

MOEJ/GEC

Feasibility Study Programme

on New Mechanism and CDM in 2011



Ministry of the Environment, Japan



Global Environment Centre Foundation

November 2011

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Introduction

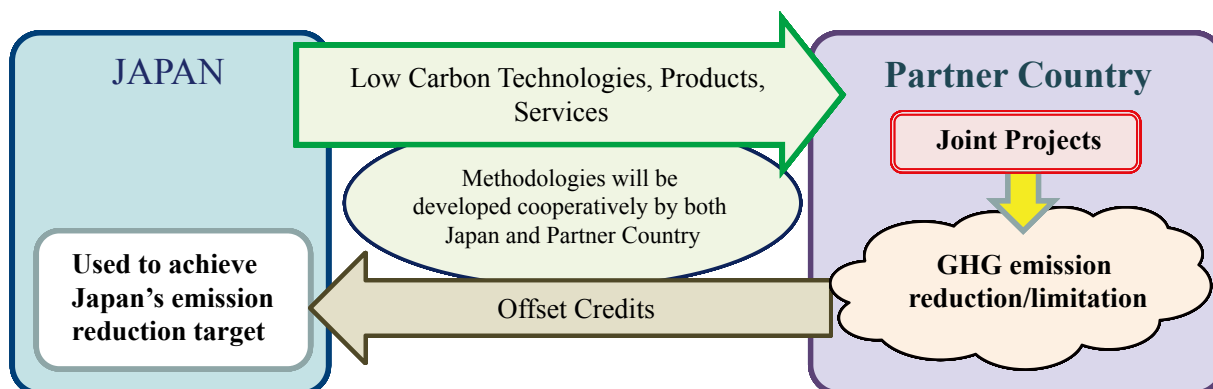
The Ministry of the Environment, Japan (MOEJ) and Global Environment Centre Foundation (GEC) have launched Feasibility Study (FS) Programme on New Mechanisms since 2010, in order to solicit GHG mitigation projects/activities supposed to be implemented under New Mechanisms in the post-2012 framework. This Programme has started based on lots of experiences from CDM/JI Feasibility Study Programme since 1999.

In FY2011, the MOEJ and GEC made a public call for proposals on New Mechanism FS, and selected 29 FS (see page 4). The FS are to investigate feasibility of projects to be implemented under New Mechanisms, in particular the Bilateral Offset Credit Mechanism (BOCM) proposed by the Government of Japan. In addition to the New Mechanism FS, the MOEJ and GEC continue the CDM FS Programme whose purpose is to contribute to the schematic improvement of the CDM.

Bilateral Offset Credit Mechanism (BOCM)

The BOCM is a new scheme to promote the transfer of advanced low-carbon technologies, products and services from Japan to developing countries in order to achieve net reductions of global GHG emissions. The purposes of the BOCM are:

- To contribute to the ultimate objective of the UNFCCC through promotion of mitigation activities globally.
- To facilitate the bilateral cooperation in the field of climate change in such a way that best suits each country's national circumstances.
- To contribute to the sustainable development of developing countries.
- To appropriately evaluate the contribution to GHG emission reductions or removals.
- To facilitate diffusion of low carbon technologies, products and services and enhance capabilities to utilise them.



FS on New Mechanism focusing on BOCM

As the schematic design of the BOCM is still under consideration, FS is expected to contribute to it. In this context, each BOCM FS is supposed to survey and give outcomes on following items:

- Demonstration of GHG mitigation effects through the proposed projects/activities
- Confirmation that the project/activity satisfies host country's needs and fits to their specific circumstances.
- Identification of reference scenario related to the project/activity – both a sectoral reference scenario and a baseline scenario similar to the CDM project are possible.
- Establishment of reasonable and credible monitoring system and plan.
- Proposed calculation protocol of GHG emissions for the reference scenario and the project/activity scenario. When these GHG emissions are quantified, expected GHG emission



- reductions will be estimated, even though the quantification would be tentative estimation at the FS phase.
- Proposed MRV methods of GHG emission reduction effects – MRV methods based on the approved CDM methodologies with some modifications or some simplifications are possible, and ones with the application of default values, through data analysis undertaken in the FS, are also possible. It seems to be necessary that proposed MRV methods are justified.
 - Evaluation of the project/activity's contribution to sustainable development in the host country, with securing environmental integrity. If the proposed project/activity reduces GHG emissions as well as enhances developmental needs of the host country, both the project proponents and the host country government hope that the project/activity should be realized and implemented. Such a project/activity should be promoted. If more promotion is desirable, “offset” or “credit” mechanism could be an option.

These items studied in FS will be useful information as inputs to the consideration of the BOCM schematic design. Therefore, one of the purposes of the BOCM FS Programme is to obtain useful study results to be input to the BOCM schematic design consideration. For this purpose, FS results should include following contents:

- Identification of projects/activities appropriately suitable to host countries' specific needs and circumstances, and matching to their policies and strategies on not only climate change but also other developmental/environmental aspects. The BOCM should be along with the host countries' needs based on the bilateral consultations, and should be more flexibly applied according to the bilateral agreements reflecting each country's specific circumstances.
- Evaluation of Japan's contribution to global GHG mitigation through the dissemination and the application of Japanese advanced low-carbon technologies. For this purpose, each FS will survey how to calculate GHG emissions on the reference scenario and on the project/activity scenario, including monitoring plan and measures, and will provide the expected GHG emission reduction effects to be quantified, in the FS reports.
- Breakthrough of CDM difficulties, such as financial addtionality demonstration, and conservativeness. In addition, too broad monitoring coverage burdens project operators, but it has to be conducted because the approved methodologies require such monitoring. Then, conservativeness plus much burden would discourage project proponents from implementing the projects/activities, which will not lead to the reduction of GHG emissions.

However, of the most importance is that the mitigation projects/activities should be realized and implemented. In this context, another objective of the FS is to explore ways for private entities to be able to implement mitigation projects/activities in the real world.

In this context, that is, for the real implementation of projects/activities, another objective of the FS programme is to explore ways for private entities to be able to implement them in the real world. We expect through the FS that reasonable enabling environments and appropriate (i.e. not overburdened) rules are proposed. The enabling environments and reasonable rules will be applicable to not only Japanese entities but host countries' counterparts and project owners. We hope to depict the realistic image of the BOCM based on the FS results, to be shared with partner countries.

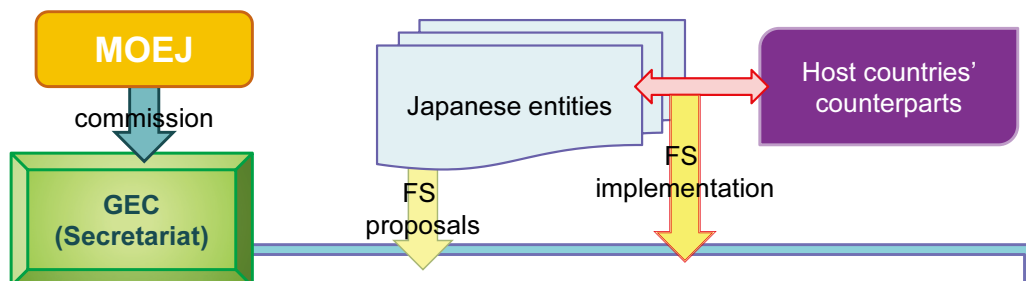
FS on CDM

The MOEJ and GEC solicit FS on CDM projects which can contribute to the schematic improvement of the CDM. Along with this perspective, 6 CDM FS are selected: 1 FS for new methodology development, 1 FS for standardised baseline development, 3 FS for the contribution to equitable regional distribution of CDM projects, and 1 FS for PoA development (see page 23).

For more information (including FS reports to be made publicly available in March 2012), please visit GEC website: <http://gec.jp/>



FS Programme on BOCM



- Invite public proposals on FS from Japanese entities (private companies and NGO/NPOs)
- Select the proposals to be officially adopted as qualified FS (funded to implement FS)
- Provide advice and supervision to the qualified FS
 - Through an expert committee and task force teams
- Consult with (selected) host countries to promote cooperative relationships
 - Through meetings with the selected host countries' governments
- Outreach the FS results
 - Through GEC website, and Side Events and Exhibits at UNFCCC sessions

Purposes of FS on BOCM

- **To input to the consideration of schematic design of BOCM:**
 - Identification of projects/activities appropriately suitable to host countries' specific needs and circumstances
 - Evaluation of Japan's contribution to global GHG mitigation through the dissemination and application of Japanese low-carbon technologies
 - Breakthrough of CDM difficulties where hurdles tough to overcome exist
- **To explore ways for private entities to be able to really implement projects/activities:**
 - Private entities (potential project proponents) implement FS where reasonable enabling environments and appropriate (not overburdened) rules are pursued based on their survey results.



