economic and institutional infrastructure for managing CDM projects. The project is therefore aimed at building the necessary capacity among authorities, energy companies, banks and industrial companies concerned that is required to be able to receive and implement CDM projects. The intention is for capacity to be developed through 'learning-by-doing'. To date the Swedish Energy Agency has clarified the needs for capacity development and what experience of CDM exists in the countries, and will build on these in its continued work.

#### ***4.1 Initiatives specially focused on the least developed countries***

Swedish development cooperation has long emphasized support to least developed countries and vulnerable countries with a low GDP per capita. Poor people are to a greater extent dependent on natural resources and agriculture for their survival, and their livelihoods are therefore directly affected by how the climate changes. A changed climate also changes access to clean water, which is already in short supply in many poor countries, and this can lead to conflicts. Sweden considers that the principal focus in these countries should be on adaptation to the negative effects of climate change and consequently on reducing poor people's vulnerability and improving their prospects of adapting to climate change that has already happened and is continuing to happen. From the Swedish point of view this is manifested in finding new methods to assist people in adapting to new living conditions, for example through a greater focus on food safety, energy supply and water resource management. In addition, Sweden contributes humanitarian assistance to those affected by extreme weather conditions.

##### **Climate change adaptation and conflicts in Kenya**

NCKK (National Council of Churches of Kenya) has been one of Diakonia's partner organisations since 2002. Diakonia and NCKK cooperate principally to reach peaceful resolutions of the conflicts between ethnic groups that arise in the Turkana area of Northern Kenya due to scarce natural resources. The drought, worsened by climate change, threatens to intensify the conflict. NCKK is working to bring young warriors from the parties to the conflict together for talks. NCKK has also developed a system that helps people to recognise when the risk of drought increases so that the population of the area has an opportunity to prepare for an imminent period of drought.

It is often difficult to distinguish pure adaptation interventions from development interventions. Adaptation to a large degree overlaps what is defined as sustainable development. Sustainable development provides gains in terms of building resilience and reducing vulnerability, two factors that are crucial to the capacity of individuals and societies to adapt. Sweden emphasizes that it is crucial to ensure that the effects of climate change are integrated into the analysis of any risks for the contribution. There is otherwise a risk of "maladaptation", which means that people's vulnerability increases as a consequence of the contribution.

Adaptation in some cases requires cooperation across sector boundaries and often regionally across national boundaries, particularly in relation to administration of shared resources such as in the ICIMOD programme, which Sweden supports.

##### **International Centre for Integrated Mountain Development**

Global warming poses a serious threat to the Himalayan region. The melting of glaciers will affect the water suppliers of 1.3 billion people, and ecosystems in the area are under threat. Sida therefore supports the work of the International Centre for Integrated Mountain Development aimed at developing adaptation strategies and improving resilience in the region. The five modules of the programme include developing a satellite-based system for monitoring change in the region's icecap, vulnerability and analysis of adaptation in communities close to dams at

high risk of bursting, mapping of present-day water management, development of more efficient energy use and increased regional collaboration on these issues.

Sweden is also working to enhance the understanding of how climate change affects the development prospects of countries. In addition to regional and bilateral operations, Sida therefore supports the pan-African programme Climate Information for Development in Africa (ClimDev-Africa), which aims to integrate management of climate change into decision-making process by producing climate data and projections. The programme is a joint effort between the African Union Commission (AUC), the African Development Bank (AfDB) and the Economic Commission for Africa (UNECA) in Addis Abeba in Ethiopia. In the short term, the programme aims at helping African countries to become better able to cope with climate variability that already exists and in the long term at reducing the risks and improving resilience to the effects of climate change. The initiative is driven by a number of African countries that have joined forces to jointly raise awareness, increase the availability of data, communicate climate change information, improve the quality of planning processes and develop support for risk management.

The Kenya Water and Sanitation Programme (KWSP) is aimed at supporting the implementation of reforms in the Kenyan water sector, improving the management of water resources and making investments in water supply and sanitation for poor people in rural areas. KWSP comprises a budget of €50 million over five years (2005- 2009) and is funded by Sweden, together with Denmark and Kenya. The programme includes the sub-component Flood and Drought Mitigation, which is aimed at supporting the Water Resource Users' Association on water resource management issues to enable them to adapt to floods and drought and to ensure equitable access to water. A development cycle containing four categories has been designed in this work: reduced risk of conflict, regulation for equitable control and distribution of water resources, preservation of water reserves and resources, and improved efficiency in the use and management of water resources.

