Sri Lanka
Climate Change Division, Climate Change Secretariat,
Ministry of Environment and Natural Resources

SRI LANKA
THE PROJECT FORCAPACITY DEVELOPMENT OF CDM PROMOTION IN SRI LANKA
PROJECT COMPLETION REPORT

OCTOBER 2011

JAPAN INTERNATIONAL COOPERATION AGENCY（JICA）
EX RESEARCH INSTITUTE LTD.
JAPAN SMART ENERGY CO., LTD.

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Abbreviation

A/R CDM	Afforestation / Reforestation CDM
APP	Asia-Pacific Partnership on Clean Development and Climate
AR4	IPCC Fourth Assessment Report
C/P	Counterpart Personnel
CCD	Climate Change Division
CCS	Climate Change Secretariat
CDM	Clean Development Mechanism
CDM-EB	CDM Exective Board
CEA	Central Environment Authority
CEO	Chief Executive Officer
CER	Certified Emission Reduction
CFL	Compact Fluorescent Lamp
CME	Coordination / Managing Entity
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
COP	Conference of the Parties to the U.N. Framework Convention on Climate Change
CSR	Corporate Social Responsibility
DNA	Designated National Authority
DOE	Designated Operational Entity
EIA	Environmental Impact Assessment
ERPA	Emission Reduction Purchase Agreement
EU-ETS	EU Emissions Trading System
EXRI	EX Research Institute Ltd.
FS	Feasibility Study
GHGs	Greenhouse Gasses
IEE	Initial Environmental Examination
IGES	Institute for Global Environmental Strategies
IPCC	Intergovernmental Panel on Climate Change
ITL	International Transaction Log
JCC	Joint Coordinating Committee
JCX	Japan Climate Exchange
JET	JICA Expert Team
JORA	Japan Organics Recycling Association
LKR	Sri Lanka Rupee
LOI	Letter of Intent
M/M	Minutes of Meeting
MENR	Ministry of Environment and Natural Resources
MLA	Multilateral Agencies
MOE	Ministry of Environment
MT	Metric Ton
MW	Mega Watt
NAMA	Nationally Appropriate Mitigation Actions
OECC	Overseas Environmental Cooperation Center
PCDA	plan-do-check-act cycle
pCDM	Programmatic CDM

PDD	Project Design Documents
PDM	Project Design Matrix
PIN	Project Idea Note
PoA	Programme of Activities
Pvt	Private
REDD	Reduced Emissions from Deforestation and forest Degradation
Rs	Rupees
SCM	Sectoral Crediting Mechanism
SEA	Sustainable Energy Authority
SLCF	Sri Lank Carbon Fund
SOP-Adaptation	Adaptation Share of Proceeds
SOP-Admin	Administration Share of Proceeds
TIC	JICA Tokyo - Tokyo International Center
TSCP	Todai Sustainable Campus Project
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Voluntary Carbon Standard

1. OUTLINE OF THE PROJECT

1.1 Background and Objective of the Project

The Democratic Socialist Republic of Sri Lanka (hereinafter referred to as "Sri Lanka") has ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1993 and officially accepted the Kyoto Protocol in 2002. The Ministry of Environment and Natural Resources (MENR) is the national focal point of the Convention and the Designated National Authority (DNA) of Clean Development Mechanism (CDM) under Kyoto Protocol with the Climate Change Division (CCD) as the working unit of DNA. In April 2008, for further accelerated development of climate change mitigation and adaptation measures, the Government of Sri Lanka (GOSR) established the Climate Change Secretariat (CCS), with the CCD taking the roles of executive office. Recently in 2009, "Action Plan for Haritha Lanka Programme" (Action Plan for Greener Sri Lanka Programme) was formulated as the implementation programme of the National Environment Action Plan for 2009-2013 with a series of planned actions to combat climate change issues. The required roles and responsibilities of CCD become increasingly important for solution to climate change in this country.

Although Sri Lanka is entitled as one of the host countries of CDM projects under Kyoto Protocol, the number of CDM projects officially registered at the United Nations are limited to 6 (six) so far. The total amount of CERs issued from the registered CDM projects is also rather small due to dominance of small-scale projects represented by mini hydropower CDM projects. On the other hand, there are considerable areas and sectors in which the potentials of greenhouse gases reduction are not well recognized and developed into CDM projects such as renewable energy, energy saving, biomass, waste management, and so forth.

To further promote and accelerate CDM project development and realize the potentials of GHGs emission reduction in Sri Lanka, the current Project is developed with the aim of strengthening institutional mechanism of CDM promotion in this country through capacity development of CCD, MENR, and other relevant government authorities in the following areas:

- Formulation of CDM promotion policies, strategies, and action plans;
- Appraisal and evaluation of potential CDM projects; and
- Promotion and dissemination of CDM project development to relevant stakeholders.

1.2 Overall Structure of the Project

(1) Overall Goal of the Project

Sustainable development of Sri Lanka will be promoted through development of CDM projects.

(2) Project Purpose

CDM projects will be further promoted and developed in Sri Lanka.

(3) Achievement Targets of the Project

Target 1: CCD members will obtain fundamental knowledge and capacities of dealing with climate change issues and CDM projects.

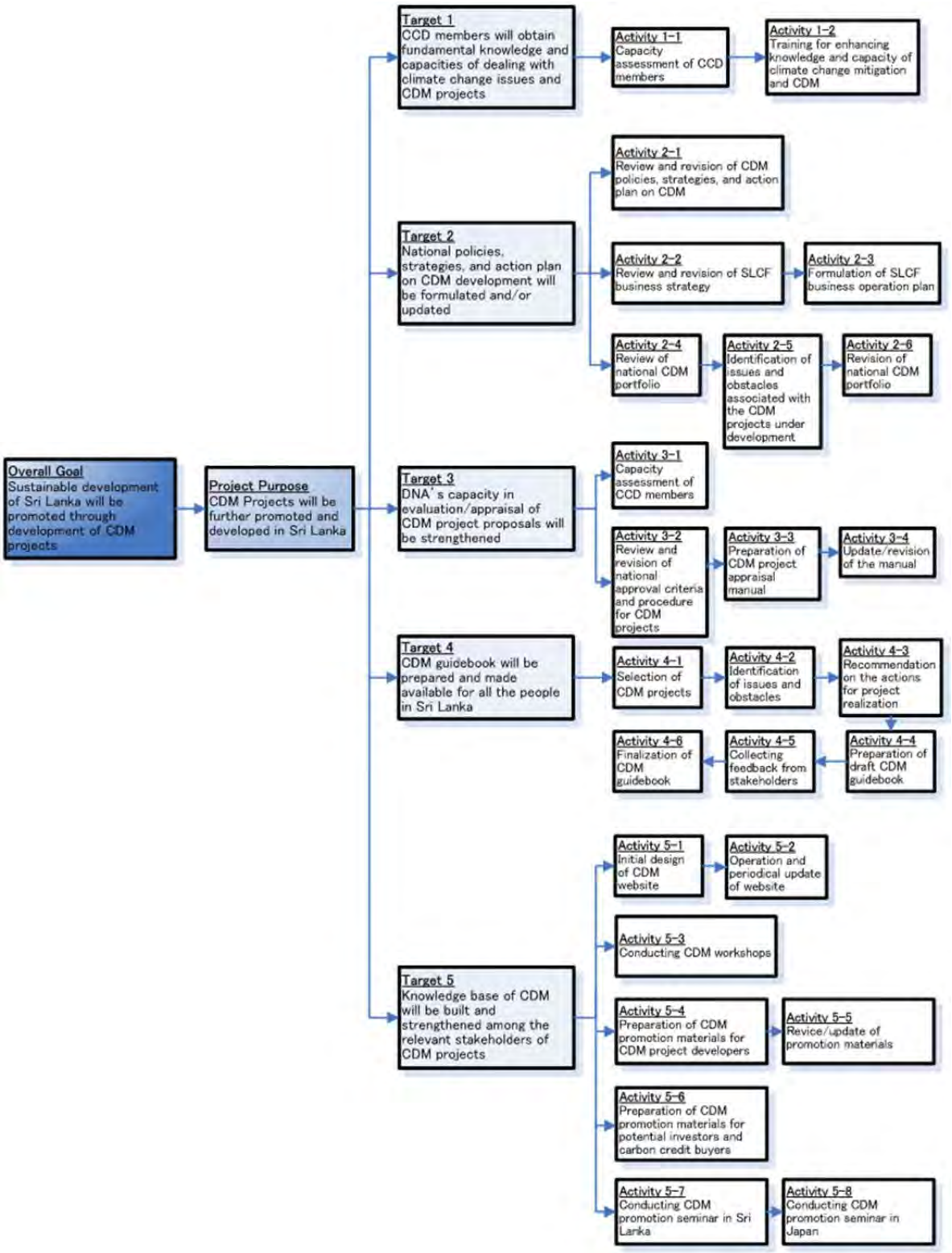
Target 2: National policies, strategies, and action plan on CDM development will be formulated and/or updated.

Target 3: DNA's capacity in evaluation/appraisal of CDM project proposals will be strengthened.

Target 4: CDM guidebook will be prepared and made available for all the people in Sri Lanka.

Target 5: Knowledge base of CDM will be built and strengthened among the relevant stakeholders of CDM projects.

Overall structure of the Project including the activities to achieve each target is illustrated in the figure on next page.



*SLCF: Sri Lanka Carbon Fund

Figure 1-1: Overall Structure of the Project

(4) Organizational Structure for Project Implementation

- In close collaboration between Sri Lanka and Japan, the Project is implemented under the organizational structure shown below.

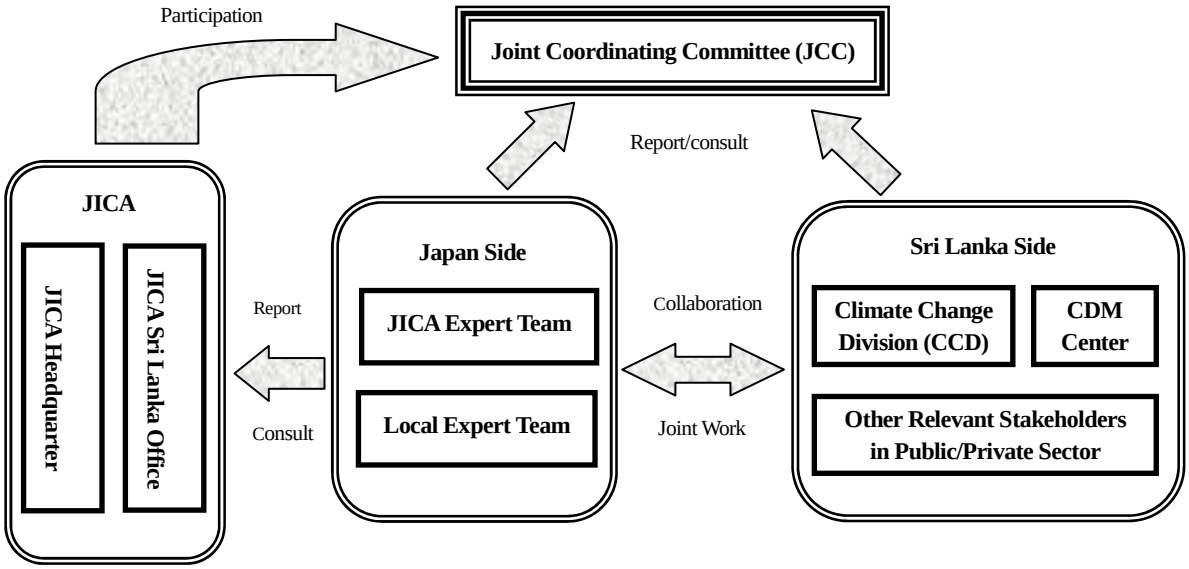


Figure 1-2: Organizational Structure for Project Implementation

a Joint Coordinating Committee (JCC)

Based on the Record of Discussions (R/D) signed on 15 January 2010, the Project established the Joint Coordinating Committee (JCC) organized by the members shown below:

(Sri Lanka side)

- Director, Climate Change Division, MENR
- Deputy Director, Climate Division, MENR
- Assistant Director, Climate Division, MENR
- Director General, Department of National Budget, Ministry of Finance and Planning
- Director General, Department of Planning, Ministry of Finance and Planning
- Director General, Department of External Resources, Ministry of Finance and Planning
- Representatives from 2 (two) National CDM Centres (University of Peradeniya and University of Moratuwa)
- Representative from Ministry of Science and Technology
- Representative from Ministry of Power and Energy

(Japan side)

- Representative(s) from JICA Sri Lanka Office
- Chief Advisor, JICA Expert Team

- Other members of JICA Expert Team
- Member(s) of missions dispatched by JICA Headquarter
- Official(s) of the Embassy of Japan (as observers)

The main roles of JCC include:

- Periodically monitor and supervise project implementation in accordance with the Plan of Operations (P/O);
- Periodically confirm and evaluate target achievement of the Project; and
- Discuss and make decisions regading the measures and actions to deal with the issues arising from the Project

The Project has held 3 (three) JCC meetings. The details of each JCC meeting are shown in the ANNEX to this report.

b Dispatch of the JICA Expert Team and major tasks

Members of the JICA Expert Team with their dispatched period and major tasks are shown in the table below:

Name	Expertise	Dispatch Period	Major Assigned Tasks
Satoshi SUGIMOTO	Chief Advisor CDM Management	2010/4/25~2010/5/20 2010/7/20~2010/8/23 2010/11/10~2010/12/15 2011/1/22~2011/3/2 2011/3/27~2011/4/7 2011/4/21~2011/5/28 2011/7/3~2011/7/30 2011/9/2~2011/9/28 2011/10/9~2011/10/23	▪ Overall management and supervision of the Project ▪ **Target 1** **Activity 1-1:** Capacity assessment of CCD members **Activity 1-2:** Training for enhancing the knowledge and capacity of climate change mitigation and CDM ▪ **Target 2** **Activity 2-1:** Review and revision of national policies, strategies and action plan on CDM **Activity 2-2:** Review and revision of SLCF business strategy **Activity 2-3:** Formulation of SLCF business operation plan **Activity 2-4:** Review of national CDMportfolio **Activity 2-5:** Identification of the issues and obstacles associated with the CDM projects under development **Activity 2-6:** Revision of national CDM portfolio ▪ **Target 3** **Activity 3-1:** Capacity assessment of CCD members **Activity 3-2:** Review and revision of national approval criteria and procedure for CDM projects **Activity 3-3,4:** Preparation, update and revision of CDM project appraisal manual ▪ **Target 4** **Activity 4-1:** Selection of CDM projects **Activity 4-2:** Identification of issues and obstacles **Activity 4-3:** Recommendation on the measures and actions for project realization **Activity 4-4:** Preparation of draft CDM guidebook **Activity 4-5:** Collecting feedback from stakeholders **Activity 4-6:** Finalization of CDM guidebook
Hirotaka NEGISHI	Carbon Fund Management	2010/5/15~2010/6/5 2010/7/14~2010/8/15	▪ **Target 1** **Activity 1-1:** Capacity assessment of CCD

Name	Expertise	Dispatch Period	Major Assigned Tasks
		2010/10/6~2010/10/30 2011/4/25~2011/6/4 2011/7/2~2011/8/4 2011/8/29~2011/9/20	members **Activity 1-2:** Training for enhancing the knowledge and capacity of climate change mitigation and CDM ▪ **Target 2** **Activity 2-1:** Review and revision of national policies, strategies and action plan on CDM **Activity 2-2:** Review and revision of SLCF business strategy **Activity 2-3:** Formulation of SLCF business operation plan **Activity 2-4:** Review of national CDMportfolio **Activity 2-5:** Identification of the issues and obstacles associated with the CDM projects under development **Activity 2-6:** Revision of national CDM portfolio ▪ **Target 3** **Activity 3-1:** Capacity assessment of CCD members ▪ **Target 4** **Activity 4-4:** Preparation of draft CDM guidebook **Activity 4-5:** Collecting feedback from stakeholders **Activity 4-6:** Finalization of CDM guidebook
Ai KAWAMURA	CDM Project Development and Appraisal/Validation	2010/5/2~2010/7/3 2010/8/4~2010/8/31 2010/10/24~2010/11/4 2010/11/21~2010/12/3 2011/1/25~2011/2/20 2011/3/13~2011/4/7 2011/4/29~2011/5/28 2011/6/14~2011/7/23 2011/8/6~2011/8/27 2011/9/15~2011/9/21	▪ **Target 1** **Activity 1-1:** Capacity assessment of CCD members **Activity 1-2:** Training for enhancing the knowledge and capacity of climate change mitigation and CDM ▪ **Target 2** **Activity 2-4:** Review of national CDMportfolio **Activity 2-5:** Identification of the issues and obstacles associated with the CDM projects under development **Activity 2-6:** Revision of national CDM portfolio ▪ **Target 3** **Activity 3-1:** Capacity assessment of CCD members ▪ **Target 4** **Activity 4-1:** Selection of CDM projects **Activity 4-2:** Identification of issues and obstacles **Activity 4-3:** Recommendation on the measures and actions for project realization **Activity 4-4:** Preparation of draft CDM guidebook **Activity 4-5:** Collecting feedback from stakeholders **Activity 4-6:** Finalization of CDM guidebook
Shiro CHIKAMATSU	CDM Project Development and Appraisal (2)	2010/5/23~2010/7/10 2010/8/22~2010/10/2 2011/2/16~2011/3/6 2011/5/8~2011/6/4 2011/6/26~2011/7/30 2011/9/4~2011/9/20	▪ **Target 1** **Activity 1-1:** Capacity assessment of CCD members **Activity 1-2:** Training for enhancing the knowledge and capacity of climate change mitigation and CDM ▪ **Target 2** **Activity 2-4:** Review of national CDMportfolio **Activity 2-5:** Identification of the issues and obstacles associated with the CDM projects under development **Activity 2-6:** Revision of national CDM portfolio ▪ **Target 3** **Activity 3-1:** Capacity assessment of CCD members ▪ **Target 4** **Activity 4-1:** Selection of CDM projects

Name	Expertise	Dispatch Period	Major Assigned Tasks
			Activity 4-2: Identification of issues and obstacles **Activity 4-3:** Recommendation on the measures and actions for project realization **Activity 4-4:** Preparation of draft CDM guidebook **Activity 4-5:** Collecting feedback from stakeholders **Activity 4-6:** Finalization of CDM guidebook
Satoshi IEMOTO	CDM Project Development and Appraisal (3)	2010/5/2~2010/5/16 2010/6/20~2010/7/5 2010/8/22~2010/9/9 2010/9/26~2010/10/6 2010/10/31~2010/11/20 2011/1/23~2011/2/11 2011/4/19~2011/5/8 2011/7/4~2011/7/9 2011/7/20~2011/7/27 2011/9/9~2011/9/18	▪ **Target 1** **Activity 1-1:** Capacity assessment of CCD members **Activity 1-2:** Training for enhancing the knowledge and capacity of climate change mitigation and CDM ▪ **Target 3** **Activity 3-1:** Capacity assessment of CCD members **Activity 3-2:** Review and revision of national approval criteria and procedure for CDM projects **Activity 3-3,4:** Preparation, update and revision of CDM project appraisal manual ▪ **Target 4** **Activity 4-4:** Preparation of draft CDM guidebook **Activity 4-5:** Collecting feedback from stakeholders **Activity 4-6:** Finalization of CDM guidebook
Satoshi TAKAGI	CDM Marketing and Promotion (1)	2010/5/7~2010/5/26 2010/6/16~2010/7/5 2010/9/15~2010/10/4 2011/1/21~2011/2/4 2011/4/17~2011/4/30 2011/9/6~2011/9/15	▪ **Target 5** **Activity 5-1,2:** Initial design, operation and periodical update of CDM website **Activity 5-3:** Conducting CDM workshops **Activity 5-4,5:** Preparation, update and revision of CDM promotion materials for CDM project developers **Activity 5-6:** Preparation, update and revision of CDM promotion materials for potential investors and carbon credit buyers **Activity 5-7,8:** Conducting CDM promotion seminars in Sri Lanka and Japan
Shinsuke OKAMOTO	CDM Marketing and Promotion (2)	2010/4/25~2010/5/20 2010/7/20~2010/8/23 2010/12/6~2010/12/25 2011/4/16~2011/5/28 2011/7/3~2011/7/30 2011/8/21~2011/9/17 2011/10/9~2011/10/23	▪ **Target 2** **Activity 2-4:** Review of national CDMportfolio **Activity 2-5:** Identification of the issues and obstacles associated with the CDM projects under development **Activity 2-6:** Revision of national CDM portfolio ▪ **Target 5** **Activity 5-1,2:** Initial design, operation and periodical update of CDM website **Activity 5-3:** Conducting CDM workshops **Activity 5-4,5:** Preparation, update and revision of CDM promotion materials for CDM project developers **Activity 5-6:** Preparation, update and revision of CDM promotion materials for potential investors and carbon credit buyers **Activity 5-7,8:** Conducting CDM promotion seminars in Sri Lanka and Japan

c Local Expert Team

In accordance with the agreement made between Sri Lanka side and JICA, as provided in the Record of Discussions (R/D), the Project hired and organized the local expert team to jointly work with the JICA Expert Team and counterpart team. The expert recruitment was carried out jointly by MENR and JICA Expert Team. The name of the local experts selected and their assigned tasks are as shown in the table below.

Expertise	Assigned Tasks
SLCF Development Support Mr. Sudarshan Senartne	▪ **Target 2** **Activity 2-2:** Review and revision of SLCF business strategy **Activity 2-3:** Formulation of SLCF business operation plan ▪ To be assigned to the Project by JICA for 6 months until SLCF is officially put in place.
CDM Project Development Appraisal Dr. Lalani Samarappuli Mr. P.G. Joseph	▪ **Target 3** **Activity 3-1:** Capacity assessment of CCD members **Activity 3-2:** Review and revision of national approval criteria and procedure for CDM projects **Activity 3-3,4:** Preparation, update and revision of CDM project appraisal manual ▪ **Target 4** **Activity 4-1:** Selection of CDM projects **Activity 4-2:** Identification of issues and obstacles **Activity 4-3:** Recommendation on the measures and actions for project realization **Activity 4-4:** Preparation of draft CDM guidebook **Activity 4-5:** Collecting feedback from stakeholders **Activity 4-6:** Finalization of CDM guidebook
CDM Facilitation Mr. L.H. Aourasha	▪ **Target 5** **Activity 5-1,2:** Initial design, operation and periodical update of CDM website **Activity 5-3:** Conducting CDM workshops **Activity 5-4,5:** Preparation, update and revision of CDM promotion materials for CDM project developers **Activity 5-6:** Preparation, update and revision of CDM promotion materials for potential investors and carbon credit buyers **Activity 5-7,8:** Conducting CDM promotion seminars in Sri Lanka and Japan

d Project Implementation Agency (Counterpart Team of the Project)

The Project implementing agency as well as the counterpart of JICA Expert Team is CCD, MENR. The members of the counterpart team are as follows:

Project Position	Organization	Assigned Tasks
Project Director	Secretary, Ministry of Environment and Natural Resources (MENR)	Target 1, 2, 3, 4, 5
Project Manager	Director, Climate Change Division (CCD), MENR	Target 1, 2, 3, 4, 5
Deputy Project Manager	Mr. Sugath Dharmakeerthi Deputy Director, CCD, MENR	Target 1, 2, 3, 4, 5
Counterpart	Ms. Anoja Herath Assistant Director, CCD, MENR	Target 1, 2, 3, 4, 5

Project Position	Organization	Assigned Tasks
Counterpart	Ms. Thiris Inoka Environment Management Officer, CCD, MENR	Target 1, 2
Counterpart	Ms. Chamika Nilmini Programme Assistant (Environment), CCD, MENR	Target 1, 3
Counterpart	Ms. Deepani Rathnasiri Programme Assistant (Environment), CCD, MENR	Target 1, 5
Counterpart	Dr. S.P. Nissanka Senior Lecturer Department of Crop Science Faculty of Agriculture University of Peradeniya (National CDM Centre)	Target 1, 2, 4
Counterpart	Dr. Suren Wijeyekoon Senior Lecturer Department of Chemical Process Engineering University of Moratuwa (National CDM Centre)	Target 1, 2, 4
Counterpart	Dr. Lalani Samarappuli Head, Soil and Land Nutrition Department Rubber Research Institute CDM Advisor for CCD	Target 1, 3
Counterpart	Mr. P.G. Joseph Director, Alternative Energy Division Ministry of Science and Technology CDM Advisor for CCD	Target 1,3
Counterpart	Mr. L.H. Aourasha Project Assistant, CCD, MENR	Target 1, 5 (for website)

e Planned Schedule of the Project Activities (P/O) and Actual Project Operation

The planned schedule of the Project Activities (Plan of Operation: P/O) and actual project operation is shown in the table below.

PLAN OF OPERATION (PO)

Month		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Year		2010									2011									
Calendar		4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10
Target 1: CCD members will obtain fundamental knowledge and capacities of dealing with climate change issues and CDM projects																				
1.1 Capacity assessment of CCD members	Plan																			
	Execution																			
1.2 Training for enhancing knowledge and capacity of climate change mitigation and CDM	Plan																			
	Execution																			
Target 2: National policies, strategies and action plan on CDM development will be formulated and/or reviewed																				
2.1 Review and revision of CDM policy, strategies and action plan	Plan																			
	Execution																			
2.2 Review and revision of SLCF business strategy/operation plan	Plan																			
	Execution																			
2.3 Review of the national CDM portfolio	Plan																			
	Execution																			
2.4 Identification of the issues and obstacles associated with the CDM project under development	Plan																			
	Execution																			
2.5 Revision of national CDM portfolio	Plan																			
	Execution																			

PLAN OF OPERATION (PO)

Month		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Year		2010									2011									
Calendar		4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10
Target 3: DNA's capacity in evaluation/appraisal of CDM project proposals will be strengthened																				
3.1 Capacity assessment of CCD members	Plan																			
	Execution																			
3.2 Review and revision of national approval criteria and procedure for CDM projects	Plan																			
	Execution																			
3.3 Preparation of CDM project appraisal manual	Plan																			
	Execution																			
3.4 Update/revision of the manual	Plan																			
	Execution																			
Target 4: CDM guidebook will be prepared and made available to all the people in Sri Lanka																				
4.1 Selection of CDM projects	Plan																			
	Execution																			
4.2 Identification of the issues and obstacles	Plan																			
	Execution																			
4.3 Recommendations on the actions fro project realization	Plan																			
	Execution																			
4.4 Preparation of draft CDM guidebook	Plan																			
	Execution																			
4.5 Collecting feedback from stakeholders	Plan																			
	Execution																			
4.6 Finalization of CDM guidebook	Plan																			
	Execution																			
Target 5: Knowledge base of CDM will be built and strengthened among the relevant stakeholders of CDM projects																				
5.1 Initial design of CDM website	Plan																			
	Execution																			
5.2 Operation and periodical update website	Plan																			
	Execution																			
5.3 Conducting CDM workshops	Plan																			
	Execution																			
5.4 Preparation of CDM promotion material for general public	Plan																			
	Execution																			
5.5 Preparation of CDM promotion material for general public	Plan																			
	Execution																			
5.6 Preparation of CDM promotion material for project developers	Plan																			
	Execution																			
5.7 CDM promotion seminar in Sri Lanka	Plan																			
	Execution																			
5.8 CDM promotion seminar in Japan	Plan																			
	Execution																			

f List of Project Output

The output of the project activities are listed in the table below.

Table 1-1: List of Project output by target activities

Target Activities	Output
Target 1: CCD members will obtain fundamental knowledge and capacities of dealing with climate change issues and CDM projects	(1) Capacity assessment sheet (for self-assessment) (2) Paper exams for capacity assessment (3) Training programme materials (for the 1st and 2nd training programmes)
Target 2: National policies, strategies and action plan on CDM development will be formulated and/or reviewed	(4) National CDM Policy (Interim Policy) (5) Recommendations regarding SLCF operation strategies and plans (6) National CDM portfolio
Target 3: DNA's capacity in evaluation/appraisal of CDM project proposals will be strengthened	(7) Sustainability Criteria for host country approval of CDM projects (8) Procedure for issuance of host country approval of CDM projects (9) Checklist for evaluation/appraisal of CDM project application for host country approval.
Target 4: CDM guidebook will be prepared and made available to all the people in Sri Lanka	(10) Evaluation Sheets of 15 selected CDM projects (11) CDM Guidebook
Target 5: Knowledge base of CDM will be built and strengthened among the relevant stakeholders of CDM projects	(12) Specification of website for DNA of Sri Lanka (13) CDM promotion leaflets for general public and project developers

2. PROGRESS OF THE PROJECT ACTIVITIES

2.1 Target 1 Activities: Building Fundamental Knowledge and Capacity of Climate Change Mitigation Measures and CDM Project Development

Target 1 activities consist of capacity assessment and implementation of lectures and training programmes. The planned implementation schedule of Target 1 activities are as follows.

Target 1: CCD members will obtain fundamental knowledge and capacities of dealing with climate change issues and CDM projects		**1st FY (2010/11)**												**2nd FY (2011)**					
		4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9
1-1	Capacity Assessment of CCD members																		
1-2	Lectures and Training Programmes																		

2.1.1 The 1st Capacity Assessment

The 1st capacity assessment was conducted in May 2010 to identify the areas of weakness in knowledge and capacity of the existing human resources in further promoting CDM development in Sri Lanka. Its results are the base for determining the focus and priority of technical assistance to the counterpart. The training programmes for the counterpart team members were also designed to solve the current weaknesses identified by this assessment.

The Project conducted the capacity assessment through self-rating (self-evaluation) by each counterpart member and face-to-face interviews by JICA Expert Team. The assessment focused on the knowledge of climate change mitigation measures, CDM, and the roles of DNA.

A. Assessment Items

The detailed assessment items were determined by the discussions with the counterpart on the preliminary draft prepared by the JICA Expert Team as shown below.

Table 2-1: Capacity Assessment Items of Human Resources

Category	Sub-Category	Assessment Item
Basic knowledge on climate change	Kyoto Protocol	■ Key contents of Kyoto Protocol ■ Updated information of the latest COP and MOP.
	Other worldwide trend of climate change topics	■ Updated information of the latest international discussions over climate change issues (e.g. the latest findings by IPCC, etc.)
Basic knowledge on CDM	CDM Project Implementation Procedure	■ Knowledge of CDM project eligibility criteria, project application and implementation procedure
	Basic rules of CDM	■ Knowledge on basic rules of CDM (Key decisions of EB, meth panel, etc.) ■ Knowledge on information sources of latest decisions related to CDM rules
Roles and responsibilities of	Roles and responsibilities	■ Knowledge on the responsibilities of DNA

Category	Sub-Category	Assessment Item
DNA	National approval process of CDM project	■ Knowledge on national approval process of CDM project ■ Presence of proper PIN form ■ Presence of proper CDM project screening process
National policies laws and regulations	Relevant laws and regulations	■ Knowledge of laws and regulations in relation to development project activities
	Environmental impact Assessment (EIA)	■ Knowledge of the national EIA system to be applied for the development of CDM project activities
Communication with private sector	CDM project finding	■ Knowledge of potential sectors/areas of CDM project development ■ Know-how of CDM project finding
	Human resource network	■ Presence of human resources network with potential CDM project developers and promoters (investors, CER buyers, local consultant, validators, etc.)
	Public relations	■ Presence of PR activities on CDM to the relevant stakeholders

B. Assessment Method

Capacity assessment of human resources was made by the JICA Expert Team in the following quantitative and qualitative evaluation methods.

