

Argentine Republic
Climate Change Unit of Secretariat of Environment and
Sustainable Development (DCC)
National Institute of Agricultural Technology (INTA)
Patagonian and Andes Forest Research
and Extension Center of Argentine Republic (CIEFAP)

No.

Project of the Enhancement for A/R CDM in the Argentine Republic

Final Report

March 2010

**Mitsubishi Research Institute, Inc
Nippon Koei. Co., Ltd.**

GED
CR(10)
10-028

PREFACE

In response to a request from the Government of the Republic of Argentina, the Government of Japan decided to conduct the Project of Enhancement for Application of Afforestation and Reforestation of CDM and entrusted the Project to the Japan International Cooperation Agency (JICA).

JICA dispatched a team to Argentina between September 2007 and February 2010, which was headed by Mr. HATANAKA Kunio (until January 2010) and Mr. HIRAISHI Kazuaki of Mitsubishi Research Institute, INC. and consists of Mitsubishi Research Institute, INC. and Nippon Koei Co., LTD.

The team conducted several activities, working closely with counterparts of Argentina side.

This report describes all activities executed during the project period. I hope that this report will contribute to promotion of AR-CDM in Argentina and to enhancement of friendly relations between the two countries.

Finally, I wish to express my sincere appreciation to the officials of the Government of Argentina for their close cooperation extended to the team.

March 2010

Kikuo NAKAGAWA
Director General, Global Environment Department
Japan international Cooperation Agency

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Abbreviation

ACF	Argentine Carbon Fund	JICA	Japan International Cooperation Agency
C/P	Counterpart	NM	New Methodology
CER	Certified Emission Reduction	OAMD	OFICINA ARGENTINA DEL MECANISMO PARA UN DESARROLLO LIMPIO
CIEFAP	Patagonian Andes Forest Research and Extension Center	OE	Operational Entities
CIP	Corporación Interstadual Pulmarí	OPDS	Provincial Organ for Sustainable Development
DCC	Direction of Climate Change	PCM	Project Cycle Management
DNA	Designated National Authority	PDD	Project Design Document
FIP	Formulario de Informacion de Proyecto	PIN	Project Idea Note
GOA	Government of Argentina	R/D	Record of Discussions
IC/R	Inception Report	SAGPyA	Ministry of Agriculture, Livestock, Fishery and Foods
INTA	National Institute of Agricultural Technology	SAyDs	Secretariat of Environment and Sustainable Development
JCC	Joint Coordinating Committee	WS	Workshop

1. Background and Object of the Project

1.1 Background of the Project

The government of Argentine (GOA) ratified UNFCCC in 1994 and Kyoto Protocol in 2001. In 1998, CDM secretariat was placed in Climate Change Unit (UCC) of Secretariat of Environment and Sustainable Development (SAyDS) and it was designated as the Designated National Authority (DNA). The UCC was upgraded to Direccion de Cambio Climático (DCC) in 2007. GOA has been actively promoting the global climate change agenda in hosting the 10th Conference of the Parties of UNFCCC in 2004 followed by the COP4 in 1998.

Meanwhile, Argentine has 278 million ha of land within which 33.19 million ha are native forest and 1.27 million ha are planted forest. There is a huge opportunity for forestation in Argentine with 20 million ha of potential land.

Recently, UCC and National Institute of Agricultural Technology (INTA), with their own budget, have been collecting basic forestry data on CDM as well as organizing seminars both in Buenos Aires and other parts of the country by inviting experts in the region. GOA recognized the needs to further strengthen A/R CDM related technical knowledge i.e. baseline, biomass expansion factor, growth rate, soil carbon content etc. in DNA and other relevant institutions and requested the Government of Japanese for technical assistance.

In view of the fact that issues identified in “Basic Study on A/R CDM in South America” implemented by Japan International Cooperation Agency (JICA) in October 2004 have been resolving, a Record of Discussion (R/D) was signed on May 21, 2007 to start this technical cooperation project.

1.2 Object of the Project

The objectives of this project are: to improve capacity on developing New Methodologies (hereinafter refereed as “NM”) and Project Design Document (hereinafter refereed as “PDD”) on A/R CDM; and to improve capacity for assisting the formulation of A/R CDM projects in the country through strengthening cooperation and collaboration among relevant institutions in the country as well as other neighboring countries. The overall goal, purpose and outputs of this project are as follows.

Overall Goal

- Activities of A/R CDM in the Argentine Republic are enhanced.

Project Purpose

- The capacity for assisting the formulation of A/R CDM projects among relevant organizations and institutions is strengthened.

Outputs

- (1) A proposal on articulation of relevant governmental organizations and course of action in relation to A/R CDM is clarified.
- (2) Human resources that can contribute to A/R CDM project cycle with emphasis on formulation, not necessarily in governmental organizations and institutions, are fostered.
- (3) Data, information and advice for formulation of PDD of A/R CDM are generated and provided to INTA, CIEFAP and UCC.
- (4) Information about A/R CDM to designers and proponents (land owner, forestry consultants, CDM consultants, etc.) of A/R CDM is accumulated and propagated.
- (5) Cooperation among parties concerned to A/R CDM in neighbor countries (e.g. Chile, Uruguay, etc.) is enhanced.

1.3 Project Area (Pilot Project Site)

Target areas of this project were pilot project sites where GOA was preparing to formulate A/R CDM projects. At the time of the project started, one area in Patagonia region and one in Buenos Aires province were considered as the pilot project sites, and final decision was made in the course of this project implementation. The land managed by CIP in Neuquen province and the land in Dorrego were selected as the pilot project areas in Patagonia region and Buenos Aires province, respectively (Figure 1). See 2,1 and 2,2 for details.

1.4 Cooperation Agencies

At the time of starting the project, relevant institutes of Argentina were as follows.

During the implementation of the project, a verbal request of upgrading the Secretaría de Agricultura, Ganadería, Pesca y Alimentos (SAGPyA) and Organismo Provincial para el Desarrollo Sostenible (OPDS) as counterpart agencies was made, and officially approved.

(1) Counterpart Agency

- Climate Change Unit of Secretariat of Environment and Sustainable Development (UCC)
- National Institute of Agricultural Technology (INTA)
- Patagonian and Andes Forest Research and Extension Center (CIEFAP)

(2) Cooperation Agency

- Ministry of Agriculture, Livestock, Fishery and Foods (SAGPyA) which is renamed as Ministerio de Agricultura Ganadería y Pesca (MAGyP)

(3) Beneficiaries

- Direct Beneficiaries: staff in UCC, INTA, CIEFAP, and A/R CDM project designers and proponents
- Indirect Beneficiaries: people in Patagonia and Buenos Aires province, and people in future A/R CDM project sites

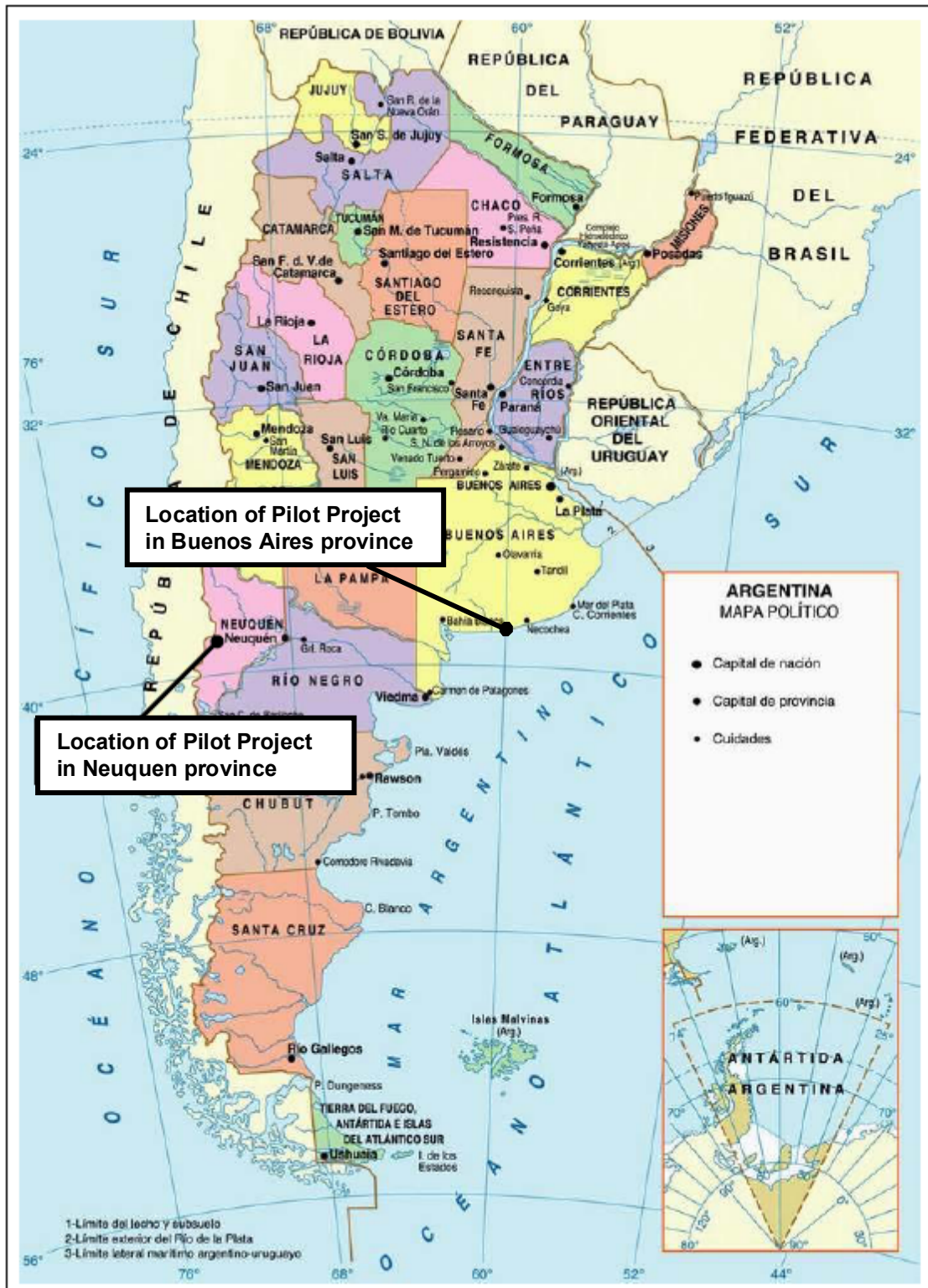


Figure 1 Location of the pilot projects sites

1.5 JICA Expert Team

JICA Expert Team for this project is comprised of following experts (Table 1). Collaboration framework between JICA Expert Team and relevant organization is shown in Figure 2.

Table 1 Expert team members and their tasks

Name	Role	Tasks
HATANAKA, Kunio	Chief Advisor /Promotion of A/R CDM (1)	Act as Team leader as well as the representative speaker for the expert team at meetings with GOA, donor meetings, national committees. Support Pilot Projects' formulation and implementation He was replaced by Hiraishi in January 2009.
HIRAISHI, Kazuaki	Chief Advisor /Promotion of A/R CDM (1)	He joined the team in January 2009 in place of Hatanaka.
FURUTA, Naoya	Promotion of A/R CDM (2)	Plan and organize seminars, workshops, training courses and experts meetings from neighboring countries. Economic Analysis and Socio-Economic study of pilot projects.
SEKINE, Hozuma	A/R CDM PDD & NM (1)	Design/Analyze methodologies, baselines, additionalities, administrative organizations of two pilot projects and PDD finalization.
MANO, Shuta	A/R CDM PDD & NM (2)	Design/Analyze methodologies, baselines, additionalities, administrative organizations of two pilot projects and PDD finalization. He was replaced by NAKANO at the beginning of the second year.
NAKANO, Masaya	A/R CDM PDD & NM (2)	He joined the team at the beginning of the second year in place of Mano.
URAGUCHI, Aya	A/R CDM PDD & NM (3)	Design/Analyze methodologies, baselines, additionalities, administrative organizations of two pilot projects and PDD finalization.
Aquiles Neuenschwander Alvarado	Forest Management (1)	Specify / Collect / Organize data which should be considered for A/R CDM project formulation.
SHIBAYAMA, Tomohiro	Forest Mangement (2) / Forest Residues	Specify / Collect / Organize data which should be considered for A/R CDM project formulation. Feasibility study on utilization of forest residues.
MACARENA PÉREZ CORREA	GIS / Remote Sensing	GIS/Remote-sensing technology transfer in regard to selection of possible A/R CDM pilot project sites.

