

Country Name	<b>The Project for Participatory Community Development and Integrated Management of the Alhajuela Lake Subwatershed</b>						
Republic of Panama							
<b>I. Project Outline</b>							
Background	<p>The area of the Alhajuela Lake subwatershed, located in the east of the Panama Canal Watershed and in the Chagres National Park and its buffer zone, is an important area particularly from the biological and socio-economical perspective. However, the factors such as growing population, expansion of agriculture land, and swidden cultivation had been causing deforestation and soil degradation which brought about deterioration of function of water reserve. Since 1975, the government of Panama designated 40% of the eastern basin of the Canal as a national park in order to preserve the natural environment within the park. On the other hand, there have been inhabitants in the area of the national park before the designation and they have been engaged in productive activities, including swidden cultivation. While regulations by the National Environment Authority (ANAM: Autoridad Nacional del Ambiente) to control logging and swidden cultivation by the local inhabitants induced complains of the local inhabitants, environment conservation had been limitedly progressed. Therefore, the government of Panama faced a keen issue how to guide production technologies harmonized with environment for the local inhabitants in order to realize improvement of their livelihoods as well as environmental conservation.</p>						
Objectives of the Project	<p>Through introduction of environment-friendly production techniques, elaboration and implementation of farmland-use plans as well as implementation of environmental education and sensitization activities through group activities organized by the project, the project aimed to practice sustainable production techniques by the group members organized by the project, thereby contributing to practices of the environment-friendly and sustainable production in the target area. The project objectives are as follows:</p>						
	<ol style="list-style-type: none"> <li>Overall Goal: The environment- friendly and sustainable production is practiced in middle and lower watershed of Alhajuela Lake.</li> <li>Project Purpose: Sustainable production techniques implemented using environment- friendly and participatory methods are practiced by the established group members through extension system of ANAM.</li> </ol>						
Activities of the project	<ol style="list-style-type: none"> <li>Project Site : Middle and lower watershed of Alhajuela Lake covering 37 communities</li> <li>Main Activities: 1) Organizing groups for production activities in the target area, 2) Delivering trainings and farmer-to farmer exchange on environment-friendly production techniques for the groups organized by the project, 3) Elaborating and implementing farmland-use plans by the groups organized by the project, 4) Implementing reforestation activities in the critical areas, 5) Delivering technical trainings for the extension teams of ANAM, 6) Implementing environmental education and sensitization activities by the groups organized by the project, school teachers, ANAM staff and Chagres national Park (PNCh) staff</li> </ol> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <b>Japanese Side</b>  <ol style="list-style-type: none"> <li>Dispatch of Experts: 8 persons</li> <li>Acceptance of trainees in Japan: 11 person</li> <li>Provision of equipment: Vehicles, dugout boat, outboard engines, PCs, etc.</li> </ol> </td> <td style="width: 50%; vertical-align: top;"> <b>Panama Side</b>  <ol style="list-style-type: none"> <li>Staff allocated: 19 persons</li> <li>Land and facilities: Project office</li> <li>Local cost: Cost of boat and vehicles, cost for office appliance, fuel cost for vehicles</li> </ol> </td> </tr> </table>					<b>Japanese Side</b> <ol style="list-style-type: none"> <li>Dispatch of Experts: 8 persons</li> <li>Acceptance of trainees in Japan: 11 person</li> <li>Provision of equipment: Vehicles, dugout boat, outboard engines, PCs, etc.</li> </ol>	<b>Panama Side</b> <ol style="list-style-type: none"> <li>Staff allocated: 19 persons</li> <li>Land and facilities: Project office</li> <li>Local cost: Cost of boat and vehicles, cost for office appliance, fuel cost for vehicles</li> </ol>
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Ex-Ante Evaluation	2006	Project Period	August, 2006 – July, 2011	Project Cost	(Ex-ante) 370 million JPY (Actual) 365 million JPY		
Implementing Agency	National Environment Authority (ANAM: Autoridad Nacional del Ambiente) (the currently, the Ministry of Environment (MIAMBIENTE: Ministério del Ambiente)						
Cooperation Agency in Japan	Forest Agency, NTC International Co., Ltd.						

## II. Result of the Evaluation

### <Special Perspectives to be Considered in the Ex-post Evaluation>

[Verification of achievement level of the Overall Goal]

As for the indicator 1 for the Overall Goal of an increase in the number of community members practicing the environment-friendly techniques promoted by the project, it was verified by the changes in the number of community members practicing the environment-friendly techniques by the promoted by the project in the prioritized 14 communities where the farmers' groups had been organized by the project since the environment-friendly techniques had supposed to be extended through the farmers' group activities. Also, due to constraints on the site survey for the ex-post evaluation, including limited accessibility to the target communities and the limited time and budget for the site survey, the coverage of the site survey was limited to the prioritized 14 communities.

[Follow-up cooperation by JICA and sustainability of the project effects]

Since JICA carried out a Follow-up cooperation in 2012 and 2013 aiming at strengthening organizational, administrative and technical capacities of the target communities and dispatched the Japan Overseas Cooperation Volunteers (JOCV) specializing in vegetable production, marketing, environmental education in those communities, and also carried out the third country training "International Course on Participatory Integrated Watershed Management(2014-2016)" to widely diffuse the experience and knowledge of the Alhajuela Project, this ex-post evaluation carefully analyzed how those cooperation affect impacts of this project as well as sustainability of the project effects.