B.1 5 (five)-grade evaluation

Based on the self-rating by each counterpart member and face-to-face interviews, the JICA Expert Team made a 5-grade evaluation in accordance with the criteria shown below:

Grade 5: Excellent tasks can be conducted without any support of JICA Expert Team

Grade 4: Tasks can be conducted in a satisfactory manner without any support of JICA Expert Team

Grade 3: Minor support by JICA Expert Team is required to reach satisfactory level of task achievement

Grade 2: Full support by JICA Expert Team is required to reach satisfactory level of task achievement

Grade 1: Difficult to reach satisfactory level of task achievement even with full support by JICA Expert Team

B.2 Qualitative evaluation

Qualitative evaluation was also made to identify the specific knowledge and capacity development needs to be provided by the training programmes.

C. Results of the 1st Capacity Assessment

JICA Expert Team prepared a self-assessment sheet for the counterpart team members to answer the questions in relation to the knowledge and experience in CDM development and promotion (see Annex 1). The Team also conducted a short exam on the knowledge of CDM to confirm and identify the weakness of knowledge and experience in CDM promotion in each of the counterpart team members (As to the detailed assessment items, see (1) Capacity Assessment Sheet of the "Output of the Project Activities attached at the end of this report.).

C.1 Results of self-assessment

The self-assessment is conducted for 10 counterpart team members of the Project including the staff of CCD and outsourced CDM advisors. Its results are summarized as follows:

Table 2-2: Results of Self-Assessment

Self-Assessment Item	Well Understood	Understood	Not understood so much	No knowledge
1. Basic knowledge on climate change				
1.1. UNFCCC				
1) UNFCCC's objective and principle				
▪ UNFCCC's ultimate objective	6	4	0	0
▪ Principle: "Common but differentiated responsibilities"	3	4	3	0
▪ Principle: "Consider special circumstances of developing country" (especially those that are particularly vulnerable to the adverse effects of climate change)	2	4	4	0
▪ Principle: "Precautionary principle" (take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects)	2	3	5	0
2) Sri Lanka and UNFCCC				
▪ The years of signature and ratification of the Convention (UNFCCC) by Gov't of Sri Lanka	8	2	0	0
▪ The roles of Annex I Parties and Non-Annex I Parties to the UNFCCC	4	4	2	0
▪ Approximate number of Parties to the UNFCCC	5	2	3	0
1.2. Kyoto Protocol				
1) Market-based mechanisms				
▪ Contents of three (3) market-based mechanisms	1	6	3	0
▪ Difference among three (3) market-based mechanisms	1	5	4	0
2) Current information of the COP and COP/MOP				
▪ Contents of the Nairobi Framework	0	2	7	1
▪ Contents of the Marrakech Accord	0	4	5	1
▪ Contents of the Bali Action Plan	1	1	7	1
▪ Contents of the Copenhagen Accord	1	3	6	0

Self-Assessment Item	Well Understood	Understood	Not understood so much	No knowledge
1.3. Other worldwide trend of climate change topics				
▪ The role of the Intergovernmental Panel on Climate Change (IPCC)	2	3	5	0
▪ Brief information of the IPCC Fourth Assessment Report (AR4)	2	1	7	0
▪ Activities by the Asia-Pacific Partnership on Clean Development and Climate (APP)	0	1	8	1
2.Basic knowledge on CDM				
2.1. Basic rules of CDM				
1) CDM Eligibility				
▪ Eligibility of CDM project types	1	5	3	1
▪ ODA utilization for CDM project implementation	0	2	7	1
▪ Concept of "additionality"	1	4	4	1
2) Rules regarding categories of CDM projects				
[Difference between Large scale and SSC projects]				
▪ Criteria for SSC projects	1	3	4	2
▪ Advantages of small scale CDM project	1	4	4	1
▪ Criteria for debundling	1	0	7	2
[Difference between Emission reduction and Sink (AR) projects]				
▪ Definition of A/R CDM project.	0	4	6	0
▪ Eligibility of lands for A/R CDM project activities	0	2	7	1
▪ Project period for AR CDM project.	0	2	6	2
▪ Definition of tCER and lCER	0	1	6	3
[Knowledge on Programme of Activities (PoA)]				
▪ Definition of programmatic CDM (PoA, CPA)	1	4	5	0
▪ Roles and responsibilities of coordinating managing entity	1	1	7	1
▪ Project period of PoA	1	0	7	2
▪ Difference in PDD forms	1	0	8	1
▪ Difference in registration process of programmatic CDM	1	0	8	1
▪ Requirements for CPAs under PoA (in methodology and technology)	1	0	8	1
▪ Erroneous inclusion of CPAs	0	1	5	4
2.2. CDM Project Implementation Procedure				
1) Project planning/ PDD production				
▪ Approved methodologies and methodological tools	1	2	6	1
▪ Actions to be taken when applicable methodologies are not available for a proposed project	1	1	7	1
▪ Contents of PDD	1	4	4	1
▪ Concept of prior consideration	0	4	5	1
▪ Concept of benchmark analysis	0	0	8	2
2) Validation				
▪ Steps to be involved in validation process	1	3	5	1
▪ The source of list of validators	1	3	6	0

Self-Assessment Item	Well Understood	Understood	Not understood so much	No knowledge
▪ Approximate cost of validation	0	2	7	1
3) Registration				
▪ Completeness check	0	2	7	1
▪ Request for registration	0	2	7	1
▪ Request for review	0	2	7	1
4) Verification/Issuance of CER				
▪ Process of verification	0	2	7	1
▪ Monitoring report	0	2	7	1
▪ Procedures for review of issuance	0	1	8	1
▪ Process of distribution of CERs	0	1	8	1
2.3. Relevant tools and guidelines for PDD production				
1) Rules regarding additionality				
▪ Contents of "Guidelines on the assessment of investment analysis"	0	1	8	1
▪ Contents of "Tool for the demonstration and assessment of additionality" and/or "Combined tool to identify the baseline scenario and demonstrate additionality"	0	1	8	1
▪ Contents of "Tool to determine the remaining lifetime of equipment"	0	1	7	2
2) Rules regarding emission reduction calculation				
▪ Contents of "Tool to calculate the emission factor for an electricity system"	1	3	4	2
3. Roles and Responsibilities of the Key Actors in CDM				
3.1. CDM-EB				
▪ Roles and responsibilities of the CDM-EB	1	3	5	1
▪ Roles and activities of the Panels and Working Groups under the CDM-EB	1	2	6	1
▪ Relationship between the CDM-EB and the COP/MOP	1	0	9	0
3.2. DNA				
▪ Roles and responsibilities of the DNA	2	6	2	0
▪ Contents of Letter of Approval	2	6	2	0
3.3. DOE				
▪ Roles and responsibilities of the DOE	1	1	8	0
▪ Validation report	1	0	8	1
▪ Verification report	0	1	8	1
▪ UNFCCC's evaluation system for DOE	0	1	8	1
4. National approval process and policies related to CDM				
4.1. National approval process				
▪ National approval process in Sri Lanka	3	3	4	0
▪ National approval criteria (Sustainability criteria) of Sri Lanka	3	4	3	0
▪ PIN form of Sri Lanka	3	5	2	0
4.2. National development policy				
▪ National plan / policy related to climate change	2	4	4	0
▪ National plan / policy related to CDM	3	4	3	0

Self-Assessment Item	Well Understood	Understood	Not understood so much	No knowledge
4.3. Laws and regulations				
1) Laws and regulations by sector				
▪ Energy	0	6	4	0
▪ Agriculture	1	5	4	0
▪ Forestry	1	5	4	0
▪ Industry	0	5	5	0
▪ Land use	1	3	6	0
▪ Waste management	2	2	6	0
▪ Environment	1	7	2	0
2) Environmental Impact Assessment (EIA)				
▪ Criteria of EIA in Sri Lanka	1	3	6	0
▪ Process of EIA in Sri Lanka	1	3	6	0
5. Current Status of CDM projects in Sri Lanka				
▪ Do you know the detail information and current status of the registered Sri Lankan CDM projects?	3	3	4	0
▪ Do you know the current status of projects that submitted PIN to DNA?	3	4	3	0
▪ Do you think of any potential areas in CDM and approximately how much CERs can be generated from such sector?	1	6	3	0
▪ Do you understand potential barriers and issues in developing CDM project in each sector?	1	5	4	0
▪ Do you think of how to approach potential project developers to identify potential CDM projects in Sri Lanka?	0	4	6	0
6. CERs and Registry System				
6.1. Certified Emission Reductions (CERs)				
▪ The Administration Share of Proceeds (SOP-Admin)	0	0	4	6
▪ The Adaptation Share of Proceeds (SOP-Adaptation)	0	0	4	6
6.2. Registry System				
▪ National Registries (Annex I Parties only)	0	1	6	3
▪ CDM Registry	0	1	7	2
▪ International Transaction Log (ITL)	0	0	4	6
▪ Other registry systems and carbon markets (EU-ETS, etc.)	0	0	6	4
7. Communication with private stakeholders relevant to CDM				
Types of CDM Stakeholders	CCD members		Outside CCD members	
▪ Potential project owners	152		27+	
▪ Investors	10		10+	
▪ Local consultant	36		5+	
▪ Validators	1		3+	
▪ CER buyers	1		3+	

Findings from the assessment

From the results of the self-assessment above, JICA Expert Team identified the current knowledge of counterpart team members on CDM its weakness as follows.

Table 2-3: Current knowledge of counterpart team members on CDM and its weakness

Assessment Item	Knowledge and Weakness
1. Basic knowledge on climate change	▪ Majority of counterpart team members have basic knowledge of UNFCCC, Kyoto Protocol and its relevance to the country. ▪ Weakness exists in keeping up with the latest information and scientific findings over climate change issues.
2. Basic knowledge on CDM	▪ Basic rules of CDM are not yet completely understood by majority of the counterpart. ▪ Knowledge on the rules of small-scale CDM, A/R CDM and programmatic CDM needs to be further strengthened. ▪ Technical knowledge on CDM project documentation is quite limited to PDD appraisal and evaluation.
3. Roles and responsibilities of the key actors in CDM	▪ DNA's roles are well captured, but the roles of the other key actors (CDM-EB and DOE) are not well understood by majority of the counterpart team members.
4. National approval process and policies related to CDM	▪ National approval process and mechanism are well captured, but the knowledge about sector development policies is limited for the majority of counterpart team members.
5. Current status of CDM projects in Sri Lanka	▪ Well captured by majority of the counterpart team members.
6. CERs and registry system	▪ Very limited for majority of the counterpart team members.
7. Communication with private stakeholders relevant to CDM	▪ Although there are several contacts with potential CDM project owners, developers and consultants, those with validators and CER buyers are very limited.

C.2 Results of short exam on CDM

In addition to the self-assessment above, the Project conducted a short exam for CCD counterpart team members to evaluate their current knowledge of CDM (As to the details of the short exam, see (2) Paper Exams for Capacity Assessment of "Output of the Project Activities attached at the end of this report.).

The result showed that most of them correctly answered to more than half of the questions (average ratio of correct answers is about 55% with the highest one of 70%). However, considering that the exam queries basic knowledge of CDM, at least 80% of the questions needs to be correctly answered as the members of DNA. The current target of knowledge building for CCD members will be set at this level after the training programme.

C.3 Face-to-face interviews

To complement the results of self-assessment and short exam conducted above, the JICA Expert Team made face-to-face interviews with each of the counterpart team members with attention to the following aspects:

- Current job/tasks and responsibilities
- Educational background and working carriers
- Problems and challenges in relation to your current works
- Knowledge and skills to be further strengthened for your current jobs/tasks

C.4 Initial Results of Capacity Assessment

Based on the overall results of capacity assessment for the counterpart team members, JICA Expert Team concluded the initial results of capacity assessment as follows:

Grade		Number of members
Grade 5	Excellent tasks can be conducted without any support of JICA Expert Team	0
Grade 4	Tasks can be conducted in a satisfactory manner without any support of JICA Expert Team	0
Grade 3	Minor support by JICA Expert Team is required to reach satisfactory level of task achievement	2
Grade 2	Full support by JICA Expert Team is required to reach satisfactory level of task achievement	8
Grade 1	Difficult to reach satisfactory level of task achievement even with full support by JICA Expert Team	0

On the other hand, the target grade of the capacity of counterpart team members by the end of this Project is set as shown in the table below.

Grade		Number of members
Grade 5	Excellent tasks can be conducted without any support of JICA Expert Team	2
Grade 4	Tasks can be conducted in a satisfactory manner without any support of JICA Expert Team	8
Grade 3	Minor support by JICA Expert Team is required to reach satisfactory level of task achievement	0
Grade 2	Full support by JICA Expert Team is required to reach satisfactory level of task achievement	0
Grade 1	Difficult to reach satisfactory level of task achievement even with full support by JICA Expert Team	0

2.1.2 Training Programme

Based on a series of capacity assessment activities conducted above, JICA Expert Team formulated a training programme for capacity development for counterparts and other public sector stakeholders of CDM to meet their needs and strengthen the knowledge base required for CDM project development. The training programme was composed of 12 sessions including one workshop while the final examination was carried out at the last day of the programme. It was implemented from 18 June to 20 August in accordance the schedule shown below.

Table 2-4: Training Programme Schedule

Session	Date	Session	Lecturer
1st Session	18 June	Functional Background of CDM	Ms. Kawamura
		Carbon Credit Market	Mr. Chikamatsu
2nd Session	24 June	CDM Typology 1	Ms. Kawamura
		CDM Typology 2	Mr. Chikamatsu
3rd Session	9 July	Institutional Background of CDM	Mr. Iemoto
		Post Kyoto Framework	Mr. Iemoto
4th Session	23 July	Stepwise Consideration of CDM 1, 2	Mr. Negishi
5th Session	6 August	Promoting Energy Efficiency Improvement in Sri Lanka (JICA Energy Conservation Team)	Prof. Jose R. Moreira
		Recap. of stepwise consideration of CDM	Mr. Negishi
		Documentation of PDD	Mr. Sugimoto
		Workshop on CERs estimation in CDM projects	Mr. Sugimoto, Mr. Negishi, Ms. Kawamura
6th Session	20 August	CDM Development in Sri Lanka	Dr. Samarappuli
		Final Examination	-

The training programme was implemented with the average participation of 30 officers from public sector organizations including the project counterpart team members. In the final examination, most of the participants scores more than 80% of correct answer ratio with the highest score made by the project counterpart member of CCD. In returning the scoring sheets of final examination, JICA Expert Team provided the certificates of participation to each participant. The materials utilized in the training programme are available in (3) Training Programme Material of "Output of the Project Activities" attached at the end of this report. They can also be downloaded from the CCD website.

Participants listening to the lecture (1)

Participants listening to the lecture (2)

Lecture given by Mr. Negishi

Commune among participants (Tea Break)

2.1.3 Seminar on CDM and Carbon Finance

On 26 and 27 of August, JICA Expert Team and CCD jointly held a "Seminar on CDM and Carbon Finance", inviting potential private sector stakeholders of CDM. On the 1st day, a series of lectures that digested the contents of training programme were made by JICA Expert Team members while the 2nd day it provided face-to-face consultation to individual CDM project proponents. The schedule of CDM consultation on the 2nd day was fully occupied by the reservation by the project participants on the 1st day as shown in the table below. It reflected the strong interest for CDM by the private sector stakeholders. The project continues discussions with some of the project proponents below to further promote the CDM project development.

Table 2-5: Timetable for individual CDM project consultation

Time	Consultation Desk A	Consultation Desk B
09:00-09:30	**Rodzali Bin Abd Rahman** Ansell Asia Servised Sdn Bhd	**Ajith Tennakoon** Sewalanka Foundation
09:45-10:15	**Shehani Gomez** MAS Holding Pvt. Ltd.	**Leel Wickremarachchi** Alternate Power System Pvt.Ltd.
10:30-11:00	**Group Caption Nalin De Silva** Human and Community Development Youth Organization	**Nelson Nagasinghe** Faxing Lanka Bioenergy Pvt. Ltd.
11:15-11:45	**L.W.D.Ranjan De Mel** Planter	**Gihan Sellahannadi** Elgin Hydro Power Pvt.Ltd.
12:00-13:00	**Lunch Break**	
13:00-13:30	**Dialni** Vallibel Lanka Pvt.Ltd.	**R.S.A.Silva** Silvermill Coco Ventures Pvt.Ltd.
13:45-14:15	**Nishantha Jayasooriya** National Development Bank	**A.M.S.Kulasekera** Lankem Tea & Rubber Plantations Ltd.
14:30-15:00	**W.A.J.Anurangi** Nature Solutions Pvt.Ltd.	**Mafaz Ansar & Lahiru Boralugoda** Vidulanka PLC
15:15-15:45	**Michael Jayawardana** Carbon Management Consulting	**Haresh Karunanayake** United Dendro Energy Pvt.Ltd.
16:00:16:30	**Pradeep Ginige** Sky management Systems	**Rohith Pradeep** Esna Power Pvt.Ltd.
16:45-17:15	**Chandana Matipe** Bamboo Cultivation Cultural Heritage	**Maura Kasun Bogoda** Sri Lanka Land Reclamation Corp.
17:30-18:00	**N.M.Abdul Gaffar** Bogo Power (Pvt.) Ltd.	**Anil Weerasooriya** Unilever Sri Lanka

2.1.4 The 2nd Capacity Assessment

The 2nd capacity assessment was conducted during May-June 2011 to evaluate the interim progress of capacity development by the Project. The assessment was made through the similar self-assessment sheet utilized in the 1st assessment and slightly updated assessment test sheet.

A. Results of the 2nd capacity assessment

Overall results of the 2nd Capacity Assessment shows that there is a significant improvement in the knowledge of climate change and CDM as well as the activities in relation to CDM project development. The table below compares the results of 1st and 2nd assessment.

Table 2-6: Comparison of the results of the 1st and 2nd self-assessment

Self-Assessment Item		Well Understood	Understood	Not understood so much	No knowledge
1. Basic knowledge on climate change					
1.1. UNFCCC					
1) UNFCCC's objective and principle					
▪ UNFCCC's ultimate objective	1st	6	4	0	0
	2nd	8	2	0	0
▪ Principle: "Common but differentiated responsibilities"	1st	3	4	3	0
	2nd	7	2	1	0
▪ Principle: "Consider special circumstances of developing country" (especially those that are particularly vulnerable to the adverse effects of climate change)	1st	2	4	4	0
	2nd	7	2	1	0
▪ Principle: "Precautionary principle" (take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects)	1st	2	3	5	0
	2nd	6	3	1	0
2) Sri Lanka and UNFCCC					
▪ The years of signature and ratification of the Convention (UNFCCC) by Gov't of Sri Lanka	1st	8	2	0	0
	2nd	8	2	0	0
▪ The roles of Annex I Parties and Non-Annex I Parties to the UNFCCC	1st	4	4	2	0
	2nd	7	3	0	0
▪ Approximate number of Parties to the UNFCCC	1st	5	2	3	0
	2nd	6	3	1	0
1.2. Kyoto Protocol					
1) Market-based mechanisms					
▪ Contents of three (3) market-based mechanisms	1st	1	6	3	0
	2nd	6	3	1	0
▪ Difference among three (3) market-based mechanisms	1st	1	5	4	0
	2nd	5	3	2	0
2) Current information of the COP and COP/MOP					
▪ Contents of the Nairobi Framework	1st	0	2	7	1
	2nd	0	4	5	1

Self-Assessment Item		Well Understood	Understood	Not understood so much	No knowledge
▪ Contents of the Marrakech Accord	1st	0	4	5	1
	2nd	2	6	2	0
▪ Contents of the Bali Action Plan	1st	1	1	7	1
	2nd	2	5	3	0
▪ Contents of the Copenhagen Accord	1st	1	3	6	0
	2nd	5	3	2	0
1.3. Other worldwide trend of climate change topics					
▪ The role of the Intergovernmental Panel on Climate Change (IPCC)	1st	2	3	5	0
	2nd	5	2	3	0
▪ Brief information of the IPCC Fourth Assessment Report (AR4)	1st	2	1	7	0
	2nd	3	4	3	0
▪ Activities by the Asia-Pacific Partnership on Clean Development and Climate (APP)	1st	0	1	8	1
	2nd	0	2	7	1
2.Basic knowledge on CDM					
2.1. Basic rules of CDM					
1) CDM Eligibility					
▪ Eligibility of CDM project types	1st	1	5	3	1
	2nd	5	3	2	0
▪ ODA utilization for CDM project implementation	1st	0	2	7	1
	2nd	3	3	3	1
▪ Concept of “additionality”	1st	1	4	4	1
	2nd	4	3	2	1
2) Rules regarding categories of CDM projects					
[Difference between Large scale and SSC projects]					
▪ Criteria for SSC projects	1st	1	3	4	2
	2nd	3	5	1	1
▪ Advantages of small scale CDM project	1st	1	4	4	1
	2nd	3	3	3	1
▪ Criteria for debundling	1st	1	0	7	2
	2nd	1	2	5	2
[Difference between Emission reduction and Sink (AR) projects]					
▪ Definition of A/R CDM project.	1st	0	4	6	0
	2nd	4	5	1	0
▪ Eligibility of lands for A/R CDM project activities	1st	0	2	7	1
	2nd	5	4	1	0
▪ Project period for AR CDM project.	1st	0	2	6	2
	2nd	2	3	4	1
▪ Definition of tCER and lCER	1st	0	1	6	3
	2nd	1	6	2	1
[Knowledge on Programme of Activities (PoA)]					
▪ Definition of programmatic CDM (PoA, CPA)	1st	1	4	5	0
	2nd	4	4	2	0

Self-Assessment Item		Well Understood	Understood	Not understood so much	No knowledge
▪ Roles and responsibilities of coordinating managing entity	1st	1	1	7	1
	2nd	3	5	2	0
▪ Project period of PoA	1st	1	0	7	2
	2nd	2	6	1	1
▪ Difference in PDD forms	1st	1	0	8	1
	2nd	3	4	2	1
▪ Difference in registration process of programmatic CDM	1st	1	0	8	1
	2nd	3	4	2	1
▪ Requirements for CPAs under PoA (in methodology and technology)	1st	1	0	8	1
	2nd	3	6	0	1
▪ Erroneous inclusion of CPAs	1st	0	1	5	4
	2nd	1	5	2	2
2.2. CDM Project Implementation Procedure					
1) Project planning/ PDD production					
▪ Approved methodologies and methodological tools	1st	1	2	6	1
	2nd	2	5	3	0
▪ Actions to be taken when applicable methodologies are not available for a proposed project	1st	1	1	7	1
	2nd	3	4	3	0
▪ Contents of PDD	1st	1	4	4	1
	2nd	5	3	2	0
▪ Concept of prior consideration	1st	0	4	5	1
	2nd	3	4	3	0
▪ Concept of benchmark analysis	1st	0	0	8	2
	2nd	5	4	1	0
2) Validation					
▪ Steps to be involved in validation process	1st	1	3	5	1
	2nd	3	6	1	0
▪ The source of list of validators	1st	1	3	6	0
	2nd	5	4	1	0
▪ Approximate cost of validation	1st	0	2	7	1
	2nd	5	3	2	0
3) Registration					
▪ Completeness check	1st	0	2	7	1
	2nd	1	5	4	0
▪ Request for registration	1st	0	2	7	1
	2nd	2	6	2	0
▪ Request for review	1st	0	2	7	1
	2nd	2	7	1	0
4) Verification/Issuance of CER					
▪ Process of verification	1st	0	2	7	1
	2nd	1	7	2	0
▪ Monitoring report	1st	0	2	7	1
	2nd	1	6	3	0

Self-Assessment Item		Well Understood	Understood	Not understood so much	No knowledge
▪ Procedures for review of issuance	1st	0	1	8	1
	2nd	1	6	3	0
▪ Process of distribution of CERs	1st	0	1	8	1
	2nd	1	6	2	1
2.3. Relevant tools and guidelines for PDD production					
1) Rules regarding additionality					
▪ Contents of "Guidelines on the assessment of investment analysis"	1st	0	1	8	1
	2nd	1	6	3	0
▪ Contents of "Tool for the demonstration and assessment of additionality" and/or "Combined tool to identify the baseline scenario and demonstrate additionality"	1st	0	1	8	1
	2nd	2	6	2	0
▪ Contents of "Tool to determine the remaining lifetime of equipment"	1st	0	1	7	2
	2nd	0	3	5	2
2) Rules regarding emission reduction calculation					
▪ Contents of "Tool to calculate the emission factor for an electricity system"	1st	1	3	4	2
	2nd	2	6	2	0
3. Roles and Responsibilities of the Key Actors in CDM					
3.1. CDM-EB					
▪ Roles and responsibilities of the CDM-EB	1st	1	3	5	1
	2nd	3	6	1	0
▪ Roles and activities of the Panels and Working Groups under the CDM-EB	1st	1	2	6	1
	2nd	3	5	2	0
▪ Relationship between the CDM-EB and the COP/MOP	1st	1	0	9	0
	2nd	2	4	4	0
3.2. DNA					
▪ Roles and responsibilities of the DNA	1st	2	6	2	0
	2nd	8	2	0	0
▪ Contents of Letter of Approval	1st	2	6	2	0
	2nd	7	2	1	0
3.3. DOE					
▪ Roles and responsibilities of the DOE	1st	1	1	8	0
	2nd	2	6	2	0
▪ Validation report	1st	1	0	8	1
	2nd	2	5	3	0
▪ Verification report	1st	0	1	8	1
	2nd	2	6	2	0
▪ UNFCCC's evaluation system for DOE	1st	0	1	8	1
	2nd	1	5	4	0
4. National approval process and policies related to CDM					
4.1. National approval process					
▪ National approval process in Sri Lanka	1st	3	3	4	0
	2nd	7	3	0	0
▪ National approval criteria (Sustainability criteria) of	1st	3	4	3	0

Self-Assessment Item		Well Understood	Understood	Not understood so much	No knowledge
Sri Lanka	2nd	6	4	0	0
▪ PIN form of Sri Lanka	1st	3	5	2	0
	2nd	7	3	0	0
4.2. National development policy					
▪ National plan / policy related to climate change	1st	2	4	4	0
	2nd	5	4	1	0
▪ National plan / policy related to CDM	1st	3	4	3	0
	2nd	6	3	1	0
4.3. Laws and regulations					
1) Laws and regulations by sector					
▪ Energy	1st	0	6	4	0
	2nd	3	5	2	0
▪ Agriculture	1st	1	5	4	0
	2nd	2	6	2	0
▪ Forestry	1st	1	5	4	0
	2nd	5	3	2	0
▪ Industry	1st	0	5	5	0
	2nd	2	4	4	0
▪ Land use	1st	1	3	6	0
	2nd	2	2	8	0
▪ Waste management	1st	2	2	6	0
	2nd	5	3	2	0
▪ Environment	1st	1	7	2	0
	2nd	6	3	1	0
2) Environmental Impact Assessment (EIA)					
▪ Criteria of EIA in Sri Lanka	1st	1	3	6	0
	2nd	7	3	0	0
▪ Process of EIA in Sri Lanka	1st	1	3	6	0
	2nd	6	3	1	0
5. Current Status of CDM projects in Sri Lanka					
▪ Do you know the detail information and current status of the registered Sri Lankan CDM projects?	1st	3	3	4	0
	2nd	6	3	1	0
▪ Do you know the current status of projects that submitted PIN to DNA?	1st	3	4	3	0
	2nd	4	5	1	0
▪ Do you think of any potential areas in CDM and approximately how much CERs can be generated from such sector?	1st	1	6	3	0
	2nd	3	5	2	0
▪ Do you understand potential barriers and issues in developing CDM project in each sector?	1st	1	5	4	0
	2nd	3	5	2	0
▪ Do you think of how to approach potential project developers to identify potential CDM projects in Sri Lanka?	1st	0	4	6	0
	2nd	2	6	2	0
6. CERs and Registry System					
6.1. Certified Emission Reductions (CERs)					

Self-Assessment Item		Well Understood	Understood	Not understood so much	No knowledge
▪ The Administration Share of Proceeds (SOP-Admin)	1st	0	0	4	6
	2nd	0	8	2	0
▪ The Adaptation Share of Proceeds (SOP-Adaptation)	1st	0	0	4	6
	2nd	0	7	3	0
6.2. Registry System					
▪ National Registries (Annex I Parties only)	1st	0	1	6	3
	2nd	0	2	6	2
▪ CDM Registry	1st	0	1	7	2
	2nd	0	1	7	2
▪ International Transaction Log (ITL)	1st	0	0	4	6
	2nd	0	1	4	5
▪ Other registry systems and carbon markets (EU-ETS, etc.)	1st	0	0	6	4
	2nd	0	2	7	1

Findings from the assessment

From the results of the 2nd self-assessment above, JICA Expert Team identified the current knowledge of counterpart team members on CDM its weakness as follows.

Table 2-7: Current knowledge of counterpart team members on CDM and its weakness

Assessment Item	Knowledge and Weakness
1. Basic knowledge on climate change	▪ Every counterpart member has obtained some knowledge on climate change. ▪ Weakness exists in some of the counterpart members regarding the understanding of the Convention as well as the trend of details of discussions in the international community over climate change.
2. Basic knowledge on CDM	▪ Significant improvement in the knowledge of basic rules of CDM. ▪ Knowledge on the rules of small-scale CDM, A/R CDM and programmatic CDM is strengthened, but still insufficient. ▪ Technical knowledge on CDM project documentation shows a good progress, but still needs to be enhanced.
3. Roles and responsibilities of the key actors in CDM	▪ The roles of the key actors (CDM-EB and DOE) are now well understood by majority of the counterpart team members.
4. National approval process and policies related to CDM	▪ Although there are some improvements in sector development policies, but still needs to be strengthened.
5. Current status of CDM projects in Sri Lanka	▪ Well captured by most of the counterpart members.
6. CERs and registry system	▪ Some improvement in the knowledge, but still needs to be strengthened.
7. Communication with private stakeholders relevant to CDM	▪ The contacts with potential CDM project owners, developers and consultants are significantly increased.

A.1 Results of short exam on CDM

In addition to the 2nd self-assessment above, the Project conducted a short exam for CCD counterpart team members to evaluate their current knowledge of CDM. The exam asked the same questions of the 1st assessment with some revisions and updates.

The result showed that most of them improved their scores with more than 80% correct answer ratio.