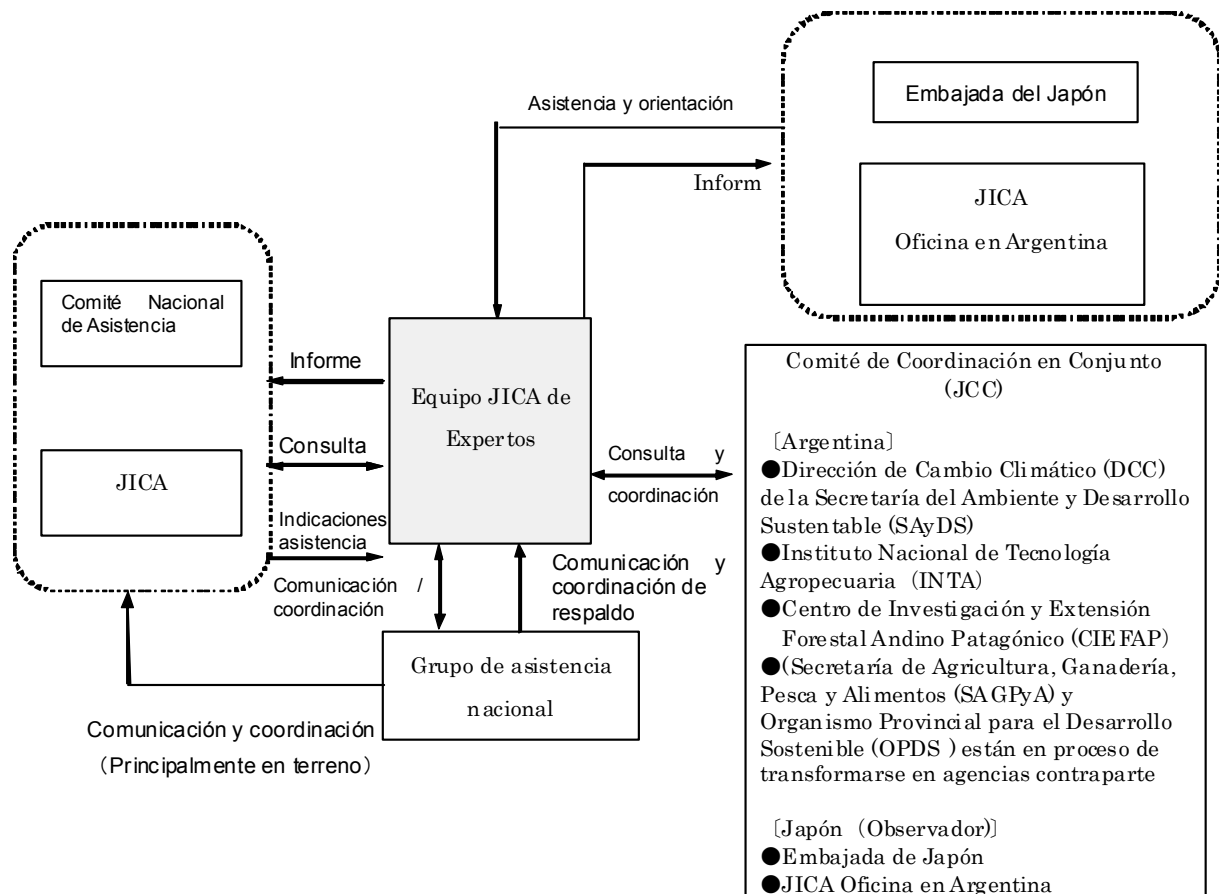


Figure 2 Collaboration between JICA expert team and relevant organizations

2. Outcomes and progresses of each activity

2.1 The pilot Project in Neuquén province

Draft version of PDD (Project Design Document) was completed based on the result of this pilot project study in Neuquen province, Argentina. The project participant of this pilot project is CIP (Corporación Interstadual Pulmarí) and forestation will be implemented in the land of CIP, two indigenous mapuche communities of Currumil and Salazar and two private land owners (Figure 3). The CIP was created by National Law N°23.612 in 1988, and is run by a Board composed by representatives of the National Government, the Provincial Government and local Mapuche communities. The goal of the Corporation is the development of productive activities such as forestry, agriculture, mining, industry, commercial and tourism, with the main purpose of contributing to socioeconomic growth of the area and the native communities established on site.

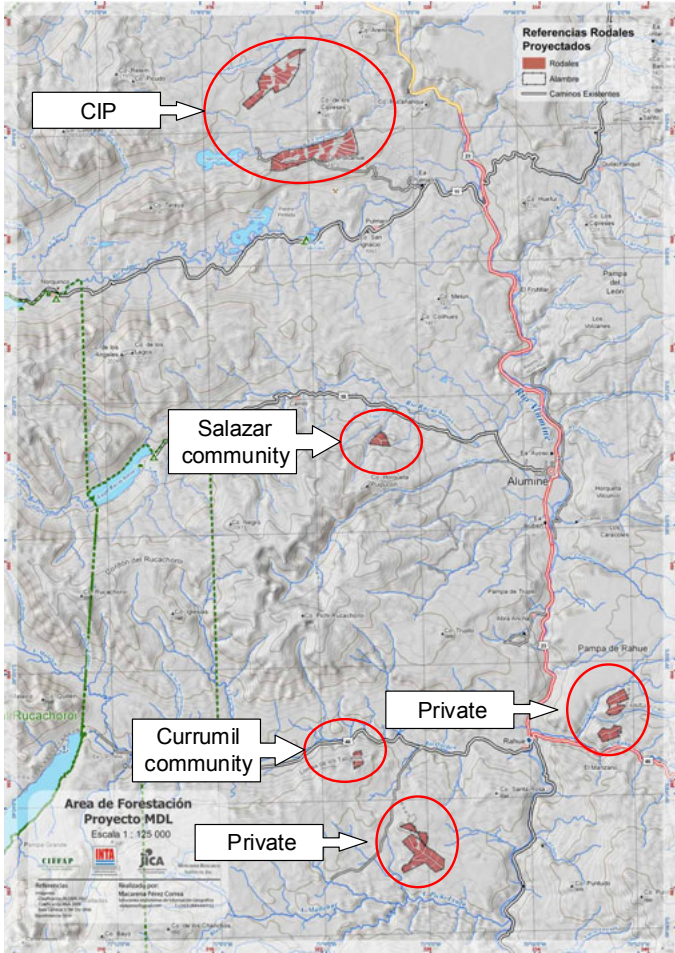


Figure 3 Location of the pilot project area in Neuquen province

2.1.1 Project boundary of the Pilot project in Neuquén province

(1) Land of CIP

Mapuche Communities

The consultation for mapuche communities had been started from July 2008. The concept of A/R CDM and issues of climate change was explained from CIP and University of Comahue during the consultation. Workshop between the representative of mapuche communities, INTA, CIP and University of Comahue held in Alumine in November 2008. JICA expert team joined the workshop. In this workshop, the representatives of mapuche communities pointed out the importance of briefing about pilot project to member of communities and propose to add it to the agenda of next board meeting of CIP. INTA agreed to the proposal and all of participants agreed to respect the culture of mapuche communities.

Since then, the consultation for mapuche communities was continuing by University of Comahue and the representative of mapuche communities agree to A/R CDM finally. This led to select Currumil (41.6 ha) and Salazar (50.4 ha) communities as the project area (Figure 4). The area of forestation is 27.7 ha in Curumil and 41.3 ha in Salazar because of the area for fire defense as see later.

CIP managed area

The part of CIP managed area (806.5 ha) was selected as the project area. The area of forestation is 461.4 ha because of the area for fire defense. The current land use of this area is for grazing with poor bush and small number of trees (*Araucaria araucana*). The carbon right for this land will be transfer to mapuche communities.



Figure 4 Overview of the Pilot Ploject in Neuquen province

(Left : Salazar comunity, Right : CIP managed area)

(2) Private land owners

Two private land owners were participated to the pilot project as a result of promotion by CIP. The totals of area are 287.8 ha and 168.1 ha (228.7 ha and 130.2 ha for forestation).

(3) Result

Totally 1,351.3 ha was selected as project area for the pilot project. And forestation will be implemented to 883.8ha within the project area. The area is defined as project boundary (Table 2).

Table 2 Project boundary of the Pilot project in Neuquen province

Land owner/user	Site	Forestation Area (ha)
Currumil community	Currumil	27.7
Salazar community	Salazar	41.3
CIP	Ignacio Norte	189.2
	Ignacio Sur	272.2
Private land owner	Estancia Quillen	228.7
Private land owner	Rahue Norte	74.0
	Rahue Sur	56.2
Total area		889.3

JICA expert team and INTA examined the applicability programmatic CDM for future participation of additional mapche communities. Although we understand the efficiency of programmatic CDM in this project area, we concluded the barrier of this scheme under time pressure of this project.

2.1.2 Data identification and collection for Pilot project in Neuquen province

(1) Land Eligibility Study

Background of the study

In the A/R CDM project development, it is necessary to demonstrate the project land was not forested at the end on 1989 until now. In order to demonstrate this condition for the pilot project in Neuquen province, land eligibility has to be conducted using satellite data with field survey for the areas including pilot project candidate site (840,000 ha). JICA team members had a series of discussion with INTA San Martin to elaborate ToR for this study and selected the reconsigned party.

Result

The study started in November 2007 by University of Comahue and the acceptance of the final report in January 2008. Then, field survey was implemented by INTA to verify the result and select project area for the pilot project. The line transect method was applied to the field survey and record the condition of soil and existing vegetation per 500m each. Project area and species for plantation was defined based on the survey. Finally, 2,000 – 3,000 ha was identified as the potential project area. The area include CIP managed area, private land and mapuche communities (Figure 5).

Livestock farming is an important activity for indigenous people economically, traditionally and socially. Therefore, it is unacceptable for them to reduce number of animals by selling or slaughtering them, and AR-AM0007, which requires it, was excluded from the candidate methodologies. In Patagonia region, it is widely recognized that animals should not be allowed to get into a forest until trees grow large enough to tolerate animal's attack. Therefore, AR-AM0009 was excluded from the candidate methodologies. AR-AM0003 was withdrawn during the project and impossible to use any more and AR-ACM0001 was identified as the most suitable methodology to apply.

(3) Baseline vegetation survey

The survey of existing vegetation was implemented in the project area of the pilot project by INTA team in 2008 and 2009 (Annex 1, Annex 2). JICA expert team had made technical support by E-mail during the survey. The result shows the deferent of biomass in Ignacio Norte of vegetation category "Matorral" because of the deferent of the dominant species of bush. (Table 3)

Table 3 biomass of exsiting vegetation in the area of the Pilot project in Neuquen province

	Erial	Estepa	Pradera	Matorral
Currumil	0.20	7.00	5.78	25.94
Salazar	0.20	7.00	5.78	25.94
Ignacio Norte	0.20	7.00	5.78	12.22
Ignacio Sur	0.20	7.00	5.78	25.94
Quillen	0.20	7.00	5.78	25.94
Rahue Norte	0.20	7.00	5.78	25.94
Rahue Sur	0.20	7.00	5.78	25.94

(4) Plantation Plan

In terms of the species to be used by the project, *Pinus ponderosa* has been chosen due to proven positive results in the region. INTA prepare the document for stakeholders to explain the applicability of *Pinus ponderosa* and the result of environmental impact analysis.

The plan of forestation was also prepared by CIP, INTA and University of Comahue based on the requirement of project participants. As a result, Ignacio Norte, Ignacio Sur, Rahue Nort, Rahue Sur were selected for traditional forestation and Quillen, Currumil, Salazar were selected for silvopastural systems. Table 4 shows forest management plan and site index of each project area. The details of the survey results are in Annex 2.

Table 4 Forest management plan and site index of the Pilot project in Neuquen province

	Ignacio Norte	Ignacio Sur	Quillen	Rahue Norte	Rahue Sur	Currumil	Salazar
Densidad de árboles (árbol /ha)							
Plantation	1100	1100	800	1100	1100	800	800
First pruning	609	609	445	609	609	445	445
Second pruning	371	371	272	371	371	272	272
Third pruning			182			182	182
Years of pruning	25,37	27,41	18,25,36	23,34	23,34	18,25,36	18,25,36
Years of thinning	9,16	7,18	7,9,13,16	9,16	9,16	7,9,13,16	7,9,13,16
Year of final harvest	45	50	38	41	41	38	38
Site index	13	12	12	14	14	12	12

Fencing, firebreak and road are required to implement forestation. The environmental negative impact is concerned by these activities and the locations of activities are identified based on the result of EIA to avoid the potential impact. The final maps of forestation plan is shown in Annex 3 (PDD draft) A4.2.

(5) Vegetation category of the project area

GHG emissions due to loss of live vegetation existing within the project boundary at the start of the project should be estimated. For this purpose, identification the categories of existing vegetation in the project boundary was implemented. The final maps of forestation plan and vegetation map for land eligibility study were overlaid and got the information of Table 5.

Table 5 Area of each vegetation category in the area of the Pilot project in Neuquen province

Category	Area (ha)						
	Ignacio Norte	Ignacio Sur	Quillen	Rahue Norte	Rahue Sur	Currumil	Salazar
Pradera	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Estepa	181.1	193.2	208.6	74.0	56.2	27.5	34.1
Erial	10.1	0.2	0.0	0.0	0.0	0.0	5.1
Matorales	0.0	75.4	20.0	0.0	0.0	0.2	0.7
Tree veg	0.0	2.4	0.0	0.0	0.0	0.0	0.0
Total	191.2	272.2	228.6	74.0	56.2	27.7	39.9

(6) Grazing Survey

There is an existing research of INTA about grazing activities and capacity of grazing around the area of the pilot project¹. JICA expert team explain INTA, CIP and University of Comahue about the

¹ Ayesa, J., Barrios, D., Becker, G., Bran, D., Letoumeau, F., Lopez, C., Marcolin, A, Sarmiento, A., Siffredi, G. (1999) "Evaluacion de los recursos naturales renovables del area Pulmari y recomendaciones orientativas para su aprovechamiento sustentable"

leakage related to the displacement of grazing activities based on the tool “Estimation of GHG emissions related to displacement of grazing activities in A/R CDM project activity” which is applied to AR-ACM0001. The data include area of grazing, vegetation category of each area within fencing, number of animals and capacity of animal were identified as necessary information and obtain all of data though CIP (

Table 6, Table 7 and Table 8).