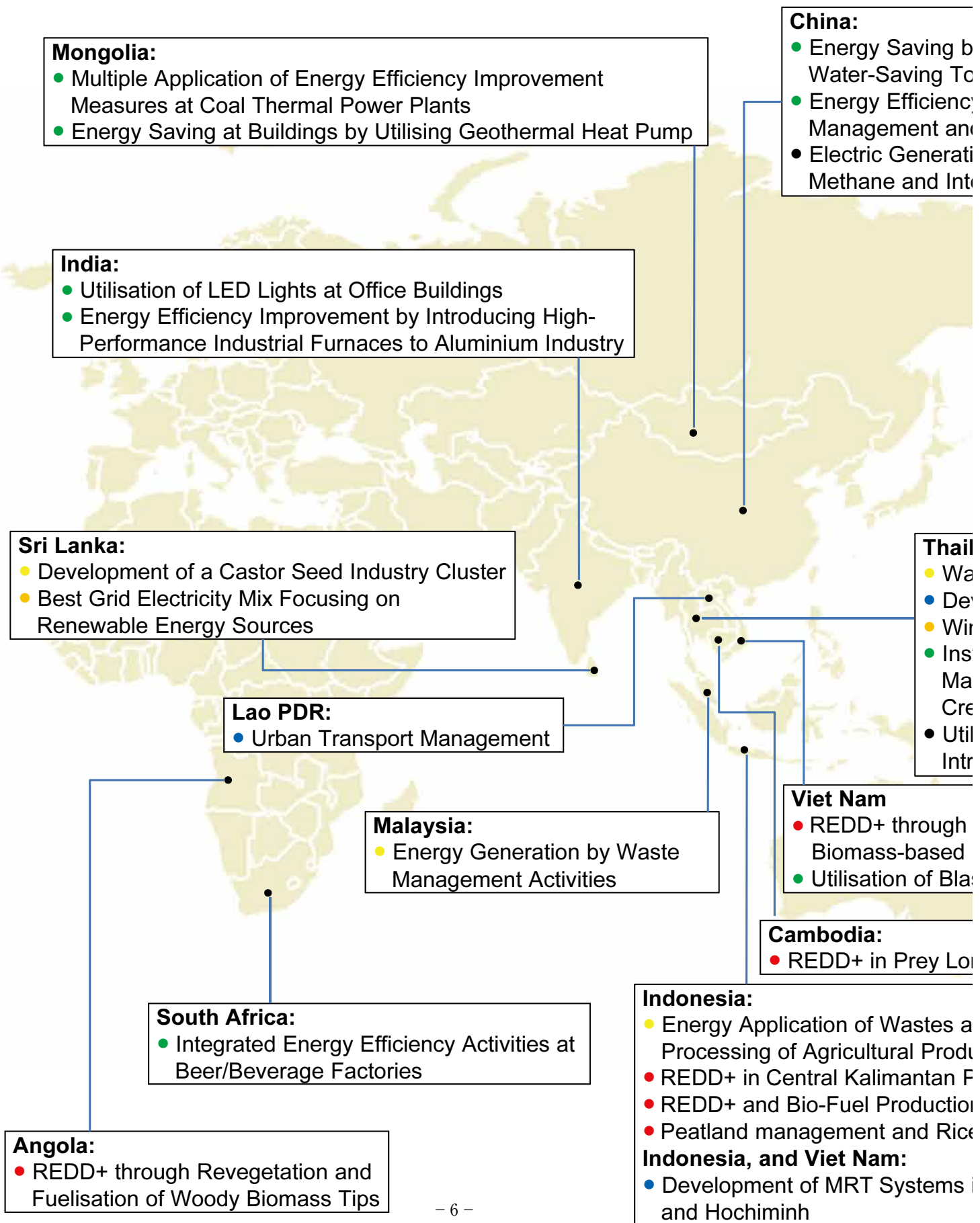
List of New Mechanism Feasibility Studies 2011

#	Category	Host Country	Emission Reduction Project/Activity	FS Entity
1	Waste Management	Thailand	Waste Management Activities in Thailand	Pacific Consultants
2		Indonesia	Energy Application of Wastes and Wastewater Originated in Processing of Agricultural Products	Chugai Technos Corporation
3		Malaysia	Energy Generation by Waste Management Activities, through Anaerobic Digestion as Model Technology	Ichikawa Kankyo Engineering
4	Biomass Utilisation	Sri Lanka	Development of Castor Seed Industry Cluster	PEAR Carbon Offset Initiative
5	Transportation	Thailand	Development of Mass Rapid Transit (MRT) Network in Bangkok	Japan Weather Association
6		Lao PDR	Urban Transport Management in Vientiane	Katahira & Engineers International
7		Indonesia, & Viet Nam	Development of Mass Rapid Transit (MRT) Systems in Jakarta, Hanoi and Ho Chi Minh	Mitsubishi Research Institute
8	Renewable Energy	Thailand	Renewable Energy Development by Wind Power Generation in Low Wind Speed Condition	Yonden Engineering
9		Sri Lanka	Development of Best Grid Electricity Mix Focusing on Renewable Energy Sources	Ex Corporation
10		Colombia	Renewable Energy Development Focusing on Geothermal Power Generation	Mitsubishi Research Institute
11	Energy Efficiency/ Energy Saving	China	Energy Saving by Reducing Water Consumptions through Diffusion of Water-Saving Toilet Systems to Households in Dalian	Mitsubishi UFJ Morgan Stanley Securities
12		China	Energy Efficiency Improvement by Introducing Energy Management and Control Systems at Factories in Shaanxi Province	Yaskawa Electric Corporation
13		Mongolia	Multiple Application of Energy Efficiency Improvement Measures at Coal Thermal Power Plants	Suuri-Keikaku
14		Mongolia	Energy Saving at Buildings by Utilising Geothermal Heat Pump and Other Technologies	Shimizu Corporation
15		Thailand	Promotion of Energy Efficiency Improvement through Institutional Development of Building and Energy Management Systems (BEMS) with Certificated Carbon Credits	Yamatake Corporation
16		India	Energy Savings by Utilising LED Lights at Office Buildings	The Japan Research Institute
17		India	Energy Efficiency Improvement by Introducing High-Performance Industrial Furnaces to Aluminium Industry	Japan Industrial Furnace Manufacturers Association



#	Category	Host Country	Emission Reduction Project/Activity	FS Entity
18	Energy Efficiency/ Energy Saving	Mexico	Promotion of Energy Efficiency Improvement at Households through Introduction of Low-CO2 Houses and Diffusion of Energy-Efficient Appliances	The Japan Research Institute
19		South Africa	Integrated Energy Efficiency Activities at Beer/Beverage Factories Using Specific Energy Consumption Methods	Recycle One.
20	REDD+	Indonesia	REDD+ in Central Kalimantan Province	Mitsubishi UFJ Research & Consulting
21		Indonesia	REDD+ and Bio-Fuel Production and Utilisation in Gorontalo Province	Kanematsu Corporation
22		Indonesia	Avoidance of Peat Aerobic Degradation by Peatland Rewetting and Rice Husk-based Power Generation Associated with Rice Production Increase in Jambi Province	Shimizu Corporation
23		Cambodia	REDD+ in Prey Long Area	Conservation International Japan
24		Viet Nam	REDD+ through Revegetation at Denuded Lands and Woody Biomass-based Power Generation in Son La Province	Sumitomo Forestry
25		Brazil	REDD+ in Acre State	Marubeni Corporation
26		Angola	REDD+ through Revegetation at Derelict Commercial Forested Lands and Fuelisation of Woody Biomass Tips for Cement Plants	PricewaterhouseCoopers Aarata Sustainability
27	Others	China	Electric Generation based on Low-Level Coal Mine Methane and Integrated Energy Efficiency Improvement in Yunnan Province	Tepia Corporation Japan
28		Thailand	CO2 Reduction through Utilising Off-Peak Power from Storage Batteries and Introducing Electric Vehicles	Mizuho Information & Research Institute
29		Viet Nam	CO2 Abatement through Utilisation of Blast Furnace Slags as Blending Material for Cement	Mitsubishi Research Institute

New Mechanism Feasibility

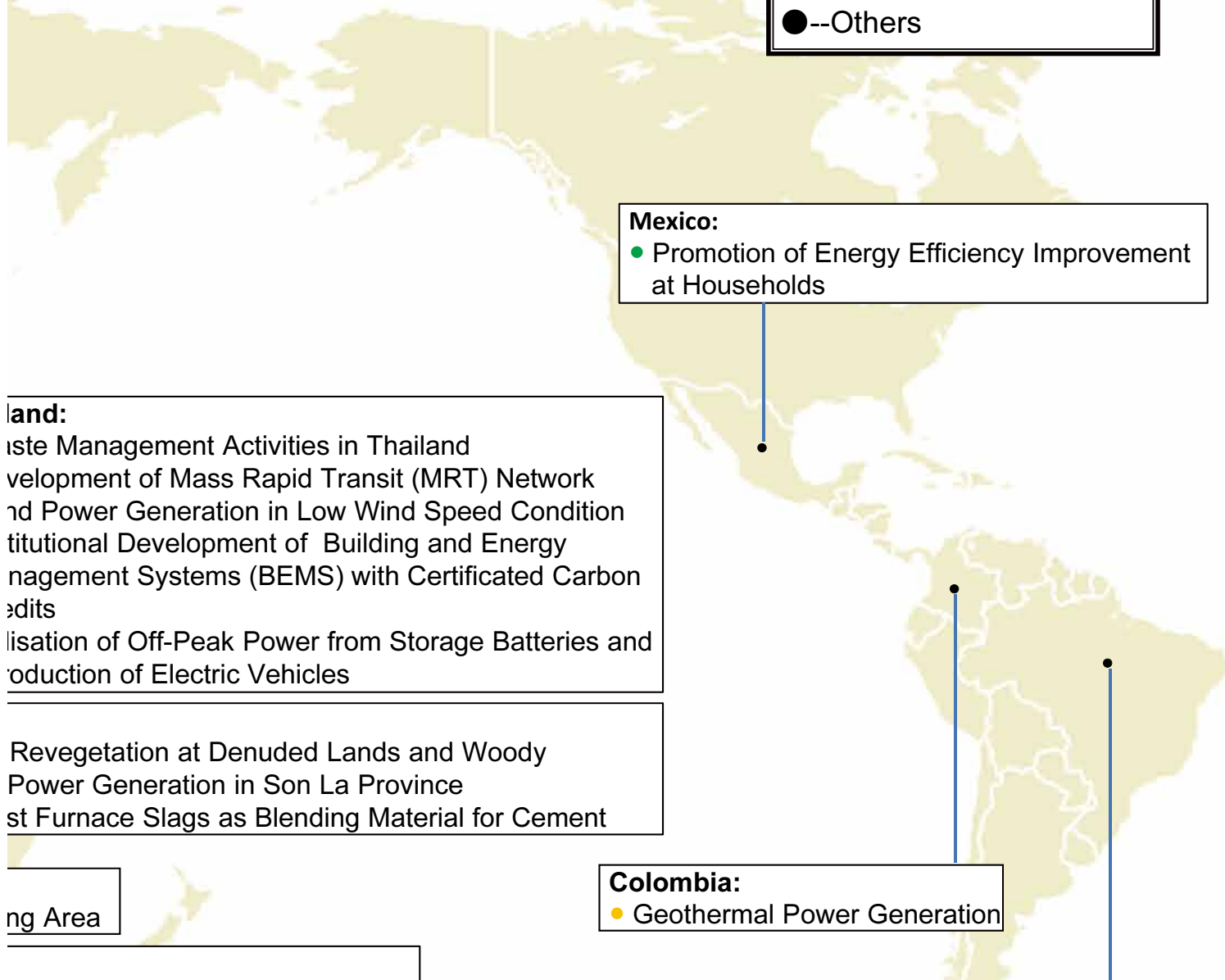


Ability Studies in FY2011

y Reducing Water Consumptions through
 ilet Systems to Households
 y Improvement by Introducing Energy
 d Control Systems at Factories
 on based on Low-Level Coal Mine
 egrated Energy Efficiency Improvement