A.2 Results of 2nd Capacity Assessment

Based on the overall results of capacity assessment for the counterpart team members, JICA Expert Team concluded the initial results of capacity assessment as follows:

Grade		Number of members
Grade 5	Excellent tasks can be conducted without any support of JICA Expert Team	0
Grade 4	Tasks can be conducted in a satisfactory manner without any support of JICA Expert Team	2
Grade 3	Minor support by JICA Expert Team is required to reach satisfactory level of task achievement	5
Grade 2	Full support by JICA Expert Team is required to reach satisfactory level of task achievement	3
Grade 1	Difficult to reach satisfactory level of task achievement even with full support by JICA Expert Team	0

2.1.5 The 2nd Training Programme

In the 2nd training programme, considering the progress of counterpart members on the knowledge of CDM and requests from the participants of the 1st training programme, the JICA Expert Team focused on the subjects of CDM project planning. The training programme was composed of 14 lectures including the final achievement test. It was implemented from 13 May to 15 July in accordance to the schedule shown below.

Table 2-8: Training Programme Schedule

Session	Date	Session	Lecturer
1st Session	13 May	Orientation of the Training Programme	Ms. Kawamura
		Renewable Energy CDM `project (Non-Biomass and Biomass)	Ms. Kawamura
		Waste Management/handling CDM Project	Mr. Sugimoto
2nd Session	20 May	Afforestation/Reforestation	Mr. Chikamatsu
		Fuel switch and energy saving/demand side management CDM Project	Mr. Negishi
3rd Session	8 July	Review Sessions ▪ Renewable energy ▪ Waste management/handling ▪ Energy saving and fuel change ▪ Afforestation/Reforestation	Ms. Kawamura Mr. Sugimoto Mr. Negishi Mr. Chikamatsu
		Outcomes of COP16/CMP6	Mr. Iemoto

Session	Date	Session	Lecturer
4th Session	15 July	Achievement Test	-
		Trend of carbon market	Mr. Negishi
		Policy measures for climate change mitigation in other countries	Mr. Sugimoto

The training programme was implemented with the average participation of 30 officers from public sector organizations including the project counterpart team members. In the final examination, most of the participants scores more than 80% of correct answer ratio with the highest score made by the project counterpart member of CCD with only one incorrect answer. In returning the scoring sheets of final examination, JICA Expert Team provided the certificates of participation to each participant.

2.1.6 Seminar on Business Opportunities of Climate Change Mitigation in Sri Lanka towards Post-Kyoto Era

On 21 of August, JICA Expert Team and CCD jointly held a "Seminar on Business Opportunities of Climate Change Mitigation in Sri Lanka towards Post-Kyoto Era", inviting potential private sector stakeholders of CDM. It was around 80 participants in the seminar. The table below shows the programme of the seminar.

Table 2-9: Seminar Programme

Programme	Lecturer
Session 1: Potential Areas of CDM and Project Formulation Method in Sri Lanka	
Renewable Energy Projects	Ms. Kawamura
Waste Management/Handling Projects	Mr. Sugimoto
Fuel Switch/Energy Saving/Demand Side Management Projects	Mr. Negishi
Afforestation/Reforestation	Mr. Chikamatsu
Session 2: Climate Change Mitigation for Post-Kyoto Era Period	
Post Kyoto Protocol Negotiation	Mr. Iemoto
Trend of Carbon Market	Mr. Negishi
Emerging Policy Measures for Climate Change Mitigation	Mr. Sugimoto

2.2 Target 2 Activities: Formulation of National Policies, Strategies and Action Plan on CDM Development

Target 2 activities are mainly divided into 3 activity components, i.e.

- Review and revision of national CDM policy, strategy, and action plan;
- Review and revision of SLCF strategy and formulation of the business operation plan; and
- Review and revision of the national CDM portfolio.

The planned implementation schedule of Target 2 activities are as shown in the table below.

Table 2-10: Implementation Schedule of Target 2 Activities

Target 2: National policy, strategy and action plan on CDM development will be formulated and/or updated		**1st FY (2010/11)**												**2nd FY (2011)**					
		4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9
2-1	Review and revision of national policy, strategy and action plan on CDM																		
2-2	Review of SLCF business strategy and formulation of business operation plan																		
2-3	Review of the national CDM portfolio																		
2-4	Identification of the issues and obstacles of the CDM projects under development																		
2-5	Revision of the national CDM portfolio																		

2.2.1 National CDM Policy, Strategy, and Action Plan

The review and revision of the National CDM Policy has been conducted in the process described below.

A. Review and Revision of the current draft of National CDM Policy by JICA Expert Team

As the first step, JICA Expert Team reviewed and proposed the revised version of the National CDM Policy for discussions with the counterparts and in the Joint Coordinating Committee (JCC). The points of review and revision that JICA Expert Team raised at that time were:

- Clear definition and division of roles between CCS and SLCF
- Source(s) of the fund for operating SLCF
- Proceeds of CERs

The amended version of National CDM Policy was first discussed in the weekly meeting with the counterpart team members and discussed twice in the Joint Coordinating Committee.

The proposed amendment of National CDM Policy was as illustrated in the following table.

Table 2-11: Comparison between the original and amended texts of National CDM Policy

Original Text	Proposed Amendment
Preamble (Paragraph 3) The NPCDM will be implemented in total compliance with and complementary to the National Strategy on Sustainable Development and the National Poverty Reduction Strategy of Sri Lanka. It is expected that the NPCDM will be instrumental in facilitating **trade of Certified Emission Reductions (CERs)** without any compromise on sustainable development aspirations while safeguarding the opportunities of present and future generations. (Paragraph4) Even though Sri Lanka is a Non Annex I country with a per capita emission of **as low as 0.6 MT per year**, it is the objective of the Government of Sri Lanka to encourage private sector investments in climate-friendly development activities, while contributing to the ultimate objective of **the UNFCCC**. (Paragraph 6) It is expected that at least a share of the financial returns from CDM projects will be shared with the people of the country.	**Preamble** (Paragraph 3) The NPCDM will be implemented in total compliance with and complementary to the National Strategy on Sustainable Development and the National Poverty Reduction Strategy of Sri Lanka. It is expected that the NPCDM will be instrumental in facilitating **CDM project development** without any compromise on sustainable development aspirations while safeguarding the opportunities of present and future generations. (Paragraph4) Even though Sri Lanka is a Non Annex I country with a per capita emission of **Greenhouse Gases (GHGs) as low as 0.6 MT (metric ton) of CO2 equivalent per year**, it is the objective of the Government of Sri Lanka to encourage private sector investments in climate-friendly development activities, while contributing to the ultimate objective of **the United Nations Framework Convention on Climate Change (UNFCCC)**. (Paragraph 6) Deleted.
Policy Principle 1. All CDM projects will be guided by the National Sustainable Development Policy and the National Environmental Policy. 2. CDM projects shall be encouraged to include the elements that would contribute to poverty reduction and employment generation. 3. Participation in CDM projects shall be in line with relevant policies of other sectors. 4. CDM projects shall recognize and comply with the right to development and aspirations of the people in Sri Lanka, exercised through the Government of Sri Lanka, in relation to all GHGs emission reductions. 5. Public, private, and social partnerships will be recognized and encouraged in CDM projects.	**Policy Principle** **No amendment.**
Policy Statements	**Policy Statements**
1. Institutional Mechanisms 1.1 CDM projects shall be provided through a transparent process that involves an assessment of their economic, social and environmental benefits and their relevance to local needs and priorities. 1.2 The National Advisory Committee on Climate Change shall advise the CDM project evaluation process, periodically.	**1. Institutional Mechanisms** 1.1 CDM projects shall be provided through a transparent process that involves an assessment of their economic, social and environmental benefits and their relevance to local needs and priorities. 1.2 The National Advisory Committee on Climate Change shall advise the CDM project evaluation process, periodically.

Original Text	Proposed Amendment
1.3 Host country approval for CDM projects will be granted by the Climate Change Secretariat (CCS) on behalf of the DNA.	1.3 Host country approval for CDM projects will be granted by the Climate Change Secretariat (CCS) on behalf of the DNA.
	1.4 The CCS plays an active role in building awareness and capacity of CDM project development in Sri Lanka.
1.4 Sri Lanka Carbon Fund Ltd. will play an active role **in improving the share of Sri Lanka in the Carbon Trade.**	1.5 Sri Lanka Carbon Fund Ltd. will play an active role in promoting CDM project development to achieve sustainable development of Sri Lanka though providing financial, and technical assistances to prospective CDM projects.
2. Legal Mechanism 2.1 All CDM projects shall be in conformity with the provisions under the National Environmental Act and other relevant rules and regulations as applicable in Sri Lanka.	**2. Legal Mechanism** **No amendment.**
3. Financial Mechanisms 3.1 CER backed project financing will be facilitated in order to promote sustainable industrial development for the country.	**3. Financial Mechanisms** 3.1 SLCF will facilitate CER backed project financing in order to promote sustainable development of Sri Lanka.
3.2 Any CDM project that does not have sustainable development criteria adequately incorporated will be required to share a portion of CERs generated with the SLCF.	(Deleted)
3.3 SLCF will use the income thus generated through CDM projects, in a Fund, which will be used to promote new CDM projects in the country.	3.2 SLCF will use the income thus generated through CDM projects, in a Fund, which will be used to promote new CDM projects in the country.
3.4 All State Institutions shall look into possibilities of reducing emissions through obtaining financing from CDM projects, assisted by the SLCF.	3.3 All State Institutions shall look into possibilities of reducing emissions through obtaining financing from CDM projects, assisted by the SLCF.
3.5 Sinks of Carbon will be actively promoted through finances obtained from REDD Initiatives and Afforestation and Reforestation (A/R) CDM Projects.	3.4 Sinks of Carbon will be actively promoted through international finance mechanisms to promote REDD Initiatives and Afforestation/ Reforestation activities in line with protecting bio-diversities of Sri Lanka.
3.6 CDM benefits could be claimed only by citizens of Sri Lanka and/or by companies incorporated in Sri Lanka with local collaboration. If any other party applies for CDM benefits for projects implemented in Sri Lanka, financial benefits generated should be shared with the SLCF, as decided by the DNA.	(Deleted)
3.7 A portion of 1% of the proceeds from CDM projects shall contribute to a revolving fund which will finance low emission technologies and carbon sinks, as well as future CDM projects and this fund will be managed by the SLCF.	3.5 A portion of 1% of the proceeds from CDM projects shall contribute to CCS to accommodate promotion of CDM projects in Sri Lanka.

Original Text	Proposed Amendment
	3.6 SLCF shall manage a fund to finance low emission technologies and carbon sinks, as well as future CDM projects. 3.7 The seed funding of SLCF shall be allocated by Ministry of Environment and also be solicited from private and public financial institutions. 3.8 The retained earnings of investment and services provided by SLCF shall contribute to revolving fund under its management to promote/finance low emission technologies and carbon sinks as well as future CDM projects.
4. Technical Issues 4.1 Inward transfer of new, proven, affordable and environmentally sound technologies will be encouraged. 4.2 Participation of private and social partners in CDM will be actively encouraged by **Sri Lanka Carbon Fund and the Climate Change Secretariat.** 4.3 The two National CDM Centres will be assisted to play a constructive role in providing technical input for the Climate Change Secretariat and the Sri Lanka Carbon Fund in improving CDM capabilities in Sri Lanka.	**4. Technical Aspects** 4.1 Inward transfer of new, proven, affordable and environmentally sound technologies will be encouraged. 4.2 Participation of private and social partners in CDM will be actively encouraged by **the Climate Change Secretariat and Sri Lanka Carbon Fund.** 4.3 The two National CDM Centres will be assisted to play a constructive role in providing technical input for the Climate Change Secretariat and the Sri Lanka Carbon Fund in improving CDM capabilities in Sri Lanka.

B. Amendment for compatibility with the National Climate Change Policy

In the special JCC held for discussing the National CDM Policy on 25 August 2010, it was decided that the amended draft national CDM policy would be reviewed in the inter-ministerial committee for its approval and to be presented in the stakeholder workshop for public consensus.

However, the additional secretary of the MENR, who chaired the previous two JCC meetings, was replaced by the new additional secretary, who requested to make further amendment to the national CDM policy, taking into account the National Climate Change Policy now under preparation. He also pointed out that the current National CDM Policy might confuse many people since it included some contents that are too specific to be mentioned in the policy statements.

After a series of discussions with the new additional secretary and counterpart team members, JICA Expert Team decided to restructure the current national CDM policy. Some of the policy statements and contents were taken out as the contents to be utilized in the strategy or action plan on CDM. The compatibility with the national climate change policy was also assessed through several discussions in the counterpart meetings.

Further, in the 4th JCC meeting, there was a discussion on that the National CDM policy should be made as an

interim policy considering the situation that the future of CDM after 2013 is still not clear. CDM strategy and action plan is also to be put in the same way as the temporary statute up until the end of 2012. Based on this discussion, the JCC decided to formulate the national CDM policy as an interim policy of the Ministry of Environment up until 2012 while the CDM strategy and action plan should be put in the CDM Guidebook as the recommendations as the strategies and actions of CDM project development up until 2012 and further. Finally, the National CDM policy is decided as the interim policy as shown in the Annex of this report while the strategies and actions of CDM project development are incorporated into the CDM Guidebook, which is also available in the Annex of this report.

2.2.2 SLCF Business Strategy and Operation Plan

Business strategy and operation plan for Sri Lanka Carbon Fund (SLCF) has been reviewed and formulated in accordance with the following procedure.

A. Review of the current status of SLCF and business strategy document

JICA Expert Team with local experts and counterpart team members first confirmed the current status of SLCF, followed by an overall review of business strategy document ("SLCF Corporate Business Strategy" prepared in 2008).

A.1 Current Status of Sri Lanka Carbon Fund (SLCF)

The SLCF was established as a private public partnership company registered under the Companies Act No 7 of 2007. The nature of the organization is a state owned private company with Government being the majority share holder with 51% of the equity. The balance share capital will be raised from other sources including the private sector. Policy decisions to establish the SLCF was given under the cabinet approval of number 08/0251/359/011 dated 05.02/2008. Cabinet has also given approval to release Rs. 100 million from the treasury as the initial capital of the SLCF. The Articles of Association of SLCF provides the objectives of SLCF as follows:

Objectives of SLCF

(a) To provide technical and financial assistance to CDM Project developers for the preparation of project documentations.
(b) To facilitate CDM sales agreement negotiations
(c) To facilitate bundling of small CDM projects
(d) To facilitate access to capital funding for CDM projects through commercial banks

(e) To provide investment capital for CDM Projects

(f) To engage in carbon trading through purchasing and subsequent sale for carbon credits

It also provides that the Board of Directors shall consist of not more than seven persons and comprise of the following:

(a) The Secretary to the Ministry in charge of the subject of Environment or his nominee

(b) The Secretary to the Treasury or his nominee;

(c) The Chairman, Central Environment Authority or his nominee

(d) One professional in the relevant field

(e) Three members from the Private sector share holders

Although there were four directors officially assigned to the Board, their replacement and new appointment are now required due to changes in the Secretary of MENR and Chairman of CEA.

B. Review of the Business Strategy Document

In 2008, SLCF commissioned Ernst & Young as a consultant to prepare a corporate strategy. JICA Expert Team with local experts and counterpart team members conducted an overall review of this strategy document. Below are the summary of this document.

a Identified issues that SLCF should address for CDM project development

The strategy identified the following issues that SLCF should address for CDM project and carbon market development in Sri Lanka.

Table 2-12: Identified Issues on CDM project and Carbon Market Development in Sri Lanka

• Lack of awareness	-	Some projects that could qualify for CDM have already commenced without CDM being considered. Need to educate both public and private sector
• Lack of expertise	-	Especially in the areas of project identification, development and preparation of documentation
• Lack of information	-	Especially on CDM project development, very little information is available in the public domain, e.g. difficulty in obtaining grid emission data etc.
• Use of technology	-	For example information on new technology such as waste heat recovery, renewable energy, energy efficiency is not readily available
• Lack of facilitation	-	Absence of a central body to facilitate and coordinate CDM activities. Lack of coordination activities among government institutions, local authorities, equipment suppliers
• Ineffective validation	-	Most project developers are not assisted by consultants at this stage and usually the project developers are left to handle the validation process on their own

- Poor marketing relating to sale of CERS
- Lack of capacity in relation to bundling
- Insufficient involvement of banks/financing institutions

b Possible services to be provided

The strategy recommends that SLCF should offer the following products and services to address the issues above.

- Carbon finance through upfront or on delivery purchase of CERs
- Technical assistance for CDM project especially in developing PINS, PDD, identifying a validator, registering the project with UNFCCC, assisting in identifying other consultants
- Awareness building
- Provision of loan guarantees to the commercial banks based on the amount of CERs produced

c Management and operations

Management and operations section of the Corporate Strategy suggests that SLCF should have three units that will perform the following functions respectively:

- **The Carbon Fund Management Unit**– This will be a separate entity incorporated in the form of a trust and the fund will be managed by SLCF
- **The Technical Assistance unit** – An internal division of SLCF which will perform the following functions
  - Identifying CDM eligible projects
  - Technical assistance to project sponsors during project preparation including due diligence, documentation, host country approval, validation and registration
  - Manage the bundling of small scale projects
  - Direct support during implementation and commercial phases of projects to ensure the delivery of both carbon credits and intended of projects
  - Training key experts in CDM concepts, techniques, design and project documentation
  - Engage the financial sector to promote integration of carbon finance in lending strategies
- **Marketing Assistance Unit** – Also an internal division of SLCF which will engage in the following
  - Trading of CERs acquired by the Fund
  - Assist external project developers in marketing their credits in return for market based fee

d Expected Incomes and Income Sources of SLCF

The potential income sources of SLCF identified in the strategy are

a) Sale of CER
b) CDM facilitation
c) Managements fee from managing the carbon fund

The sales of CER is expected to generate about 97% of the total income above while CDM facilitation and management fee is expected to generate the remaining 3%.

The revenue forecast of SLCF was based on the assumption that there will be about 187,000 CERs available in the domestic carbon market in 2010 and that SLCF could get about 80% of them for trading. The primary purchase and secondary selling prices of CERs were assumed at EUR 13.50 and EUR 15.00 respectively. The EUR/LK exchange rate was assumed as 142.70. Based on the above, the total net income projected for the two years was estimated as follows:-

Table 2-13: Estimated Total Net Income of SLCF (Rs thousand)

	2010	2011
Gross Revenue	350,108	378,152
Expenses Related to revenue	308,157	330,317
Net revenue	41,537	47,835

The Corporate strategy has identified the government sector institutions such as Railways, Ceylon Electricity Board, Petroleum Corporation as the main sectors that could implement large-scale CDM projects. However, the limited interest and knowledge in CDM at that time has resulted in non-implementation of these CDM projects.

e Critical Risks Involved in Business Operation of SLCF

Based on the current status of CDM project development and delayed establishment of SLCF, as well as the review results of the strategy document above, the Project identified the important risks involved in the business operation of SLCF as described below.

(1) Short-term risks related to income and financial sources in SLCF business operation

- It is difficult to raise the fund from private sector at the current situation that there is no concrete CDM project portfolio that can expect substantial incomes from CER trading.
- Most of the on-going CDM initiatives are currently under the preparation process of official registration at the United Nations; therefore, it will take a considerable time to get issuance of CERs

from those CDM projects.

- Although SLCF is expected to take the role of mediating CDM project proponents and CER buyers, it also takes some time to get income from such activities.
- Those who need mediation of CER sales and technical/financial assistances are the small scale CDM project proponents, who also need financial assistance for project registration process.
- **From the above, SLCF cannot expect substantial income in the short term (in 2 to 3 years) as planned in the "Corporate Business Strategy". The first priority of SLCF activity should be given to build a concrete "CDM project portfolio" that can produce substantial CER for trading.**

(2) Risks involved in establishment of investment trust fund

- CDM project is generally not economically viable without CER revenues while the revenue from CER also involves the following risks:
  - Non registration of the project
  - Non implementation of the project
  - Overestimation of CER issuance
- Direct investment in the form of preferential shares, convertible deventures may involve the use of trust fund for non-CDM project purposes if such investment is made for the company not the CDM project itself. Taking into account the original concept of carbon fund, SLCF should limit its role to help CDM project development and to the extent that CER is concerned.

C. Examination of the SLCF Business Operation Strategy and Plan

C.1 Current Status of CDM Project Development in Sri Lanka and Potential Carbon Market for SLCF

The critical factor to be considered in SLCF business operation for providing financial assistance to CDM projects is the potential of GHGs emission reduction and sink enhancement in Sri Lanka. Taking into account that CDM will temporarily end with the completion of the 1st commitment period of Kyoto Protocol in 2012, SLCF has to properly identify the possibility of CDM project registration and implementation by 2012 for the purpose of potential carbon credit (CER) to be produced from these projects.

Based on this recognition, the Project conducted a review of the current Sri Lankan CDM project portfolio to identify the potential CDM projects to be registered and implemented with the production of actual GHGs

emission reduction in the form of CERs.

(1) The current Sri Lankan CDM Project Portfolio

Table 2-14: Current Sri Lankan CDM Project Portfolio by Categories (March 2011)

CDM project category	Number	Estimated CER ($tonCO_2/yr$)
Registered CDM projects	7	210,168
CDM projects currently in validation	21	496,478
CDM projects with PDD prepared	10	142,393
CDM projects with PIN prepared	85	-
CDM projects currently in the process of PIN preparation	11	-
TOTAL	134	849,039

As to the CDM projects currently at the stage of PIN or PIN preparation, the estimated amount of CER is not included in the table above as it is highly uncertain at this stage. The total number of listed CDM projects in the current Sri Lankan CDM project portfolio is 134 (38 excluding the project at PIN level). The estimated total amount of CERs to be produced from the CDM projects above PDD level reached about 85 thousand $tonCO_2$ per year.

(2) Potential CDM projects and CERs subject to purchase by SLCF

Based on the identified potential CDM projects and estimated CER above, the amount of CER subject to purchase by SLCF is estimated in the next table. The estimation is made in accordance with the following assumption:

① The estimation of CER is made for the projects that have already developed PDDs. The projects at the stage of PIN or PIN preparation are excluded.

② As to the estimated amount of CER to be produced from the CDM projects identified above, the realization rate of 100%, 70%, and 50% is assumed respectively.

③ The estimated amount of CER is assumed to be sold at the primary price of US$ 10 per ton of CO_2 to SLCF by the CDM project owners.

④ The CER purchased by SLCF at the price above will be sold at the price of US$ 13 per ton of CO_2 to the secondary buyers or at the carbon market; therefore the profit margin of SLCF will be US$ 3 per ton of CO_2 sold. The table on next page shows the result of estimation with these assumptions.

Table 2-15: Estimation of the amount of CER that can be purchased by SLCF

Category of CDM Project	Estimated CER (Annual Average)					
	100% realization		70% realization		50% realization	
	$tonCO_2$	US$	$tonCO_2$	US$	$tonCO_2$	US$
Registered Projects	210,168	2,101,680	147,118	1,471,180	105,084	1,050,840
Projects in validation	496,478	4,964,780	347,535	3,475,350	248,239	2,482,390
Projects with PDD prepared	142,393	1,423,930	99,745	997,450	71,247	712,470
Total	**849,139**	**8,491,390**	**594,398**	**5,943,980**	**424,570**	**4,245,700**
Excluding Registered Projects	**638,971**	**6,389,710**	**447,280**	**4,472,800**	**319,486**	**3,194,860**
Estimated profit by CER trading		**1,916,913**		**1,341,840**		**958,458**

As estimated in the table above, if SLCF purchases and resells all the estimated CERs produced from the CDM projects above except registered ones, the annual profit by CER trading is estimated about US$ 1.9 million at its maximum (with 100% realization) and US$ 960 thousand with 50% realization case.

However, the actual profit that SLCF can possibly obtain from CER trading is estimated smaller than this amount since it is more reasonable to assume that SLCF will not be able to purchase all the CER produced from the above CDM projects. In reality, the potential profit from CER trading will remain at a few hundreds of thousand US dollars annually.

Thus, the current SLCF business strategy with the expectation of more and bigger scale CDM projects needs to be completely reviewed based on the current condition of CDM project development in Sri Lanka.

The Project, in accordance with the discussions between JICA Expert Team and Counterpart, recommended the two-phased SLCF business strategy for short-term up until 2012 and mid-term after 2013.

C.2 Recommendation on Revised SLCF Business Strategy

(1) Short-Term Business Strategy of SLCF (2011-2012)

Strategic Targets	1. Elaborate and select the prospective on-going CDM project initiatives from the currently proposed CDM projects and make exclusive contracts of "CER trading" with the project proponents. 2. Based on these contracts, SLCF will build the "CDM project portfolio" consisting of the list of CDM projects with their exclusive trading right of CERs. 3. SLCF will start carbon credit trading negotiations with the potential buyers based on this "CDM Project Portfolio".
Main Activities	■ Technical/financial assistance for CDM project registration (Carbon Finance or loan to the CDM project proponents) ➢ Preparation of PDD (Project Design Document) ➢ Validation ■ Assistance for implementation of registered CDM projects ➢ Monitoring/Verification ➢ CER selling

(2) Mid-Term Business Strategy of SLCF (after 2013)

Strategic Targets	1. Making CER trading contracts with potential buyers of carbon credit based on the "CDM project portfolio". 2. Making agreements/contracts on technical/financial assistance (NAMA, SCM) with ANNEX I countries and/or bi/multi-lateral donors based on the "CDM Project Portfolio". 3. Start inviting private sector participation in SLCF based on the business achievement gained by 2012 with the "CDM project portfolio".
Main Activities	SLCF will expand its activities to the following areas: ■ Financial assistance to CDM project implementation (CER-based loan guarantee to the banks providing project lending) ■ Carbon credit trading (participation in carbon trading market)

The next figure illustrates the basic business framework of SLCF including short and mid-term business strategies.

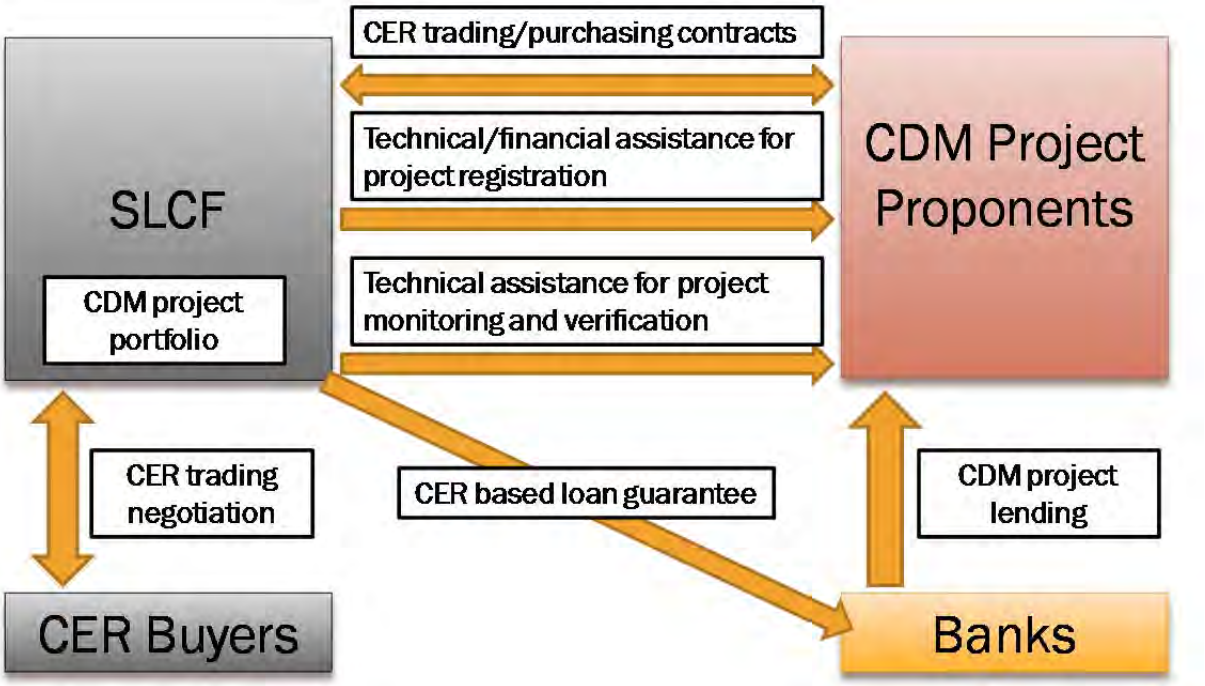


Figure 2-1: Recommended Basic Framework CDM Project Assistance by SLCF

D. Promotion of Sri Lankan CDM projects to potential buyers

To further promote the activity of Sri Lankan Carbon Fund, the JICA Expert Team together with the Local Expert Team and the counterpart team carried out the promotion of Sri Lankan CDM projects to potential buyers. In conducting the promotion, the CDM project proposals subject to the promotion to potential buyers are selected from the Sri Lankan CDM Project Portfolio. The CDM project proposals selected are those which have registered or produced their project design documents (PDDs) and started validations by the designated Operation Entities (DOEs). The primarily selected CDM projects are as shown in the table below.

Table 2-16: Candidate CDM projects and proposals for promotion to the potential CER buyers

CDM projects	Number	Estimated CER ($tonCO_2/yr$)
1. Registered CDM projects (currently in operation	**7**	**210,168**
(1) CER buyer identified (with ERPA)	6	196,684
(2) CER buyer not identified	1	13,484
2. Projects under validation	**16**	**387,592**
(1) Final phase of validation	4	48,761
(2) In process for VER acquisition	5	106,737
(3) Others (under validation)	7	232,094
Total	**23**	**597,960**

There are 4 projects at the final stage of validation, looking for the buyers (approx. 50,000 tonCO_2 or 450,000 EURO). The total number of CDM projects currently under validation is 16 (approx. 400,000 tonCO_2 or 3,600,000 EURO）

According to the above list, there are 7 projects which have been registered. Of these, 6 have already entered into sales agreements with buyers to sell CERs. Only the "Adavikanda, Kuruwita Division Mini Hydro Power Project" (6.5MW), which was registered in August 2010, has not yet identified any buyers. This project has the potential to generate about 13,500 CERS.

Of the CDM projects that are under validation, the following projects are nearing completion of validation and are expected to register with UNFCCC over the next three months. Most of them have started construction pending UNFCCC registration.

Table 2-17: Selected CDM project proposals for promotion to the potential CER buyers

Start date of validation	Project Title	Estimated CER (tonCO_2/yr)
Feb. 2009	Somerset Upper Neluwa and Palmerston Small Scale Hydropower CDM Project in Sri Lanka (4.45MW by 3 units)	13,118
May 2009	Mampuri Wind Power Project (Wind power: 10MW with 8 wind turbines)	18,771
Aug. 2009	Gantuna, Udagama, Ethamala Ella and Sheen Small Scale Hydropower Project in Sri Lanka (3.76MW by 3 units)	9,564
Sept. 2010	Branford Mini Hydro Power Project (2.5MW)	7,308
	Total	**48,761**

None of the above projects has contacted with any buyers and therefore they are interested in identifying buyers for their CERs. Further, these project developers do not have sufficient knowledge about the selling process and to how to negotiate prices.

As one of the primary objectives of the Sri Lanka Carbon fund (SLCF), is to assist project developers to engage in carbon trading, these projects provide and ideal opportunity for SLCF to commence operation by identifying buyers and negotiate suitable prices on behalf of these companies.