Table 6 Grazing area of the Pilot project sites in Neuquen province

Category	Area (ha)						
	Ignacio Norte	Ignacio Sur	Quillen	Rahue Norte	Rahue Sur	Currumil	Salazar
Grazing area							
Pradera	30.0	44.5	28.4	37.3	26.8	63.7	55.3
Estepa	186.2	400.0	900.8	759.4	546.7	633.7	903.6
Erial	83.0	10.4	2.0	0.0	0.0	1.2	39.9
Matorales	300.0	235.3	96.1	46.1	33.2	151.2	4.6
Bosque	900.0	738.6	96.9	139.5	100.4	1,271.5	13.0
Total	1,499.2	1,428.7	1,124.1	982.4	707.2	2,121.2	1,016.4
Inside fences							
Pradera	0.3	11.9	0.0	0.0	0.0	0.0	0.0
Estepa	196.1	221.0	257.9	97.3	69.7	38.1	41.4
Erial	97.0	0.0	0.1	0.0	0.0	0.1	7.7
Matorales	20.6	226.6	29.2	0.1	0.2	0.5	1.2
Tree veg	46.7	8.5	0.2	0.1	0.4	0.0	0.0
Others	8.9	11.1	0.1	0.4	0.0	0.0	0.2
Total	369.5	479.1	287.5	97.8	70.3	38.6	50.5

Table 7 Number of animals in the area of the Pilot project sites in Neuquen province

Animal	Number of animals (count)						
	Ignacio Norte	Ignacio Sur	Quillen	Rahue Norte	Rahue Sur	Currumil	Salazar
Cow	70	30	380	352	195	75	63
Sheep	0	0	0	104	0	450	210
UGO	560	240	3040	2920	1560	1050	714

Table 8 Capacity of animals in the area of the Pilot project sites in Neuquen province

Category	Average carrying capacity (UGO/ha/year)
Pradera	8
Estepa	4.8
Erial	0.08
Matorales	2.4
Tree vegetation	0

We also shared the issues of over grazing from the aspect of sustainable development, not only the impact of carbon credit. Leakage was calculated based on the tool and the result demonstrate no leakage from displacement of grazing (Table 9).

Table 9 The result of leakage estimation of the Pilot project sites in Neuquen province

	Ignacio Norte	Rahue Sur	Currumil	Salazar	Ignacio Sur	Quillen	Rahue Norte
Number of animals (UGO)	560	1560	1050	714	240	3040	2920
Carrying capacity (UGO)	859.8	2583.3	3730.4	4591.6	1141.3	3473.9	3587.2
Sustainability	sustentable	Sustentable	sustentable	Sustentable	sustentable	sustentable	Sustentable
Area under over grazing (ha)	0	0	0	0	0	0	0
<i>LK</i> _{Conversión} (tonCO ₂)	0	0	0	0	0	0	0

(7) Growth model

INTA had developed the growth model of *Pinus ponderosa* which can be applied to the pilot project area. This model was decided to be applied to GHG estimation of forestation. See Annex 2 for the detail of mode.

(8) GHG Calculation

Based on the methodology, INTA and CIP estimated the amount of net anthropogenic GHG removals by sinks during the period of pilot project (Table 10).

Table 10 Estimated amount of net anthropogenic GHG removals by sinks

Year	Estimation of baseline net GHG removals by sinks (tonnes of CO ₂ e)	Estimation of actual net GHG removals by sinks (tonnes of CO ₂ e)	Estimation of actual net GHG biomass loss (tonnes of CO ₂ e)	Estimation of leakage (tonnes of CO ₂ e)	Estimation of net anthropogenic GHG removals by sinks (tonnes of CO ₂ e)
Year 1	0.00	58.3	18.4	0.00	39.8
Year 2	0.00	417.5	82.0	0.00	335.4
Year 3	0.00	1017.7	764.0	0.00	253.7
Year 4	0.00	1618.9	764.0	0.00	854.9
Year 5	0.00	1606.8	764.0	0.00	842.7
Year 6	0.00	2342.0	764.0	0.00	1577.9
Year 7	0.00	4255.3	764.0	0.00	3491.2
Year 8	0.00	7373.4	764.0	0.00	6609.4
Year 9	0.00	9579.4	764.0	0.00	8815.4
Year 10	0.00	10951.9	764.0	0.00	10187.8
Year 11	0.00	11517.9	745.6	0.00	10772.3
Year 12	0.00	11704.1	682.0	0.00	11022.1
Year 13	0.00	9946.6	0.0	0.00	9946.6
Year 14	0.00	12912.9	0.0	0.00	12912.9
Year 15	0.00	11383.7	0.0	0.00	11383.7
Year 16	0.00	11715.6	0.0	0.00	11715.6
Year 17	0.00	11526.0	0.0	0.00	11526.0
Year 18	0.00	11014.9	0.0	0.00	11014.9
Year 19	0.00	9152.5	0.0	0.00	9152.5
Year 20	0.00	6882.3	0.0	0.00	6882.3
Year 21	0.00	3224.8	0.0	0.00	3224.8
Year 22	0.00	6254.3	0.0	0.00	6254.3
Year 23	0.00	9318.0	0.0	0.00	9318.0
Year 24	0.00	9174.6	0.0	0.00	9174.6
Year 25	0.00	1844.0	0.0	0.00	1844.0
Year 26	0.00	8609.0	0.0	0.00	8609.0
Year 27	0.00	-2259.9	0.0	0.00	-2259.9
Year 28	0.00	-17262.2	0.0	0.00	-17262.2
Year 29	0.00	3758.6	0.0	0.00	3758.6
Year 30	0.00	6851.6	0.0	0.00	6851.6
Total (ton CO₂e)	0.00	176490.6	7640.4	0.00	168850.2

(9) Additionality and baseline scenario

“Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities” was applied to identify the baseline scenario and demonstrate additionality.

The project area was degraded, and reforestation and increase of shrub biomass could not be expected without human intervention. Under such circumstances, alternative scenarios were identified for each of the project sites:

- Ignacio Norte, Ignacio Sur, Rahue Nort and Rahue Sur where traditional forestation was

planned

- a) Traditional forestation without A/R CDM
- b) Continuation of current land use

■ Quillen, Currumil, Salazar where silvopasture system was planned

- a) Silvopasture system without A/R CDM
- b) Continuation of current land use

Additionality was demonstrated to each project boundary. The project area is degraded and forestation is unattractive for investors. The land has been allocated for grazing and no forestry activities have been undertaken in the past. Therefore, lack of knowledge in forestation could represent a barrier for the development of the project without the incentive of A/R CDM. Especially in mapuche communities, the main activity of the mapuche communities and the common practice in the area is the use of the land for grazing. The products obtained are mainly used to satisfy their own consumption needs, and this tradition is not expected to change unless the incentive of A/R CDM is considered. This analysis demonstrates the additionality and baseline scenario of this pilot project.

(10) Monitoring framework plan

Monitoring framework plan was examined so that the pilot project would continue sustainably for long time and CER would be issued based on the sound monitoring (Figure 6).

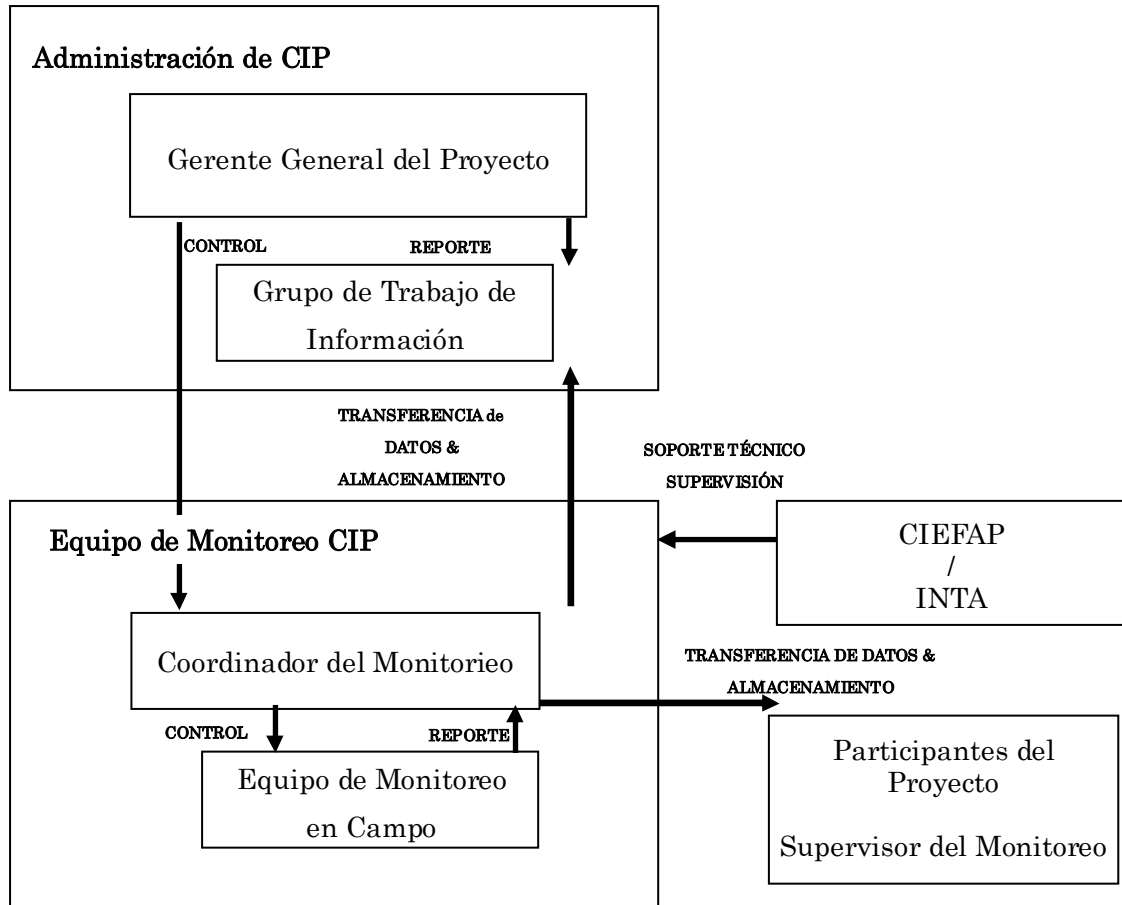


Figure 6 Monitoring framework plan for the pilot project

2.1.3 Socio Economic study for the pilot project in Neuquen province

University of Comahue and JICA expert team implemented the survey of socio-economic impact of the pilot project (Annex 4).

Survey Result

The survey started in 2008 and the acceptance of the final report in August 2009. The methodology followed in the Study involved a series of activities, which include:

- Information compilation from primary sources: social research techniques were used; interviews with members of different institutions involved in the social-economic development of the Alumine department and representatives from other local organizations; surveys were conducted, directed to producers from the local communities.
- Information compilation from secondary sources: it was undertaken through the research of bibliography, technical reports, project reports and other publications.

No significant negative impacts have been identified and it is expected that the proposed A/R CDM

project activity will contribute positively to the social and economic aspects include the enhancement of supply chain of forestry sector. In order to enforce the positive impact of the project, it has to be assured that the project respects the dignity, human rights and identity of the Indigenous People; that the benefits of the project are culturally accepted; and that the Indigenous People are consulted and participate all through the project cycle.

The result of the survey is referred to Section G of PDD draft.

2.1.4 Environmental Impact survey of pilot project in Neuquen province

The environmental impact survey was divided into two phases. The first phase was conducted before the determination of the project boundary, and therefore targeted the whole region. Then, in the second phase, the detailed survey was implemented for each of the project sites. The both phases were done by a subcontractor.

Results

The first phase of the survey started in December 2008 and the acceptance of the final report in March 2009. And, second phase of the survey started in July 2009 and the acceptance of the final report in December 2009.

It was concluded that the pilot project activity generates mostly positive include 1) absorption of CO₂, 2) job security 3) restoration and recovery process of soil erosion, 4) improving the conditions of grassland ,4) introduction of silvopastoral systems. On the other hand, negative impacts include 1) increased fire risk, 2) transition from grassland to a monospecific forest, 3) risk of spontaneous colonization of *Pinus Ponderosa* 4) increased erosion during the early stages of road construction and harvesting, potential impairment of water quality and quantity were identified. The report proposed to measures for the prevention and mitigation of potential impacts. The result of the survey is referred to Section F of PDD draft.

2.1.5 Development of PDD of the pilot project in Neuquen province

JICA expert team carefully studied each items of PDD with INTA, CIP, University of Comahue, and DCC based on the study and analysis of above section. The staff of DCC drafted PDD to integrated these information and knowledge. See Annex 3 (PDD Draft) for details.