Category

- --Waste Management
Biomass Utilisation
- --Transportation
- --Renewable Energy
- --Energy Efficiency /
Energy Saving
- --REDD+
- --Others



land:
 iste Management Activities in Thailand
 velopment of Mass Rapid Transit (MRT) Network
 nd Power Generation in Low Wind Speed Condition
 titutional Development of Building and Energy
 nagement Systems (BEMS) with Certificated Carbon
 edits
 lisation of Off-Peak Power from Storage Batteries and
 oduction of Electric Vehicles

Mexico:
 ● Promotion of Energy Efficiency Improvement
 at Households

Revegetation at Denuded Lands and Woody
 Power Generation in Son La Province
 st Furnace Slags as Blending Material for Cement

Colombia:
 ● Geothermal Power Generation

Brazil:
 ● REDD+ in Acre State

ng Area

nd Wastewater Originated in
 icts
 Province
 n and Utilisation
 e Husk-based Power Generation
 in Jakarta, Indonesia, and Hanoi



New Mechanism Feasibility Study (FS) **Host Country: Thailand**

Waste Management Activities in Thailand **FS Entity: Pacific Consultants**

Outline of GHG Mitigation Activity

Following priority waste management projects will be implemented by utilising Japanese technologies on appropriate waste & wastewater management. The priority projects are identified through the last year's FS results.

Site of GHG Mitigation Activity

Draft MRV Methods

MRV methods will be basically along with streamlining process under the CDM scheme, based on CDM methodologies such as AM0093, AMS-I.D, AMS-III.F, and AMS-III.O, as well as methodological tools such as "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site". In addition, some applicable **default values** will be considered, as a part of reasonable MRV methods.

Expected GHG Reductions

- A semi-aerobic landfill project will reduce **60,000t-CO₂/y**.
- An aerobic digestion project of solid waste will reduce **120,000t-CO₂/y**
- A forced methane fermentation project will reduce **100,000t-CO₂/y**
- 5 aerobic digestion projects of human excrete will reduce **30,000t-CO₂/y**

Color legends: Reference scenario (blue), Mitigation project (orange), Co-benefits (pink)

New Mechanism Feasibility Study (FS) **Host Country: Indonesia**

Energy Application of Wastes and Wastewater Originated in Processing of Agricultural Products **FS Entity: Chugai Technos Corporation**

Outline of GHG Mitigation Activity

Agricultural wastes derived from factory processing will be utilised as energy sources, as follows:

1. Solid agricultural wastes from palm oil mills (EFB) and sugar factories (bagasse) will be fuelised (in pellets or powders) to displace coals at thermal power plants or at mini-power plants at community level.
2. Wastewater from palm oil mills (POME) and rubber factories will be input to digesters to generate methane gas to utilised at gas engine power generators.

Site of GHG Mitigation Activity

Draft MRV Methods

MRV methods should be basically along with streamlining process under the CDM scheme, based on CDM approved methodologies (in this case, ACM0006, ACM0014, AM0015 and AM0085). In addition, MRV should link to the certification of "Roundtable on Sustainable Palm Oil (RSPO)", in particular about reporting and verification, to establish effective MRV system.

Expected GHG Reductions

2.2 million t-CO₂/y (total of PTPN-7 factories in 3 provinces):

- ← methane avoidances + amount of energy produced from wastes/wastewaters (displacement of fossil fuels)

Potentials: 22.4 million t-CO₂/y (total in entire Indonesia)



New Mechanism Feasibility Study (FS) **Host Country: Malaysia**

Energy Generation by Waste Management Activities, through Anaerobic Digestion as Model Technology **FS Entity: Ichikawa Kankyo Engineering**

Outline of GHG Mitigation Activity

Food wastes from Rest & Service Areas (RSAs), Overhead Bridge Restaurants (OBRs), and Lay-bys (LBs) along with the PLUS "North-South Expressway (NSE)" are segregated to be transported into designated points where methane fermentation plants are constructed. Biogas from the methane fermentation process is to be utilised for energy generation, whose options would be: (i) cogeneration through gas engines to provide electric and thermal energy, (ii) sale to town gas grids as LNG, and (iii) CNG fuel for garbage trucks newly introduced. This activity will not only avoid methane emissions from landfilled organic wastes (GHG reduction), but contribute to waste "3R" policies with high-value addition in Malaysia.

Sites of GHG Mitigation Activity

plots for waste-to-energy plants: **Penang, Ipoh, Kuala Lumpur, Melaka**

Expected GHG Reductions

Rough estimation: 15.657t-CO₂/yr

- 100t/day of food wastes will be treated → methane avoidance effect from landfill sites = 12,424t-CO₂/yr
- 100% of biogas will be utilised for gas engine power generation → 10,000MWh/yr will be generated and 60% will be sold to electric grid = 6,000MWh/yr x 0.595kg-CO₂/kWh = 3,570t-CO₂/yr
- *Project emissions: 171t-CO₂/yr* for plant maintenance (1 month), and 166t-CO₂/yr for additional garbage truck transportation

Potentials: 53 Mt-CO₂/yr (assumed if food wastes (20% of total wastes) are collected and utilised in entire Malaysia)

Draft MRV Methods

With reference of CDM methodologies and tools, GHG reductions could be **measured** through analysis of biogas property and monitoring of provisions of electricity and/or LNG. For expanded activities, inter-organizational (i.e. multi-stakeholder related) **reporting** and **verification** should be established to administrate and manage each activity in a integrated manner.

New Mechanism Feasibility Study (FS) **Host Country: Sri Lanka**

Development of Castor Seed Industry Cluster **FS Entity: PEAR Carbon Offset Initiative**

Outline of GHG Mitigation Activity

A cluster of biomass industries based on castor seed/oil is developed to utilise castor seed/oil as one of energy sources and one of export goods of Sri Lanka. In order to develop the industries, step-by-step approach will be taken: (1) to promote the cultivation technology of castor-oil plants in the northern and western regions in Sri Lanka; (2) to refine high quality castor oil and produce sebacic acid which is a raw material of bio-synthetic fiber; (3) to produce solid biomass fuel from squeezed castor seeds, which replace partially fuels at coal fired thermal power plants in Sri Lanka to reduce GHG emissions.

Site of GHG Mitigation Activity

Expected Emission Reduction

<Case1> Used for mixed fuel with coal at existing coal thermal power plant: ERy= 59,736t-CO₂/yr

<Case2> Used as fuel for off-grid biomass power generations: ERy= 41,083t-CO₂/yr

Draft MRV Methods

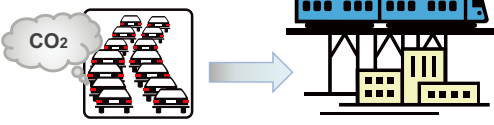
MRV methods should be able to be implemented in Sri Lanka, based on parameters available and easily accessible (compared to CDM methodologies). Measurement is along with simple monitoring plan. Reporting is similar to CDM monitoring report. Verification should be pre-check and post-review basis.

New Mechanism Feasibility Study (FS) **Host Country: Thailand**

Development of Mass Rapid Transit (MRT) Network in Bangkok **FS Entity: Japan Weather Association**


Outline of GHG Mitigation Activities

A network of Mass Rapid Transit (MRT) systems, with multiple MRT lines, will be introduced in Bangkok. The MRT network will lead to the modal shift from the current road-oriented transport and reduce GHG emissions. In addition, the co-benefits, such as air pollution improvement, will be expected.



Sites of GHG Mitigation Activities

MRT Network Master Plan in Bangkok Metropolitan Region



Expected GHG Reductions

- **Option1: transport demand forecasting model**
 *The following is tentatively calculated according to a transport demand forecasting model with the "Four-Step Estimation Method for Traffic Demands"
 → **780,000 t-CO₂/y** will be reduced
 → **6,240,000 t-CO₂/y** will be reduced between 2013 and 2020 in total
- **Option2: simplified ACM0016**
 → **140,000 t-CO₂/y** will be reduced

Draft MRV Methods


2 options of MRV methods should be based on Measurement process: transport demand forecasting model or simplified ACM0016. Both should ensure accuracy enough to be internationally acceptable. In addition, pre-activity and post-activity Reporting and Verification process will be considered and proposed.