However, due to delayed establishment and operation of SLCF, it was not possible to initiate these activities under the management of SLCF. Instead, the Project provides all the results of discussions with these CDM project proponents as well as with the potential buyers.

E. Recommendations regarding the strategy and operation plan of the Sri Lankan Carbon Fund

Although the Project could not provide any practical assistance in operation itself of SLCF, it provides the

recommendations regarding the strategy and operation plan of SLCF as a guiding document for SLCF, which is available in the Annex of this report.

2.2.3 National CDM Portfolio

A. Preparation of National CDM Portfolio

Based on the PINs and PDDs that have been submitted to CCD, the national CDM portfolio was developed by the counterpart team members with the guidance of JICA Expert Team. The steps of preparation of national CDM portfolio is described as follows.

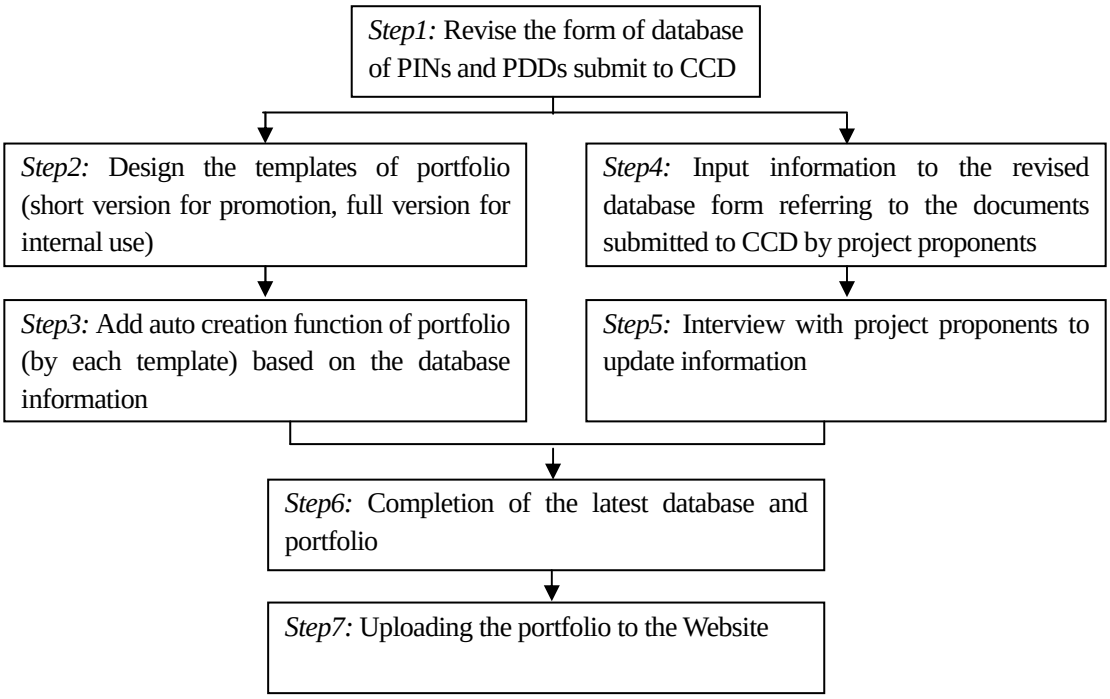


Figure 2-2: Steps of Preparation of National CDM Portfolio

A.1 Revise the form of database of PINs and PDDs submit to CCD

JICA Exert Team together with CCD counterpart members reviewed the form of the CDM project database of CCD and added useful items to the database. The items of database was finalised as follows:

- CCD file number
- Category (Hydropower, biomass, energy efficiency etc)
- Name of the Project
- Project Participants (Organization, contact person)
- Date of Principal letter
- Date of letter of approval
- Current status (Project Idea, PIN, PDD, Validation, Request for registration, Registered, CER issued, Rejected)

- Project activity status (Ongoing, On-hold, Halt)
- Operation status (Planning, Under construction , Started operation, Terminated etc)
- Operational start date
- CDM project start date
- Crediting period (7 years or 10 years)
- Project cost estimates
- Project benefits
- Status of CER negotiation
- Source of Finance
- Project Description
- CDM consultancy
- Validator
- Remarks

A.2 Design the templates of portfolio

CCD counterpart members and JICA Exert Team designed two versions of templates of portfolio (short version and full version) were prepared as shown in Figure 2-3. Short version is designed to be utilized mainly for promotion while full version is for internal usage. Full version template includes all the information of each project in the database.

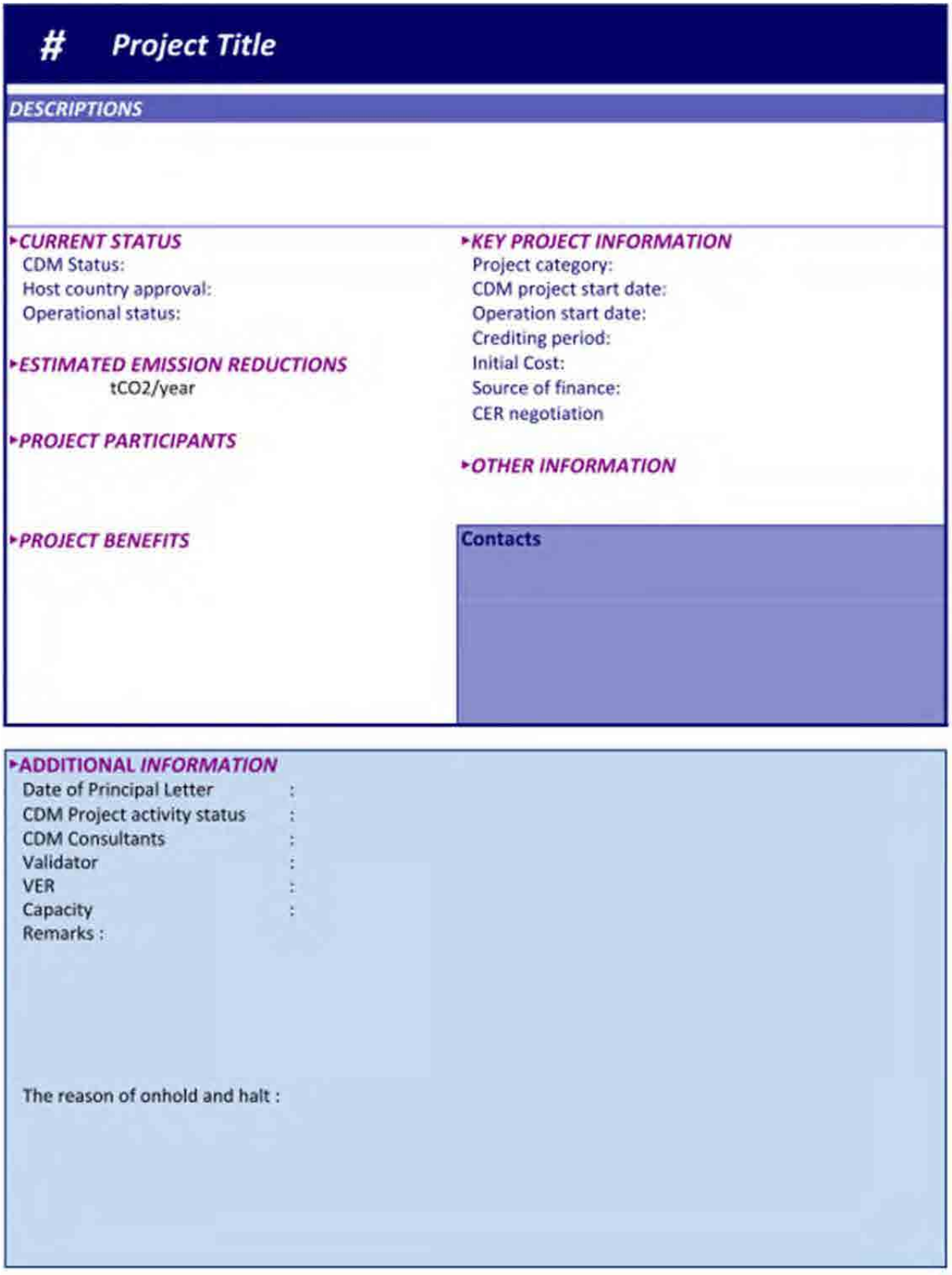


Figure 2-3: Project Template in the National CDM Project Portfolio (full version)

A.3 Add auto creation function of portfolio (by each template) based on the database information

JICA Expert Team in consultation with CCD counterpart members produced auto creation function of portfolio based on database information. As shown in the figure below, auto creation bottom is incorporated in the database and both version of portfolio can be created by selecting the project number and clicking the button "short" or "full". Upto five templates can be created at one time.

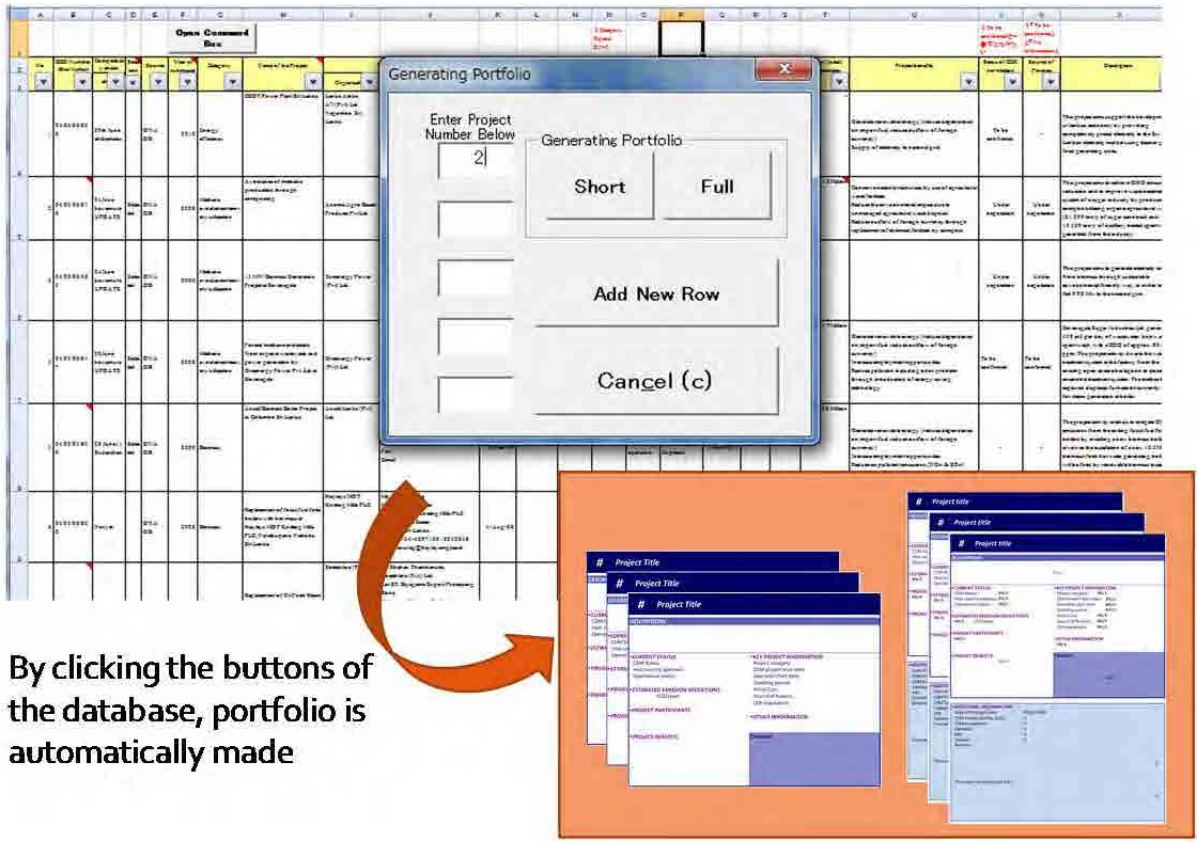


Figure 2-4: auto creation function of portfolio

A.4 Input information to the revised database form referring to the documents submitted to CCD by project proponents

Counterpart team members, local experts and JICA Expert Team updated the new database based on the documents submitted to CCD by project proponents.

A.5 Interview with project proponents to update information

After completion of the data input based on the documents, Counterpart team members, local experts and JICA Expert Team contacted project proponents to obtain latest information of each potential project.

A.6 Completion of the latest database and portfolio

Counterpart team members, local experts with assistance by JICA Expert Team, completed the database through implementation of Step 1~5. JICA Expert Team instructed the procedures of maintenance and updating national CDM portfolio to Counterpart members.

Table 2-18: Potential CDM Projects by Category

Category	Number of Projects
Transportation	0
Afforestation & Reforestation	6
Hydro power	54
Biomass	52
Wind power	4
Methane avoidance/recovery/utilization	7
Energy efficiency	4
Others	5
Total	132

Table 2-19: Potential CDM Projects by Project Development Status

Status	Number of Projects
Project Idea	3
PIN	75
PDD	25
Validation	19
Request for registration	0
Registered	7
CER issued	0
Rejected	3
Total	132

2.3 Target 3 Activities: Capacity Development of DNA in Appraisal of CDM Project Proposals

The target 3 activities mainly consist of the following components:

- Capacity assessment (jointly conducted with the capacity assessment in Target 1)
- Review and revision of national approval criteria and procedure
- Preparation of CDM project appraisal manual

The planned implementation schedule of the Target 3 activities are as shown in the table below:

Table 2-20 Implementation Schedule of Target 3 Activities

Target 3: DNA's capacity in evaluation/appraisal of CDM project proposals will be strengthened		**1st FY (2010/11)**												**2nd FY (2011)**					
		4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9
3-1	Capacity assessment of CCD members																		
3-2	Review and revision of national approval criteria and procedure																		
3-3	Preparation of CDM project appraisal manual																		
3-4	Revision and update of the manual																		

2.3.1 Review and Revision of National Approval Criteria and Procedures

To review and revise the current national approval criteria, JICA Expert Team and counterpart team members had a series of meetings and discussions with the reference materials prepared by JICA Expert Team. Finally, the following sustainability criteria was produced for issuing the host country approval of CDM projects in Sri Lanka.

Table 2-21: Sustainability Criteria for issuance of host country approval of CDM projects in Sri Lanka

Category	Criteria	Example/Indicator	Reference to the National Policy Documents
Economical Criteria	▪ Improving quality of life ▪ (Project should not lower the quality of life of the community)	▪ Better housing, Electrification of households, Better education, Secure access for safe water	▪ Mahinda Chinthana idiri Dekma (2,3,5.)
	▪ Alleviation of poverty ▪ (Project should not lower the income of the community)	▪ Increase income of the community households	▪ Mahinda Chinthana idiri Dekma (2,5,7)
Social Criteria	▪ Participation of the Community	▪ Section E ("Stakeholders' comments") of proposed PDD. ▪ Promote social interactions, activities relating to the Corporate Social Responsibility (CSR)	▪ National CDM policy (Draft) ▪ Budget speech made by Hon minister of finance in 2010.

Category	Criteria	Example/Indicator	Reference to the National Policy Documents
Technological criteria	▪ Transfer of appropriate technology include know-how and method ▪ (Obsolete technologies should not be used in the project. ▪ The technology applied in the project should not continuously depend on the external knowledge)	▪ Low GHG technologies replace high GHG technologies	▪ National CC policy (Draft) ▪ National CDM policy (Draft)
Environmental Criteria	▪ Conservation of Natural Resources (water, soil, biodiversity, air, minerals, forest and natural habitats etc.)	▪ Impact on the Natural Resources ▪ Planting trees ▪ Conforming to emission standards	▪ National Environmental Act (Part IV,17) ▪ National CC policy (Draft) ▪ National CDM policy (Draft) ▪ National action for Haritha lanka Program (Mission 1,2,5,7,8)
	▪ Sustainable use of land	▪ Impact on land resources	▪ National Environmental Act (Part IV 16,17) ▪ National action for Haritha lanka Program (Mission 5)
	▪ Contribution to the GHG Reduction	▪ The amount of GHG reduction	▪ National Communications under UNFCCC ▪ National CC policy (draft)

In addition to the criteria above, the Project also produced the documentary requirement for submission of the Project Idea Notes (PINs) and Project Design Document (PDD). This requirement was made based on the recommendations from the counterpart team to smooth and the approval process.

Documentary requirements of Sri Lanka DNA Approval procedure

◆ **Documents required for In-principles approval**

(Mandatory)

☐	Project Idea Note (PIN)
☐	Copy of Prior Consideration of the CDM Form

*Project Participants must submit three hard copies of each above document in English and one soft copy (by email).

◆ **Documents required for Host Country approval**

(Mandatory)

☐	Project Design Document (PDD)
☐	Proof of Legal Capacity of Project Participants
☐	Other Documents required in respect of the type of project

*Project Participants must submit three hard copies of each above document in English and one soft copy.

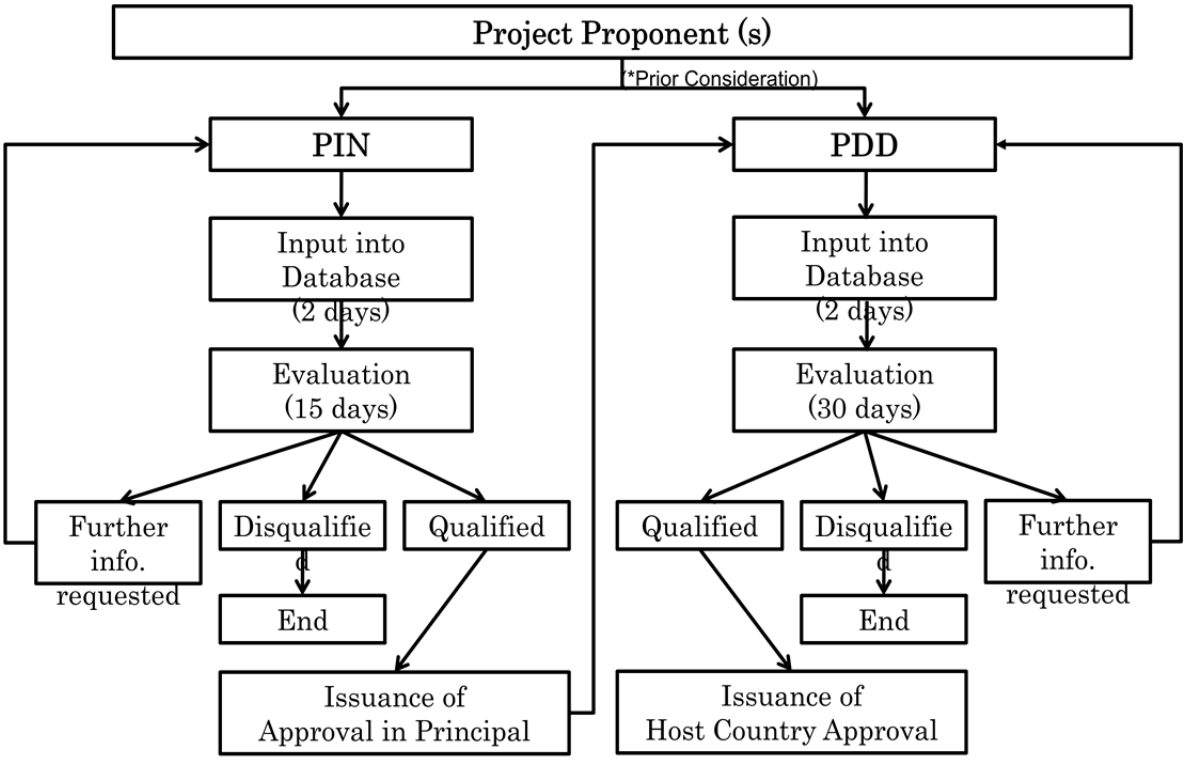
◆ **Supporting Documents**

The availability of following document (where applicable) will help facilitate the approval process

☐	Validation Report from DOE
☐	Local Gov't approval letter (for construction plan)
☐	Environmental Impact Assessment (EIA) Report or Initial Environmental Examination (IEE) Report
☐	Feasibility Study (FS) Report
☐	Copy of the approval letter for project investment
☐	Copy of the Emission Reduction Purchase Agreement (ERPA) or the Letter of Intent (LOI) for the credit purchase
☐	Section A2 of the PDD (Description of the project activity) written in local language (Sinhalese and/or Tamil)
☐	Recommendation letter from the Forestry Department (only for A/R CDM project proposal)

*Project Participants are requested to submit one hard copy and one soft copy (by email) of above documents.

In the same way, the host country approval procedure for CDM projects were also revised and finalized after a series of discussions as shown in the figure below.



(*) Prior Consideration: If a project has already started before a PDD has been published for public comments or a new methodology or revision of methodology related to the project has been proposed, a notification of CDM prior consideration is required. This notification has to be sent to the DNA and the UNFCCC secretariat within 6 months of the project start date.

Figure 2-5: Host Country Approval Procedure

2.3.2 Preparation of CDM Project Appraisal Manual

Based on the CDM project appraisal sheet prepared and utilized in other JICA CDM promotion project, the similar appraisal sheet was developed by the counterpart team after a series of reviews and discussions. The figure below shows the Sri Lankan CDM project appraisal sheet for host country approval.

1. Project Name:

2. Name of Project Participant(s):

3. Is it in compliance with the following host country's criteria (Environmental criteria)?
   (1) Conservation of Natural Resources *(water, soil, biodiversity, air, minerals, forest and natural habitats etc.)*
   YES ( ) NO ( ) Not applied ( )
   (2) Sustainable use of Land
   YES ( ) NO ( ) Not applied ( )
   (3) Contribution to the GHG reduction
   YES ( ) NO ( ) Not applied ( )

   (Economical criteria)
   (4) Improving quality of life *(Project should not lower the quality of life of the community)*
   YES ( ) NO ( ) Not applied ( )
   (5) Alleviation of poverty *(Project should not lower the income of the community)*
   YES ( ) NO ( ) Not applied ( )

   (Social criteria)
   (6) Participation of the Community *(Section E of PDD)*
   YES ( ) NO ( ) Not applied ( )

   (Technological criteria)
   (7) Transfer of appropriate technology include know-how and method
   (Obsolete technologies should not be used in the project. The technology applied in the project should not continuously depend on the external knowledge)
   YES ( ) NO ( ) Not applied ( )

4. Does project participant(s) have the legal status in Sri Lanka? (Proof of Legal Capacity of Project Participant, etc.)
   YES ( ) NO ( ) Not applied ( )

5. Have project participant(s) already obtained necessary project permits? (Local gov't approval letter for construction plan, etc.)
   YES ( ) NO ( ) Not applied ( )

6. Is it compatible with the national development policy priorities?
   YES ( ) NO ( )
   In negative case, indicates which the reasons are:

7. Is an Environmental Impact Assessment (EIA) or an Initial Environmental Examination (IEE) Report attached?
   YES ( ) NO ( )

8. Is a Feasibility Study (FS) Report attached?
   YES ( ) NO ( )

9. Is a copy of the approval letter for project investment attached?
   YES ( ) NO ( )

10. Is a copy of the Emission Reduction Purchase Agreement (ERPA) or the Letter of Intent (LOI) for the credit purchase attached?
    YES ( ) NO ( )

11. Has the project participant(s) the institutional/corporative capacity to achieve the project?
    YES ( ) NO ( )
    Observations:

12. Baseline: Is it reasonable/acceptable of assumptions and information?
    YES ( ) NO ( )
    Observations:

13. Methodology: Is it used an approved methodology/well applied the methodology?
    YES ( ) NO ( )
    Observations:

14. Additionality: Is it used the additionality tools provided in EB?
    YES ( ) NO ( ) To be clarified ( )
    Observations:

(15) [Only for A/R CDM project proposal] Is a recommendation letter from Forestry Department attached?
YES ( ) NO ( )

Conclusions:

Approved **Review required** **Rejected**

Signature of PIN/PDD Evaluation Committee: [Date: / /]

Signature of Director of CCD (DNA): [Date: / /]

Figure 2-6: PIN/PDD Evaluation Form of Sri Lanka DNA (Version 1.0), 26 July 2011)

2.4 Target 4 Activities: Preparation of CDM Guidebook

The Target 4 activities mainly consist of the following 2 (two) components:

- Selection prospective CDM projects and their assessment and recommendations on the actions for project realization; and
- Preparation of the CDM Guidebook for the use by the potential project proponents.

The implemented schedule of the Target 4 activities is as shown in the table below.

Table 2-22: Implementation Schedule of Target 4 Activities

Target 4: CDM guidebook will be prepared and made available for all the people in Sri Lanka		**1st FY (2010/11)**												**2nd FY (2011)**						
		4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10
4-1	Selection of potential CDM projects																			
4-2	Feasibility assessment of the selected CDM projects																			
4-3	Recommendations on the actions for project realization																			
4-4	Preparation of draft CDM guidebook																			
4-5	Distribution of the draft CDM guidebook and collection of feedback from CDM stakeholders																			
4-6	Revision and finalization of the CDM guidebook																			

2.4.1 Selection of Potential CDM Projects

A. Selection Policy

In Target 4, JICA Expert Team and the counterpart team members selected the 15 CDM projects currently under development in order to identify and understand the underlying obstacles and problems faced by the project proponents and provide recommendation to project proponent in the form of CDM guidebook.

The objective of selecting 15 projects under Target 4 are as follows:

(a) to create capacity to appraise and evaluate potential projects, and
(b) to accelerate CDM project development.

In order to achieve objective (a), it is inevitable to identify and understand the various issues (problems and obstacles) faced by project proponents, and hence, it is considered more effective selecting various projects from early stage to mature stage and from wide range of categories rather than selecting only successful projects of similar project types. Regarding objective (b), “High probability of project realization” is obviously one of the most important factors to be considered, in order to accelerate CDM project development, “Positiveness of project proponents for participation in this JICA project” and “Necessity of support by JICA Expert Team” are also considered as high priority criteria to select 15 projects from viewpoint of ownership of

projects and the need of assistance. In addition to this, in order for the outcome to be widely applied for the future CDM project development in Sri Lanka, "Potential (wide applicability) of projects" is also important.

Thus, for selection of 15 projects, the following four (4) criteria were determined:

- High probability of project realization
- Positiveness of project proponents for participation in this JICA project
- Necessity of support by JICA Expert Team
- High potential (wide applicability) of projects
- Knowledge accumulation of wide variety of project type

Forestry sector, although there were several project applications submitted to DNAs, were not included in the 15 projects as the sector was within the scope of work of JICA Expert Team.

B. Candidate Projects for Selection

The 15 priority projects were selected from the candidate project applications falling into the following categories.

a Category 1

The following two programmatic CDM projects already agreed to be included in the 15 projects:

- Industrial Fuel Switch by Wood Biomass Programmatic CDM in Sri Lanka (hereafter, Wood Biomass PoA)
- CFL programmatic CDM (hereafter, CFL PoA)

b Category 2:

The proponents of 24 projects replied to the questionnaire delivered by CCD in June 2010 to get updates of all the projects proponents that have submitted PINs, PDDs and other form of project information. The replies are the positive feedback to CCD, and hence, these 24 projects are regarded as projects with high "Positiveness of project proponents for participation in this JICA project" and high "Necessity of support by JICA Expert Team" compared to the projects that did not reply.

c Category 3:

14 project proponents that had individual consultation on 27th August 2010 after the CDM seminar for private sector held by JICA Expert Team on 26th August 2010.

d Category 4:

Project proponents visited DNA office for individual consultation.

e Category 5:

Rest of the projects of DNA's CDM project database that are not included in Category 2 or 3. Projects were screened by the submission date after 1st Jan 2008 as some of the PINs were submitted more than 5 years and no update information were provided. The number of projects under Category 5 is 59 projects.

C. Screening Criteria and Selection Procedures

Wood Biomass PoA & CFL PoA project are already selected by the agreement between CCD and JICA. Therefore 13 more projects need to be selected. Screening criteria to select 13 projects are shown in the table below. As specified in A.1, the criteria was determined to ensure i)High probability of project realization, ii) Positiveness of project proponents for participation in this JICA project, iii) Necessity of support by JICA Expert Team, and iv) High potential (wide applicability) of projects.

Table 2-23: Screening Criteria

Item	Strength	Screening Criteria
i) High probability of project to be realized	Must	It is an ongoing project
		Approved methodology is used
	Favored	PDD is available
		Project finance secured
		The project has not started its operation or has started less than 6 months ago
		Economic viability is expected in terms of CER sales
ii) Positiveness of the project proponent	Favored	Positive feedback from project proponent is give (High priority is placed on the project of Category 2 & 3 in A.2).
iii) Necessity of support by the JICA Expert Team.	Favored	Project proponents have basic levels of understanding of the CDM but require support
iv) High potential of projects	Favored	Similar type of project are expected to be developed

For the portfolio to be balanced, the number of each project category was decided as shown in the next table, 5 projects from Biomass, 5 projects from Small Scale Hydro Power, and 5 projects from other types. This balance was determined because, based on the analysis of the submitted PINs, the top two categories of potential CDM projects in Sri Lanka were Biomass and Mini-hydro power and the other types were very small in number.

Table 2-24: Number of Projects Selected by Category

Category	Approximate Number of Projects To Be Selected	Remarks
Biomass (electricity & thermal)	5	Wood Biomass PoA included
Small scale hydro power	5	
Other types of projects	5	CFL PoA included

The outline of the selected 15 projects are shown below.

Table 2-25: Number of Projects Selected by Category

No	Project Name	Project Developer	Project Type	Original Stage	Current Stage
1	Industrial Fuel Switch by Wood Biomass Programmatic CDM in Sri Lanka	EX Research Institute Ltd.	Biomass (PoA)	Validation	Validation
2	Ansell Biomass Boiler Project in Colombo Sri Lanka	Ansell Lanka	Biomass	PDD	Validation
3	Ampara Small Scale Dendropower CDM project in Sri Lanka	Nature solutions	Biomass	PDD	On hold
4	10MW Biomass Power Project at Tunkama, Embilipitiya with plantation development	Nelson Nagasinghe Lanka Bio Energies (Pvt) Ltd (Chinese collaborators)	Biomass	PDD	PDD
5	MAS Holdings Bundle	MAS Holdings	Biomass	PIN	PIN
6	Kithulgala Small Scale Hydropower Project	Vallibel Lanka Pvt. Ltd.	Hydro	PDD	Validation
7	Kiriwan Eliya MHP	Country Energy Pvt. Ltd.	Hydro	PIN	PIN
8	Kirkoswald Small Scale Hydro Power CDM Project	Bogo Power	Hydro	PDD	PDD
9	Ethamalla Small Scale Hydropower CDM project in Sri Lanka	Vidullanka Plc	Hydro	Validation	Validation
10	CFL distribution project	J-power	Energy Efficiency (PoA)	draft PDD	draft PDD
11	Installation of energy efficient pumping systems	Water Supply Drainage & Board (SEA involved as well)	Energy Efficiency (PoA)	PIN draft	PIN draft
12	Forced Methane Extractions From Organic Wastewaters & Power Generations	Greenergy Power Pvt Ltd.	Biogas	PDD	Validation
13	Avoidance of methane production through composting	Anoma Agro Based Products Pvt. Ltd.	Composting	PDD	Validation
14	Landfill gas CDM project	Waste Management Authority	Composting (PoA)	Idea stage	PIN?
15	Mampuri Wind Power Project	Senok Wind Power (Pvt) Ltd	Wind	Validation	Validation

2 Avoidance of methane production through composting

DESCRIPTIONS

This project aims to achieve GHG emission reduction and to improve waste treatment system of a sugar industry by producing compost utilizing organic agricultural waste (81,000 ton/y of sugar cane trash and 13,500 ton/y of distillery treated spent wash) generated from the industry.