2.2 Pilot project in Buenos Aires province

In Buenos Aires province, the area of pilot project was decided to Dorrego after this collaboration project has been started. JICA expert team and OPDS made some field survey and consultation of PDD development. And, stakeholder's workshop was held in Dorrego after the survey of land eligibility and environmental vulnerability. Although the pilot project was cancelled finally, technology and knowledge transfer of A/R CDM was realized through stakeholder's workshop and internal meetings with counterparts.

2.2.1 Basic framework of the pilot project in Buenos Aires province

(1) Determination of the pilot project area

During the first year, a series of preparation for the pilot project in Buenos Aires was made among DCC, Buenos Aires state and INTA soil laboratory. Surroundings of Guamini and Dorrego, situated, respectively, in the mid-west and the south-west of the state were introduced as candidate areas. Results of site-surveys, as well as interviews to stakeholders of both area conducted by JICA experts team was summarized and submitted to Argentinean counterparts for their consideration (Annex 5). In the report, JICA team pointed out the possible conflict with protected area establishment plan and concern related to possible negative impact of forestation in the coastal area, as well as the absence of fixed counterparts and of data/information needed for PDD development, for Dorrego area.

On May 29th, it was informed by DCC that Dorrego area was decided to be the pilot project area. Perhaps the decision was made with strong intention of Buenos Aires provincial government, but JICA expert team started to take necessary steps toward the development of the pilot project with respect for the decision of GOA.

(2) Counterparts

In the JCC on June 18th, it was proposed from Argentinean side to include OPDS as a counterpart agency. In addition, the counterpart team under OPDS was formulated. The team consisted of experts from University of Sur, University of La Plata, Ministerio de asuntos agrarios y produccion, Municipalidad de Dorrego and private consulting firm (Annex 6).

The components of PDD were explained by JICA team to the members of the counterpart team under OPDS. The roles of the members were discussed in relation to necessary steps for elaboration of PDD, and the basic idea was identified and share among the members (Annex 7).

(3) Issues

As mentioned above, the possible conflict with protected area establishment plan and concern related to possible negative impact of forestation in the coastal area were recognized for Dorrego area. In order to clarify these concerns, JICA team contracted out a study on environmental vulnerability in this area to explain the results to the stakeholders in the region. See 2.2.4 for details.

2.2.2 Field visit for the pilot project in Buenos Aires province

(1) Existing plantation sites and a nursery

JICA team together with OPDS counterpart team made a field visit on August 15th 2008 visiting a nursery and several existing plantation sites close to the potential pilot project site (Figure 7).

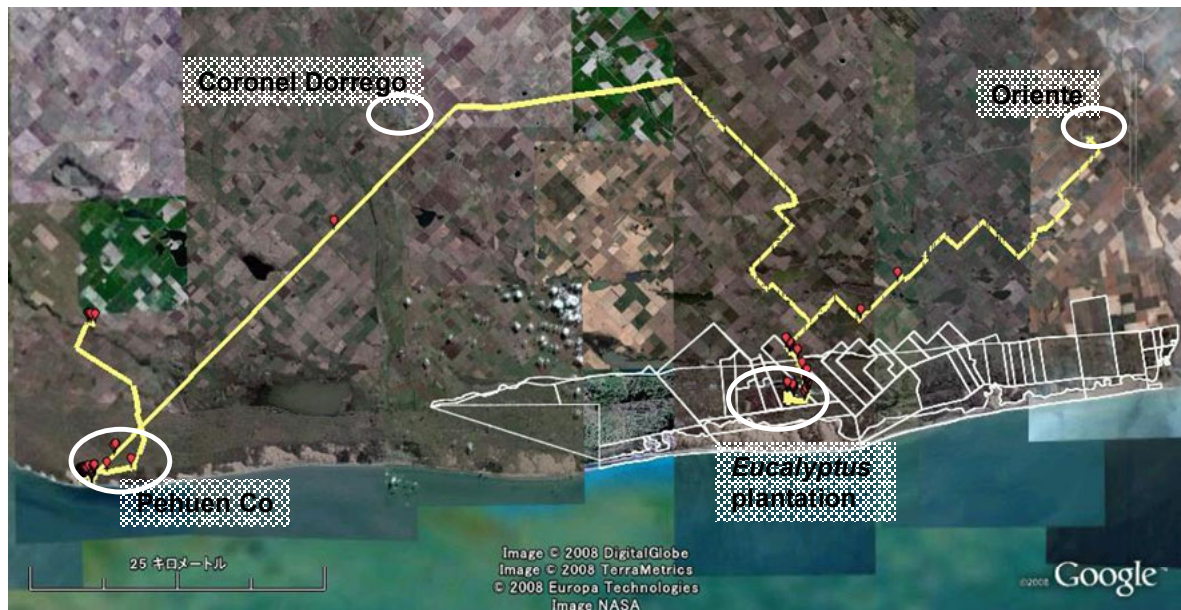


Figure 7 Field visit for existing plantation sites in Dorrego

The first visited site was Pehuen Co. Pehuen Co was established in 1948 as a camping site. Camping facilities exist under 38 to 42 years old plantations with several tree species, mainly Pinus. Also, Pehuen Co has a nursery growing ornamental plants in addition to trees for plantation (Figure 8).



Figure 8 Existing plantation and nursery in Pehuen Co

The next site was a plantation of *Eucalyptus glublus* in 350 ha in near candidate area for the pilot project. Trees were planted in 1999 in density of 3 m x 3 m, many of them died because of drought, and some trees were planted in 2002. Since density of trees was low, the area was rented for grazing as well (Figure 9).



Figure 9 Existing *Eucalyptus* plantation near candidate area

(2) Meeting with relevant parties

A meeting with municipality officials was organized in Coronel Dorrego on August 14th, and another meeting with community leaders and private land owners was organized in Oriente in the next day (Figure 10). The concept of climate change and A/R CDM and the plan of the environmental vulnerability study were explained to them. Positive interests to the activity were shown in the both meeting.



Figure 10 Meetings in Coronel Dorrego (left) and in Oriente (right)

2.2.3 Land Eligibility Survey for the pilot project in Buenos Aires province

JICA team and OPDS jointly carried out a land eligibility study for A/R CDM for 40,000 ha consisted

from public lands of Dorrego municipality and Buenos Aires province and private lands owned by approximately 20 land owners.

First, we demonstrated that the whole area was not forested at the end of 1989 and now by analyzing Landsat5 TM acquired in September 1987 and March 2008. Next, the classification accuracy for 2008 result was validated through land cover survey on the ground with the line transect method. Based on these results, the map was generated (Figure 11).

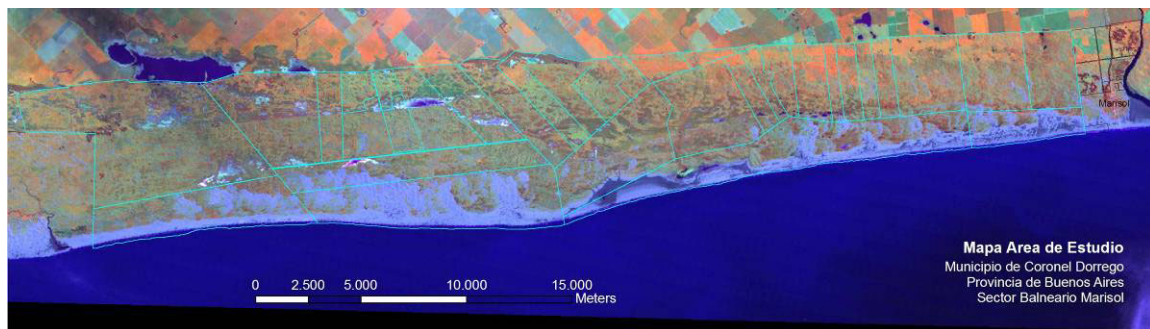


Figure 11 Map of land eligibility study in Dorrego

2.2.4 Environmental vulnerability study for the pilot project in Buenos Aires Province

As mentioned above, the possible conflict with protected area establishment plan and concern related to possible negative impact of forestation in the coastal area were raised. In order to clarify these concerns, environmental vulnerability study was decided to be conducted for the candidate area of the pilot project. The study aimed to extract eligible land for forestation by examining vulnerabilities in biodiversity, coastal dynamic, soil, hydrologic system, and landscape. The study was implemented by University of La Plata by subcontracting with JICA team.

Result

The interium report was made at the end of October 2008, and the progress of the study was reported at OPDS on the 12nd November. The draft final report was submitted to JICA expert team in the 3rd of December and it was presented in the next day at OPDS. JICA expert team, OPDS and supporting team found some points in the report had not been brought in logical way, and requested corrections. The report was finalized after the corrections.

The stakeholder's workshop was held on the 17th of December at Oriente, and the results of the environmental vulnerability study were reported. The results of study were summarized below.

Vulnerabilities in the pilot project area in term of biodiversity, coastal dynamics, soil, hydrologic system, and landscape were examined using indicators. The activity, which was considered to influence on the environments, was forestation, but the detailed forestation plan had not been decided at the time of the study. Therefore, traditional forestation model with monospecies was assumed. The results showed the vulnerability of the pilot project site would vary depending on the five indicators. A question how to integrate several indicators is the same as a question what kind of

value you put the priority, and is difficult to answer. In the study, the strictest method was adopted, namely, unit of lands which were evaluated to have high vulnerability with more than one indicator were labeled as not preferable for forestations. The area of relatively low vulnerability was estimated as 20 percent of total land surface of the targeted area. This study also showed that forestation would be possible by designing forestation model: forestation density, species, and size and location of forestation patches.

2.2.5 Cancellation of the pilot project in Buenos Aires province

Although the survey of environmental vulnerability showed the potential land for plantation with applicable forestation model, it could not solve the problem of conflict between the zoning of conservation area and A/R CDM project. And, OPDS made a decision to cancel the pilot project on Buenos Aires province finally.

2.3 Forest Residue Usage Survey

2.3.1 Forest Residue Usage Survey

(1) Framework of Forest Residues Usage Survey

The Forest Residue Usage Survey (here in after refer to as “the Survey”), under the Project consists of following three surveys.

1. Raw Material Estimation and Evaluation (hereinafter referred to as “TOR1 survey”)
2. Actual Uses and Evaluation of Applicable Technologies and their Economical Aspects for Forest Residues Processing and for Effective Uses of Residues (hereinafter referred to as “TOR2 survey”)
3. Proposal for Feasible Implementation Systems and Institutional Frameworks for Effective Uses of Forest Residues (hereinafter referred to as “TOR3 survey”)

Objective:

The major purpose of the Survey is to collect the following baseline information of forest residues in Patagonia:

- i) Forest plantation / sawmill residues production (hereinafter referred to as “the forest residues” or otherwise specified),
- ii) Actual usages and evaluation of applicable technologies for effective processing/ use of the forest residues, and
- iii) Suggestions/ proposals for feasible implementation systems and institutional frameworks.

Specific objectives for each of the three surveys are described in Table 11.

Table 11 Objectives of TOR 1, TOR 2 and TOR 3 Surveys.

Survey	Objectives
TOR 1 Survey	To understand and estimate: i) Supply amount of forest plantation/ sawmill residues, and ii) The harvesting and transportation costs related to wood production.
TOR 2 Survey	Keeping in mind results for TOR 1 survey, to understand and estimate i) Actual uses of the forest residues, ii) Evaluation applicable technologies/methods for primary/secondary residues processing, and iii) Evaluation applicable technologies/methods for effective uses of the forest residues
TOR 3 Survey	Keeping in mind results for TOR 1 and TOR 2 surveys, to provide: i) Analysis and suggestions for feasible implementation systems in relation to uses of the forest residues, energy production and distribution; ii) Analysis for institutional frameworks related with use of the forest residues, energy production and distribution; iii) Suggestions for promoting the use of the forest residues and biomass energy at different levels, and, iv) Suggestions for applicable institutional frameworks related to effective use of the forest residues and bio-energy production.

Source: TOR of each survey

Study Area:

The primary target area of the Survey is Patagonian provinces of Argentina, particularly Chubut/ Neuquén provinces. In addition to above, emphases are given to following two areas within Patagonia.

- i) Aluminé department of Neuquén province which includes CIP area (pilot project area of the Project), and
- ii) Northwest of Cushamen department in Chubut province with the old plantations having serious forest residues problems.

Implementation Setup and Schedule:

The TOR 1 survey was conducted directly by CIEFAP, the counterpart agency for the Project, whereas TOR 2 survey and TOR 3 survey were implemented by subcontractors. TOR 1 survey and TOR 2 survey were conducted during FY 2008 and TOR 3 survey was conducted during FY2009.

(2) Summary of TOR 1 Survey

The TOR 1 survey was commenced from the beginning of June2008. The draft final report was completed in mid October 2008, and the final report was completed at the end of November 2008.

The major scope of work for the TOR 1 survey is summarized in Table 12.

Table 12 Scope of Work for TOR 1 Survey

Items	Content
1. Wood Processing Industries (Saw Mill) Residues	<ul style="list-style-type: none"> - Production by types and species (sawdust, solid timber, etc): actual and potential productions. - Technological Characteristics (moisture content, density, size, etc). - Estimation of actual and potential amount by regions, department, municipalities (projection for the next 5-10 years)
2. Forest Plantation Residues	<ul style="list-style-type: none"> - Compilation of existing plantation information in the target area (cluster by species, age, regions, department, municipalities) - Estimation of actual production of residues by types of biomass by operations (pruning, thinning, etc). - Technological characteristics of each type of residues (moisture content, density, size, etc) - Estimation of actual and potential amount by regions, department, municipalities (projection for the next 5-10 years)
3. Economical Aspects of Residues	<ul style="list-style-type: none"> - Actual harvesting methods and costs of forestry operations (pruning, thinning, etc.) and transportation.