New Mechanism Feasibility Study (FS) **Host Country: Lao PDR**

Urban Transport Management in Vientiane **FS Entity: Katahira & Engineers International**


Outline of GHG Mitigation Activity

The urban transport management projects/activities is promoted, based on "Master Plan on Comprehensive Urban Transport in Vientiane" which promotes environmentally sustainable transport (EST). The master plan has three categories of planned projects/activities: construction and expansion of road network, introduction of public transport systems, and establishment of transport-related facilities. Projects/activities which can contribute to the GHG reductions are picked up among all planned projects/activities, and the contributions of those selected projects/activities, and how to promote them are surveyed, in particular, focusing on the introduction of bus rapid transit (BRT) systems in Vientiane.



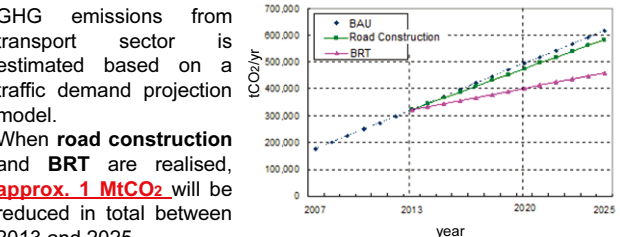
Sites of GHG Mitigation Activity

Central part of Vientiane



Expected GHG Reductions

GHG emissions from transport sector is estimated based on a traffic demand projection model. When road construction and BRT are realised, **approx. 1 MtCO₂** will be reduced in total between 2013 and 2025.



Year	BAU (tCO ₂ /yr)	Road Construction (tCO ₂ /yr)	BRT (tCO ₂ /yr)
2007	~150,000	~150,000	~150,000
2013	~300,000	~300,000	~300,000
2020	~500,000	~400,000	~400,000
2025	~650,000	~500,000	~500,000

Draft MRV Methods

Proposed MRV methods should be along with ISO 14064-2, but emissions on reference scenario should be decided ex-ante and periodically reviewed the reference scenario and emissions to correct ex-post.

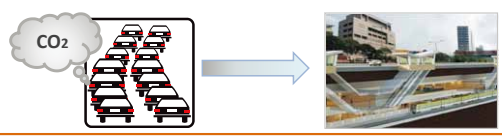


New Mechanism Feasibility Study (FS) Host Country: Indonesia and Vietnam

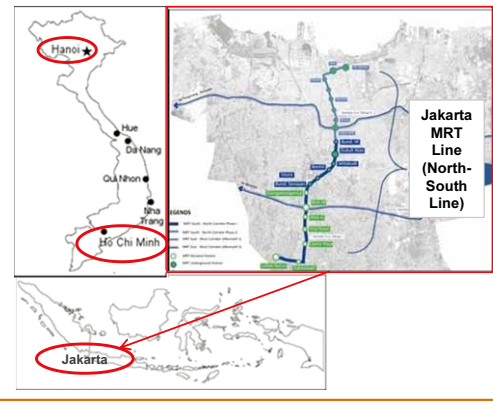
Development of Mass Rapid Transit (MRT) Systems in Jakarta, Hanoi and Ho Chi Minh
 FS Entity: Mitsubishi Research Institute

Outline of GHG Mitigation Activities

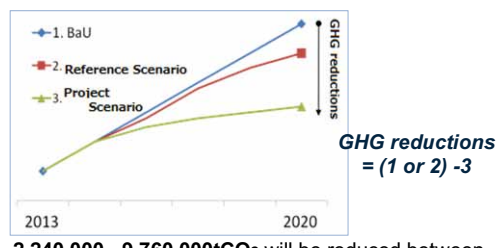
Mass Rapid Transit (MRT) systems are planned to be introduced in 3 cities; Jakarta, Hanoi and Ho Chi Minh. The MRT systems will lead to the modal shift from the current road-oriented transport to mass public transport in the mega cities to reduce GHG emissions.



Sites of GHG Mitigation Activities



Expected GHG Reductions



GHG reductions = (1 or 2) - 3

2,240,000 - 9,760,000tCO₂ will be reduced between 2015 and 2020 in total (3 cities).

Draft MRV Methods

Direct project emissions are measurable based on the fuel/energy consumptions, by referring to ACM0016. Reference emissions and indirect project emissions should be calculated based on the statistical data such as the results of JICA's person trip surveys.


New Mechanism Feasibility Study (FS) Host Country: Thailand

Renewable Energy Development by Wind Power Generation in Low Wind Speed Condition
 FS Entity: Yonden Engineering

Outline of GHG Mitigation Activity

Install wind power generators as a partial alternative to grid electric power in Thailand, where few wind power generation projects are registered by the CDM EB. The possible reason is wind conditions are not enough. Therefore, this activity will employ Japanese windmills which work in low wind speed condition compared to standard windmills.

Site of GHG Mitigation Activity

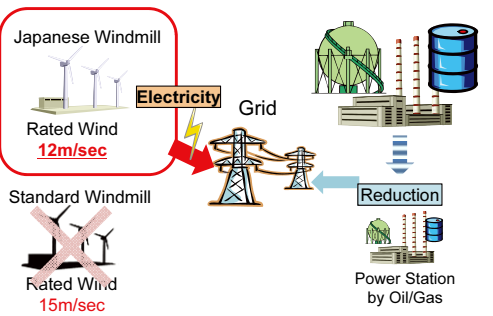


Expected GHG Reduction

- Reference scenario (current practice):
 [Wind power generations to grid] x [Grid EF]
 = (50MW x 24h x 365d x 25%) x 0.5980t-CO₂/MWh
 = 65,481t-CO₂/y
- Project scenario: No GHG emission
- ➔ **GHG emission reductions: 65,481t-CO₂/y**

If the Thai Alternative Energy Dev. Plan is realised (i.e. 800MW by 2022), GHG reductions could potentially be **7 million t-CO₂ in total**.

Draft MRV Methods



Basically CDM ACM0002 will be applied to the proposed activity. In addition, this activity attempts to develop the ex-post grid EF annually for accurate reference scenario. Therefore, an objective and transparent MRV method for annual electric mix in grid should be established, based on the study results.



New Mechanism Feasibility Study (FS) **Host Country: Sri Lanka**

Development of Best Grid Electricity Mix Focusing on Renewable Energy Sources
FS Entity: Ex Corporation

Outline of GHG Mitigation Activity

Through the development of renewable energy such as biomass utilisation, photovoltaic power generation, and hydropower generation, as well as the optimisation of the national grid based on the introduction of renewable energy, the way to ensure the best grid electricity mix should be identified. The pumped-up hydropower generation is also considered as an electricity storage function which can contribute to the stabilisation of inlets from renewable sources to the grid, although it would be implemented in the future. Based on this analysis, an appropriate scenario for low-carbon development in Sri Lankan electricity sector is expected to be established, which would be reflected in Sri Lankan NAMA strategy.

Site of GHG Mitigation Activity

Expected Emission Reduction

- 5MW renewable energy (biomass/wind/solar/hydro): **25,020tCO₂/yr** will be reduced.
 → Potential (2,212MW): **11MtCO₂/yr** will be reduced.
- 250MW pumped-up hydro: **126,838tCO₂/yr** will be reduced.

Draft MRV Methods

MRV methods should be balanced between austerity and operability, based on the fundamental data collected and archived for objective verification of GHG reductions.

New Mechanism Feasibility Study (FS) **Host Country: Colombia**

Renewable Energy Development Focusing on Geothermal Power Generation
FS Entity: Mitsubishi Research Institute

Outline of GHG Mitigation Activity

A geothermal power plant is newly established to supply electricity to meet the increasing demand of domestic electricity. Since no geothermal technology has been introduced in Colombia, this can be a very first geothermal power plant, which is planned to be constructed at Manizales, Nevado del Ruiz region.

Japan has an excellent geothermal technology because it is a volcanic country, so the Japanese technology will be provided to the Colombian first geothermal power generation project. In addition to hardware, Japanese side will provide software such as operation technique and know-how.

Expected GHG Reductions

Baseline emissions: 47,304tCO₂/yr

- Capacity of geothermal power plant: 50MW
- Generated electricity: 394.2GWh/yr
- Electric grid emission factor: 0.12tCO₂/MWh (hydropower shares 67% in Colombia)

Project emissions: 19,712tCO₂/yr
GHG reduction estimation: 27,583tCO₂/yr

However, when the geothermal power generation (i.e. renewable energy) can be considered to replace the incremental electricity demand, which would be covered by natural gas/petroleum-based thermal power generation, GHG emission reductions would increase.

Sites of GHG Mitigation Activity

Draft MRV Methods

MRV methods will be considered and proposed, based on CDM ACM0002. However, it is required to continuously monitor CO₂ and CH₄ in non-condensable gas (NCG) by ACM0002. In place of this, simplified monitoring method based on ASTM E1675-95a "Standard Practice for Sampling Two-Phase Geothermal Fluid for Purposes Chemical Analysis".




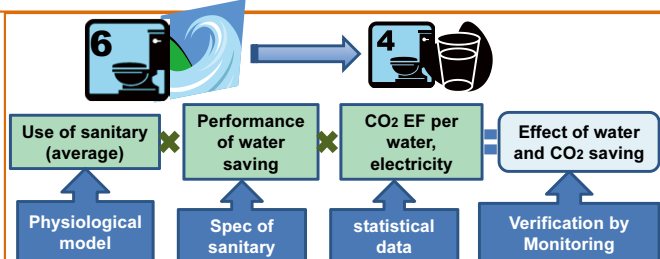
New Mechanism Feasibility Study (FS) Host Country: China

Energy Saving by Reducing Water Consumptions through Diffusion of Water-Saving Toilet Systems to Households in Dalian FS Entity: Mitsubishi UFJ Morgan Stanley Securities

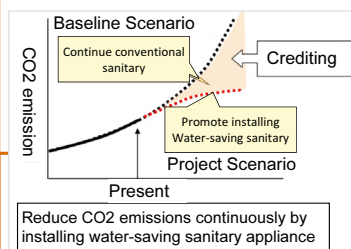
Outline of GHG Mitigation

Water-saving sanitary appliances (toilet systems) will be installed to households for the reduction of water consumptions. GHG emissions from water and sewage plants will be reduced through the water saving effect brought by the installation of such appliances. In addition, this can contribute to water supply problem in Dalian.

