

The Co-benefits Approach for GHG Emission Reduction Projects



Ministry of the Environment, Japan

Background

What is the “co-benefits approach” and why is it necessary? Under the Kyoto Protocol, the Clean Development Mechanism (CDM) is intended to help non-Annex I Parties (developing countries) achieve sustainable development. These countries are expected to benefit from project activities resulting in certified emission reduction units (CERs). The active promotion of CDM projects is expected to produce more than 1.4 billion CERs by the end of 2012. Such projects, however, do not always address economic and social development needs, despite the fact that these needs are often a high priority for developing countries.

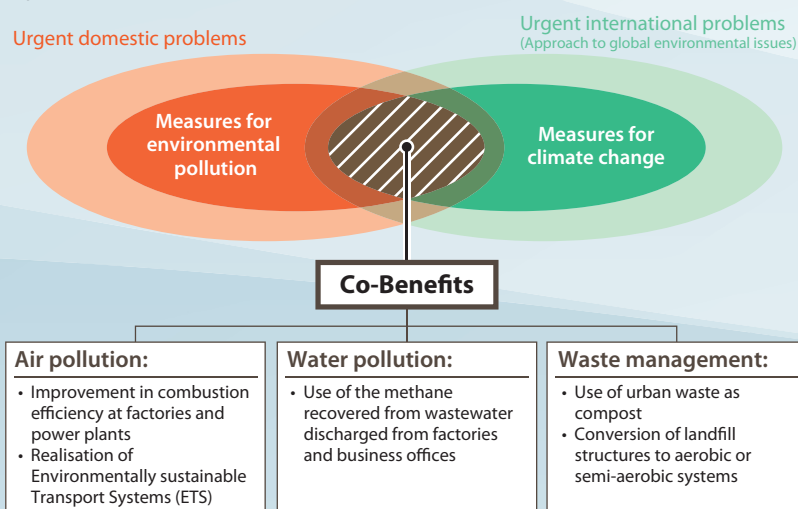
Another issue is the regional imbalance in the distribution of CDM projects. New approaches are needed to address these issues. This is why Japan launched initiatives based on the “co-benefits approach” in 2006, and has been advocating the merits of project-based mechanisms based on this new approach—at meetings of the Ad hoc Working Group on further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP) and in other international fora, such as the East Asia Summit in 2007 and the G8 Environmental Ministers’ Meeting in 2008.

Co-benefits Projects Can Help Developing Countries Meet Economic and Social Development Needs

The co-benefits approach is a new project-based approach to address climate change concerns while also improving the local environment. The need to find the initial investment funds is often a serious barrier for these projects. Local environmental problems are urgent issues to address among the priority development goals of developing countries. Air and water pollution and waste-related problems result from rapid industrialization, urbanization, and population growth, and often cause serious problems for a country’s social and economic development as well as for the natural environment.

The co-benefits approach aims to address climate change concerns while also improving the local environment—as part of actions by developing countries to achieve their development goals in a sustainable manner. The mitigation of climate change is essential if we are to achieve the ultimate objective of the United Nations Framework Convention on Climate Change (UNFCCC), and this objective should be pursued in a way that helps developing countries address their economic and social development needs. One could also expect this approach to reduce imbalances in the regional distribution of CDM projects and other greenhouse gas (GHG) emission reduction projects. The co-benefits approach has been much-discussed recently, but unfortunately, the number of actual projects implemented is still small.

Japan has taken various steps to promote the co-benefits approach, including policy and technical dialogue, capacity building, bilateral statements, and pilot studies. Studies are currently being conducted to establish measurable, reportable and verifiable methods to assess the effectiveness of the co-benefits approach. At the same time, preferential treatment and various financial schemes are being discussed, in the interest of promoting the co-benefits approach. It is hoped that the findings and experiences gained through these efforts done in cooperation with developing countries will be reflected in future international rules and frameworks, for example, by incorporating the idea of co-benefits as one of the criteria for CDM project registration, by offering preferential treatment for co-benefits CDM projects, and so on.