Source: TOR of TOR 1 survey

Followings are Summary Result of TOR 1 survey

- Specific locations named “Node” were established in consideration of locations of plantations as well as concentration of sawmills
- For estimate of forest plantation residues, existing plantation inventory (GIS data), and growth models of three major plantation species in the region are used.
- For estimates of saw mill residues, inventory on regional sawmills was initiated.
- Following two variables (assumptions) and their combinations were considered for possible 9 scenarios for supply of plantation residues:
 - ⇒ Rate of plantation management (percentage of treated area): 100, 75 and 50%. Each representing maximum potential, a considerable increase in the surface that would be subject to management, and similar pace as current.
 - ⇒ Levels of utilization of residues (% stem and branches): high, medium, low.
- Of the above variables, 75% plantation management rate and medium level utilization were concluded as realistic scenario for estimating the supply of plantation residues for the following 10 years.
- Based on the selected scenario, following table (Table 13) describes, supply estimates of plantation residues.

Table 13 Supply of Forest Plantation Residues Biomass per Node for Neuquen and Chubut provinces

Node	Biomass Supply (dry ton/year)	Node	Biomass Supply (dry ton/year)
Manzano Amargo	2,487	El Hoyo	11,692
Las Ovejas	8,846	El Maitén	4,640
Andacollo-Huinganco	2,971	Cholila	721
El Huecu	113	Esquel	2,495
Loncopue	1,911	Trevelin	889
Villa Pehuenia	7,221	Corcovado	1,907
Aluminé	6,767	Río Pico	546
Junín de los Andes	6,706		
San Martín de los Andes	10,758		
Total Neuquén	47,778	Total Chubut	22,890

Source: Final Report TOR 1 Survey

- Based on the selected scenario, following table (Table 14) describes, supply estimates of sawmill residues.

Table 14 Supply of Sawmill Residues Biomass per Node for Neuquen and Chubut Provinces

Node	Biomass Supply (dry ton/year)		Node	Biomass Supply (dry ton/year)	
	Solid ton	Sawdust ton		Solid ton	Sawdust ton
Manzano Amargo	130	30	El Hoyo	4,951	1,401
Las Ovejas	977	226	El Maitén	211	52
Huinganco-Andacollo	296	68	Cholila	48	15
El Huecu	-	-	Esquel – Trevelin	1,806	546
Loncopue	-	-	Corcovado	225	54
Aluminé	2,457	720	Río Pico		
Villa Pehuenia	83	19			
Junín de los Andes	1,584	395			
S M de los Andes	4,547	1,046			
La Angostura	478	104			
Total Neuquén	10,553	2,609	Total Chubut	7,240	2,067

Source: Final Report TOR 1 Survey

- The selected scenario implies that there are potential supply of 60,000 tones / year, in Neuquen and 30,000 tons / year in Chubut.

(3) Summary of TOR 2 Survey

The major scope of work for the TOR 2 survey is summarized in the Table 15.

Table 15 Scope of Work for TOR 2 Survey

Scope of Work	
i) Patagonian provinces of Argentina	
1. Data/ information collection, and compilation/ analysis of collected data/ information to derive applicable technologies/ methods (To derive “Menu List”)	
A. Actual Uses of the Forest Residues	
B. Evaluation of Applicable Technologies and their Economical Aspects for Forest Residues Processing	
C. Evaluation of Applicable Technologies for Effective Use of Forest Residues (Especially for Energy)	
2. Pre-feasibility study of the above applicable technologies/methods by regions (i.e. by nodes determined in TOR 1)	
ii) Detail Study for Aluminé department of Neuquén province (in relationship with A/R CDM Project)	
iii) Detail Study for Northwest of Cushamen Department in Chubut province	

Source: TOR of TOR 2 Survey

Followings are Summary Result of TOR 2 survey:

- 90,000 dry ton/year forest residues available from provinces of Neuquén and Chubut can be converted to 72,000 ton/year briquettes, (equivalent to 5.5% of Argentine fuel wood production) or, if used for co-generation of heat and electrical energy, 42 ton/h of steam and 14 MVA electrical. These are calculated based on a hypothetical assumption that all residues to be brought together and to be used in one location.
- Selection of applicable technologies /methods for primary/secondary residues processing as well as effective uses of the forest residues were evaluated on the basis of technical and economical analysis. First selection was made for non-combustion-use technologies such as impregnated poles, compressed shavings, finger-joint (FJ) boards, veneer production, broom sticks production, wood cement panels, cellulose pulp, MDF, and OSB. Second selection was done in term for production of fire wood and/or energy usages, such as hog fuel, charcoal, briquettes, pellets, biofuel and gas producers. In addition, the description and analysis of steam production for thermal and electrical energy which aimed for wood sawing and drying, was conducted.
- Based on the above survey, a “menu list (data book)” of applicable technologies was compiled.
- Decisions for technologies/methods applicable for the “nodes” considered in the TOR 1 Survey was taken on the basis of the estimated forest residues as per node, and in consideration of non-combustion-use technologies and also for conversion to different kinds of renewable fuel. Also using residues for substitution to fire wood and natural gas was considered.
- The more efficient/ effective technologies which are feasible or worth considering for further implementation were selected/ evaluated based on following aspects: contribution to more effective use of forest plantation residues, enabling value-added productions, allowing easier transportation and storage, enabling better combustion controllability and more qualified uses. Followings are some possibilities in the Study Area.

- Sawdust is an important ingredient for brick fabrication and used for the mixture of brick stuff as well as for fuel for bricks quenching. There is potential demand for such usage in the area.
- Shavings have a demand for animal /livestock beds. Compressed shavings could be produced by Antu Lemu sawmill which has two modern molding machines with estimated shavings generation of 1tn/h.
- Charcoals fabricated from solid sawmill residues, showed to be profitable even at low level production for domestic uses and for steel production. Total demand capacity estimated for the region under Study is around 3,776 ton/year. Majority of charcoal consumed in Patagonia comes from other provinces, thus charcoal production by sawmill residues has certain potential.
- Crushed charcoal and bark with the addition of soil nutrients can serve as environment friendly substratum and fertilizers for better growth of seedlings/trees in nurseries. A forest nursery with one million seedlings production consumes 120 ton/year of this material.
- Fuel wood replacement is needed because of increasing restriction on natural forest exploitation. Briquettes and pellets are the products normally used for that purpose. A total production of 3tn/h of briquettes in CIP and Cushamen was recommended, since in these nodes, raw material (chips) and transport has the lowest incidence on production cost. However, selling prices of these products are at present limited by the price of fuel wood, and production cost is very sensitive to raw material cost.
- The most suitable raw material for pellets is dry sawdust and shavings, which are very scarce in the surveyed region because of the little remanufacture activity taken in place. Also, currently there is practically no demand for pellets owing to the very little combustion equipment established for pellets in Argentina. The same constraints on price and cost as for briquettes are valid for pellets.
- Twenty nine (29) small steam and hot water boilers working by natural gas, in the province of Chubut, can be transformed to work on gas producers through solid wood residues gasification. This would allow increment in heat availability for wood drying and other uses with investment and operation cost similar to natural gas.
- Hog fuel obtained from chipping of forest residues permits automatic combustion control in steam boilers for heat and electricity generation. For the two sawmills of CORFONE and Antu Lemu in province of Neuquén, which at present are consuming solid fuel wood were suggested for using hog fuel. Electrical generation from forest biomass at a scale lower than 3 MVA is considered unprofitable unless it is aimed for self sufficient operation of such facility. In Patagonia this solution is feasible for sawmills close to plantation sites.
- Conversion of wasted thinning logs and tops of trees into either poles for wine yard supports or impregnated poles for fences and electric lines has certain potential in the region. For serving this purpose, an increase in production of CORFONE's two sawmills is recommended.
- Wood wool cement panels for construction enables consumption of high volume forest residues. It is for housing construction and can be produced in different shapes/sizes and having good thermo acoustic properties, which is valued products for Patagonia.

(4) Summary of TOR 3 Survey

The major scope of work for the TOR 3survey is summarized in the following Table 16.

Table 16 Scope of Work for TOR 3 Survey

Item	Content
1. Legal and Institutional Framework	<ul style="list-style-type: none"> - Possibilities and options for legal/ institutional frameworks and support mechanisms related to effective uses of the forest residues, and promotion of biomass energy, co-firing, combined heat and power. - Opportunities for residues utilization to contribute better forest management and CDM projects. - Financial possibilities and options for activities, and systems applicable at small to medium scale and at community level (biomass related, thinning products) - Possibilities of state policies and incentives (tax, cost-share, subsidies, etc) for establishment and maintenance of facilities/ equipments and their effects - Expected roles of economy/industry/ forestry related administration - Impacts of above mentioned institutional frameworks - Analysis and suggestions on possible collaboration for effective use of forest / sawmill residues <ul style="list-style-type: none"> • Joint activities with potential Users

Item	Content
	<ul style="list-style-type: none"> • Possible collaborations between suppliers and consumers, • Possible linkage/ grouping of suppliers, consumers
2. Competitiveness of Patagonia as energy / resource producer through forests residues	<p>SWOT analysis of residues and products made of residues produced in Patagonia for demands mainly at markets inside Patagonia (and some brief analysis for outside of Patagonia (national level, Chile). Identification of potential competitors)</p> <p>Not required to have full-scale workshop. Needed to collect SWOT information in relation to the above “legal and institutional framework” (Possibility of small work shop in Esquel or elsewhere)</p>
3. Business feasibility of facilities/ equipments to be introduced	<ul style="list-style-type: none"> - Based on above, suggestions and recommendations for feasible implementation system / business models (in relation to outputs of TOR 2 survey) - Possibilities and options for new projects and business models related to effective use of residues, and promotion of biomass energy, co-firing, combined heat and power - Analysis of possibilities of using CDM to facilitate energy projects using the forest residues in the region

Source: TOR of TOR 3 Survey

The target study area for TOR 3 survey is the same as that of TOR 1/ TOR 2 surveys. Firstly, analysis/ suggestions at Patagonia level (particularly Chubut/ Neuquén provinces) were done. And then, case studies for Aluminé department of Neuquén province and Cushamen department of Chubut province were conducted.

Followings are Summary Result of TOR 3 survey:

- Effective uses of forest residues in Patagonia is physically attainable and for some projects/activities subsidies and other promotion measures haven been already introduced.
- However, under the current circumstances, the actual usages of forest residues as well as sound management and production of forest plantations are very limited. This is due to weakness in 1) active involvement/coordination as well as establishment of relevant policies/ institutional setups by the public sector, 2) collaboration between public and private sectors, and 3) incentives/ advantages for investment in the industry. Especially, awareness and knowledge toward usages of forest residues, and necessity of supporting activities are often weak in the concerned public sector/ agencies of the region.
- In addition, wood production and processing in Patagonia is less competitive in comparison to other regions in Argentina. This is due to geographical extension/remoteness, adverse weather conditions, slow growth, low/ small-scale production, emphasis and priorities toward traditional land use practice such as grazing in the region. Unless, improvement in policies as well as business support mechanism will taken into place, there is high probability of stagnation of not only for long-term usage of forest residues but also for forestry /forest product industry in Patagonia.
- When considering usage of forest residues for electricity generation, there are opportunities or extending policies to promote bio energy. However, in the view of uncertainty in legal/ institutional frameworks, low prices for natural gas and hydro-energy, currently it is not always in a favorable environment for promoting usages of forest residues for energy purposes. Most of existing subsidies/ incentives related to energy uses in Argentina are directed to wind energy and

- large-scale projects.
- In view of current situations and limiting factors prevalent in Patagonia/ Argentina, following four institutional frameworks are proposed for promoting effective usages of forest residues of Patagonia
 - Establishment of national-level project portfolio including grid-connected electricity generation
 - Usage of program CDM approach at national level
 - Establishment of agencies promoting regional development at provincial level
 - Establishment of cooperative associations at municipal level for promoting local development
 - Based on evaluation of technical/ economical feasibilities of technologies proposed in TOR 2 survey and business models for grid-connected electricity generation, following two types of businesses are generally feasible for effective usage of forest residues in Patagonia
 - Small-scale project/ business at community/ organization level: briquette production, brick production, wooden panel production
 - Larger-scale project/ business involving several towns/villages or at nodes: Using residues as raw material for grid-connected electricity generation (in consideration of the current electricity situations in Patagonia)
 - Small-scale projects do not require drastic changes in policies/ institutional support nor support/ subsidy mechanism. Even in the region, similar projects had been already implemented in certain locations. However, when considering extension to communities and for broader areas, there is necessity for supports in promoting investment mechanisms/ opportunities to such projects. Furthermore, in comparison to traditional production/ business activities prevalent in the region, the said projects/ activities are not the type of activities to be implemented by own initiatives of communities. Therefore, collaboration among concerned local authorities and awareness raising organizations is important.
 - Larger-scale electricity generation projects tend to have better technical/ economical feasibilities than small-scale projects. However, it is required to restructure current subsidy / incentive measures for existing electricity generation projects/ businesses and electricity tariff. Under the current circumstances, electricity generation using residues need to compete with existing electricity generation projects/ businesses which already have subsidies/ tax exemption. In consideration of lack of electricity in the country and the region, using of residues for regional electric generation may have higher probability for establishment of policy/ institutional setups than other types of raw material.
 - The forest residues have different types of usages. Thus in some cases, there will be conflicts among different types of usages. Conflicts may arise when establishing policy/ institutional setups among different types of usages. Therefore, coordination for implementation as well as policy/ institutional setup establishment among different types of usages is preferred.
 - When ranking feasible technologies/ products as per nodes within in the region, generally, 1) briquette production, and 2) fence pole production have high potential but their development are often prevented either by a lack of good financial mechanism or by lack of experience under current institutional framework. Detail of the ranking is described in Table 17.