Site of GHG Mitigation Activity

Expected GHG Reductions



Population in Dalian: 5.82 million; Use of toilet: 5 times/day/capita
 Water saving: 1.2 liters (regulation: 6 liters, project toilet: 4.8 liters)
 EF: 0.59kgCO₂/m³ (based on Household Eco-Account Book in Japan)
 Population of initial year: 0.3 million (replace all toilet in Dalian through 20 years) → **approx. 387.63 tonCO₂/yr**
 Accumulated GHG reduction through 20 years: **approx. 81ktCO₂**

Draft MRV Methods

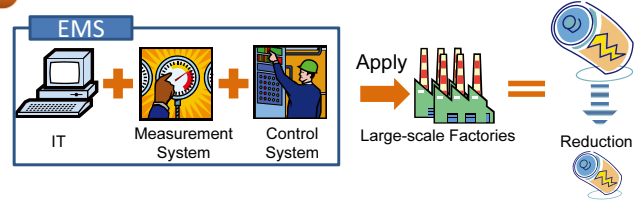
A proposed MRV method should be along with the standardized physiological model which is elaborated based on field surveys of sanitary in order to reduce burden of monitoring.

New Mechanism Feasibility Study (FS) Host Country: China


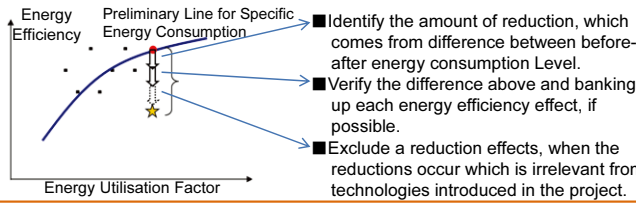
Energy Efficiency Improvement by Introducing Energy Management and Control Systems at Factories in Shaanxi Province FS Entity: Yaskawa Electric Corporation

Outline of GHG Mitigation Activity

Energy conservation measures are practiced by introducing 'Energy Management and Control Systems (EMS)' at large-scale factories to lead GHG emission reductions. An electric furnace steel plant and a chemical fertiliser factory will be surveyed as model factories.



Site of GHG Mitigation Activity

Expected GHG Reductions

GHG reduction potentials: 10,680t-CO₂

- Annual electricity consumptions of a factory which is selected as "Priority 1,000 Companies" (consuming 1/3 of entire electricity in China as a whole): **80,000MWh**
- Energy efficient rate by the introduction of relevant technology: **15% (average)**
- Electric grid mission factor: **0.89t-CO₂/MWh**

Draft MRV Methods

A proposed MRV method is based on measured energy consumptions. For baseline emissions are to be calculated by using specific energy consumption per production unit, with a reference to CDM AMS-II.B. In addition, how to verification is also considered in this FS.

New Mechanism Feasibility Study (FS) Host Country: Mongolia

Multiple Application of Energy Efficiency Improvement Measures at Coal Thermal Power Plants FS Entity: Suuri-Keikaku

Outline of GHG Mitigation Activities

Comprehensive and multiple application of Energy Efficiency (EE) improvement measurements, as a package, will be introduced to coal-fired power plants connected to the Central Integrated Power System in Mongolia. The proposed EE improvement measures are not limited to hardware displacement/update (e.g. high efficient turbine and electric transformer) but include software activities (i.e. improvement of operation and management techniques)

Expected GHG Reduction

Comprehensive EE measurements (both hard and soft) will reduce **254,002tCO₂/year**.

The calculation is based on:
 Total EE (8.0%) x (1-safety factor (40%)) x coal consumptions (4 mil t/yr) x coal EF (0.1tCO₂/GJ) x caloric value of coal (13.4GJ/t)

→ cf.) Only soft EE will reduce 65,817tCO₂/year.

Sites of GHG Mitigation Activities

Western Power System Central Integrated Power System Eastern Power System

FS-targeted power plants are thermal power plants #2, #3, and #4, Erdenet plant, and Darkhan plant.

Draft MRV Methods

GHG emissions reductions will be **Measured** and **Reported** by operators using a template sheet, which will be **Verified** by local experts familiar with the power/industry sector and local circumstances. This procedure would appropriately reflect real situations in the host country and target sector(s).

New Mechanism Feasibility Study (FS) Host Country: Mongolia

Energy Saving at Buildings by Utilising Geothermal Heat Pump and Other Technologies FS Entity: Shimizu Corporation

Outline of GHG Mitigation Activity

Geothermal heat pump technology and other technology such as photovoltaic power generation will be installed to achieve energy savings at buildings. Heating with geothermal heat pumps will displace the current heating systems based on coal-fired boilers. A specific target sector is public buildings in this feasibility study where some model projects could be identified. Based on the results of this feasibility study, the dissemination and expansion of these proposed technologies to other types of buildings would be considered at the next steps.

The Japanese geothermal heat pump facilities are very competitive, and their efficiencies are quite high. Since various facilities are already commercialised, the appropriate application/installation can be achieved according to local conditions.

Site of GHG Mitigation Activity

Mongolia nation-wide – FS will be undertaken without identification of specific site. Model cases could be selected in the FS.

Expected GHG Reductions

[in the case of heat pump only]
 Pre-activity GHG emissions: 163,000 tCO₂/year
 Activity GHG emissions: 125,000tCO₂/year
 → **GHG emission reductions: 38,000tCO₂/year**

[in the case of heat pump and photovoltaic power generation]
 Pre-activity GHG emissions: 163,000 tCO₂/year
 Activity GHG emissions: 0tCO₂/year
 → **GHG emission reductions: 163,000tCO₂/year**

Draft MRV Methods

Since buildings are beyond number, more simplified monitoring methods should be developed. One possible option would be based on the submissions of application forms for heat pump installation and their compilations, with no-notice inspections to actual installation and operation.



New Mechanism Feasibility Study (FS) **Host Country: India**

Energy Efficiency Improvement by Introducing High-Performance Industrial Furnaces to Aluminium Industry **FS Entity: Japan Industrial Furnace Manufacturers Association (JIFMA)**

Outline of GHG Mitigation Activities

Replacement of existing industrial furnaces currently used in Indian aluminium sector with Japanese high-performance industrial furnaces equipped with regenerative burners will lead GHG reductions through 30% of energy savings, by enhancing the exhaust heat recovery rate.

Estimated GHG Reductions

Since GHG reductions depends on fuel consumptions reduced by energy savings, GHG reductions can be theoretically calculated as following:
 GHG reductions =
 fuel reductions x emission factor per fuel unit
2,000tCO₂/yr/furnace will be estimated to be reduced.

Site of GHG Mitigation Activities

Lots of potential furnaces exist in India, but **6 model factories** shown on the map will be surveyed for the evaluation of possibility of GHG reduction in this FS. The activities aim to expanding to entire India.

Draft MRV Methods

ISO/TC244 "Industrial furnace and associated thermal processing equipment" is proposed for approval by JIFMA, which can be a MRV method.

New Mechanism Feasibility Study (FS) **Host Country: Mexico**

Promotion of Energy Efficiency Improvement at Households through Introduction of Low-CO₂ Houses and Diffusion of Energy-Efficient Appliances **FS Entity: The Japan Research Institute**

Outline of GHG Mitigation Activity

Japanese high-efficient electric appliances will be introduced to households in Baja California, Mexico, to replace existing ones. In particular, inverter-controlled air-conditioners, inverter-controlled refrigerators, and LED lamps are firstly introduced, to visualise energy saving effects. In the future, photovoltaic panels as well as storage batteries would be installed, to realise more reductions of GHG emissions from fossil fuel-based energy. Such comprehensive measures achieve **Low-CO₂ Houses** in Mexico.

Sites of GHG Mitigation Activity

Baja California State (focusing on Mexicali City)

Expected GHG Reductions

Since concrete targeted houses are not confirmed yet, GHG reductions cannot quantified at the moment. When 50% of energy is assumed to be reduced, total emission reductions in entire Mexico would be **2.5MtCO₂/yr**.
 - Mexican GHG emissions (2006): 715MtCO₂/yr;
 - household sector: 6.87% share

Draft MRV Methods

Proposed MRV methods will be based on approved CDM methodologies, such as AMS-II.C, AMS-II.J, and AMS-I.D, with some improvements/simplifications in terms of applicability, setting and identification of reference scenario, monitoring method, and calculation of emission reductions.