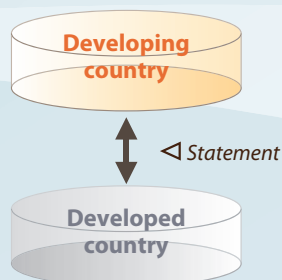
Promotion of the Co-benefits Approach

Where can co-benefits projects be promoted? By whom? How? Efficient promotion of the co-benefits approach requires technical, financial, and institutional support and cooperation. The following examples indicate how the co-benefits approach could be promoted. Both co-benefits CDM projects and other co-benefits GHG emission reduction projects are covered.

Case 1 focuses on country-level initiatives, and also includes potential contributions to international initiatives for a future climate framework. Case 2 focuses on cooperation between

developing and developed countries, particularly between the private sector and governmental organizations. The key here is communication between the main actors involved in reducing emissions (the private sector) and the main support entities (the government sector). Case 3 focuses on activities by private entities, where the co-benefits element of each project is financially supported through both public and private schemes. These scenarios need not be implemented in any particular sequence, as the co-benefits approach can be started in the most convenient way for each host country or entity.

Case 1: Country level



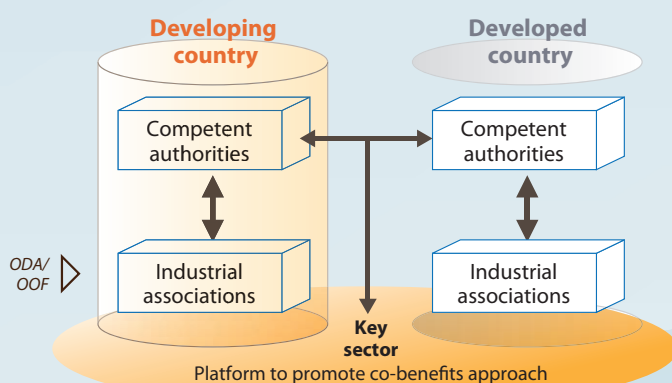
Case 1

Country level activities include conclusion of a joint statement on the promotion of co-benefits projects, with the following points.

- **Targets:** High-priority sectors, emission reduction amounts, number of projects, amount of energy consumption reduced, duration of activities, etc.
- **Priorities:** Regions, sectors, project types, etc.

As one example, MOEJ and the Ministry of Environment Protection, China, concluded the "Statement of Intent on Cooperation on the co-benefits Approach Addressing Climate Change and Environmental Improvement" in December 2007. Based on the statement, both ministries have intensified their efforts to promote policy dialogue on development and implementation of several co-benefits projects in China. In 2008, some project candidates have been identified and preliminary studies are now underway to lead to implementation.

Case 2: Private sector & government level



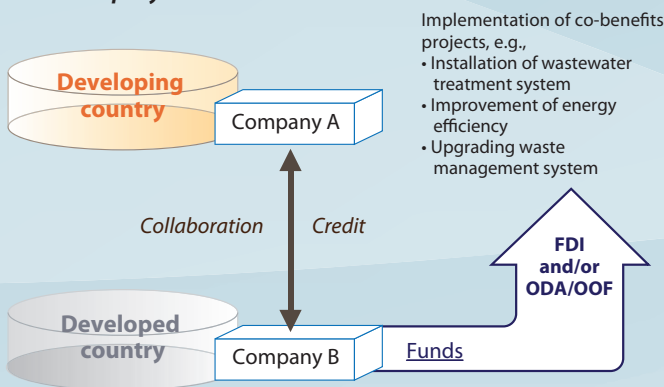
Case 2

Cooperation between the competent authorities and industry (for example, industrial associations) could promote the co-benefits approach in major sectors of host countries. This may include the establishment or support of a platform for the co-benefits approach in a given sector.