Table 17 Feasible Technologies/ Products and Locations under the current Institutional Framework

Product	Production site (node)	Ranking
Briquettes	El Hoyo	41.0
Fence poles	Abra Ancha	39.5
Wood wool panels	Villa Pehuenia	33.5
Wood wool panels	Pueblo Cushamen	33.5
Charcoal	Villa Pehuenia	31.5
Charcoal	El Hoyo	31.5
Soil enhancer	Abra Ancha	30.5
Briquettes	Villa Pehuenia	30.0
Briquettes	Aluminé	27.0
Grid-connected power generation	Villa Pehuenia y Aluminé	25.0
Grid-connected power generation	El Hoyo	25.0
Community energy supply	Villa Pehuenia	23.0
Community energy supply	Zona rural de Cushamen	23.0

Source: Final Report of TOR 3 Survey

- When assuming that proposed institutional frameworks to be materialized, 1) grid-connected power generation, 2) briquette production, 3) fence pole production, 4) wood wool panel production, and 5) Charcoal production are ranked as high potential feasible technologies/ products as per nodes within in the region. Detail of the ranking is described in Table 18.

Table 18 Feasible Technologies/ Products and Locations under the Proposed Institutional Framework

Product	Production site (node)	Ranking
Grid-connected power generation	El Hoyo	74.0
Grid-connected power generation	Villa Pehuenia y Aluminé	66.0
Briquettes	El Hoyo	52.0
Fence poles	Abra Ancha	50.5
Wood wool panels	Villa Pehuenia	44.5
Wood wool panels	Pueblo Cushamen	44.5
Charcoal	Villa Pehuenia	42.5
Charcoal	El Hoyo	42.5
Briquettes	Aluminé	38.0
Soil enhancer	Abra Ancha	37.5
Briquettes	Villa Pehuenia	37.0
Community energy supply	Villa Pehuenia	33.0
Community energy supply	Zona rural de Cushamen	33.0

Source: Final Report of TOR 3 Survey

2.4 Seminar, Work-shop, Training course

2.4.1 Work-shop with Experts from neighboring countries (First Year)

The first year work-shop with the participation of experts from neighboring countries (hereafter “the work-shop”) was organized on February 19 and 20, 2008. In addition to overseas experts from Uruguay, Paraguay, Chile, Belgium etc., main members from counterpart institutions and related people with pilot projects in Argentina, totalizing about 40 persons, participated to the work-shop.

The program of the work-shop (Figure 12) covers vast areas from latest world-wide information about A/R CDM to experiences of each participating country (Figure 13). During the morning session of the second day, participants discussed in three groups, organization, finance and methodologies, and reported the conclusion of each group. An enquiry was also made to participants with a view to improving the work-shop in next year. Annex 8 contains documents for group discussions and the results.

Programa de Actividades	
Martes 19 de febrero	
<p>09:00-10:00 Palabras de bienvenida</p> <ul style="list-style-type: none"> > Toshiaki Furuya, JICA > Kunio Hatanaka, <i>Director Técnico contraparte Japonesa</i> > Nazareno Castillo Marín, <i>Director de Cambio Climático (SAyDS)</i> > Tomás Schlichter, INTA > Representante del CIEFAP > Mirta Larriou, <i>Dirección de Forestación (SAGPyA)</i> <p>10:00-11:00 Introducción</p> <ul style="list-style-type: none"> > Novedades de la COP13 en Bali. <i>Dr. Nazareno Castillo Marín, Dirección de Cambio Climático (SAyDS)</i> > Aspectos metodológicos y herramientas disponibles para los proyectos MDL forestales. <i>Dr. Walter Oyhançabal, MGAP (Uruguay) - UNFCCC-IPCC</i> > Preguntas <p>11:00-11:30 Intervalo</p> <p>11:30-12:30 Mercado de Carbono</p> <ul style="list-style-type: none"> > Introducción a los mercados de carbono. <i>Lic. Germán Zunini, Fondo Argentino de Carbono</i> > Mercados y Proyectos - Mercados por créditos forestales y oportunidades por desarrolladores de proyectos. <i>Dr. Charlotte Streck, Climate Focus</i> > Preguntas <p>12:30-13:30 Presentación de casos. Uruguay y Paraguay</p> <ul style="list-style-type: none"> > Restauración de tierras degradadas con sistemas silvopastoriles. <i>Dr. Walter Oyhançabal, MGAP (Uruguay) - UNFCCC - IPCC</i> > Experiencia de Paraguay en el marco del MDL. <i>Ing. Ángel Parra Aguiar, Secretaría de Ambiente (Paraguay)</i> > Preguntas <p>13:30-14:30 Almuerzo</p>	<p>14:30-15:30 Presentación de casos. Chile</p> <ul style="list-style-type: none"> > El proyecto de cooperación de JICA en Chile. <i>Mr. Kunio Hatanaka, Mitsubishi Research Institute Inc.</i> > Proyecto en Coyhaique. <i>Ing. Pablo Moreno</i> > Preguntas <p>15:30-16:00 Intervalo</p> <p>16:00-16:30 Fondo Argentino de Carbono</p> <ul style="list-style-type: none"> > Funcionamiento y apoyo a proyectos MDL. <i>Ing. Sebastián Galbusera, Fondo Argentino de Carbono</i> > Preguntas <p>16:30-17:00 Presentación de casos. Argentina</p> <ul style="list-style-type: none"> > Proyecto forestal MDL en Santiago del Estero. <i>Juan Luis Mérega, Fundación del Sur - Sonia Ramirez, GADE</i> > Preguntas
Miércoles 20 de febrero	
<p>09:00-09:10 Presentación de la dinámica de trabajo del día</p> <p>09:10-10:20 Presentación de casos. Argentina</p> <ul style="list-style-type: none"> > Actividades Regionales de Investigación del INTA. <i>Ing. Guillermo Merletti</i> > Proyecto Forestal MDL Pulmarí. <i>Proyecto de cooperación JICA-SAyDS-INTA-CIEFAP</i> > Preguntas <p>10:20-11:30 Discusión en grupos</p> <p>11:30-12:00 Intervalo</p> <p>12:00-13:00 Conclusiones y cierre</p> <p>13:00-14:00 Almuerzo</p>	 <p style="text-align: center;">Taller "Fortalecimiento del MDL forestal en Argentina" Secretaría de Ambiente y Desarrollo Sustentable, Jefatura de Gabinete de Ministros - San Martín 451, Ciudad de Buenos Aires</p>

Figure 12 Agenda of Work-shop



Figure 13 Pictures of workshop

2.4.2 GIS training

In the second year, JICA team carried out introductory level training courses on GIS for DCC and OPDS. These training courses were held at DCC on November 20th and 21st, 2008 and at OPDS on November 24th, 2008. After three-hour lectures on GIS outline, data type, and application, actual practice session utilizing ArcGIS9 was provided for five hours.

2.4.3 Training course for A/R CDM / Work-shop with Experts from neighboring countries (Second Year)

An A/R CDM training course was organized in Buenos Aires from 16th to 20th February 2009, with a cooperation of Carbon Decision. S.A. Approximately 30 persons from SAYDs, SAGPyA, other ministries, universities and private consulting firms participated to this training course (Figure 14).

Following this training course, second year work-shop with experts from neighboring countries was held in the afternoon of 20th February. Pilot projects in Neuquen Province and in Buenos Aires Province under the project, as well as another bio-energy project under another JICA cooperation were introduced and active discussions were observed among participants. It was also proposed and agreed that a net-work of experts in the southern part of South America will be established (Annex 9).



Figure 14 A/R CDM training course/Work-shop with experts from neighboring countries

2.5 Final Seminar on A/R CDM

2.5.1 Final Seminar in Neuquen

22 February 2010, the final seminar was held at the hall of Museum of Mapuche culture in the capital of Neuquen Province.

About 60 people attended to the seminar which includes more than 15 Mapuche people from Salazar, Curumiru and other communities. It was a very diverse group with representatives of Agriculture Ministry of the province of Neuquén, private owners Provincial Parks Administration, CIEFAP, INTA, Provincial Ministry of Environment, CORFONE (Forest Institution of Neuquén), Provincial Native Forest Direction, provincial and national representatives and other stakeholders, at least 15 representatives of Mapuche community from Salazar, Curumiru and other communities.

The opening ceremony was in charge of a National Senator representing the province of Neuquén, representative of JICA's office in Argentina, the National Climate Change Director, CIEFAP's representative and INTA's representative in charge of the workshop moderation. In the seminar, JICA expert team reported the result of pilot project in Neuquen province as well as other fruit. Each counterpart organizations and CIP, the project

participant of this pilot project, reported their activities during the project. In addition, the result of panel discussions with participants showed high expectations for the pilot project.

In the panel discussion, the topics include the additional cost of forestation CDM, care for indigenous people and future possibility of forest activities under global warming issues were noted from the attendees of seminar. CIP mentioned that they take care of the cost of validation for pilot project. CIP also mentioned about future project of wood production and biomass energy system in Mapuche communities for sustainable activities in the project area. In addition, counterpart organization mentioned about future possibility of forest activities in Argentina include REDD and CDM. See Annex 10 for details.

2.5.2 Final Seminar in Buenos Aires

26 February 2010, the final seminar was held at the hall of SAyDS in the center of Buenos Aires. About 60 people include the experts from Chile, Paraguay and Uruguay and some Japanese companies in Argentina attended to the seminar. Director of SAyDS and Minister Yamamoto also joined to the seminar. In the seminar, JICA expert team reported the result the project includes the pilot project in Neuquen province and Buenos Aires province, and each counterpart organization reported their activities during the project. JICA expert team also reported lessons learned and recommendations from this project based on final report. Then, open discussions were held with participants and, and future expectations were expressed for the pilot project and forestation CDM in Argentina. Particularly, the attendees were interested in the topic of the pilot project in Buenos Aires and Neuquen province, forest residues utilization studies and the result of socio-economic survey in Neuquen province.

Expert workshop with the experts from neighboring countries (Chile, Paraguay and Uruguay) was held after final seminar. In the workshop, future of forestation CDM in South America and the possibility of triangular cooperation with Japan were discussed.

Specifically, experts discuss to expansion of cooperation within South and Latin America by using the experience of JICA's project in each country. Although clear target for future cooperation was not mentioned, all of attendees agree the importance of forest-related activities for global warming issues. See Annex 10 for details.

2.6 A/R CDM Guidebook

The guidebook for A/R CDM project in Argentina was published based on the result of the project. The target of the guidebook is to enhance the capacity and opportunity of A/R CDM in Argentina (Figure 15). Interviews to various expert include counterpart organization were conducted to decided the contents of it. The fruits of the project include PDD and reports ware

reflected to it also. The guidebook was distributed to the participants of final seminar in the Neuquen and the Buenos Aires and provided to counterpart organization. The contents of guidebook will upload to the website of DCC.



Figure 15 Cover and contents of the guidebook

2.7 Website

Website of DCC was improved for publicity, dissemination of the results of this pilot project and enhancing the information transmission capacity of A/R CDM (Figure 16 and Figure 17).

Specifically, the search tool for CDM information in Argentina was developed. User can search the information on CDM by the type of project and by province. The new user-friendly contact form allows user to ask a simple question for project implementation. Users will be able to browse and download the information of pilot project through the website.