New Mechanism Feasibility Study (FS)		Host Country: South Africa	
Integrated Energy Efficiency Activities at Beer/Beverage Factories Using Specific Energy Consumption Methods in South Africa		FS Entity: Recycle One	
Outline of GHG Mitigation Activity		Site of GHG Mitigation Activity	
<p>GHG reductions will be achieved by utilizing Japanese advanced EE technology:</p> <ol style="list-style-type: none"> 1) Improvement of production processes based on outputs from simulations about material and energy balances, 2) Japanese EE systems (such as Vapor re-compression (VRC) system, heat-pump system, waste heat recovery system, and efficient cooling system). <p>These will be introduced to beer/beverage factories as package.</p>		<p>A beer factory of SAB Miller in Durban</p>	
Estimated GHG Reductions		Draft MRV Methods	
<p>26,400 tCO₂/yr (for Durban factory) =CO₂ emission unit per output (0.22tCO₂/kl) x output (=beer productions) (400,000kl/yr) x EE rate (30%)</p> <p>(*) 0.22tCO₂/kl is calculated from: - electricity: 0.1MWh/kl x EF (1.04tCO₂/MWh) - heat (coal): 0.3Gcal/kl x EF (0.38tCO₂/Gcal)</p>		<p>Third-party sector- and local-specific experts will review the project contents including reference scenario, calculation formula and CO₂ emission unit per output, to reflect specific conditions and ensure reliability. Through the experts' review, reference scenario and monitoring plan are confirmed.</p> <p>The MRV methods also include PDCA process to achieve further EE improvement.</p>	

New Mechanism Feasibility Study (FS)		Host Country: Indonesia	
REDD+ in Central Kalimantan Province		FS Entity: Mitsubishi UFJ Research & Consulting	
Outline of GHG Mitigation Activity		Site of GHG Mitigation Activity	
<p>The REDD+ project will prevent peat swamp forests from being exploited to oil palm plantations to reduce CO₂ emissions from deforestation and forest degradation. The project expects to utilise melaleuca trees as timbers to provide locals the alternative economic income</p>			
Expected GHG Reductions		Draft MRV Methods	
<p>Average of 25 years: approx. <u>70t-CO₂/ha/yr</u> → 10,000ha of project site: <u>700,000t-CO₂/y</u></p>		<p>[GHG emissions] = [areas of deforestation/forest degradation] x [EF per area unit] – [timber productions] – [biomass combustions (incl. peat combustions)]</p> <p>The MRV system should be based on Indonesian REDD+ MRV methods whose information should be collected from Min. of Forestry and DNPI, taking into account the IPCC guidelines and GOF-C-GOLD.</p>	

New Mechanism Feasibility Study (FS) Host Country: Indonesia

REDD+ and Bio-Fuel Production and Utilisation in Gorontalo Province

FS Entity: Kanematsu Corporation

Outline of GHG Mitigation Activity

Both a REDD+ project with plantation at deteriorated forest and fallowed land areas and a bio-fuel project with plant oil will be implemented as a package in Boalemo Prefecture, Gorontalo Province, to reduce GHG emissions. The package will produce synergetic effect on forest preservation with safeguard means by the bio-fuel project.

Site of GHG Mitigation Activity

Expected GHG Reductions

The pilot project activity will be implemented within 20,000ha at Boalemo Prefecture:

- REDD+ for deteriorated forests and fallowed lands → **150,000t-CO₂/y** to be reduced
- Oil plant cultivation (500ha) and bio-fuel production & consumption → **1,000t-CO₂/y** to be reduced

→ **Potential:**
Approx. **6 million tCO₂** between 2013 to 2020 (if the activity expands entire Boalemo Prefecture (100,000ha of deteriorated forest/followed land areas))

Draft MRV Methods

Draft MRV methods should be proposed based on ideas of VCS, GOFCC-GOLD, and BioCarbon Fund, along with securing the consistency to Indonesian governmental consideration on MRV and provincial reference levels (by Ministry of Forest, and DNPI).

New Mechanism Feasibility Study (FS) Host Country: Indonesia

Avoidance of Peat Aerobic Degradation by Peatland Rewetting and Rice Husk-based Power Generation Associated with Rice Production Increase in Jambi Province

FS Entity: Shimizu Corporation

Outline of GHG Mitigation Activity

Water gates will be operated to allow tidal zone river water onto the site to raise and keep water table there at a certain level. Raising water table will inhibit aerobic decomposition of peat by microorganisms, thereby enabling peat CO₂ emissions to be reduced, and will raise rice productions with the increase of cultivations (from single cropping to double/triple cropping), where the excess rice husk to be utilised for biomass-based power generation.

Site of GHG Mitigation Activity

Irrigated lands in the East Tanjung Jabung regency of Jambi Province (approx. 10,000ha)

Expected GHG Reductions

225,000t-CO₂/y will be reduced when 50cm (-90cm below to -40cm below ground) of ground water table around the site of 10,000ha is raised:
 $- 45\text{tCO}_2/\text{ha}/\text{meter}/\text{yr} \times 10,000\text{ha} \times 0.5\text{m} = 225,000\text{t-CO}_2/\text{y}$

6000t-CO₂/y will be reduced by rice husk-based power generation (capacity: 1MW):
 $- 1\text{MW} \times 8,000\text{h}/\text{yr} \times 0.743\text{tCO}_2/\text{MWh} \approx 6,000\text{t-CO}_2/\text{y}$

Draft MRV Methods

MRV methods to projects/activities covering huge areas need tremendous costs to ensure accurate measurement. For this activity, the application of remote sensing technology should be considered, based on this FS for the pilot activity.



New Mechanism Feasibility Study (FS) **Host Country: Cambodia**


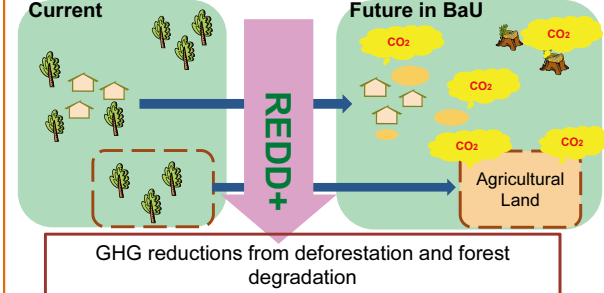
REDD+ in Prey Long Area **FS Entity: Conservation International Japan**

Outline of GHG Mitigation Activity

REDD+ project in Prey Long Area will be implemented, with following two approaches:

- Countermeasures to unplanned deforestation: contracting with local people to conserve forest area to strengthening patrol activities
- Countermeasures to large-scale commercial forest clearance: obtaining forest conservation concession from Cambodian government to block future exploitation concessions

Site of GHG Mitigation Activity

Expected GHG Reductions

1,200,000t-CO₂/y
Calculation is based on VCS methodologies.

Draft MRV Methods

Cambodian government identified general principles for REDD+ MRV system, and their MRV/REL (reference level) technical team is considering deeply MRV methods for REDD+. In addition, biomass survey under the project will be undertaken along with the VCS guidelines by the FS entity, which will input to the process to establish the Cambodian REDD+ MRV system.

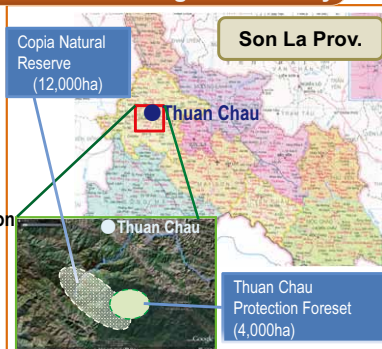
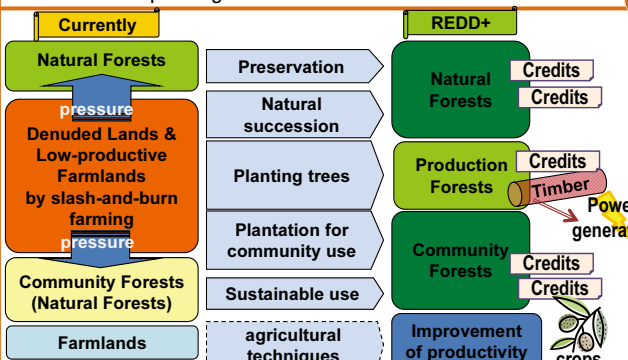
New Mechanism Feasibility Study (FS) **Host Country: Viet Nam**

REDD+ through Revegetation at Denuded Lands and Woody Biomass-based power Generation in Son La Province **FS Entity: Sumitomo Forestry**

Outline of GHG Mitigation Activity

Protecting forests as well as planting trees for revegetation of denuded lands at Thuan Chau Protection Forest and Copia Natural Reserve areas in Son La Province will be implemented to reduce GHG emissions and enhance GHG sinks, through the utilisation of REDD+ scheme. In addition, timbers will be produced and utilised, which will lead to the establishment of big wooden product factories there, and wasted woody biomass will be also utilised as power generation fuels.

Site of GHG Mitigation Activity

Estimated GHG Reductions

- **REDD+: 2.8MtCO₂ for 20 years**
- **Biomass power generation: 1.3MtCO₂/yr** (370MW power generation is expected)

Draft MRV Methods

- REDD+: based on existing MRV methods, such as VCS and J-VER
- Biomass power generation: based on existing approved CDM methodologies

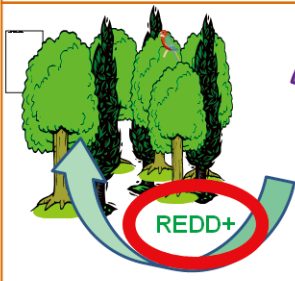


New Mechanism Feasibility Study (FS) Host Country: Brazil

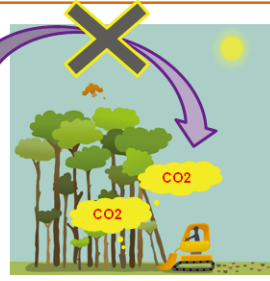
REDD+ in Acre State **FS Entity: Marubeni Corporation**

Outline of GHG Mitigation Activity

An economic incentive system to distribute financial resources from developed countries to local stakeholders (including indigenous people) will be established in order for local stakeholders to take actions of REDD+, such as the forest fire defense, the patrol to prevent illegal logging, sustainable forest management, and reforestation.

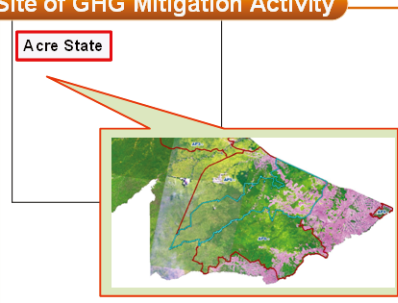


REDD+




CO2

Site of GHG Mitigation Activity



Acre State

Estimated GHG Reductions



According to Acre State's target for REDD+, **164MtCO₂** will be reduced between 2005 and 2020 (for 15 years).
At a REDD+ project level, **several hundred thousand tCO₂/yr** could be reduced.