## 5. Technology development and diffusion

Swedish environmental technology exports totaled SEK 33 billion in 2007. The largest individual sector is waste management and recycling, but many of the current environmental technology solutions such as district heating, biogas, underground waste transport, geothermal heating and geothermal cooling have existed on a large scale in Sweden for many years. The Swedish Trade Council is working to facilitate exports by Swedish companies, in areas such as environmental technology and waste management, recycling, bioenergy, solar energy, wind power and energy efficiency. Bilateral technological cooperation with China focused on sustainable urban development has been in progress since April 2008. Sino-Swedish Environmental Technology Cooperation involves three Swedish ministries and their Chinese counterparts in the region concerned. An example of a specific project is the development of biofuel and distribution for the city of Wuhan.

SymbioCity is a new export concept driven by the Swedish Trade Council that supports holistic and sustainable urban development. The initiative involves the private sector and is aimed at highlighting the synergies that exist between different supply systems in the modern city and that have the potential to provide both environmental and financial gains, including reduced greenhouse gas emissions. Work on holistic urban development and efficient resource management has been in progress in Sweden for more than 50 years, and this experience forms the basis of SymbioCity. The SymbioCity concept has been applied in other cities around the world, such as in Luodian Town, Tianjin Guangdong in China, Buffalo City in South Africa and Pune in India.

Sweden considers the private sector to have an important role in technological development and diffusion. However, with the aim of creating the necessary conditions for the private sector becoming involved in developing countries support is often required to reduce the risk, and loans and guarantees or risk credit can be used for this purpose.

From the point of view of development, the issue of technology is more than physical transfer of hardware or software, it is more a matter of developing capacity in developing countries to receive, use and develop technology. Development cooperation has an important role to play in this context, and Sweden undertakes technology and research cooperation with significant elements of capacity development with a number of partner countries. This approach is crucial to the opportunities for developing countries to benefit from and themselves contribute to the development of sustainable technological solutions adapted to their circumstances.

**Distance master's programme on sustainable energy engineering**

The Royal Institute of Technology (KTH), with support from Sida, conducts a distance Master's programme on sustainable energy technology in partnership with universities in Uganda, Mozambique, Ethiopia, Tanzania, Zambia, Mexico, the Maldives and Sri Lanka, with a total of around 150 distance students admitted annually. 80 students a year receive scholarships from Sida. KTH has developed an interactive web platform which contains, for example, all educational material, including lectures, study visits and individual laboratory and calculation exercises. It is intended that the programme will be transferred to the partner university after 5-7 years with continued closed contact with KTH.

Sweden attaches great importance to adapting technological solutions to local circumstances in developing countries, utilizing national knowledge and recruiting national expertise in the area concerned. An example is the project relating to Energy Services Companies (ESCO) in Zambia, where Sida and SEI created a network of existing privately owned companies in the energy sector. Instead of implementing ready-made technological solutions directly at the end-users, a long-term sustainable solution was established for energy supply in the form of local companies that could procure system solutions for leasing and offer user training, servicing and maintenance of the installations.

The Swedish Agency for Economic and Regional Growth is implementing on Sida's behalf the Demo-Miljö project, which relates to environmental technology initiatives in the areas of sustainable urban development and renewable energy. The assistance is targeted at Sweden's partner countries in Africa, Asia, Latin America and Eastern and Central Europe, and creates opportunities for authorities, local governments, institutions and companies in these countries to try out new technology in areas such as air pollution, water and sanitation, waste management, energy saving, renewable energy and urban transport. A waste management project in Chennai in India which is being implemented under Demo-Miljö is aimed at reducing greenhouse gas emissions by generating biogas from utilized biological waste. The biodigester for the project comes from Sweden.

The StartSyd and StartÖst programmes offer small and medium-sized enterprises in around 40 of Sida's partner countries in Africa, Asia, Latin America and Eastern Europe the opportunity to apply for financial support for knowledge transfer and equipment. The aim is to contribute to improved prospects for economic growth for sustainable, profitable and productive small and medium-sized enterprises. With

effect from 2009 Swedfund is taking over implementation of the programmes to develop the business-oriented development cooperation in accordance with Swedish global development policy. Swedfund also offers venture capital and expertise for investments in developing countries to create profitable companies in the formal sector, strengthen the local business community in poor countries and consequently contribute to sustainable poverty reduction. The work is partly focused on what are known as Clean Tech investments in developing countries with major environmental problems.

## 6. Capacity building

Capacity development is a critical factor in enabling developing countries to face up to climate change. Capacity is required to receive financial and technology- related support for adaptation and mitigation and to ensure that such support is sustainable. National expertise and know-how on climate change and its effects is significant, as well as strengthening institutions so that the countries in the longer term will themselves be able to integrate climate change into their planning process and pursue a national climate change policy. Sweden has found that the best results are achieved when capacity development is based on countries' own needs and priorities and is a joint learning process owned and operated nationally but taking place in partnership. It is therefore important to strengthen the national systems instead of creating new ones.