Those projects might be eligible as CDM projects, but such eligibility is not an absolute condition for the co-benefits approach. Development of the sector, accompanied by co-benefits, should be the most important criteria. The platform might address the following issues in a cooperative manner:

- Best Available Technology (BAT), consideration and determination of indicators
- Understanding of current status and target setting
- Technical cooperation and human resources development

Case 3: Company level



Case 3

In this scenario, several financial sources from the public sector support private companies for the implementation of co-benefits projects. The target projects are not limited to CDM projects, but may also include other GHG emission reduction projects. Funds will be mainly allocated to the co-benefit element of the project. For private companies, initial costs are one barrier to the realization of projects. To support private entities, Japan has already established and implemented financial systems, including foreign direct investment (FDI), as well as subsidies and allocation of funds from Official Development Assistance (ODA) and Other Official Flows (OOF).

“Manual for Quantitative Evaluation of Projects under the Co-Benefits Approach to Climate Change Countermeasures and the CDM”

Evaluation Manual: Background and Purpose

In order to effectively promote the use of the co-benefits approach to climate change countermeasures and the CDM in developing countries, it is important to have specific methods to evaluate and properly determine the benefits of those activities. To this end, the Ministry of the Environment published this Manual in the autumn of 2009.

To properly determine the benefits of a project, quantitative evaluation methodologies are preferred. It is also important to use simple methods, so that when project participants actually use the evaluation methodology they are not required to deal with additional burdens (such as the need to invest new funds, install sophisticated measurement devices, or engage in cumbersome monitoring tasks).

The objective of this evaluation manual is to encourage project parties to efficiently introduce and promote co-benefits-type CDM projects, by presenting the simplest and most qualitative methods possible to evaluate two or more project benefits on the environmental and climate change dimensions. (See “More Information” at end of this brochure to access this Manual.)

Evaluation Categories

The Manual focuses on the three areas listed below, which are important in many developing countries (particularly for those experiencing rapid economic growth) and for which quantitative

evaluation is relatively easy:

- Water quality improvement
- Air quality improvement
- Waste management

Evaluation Indicators

Indicators for each category are listed below.

Water quality improvement category:

- Chemical oxygen demand (COD), odors, methane (CH₄), carbon dioxide (CO₂)

Air quality improvement category:

- Sulphur oxides (SO_x), nitrogen oxides (NO_x), dust, carbon dioxide (CO₂)

Waste management category:

- Coverage ratio of collection area, collection ratio of waste, recycle ratio, amount of waste, Chemical oxygen demand (COD), odors, methane (CH₄), carbon dioxide (CO₂)

Evaluation Methods

Tier1: No calculation is needed. The evaluation is based on the actual details of the activity.

Tier2: Evaluation for this tier uses predetermined equations and available data. Generally, actual measurement data are used, but when data are not available, default values are used.

Tier3: This tier uses specific equations formulated by researchers or applied in the country.

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Chapter 1. The Co-Benefits Approach to Climate Change Countermeasures and the CDM: General Remarks

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- 1.3 The Co-Benefits Approach to Climate Change: Criteria for Evaluation Methodologies
- 1.4 Proposed Framework for Evaluation Methodologies of the Co-Benefits Approach to Climate Change (Draft)

Chapter 2. Quantitative Evaluation

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Appendices

(Total: 64 pages)

Examples in Action: Water Quality Improvement

Case Study 1

Reducing Methane Emissions with Wastewater Technology and Equipment

Industrial and household wastewater discharge may cause water pollution if not properly treated, or if treated by inferior conventional methods. High levels of organic wastewater emit methane as well as water pollution and odors to the surrounding community.

Proper treatment technologies and equipment will offer co-benefits and control these problems. Co-benefits projects of this type are currently under way as CDM projects in Malaysia, Thailand, and Vietnam, in cooperation with Japan, supported by Ministry of the Environment, Japan.

One example is a CDM project in Malaysia, registered with the UNFCCC in 2009. The project will introduce closed digester tanks and special bacteria, instead of using open lagoons, to treat wastewater containing palm oil mill effluent (POME).