Draft MRV Methods

MRV methods should be based on the principles and approaches provided in ISO 14064-2, which is also adopted in VCS methodologies, and apply to the identification of reference level, the measurement of carbon stocks. When the MRV system is established, Acre State's approach, GCF's guidelines, as well as IPCC guidelines should be taken into account, in order to secure high reliability.

New Mechanism Feasibility Study (FS) Host Country: Angola

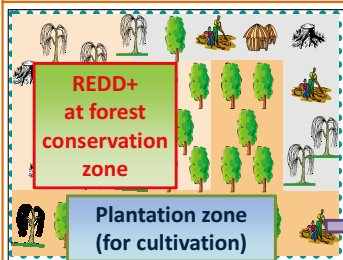
REDD+ through Revegetation at Derelict Commercial Forested Lands and Fuelisation on Woody Biomass Chips for Cement Plants

Outline of GHG Mitigation Activity **FS Entity: PwC Aarata Sustainability**

GHG mitigation is achieved through a combined activity composed of:

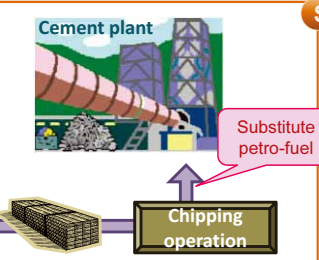
- REDD+ project at preservation zone, and
- fuel switch project from heavy oil to woody biomass cultivated from plantation zone to be used for cement clinker calcination process.

Zone categorisation is based on the analysis result of remote sensing data.



REDD+ at forest conservation zone

Plantation zone (for cultivation)

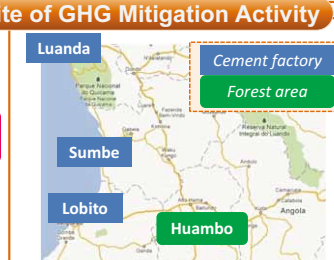


Cement plant

Substitute petro-fuel

Chipping operation

Site of GHG Mitigation Activity



Luanda

Sumbe

Lobito

Huambo

Cement factory

Forest area

Estimated GHG Reductions

Fuel switch project will displace heavy oil fuel (690 TJ/yr) with woody biomass chips.
 $\rightarrow 690\text{TJ/yr} \times \text{EF for heavy oil (77.4tCO}_2\text{/TJ)}$
 $= 53,400\text{tCO}_2\text{/yr of GHG will be reduced.}$

Detailed contents of **REDD+ project** will be surveyed in this FS, including REDD+ boundary identification. Based on this survey outcome, GHG reduction will be quantified.

Draft MRV Methods

In principle, draft MRV methods will be established, with the reference of internationally approved MRV standard such as CDM and VCS.
 For **REDD+ project**, ISO 14064-2 adopted in VCS scheme will be applied.
 For **biomass project**, CDM methodology ACM0003 is the basis of the consideration.

New Mechanism Feasibility Study (FS) **Host Country: China**

Electric Generation based on Low-Level Coal Mine Methane and Integrated Energy Efficiency Improvement in Yunnan Province
FS Entity: Tepia Corporation Japan

Outline of GHG Mitigation Activity

Introducing 'Mine Enesave Pack' as an integration of series of technologies: (i) extraction of the low-level coal mine methane and its utilisation for electric generation, (ii) inverter-control of belt-conveyors and cooling systems, and (iii) static var compensator (SVC) to reduce electricity loss upon high-voltage electricity conversion at receiving ends.

Site of GHG Mitigation Activity

Expected GHG Reduction

306,286t-CO₂/yr ← $([1]+[2]) - ([3]+[4])$
Reference Scenario: 351,552t-CO₂/yr
 [1] CMM emissions: 323,870t-CO₂/y
 [2] CO₂ emissions from electric grid: 27,682t-CO₂/y
Project Scenario: 45,265t-CO₂/yr
 [3] CO₂ emissions from CMM power generation: 42,412t-CO₂/y
 [4] CO₂ emissions from electricity use: 2,854t-CO₂/y

Draft MRV Methods

Draft MRV methods will be developed, based on inputs from experts relevant to component technologies (CMM, gas-engine power generation, SVC, and inverter controls), as well as survey results including measured data. The draft MRV methods should ensure credibility, conservativeness and versatility.

New Mechanism Feasibility Study (FS) **Host Country: Thailand**

CO₂ Reduction through Utilising Off-Peak Power from Storage Batteries and Introducing Electric Vehicles
FS Entity: Mizuho Information & Research Institute

Outline of GHG Mitigation Activity

Introducing storage batteries (big stationary batteries as well as mobile batteries mounted on electric vehicles (EVs)) which store nighttime power originated from renewable energy sources such as wind and hydro, and will be utilised for peak-time power in daytime. This leads to the reduction of fossil fuel consumptions to generate power at peak time.

Site of GHG Mitigation Activity

Specific site(s) are not identified, but entire Thailand is a target area.

Expected Emission Reductions

The amount of nighttime renewable energy generation is 43,800MWh/yr (50MW with 20% of operation efficiency), and the loss of storage and discharge is 30%:
 $43,800 \times 70\% = 30,660\text{MWh}$
 30,660MWh will be utilised as peak-time power in daytime:
 $30,660\text{MWh} \times \text{EF} (0.5\text{tCO}_2/\text{MWh}) =$
15,330t-CO₂/y

→Future development of renewable energy will further increase emission reductions.
 →Rough estimation:
380,000t-CO₂/y

Draft MRV Methods

Since no internationally approved methodologies to quantify emissions and their reductions exist, a new methodology should be established. Basically following items should be defined/quantified:

- Net power discharged from batteries,
- Emission factors for charging and discharging,
- Power consumptions or travel distances of EVs, etc.

Proposed MRV will be established through the consultations with stakeholders.



New Mechanism Feasibility Study (FS)		Host Country: Viet Nam																									
CO2 Abatement through Utilisation of Blast Furnace Slags as Blending Material for Cement																											
FS Entity: Mitsubishi Research Institute																											
Outline of GHG Mitigation Activity																											
<p>Blast furnace slags are utilised as blending material for cement production process, where blast furnace slags replace clinkers in the BaU scenario. This reduce CO₂ emissions originated from the combustion of fossil fuels for the clinker calcination processes, as well as CO₂ emissions derived from the processes to remove carbon acid from lime stones (CaCO₃: raw material of clinkers).</p>																											
		Site of GHG Mitigation Activity																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #90EE90;">Slag cement</td> <td style="background-color: #90EE90;">Blast furnace slags</td> <td style="background-color: #90EE90;">Crushers</td> <td style="background-color: #90EE90;">Slag powders</td> </tr> <tr> <td></td> <td></td> <td></td> <td style="background-color: #90EE90;">blending</td> </tr> <tr> <td></td> <td style="background-color: #90EE90;">Processing</td> <td style="background-color: #90EE90;">Calcination</td> <td style="background-color: #90EE90;">Finishing</td> </tr> <tr> <td style="background-color: #D3D3D3;">BaU: Ordinary cement</td> <td style="background-color: #D3D3D3;">Lime stones</td> <td style="background-color: #D3D3D3;">Crusher</td> <td style="background-color: #D3D3D3;">Baking furnace</td> </tr> <tr> <td></td> <td></td> <td style="background-color: #D3D3D3;">Clinkers</td> <td style="background-color: #D3D3D3;">Crushers</td> </tr> <tr> <td></td> <td></td> <td></td> <td style="background-color: #D3D3D3;">Ordinary cement</td> </tr> </table>		Slag cement	Blast furnace slags	Crushers	Slag powders				blending		Processing	Calcination	Finishing	BaU: Ordinary cement	Lime stones	Crusher	Baking furnace			Clinkers	Crushers				Ordinary cement	<div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;">Nghi Son Cement factory in Thanh Hao Province</p> <ul style="list-style-type: none"> • Line #1: 2.15Mt/yr of cement productions • Line #2: 2.2Mt/yr of cement productions </div>	
Slag cement	Blast furnace slags	Crushers	Slag powders																								
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			Ordinary cement																								
Estimated GHG Reductions		Draft MRV Methods																									
<p>470,000tCO₂/yr is expected to be reduced:</p> <ul style="list-style-type: none"> - 0.5tCO₂/t-clinker reduced from material processing - 0.5tCO₂/t-clinker reduced from replacement of calcination - 500,000t of clinkers will be replaced by slag cement - 30,000tCO₂ emitted from import from Japan 		<p>Application of default values or ex-ante estimation is considered into a MRV methods, as much as possible in order to enhance predictability and usability.</p>																									



Overview of CDM Feasibility Studies 2011

Since we consider that the CDM will continue to be an important tool to mobilise private investment to climate change mitigation activities, the MOEF and GEC are implementing the CDM Feasibility Study (FS) Programme, in order for private entities to survey the feasibility and profitability of their proposed project activities.

Therefore, we should focus on the future of the CDM. In this context, the FS programme solicits proposals aiming at the improvement of the CDM scheme, according to the following objectives:

1. Development of a new CDM methodology;
2. Development of a standardised baseline;
3. Resolution of inequitable regional distribution of CDM projects; and
4. Development of a PoA (Programmatic CDM)

Objective #1 (new methodology development) contributes to the expansion of the applicability of the CDM project activities. We believe that if new type projects can be eligible to the CDM project activities, then they could help the number of the registered CDM project activities increase.

Objective #2 (standardised baseline development) responds to the decision 3/CMP 6 on the standardised baseline applicable to the CDM project activities, and also contribute to the increase of the number of the registered CDM project activities as well as to the equitable regional distribution of the CDM project activities, in particular in LDCs.