CURRENT STATUS

CDM Status: Validation
Host country approval: 5-Jan-09
Operational status: Ongoing

ESTIMATED EMISSION REDUCTIONS

40,483 tCO2/year

PROJECT PARTICIPANTS

Aroma Agro Based Products (Pvt) Ltd
Research & Development International Consultants (Pvt.) Ltd.

PROJECT BENEFITS

Conserve national resources by use of agricultural waste fertilizer
Reduce the environmental impact due to unmanaged agricultural waste disposal
Reduce outflow of foreign currency through replacement of chemical fertilizer by compost

KEY PROJECT INFORMATION

Project category: Methane avoidance/recovery/utiliz
CDM project start date: 01/03/2008
Operation start date: 15-Nov-10
Crediting period: 7yrs (with renewal up to 21yrs
Initial Cost: USD 1.2Million
Source of finance: To be confirmed
CER negotiation To be confirmed

OTHER INFORMATION

Contacts

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Colombo 05, Sri Lanka
Tel: +94-114518331-3
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4 Forced methane extraction from organic wastewater and power generation by Greenergy Power Pvt. Ltd at

DESCRIPTIONS

Sevenagala Sugar Industries Ltd. generates 450 m3 per day of wastewater, know as spent wash, with a COD of approx. 80,000 ppm. This project activity diverts the water treatment system at the factory from the existing open anaerobic lagoon to closed anaerobic treatment system. The methane captured displaces furnace oil currently used for steam generation at boiler.

CURRENT STATUS

CDM Status: Validation
Host country approval: 24-Nov-08
Operational status: Ongoing

ESTIMATED EMISSION REDUCTIONS

38,792 tCO2/year

PROJECT PARTICIPANTS

Greenergy Power (Pvt) Ltd.
Research & Development International Consultants Pvt Ltd

PROJECT BENEFITS

Generate renewable energy (reduce dependence on import fuel, reduce outflow of foreign currency)
Increase employment opportunities
Reduce pollution including odor problem through introduction of energy saving technology

KEY PROJECT INFORMATION

Project category: Methane avoidance/recovery/utiliz
CDM project start date: 08/03/2008
Operation start date: 15-Dec-10
Crediting period: 7yrs (with renewal up to 21yrs
Initial Cost: USD 1.7Million
Source of finance: To be confirmed
CER negotiation To be confirmed

OTHER INFORMATION

Contacts

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No.04, E.D. Dabare Mawatha,
Narahenpita, Colombo 05, Sri Lanka
Tel: +94-114518331-3
Email: researchdeve@sltnet.lk

5 Ansell Biomass Boiler Project in Colombo Sri Lanka

DESCRIPTIONS

The project activity intends to mitigate GHG emissions from the exiting fossil fuel fired boilers by installing a new biomass boiler. It involves the installation of a new 10.5MW biomass-fired hot water generating boiler that will be fired by renewable biomass instead of Heavy Fuel Oil (HFO).

▸CURRENT STATUS

CDM Status: Validation
Host country approval: 0-Jan-00
Operational status: Ongoing

▸ESTIMATED EMISSION REDUCTIONS

17,423 tCO2/year

▸PROJECT PARTICIPANTS

Ansell Lanka (Pvt) Ltd

▸KEY PROJECT INFORMATION

Project category: Biomass
CDM project start date: 01/01/2011
Operation start date: Mid 2010 Expected
Crediting period: 7yrs (with renewal up to 21yrs
Initial Cost: USD 2.08 Million
Source of finance: -
CER negotiation -

▸OTHER INFORMATION

▸PROJECT BENEFITS

Generate renewable energy (reduce dependence on import fuel, reduce outflow of foreign currency)
Increase employment opportunities
Reduce air pollutant emissions (NOx & SOx)

Contacts

Mr.Rodzali Abdul Raman
Ansell Lanka (Pvt) Ltd.
Biyagama Export Processing Zone
Colombo, Sri Lanka
Tel:
Fax:
Email:

25 Programmatic CDM of Biomass (Gliricidia) Utilisation for Thermal Energy to Be Used at Industrial Facilities

DESCRIPTIONS

This programmatic CDM project aims to use collected wood chips of Gliricidia (Gliricidia sepium), a fast growing tree, and use it as a source of industrial heat under the framework of Programmatic CDM as an alternate to fossil fuel (furnace oil, diesel) and in addition to reduction of GHG and co benefits resulting from the prevention of atmospheric pollution, contribute to self reliance in terms of energy and development of rural villages and areas in Sri Lanka.

▸CURRENT STATUS

CDM Status: Validation
Host country approval: -
Operational status: Ongoing

▸ESTIMATED EMISSION REDUCTIONS

13,000 tCO2/year

▸PROJECT PARTICIPANTS

Biomass Energy Association,
EX Corporation

▸KEY PROJECT INFORMATION

Project category: Biomass
CDM project start date: 01/05/2011
Operation start date: -
Crediting period: 10 years
Initial Cost: -
Source of finance: Planning
CER negotiation Searching for a potential buyer

▸OTHER INFORMATION

▸PROJECT BENEFITS

- Reduction of fossil fuel use
- Reduction of air pollutants generated by fossil fuel combustion
- Income generation of farmers by selling wood chips to factories

Contacts

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29 CFL Programmatic CDM

DESCRIPTIONS

This is a programmatic CDM to replace conventional lighting bulb which consumed a lot of electricity into energy efficient lighting (CFL). This programmatic CDM is developed under JICA technical transfer project under collaboration between the Sustainable Energy Authority and J-Power.

▸CURRENT STATUS

CDM Status: PDD
Host country approval: -
Operational status: Ongoing

▸ESTIMATED EMISSION REDUCTIONS

- tCO2/year

▸PROJECT PARTICIPANTS

J-Power

▸PROJECT BENEFITS

- Reduction of fossil fuel consumption
- Energy cost saving for the electricity consumers

▸KEY PROJECT INFORMATION

Project category: Energy efficiency
CDM project start date: -
Operation start date: -
Crediting period: -
Initial Cost: -
Source of finance: -
CER negotiation -

▸OTHER INFORMATION

Contacts

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37 Kirkoswald Small Scale Hydro Power CDM Project

DESCRIPTIONS

4MW run of the river hydropower plant at Kirokoswald in Nuwara Eliya. The estimated output is 12.26GWh, which will be exported to the national grid

▸CURRENT STATUS

CDM Status: PIN
Host country approval: -
Operational status: Ongoing

▸ESTIMATED EMISSION REDUCTIONS

9,419 tCO2/year

▸PROJECT PARTICIPANTS

Bogo Power Pvt. Ltd.

▸PROJECT BENEFITS

- Supply of electricity to national grid
- Displacement of fossil fuel
- Provides additional empolyment

▸KEY PROJECT INFORMATION

Project category: Hydro power
CDM project start date: Jun 2009(date of proposal
Operation start date: Depends on datte of CDM
Crediting period: 7yrs (with renewal up to 21yrs
Initial Cost: USD7.39million (LKR850million)
Source of finance: Planning
CER negotiation Searching for a potential buyer

▸OTHER INFORMATION

Contacts

Dr. Abdul Gaffar
Mr. Chrysanth Jesuthasan
Bogo Power Pvt Ltd
833 Srimavo Bandaranaike Mawatha
Sri Lanka
Tel: +94-112524734
Email: gaff@eureka.lk

38 Kiriwaneliya Mini Hydro Power Project

DESCRIPTIONS

This project aims to generate emission free renewable electricity and will export it to the national grid. As a result, the electricity generated from the project will replace electricity from grid connected fossil fuel based power plants while reducing greenhouse gas emission at these plants.

▸CURRENT STATUS

CDM Status: PDD
Host country approval: 0-Jan-00
Operational status: Ongoing

▸ESTIMATED EMISSION REDUCTIONS

11,900 tCO2/year

▸PROJECT PARTICIPANTS

Bogo Power Pvt. Ltd.

▸PROJECT BENEFITS

Generate renewable energy (reduce dependence on import fuel, reduce outflow of foreign currency)
Improve infrastructure
Increase employment opportunities

▸KEY PROJECT INFORMATION

Project category: Hydro power
CDM project start date: PO : 22 March 2010
Operation start date: Expected in end of October
Crediting period: 10yrs
Initial Cost: LKR 808.80 million
Source of finance: Already identified
CER negotiation Searching for a potential buyer

▸OTHER INFORMATION

The project is expected to register in UNFCCC mid of 2012

Contacts

Mr. Russell De Zilva
Jt. Chief Executive Officer
Alternative Power Systems Pvt. Limited
27-02 East Tower, World Trade Center
Colombo, Sri Lanka
Tel: +94-773635326
E-mail: russell@vallibel.com

43 Kithulgala Small Scale Hydropower CDM Project in Sri Lanka

DESCRIPTIONS

7.3MW run of the river hydropower plant at Kithulaga in Sri Lanka. The total estimated annual output of this small hydropower plant is 28.78GWh per annum which will be exported to the national grid

▸CURRENT STATUS

CDM Status: Validation
Host country approval: 0-Jan-00
Operational status: Ongoing

▸ESTIMATED EMISSION REDUCTIONS

20,765 tCO2/year

▸PROJECT PARTICIPANTS

Kithulgala Hydro Power (Pvt) Ltd.
Vallibel Lanka Pvt. Ltd.
Nature Solutions

▸PROJECT BENEFITS

Generate renewable energy (reduce dependence on import fuel, reduce outflow of foreign currency)
Supply of electricity to national grid

▸KEY PROJECT INFORMATION

Project category: Hydro power
CDM project start date: Expected date of civil
Operation start date: Expected date of
Crediting period: 7yrs (with renewal up to 21yrs
Initial Cost: LKR 1721 Milliion
Source of finance: To be confirmed
CER negotiation Searching for a potential buyer

▸OTHER INFORMATION

Contacts

Mr.Aruna Dheerasinghe
Kithulgala Hydro Power (Pvt.) Ltd.
27/2, East Tower, World Trade Centre
Colombo 01, Sri Lanka
Tel: +94-112381111
Fax: +94-112381115
Email: aruna@vallibel.com

51 Ampara Small Scale Dendropower CDM project in Sri Lanka

DESCRIPTIONS

It is proposed to install 10MW dendro(biomass) power plant at Ampara. The estimated annual output of this small dendropower plant is 70.08GWh which will be exported to the National grid

CURRENT STATUS

CDM Status: PDD
Host country approval: -
Operational status: Halt

ESTIMATED EMISSION REDUCTIONS

53,653 tCO2/year

PROJECT PARTICIPANTS

Nature Solutions Pvt. Ltd.

KEY PROJECT INFORMATION

Project category: Biomass
CDM project start date: 2012
Operation start date: 2012
Crediting period: -
Initial Cost: USD 20 Million
Source of finance: -
CER negotiation No activity

OTHER INFORMATION

PROJECT BENEFITS

New employment towards the surrounding communities who are engaged in planting fuel wood, harvesting them and suppliying to the factories.

Contacts

Ms. Thamali Jayawickrama
Narute Solutions
Tel: +94-112823970
Fax: +94-112823970
Email: info@naturesolutions,org

60 Ethamalla Small Scale Hydropower CDM project in Sri Lanka

DESCRIPTIONS

3 run of river hydropower plants at Gantuna Udagama (1.2MW), Ethamalla (2.0MW) and sheen (0.56MW). The combined estimated output of these three small hydropower plants is 13,715 GWH annually which will be exported to the National Grid

CURRENT STATUS

CDM Status: Validation
Host country approval: 3-Dec-08
Operational status: Ongoing

ESTIMATED EMISSION REDUCTIONS

10,530 tCO2/year

PROJECT PARTICIPANTS

Vidullanka PLC

KEY PROJECT INFORMATION

Project category: Hydro power
CDM project start date: 01/11/2008
Operation start date: Sheen 2008/9/22
Crediting period: 7yrs (with renewal up to 21yrs
Initial Cost: USD 6,70 Million
Source of finance: To be confirmed
CER negotiation Searching for a potential buyer

OTHER INFORMATION

PROJECT BENEFITS

Generate renewable energy (reduce dependence on import fuel, reduce outflow of foreign currency)
Supply of electricity to national grid
Increase employment opportunities

Contacts

Mr.Chamil Suranga Silva
Manager
Vidullanka PLC
278, Union Place,
Level 4, Access Towers,
Colombo 02, Sri Lanka
Tel: +94-773028756, +94-114-4760000

108 Installation of energy effieicnt pumping systems (Programmatic CDM)

DESCRIPTIONS

This programmatic CDM is to replace the existing water pumping stations where the average monthly electrical power consumption is 457MWh, while the maximum demand is 8000 kVA by energy efficient water pumps, which can save approximately 30% of electricity. Project is financed by a bi–lateral loan from kfw, Germany to the National Water Supply & Drainage Board of the Government of Sri Lanka. National Water Supply & Drainage Board is the Cordinating Managing

▸CURRENT STATUS

CDM Status: Project Idea
Host country approval: -
Operational status: -

▸ESTIMATED EMISSION REDUCTIONS

8,200 tCO2/year

▸PROJECT PARTICIPANTS

National Water supply & Drainage Board
(SEA involved as well)

▸PROJECT BENEFITS

- Reduction of cost of water for rural and urban poor in Sri Lanka.
- Increase the water production which enhances the access of water in the Country
- Improved sanitation, enhanced economic & commercial expansions, more employment, higher

▸KEY PROJECT INFORMATION

Project category: Energy efficiency
CDM project start date: 2011
Operation start date: 2011
Crediting period: -
Initial Cost: USD 82.0 million
Source of finance: Already identified
CER negotiation -

▸OTHER INFORMATION

Contacts

Mr. M. Abeysekara (Assistant General Manager)
Tel: +94-773129444
Email: nwsdblog@sltnet.lk

110 10MW Biomass Power Project at Tunkama, Embilipitiya with plantation development

DESCRIPTIONS

10MW Biomass Power Project at Tunkama, Embilipitiya with plantation development

▸CURRENT STATUS

CDM Status: PDD
Host country approval: -
Operational status: Ongoing

▸ESTIMATED EMISSION REDUCTIONS

60,000 tCO2/year

▸PROJECT PARTICIPANTS

Nelson Nagasinghe
Lanka Bio Energies (Pvt) Ltd
Chinese collaborators

▸PROJECT BENEFITS

-

▸KEY PROJECT INFORMATION

Project category: Biomass
CDM project start date: 01/08/2011
Operation start date: 1-Aug-11
Crediting period: -
Initial Cost: USD 14 million
Source of finance: -
CER negotiation Searching for a potential buyer

▸OTHER INFORMATION

Contacts

Nelson Nagasinghe
Faxiang Lanka Bio Energies (Pvt) Ltd.
Tel: '+94-(0)2907831
Fax: +94-(0)2905196
Email: bioenergies@sltnet.lk

111 MAS Holdings-Bundle

DESCRIPTIONS

Biomass project switching from furnance oil to generate steam at several facilities. We have so far identified 5 small scale projects within the group. A) Noyon Lanka Pvt. Ltd., B) Stretchline Holdings (2projects), C) Linea Intimo, D) MAS Fabric Park

CURRENT STATUS

CDM Status: PIN
Host country approval: -
Operational status: Ongoing

ESTIMATED EMISSION REDUCTIONS

18,000 tCO2/year

PROJECT PARTICIPANTS

Noyon Lanka (Pvt) Ltd.
MAS Holdings Pvt. Ltd.

PROJECT BENEFITS

· Reduced emissions foot print
· Align with MAS group sustainability strategy

KEY PROJECT INFORMATION

Project category: Biomass
CDM project start date: 19/01/2010
Operation start date: -
Crediting period: -
Initial Cost: USD1million
Source of finance: -
CER negotiation Searching for a potential buyer

OTHER INFORMATION

Contacts

Shehani Gomes
Mas Holdings (Pvt) Ltd.
Tel: +94-777588823
Fax: +94-114762222
Email: sheanig@masholdings.com

116 Mampuri Wind Power Project

DESCRIPTIONS

This CDM project aims to generate electricity through wind mill of 10 MW capacity using 8 wind turbines, each rated at 1.25 MW. The power plant is expected to generate 27.6 GWh per year. Electricity produced will be sold to Ceylon Electricity Board (CEB), the national electricity utility, through dedicated transmission line.

CURRENT STATUS

CDM Status: Validation
Host country approval: 4-May-09
Operational status: Ongoing

ESTIMATED EMISSION REDUCTIONS

18,767 tCO2/year

PROJECT PARTICIPANTS

Senok Wind Power (Pvt) Ltd

PROJECT BENEFITS

Supply of electricity to national grid (27.6 GWh/year)
Develop the local infrastructure (roads, social facilities, health and recreation facilities)

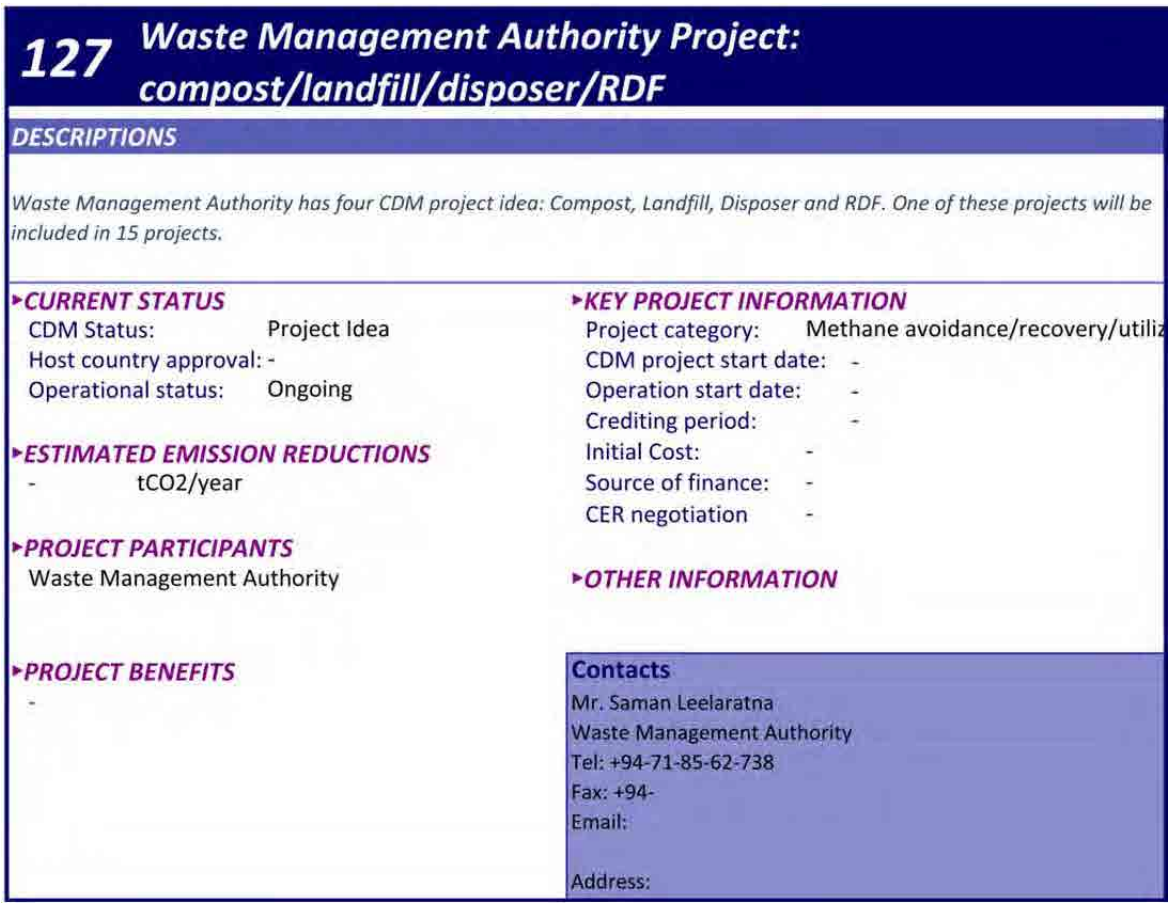
KEY PROJECT INFORMATION

Project category: Wind power
CDM project start date: 05/06/2010
Operation start date: 23-Aug-08
Crediting period: 7yrs (with renewal up to 21yrs
Initial Cost: USD20.8million
Source of finance: -
CER negotiation Searching for a potential buyer

OTHER INFORMATION

Contacts

Mrs Pancherine Dias
Senok Wind Power (Pvt) Ltd.
No 3, R A de Mel Mawatha
Colombo 5, Sri Lanka.
Tel: +94-11- 259 3343
Fax: +94-11- 258 0022
Email: dias@senoksl.com



127 Waste Management Authority Project: compost/landfill/disposer/RDF

DESCRIPTIONS

Waste Management Authority has four CDM project idea: Compost, Landfill, Disposer and RDF. One of these projects will be included in 15 projects.

CURRENT STATUS

CDM Status: Project Idea
Host country approval: -
Operational status: Ongoing

ESTIMATED EMISSION REDUCTIONS

- tCO2/year

PROJECT PARTICIPANTS

Waste Management Authority

PROJECT BENEFITS

-

KEY PROJECT INFORMATION

Project category: Methane avoidance/recovery/utiliz
CDM project start date: -
Operation start date: -
Crediting period: -
Initial Cost: -
Source of finance: -
CER negotiation -

OTHER INFORMATION

Contacts

Mr. Saman Leelaratna
Waste Management Authority
Tel: +94-71-85-62-738
Fax: +94-
Email:

Address:

2.4.2 Assessment of the Feasibility of Selected CDM Projects

The selected CDM projects were assessed by the JICA Expert Team, local experts and the counterpart team members based on:

(a) Submitted documents including PINs, PDDs and the answers for the questionnaire sent by CCD in June 2010.
(b) Interviews with project proponents

The JICA Expert Team provided the viewpoints and methodologies of feasibility analysis to local experts and counterpart team members for assessment of each selected 15 CDM projects. Analysis result has been reviewed by the JICA Expert Team to provide feedback to the counterpart team members to elaborate the level of feasibility analysis in accordance with the PCDA cycle so that the capacity of CDM project analysis can be strengthened in a step-by-step manner.

The reviewing process includes the following checkpoints:

- Feasibility of the CDM registration
- Baseline assessment
- Additionality assessment

- PDD completeness
- Other concerns/comments from the project proponents
- Feasibility of the project activity
- Track record of the company
- Maturity of the project (planning stage, under construction, started operation)
- Financing status/prospects
- ERPA progress
- CDM Monitoring capability

The result of assessment is in the ANNEX to this Report.

2.4.3 Identification of Issues and Obstacles from Assessment of 15 Projects

The following obstacles and problems were identified through the feasibility assessment of 15 projects.

- Difficulties in demonstrating additionality (especially investment analysis)
- Difficulties in coping with DOE (Designated Operational Entity)
- Taking time in clearing Environmental Impact Assessment (EIA)
- Financing/financial difficulty (CDM development cost)
- Difficulties in finding CER buyers

In addition to the above, following obstacles and problems were identified through interviews with project proponents of other potential CDM projects.

- Lack of knowledge
- Non availability of baseline data (including data required for grid emission factor calculation)
- Lack of data calculating grid emission factor
- Small size of projects

2.4.4 Production of CDM Guidebook

Based on the experiences obtained from all the activities carried out above, JICA Expert Team together with the counterpart team members and local experts produced the CDM Guidebook for project developers in Sri Lanka. The contents of CDM Guidebook are summarized as follows:

- Introduction:

  History of Sri Lanka's efforts in climate change issues and the background of producing the CDM Guidebook is described.

- CDM and Post-Kyoto mechanism under discussion:

  Overview of global GHG emission trend, basic rules and definitions of CDM and current discussions over Post-Kyoto international framework for climate change mitigation are discussed.

- Basic procedure for CDM project development:

  Basic CDM project cycle and key issues in major phase of the cycle are discussed.

- Project formulation guidance by types of climate change mitigation projects (by sector):

  Principle, CDM methodologies, application examples and things to be considered for project planning/ development are discussed by sector (renewable energy, fuel switch/energy efficiency project development, afforestation/reforestation and others).

Detail table of contents of the guidebook is as described in Table 2-26.

Table 2-26: Table of Contents of the Guidebook

1. INTRODUCTION
2. CDM AND POST-KYOTO MECHANISM UNDER DISCUSSION
2.1 Overview of Global GHGs Emissions
2.1.1 Global GHGs emission by types and sectors
2.1.2 Difference in per capita and GDP Emissions among the countries
2.2 CDM and GHGs Emission Reduction Commitment in Kyoto Protocol
2.3 Basic Definition of CDM
2.4 Institutional Mechanism for CDM Project Administration in the UNFCCC
2.5 CDM Project Stakeholders
2.6 Project Types of CDM
2.6.1 Types of GHGs and Emission Sources
2.6.2 Types of CDM Projects defined by CMP
2.7 Development of CDM Project
2.7.1 CDM projects by types
2.7.2 CDM Projects by Countries
2.8 Current Discussions over Post-Kyoto International Framework for Climate Change Mitigation
2.8.1 Key milestones of the negotiation for Post-Kyoto Framework
2.8.2 Remaining Issues for the Decisions in COP 17 (December 2011 at Durban, South Africa)
3. BASIC PROCEDURE FOR CDM PROJECT DEVELOPMENT
3.1 CDM Project Cycle and Parties Involved in The Process
3.2 Key Issues in Major Phase of CDM Project Cycle
3.2.1 Project Inception
3.2.2 PDD Development
3.2.3 Validation
3.2.4 Registration
3.2.5 Verification
4. PROJECT FORMULATION GUIDANCE BY TYPES OF CLIMATE CHANGE MITIGATION PROJECTS (BY SECTOR)
4.1 Renewable Energy
4.1.1 Principle of Emission Reductions
4.1.2 Emission Reduction Calculations
4.1.3 CDM Methodologies
4.1.4 Issues to Be Considered when Planning Renewable Energy Projects
4.1.5 Things to Be Kept in Mind for Renewable Energy Projects
4.2 Fuel Switch/Energy Efficiency Project Development
4.2.1 Introduction
4.2.2 Principle
4.2.3 CDM Methodologies

4.2.4 Application Examples
4.2.5 Things to be kept in mind for Energy Efficiency Projects
4.3 Afforestation/Reforestation
4.3.1 Principles of GHG removal of A/R CDM
4.3.2 A/R CDM eligibility conditions
4.3.3 GHG removal calculation method
4.3.4 New forest carbon sink initiatives
4.3.5 Forest related carbon credit project opportunity in Sri Lanka

2.5 Target 5 Activities: CDM Promotion

The Target 5 activities mainly consist of the following components:

- Establishment, operation, and periodical update of the national CDM website
- CDM training seminars and workshops
- Production of CDM promotion materials (for overall PRs)
- Preparation of CDM promotion materials (for potential CDM project stakeholders)
- CDM promotion seminars in Sri Lanka and counterparts training in Japan

The planned implementation schedule of the Target 5 activities is as illustrated in the table below:

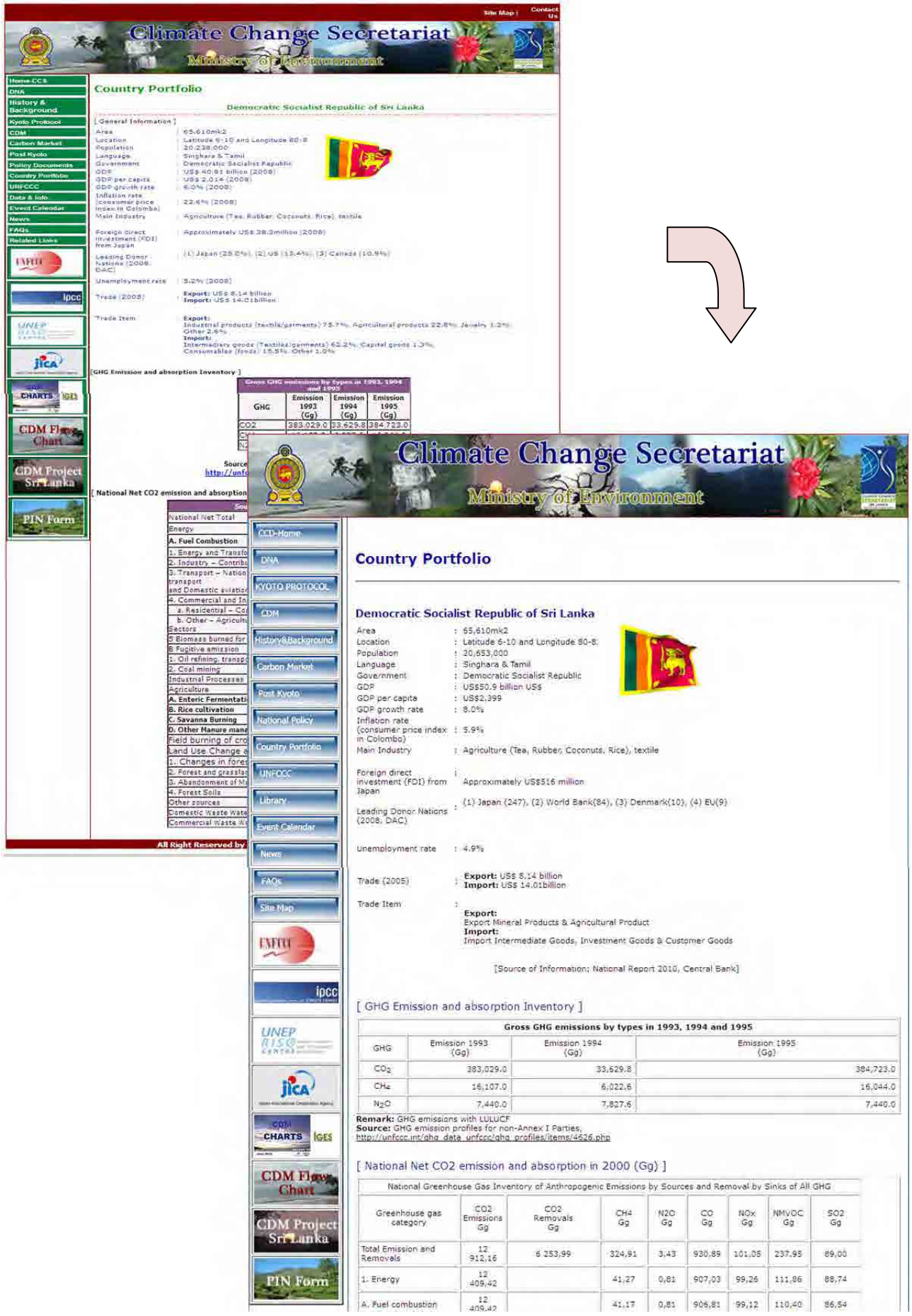
Table 2-27: Implementation Schedule of Target 5 Activities

Target 5: Knowledge base of CDM will be built and strengthened among the relevant stakeholders of CDM projects		**1st FY (2010/11)**												**2nd FY (2011)**						
		4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10
5-1	Initial design of the national CDM website																			
5-2	Operation and periodical update of the website																			
5-3	Workshops and seminars																			
5-4	Preparation of CDM promotion materials (for overall PRs)																			
5-5	Updates and revision of CDM promotion materials																			
5-6	Preparation of CDM promotion materials (for potential CDM stakeholders)																			
5-7	CDM promotion seminar in Sri Lanka																			
5-8	CDM promotion seminar in Japan																			

2.5.1 Establishment, Operation, and periodical update of National CDM Website

Based on the collaborative works between counterpart team members and JICA Expert Team, the National CDM website of Sri Lanka has been officially launched on 30th of June 2010. Since its establishment, the contents of the website are periodically updated based on the discussions between counterpart team members and JICA Expert Team regularly. In June-July period, the website received the first major replenishment,

making the appearance of the site consistent with its parent page, i.e. Climate Change Secretariat page, and contents were updated/ revised. Some of the update/revision of the CDM website are shown below (http://www.climatechange.lk/dna/dna.html).