The tanks can treat POME (which has very high COD levels) more

quickly and under a greater variety of operating conditions. The project also helps reduce methane emissions as well as odors and the risk of water pollution.



Contribution to better water quality

(Source: GEC, Konzen)

Case Study 2

Biogas Power Generation Project Using Wastewater from an Ethanol Factory in Thailand

This project aims to treat wastewater discharged from an ethanol factory. Before the project, wastewater was treated in a non-aerobic open lagoon. The project will introduce a non-aerobic waste fermenter and thereby prevent environmental pollution by improving the quality of wastewater and preventing the release of odors. It also aims to collect methane from the wastewater treatment and utilize it to generate electricity and supply it to the local power company. As a result, the project can help to reduce the consumption of fossil fuels previously used for power generation, reduce both methane and CO₂ emissions, improve water quality, and control odors.

The examples selected for these case studies are either essential industries or industries where the current treatment method is prevalent. Thus, these types of projects have high replicability and offer many co-benefits in numerous countries.



(Source: Ministry of the Environment, Japan)

Prevention of climate change

Reduction in greenhouse gas emissions

Prevention of environmental pollution

Improvement in the quality of wastewater
Prevention of foul odors
(Reduction in size of non-aerobic open lagoon)

Examples in Action: Air Quality Improvement

Case Study 1

Co-benefits Project in Panzhihua City, Sichuan, China

Through the “Japan-China Dialogue on Co-benefits,” Ministry of the Environment, Japan (MOEJ) and Ministry of Environmental Protection of the People’s Republic of China signed an agreement to promote co-benefit initiatives in China, with cooperation from Japan. Under the agreement, a model project has been started in Panzhihua City.

The city is currently experiencing rapid economic growth and is home to many thermal power plants, as well as iron, steel and cement industries, all of which consume a large amount of fossil fuels. Air and water pollution are urgent issues here, and the city has already introduced some regulations to control pollution. The Japanese initiative supports their efforts to introduce practical technologies to reduce the release of pollutants as well as to develop quantitative methods to evaluate the co-benefits derived from those regulations and technologies. During the first stage,

experts from both sides are cooperating to develop methods to evaluate the reduction of SO₂ and CO₂ emissions.



(Source: Ministry of the Environment, Japan)

Case Study 2

Environmental Model City Project in Guiyang City, China

The Japan International Cooperation Agency (JICA) and the Japan Bank for International Cooperation (JBIC) implemented seven high-priority projects focused on preventing air pollution.

- (1) Air pollution prevention at a Guiyang steel factory
- (2) Dust prevention at a Guizhou cement factory
- (3) Flu-gas desulfurization at a Guiyang power plant
- (4) Construction of a coal desulfurization facility at the Lindong clean coal factory
- (5) Coal gas piping expansion and storage tank construction project
- (6) Construction of an automatic air pollution monitoring system and an online pollution source monitoring system
- (7) Decommissioning of acetic acid manufacturing facilities using a mercury catalyst at Guizhou Crystal Organic Chemical Factory

The project has produced several co-benefits:

- Reduction of 163,500 tons of SO₂, or 80.54% of annual gross emissions
- Reduction of 57,080 tons of flue dust and dust particles, or 66.37% of annual emissions
- Reduction of 2.282 million tons of annual wastewater discharge
- Reduction of 1.0674 million tons of annual CO₂ emissions



(Source: JICA's Assistance for Mitigation to Climate Change)

Examples in Action: Waste Management

Case Study 1

Project for Implementation Support for 3Rs Initiative in Hanoi City to Contribute to the Development of a Society with Sound Material Cycles, Viet Nam

Hanoi City has been facing serious urban waste problems caused by rapid socioeconomic development and urbanization. JICA has implemented a cooperation project to develop a society with sound material cycles under a “3Rs” initiative under the theme of Reduce, Reuse and Recycle. The project includes participatory environmental training activities, the implementation of pilot activities for waste source separation and recycling.