Titulo	Descripcion	Reducciones esperadas
Central Hidroeléctrica el Chañar	Aprovechar la estructura y potencial hidroenergético existente en el ciclo compensador "El Chañar" ubicado en el complejo hidroeléctrico Cerros Colorados S.A.	62310
Cambio en el ciclo de Producción de Energía abierto para combinado de sierra chata, cuenca neuquina.	Cambio de ciclo abierto por ciclo combinado. Hoy genera energía eléctrica para consumo interno a través de turbina de ciclo abierto. La propuesta es insertar un sistema para la generación de vapor y una turbina a vapor.	4800
Forestación en tierras áridas degradadas por sobrepastoreo en Alumbré, Neuquén.	Se forestará 2.308 ha con coníferas y latifolias sobre una superficie total que alcanza las 2.744 ha.	83669
Forestación con ciprés de la corralera en la provincia de Neuquén.	Capturar carbono mediante una plantación forestal con una especie nativa ciprés de la corralera (Austrocedrus chilensis) a ser implantada en una zona esteparia degradada por la actividad en esa zona.	-1
Proyecto Engorras a corral con subproductos de la industria	En este proyecto se enlatará 18.000 tn de orujo de manzana que servirán para engorras a los 5000 animales durante un año. La reducción de las emisiones estarán en el aprovechamiento del subproducto como alimento en vez de ser eliminado en oscureros.	17000
Proyecto Forestal MDL Pulmarí	Creación y aprovechamiento de una masa boscosa de una superficie de 10000 ha.	80000

Figure 16 Image of the list of CDM project by province

Inicio
 Buscar
 Organigrama
 Índice Temático
 Programas y Proyectos

Áreas
 Unidad Secretario
 Subsecretaría de Coordinación de Políticas Ambientales
 Subsecretaría de Planificación y Política Ambiental
 Subsecretaría de Promoción del Desarrollo Sustentable
 Subsecretaría de Control y Fiscalización Ambiental y Prevención de la Contaminación
 MERCOSUR
 Educación Ambiental

Servicios
 Trámites
 Licitaciones
 Buzón Verde

Información
 Marco legal
 Info Foto
 Glosario Ambiental
 Bibliotecas
 Publicaciones
 Estadísticas
 Indicadores
 Calendario Ambiental
 Preguntas Frecuentes (FAQs)

Antecedentes
 Nuestro país posee posibilidades de desarrollo del sector forestal que apenas están exploradas en comparación con su potencial, con base tanto en los bosques nativos como en los implantados. Sin embargo, existe un atraso relativo en el sector forestal, respecto de los países vecinos, como Chile, Brasil y Uruguay, motivado por múltiples causas, entre las cuales una de las más importantes es la baja proporción de inversión.

La Argentina cuenta con un importante desarrollo industrial en lo sectorial que ha mejorado su productividad en forma sostenida durante los últimos años, lo que le dio competitividad internacional. Sin embargo, el desarrollo logrado está muy lejos del potencial real alcanzable.

Existen 20 millones de hectáreas de terreno potencial para forestar en nuestro país, por lo que existe un gran potencial para la implementación de proyectos relativos al Mecanismo de Desarrollo Limpio, en el área de **forestación y reforestación (MDL F/R)**. Sin embargo, una de las limitantes más importantes para la implementación de estos proyectos ha sido, la escasa comprensión de los mecanismos y metodologías necesarias para su implementación, por las partes interesadas, y la escasa presencia de experiencias exitosas en la región que pueda servir como de base para el desarrollo de nuevos proyectos. Por lo tanto, existe una necesidad de seguir diseminando conocimiento técnico sobre los MDL forestales y fortalecer las capacidades nacionales para la

Figure 17 Image of JICA's pilot project

2.8 Collaboration among Argentina Government institutions involved

During the project implementation, collaboration among Argentina governmental institutions, namely DCC, INTA and SAGPyA was excellent, as with CIEFAP less participation by geographic disadvantages. For instance, the rate of attendance to JCC was quite high despite of the short notice and there was a lot of participation from DCC and INTA on business trips to La Plata, Dorrego, San Martin and Almine although the budget was extremely limited CIEFAP, geographically far from other institutions and not having the forest plantation as the main mission, did not participated as actively as other institutions. However, they recognized the importance of carrying out a study which should contribute to the pilot project in Neuquen. OPDS, coming at a later stage to the project could not finally become counterpart institution due to administrative procedures although they were cooperative in project activities and JCC meetings.

On the other hand, CIP, the implementing agency of the pilot project, was not defined as counterpart institution nor agency in cooperation at the beginning of the project.

3. Outputs of activities

3.1 Inputs

3.1.1 Inputs by Japanese side

(1) Japanese experts and Chilean experts

A total of eight Japanese experts (of which two are to replace previous experts) were dispatched for 822 days and two Chilean experts were dispatched for a total of 187 days. Details are given in the following Table 19.

Table 19 Duration of assignments in Argentina

Name	Man Month (day)
HATANAKA, Kunio	5.07 (152)
HIRAIISHI, Kazuaki	0.33 (10)
FURUTA, Naoya	7.43 (223)
SEKINE, Hozuma	3.27 (98)
MANO, Shuta	0.73 (22)
NAKANO, Masaya	1.00 (30)
URAGUCHI, Aya	3.97 (119)
Aquiles Neuenschwander Alvarado	1.70 (51)
SHIBAYAMA, Tomohiro	5.60 (168)
Macarena Perrez Correa	4.54 (136)
Total	33.64 (1009)

(2) Provision of equipment

In the first year, equipments listed below were procured and provided by JICA Argentine office to the counterpart agencies.

- One 4WD vehicle to CIEFAP
- One 4WD vehicle to INTA San Martin
- One Photocopy machine to INTA San Martin
- One projector to INTA San Martin
- Two Palm computers to INTA San Martin

In the second year, additional equipments listed below were procured and provided by JICA Argentine office to the counterpart agencies.

- One desktop PC and two displays to INTA San Martin
- One software of remote sensing data analysis to INTA San Martin
- One desktop PC and one display to DCC
- One GIS software to DCC

(3) Training in Japan

During the cooperation period, under the collective training course named “Capacity Building for Officers dealing with A/R CDM project for Asia-Pacific Region and South and Central America” a

total number of five trainees from Argentina (one in FY 2007, two in FY 2008 and two in FY 2009) were invited to receive training course in Japan.

(4) Local cost expenditure

Cost of five studies sub-contracted to Argentina local consultants, cost of organizing seminars, work-shops, training course in Buenos Aires, GIS training course and final seminars, cost for webpage improvement of DCC, cost for editing and printing A/R CDM guidebook, are the main items of local expenditure born by Japanese side. Such local expenditure amounts to 6,800 thousands yen in FY 2007, 13,389 thousands yen in FY 2008, 8,033 thousands yen in FY 2009, and in total 28,122 thousands yens.

3.1.2 Inputs by Argentina side

(1) Counterpart personnel

With slight variation in numbers depending on situations, two counterparts from DCC, two from INTA and two from CIEFAP participated to joint works with JICA Expert Team. In addition, one person from OPDS, two persons from CIP and two persons from University of Comahue San Martin, although they are not official counterparts, participated actively to joint works.

(2) Office Space

Working desks were provided within DCC and one office was offered within INTA San Martin. Necessary working space was also provided at CIEFAP when JICA Expert Team was working there.

3.2 Implementation schedule

3.2.1 Initial schedule

Initial cooperation period was two years between September 2007 and September 2009. This cooperation period was extended for the reason explained below.

3.2.2 Extension of cooperation period

The decision of boundary in Nequen pilot project was delayed due to the time needed for Mapuche participation while the pilot project in Buenos Aires Province was cancelled due to environmental issues although environmental eligibility study was carefully carried out. Under such circumstances, Argentina government made an official request to JICA in April 2009 to extend the cooperation period with a strong view of accomplishing the PDD. After considering this request, JICA decided to extend the cooperation period in Argentina until February 2010, extension of approximately half a year.

3.2.3 Schedule for dispatching experts

(1) Original plan

Year	2007							2008									2009							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Month	H19.9	10	11	12	H20.1	2	3	4	5	6	7	8	9	10	11	12	H21.1	2	3	4	5	6	7	8
Argentina	[Redacted] 1st mission							[Redacted] 2nd mission									[Redacted] 3rd mission							
Japan	□ 1st							□ 2nd									□ 3rd							
ICC	◆							◆									◆							
WS (BA)	◇							◇									◇							
Seminar								◇																
TC (BA·BR)								◇																
Workshop with Experts (BA)	◇							◇									◇							

(2) Revised Plan

Year	2007							2008									2009														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Month	H19.9	10	11	12	H20.1	2	3	4	5	6	7	8	9	10	11	12	H21.1	2	3	4	5	6	7	8	9	10	11	12	H22.1	2	3
Argentina	[Redacted] 1st mission							[Redacted] 2nd mission									[Redacted] 3rd mission														
Japan	□ 1st							□ 2nd									□ 3rd														
ICC	◆							◆									◆														
WS (BA)	◇							◇									◇														
Seminar (BA·BR)								◇																							
TC (BA·BR)								◇																							
Workshop with Experts (BA)	◇							◇									◇														

MRI: Mitsubishi Research Institute, NK: Nihon Koei, WS: Workshop, TC: Training course, BA: Buenos Aires, BR: Bariloche

3.3 Accomplished activities

Table 20 Summary of actions taken and progresses (September 2007~February 2010)

Actividades	Acción y Avance
(1-1) To discuss and share course of action for promoting A/R CDM among relevant governmental organizations and institutions.	<ul style="list-style-type: none"> • Discussion for this activity was initiated at the Joint Coordination Committee meeting and following meetings with counter part agencies. • This topic should be continuously discussed and shared among parties concerned even after the end of the project and DCC should take a lead on this discussion.
(1-2) To establish mechanism and structure for articulation among relevant governmental organizations and institutions for the promotion of A/R CDM.	<ul style="list-style-type: none"> • Discussion with SAGPyA and OPDS in Buenos Aires province was started. • In the meantime, joint efforts between JICA team and SAGPyA and OPDS were started. SAGPyA offered their forest engineers to participate to the pilot projects and OPDS offered to develop a pilot project in Dorrego. El proyecto piloto Dorrego was not realized but contributed to the reinforcement of collaboration through joint actions.
(2-1) To organize workshops to promote understanding of project cycle of A/R CDM for organizations and institutions in relation to A/R CDM.	<ul style="list-style-type: none"> • In the first year, one seminar and one regional experts' meeting were carried out. In the second year, two seminars, and one regional experts' meeting one A/R CDM training course were organized. During the third year, two final seminars and one regional experts' meeting were held. • In Neuquen pilot project, consultation with potential project participants, especially Mapuche community, was started and during this process, concept of climate change and A/R CDM was explained to them. • In pilot project in Buenos Aires province, meetings with municipality officials, community leaders and private land owners were organized and the concept of climate change and A/R CDM was explained to them in these meetings.
(2-2) To organize seminars or training courses to promote understanding of formulating A/R CDM on the basis of FIP (Format for Information of Project), PIN (Project Idea Note), and PDD for A/R CDM project designers and proponents (land owner, forestry consultants, CDM consultants, etc.)	<ul style="list-style-type: none"> • As mentioned in (2-1), five seminars, three regional experts' meetings and one A/R CDM training course were held during the project. In Almine as well as in Dorrego, meetings and discussions with stakeholders were held and many private stakeholders and consultants have participated in addition to counterparts. • In addition to that, GIS training courses were organized by JICA team for DCC, OPDS, INTA and CIP.
(3-1) To promote practical understanding of Base-line and Additionality to DCC, INTA and CIEFAP.	<ul style="list-style-type: none"> • In relation to the pilot project in Neuquen, INTA in close collaboration with other experts carried out a base-line study for potential pilot project sites until May 2008. Plumari also carried out a study on livestock in the same period. • Based on the data and information, JICA Team had discussion with INTA and Plumari to promote further practical understanding of base-line, additionality, how to apply methodology, and especially how to deal with leakages.

Actividades	Acción y Avance
	<ul style="list-style-type: none"> • Through the elaboration of PDD, understanding and application capacity on these points were certainly acquired.
(3-2) To examine applicability of A/R CDM methodologies that has been approved by the CDM Executive Board to A/R CDM project in the Argentine Republic and propose modification and adaptation if needed.	<ul style="list-style-type: none"> • Based on the latest information, JICA team made a in detailed analysis on the approved methodologies and identified AR-ACM0001 as the most suitable methodologies to be applied for the pilot project in Neuquen region. • Result of the analysis was shared with INTA San Martin and Plumari and further examination was made how to apply this methodology to the pilot project in Neuquen province.
(3-3) To prioritize data that should be collected by INTA and carry out study after identifying data that are necessary for the formulation of PDD.	<ul style="list-style-type: none"> • In Buenos Aires province, Dorrego was selected as a pilot project site. In the comparative analysis report submitted to DCC, JICA team pointed out the possible conflict with protected area establishment plan and concern related to possible negative impact of forestation in the coastal area. In order to clarify these concerns, JICA team contracted out a study on environmental vulnerability in this area which was explained to the stakeholders in the region. The realization of this pilot project was not continued, however, by the joint work described below part of necessary data for PDD were collected. • Apart from that, JICA team and OPDS jointly carried out a land eligibility study for A/R CDM in this area using satellite image and ground survey. The counterpart team under OPDS was formulated including University of Sur and University of La Plata. Some basic information such as growth rate of trees was provided by the University of Sur and an example of environmental impact study was provided by University of La Plata. • As already mentioned in (3-1), in relation to the pilot project in Neuquen, INTA in close collaboration with other experts carried out a base-line study for potential pilot project sites until May 2008. Plumari also carried out a study on livestock in the same period. • In this period, JICA team started a socio-economic survey for the pilot project in Neuquen province with University of Comahue. • All data acquired above are utilized in the process of elaborating PDD for proyecto piloto de la Provincia de Neuquén. • JICA team and CIEFAP carried out a forest residue survey TOR1-3, and contracted out TOR2 and TOR3 studies. The result of TOR3 is expected to contribute even indirectly to the proyecto piloto de la Provincia de Neuquén
(3-4) To elaborate a guidebook for developing PDD from PIN.	<ul style="list-style-type: none"> • The discussion on the handbook was initiated with DCC and INTA, and a guidebook was completed at the end of project.
(4-1) To collect and organize the latest information about A/R CDM.	<ul style="list-style-type: none"> • The latest information about A/R CDM was continuously collected by JICA team and shared with counter part agencies. Such data will be made public through webpage of DCC.