Objective #3 (contribution to equitable regional distribution of CDM projects) contributes to the increase of the number of the registered CDM project activities in the underrepresented host countries, in particular LDCs. Under this objective, the FS programme invites proposed projects to be implemented in the host countries with less than 10 registered CDM project activities.

Objective #4 (PoA development) help develop programmatic CDM projects (PoAs) which are widely applicable to micro-scale projects with small amount of GHG emission reductions. In fact, PoAs are not spread as expected although the concept of the PoA is good. We consider that the FS programme should promote more private entities to be involved in the PoA development. When more PoAs are developed, much more potentials of GHG mitigation would be realized even though GHG mitigation effect of each component is very small.

Objective	Category	Host Country	Project Activity	FS Entity
New Methodology Development	Energy Efficiency Improvement	Viet Nam	Energy Efficiency Project through Installing High Efficiency Air Conditioners (with New CDM Methodology Development)	Mitsubishi UFJ Morgan Stanley Securities
Standardised Baseline Development	Biomass Utilisation	Cambodia	Biomass-based Power Generation Project (with Development of Standardised Baseline of Off-Grid Electricity Generation)	Japan NUS
Contribution to Equitable Regional Distribution of CDM	Renewable Energy	Sri Lanka	Wind Power Generation for Hambantota International Convention Centre	Takasago Thermal Engineering
	Waste Management	Bangladesh	Household Biogas Digester Promotion Programme (PoA)	PEAR Carbon Offset Initiative
		Kazakhstan	Energy Utilisation of Broiler Chicken Manure PoA in Ust-Kamenogorsk	Ex Corporation
PoA Development	Transportation	Malaysia	Fuel Efficiency Improvement PoA through Introduction of Digital Tachograph to Cargo Trucks	Nippon Express



CDM Feasibility Study (FS) Host Country: Viet Nam

Energy Efficiency Project through Installing High Efficiency Air Conditioners (with New CDM Methodology Development)

FS Entity: Mitsubishi UFJ Morgan Stanley Securities

Outline of CDM Project

Installations of air-conditioners controlled by inverters with high efficient heat-pump technologies as a large-scale CDM project will save energy consumptions generated from fossil fuels. Although the approved small-scale CDM methodology exists, no large-scale methodology has been approved to be applicable to the project. Therefore the FS entity will develop a new large-scale methodology in this study as well, and the new methodology will be based on the standardised framework of the ISO.

Project site

The proposed project will be implemented in the entire Viet Nam.

Methodology to be applied

A new methodology will be developed through this FS, because the AMS-II.C "Demand-side energy efficiency activities for specific technologies" is only applicable to small-scale CDM projects.

The proposed new methodology will include the process that the programmatic approach is eligible as a single project under the new methodology, as well as the monitoring process with sampling methods.

Expected GHG Reductions

Rough estimation of GHG reductions is as follows:
 1st year: 19,555tCO₂; 2nd year: 49,653tCO₂; 3rd year: 124,898tCO₂;
 4th year: 275,387tCO₂; 5th year: 576,367tCO₂;
 6th year: 1,027,836tCO₂; 7th year: 1,780,286tCO₂;
 ← Air conditioners will be installed additionally each year (programmatic method)
Total GHG reductions: 3,853,985tCO₂ (for first 7 years)

CDM Feasibility Study (FS) Host Country: Cambodia

Biomass-based Power Generation Project (with Development of Standardised Baseline of Off-Grid Electricity Generation)

FS Entity: Japan NUS

Outline of CDM Project

Biomass-based power generation as a CDM project will replace diesel/heavy oil thermal power generations independent from the electric grid. Napier grass and/or other woody biomass are considered as fuels for project activity. The FS also aims to develop a draft standardised baseline applicable to renewable energy projects to be implemented at the areas without any plans to expand electric grid in Cambodia.

Project site

Methodology to be applied

New methodology based on (or revision of) AMS I.F "Renewable electricity generation for captive use and mini-grid"
 Methodology should be consistent with the **standardised baseline** to be developed in this FS.

Expected GHG Reductions

Net caloric value of biomass at the project site: 455GJ/ha
 → Total energy contents of collected biomass: 530,830MWh (from 4,200ha)
 Power generation efficiency: 30%
 Grid EF: 0.7283t/CO₂MWh (cited from IGES's Phnom Penh Grid)
530,830MWh x 30% x 0.7283tCO₂/MWh = 115,981tCO₂ of GHG reduction



CDM Feasibility Study (FS) Host Country: Sri Lanka

Wind Power Generation for Hambantota International Convention Centre
 FS Entity: Takasago Thermal Engineering

Outline of CDM Project

Wind power generation will supply electricity to Hambantota International Convention Centre (ICC) through the local grid. The ICC is now being constructed by the Sri Lankan Urban Development Authority (UDA). Electricity generated by the wind power plant will replace a part of electricity consumptions of the ICC derived from thermal power plants connected to the grid, to reduce CO₂ emissions from fossil fuel combustion.

Methodology to be applied

- AMS-I.D. "Grid connected renewable electricity generation" (ver.17) (revised at EB61)
 "Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling."
- Tool to calculate the emission factor for an electricity system (ver.2.2) (revised at EB61)
 "The calculation of the combined margin emission factor ($EF_{grid,CM,y}$) is based Simplified CM (can only be used if project activity is located in LDSs or in countries with less than 10 registered projects at the starting date of validation).

Project Site

Planning site of wind-power generation

Hambantota International Convention Center

Estimated GHG Reductions

$$ER_y = BE_y - PE_y = 3,570tCO_2/yr$$

$$BE_y = EG_{BL,y} * EF_{CO_2,grid,y}$$

$$= 5,256MWh \times 0.6792t-CO_2/MWh$$

$$= 3,570tCO_2/yr$$

$$PE_y = 0$$

ER: emission reductions, BE: baseline emission, PE: project emissions, EG: electric energy supplied from a wind power-plant to the grid, EF_{CO₂}: grid emission factor

CDM Feasibility Study (FS) Host Country: Bangladesh

Household Biogas Digester Promotion Programme (PoA)
 FS Entity: PEAR Carbon Offset Initiative

Outline of CDM Project

The proposed project aims at the realisation of the rural development with self-supplied energy generation. Concrete project contents are the introduction of micro-scale bio-digesters to each households where farmer's livestock manure is fermented to generate methane gas which will be utilised for cooking. This will replace firewood to reduce CO₂ emissions from non-renewable biomass. In addition, this will also improve housewives' health problems by cleaning exhaust air.

Project Site

Bangladesh

ACTIVITIES AREA OF GRAMEEN SHAKTI February, 2011

FACTILE kitchen range with biomass fuel

Biogas Digester

Biogas

Methodology to be applied

AMS-I.E. (ver. 4) "Switch from non-renewable biomass for thermal applications by the user"

Expected Emission Reduction

Emission reductions per household: 3.83tCO₂/yr

Quantity of subtracted/displaced non-renewable fuelwoods (3.29 [t/household/yr]) x Fraction of non-renewable woody biomass (100%) x Net calorific value of fuelwoods (0.015 [TJ/t]) x EF (81.6 [tCO₂/TJ]) x gross adjustment factor (0.95)

Total emission reductions:
 = Number of households using biogas x 3.83tCO₂/yr

Host Country: Kazakhstan

Energy Utilisation of Broiler Chicken Manure PoA in Ust-Kamenogorsk

FS Entity: Ex Corporation

Outline of CDM Project

Introduction of biomass boilers to a poultry farm to replace coal boilers to supply thermal energy to the poultry houses in the farm. The fuel for biomass boilers is planned to be broiler chicken manure emitted vastly from the poultry houses. The chicken manure is currently just abandoned (stockpiled) on the farm premise, and such situation will be improved by the proposed project. 2 biomass boilers will be installed to each group of nearby poultry houses, and this should be one CPA. The boundary for the PoA is the entire premise of the poultry farm.

Project Site

Expected GHG Reductions

Baseline emissions (BE): 6,300tonCO₂/yr
 ← Coal EF (90t-CO₂/TJ) x Coal boilers' heat supply (70TJ/yr)

Project emissions (PE): 162.6tonCO₂/yr
 ← Biomass boilers' electricity consumptions (108MWh/yr) x Grid EF (1.506t-CO₂/MWh)

→ **GHG reductions: 6,130t-CO₂/yr for a CPA**
 → **PoA GHG reductions (total: 10 CPAs): 61,300t-CO₂/yr**

Methodology to be applied

AMS-I.C. "Thermal energy production with or without electricity" is applied to this PoA.
AMS-III.E "Avoidance of methane production from decay of biomass through controlled combustion" would be also applied when methane emissions from stockpiled chicken manure are confirmable and measurable.

Host Country: Malaysia

Fuel Efficiency Improvement PoA through Introduction of Digital Tachograph to Cargo Trucks

FS Entity: Nippon Express

Outline of CDM Project

Fuel efficiency of cargo trucks will be improved through the installation of digital tachograph systems on the cargo trucks. The improvement of fuel efficiency leads to the reduction of CO₂ emissions from cargo trucks. The main feature of a digital tachograph system is sound alarm against non-eco-driving (ineffective fuel consumptions) based on its continuance recording of over-speeding, unnecessary idling, and sudden starting & breaking. A group of trucks are included in a CPA, and some CPAs compose a PoA, which will be the world's first case of CDM in cargo truck sector.

Project Site

Expected GHG Reductions

NTS operation records for 98 trucks are analysed, and the result shows 537tCO₂/yr (for 98 trucks) is reduced due to fuel efficiency improvement.
 When a CPA is implemented, the digital tachograph systems are installed on 130 trucks, and **712tCO₂/yr** is reduced.
 More CPAs are included, more emission reductions are achieved.

Methodology to be applied

AMS-III.AT. "Transportation energy efficiency activities installing digital tachograph systems to commercial freight transport fleets" is applied to the project. The methodology is developed by Nippon Express and its supporter.