Climate Change Secretariat
Ministry of Environment

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Related Links

Country Portfolio

Democratic Socialist Republic of Sri Lanka

[General Information]

Area	: 65,610mk2
Location	: Latitude 6-10 and Longitude 80-8
Population	: 20,238,000
Language	: Singhara & Tamil
Government	: Democratic Socialist Republic
GDP	: US$ 40.91 billion (2008)
GDP per capita	: US$ 2,014 (2008)
GDP growth rate	: 6.0% (2008)
Inflation rate (consumer price index in Colombo)	: 22.6% (2008)
Main Industry	: Agriculture (Tea, Rubber, Coconuts, Rice), textile
Foreign direct investment (FDI) from Japan	: Approximately US$ 38.3million (2008)
Leading Donor Nations (2008, DAC)	: (1) Japan (25.0%), (2) US (15.4%), (3) Canada (10.9%)
Unemployment rate	: 5.2% (2008)
Trade (2008)	: **Export:** US$ 8.14 billion **Import:** US$ 14.01billion
Trade Item	: **Export:** Industrial products (textile/garments) 75.7%, Agricultural products 22.8%, Jewelry 1.2%, Other 2.6% **Import:** Intermediary goods (Textiles/garments) 62.2%, Capital goods 13%, Consumables (foods) 15.5%, Other 1.0%

[GHG Emission and absorption Inventory]

Gross GHG emissions by types in 1993, 1994 and 1995

GHG	Emission 1993 (Gg)	Emission 1994 (Gg)	Emission 1995 (Gg)
CO2	383,029.0	33,629.8	384,723.0

Source
http://unfc

[National Net CO2 emission and absorption

National Net Total
Energy
A. Fuel Combustion
1. Energy and Transfo
2. Industry – Contribu
3. Transport – Nation transport and Domestic aviation
4. Commercial and In
a. Residential – Co
b. Other – Agricultu
Sectors
5 Biomass burned for
B Fugitive emission
1. Oil refining; transpo
2. Coal mining
Industrial Processes
Agriculture
A. Enteric Fermentati
B. Rice cultivation
C. Savanna Burning
D. Other Manure mana
Field burning of cro
Land Use Change a
1. Changes in fores
2. Forest and grassla
3. Abandonment of M
4. Forest Soils
Other sources
Domestic Waste Wate
Commercial Waste Wa

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CDM Flow Chart
CDM Project Sri Lanka
PIN Form

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Country Portfolio

Democratic Socialist Republic of Sri Lanka

Area	: 65,610mk2
Location	: Latitude 6-10 and Longitude 80-8
Population	: 20,653,000
Language	: Singhara & Tamil
Government	: Democratic Socialist Republic
GDP	: US$50.9 billion US$
GDP per capita	: US$2,399
GDP growth rate	: 8.0%
Inflation rate (consumer price index in Colombo)	: 5.9%
Main Industry	: Agriculture (Tea, Rubber, Coconuts, Rice), textile
Foreign direct investment (FDI) from Japan	: Approximately US$516 million
Leading Donor Nations (2008, DAC)	: (1) Japan (247), (2) World Bank(84), (3) Denmark(10), (4) EU(9)
Unemployment rate	: 4.9%
Trade (2005)	: **Export:** US$ 8.14 billion **Import:** US$ 14.01billion
Trade Item	: **Export:** Export Mineral Products & Agricultural Product **Import:** Import Intermediate Goods, Investment Goods & Customer Goods

[Source of Information: National Report 2010, Central Bank]

[GHG Emission and absorption Inventory]

Gross GHG emissions by types in 1993, 1994 and 1995

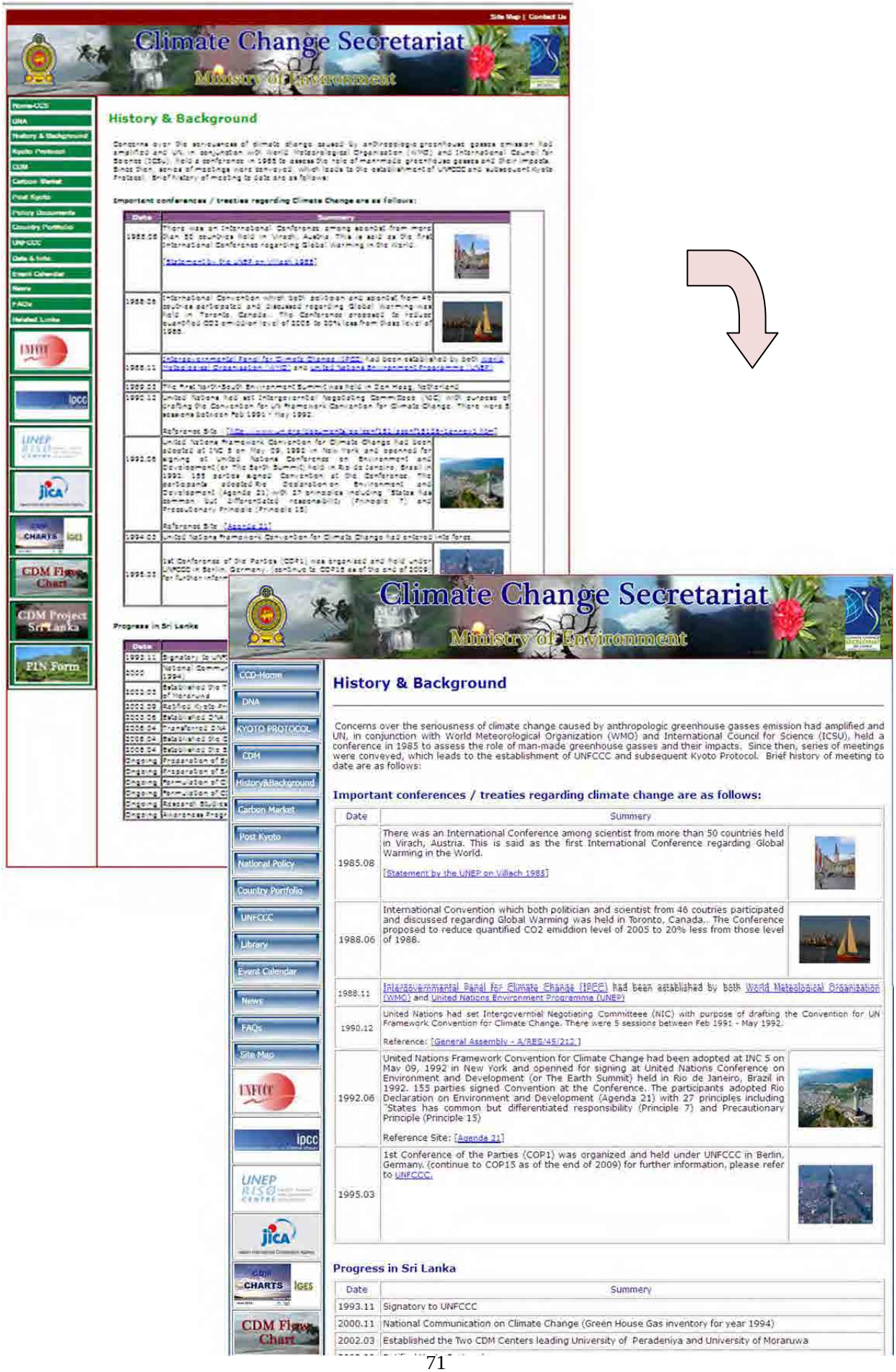
GHG	Emission 1993 (Gg)	Emission 1994 (Gg)	Emission 1995 (Gg)
CO_2	383,029.0	33,629.8	384,723.0
CH_4	16,107.0	6,022.6	16,044.0
N_2O	7,440.0	7,827.6	7,440.0

Remark: GHG emissions with LULUCF
Source: GHG emission profiles for non-Annex I Parties,
http://unfccc.int/ghg_data_unfccc/ghg_profiles/items/4626.php

[National Net CO2 emission and absorption in 2000 (Gg)]

National Greenhouse Gas Inventory of Anthropogenic Emissions by Sources and Removal by Sinks of All GHG

Greenhouse gas category	CO2 Emissions Gg	CO2 Removals Gg	CH4 Gg	N2O Gg	CO Gg	NOx Gg	NMVOC Gg	SO2 Gg
Total Emission and Removals	12 912,16	6 253,99	324,91	3,43	930,89	101,05	237,95	89,00
1. Energy	12 409,42		41,27	0,81	907,03	99,26	111,86	88,74
A. Fuel combustion	12 409,42		41,17	0,81	906,81	99,12	110,40	86,54


Climate Change Secretariat
Ministry of Environment
History & Background
Important conferences / treaties regarding Climate Change are as follows:
Progress in Sri Lanka
CDM Flow Chart
CDM Project Sri Lanka
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Climate Change Secretariat
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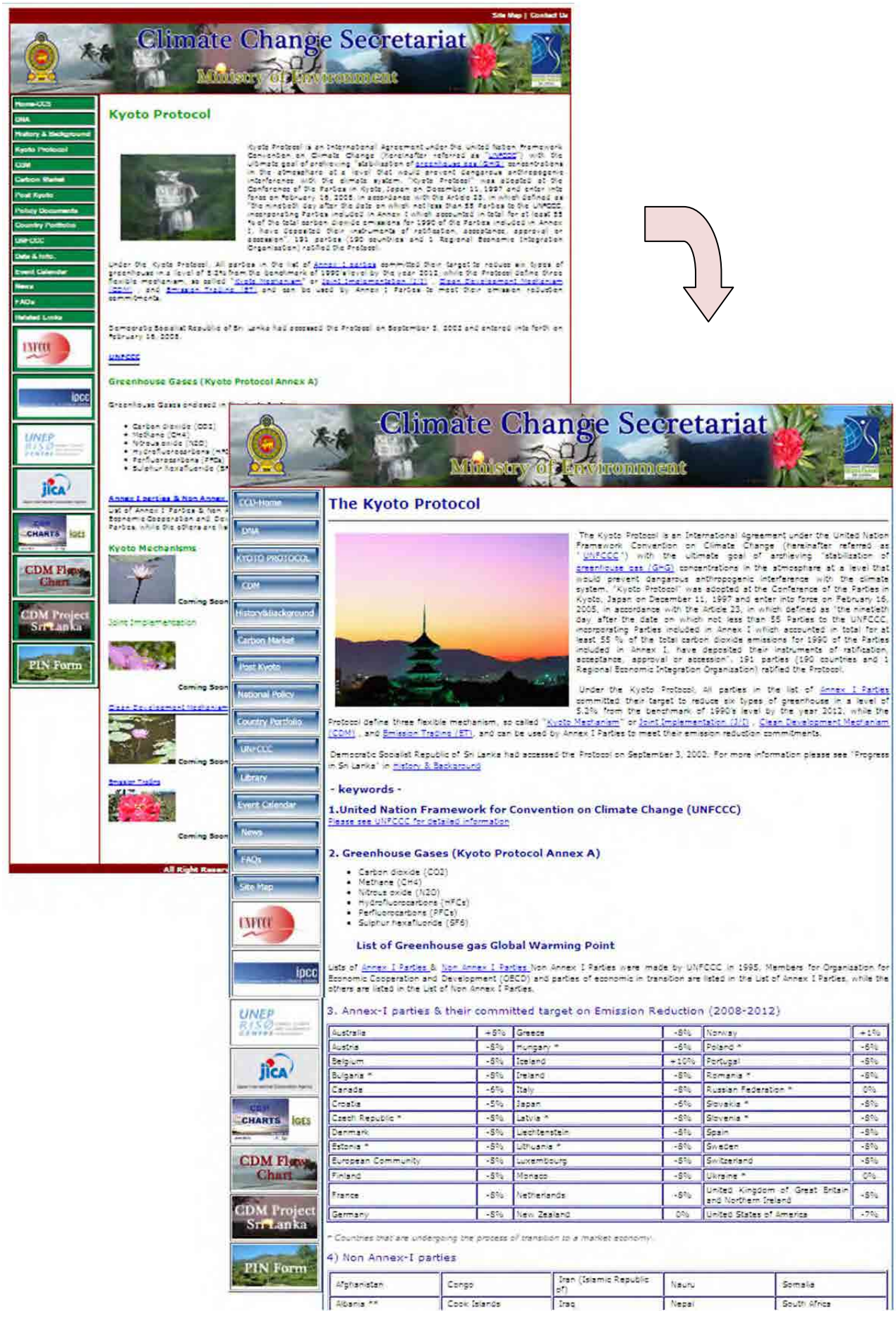
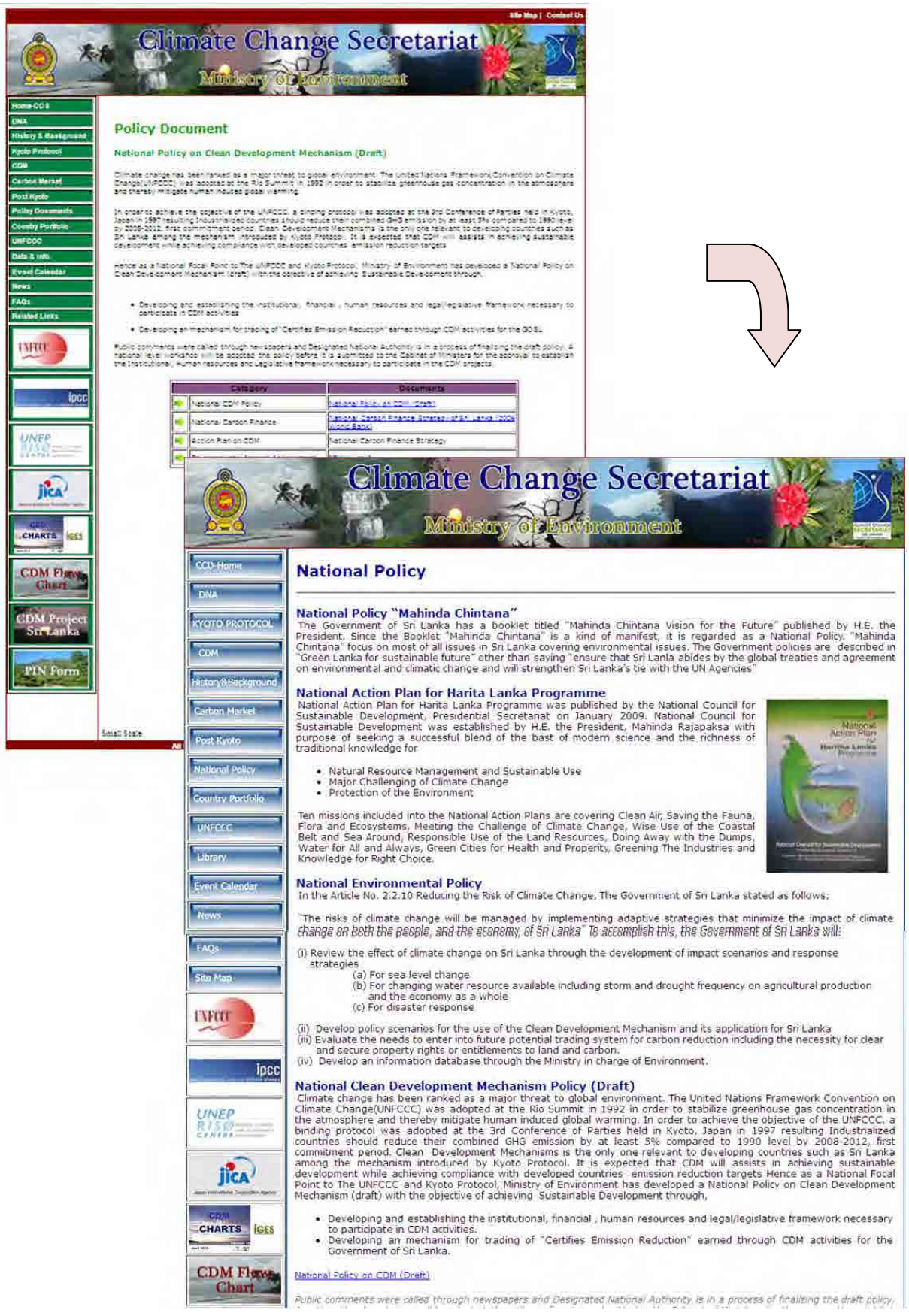
History & Background
Concerns over the seriousness of climate change caused by anthropologic greenhouse gasses emission had amplified and UN, in conjunction with World Meteorological Organization (WMO) and International Council for Science (ICSU), held a conference in 1985 to assess the role of man-made greenhouse gasses and their impacts. Since then, series of meetings were conveyed, which leads to the establishment of UNFCCC and subsequent Kyoto Protocol. Brief history of meeting to date are as follows:
Important conferences / treaties regarding climate change are as follows:
Date
Summery
1985.08
There was an International Conference among scientist from more than 50 countries held in Virach, Austria. This is said as the first International Conference regarding Global Warming in the World.
[Statement by the UNEP on Villach 1985]
1988.06
International Convention which both politician and scientist from 46 coutries participated and discussed regarding Global Warming was held in Toronto, Canada.. The Conference proposed to reduce quantified CO2 emiddion level of 2005 to 20% less from those level of 1988.
1988.11
Intergovernmental Panel for Climate Change (IPCC) had been established by both World Meteorological Organization (WMO) and United Nations Environment Programme (UNEP)
1990.12
United Nations had set Intergoverntial Negotiating Committeee (NIC) with purpose of drafting the Convention for UN Framework Convention for Climate Change. There were 5 sessions between Feb 1991 - May 1992.
Reference: [General Assembly - A/RES/45/212]
1992.06
United Nations Framework Convention for Climate Change had been adopted at INC 5 on May 09, 1992 in New York and openned for signing at United Nations Conference on Environment and Development (or The Earth Summit) held in Rio de Janeiro, Brazil in 1992. 155 parties signed Convention at the Conference. The participants adopted Rio Declaration on Environment and Development (Agenda 21) with 27 principles including "States has common but differentiated responsibility (Principle 7) and Precautionary Principle (Principle 15)
Reference Site: [Agenda 21]
1995.03
1st Conference of the Parties (COP1) was organized and held under UNFCCC in Berlin, Germany. (continue to COP15 as of the end of 2009) for further information, please refer to UNFCCC.
Progress in Sri Lanka
Date
Summery
1993.11
Signatory to UNFCCC
2000.11
National Communication on Climate Change (Green House Gas inventory for year 1994)
2002.03
Established the Two CDM Centers leading University of Peradeniya and University of Moraruwa


Climate Change Secretariat
Ministry of Environment
Kyoto Protocol
Greenhouse Gases (Kyoto Protocol Annex A)
Climate Change Secretariat
Ministry of Environment
The Kyoto Protocol
- keywords -
1.United Nation Framework for Convention on Climate Change (UNFCCC)
2. Greenhouse Gases (Kyoto Protocol Annex A)
List of Greenhouse gas Global Warming Point
3. Annex-I parties & their committed target on Emission Reduction (2008-2012)
4) Non Annex-I parties


Site Map | Contact Us
Climate Change Secretariat
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History & Background
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National Policy on Clean Development Mechanism (Draft)
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National Carbon Finance
Action Plan on CDM
National Carbon Finance Strategy
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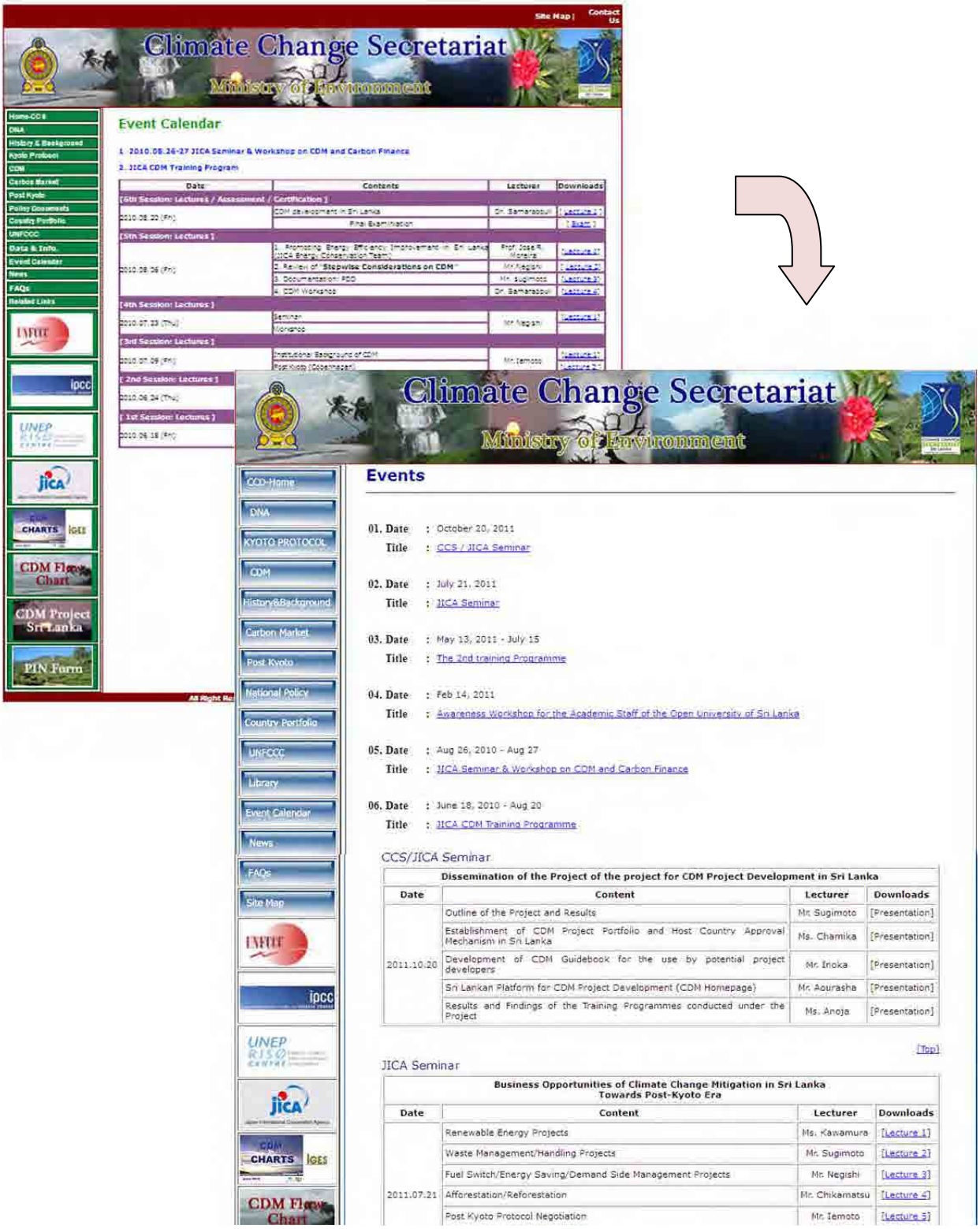
CDM CHARTS IGES
CDM Flow Chart
National Policy
National Policy "Mahinda Chintana"
The Government of Sri Lanka has a booklet titled "Mahinda Chintana Vision for the Future" published by H.E. the President. Since the Booklet "Mahinda Chintana" is a kind of manifest, it is regarded as a National Policy. "Mahinda Chintana" focus on most of all issues in Sri Lanka covering environmental issues. The Government policies are described in "Green Lanka for sustainable future" other than saying "ensure that Sri Lanla abides by the global treaties and agreement on environmental and climatic change and will strengthen Sri Lanka's tie with the UN Agencies"
National Action Plan for Harita Lanka Programme
National Action Plan for Harita Lanka Programme was published by the National Council for Sustainable Development, Presidential Secretariat on January 2009. National Council for Sustainable Development was established by H.E. the President, Mahinda Rajapaksa with purpose of seeking a successful blend of the bast of modern science and the richness of traditional knowledge for
Natural Resource Management and Sustainable Use
Major Challenging of Climate Change
Protection of the Environment
Ten missions included into the National Action Plans are covering Clean Air, Saving the Fauna, Flora and Ecosystems, Meeting the Challenge of Climate Change, Wise Use of the Coastal Belt and Sea Around, Responsible Use of the Land Resources, Doing Away with the Dumps, Water for All and Always, Green Cities for Health and Property, Greening The Industries and Knowledge for Right Choice.
National Environmental Policy
In the Article No. 2.2.10 Reducing the Risk of Climate Change, The Government of Sri Lanka stated as follows;
"The risks of climate change will be managed by implementing adaptive strategies that minimize the impact of climate change on both the people, and the economy, of Sri Lanka" To accomplish this, the Government of Sri Lanka will:
(i) Review the effect of climate change on Sri Lanka through the development of impact scenarios and response strategies
(a) For sea level change
(b) For changing water resource available including storm and drought frequency on agricultural production and the economy as a whole
(c) For disaster response
(ii) Develop policy scenarios for the use of the Clean Development Mechanism and its application for Sri Lanka
(iii) Evaluate the needs to enter into future potential trading system for carbon reduction including the necessity for clear and secure property rights or entitlements to land and carbon.
(iv) Develop an information database through the Ministry in charge of Environment.
National Clean Development Mechanism Policy (Draft)
Climate change has been ranked as a major threat to global environment. The United Nations Framework Convention on Climate Change(UNFCCC) was adopted at the Rio Summit in 1992 in order to stabilize greenhouse gas concentration in the atmosphere and thereby mitigate human induced global warming. In order to achieve the objective of the UNFCCC, a binding protocol was adopted at the 3rd Conference of Parties held in Kyoto, Japan in 1997 resulting Industrialized countries should reduce their combined GHG emission by at least 5% compared to 1990 level by 2008-2012, first commitment period. Clean Development Mechanisms is the only one relevant to developing countries such as Sri Lanka among the mechanism introduced by Kyoto Protocol. It is expected that CDM will assists in achieving sustainable development while achieving compliance with developed countries emission reduction targets Hence as a National Focal Point to The UNFCCC and Kyoto Protocol, Ministry of Environment has developed a National Policy on Clean Development Mechanism (draft) with the objective of achieving Sustainable Development through,
Developing and establishing the institutional, financial , human resources and legal/legislative framework necessary to participate in CDM activities.
Developing an mechanism for trading of "Certifies Emission Reduction" earned through CDM activities for the Government of Sri Lanka.
National Policy on CDM (Draft)
Public comments were called through newspapers and Designated National Authority is in a process of finalizing the draft policy.

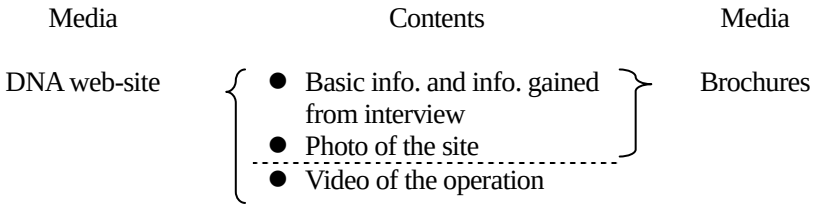


All the content and links, both internal and external, are carefully checked and revised/corrected where necessary. In addition, 'Specification of Website for National Designated Authority of Sri Lanka (Ver.01)' was prepared. This document include following:

1. Objectives, Policy & Strategy 1-1. Objectives 1-2. Policy & Strategy
2. Details of CCD's Existing Website (as of April, 2010) 2-1. Environment 2-2. Site Map 2-2. Contents
3. Specification of CCD's web-pages (ver.01-02 as of Feb, 2011) 3-1. Structure 3-2. Contents 3-3. Function 3-4. Design
4. Architecture 4-1. Hardware for website creation 4-2. Source/Data Management 4-3. Network
5. Creation, Operation & Maintenance 5-1. CCD's Organization & Responsibility for each member of staff 5-2. Creation 5-3. Operation 5-4. Maintenance
6. Attachment 1) Specification of CCD's web-pages (ver.01-02 as of May, 2010) 2) Sample of Check Sheet

2.5.2 Production of CDM Promotion materials (for overall PRs)

In order to produce CDM promotion materials, the counterpart team members and JICA Expert Team conducted interviews and visited CDM project sites that have already been registered and/or started their operations. These promotion materials are in written, photo, and video format and intended for potential project proponents. Information included in the promotion materials are basic project information as well as hands-on experience of the CDM project development, which cannot be found in PDD or other documents.



The projects interviewed/visited were selected based upon maturity and types of CDM.

Table 2-28 List of Project for Promotion Material

	Title	Project Proponent	Location	Type	Status	Visited date
1	Biomass Projects	Lalan Rubber	Biyagama	Biomass	Not for CDM	May 5, 2011

		Pvt.Ltd.			(VCS)	
2	Replacement of fossil fuel fired boilers with bio mass at Hayleys MGT Knitting Mills PLC,	Hayleys MGT Knitting Mills PLC	Narathupana	Bio mass	Validation	May 9, 2011
3	Mampuri Wind Power Project	Senok Wind Power (Private) Limited	Puttalam	Wind	Validation	May16, 2011
4	Community based composting project	Kaduwela Municipality	Kaduwela	Compo-sting	Validation	Sept. 2, 2001
5	Coconut shell charcoaling and power generation at Badalgama	Recogen Ltd.	Badalgama	Bio mass	Registered	Phone Interview

The activity was conducted from early May to early September 2011 and the promotion materials and uploaded on the web and printed as a brochures.