Actividades	Acción y Avance
(4-2) To up-date the DCC Webpage with the latest information about A/R CDM and product from project activities.	<ul style="list-style-type: none"> Several discussions were made with DCC to improve their website system and after internal coordination in DCC has been finished in order to proceed to the next step, framework of new webpage was completed. It is expected that contents will be improved and new information will be put into place by respective person in charge of DCC.
(5-1) To exchange information among related organizations and institutions in neighbor countries about activities and experiences on A/R CDM project formulation and implementation.	<ul style="list-style-type: none"> Three meetings, March 2008, February 2009 and February 2010 were organized and experts from Chile, Uruguay, Paraguay and other countries participated. All information and experiences through this project are shared by A/R CDM related institutions of neighboring countries.

3.4 Degree of achievement of outputs

Table 21 Output and Activities of the Project

Output	Activities
(1) A Proposal on cooperation of relevant governmental organizations and course of action in relation to A/R CDM is clarified.	(1-1) To discuss and share course of action for promoting A/R CDM among relevant governmental organizations and institutions.
	(1-2) To establish mechanism and structure of cooperation among relevant governmental organizations and institutions for the promotion of A/R CDM.
(2) Human resources that can contribute to A/R CDM project cycle with emphasis on formulation, not necessarily in governmental organizations and institutions, are fostered.	(2-1) To organize workshops to promote understanding of project cycle (*1) of A/R CDM for organizations and institutions in relation to A/R CDM.
	(2-2) To organize seminars or training courses to promote understanding of formulating A/R CDM on the basis of FIP (Format for Information of Project), PIN (Project Idea Note), and PDD for A/R CDM project designers and proponents (land owner, forestry consultants, CDM consultants, etc.)
(3) Data, information and advice for formulation of Project Design Document (PDD) of A/R CDM are generated and provided to INTA, CIEFAP and DCC.	(3-1) To promote practical understanding of Base-line and Additionality to DCC, INTA and CIEFAP.
	(3-2) To examine applicability of A/R CDM methodologies that has been approved by the CDM Executive Board to A/R CDM project in the Argentine Republic and propose modification and adaptation if needed.
	(3-3) To prioritize data that should be collected by INTA and carry out study after identifying data that are necessary for the formulation of PDD.
	(3-4) To elaborate a guidebook for developing PDD from PIN.
(4) Information about A/R CDM to designers and proponents (land owner, forestry consultants, CDM consultants, etc.) of A/R CDM is accumulated and propagated.	(4-1) To collect and organize the latest information about A/R CDM.
	(4-2) To update the DCC Webpage with the latest information about A/R CDM and product from project activities.
(5) Cooperation among parties	(5-1) To exchange information among related

concerned of A/R CDM in neighbor countries (e.g. Chile, Uruguay, etc.) is enhanced.	organizations and institutions in neighbor countries about activities and experiences on formulation and implementation of A/R CDM project.
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(*1) Project cycle of A/R CDM: Series of process from formulation, registration and implementation of A/R CDM

(1) Proposal on articulation of relevant governmental organizations and course of action in relation to A/R CDM is clarified

Verifiable Indicators for this output are:

(1-1) A Plan for articulation of relevant governmental organizations and course of action in relation to A/R CDM are to be approved by JCC.

(1-2) More counterpart agencies are to be added from the original ones, i.e. DCC, INTA, and CIEFAP

At present, no official coordinating committee is put in place by law or regulation among related governmental institutions with a view to promoting A/R CDM. However, it is expected to secure a coordination among them by utilizing JCC which was set up under present project. The future prospect of A/R CDM depends largely on international discussions including COP, but in general we can observe a tendency to make easier the formulation of A/R CDM project. We expect to see the increase of the importance of A/R CDM in future and Argentina government takes advantage of such direction. During the project, SAGPyA and OPDS were added as the counterpart agencies.

(2) Human resources that can contribute to A/R CDM project cycle with emphasis on formulation, not necessarily in governmental organizations and institutions, are fostered

Verifiable Indicators for this output are:

- (2-1) Understandings of participants about A/R CDM are to be enhanced through workshops.
- (2-2) Understandings of participants about A/R CDM are to be enhanced through seminars and training courses.

Two seminars, training course, GIS training course organized under this project, participated not only people from counterpart institutions as DCC, INTA, CIEFAP, but also people from SAGPyA, OPDS, CIP, or people from universities such as Comahue, La Plata, Sur, or from provincial governments and private consultants. These participants learned theoretical aspects of A/R CDM and some of them effectively joined the process of formulating pilot projects. Through these experiences, we believe that a certain number of human resources who may contribute to the A/R CDM project formulation have been formulated.

(3) Data, information and advice for formulation of Project Design Document (PDD) of A/R CDM are generated and provided to INTA, CIEFAP and DCC

Verifiable Indicators for this output are:

- (3-1) A/R CDM methodologies existing at the time of this project are to be analyzed.
- (3-2) More than 1 set of data are to be produced.
- (3-3) One guidebook is to be produced.

Data and information necessary for the elaboration of PDD have been collected, namely those related to Neuquen pilot project. All of the existing methodologies were analyzed and the most suitable methodology for Neuquen pilot project was adopted (See 2.1.2.(2)). Part of the collected data was systemized as PDD and rest of them were gathered as related materials. A guidebook was also elaborated and part of the collected data was put into the book along with the collection of experience and advice. Some data is available to the public through DCC's webpage.

(4) Information about A/R CDM to designers and proponents (land owner, forestry consultants, CDM consultants, etc.) of A/R CDM is accumulated and propagated.

Verifiable Indicator for this output is:

- (4-1) Information of this A/R CDM cooperation project is to be updated on DCC Website in accordance with the progress of this project.

As mentioned above, the latest information on A/R CDM is to be accumulated on the webpage of DCC and will be utilized by future designers or proponents. Specifically, the latest information on this

project along with the electronic file of the guidebook for A/R CDM and information on CDM projects currently in planning and in operation in Argentina will unitary be managed. Tools to browse and search information by each region using maps will also be available and the information on CDM project in this country is to be widely offered to the general public.

(5) Cooperation among parties concerned to A/R CDM in neighbor countries (e.g. Chile, Uruguay, etc.) are enhanced.

Verifiable Indicators for this output are:

(5-1) Two opportunities to be realized for information exchange.

(5-2) Progress and results of the projects are to be presented and understandings of the participants are to be enhanced.

Work-shops inviting experts from neighboring countries like Chile, Uruguay, Paraguay etc. have been three times organized during 2008 and 2010. Through these meetings as well as the fact that a world-wide known Chilean expert is in the JICA Expert Team, all experts got acquaintance with each other and got information on the projects under preparation or under implementation in each country. Thus the objective of JICA to reinforce the collaboration and cooperation among experts in the southern part of South America has been largely attained.

3.5 Degree of achievement of the project purpose

Verifiable Indicators for the project purposes are:

- (1) Formulation of two projects is to be started by DCC, SAGPyA, INTA, or OPDS (including technical advices to be provided to other institutions).
- (2) Out of above projects started, more than one FIP, PIN or PDD of A/R CDM projects is to be submitted to DCC.

During the project implementation, two pilot projects were started and PDD of one project was completed. This indicates that the target written in PDM was achieved 100%. When looking at the various aspects of the project, it is to be noted in particular that the most important target for Argentina side that is to accomplish PDD has almost all been achieved.

3.6 Prospect to attain overall goal

Verifiable Indicator for the overall goal is:

- At least one more FIP, PIN or PDD of A/R CDM projects is to be submitted to DCC within 3 years after the completion of this cooperation project

Although the pilot project in Buenos Aires province cancelled at the discretion of the counterpart, the continuous consideration toward realization of A/R CDM project is carried out by provincial government. In this consideration, several members of this project are included and elaborating PIN that reflects the result of the project is expected in the future.

3.7 Change of PDM and contribution to other index than described in PDM

In the first year of the project, PDM ver. 1 was agreed at the first kickoff meeting. In the second year, the revision of the PDM was discussed with the counterparts and PDM ver.2 was agreed during the final mission of that year. The revision were considered to make the output indicators appropriate ones from the original ones which were rather close to activity indicators, and to include OPDS and SAGPyA in addition to DCC, INTA, CIEFAP. See Annex 11 for details of PDM.

3.8 Lessons and suggestions

3.8.1 Lessons

(1) Implementation of pilot projects

Two pilot projects were expected from the beginning in this project, but only one pilot project was available as a result. However, PDD was successfully completed as an outcome. Because of this concrete pilot project, ① Argentina Government institutions participated in the formulation of the A/R CDM project until the end of the project, ② similarly, the academicians and private consultants were able to work together in spite of the fact that they normally have very little interaction ③ as the project made concrete progress, as in the discussion with indigenous Mapuche, the project encountered with some difficulties and efforts were required to solve the problems, and ④, the future project stands up as a visible accomplishment. These positive effects were obtained. That is, it is necessary to aim at technical cooperation based on the actual practice as much as possible rather than the cooperation done in the office, and the measure to make it possible is through the pilot project.

(2) Confirmation of implementing agency

At the time of first visit to Argentina by JICA Expert Team, information about possible implementation agency of Neuquen pilot project was not available and the site for Buenos Aires pilot project as well as its implementation agency were not decided. If pilot projects are to be included in the technical cooperation project, implementing agency should have been identified and added as one of counterpart institutions in the R/D or M/M because implementing agency is most the important counterpart fulfilling duties and obligations for a successful realization of the project.

(3) Combination with training course in Japan

In parallel with this project, the group training program with the same theme, “(Training by Region) Capacity Building for Officers dealing with A/R CDM Project for Asia-Pacific Region and South & Central America” has been conducted in our country for three fiscal years and many parties concerned from Argentine were participated. The opportunity to participate in such training program would bring extremely positive effect to the staff members of counterpart organization. That is it is preferable to adopt the training programs because any hardwork or achievement in JICA project will lead to the increased opportunity for them to participate in such training program, and therefore, the motivation of staff members of counterpart organization will also be increased.

3.8.2 Suggestions

(1) Establishment of a coordinating mechanism

It is clear that A/R CDM is not under the sole management of one agency, but under the jurisdiction of many governmental agencies. Currently, the knowledge related A/R CDM tends to be centralized among the public sector, but the knowledge ought to be shared with many others including organizations in the private sector. In order to promote A/R CDM in the long run, it is desirable to establish a coordinating mechanism involving central government, universities and private sector to discuss the direction in the future. As for the central government, JCC member institutions created under the project may be core members. A national coordination will become possible by inviting universities and private investors/promoters and consultants. Policy issues to promote A/R CDM, including technical and financial assistance would be the center of discussions.

(2) Creation of specialized unit in INTA

A/R CDM is not yet well-known by the public in general and limited knowledge and information related to this subject seems to be owned by former staff members of UNFCCC, INTA and academicians. In order to promote A/R CDM further to general public, it is necessary to foster experts in the private sector. However, it is also necessary for expert in charge of technical assistance to support the formation of the project with the private initiative. Since such expert group cannot be placed at DCC, the secretariat of DNA, it is appropriate to set it up in INTA to meet the needs of the private sector.

(3) Non obligation to repay the plantation subsidy

Currently, the central government provide forestation subsidy in Argentina, but the whole amount of subsidy needs to be repaid when the sales revenue of future CER is received by using the system of A/R CDM. Forest project has in general very low rate of return. Even if supplemented by CDM system, low international price of t-CER or l-CER would not improve substantially such low profitability. Besides, if the forestation subsidy from the government needs to be repaid in full, the

profitability of the project will become extremely low (or negative) and no one would be interested in A/R CDM project. With this perspective, the necessity of the obligation to repay the forestation subsidy had widely appealed during the project implementation, but this ordinance was unfortunately not amended during the cooperation period. Therefore, we should continue to seek for the abolishment of the obligation to repay the forestation subsidy in order to promote A/R CDM in the future.

(4) Transfer of knowledge and experiences of project formulation

In this JICA technical cooperation project, counterpart, and DCC, INTA, CIEFAP, SAGPyA, OPDS, CIP, academicians from University of Comahue University of La Plata and University of Sur, and private consultants who had active participation equal to or even more than counterparts were all worked together with JICA Expert Team in the various phases of the project. It is necessary to share the knowledge and experience related to the formation of the project acquired from the project with many of related parties. DCC's website is one of the means aiming to further increase the effectiveness by the measure for improvement. However, DCC, INTA, SAGPyA should consider hosting seminars or events on A/R CDM from time to time because they are also indispensable to transfer knowledge and experiences.

(5) Various supporting system

In order to promote policies of A/R CDM projects in Argentina, various supporting measures by central or local governments would be necessary. Technical assistance by INTA during project formulation is essential, but it is also necessary to examine if any compensation should be made toward the technical assistance or any subsidy should be provided under certain criteria. Moreover, since there are costs for land eligibility study, social-economic study and various studies within the boundaries, it is necessary to examine the measures to subsidize the part of project formulation costs. In addition, in order to promote A/R CDM project with low profitability, it is worth considering measures to introduce public finance to partially cover the cost of elaborating PDD, the cost of validation of effectiveness of PDD, or the cost of registration if certain criteria are satisfied.