The project is expected to promote the effective use of resources and waste reduction, which will help reduce GHG emissions. This project also aims at composting the organic waste, instead of dumping it in a landfill, thus shifting from anaerobic to aerobic treatment and reducing methane emissions from landfill sites.



(Source: JICA's Assistance for Mitigation to Climate Change)

Case Study 2

Environmental Improvement to Reduce Greenhouse Gases Emitted from a Closed Landfill in Malaysia

Many developing countries face increasing waste management challenges. Open dumping and less-managed landfill sites cause serious environmental problems, such as odors, toxic leachate, and methane emissions. Economically feasible and effective landfill site management can be carried out by using the semi-aerobic “Fukuoka Method” developed in Japan.

This approach will help achieve multiple benefits, such as mitigation of the environmental problems mentioned, early stabilization of landfill sites, and methane emission reduction.

A typical example of this type of co-benefits project is now under way in Malaysia, in cooperation with Japan.



(Source: Ministry of the Environment, Japan)

Prevention of climate change

Reduction in greenhouse gas emissions

Prevention of environmental pollution

Stabilization of the environment of the landfill
and its safe closure
Improvement in the quality of leachate

Outline of Co-benefits CDM Model Projects (Subsidy Projects)

Purpose and Significance

In addition to GHG mitigation CDM projects are expected to contribute to technology transfer and sustainable development of developing countries. It is also strongly desirable that “co-benefits” type CDM projects will be implemented—projects that not only mitigate GHG emissions, but also address local needs for environmental quality improvement (i.e., projects with synergistic benefits).

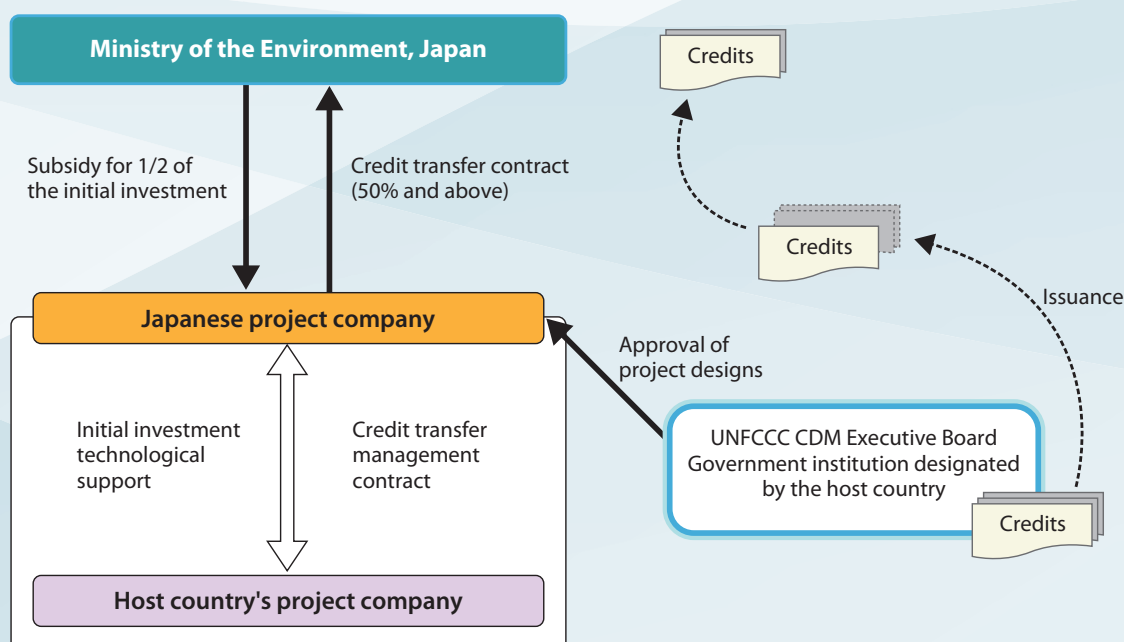
These subsidized projects are implemented as CDM model projects that address the needs of Asian developing countries facing environmental problems such as air pollution, water pollution, and waste-related issues, in order to promote co-benefits CDM projects that aim to achieve the co-benefits of climate change mitigation and environmental pollution countermeasures.