2.5.3 Preparation of CDM promotion materials (for potential CDM project stakeholders)

In parallel to producing CDM promotion materials for general public, counterpart member and JET also prepared a promotion material for potential CDM project stakeholders. This promotion material were prepared taking in to account the followings:

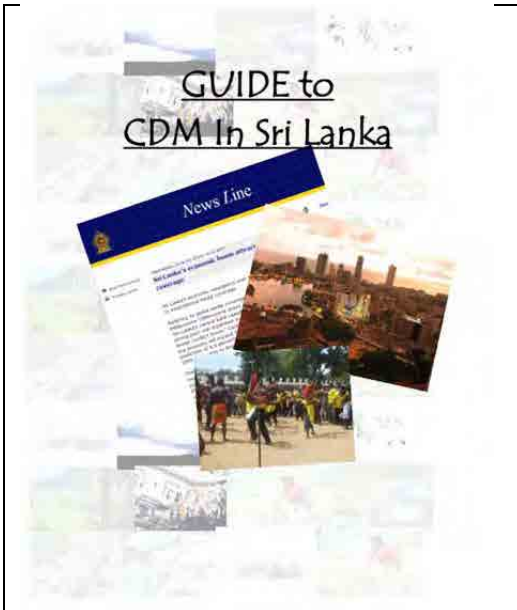
- Simple but covers minimum required data & information both for domestic CDM proponents and potential CER buyers shall be provided.
- Our message shall be reached to as many the targeted parties as possible.
- Excellent Design, Pictures & Exact Wordings

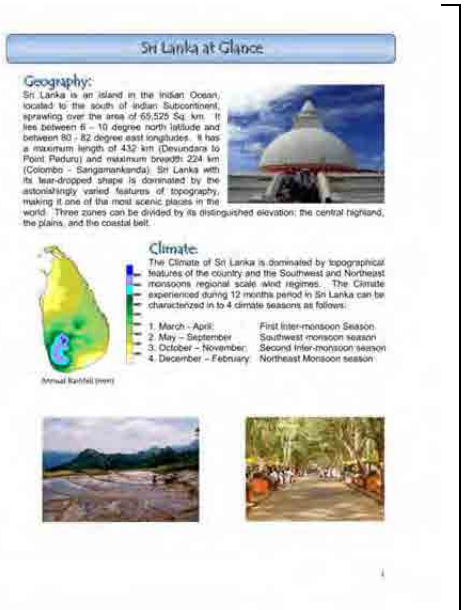
The content of the Promotion Materials include:

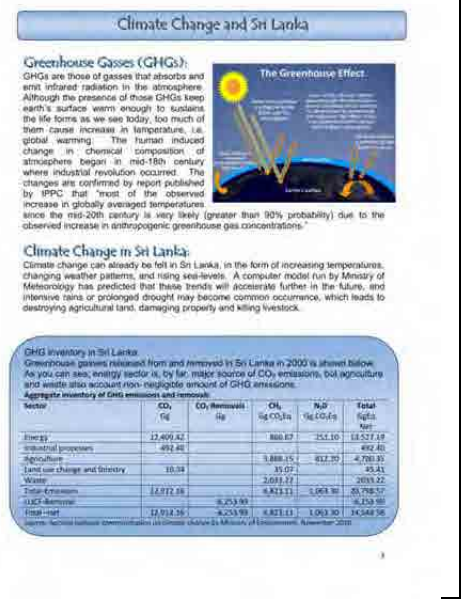
1. Sri Lanka at Glance
   - Geography
   - Climate
2. What are the actions taken against global warming?
   - In International Community
   - In Sri Lanka
3. Climate Change and Sri Lanka
   - Greenhouse Gasses (GHGs)
   - Climate Change in Sri Lanka
4. How Sri Lankan Government tackling against global warming
   - Climate Change Secretariat, Ministry of Environment
   - Climate Change Division (CCD)
   - CDM Development in Sri Lanka

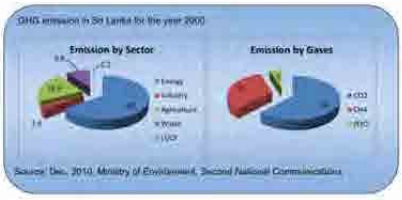
5. Introduction of Mitigation Actions in Sri Lanka
6. Future Perspective for CDM Projects
7. Contact Information

Following shows some of the pages from the produced CDM promotion material for potential CDM stakeholders:









How Sri Lankan Government tackling against global warming

Sri Lanka Government has realized the importance of contributing to the global efforts to reduce global warming and taking adaptation measures to minimize the adverse effects arising out of global warming. Some of the key actions taken by SL government in this regard are,

- Formulating **National Policies** to actively encourage mitigation and adaptation. These involve incorporating environment protection, mitigation, and adaption concepts. Some of the key policies for combating global warming are:

Policies	Date
• National Policy on CDM	Mar. 2011
• National Environment Policy 2003	2003
• National Climate Change Policy	

- Establishment of **National Action Plan** Haritha Lanka Program, for Sustainable Development which includes short, medium and long term targets scanning the period 2009-2016. The main thrust areas covered under those programs are Clean Air-everywhere, Saving the Fauna, Flora and Ecosystem, Meeting the Challenges of Climate Change, wise use of Coastal Belt and Sea Around, responsible use of

Land Resources, Doing Away a with the Dumps, Water for all and Always, Green Cities for Health and Prosperity, Greening the industries knowledge of Civil rights. Another action plan directly related to climate change is:

Policies	Date
• National Climate Change Adaptation Strategy for Sri Lanka 2011-2016	Nov 2010

- **Establishment and development of Institutions** such as climate change secretariat and Sustainable Energy Authority to develop renewable energy and energy efficiencies projects and activities to enable the government implement policy and contribute to the mitigation and adaptation efforts. As mitigation action SEA is engaged in promoting ESCOs, energy labeling schemes, Energy efficient building , energy management schemes, energy reporting and benchmarking
- Further, through SEA the government has taken the following **initiatives** to promote investments in Renewable Energy Projects.
  - 10% of the energy required to be NCRE by 2015.
  - *Introduce four medium scale hydro plants*
  - *Introduction of LNG based CCGT plants*
  - Demand side management to increase the use of CFL bulbs which is expected to bring about a reduction of 114 ...tCO2
- Through **adoption of Kyoto Protocol** in 2002 Sri Lankan has also committed to participate in CDM. This process has encourages Sri Lankan investors to develop GHG mitigation projects and generate foreign currency earnings. This has enabled Sri Lankan an opportunity to investments in renewable energy technology and project and to benefit by transfer of technology in the energy sector.
- Other **co-benefits** derived out of mitigation actions in Sri Lanka are reducing air pollution, Reduce dependency on fossil fuel and thus import of oil, Better conservation methods, Better land use, Increased productivity in the agriculture production, Lower health expenditure, Resilience to natural disaster

Climate Change Secretariat, Ministry of Environment

Climate Change Division (CCD):

Ministry of Environment (MOE) has been determined as Designated National Authority (DNA) of Kyoto Protocol. As a working body of DNA, Climate Change Division (CCD) of MOE performs; 1) Evaluation & Approval of CDM project, 2) Capacity Development foe CDM Project Development and 3) CDM Market. Details each of these tasks are given below.

1) Evaluation & Approval
   (1) Adaptation of International Criteria
   (2) Development of National Criteria
   (3) Establish Guidelines for the CDM Project Development
   (4) Establish National Procedure for Evaluation & Approval of CDM Project(s)
2) Capacity Development for CDM Project Development
   (1) To identify and formulate project(s)
   (2) To definite Baseline
   (3) To quantify Emission Reduction(s)
   (4) To monitor project(s)' performance
3) CDM Market Promotion
   (1) Developing portfolio that contains reliable information and data
   (2) Providing technical input for identification, formulation and development of CDM project(s) & baseline of the CDM project in Sri Lanka
   (3) Providing carbon market information
   (4) Supporting generation of cost effective CERs with maximum quantity

CDM Development in Sri Lanka:

A proponent for the CDM project in Sri Lanka should look into the following **Criteania** if his/her project comply with one or more conditions shown below

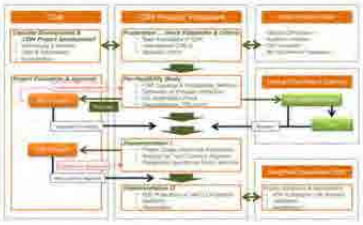
Economical Criteria:
- Improving quality of life
- Alleviation of poverty
- Improvement of equity

Social Criteria:
- Participation of the Community

Technological Criteria
- Transfer of appropriate technology include know-how and method

Environmental Criteria
- Conservation of natural resources
- Sustainable use of land
- Contribution to the GHG reduction

Procedure for CDM in Sri Lanka can be surmised as below.



Introduction of Mitigation Actions in Sri Lanka

Sri Lanka has already 7 registered projects under UNFCCC and various other projects are underway. Following the list of registered project, some of the representative mitigation projects in Sri Lanka are shown.

Registered	Title	Parties	Methodology	Reductions*
30 Oct 05	Magal Ganga Small Hydropower Project	Netherlands	AMS-I.D. ver. 5	34,179
28 Mar 09	Coconut shell charcoaling and power generation at Battalgama, Sri Lanka	Japan	AMS-III.K. ver. 3 AMS-I.D. ver. 13	43,265
24 Aug 10	Adavikanda, Kuruwita Division Mini Hydro Power Project	Japan	AMS-I.D. ver. 13	13,484
30 Oct 05	Small Hydropower Projects at Aluporia and Badulu Oya	Netherlands	AMS-I.D. ver. 5	25,109
28 Oct 09	10 MW Biomass Power Generation Project - Tokyo Cement, Trincomalee	Japan	AMS-I.D. ver. 13	43,600
30 Oct 05	Hapugastenna and Hulu Ganga Small Hydropower Projects	Netherlands	AMS-I.D. ver. 5	44,842
11 Dec 06	Sangshar and Delta Small Hydro Power Projects	Switzerland	AMS-I.D. ver. 9	5,469

* Estimated emission reductions in metric tonnes of CO_2 equivalent per annum (as stated by the project participant).
Source: http://cdm.unfccc.int/Projects/projsearch.html

Renewable Energy (Mini-hydro)
Adavikanda, Kuruwita Division Mini Hydro Power Project

Amount of CO_2 Reduced 13,484 ton / yr

Company Name	Alternate Power Systems (Pvt.) Ltd.
Location	Kuruwita Division, Ratnapura District
Sector	Energy (renewable / non-renewable sources)
Products	Generation of Electricity
GHG Emission Reduction by	Hydropower Technology

About Adavikanda Mini Hydro Power Project

Alternate Power Systems (Pvt.) Ltd. is constructing a run-of-river 6.5 MW mini hydro power plant in Sri Lanka. The project activity involves generation of electricity from a small-scale hydropower plant and supply of power generated to the Sri Lankan national utility grid which is Ceylon Electricity Board. The proposed project is expected to generate electricity of 19.83 GWh /year at a PLF of 35%. As 59.6% of the country's power requirement came from Thermal Energy in 2008, operation of this small hydropower plant will result in a displacement of electricity from thermal power stations. The project is run of the river type, hence minimal storage is required at the weir.

Renewable Energy (Biomass: Saw Dust & Gliricidia)
Hayleys Mgt Knitting Mills PLC

Amount of CO2 Reduced 25,609 ton / yr

Company Name	Hayleys MGT Knitting Mills PLC
Location	Nartnupana Estate, Nebodda
Sector	Manufacturing
Products	Knitted fabric
GHG Emission Reduction by	Biomass boiler

About the GHG Emission Reduction Measure

The company has successfully reduced the CO_2 emissions by switching two oil furnaces to a biomass burning boiler in September 2010. The boilers are used for generation of dry saturated steam for the process requirements of fabric dyeing machines. Approximately 75-80 MT per day of biomass (woodchips/saw dust) is used. Gliricidia is also used as secondary fuels.

Renewable Energy (Wind Power)
Mampuri Wind Power Project

Amount of CO_2 Reduced 18,771 ton / yr

Company Name	Senok Wind Power (Private) Limited
Location	Mampuri, North Western Province
Sector	Energy
Products	Generation of Electricity
GHG Emission Reduction by	Wind power

About Mampuri Wind Power Project

Mampuri Wind Power Project is located in the general are of the Mampuri village in the North Western Province. It uses the wind energy potential in the North West Coastal belt of Sri Lanka to produce a total of 10MW using eight wind turbines, each rated at 1.25MW. The power plant generates 27.638GWh per year, on the basis of long-term average wind speed at the location. Electricity produced is sold to Ceylon Electricity Board through a dedicated transmission line.

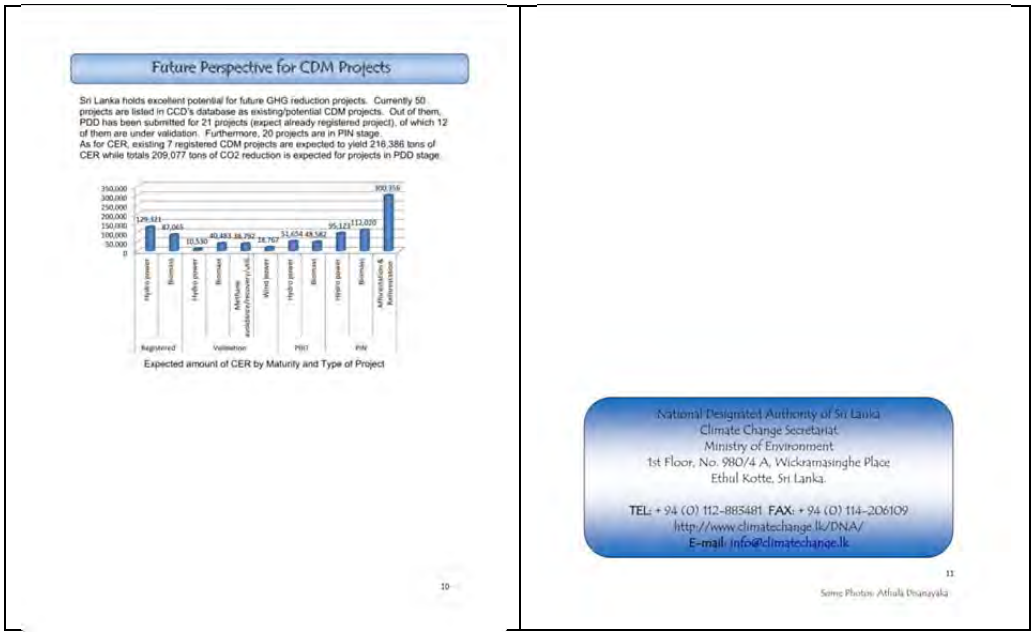
Renewable Energy (Biomass: Saw dust)
Lalan Rubber (Pvt) Ltd - Biyagama Free Industrial Zone

Amount of CO_2 Reduced N/A ton / yr

Company Name	Mapa Lalan (Pvt) Ltd
Location	Biyagama Free Industrial Zone
Sector	Manufacturing
Products	Rubber gloves (for household use)
GHG Emission Reduction by	Biomass boiler

About the Project

Lalan Rubber (Pvt) Ltd is a premier manufacturer and exporter of gloves from Sri Lanka. The company commenced operations in the mid 1940's and grew steadily and moved in to the production of centrifuged latex and manufacturing of gloves during the mid 1980's. The company has successfully reduced the CO2 emissions by switching two oil furnaces to a biomass burning boiler in September 2010. With this project, the company is seeking Voluntary Emission Reduction (VER) credit – a type of carbon credit outside of legally binding framework to assure financial benefit.



2.5.4 CDM promotion seminar in Sri Lanka and counterparts training in Japan

A counterparts training in Japan and CDM promotion seminar in Sri Lanka were held in September – October period.

A. Counterpart Training in Japan

A.1 Outline of the Counterpart Training in Japan

Ten (10) members of counterparts were participated the program which was held in September 25 to October 8. Objectives of the training program are:

1. To promote the potentials and opportunities of climate change mitigation in Sri Lanka to the relevant public and private sector organizations in Japan.
2. To discuss/dialogue with key Japanese government ministries and organizations on the future technical and financial cooperation in climate change mitigation.
3. To visit private companies and organizations in Japan for the learning of climate change mitigation technologies and measures as well as the discussions on the possibility introducing and marketing them in Sri Lanka with their focus on the potential sectors.

In order to achieve above objectives, following organization and facility were visited and discussions were carried out.

Date		Time	Contents	Lectures	Expected outcome	Venue
9/25	Sun		Sri Lanka -> Tokyo			

Date		Time	Contents	Lectures	Expected outcome	Venue
9/26	Mon	9:00-12:00	Orientation	TIC	―	TIC
		13:00-17:00	JICA's assistance on climate change issues	JICA	Output1 Output2	JICA
9/27	Tue	11:00-16:00	Efforts taken and cooperation made on climate change issues by the IGES	The Institute for Global Environmental Strategies (IGES)	Output1 Output2	IGES (Hayama)
9/28	Wed	9:00-12:00	Measures on climate change in Japan	EX Research Institute Ltd. (EXRI)	Output1	EXRI
		14:00-16:00	Measures and effort taken on Climate Change Issues by Overseas Environmental Cooperation Center (OECC)	OECC	Output1 Output2	OECC
9/29	Thu	whole day	Wood biomass utilization facility of Katsuta City / Lecture on biomass utilization	Dr. Shigeo Fuji	Output2 Output3	Katsuta project site
9/30	Fri	9:00-12:00	Measures taken on Climate Change Issues by Tokyo Metropolitan Government	Tokyo Metropolitan Government	Output1 Output2	Tokyo Metropolitan Government
		14:00-16:00	The University of Tokyo (hospital energy efficient system etc)	The University of Tokyo, Todai Sustainable Campus Project (TSCP)	Output1 Output3	Universitry of Tokyo
10/1	Sat		Preparation for presentation	―		
10/2	Sun		Preparation for presentation	―		
10/3	Mon	9:00-12:00	Intermediate session for training	EX Research Institute Ltd. (EXRI)	-	EXRI
		13:00-17:00	Measures taken on climate change by City of Yokohama	City of Yokohama	Output1 Output2	City of Yokohama
10/4	Tue	9:00-12:00	Applying energy conservation technologies to CDM in consumer sector (energy conservation)	Azbil Yamatake	Output1 Output3	Smart Energy
		14:00-16:00	Mini-hydro power project and its application in CDM project in Sri Lanka	Seabell International	Output1 Output3	Smart Energy
		16:00-17:30	Meeting between SLCF and Japan Climate Exchange (JCX)	JCX	Output1 Output2	Smart Energy
10/5	Wed	9:00-12:00	Methane fermentation facility	Ichikawa Kankyo Engineering Co. Ltd	Output2 Output3	Ichikawa Kankyo
		14:00-16:00	CO_2 emissions and power generation	Central Research Institute of Electric Power Industry	Output1 Output3	EXRI
10/6	Thu	9:00-12:00	Utilization of biomass resources and CDM	Dr. Shigeo Fuji	―	EXRI
		14:00-16:00	Biomass utilization technologies in Japan	Japan Organics Recycling Association (JORA)	Output1 Output3	JORA
10/7	Fri	9:00-12:00	Measures on climate	MOE	Output1	MOE

Date		Time	Contents	Lectures	Expected outcome	Venue
			change and their implementation Ministry of Environment (MOE)		Output2	
		14:00-16:00	Presentation of the result of the training in Japan	JICA	-	JICA
		16:00-16:30	Commencement	JICA	-	JICA
10/8	Sat		Returning to Sri Lanka	―		

Note:

<Output 1> Trainees explains the Sri Lanka's climate change mitigation potentials in detail to relevant bodies, both in public and private in Japan, to discuss the possibility of investment, technical cooperation/partnership.

<Output 2> Trainees understand the Japanese policy on climate change issues and framework of international cooperation, thus consider the possibility of future corporations in the field.

<Output 3> Trainees deepens the understanding of technologies for climate change measure that Japanese private industry holds and consider/assess the possibility of applying that technologies to Sri Lanka.

A.2 Results and Achievements of the Counterpart Training in Japan

The counterpart training in Japan under the Project was smoothly carried out with its packed schedule of meetings and site visits within 10 days. Every participant returned home with his/her own training achievement. From the comments and evaluations by the participants, the Project recognizes the following achievements and learnings from the this counterpart training.

（1） Achievements related to promotion of the Sri Lankan Climate Change policies and measures and CDM project potentials to the relevant stakeholders in Japan and deliberation on the possibility of future cooperation in the area of climate change and CDM

In most of the visits to public/private organizations in this counterpart training programme, Sri Lankan participants initiated the discussions by explaining the Sri Lankan climate change policies and measures as well as CDM project development and potentials, which was followed by the presentations from Japanese host organizations and exchange of opinions/discussions on climate change mitigation measures, technologies and CDM project development.

Every participant had a great deal of interest in climate change mitigation technologies and measures, therefore many questions were made to the Japanese host organizations.

Though the primary interest of participants was drawn to the Japanese hardware technologies related to climate change mitigation, the carefully-crafted measures related to behavioral changes for climate change mitigation also drew strong attentions from them when they visited Tokyo Metropolitan Government and Yokohama Municipal Government offices to hear about their climate change mitigation measures. Many of the participants mentioned that those behavioral measures could be immediately applied in Sri Lanka with no or minimum investment.

On the other hand, as to the government grant and financial assistance to private sector investment in climate change mitigation measures applied in Japan, the participants mentioned about the difficulty in taking such measures in Sri Lanka due to its limited national and local budget and difference in policy priorities from Japan.

Regarding the possibility of the future cooperation between Sri Lanka and Japan in this area, it was difficult to make any concrete decisions in this training programme, mainly because of the limited time of discussions and no participation of decision-makers from Sri Lankan side (Participation was limited to working level officials.). However, the participants showed their strong interest to continue information and opinion exchange with some of the Japanese host organizations. It is expected that the continuation of this working-level communication would contribute to development of climate change policies and measures in Sri Lanka.

（２） Understanding of Climate Change Mitigation and International Cooperation Policy Administration in Japan and deliberation of the future cooperation

In the visits to the national government offices such as the Ministry of Environment, the participants received detailed explanations about the climate change policy administration in Japan. They were deeply impressed with the government policy administration in Japan. The participants including government officials and university/college professors and lecturers/researchers questioned not only about climate change policies/measures, but also policy administration mechanism and organization structure of the government, research mechanism, facilities and administration in universities and research institutes. It clearly indicated the participants' strong motivation and interest in learning the experience and know-how in all aspects in Japan. As to the knowledge and learning from this training, every participant compiled the reports with his/her own themes and presented in the final seminar of the Project. It also showed their sincere efforts for climate change mitigation. In this respect, this counterpart training is significant to motivate the participants to further develop climate change policies and measures in Sri Lanka.

As mentioned above, it was difficult to have concrete discussions regarding the future bilateral cooperation in the area of climate change. It remained to exchange information and opinions between the participants and the Japanese host organizations at working level. In the current context of deliberating the new international mechanism for assisting developing countries in the area of climate change, this working level communication should be continued for bottom-up development of bilateral policy dialogue and cooperation between Sri Lanka and Japan.

（３） Understanding and assessment of the applicability of Japanese climate change mitigation technologies and measures to Sri Lanka

This counterpart training included site visits and interview surveys on Japanese private companies that

developed and practically applied various climate change mitigation technologies with attention to the areas/sectors of GHGs emission reduction potentials in Sri Lanka. Such technologies include renewable energies (e.g. mini/micro hydro, biomass), emission reduction measures in electricity and solid waste management sectors, and other various energy efficiency improvement (energy-saving) measures. Many participants appreciated these visits and interviews by saying that it was the first time to learn so various technologies within this short period (10 working days).

The training programme also targeted to learn about the climate change measures related to behavioral changes conducted under the initiative of the Japanese national/local governments and other public-private sector organizations. They also provided the training participants with unique knowledge and know-how of climate change mitigation that can be applied in Sri Lanka.

The participants, during site visits and interviews, made a great deal of specific questions about the technologies and measures such as the time, cost and human resources required for their introduction and application. They also tried to introduce and disseminate the knowledge and know-how in the final seminar of the Project. The objective of the training is sufficiently achieved through these follow-up activities by the participants.

B. CDM Promotion Seminar in Sri Lanka

B.1 Outline of the Seminar

CDM promotion seminar was held on October 20, 2001 at Waters Edge, Battaramulla, Sri Lanka. 38 people from both public and private sector were participated in this final seminar. Program of the seminar is as follows:

8:30	Registration
9:00-9:10	Opening Remarks
	Ms Anoja Herath, Asst.Director,Climate Change Secretariat, Ministry of Environment
9:10-9:40	Outline of the Project
	Mr. Satoshi Sugimoto,Chief Advisor, JICA Expert Team The Project for Capacity Development in CDM Promotion in Sri Lanka
9:40-10:15	Outcomes of the project on Capacity Development of CDM promotion in Sri Lanka by Ms. Thiris Inoka, Environment Mgt officer, Ms Chamika Iddagoda, Programme Assistant (Environment), Climate Change Secretariat, Ministry of Environment
10.15 -10.30	Q & A
10:30-10:45	Tea Break
10:45-11:15	Results and Findings on policy related matters of counterpart training programme in Japan conducted under the Project Ms. Anoja Herath, Assistant Director, Climate Change Secretariat, Ministry of Envt
11:15-11:45	Results and Findings on biomass energy of counterpart training programme in Japan conducted under the Project Mr P G Joseph, CDM Development/Appraisal Expert

11:45-12:15	Results and Findings on other energy efficiency of counterpart training programme in Japan conducted under the Project Prof. Suren Wijekoon, University of Moratuwa
12.15-12.30	Q & A
12:30-12:45	Closing Remark by Mr Sugath Dharmakeerthi Director (NRM), Ministry of Environment

B.2 Seminar Results

The final seminar of the Project was attended by approximately 40 participants who have been the trainees of the 1st and 2nd Training Programme of the Project or the audience of the CDM dissemination seminars held for private sector stakeholders. The seminar aimed at disseminating the final results and output of the Project through a series of presentations by the Sri Lankan counterpart members of the Project.

At the outset of the seminar, Ms. Anoja Herath, the Assistant Director of the Climate Change Division, the Ministry of Environment, Sri Lanka, made an opening address by expressing her thanks to the JICA Expert Team for their technical assistance through the Project. She also called on the audience that those who participated in a series of training programmes and seminars under this Project must be the leaders in promoting CDM projects and climate change mitigation measures in Sri Lanka through training of other people and disseminating the knowledge and know-how obtained.

Subsequently, the project results and output are presented by the Sri Lankan counterpart members except for the explanation of project outline by the JICA Expert Team. The results of the counterpart training in Japan are also presented in detail by the participants with many questions from the audience about the potentials of applying the technologies and measures in Japan. Finally, the Seminar was closed with the declaration and confirmation that all the participants in this seminar would take the leadership at their own organizations to promote climate change mitigation measures.

3. Project Achievement and Lessons for the Future

3.1 Target 1：Development of Knowledge and Capacity of C/P Members in Dealing with Climate Change and CDM

As to the target 1 activities including capacity assessment and training programmes have been completed mostly as scheduled.

The result of capacity assessment of the counterpart members at the beginning of the Project, their capacity of CDM project promotion is evaluated as shown in the table below.

Table 3-1: Result of the 1st Capacity Assessment of C/P Member at the Beginning of the Project

Grade		Number
Grade 5	Excellent tasks can be conducted without any support of JICA Expert Team	0
Grade 4	Tasks can be conducted in a satisfactory manner without any support of JICA Expert Team	0
Grade 3	Minor support by JICA Expert Team is required to reach satisfactory level of task achievement	2
Grade 2	Full support by JICA Expert Team is required to reach satisfactory level of task achievement	8
Grade 1	Difficult to reach satisfactory level of task achievement even with full support by JICA Expert Team	0

The target of capacity development set by the Project after the above 1st capacity assessment is as follows:

Table3-2：The Target of Capacity Development of C/P members after the 1st Assessment

Grade		Number
Grade 5	Excellent tasks can be conducted without any support of JICA Expert Team	2
Grade 4	Tasks can be conducted in a satisfactory manner without any support of JICA Expert Team	8
Grade 3	Minor support by JICA Expert Team is required to reach satisfactory level of task achievement	0
Grade 2	Full support by JICA Expert Team is required to reach satisfactory level of task achievement	0
Grade 1	Difficult to reach satisfactory level of task achievement even with full support by JICA Expert Team	0

At the time of Project completion, the result of the final capacity assessment is as shown in the table below.

Table 3-3：Result of the final capacity assessment of C/P members

Grade		Number
Grade 5	Excellent tasks can be conducted without any support of JICA Expert Team	2
Grade 4	Tasks can be conducted in a satisfactory manner without any support of JICA Expert Team	5

Grade		Number
Grade 3	Minor support by JICA Expert Team is required to reach satisfactory level of task achievement	3
Grade 2	Full support by JICA Expert Team is required to reach satisfactory level of task achievement	0
Grade 1	Difficult to reach satisfactory level of task achievement even with full support by JICA Expert Team	0

（Evaluation of Target Achievement）

Although the Project could not achieve the planned target, at least 7 (seven) C/P members have built their capacity enough to work as the CDM experts in Sri Lanka. This can be a positive achievement gained by the Project.

As to the members evaluated as "Grade 3", their capacities are expected to increase with the assistance of the 7 CDM experts above by continuing their daily activities in their positions. Basic knowledge and capacity of dealing with climate change issues and CDM have already be firmly established within them through this Project.

（Issues and Lessons for the Future）

The issues and lessons identified from the Target 1 activities are as follows.

(1) Capacity Development with Attention to Possible Personnel Reshuffling

During the period of the Project, 3 (three) of the C/P members have left their duties in relation to climate change issues due to transfer to the other divisions of the Ministry or retirement. As a result, though some of them were still able to attend the training programmes, the capacity development activities through on-the-job training became virtually not possible. A personnel reshuffling is always inevitable for any government officials, but it somehow gave some negative impacts upon constant capacity development of C/P members.

On the other hand, many government officials from the other divisions of the Ministry of Environment as well as other ministries and government agencies also attended the training programmes. In addition, the Project conducted the seminars twice for private sector organizations, in which the essence of training programmes are packaged. These training programmes for public sector and seminars for private sector contributed to expansion of the knowledge on climate change and CDM to the relevant stakeholders in Sri Lanka.

(2) Importance of Strengthening the Capacity of Study and Research

One of the important factor to be considered in raising the knowledge and capacity of dealing with climate change and CDM is to keep up with the new scientific findings and information. The capacity of study and research is an important ability to be strengthened to work as the expert in this field.

During the period of conducting the training programmes in the Project, new scientific findings and methodologies were constantly coming out. The information and knowledge obtained only a few months became instantly obsolete and invaluable in the world of climate change and CDM.

The Project made its utmost efforts of providing the latest scientific findings and information on climate change and CDM through training programmes as well as in the weekly meetings with C/P members. It is important now for the C/P members to constantly update the knowledge and information by their own efforts after completion of the Project.

In this respect, the review, revision and update of the project output such as "CDM Guidebook", "Sri Lankan CDM Project Portfolio", and "CDM Website" is the key for the C/P members to make the best of their knowledge and capacity developed by the project. The future update of project output by C/P members will serve as a touchstone to evaluate the sustainability of the impacts arising from this Project.

3.2 Target 2：Review and Revision of the Policies related to CDM Project Promotion

Target 2 consists of the following project activities:

- Review and revision of the national CDM policy, strategy and action plan;
- Review and revision of the SLCF business strategy and operation plan
- Review and revision of the national CDM project portfolio

The achievement of the above target activities are illustrated in the table below.