Sida has been funding a training programme 'International Training Programme' (ITP) focused on emissions mitigation and adaptation, which is implemented by the Swedish Meteorological and Hydrological Institute (SMHI) in cooperation with SWECO and SEI since 2006. The aim is to improve knowledge of climate change and its effects and provide the 25 selected participants with tools to identify vulnerable sectors in their countries and develop projects in their homelands with support from the organisers. The target group is individuals in leading positions in administration, national or local, non-governmental organisations, universities or companies. Evaluations show that the participants rate the course highly and that the training has greatly increased their knowledge of climate change. A large majority of the participants also thought that the contents were of great or very great significance to their continued work, and a number of important contacts had been established with experts in Sweden.

Capacity development is primarily an integral part of the programmes and projects supported by Sida. The integrated approach is of key significance as capacity cannot develop in a vacuum and is always linked to the relevant activity. It is important to ask 'capacity for what?'. Sweden considers it important to take a broader grip on capacity development in training and research, but also to raise capacity institutionally through various forms of support to and cooperation with the national and local institutions. In addition, Sweden considers it crucial to ensure that the developing countries' negotiators are supported in the climate change negotiation process.

The European Capacity Building Initiative (ECBI) programme is directly linked to UNFCCC and is aimed at strengthening the negotiating group for developing countries, G77, in the climate change negotiations. Climate change negotiators from G77 and the EU are offered a unique platform for meetings and capacity development at which key concepts and technology transfer are discussed and analysed. According to an evaluation, the programme has contributed to developing countries having become more successful at speaking with one voice in the negotiations, and there has been increased understanding between negotiators from the different blocks. The developing countries have in a short time improved their prospects of achieving the long-term aim of strengthening the perspective of poor and vulnerable countries in the climate change negotiations. Swedish support totalled SEK 4.8 million over the period 2005-2007.

Sustainable City Planning in Pune

Sustainable City Planning Pune (SCPP) is a project in which Pune Municipal Corporation (PMC) and Sida cooperate. The programme aims to enhance skills in sustainable urban planning, focusing on mobility and physical planning. The project contains a number of different activities in the areas of physical planning, sustainable transport systems and high-quality public transport. The participants visited Sweden in May 2008 to hear about Swedish experience, for example, including from the eco-towns of Hammarby Sjöstad in Stockholm and Västa Hamnen in Malmö.

Sida's research cooperation is aimed at strengthening the research capacity of partner countries and promoting development-oriented research. This contains support to cooperating countries to create enabling research environments and training of research scientists and to develop methods to plan and prioritise research. Promoting development-oriented research means both financially and scientifically supporting the opportunities of partner countries to identify new knowledge in areas that are significant for their development.

#### **Innovative climate research in Southeast Asia**

Sida has cooperated with regional environmental economics research networks in Southeast Asia, Africa and Latin America for almost 15 years. The networks are based to varying degrees on the successful model EEPSEA (Economy and Environment Programme for Southeast Asia), which has been devised to strengthen research capacity in the area of environmental economics. Swedish support for 2005-2007 totalled SEK 29 million. The network is one of the more significant in southern Asia and assisted in the IPCC (Intergovernmental Panel on Climate Change) investigative protocol in 2007. The network's innovative research on the role of mangrove swamps in reducing the negative effects in cyclones and tsunamis has attracted great attention both locally and internationally. The network has also undertaken extensive mapping with regard to five climate change and disaster risk reduction-related threats – tropical cyclones, floods, earthquakes, drought and rising sea levels – which has been of great importance both for national policies and for international development assistance.

The cooperation pursued in natural science and technology, natural resources and the environment is relevant from the point of view of climate change. In addition, a contribution is made to capacity building for instance through support for the build-up of universities and research councils in developing countries. The 'sandwich method' used by Sida, which is based on alternating studies in the home country with studies abroad, has proved successful in enabling researchers and students to remain in their countries on completing their education and therefore not allowing the capacity to be lost through a 'brain drain'. Thematic research programmes in natural resources and the environment, technology and industrialization, as well as natural science, are also funded.

#### **Support for research on sustainable development in Mozambique**

Since 1989, SIDA has been supporting work at the Department of Physics at the Eduardo Mondlane University (UEM) in Maputo in Mozambique to establish a fundamental structure for research and a favorable scientific climate. These initiatives have led to the first attempt to develop complex research in the area of sustainable environment in Mozambique. Swedish resources have contributed greatly to the development of capacity in the department with regard to both research and research training. UEM has identified greenhouse gas emissions due to uncontrolled forest fires, desert spread due to overuse of forest and land and air and soil pollution in connection with energy production, industry and mining as the environmental and climate change problems with the greatest potential to seriously undermine sustainable development in Mozambique. Sida has been supporting a research programme for energy, environment and climate change that conducts research on these areas since 2006.