Project requirements

The Government of Japan provides a subsidy to cover half of the initial investment for a CDM model project aimed at achieving co-benefits, on condition that 50% or above of the credits obtained from the project will be transferred to the Government of Japan at no cost.

Subsidies provided

1. Eligible candidates: Private organizations
2. Projects to be subsidized: Co-benefits CDM model projects aimed at reducing greenhouse gas emissions and preventing environmental pollution
3. Amount of subsidy: Half of the initial investment



Potential Financial Schemes to Promote the Co-benefits Approach

As a part of the “Cool Earth Partnership” announced by Japanese Prime Minister Yasuo Fukuda at the World Economic Forum in 2008, the Government of Japan plans to offer loans under its ODA program on terms that are even more concessional than those currently applicable for environmental projects. Financial assistance and practical projects and examples are critical to implement the co-benefits approach. Several financial schemes could apply the co-benefits approach without diverting ODA funds:

- Yen loans (especially for infrastructure improvements)
- Two-step loans focusing on basic human needs (BHN) in least-developed countries (LDCs)

- Support systems for measurable, reportable and verifiable emission reduction activities in developing countries (currently underway)
- Subsidies to promote feasibility studies for CDM project-finding (currently underway)
- Systems to stimulate transfers of state-of-the-art technologies (e.g., support systems that promote “first-of-its-kind” technologies, such as NEDO model projects) (currently underway)
- Subsidies to help realize co-benefits-type CDM projects (currently underway)

More Information from Japan on the Co-benefits Approach

Examples of Japanese Initiatives Using the Co-benefits Approach

MOEJ and the Ministry of Environment Protection, China concluded the “Statement of Intent on Cooperation on the Co-benefits Approach Addressing Climate Change and Environmental Improvement” (3 Dec. 2007)	
MOEJ and the Ministry of Environment, Indonesia agreed on the “Statement of Intent on Cooperation on the Co-benefits Approach” (12 Dec. 2007)	
CDM/JI Feasibility Study (FS) Programme	▶ gec.jp/gec/gec.nsf/en/Activities-CDMJI_FS_Programme-Top
Better Air Quality 2008 Pre-Event “Climate-Friendly Transportation Strategies in Asia: Overcoming Obstacles to Co-benefits”	▶ www.iges.or.jp/en/cp/activity20081111.html
Co-benefits CDM Model Projects (in Japanese)	▶ www.env.go.jp/water/info/cdm/index.html
JICA’s Assistance for Mitigation to Climate Change – The Co-benefits Approach to Climate Change	▶ www.jica.go.jp/english/publications/reports/study/topical/climate_1/index.html

Related Materials (Downloads)

Japan’s Initiative for Putting Co-benefits Forward -Demonstrating Tangible Co-benefits Projects-(Dec. 2008)	
The Co-benefits Approach for GHG Emission Reduction Projects (Dec. 2008)	
Co-benefits Approach to Climate Change and CDM in Developing Countries –Towards the Achievement of Co-benefits in Environmental Pollution Control and Climate Change Mitigation– (Dec. 2008)	▶ www.kyomecha.org/cobene/e/outreach.html
Promoting the Co-benefits Approach, through the Financial Mechanisms, “Cool Earth Partnership” –Aligning Climate and Development- (May 2008)	
Policy Tools for Co-benefits Projects; Good Practice Matrix, Catalog for Identification of Co-benefits Projects	▶ www.kyomecha.org/cobene/e/tools.html
Manual for Quantitative Evaluation of the Co-Benefits Approach to Climate Change Projects	
Implementation Manual-Catalogue for Identification of Co-benefits Projects to GHG Reduction and Local Environmental Improvement-Water, Air, and Waste, Asia-Pacific Gateway to Climate and Development	▶ www.climateanddevelopment.org/cobenefits/index.html

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