Table3-4：Target 2 Activities and Their Achievements

Target Activities	Achievements
Review and revision of the national CDM policy, strategy and action plan	▪ Although the reviews and revisions are planned for the national CDM policies, strategy and action plan, national CDM policy was subject to this activity due to no existence of the CDM strategy and action plan in Sri Lanka. ▪ As to the CDM strategy and action plan, recommendations were made by the JICA Expert Team based on the review results of the national CDM policy and incorporated in to CDM Guidebook. ▪ The revised CDM policy is established as the interim policy up until the completion of the 1st commitment period of Kyoto Protocol in 2012.
Review and revision of the SLCF business strategy and operation plan	▪ Review and revision of the existing SLCF business strategy and operation plan were made with recommendations regarding the future SLCF business operation strategy and plan
Review and revision of the national CDM project portfolio	▪ Review and revision was made with update of the CDM project information. ▪ The CDM project portfolio was also redesigned to be used as the CDM project database in Sri Lanka.

（Evaluation of Target Achievement）

Review and revision was made for the national CDM policy while recommendation was made for the future CDM strategy and action plan by the JICA Expert Team. As to the national CDM policy, it was submitted as the interim policy with the time limit up until 2012 after a series of reviews, revisions and discussions in JCC.

SCLF business operation strategy and plan were also reviewed and revised by the JICA expert team, working の together with the local expert team and submitted as the recommendation after a series of discussions in JCC.

The review and revision of the national CDM project portfolio was carried out as planned to establish the redesigned portfolio that can be used as the database of CDM projects in Sri Lanka.

As mentioned in the previous chapters, the Project partially changed the scope of target 2 activities based on thediscussions with C/P members and agreed by JCC. However, the revised targets are achieved by the Project.

（Issues and Lessons for the Future）

The issues and lessons identified from the Target 2 activities are as follows.

(1) Difficulty in responding to the situation change after the agreement on the scope of project activities

At the time of concluding the agreement on implementation of this Project, the importance of CDM project development was well recognized by the Sri Lankan Government. It was also planned that SLCF would be established within 3 (three) months after the beginning of the Project. The technical assistance for establishment and operation of SLCF was also planned in this project including recruitment of a local expert on carbon fund development and management.

After the official agreement on the project implementation, however, the Environment Minister and Secretary were both reshuffled while the future of CDM as well as the financial assistance mechanism for non-Annex I countries to the Convention (UNFCCC) became uncertain with the stagnated discussions in the international community over the future framework of climate change convention. In the process between Copenhagen Accord and Cancun Agreement, the Ministry of Environment of Sri Lanka decided to reserve its position about the climate change mitigation policies including the national policy on CDM in recognition on the risk of taking any concrete decisions.

As a result, the national CDM policy reviewed and revised in this Project is submitted as the interim policy up until the end of 2012 in accordance with the decision by JCC.

As to the Sri Lankan Carbon Fund, which has not yet been officially established so far, the Project conducted a series of review and revision of the existing operation strategy and plan to reflect the difference in the status of

CDM project development between the time it was established and now. Finally, the Project submitted the recommendations regarding the revised SLCF business operation strategy and operation plan as the result of a series of discussions in JCC and with the members of the SLCF board of directors.

The Project finally made a way to submit some output in relation to CDM policy and SLCF business operation strategy and plan, based on the discussions with Sri Lankan side. It is true that the change of situation after the project implementation agreement had several significant impacts upon these Target 2 activities. Particularly in the case of providing technical assistance in national policy formulation such as this Project, the expert team re-acknowledged that it needs to be careful and well aware of the possible change in P/O and PDM so as to flexibly respond to the situation.

(2) Risks involved in providing the policy formulation assistance

This project includes several policy formulation assistances such as the review and revision of the national policy on CDM and SLCF business operation strategy and plan. In providing such technical assistances, not only the discussions with the counterpart ministry, but also the coordination with other relevant ministries and agencies as well as sometimes a higher level decision is required such as the cabinet decision. In the case of providing technical assistance in the establishment of a new government organization such as SLCF in this Project, it involves a series of political and bureaucratic processes including the official appointment of new government officials, acquisition of national budget allocation from the finance ministry, and so forth. Since the time required for such processes is usually very difficult to predict and control, the project activity itself can be strongly affected by these external factors. In the case of this Project, the review and revision process of national CDM policy and SLCF business operation strategy were delayed due to the time required for coordinated decisions by the relevant ministries and government agencies. As a result, the Project kept continuing these activities until its late period while waiting for the responses from the Sri Lankan Government.

Based on this experience, the Project learned about the following actions to be taken at its early stage to avoid or minimize the risks involved in providing this type of national policy formulation assistance:

① Keeping the flexibility in scope of project activities with attention to administration changes or personnel reshuffling of the counterpart organizations, such as always having the alternative scope of activities in the case of these situation changes;
② Making a written agreement on proper taking over of the project with agreed roles and responsibilities in the case of reshuffling of the counterpart officials in charge of the Project; and
③ Careful identification of the external factors that may impact upon the implementation of the planned project activities.

3.3 Target 3 : Strengthening the Capacity of Assessing the CDM Project Proposals for their Host Country Approval

The following activities were carried out under the Target 3.

- Capacity assessment of the counterpart members in evaluation of CDM project proposals
- Review and revision of the host country approval criteria and procedure for CDM projects
- Preparation of the manual for assessing the CDM project proposal for host country approval

（Evaluation of Target Achievement）

Since the activities conducted under Target 3 are the central function of CCD, the counterpart agency of this Project, they were very smoothly conducted with good responses from the C/P members. Their comments and suggestions were well reflected to the output of the Target 3 activities including the host country approval criteria and procedure, and so forth.

（Issues and Lessons for the Future）

Although the target 3 activities were smoothly conducted with active participation by the C/P members, the Project found some issues in relation to the host country approval process of CDM projects through its activities.

(1) Sustainability criteria is not enough for proper assessment of CDM project proposals for host country approval

In the process of reviewing the existing host country approval criteria, the actual assessment process of CDM project proposals were discussed between JICA Expert Team and the counterpart members. It found that the exercise or use of the criteria in fact largely depended upon the judgment of the assessors without any written guidelines for checking the compliance with the criteria. It implies the possibility of issuing the host country approvals without clear and transparent assessment of the CDM project proposals.

There are several CDM project proposals in Sri Lanka that have failed to be registered under CDM in the process of validation or application for registration due to their incompliance with the eligibility criteria for CDM projects. Some of the causes may have been avoided or recognized at the time of issuing the host country approvals if the contents of PDD are carefully assessed with respect to CDM project eligibility criteria in detail.

Compliance assessment of the CDM project proposals with the sustainability criteria or national development priorities is an important task of DNA, but it is also necessary to check the contents of PDD from the professional viewpoints of CDM so that the quality of CDM project proposals can be higher with more registration and implementation. In fact, CDM project proponents frequently visited CCD to receive technical consultation for CDM project formulation and development, to which JICA Expert Team members were also frequently invited to provide technical consultations. CCD also frequently received telephone calls from CDM project proponents asking for CCD's consultations on CDM.

Based on the above understanding, the Project added the items to check the compliance with CDM eligibility criteria to the "Checklist for assessing the CDM project proposals for host country approval" to help the assessors in evaluating the proposals in view of CDM projects feasibility. As a result, this checklist is expected to function as the manual for evaluating the CDM project proposals in terms of sustainability criteria of Sri Lanka as well as CDM project eligibility.

(2) Revision of the host country approval mechanism with its priority in internal assessment by CCD-DNA members

In the course of review and revision of host country approval procedure, the Project found that the actual assessment of CDM project proposals were not solely conducted within the DNA, but carried out by an assessment committee organized by the experts invited from the other organizations. It was also found that the issuance of host country approval was made in accordance with the full members' agreement of the assessment committee. Therefore, the decisions were sometimes delayed due to the difficulty in holding the committee with full members' attendance during the Project period.

Responding to this situation, the Project provided the maximum days allowed for notifying the results of assessment of CDM project proposals for host country approval issuance so that the assessment can be conducted on time to make decisions. It also decided in accordance with the discussions with the C/P members that the primary assessment of the CDM project proposals would be carried out by CCD officials who have now enough knowledge and capacity obtained from the Project so that the procedure can be more promptly conducted.

3.4 Target 4：Preparation of CDM Guidebook

Target 4 consists of the following project activities:

- Evaluation of the priority CDM projects selected from the national CDM project portfolio (15 pojects)
- Preparation of CDM Guidebook based on the results of evaluation above and incorporation of allthe other activities.

（Evaluation of Target Achievement）

The project activities under Target 4 were mostly completed as scheduled with the submission of the CDM Guidebook as its output.

（Issues and Lessons for the Future）

The issues and lessons from the project activities under Target 4 are as follows.

（1） Necessity of continuous CDM project monitoring by DNA

In selecting the 15 priority projects from the national CDM project portfolio of Sri Lanka, the Project have contacted with the project proponents to update the progress of their projects after their submission of PIN or PDD to the DNA. There is no such contact ever made by DNA. By this communication with the CDM

project proponents, the Project found that a considerable number of proposed CDM projects have already given up their project implementation. The existing CDM project portfolio actually included the CDM project that was refused to register under CDM by UNFCCC. To use this portfolio for promotion of CDM projects to potential investors and credit buyers, each project status had to be updated through contact with the project proponents.

The project also obtained very useful information from the project proponents through direct contacts about the difficulties they are facing with for their project implementation.

It is essential for the DNA as the CDM promotion body in Sri Lanka to periodically monitor the progress of proposed CDM projects with provision of necessary advice to the project proponents if required. With the strengthened knowledge and capacity of CDM promotion, the roles of CCD members to provide technical assistance and advice for project proponents are of great importance in Sri Lanka.

(2) Accumulation of the basic information and data as the foundation for promotion of climate change mitigation and CDM projects

To further promote CDM projects and climate change mitigation in Sri Lanka, the collection and accumulation of the basic information and data is indispensable especially the data on GHGs emission sources and emission amount. Although Sri Lanka recently submitted the 2nd National Communication to the UNFCCC with the GHGs emission sources and sinks inventory, it was made based on the year 2000, which did no longer reflect the current status of GHGs emission in this country.

The national inventory of GHGs emission sources and sinks is the primary tool to identify the potentials of GHGs emission reduction or sink enhancement in this country. At least, it should be updated every two or three years based on the latest available information and data set.

So far, the national communication under the UNFCCC including preparation of the national GHGs inventory in Sri Lanka has been conducted, in the same way as many other non-Annex I countries, with the technical and financial assistance from the multilateral or bilateral donors. In such works, most of the technical knowledge and know-how are accumulated in a few individuals and not within the government.

With the strengthened knowledge and capacity developed through the project, it is time now for the Ministry of Environment to establish a mechanism to develop the national GHGs inventory as the 1st step for formulation of the national climate change mitigation policy.

(3) Importance of inter-departmental/ministerial collaboration for promotion of climate change mitigation and CDM projects

Inter-ministerial collaboration is also the key to establish a mechanism to develop the national GHGs inventory as the regular government activity as most of the data and information required for GHGs emission estimation are in the hands of the relevant ministries in charge of various sector-by-sector activities. Technical and professional knowledge relevant to the sector activities also exists within these ministries.

Furthermore, the sector ministries, such as the Ministry of Power and Energy or the Ministry of Industry. Formulate their own sector development policies and programmes, some of which can also contribute to GHGs emission reduction or sink enhancement. Renewable energy development policy and energy saving and conservation policies are the examples of such win-win policies.

The Bilateral Offset Credit Mechanism (BOCM), currently in discussions at the UNFCCC, has the potential of expanding the trading of carbon credit from project by project basis to sector basis through aggregation of the sector policies and programmes serving for GHGs emissions or sink enhancement.

In this respect, the Ministry of Environment should take the lead in formulating the national climate change mitigation policy based on the inter-ministerial collaboration in Sri Lanka.

3.5 Target 5 : Awareness Raising through CDM Project PR (Public Relations) Activities

Under Target 5, the following CDM project PR activities were carried out.

- Estabishment of the Sri Lankan CDM Website
- CDM Seminars and Workshops
- Preparation of CDM Promotion Materials
- CDM Project Promotion Seminars

（Evaluation of Target Achievement）

Although the concept of CDM project promotion seminar was changed, all the activities under Target 5 were smoothly carried out and completed with submission of the project output.

（Issues and Lessons for the Future）

The issues and lessons learned from the activities under Target 5 are as follows.

(1) The role of Sri Lankan CDM Website as the CDM Information Platform

The Sri Lankan CDM website is expected to be utilized as the CDM information platform in this country. The website uploaded the latest information and data on CDM with the links to the important information sources of CDM. It also uploads all the output of the project which are allowed to be publicly disclosed including the national CDM project portfolio and CDM Guidebook.

To use this website as the CDM information platform of Sri Lanka, the data and information available on the website must be periodically reviewed and updated by the CCD-DNA to keep providing the guest to website the latest available information. The output of the project is also needs to be reviewed and revised through the input from the other public as well private stakeholders of CDM and climate change mitigation activities.

(2) PR activities also contributes to capacity development of the persons involved

Preparation and update of CDM PR materials as well as PR activities also contributes to capacity development of the persons involved in such activities. Preparation and update of PR materials includes collection and selection of proper data and information as well as compiling them into PR materials. Such activities will increase the knowledge of CDM as well as strengthen the human network with relevant key persons in CDM project promotion. Finally the CDM facilitator can be information focal point of CDM if he can continue his activities. In this respect, the public relations activities should be continued after completion of this Project.

3.6 Overall Evaluation of the Project

3.6.1 CDM Project Development

The table below compares the condition of CDM development before starting the Project with the condition at the time of completing the Project.

Figure 3-1: Difference in CDM Development before and after the Project

Indicator	Before the Project	After the Project
Registered CDM project	6	7
CDM project in validation	33	40
CDM project proposals submitted to DNA	153	127

Remarks:

- The numbers of registered CDM projects and the projects in validation above are based on the information from CDM website of UNFCCC (http://cdm.unfccc.int/)
- The numbers of CDM project proposals are based on the list prepared by CCD, DNA of Sri Lanka.

From this table, the number of CDM projects were increased by 1 for registered ones and 7 for the projects in validation. As to the new registered CDM projects, which had already completed validation at the time of starting this Project, it is not the one developed with the assistance under this Project. On the other hand, some of the newly developed CDM projects currently in validation (7 new projects) received technical advice and consultation from CCD as well as JICA Expert Team in the process of PDD preparation. They are also proposed by the members who participated in the training programme or seminar held under this Project. In this regard, this project made some contribution to the development of these new CDM projects.

The number of CDM project proposals that are submitted to Sri Lankan DNA decreased by 26 between before and after the Project. This is because of the elimination of "sleeping or dead projects" from the list of CDM project proposals when the project reviewed all the listed project proposals in the process of developing "Sri Lanka CDM Project Portfolio". The Sri Lankan DNA listed all the project proposals that have been submitted since the early year of 2000s, many of the proposals submitted before 2008 had already been

cancelled by the project proponents or not practically active when the project conducted interviews by phone. All of these "sleeping or dead" projects are deleted from the Sri Lanka CDM Project Portfolio.

Considering that the project aims at promoting CDM in Sri Lanka, it is important to evaluate the condition of CDM project development between before and after the Project. Although there is no actual increase in the number of registered CDM projects, the Project contributes to reactivation of a considerable number of "sleeping projects", which had been making no progress after obtaining the host country approvals or submission of PDD through the CDM seminars and individual consultations to the private sector project proponents. Some of such reactivated projects has reached validation stage. It is a positive achievement of the Project.

In addition, during the period of the Project, the number of newly proposed PINs and PDDs reached between 20 and 30 projects though the total number of CDM project proposals decreased due to elimination of non-active ones from the list. This is also a direct positive results arising from the Project.

From these results above, the Project accomplishes, to a certain extent, its main purpose of promoting CDM project development in Sri Lanka.

3.6.2 Evaluation of the Project by the Counterpart Organizations

In the 5th Joint Coordination Committee (JCC) held at the end of the Project, the Secretary of the Ministry of Environment expressed his appreciation to the JICA Expert Team for about 1 and half years' technical assistance under the Project. He also mentioned his expectation that the approximately 30 government officers trained by the Project would play their active roles in promoting climate change mitigation policies and measures in Sri Lanka.

Ms. Anoja Herath, the assistant director of the Climate Change Division, Ministry of Environment took his expectation and reported to the committee that she planned to have an informal preparatory meeting on the development of the National GHGs Inventory with the members who participated in the counterpart training in Japan. She also mentioned that the results of the Project would be effectively utilized in the on-going project of "Assessment of Climate Change Technologies" financed by UNDP.

Finally, the Secretary of the Ministry of Environment announced that the achievement and output of the Project would be the important assets for Sri Lanka to further promote climate change mitigation policies and measures no matter how the current international discussions and negotiations over the future climate change measures would be concluded.

3.6.3 Coordination and Communication with Other Donors and Other Relevant Projects

Since its beginning, the Project has been making coordination with other donors and relevant projects. Particularly with UNDP, which had provided technical assistance to CCD/MOE in preparing the National Communication under UNFCCC and national climate change adaptation policy, the Project has kept daily communication in the office of CCD. The Project participated in the preparatory meeting on the UNDP financed project on "Assessment of Climate Change Technologies in Sri Lanka" as an observer to provide technical advice to the members of the meeting.

The Project also provided technical advice to the Waste Management Authority of Sri Lanka on the project financed by Korean International Cooperation Agency: KOICA) for CDM project development in Waste Management Sector.

The Project had been very active in its promotion and dissemination through participation in seminars and international conferences at the request of CCD and other counterpart members. In April 2011, the project participated in the seminar of "Open University of Sri Lanka" as the lecturer of CDM and Sri Lankan Potentials. In October 2011, the project participated in the "10th International Conference of the East and Southeast Asia Federation of Soil Science Societies", as the invited lecturer to present about "Agricultural soil, land use and climate change".

Thus, the Project tried to take every opportunity possible for its promotion and dissemination as well as coordination with other donors and relevant projects.

3.6.4 Achievement of Capacity Development under the Project and Remaining Issues

The Project conducted various capacity development activities including 2 training programmes and seminars as well as on-the-job trainings. It also developed various tools to support promotion of CDM project in Sri Lanka. The results of these capacity development activities can be evaluated as follows.

A. Capacity Development of Human Resources for CDM Project Development

As the human resources for CDM project development in Sri Lanka, the Project conducted 2 training programmes for public sector officers (including MOE and other relevant government organizations) while conducting on-the-job trainings through various project activities such as formulation of the national CDM policy, development of the national CDM project portfolio, preparation of CDM Guidebook, and public relations activities for CDM promotion.

To the private sector stakeholders of CDM, the Project conducted the seminars with the packed contents of training programmes while providing individual consultations to the CDM project proponents to motivate them into CDM project development.

The capacity of DNA officers in CCD/MOE has been strengthened with sufficient knowledge of climate change and CDM, so that they can accomplish their duties to promote CDM project development in Sri Lanka with their own capacities.

As to the private sector stakeholders, continuous consultations and discussions by the project increase the communication between DNA and CDM project proponents. It is an achievement of the CDM public relations and private sector awareness raising activities by the Project.

From now on, the counterpart members including the officers of DNA in CCD/MOE should take the leadership in providing information to and continuous communication with the relevant public and private sector stakeholders to establish the overall government mechanism to promote climate change mitigation policies and measures. Such efforts will be the key to spreading the achievements of the Project.

B. Development of Various Tools to Support Capacity Development and Their Utilization

The Project developed and submitted to DNA various tools to support promotion of CDM project development in Sri Lanka in the process of capacity development activities.

These tools are all important for sustaining climate change mitigation and CDM project development in Sri Lanka. There are several keys to effectively utilize these tools.

The first key is continual revision and update of the tools. The project output such as "Training programme materials", "National CDM Portfolio", "CDM Guidebook", and "Sri Lanka CDM Website" has to be periodically reviewed with update of the contents and data for the use by CDM project stakeholders. Such review and updating activities themselves also contribute to further capacity development of DNA officers. The scientific knowledge and information on climate change moves very quickly while the current ones become obsolete. In this respect, the role of DNA in keeping up with the latest information and knowledge is of great importance.

The second key is the partnership and communication with the relevant public/private stakeholders. The supporting tools developed by the Project are designed to promote partnership and communication between DNA and key public/private sector stakeholders of CDM projects. "Training Programme Materials" and "CDM Guidebook" are prepared for continuous training and information dissemination of CDM to the potential CDM project stakeholders while "National CDM Project Portfolio" and "Sri Lanka CDM Website"

are developed as the platforms of communication between DNA and CDM project proponents.

Therefore, the functions of the tools can be maximized if the DNA (CCD/MOE) internalizes the above 2 key activities (regular review and updates of the tools and communication with CDM stakeholders) as the daily duties.

C. Challenges of Sri Lanka for Promotion of Climate Change Mitigation and CDM Project Development

After completion of the Project, CCD/MOE is now in the position to take the national leadership in promoting climate change mitigation and CDM project development in Sri Lanka. The challenges CCD/MOE is going to face for implementation of climate change mitigation policies and measures are discussed below.

C.1 Development of Baseline Data and Information on Climate Change

To properly implement domestic climate change mitigation measures, Sri Lanka has to identify the areas and sectors where there are potentials of GHGs emission reduction and/or sink enhancement within the country. The national GHGs Inventory constitutes the fundamental information and data to capture the country's potentials of climate change mitigation.

Although the current Sri Lankan GHGs inventory is available from the "2nd National Communication" prepared under the provision of UNFCCC, it was developed on the basis of data in the year 2000, which does not reflect the real time situation any more.

To continue promotion of climate change mitigation, this GHGs inventory needs to be reviewed and updated at much higher frequency (ideally every year and at least once every 3 years) so that the real time situation of GHGs emission can be captured.

Regular preparation of the national GHGs inventory requires establishment of an institutional/administrative mechanism under the national policy to collect and compile relevant data and information that are currently scattered among various government organizations. Inter-governmental coordination and cooperation is an important key to development of the national GHGs inventory at national level.

The technical methodology for developing the national GHGs inventory is available at the "IPCC guidelines for National GHG Inventories". Most of the countries follow the methods in these guidelines. Taking into account that CCD officers now have sufficient capacity to deal with these guidelines for preparing the national GHGs inventories in Sri Lanka, the Project strongly recommended that CCD should take the leading role, working together with the other counterpart members from the CDM centres (The University of Peradeniya and Moratowa) in developing the Sri Lankan national GHGs inventory.

C.2 Short and Medium/Long-Term Climate Change Mitigation Measures and Basic Strategy for CDM Project Development

In the context of unclear future of Kyoto Protocol and UNFCCC after the year 2013, Sri Lanka is required to prepare for the climate change mitigation strategy in the short-term (until the end of 2012) and in the mid/long-term (after 2013).

In the short-term up until the end of 2012, the Government of Sri Lanka should make its maximum effort in registration and implementation of the currently proposed CDM projects. The current CDM project proposals in Sri Lanka are summarized as shown in the table below based on the Sri Lankan CDM Project Portfolio developed by the Project.

Table 3-5: The Composition of CDM Projects in the Sri Lanka CDM Project Portfolio

CDM Project Categories by Levels of Maturity	Number	Estimated CER (tonCO2e/yr)
CDM projects in validation	21	496,478
CDM projects with PDD prepared or host country approval issued	10	142,393
CDM projects with PIN prepared	85	-
CDM projects with PIN under preparation	11	-

Considering the time required for registration of CDM project, CCD/MOE should focused on promotion of the proposed CDM projects at least with their PDD prepared (Currently, 31 CDM project proposals fall into this category.), aiming at their registration by the end of 2012.

Meanwhile, CCD/MOE must properly inform the potentials and risks of CDM project development after 2013 to the project proponents who do not prepare PDDs. Although CDM itself may continue after 2012, the trend of world carbon market after 2012 will be strongly influenced by the results of international negotiation over the new framework of climate change mitigation commitments after 2013. After 2013, the situation of carbon finance from the world carbon market is still uncertain (The carbon market may expand if the new and additional commitments of GHGs emission reduction are agreed among the participating countries, or it may shrink if no additional commitment is agreed.).

As to the mid and long-term strategy after 2013, it depends upon the Sri Lanka's political standpoint against climate change mitigation and results of international negotiations. In any case, however, it is important to identify the country's condition of GHGs emission and sequestration and potentials of emission reduction and sink enhancement based on the development of national GHGs inventory.

Some of the important steps to be taken for formulation of the national climate change mitigations policy are as follows:

- Formulation the climate change mitigation policies for the priority sectors identified from the national GHGs inventory (According to the current national GHGs inventory in the 2nd National Communication, the priority sectors include energy, waste management, agriculture, industry, and transport.); and
- In formulating the sectoral climate change mitigation policies, the compatibility with the national development policy priorities must be carefully evaluated so that the implementation of the climate change mitigation policies can also contribute to sustainable development of the country as the "WIN-WIN" policies.

Sri Lanka should first consider the national development policy priorities and put the priority on promoting the climate change mitigation measures that also contribute to sustainable development the country. The priority of climate change mitigation in the Sri Lankan national development policy is the matter belonging to highly political decision by the Government. Without such decision by the Sri Lankan Government, Sri Lanka should promote the climate change mitigation measures that supports the national development policy priorities in the mid and long-term.

C.3 Priority Sectors of Climate Change Mitigation and Possible Measures Based on the GHG Inventory in the 2nd National Communication

To show an example of the basic steps to formulate the mid and long-term climate change strategy in Sri Lanka, the priority sectors of climate change mitigation and possible measures are discussed below based on the national GHG inventory of Sri Lanka in the 2nd National Communication. This only shows an example based on the data of 2000. The formulation of mid and long-term climate change mitigation strategy after 2013 must be based on the latest data and information of GHGs emission and sequestration.

a Structure of GHGs Emission in Sri Lanka (Based on the 2nd National Communication)

The table below illustrates the structure of GHGs emission in Sri Lanka based on the 2nd National Communication.

Table 3-6: Structure of GHGs Emission in Sri Lanka(Year 2000 data)

Source	GHG Emission/Sequestration (thousand tonsCO_{2e})				
	CO_2		CH_4	N_2O	Total
	Emission	Sequestration			
Energy (fossil fuels)	12,409.42		866.67	251.10	13,527.19
Industry	492.40				492.40

Source	GHG Emission/Sequestration (thousand tonsCO_{2e})				
	CO_2		CH_4	N_2O	Total
	Emission	Sequestration			
Agriculture			3,888.15	812.20	4,700.35
Land use/forest	10.34		35.07		45.41
Waste			2,033.22		2,033.22
Total	12,912.16		6,823.11	1,063.30	20,798.57

From the table above, the energy utilization of fossil fuels is the largest source of GHG emission (65% of the total emission), followed by agriculture and waste.

The table below shows the breakdown of GHGs emission from energy utilization of fossil fuels by sector.

Table 3-7: GHG Emission from Energy Utilization of Fossil Fuels by Sector (Year 2000 data)

Sector	GHG Emission (thousand tonsCO_{2e})			
	CO_2	CH_4	N_2O	Total
Energy Industry	2,808.94	2.52	6.20	2,817.66(20.8%)
Industry	1,710.62	31.29	62.00	1,803.91(13.3%)
Transport	6,540.14	12.39	18.60	6,571.13(48.6%)
Residential/ Commercial	1,081.45	818.16	164.30	2,063.91(15.3%)
Others	268.27	2.31	0	270.58(2.0%)
Total	12,409.42	866.67	251.10	13,527.19

As to the GHGs emission from energy utilization of fossil fuels, transport sector is the largest source (48.6% of the total emission) while the emissions from energy industry, industry, and residential/commercial sectors occupies about 15 to 20% of the total emission from energy utilization of fossil fuels respectively.

The table below compares the GHGs emission by sector including the emission from non-fossil fuel sources.

Table 3-8: GHG Emission by Sector (Year 2000 data)

Sector	GHG Emission (thousand tonCO_{2e})	Percentage
Energy Industry (Electricity, etc.)	2,817.79	13.5%
Industry (1) Energy Consumption	2,296.31 1,803.91	11.0% 8.7%

Sector	GHG Emission (thousand tonCO_{2e})	Percentage
(2) Process Emission	492.40	2.3%
Transport	6,570.71	31.6%
Residential/Commercial	2,064.54	9.9%
Agriculture	4,700.10	22.6%
Waste	2,033.20	9.8%
Others	315.85	1.5%
Total	20,798.50	-

Transport sector is the largest emission source of GHGs, occupying 31.6% of the total GHGs emission in the country, followed by industry and agriculture.

The tables below illustrate the breakdown of methane emission by sources in agriculture and waste sectors

Table 3-9: Methane Emission from Agriculture (Year 2000 data)

Source	GHG Emission (Thousand tonCO_{2e})	Percentage
Enteric Fermentation	1,253.28	32.2%
Livestock Manure	145.32	3.7%
Flooded Rice Fields	2,466.03	63.4%
Open Burning of Agricultural Residues	23.31	0.7%
Total	**3887.94**	-

Table 3-10: Methane Emission from Waste Management (Year 2000 data)

Source	GHG Emission (Thousand tonCO_{2e})	Percentage
Municipal Solid Waste	1,765.2	86.8%
Household Wastewater	166.1	8.2%
Industrial Wastewater	101.8	5.0%
Total	**2,033.1**	-

b Priority Sectors of Climate Change Mitigation and Possible Measures

The next table shows the possible measures of climate change mitigation in the priority sectors identified above.

Table 3-11: Priority Sectors of Climate Change Mitigation and Possible Measures

Source	Sector	Possible Measures
Fossil fuels combustion	Transport	■ Fuel switch ■ Energy efficiency improvement ■ Mass transit system
	Electricity	■ Renewable energy utilization ■ Fuel switch ■ Energy efficiency improvement at power supply and demand side
	Residential/Commercial	■ Rural electrification (Distributed electricity supply with renewable energy) ■ Behavioral change ■ Demand side Management
	Industry	■ Fuel switch ■ Energy efficiency improvement (boilers, furnaces and other energy production/supply equipment)
Agriculture	Livestock management (animal husbandry)	■ Improvement of feeding practice (Improvement of pasture quality and grain diet) ■ Proper manure management (methane capture and energy utilization from manure treatment process, composting, use of waste as fuel, aerobic treatment, etc.)
	Rice cultivation	■ Draining wetland rice ■ Increasing rice productivity of the cultivated land ■ Proper water management in the off-rice season (keeping the soil as dry as possible) ■ Composting or energy use of the residues
Waste	Municipal solid waste	■ Methane capture and flaring/energy utilization ■ Aerobic treatment of organic waste (composting) ■ Energy utilization of waste (waste-to-energy) ■ Waste minimization (3R)
	Wastewater	■ Methane capture and flaring/energy utilization ■ Aerobic treatment of organic matters

As outlined in the table above, once the priority sectors and possible measures are identified, they can be further broken down to specific climate change mitigation technologies and measures. Further deliberation of such technologies and measures in terms of their cost-benefit as well as compatibility with the national development policy priorities is required to finally determine the climate change mitigation policies and strategies. In formulating the national climate change mitigation policies and measures in the mid and

long-term, this kind of ground works are required with the latest GHGs inventory data by sectors and emission sources.