<p><b>1 Relevance</b></p> <p>&lt;Consistency with Development Policy of Panama Government at the time of ex-ante evaluation and the project completion&gt;  The project was consistent with the Panama’s development policy of “conservation of the Panama Canal watershed” as set forth in the policy documents, including “the National Environment Strategy (1999-2005), “Environment Management of Sustainability (2008-2012)” and “the Chagres National Park Management Plan (2005-2025).</p> <p>&lt;Consistency with Development Needs of Panama at the time of ex-ante evaluation and the project completion&gt;  The project met the development needs of Panama to conservation of water and soil in the Panama Canal watershed at the national level and to improve livelihood of local people through stable agricultural production in the target area at the community level.</p> <p>&lt;Consistency with Japan’s ODA Policy for Panama at the time of ex-ante evaluation&gt;  The project was consistent with the Japan’s ODA policy for Panama based on the policy dialogue in 2005, prioritizing environmental conservation, including conservation of natural environment</p> <p>&lt;Evaluation Results&gt; In the light above, the relevance of this project is high.</p>
<p><b>2 Effectiveness/Impact</b></p> <p>&lt;Status of Achievement of the Project Purpose at the time of project completion&gt;  The Project Purpose was achieved by the time of project completion. Out of 40 types of environment-friendly techniques introduced by the project, 97.5% (39 types) of them were utilized by the members of 14 groups organized by the project in the 14 prioritized communities for the project activities. Also, all the 14 groups organized by the project prepared their action plans incorporating the environmental friendly techniques.</p> <p>&lt;Continuation Status of the Project Effects at the time of ex-post evaluation&gt;  The project effects have been continued since the project completion.</p> <p>In terms of environment-friendly techniques, according to the group interviews in the 14 communities, more than 20 environment-friendly techniques introduced by the project, such as organic fertilizer, live and dead barriers, terraces and so forth, have been practiced in the communities where the groups had been organized by the project, despite the fact that they have not prepared and implemented the Farmland Use Plans (PUFs: Plan de Uso de Finca). Out of 14 groups organized by the project, 8 groups have still been functioning. In the communities where the groups were disbanded, most of the ex-members have also continued to practice the techniques individually. In addition, after the project completion, a group was organized in a new community of Cerro Azul in order to promote the activities implemented by the project. According to the PNCh Management office, two extension officers are assigned to support farmers’ groups and they visit each group once a month and individual farms every 3 or 4 month following the exit strategy which was prepared by the project. Also, PNCh Management Office has provided workshops to promote the environment-friendly techniques to the 8 groups.</p> <p>Environmental education activities have been carried out in 16 primary schools annually in the target area by the PNCh Management Office. Also, the Directorate of Protected Areas of MIAMBIETE, the Chagres Foundation, the Panama Canal Authority (ACP: Autoridad del Canal de Panamá) and the Ministry of Agriculture and Development (MIDA: Ministerio de Desarrollo y Agricultura) have been working on environmental education in the target area.</p> <p>In addition, the areas reforested by the project have been sustained. According to the study of ACP in 2013, the vegetative growth has been confirmed. The vegetative growth in the PNCh watershed area in 2013 was 101,334.2 ha which increased from 97,810.8 ha. According to the PNCh Management Office, the reforested areas have been maintained by the committed groups and individuals to be part of PNCh community since they have good understanding on the importance of soil conservation of their land by reforestation. Also, the environmental education conducted by the MIAMBIENTE and ACP officers focuses the importance to avoid swidden cultivation and to apply alternative useful measures such as planting fruit trees and coffee trees for not only soil conservation but also income generation. Furthermore, according to the interviews with the famers’ groups, 11 groups out of 14 have continued the plantation activities though they hold no track record of the number of new trees planted. It was because of their environmental conservation and self-interest in income generation by planting cash crop trees. Also, the government replanting promotion, such as ACP’s coffee tree planting program, has encouraged them to continue plantation activities.</p> <p>&lt;Status of Achievement of the Overall Goal at the time of ex-post evaluation&gt;  The Overall Goal has been partially achieved. The number of the community members in the 14 prioritized communities for the project activities<sup>1</sup> who practice at least two techniques promoted by the project decreased from 133 in 2011 to 72 in 2015 because ANAM/MIAMBIENTE did not continue on the extension service in the target area in accordance with the exit strategy after the project. However, according to the interviews with the farmers’ groups, 72 farmers continue to practice farming activities in accordance with PUF of farmland management plan. Since MIAMBIENTE does not have human and economic resources to support preparation of PUF or farmland management plan, no PUF or farmland management plan was newly prepared in other areas. Also, although the PNCh Management Office has made efforts to follow up the existing PUF and farmland management plan, it is difficult to follow up all the individual farmers in order to implement PUF or farmland management plan.</p> <p>&lt;Other Positive and Negative Impacts&gt;  There are some positive impacts by the project. Despite of no quantitative data, the PNCh Management Office estimates that the traditional agricultural practice of swidden cultivation has been replaced by the environment-friendly techniques introduced by the project. At the time of ex-post evaluation, 13 farmers’ groups out of 14 answered that they no longer practice swidden cultivation. Furthermore, 64% of the farmers in the target areas have improved their income by utilization of the environmental friendly farming techniques introduced by the project. Since the application of those techniques requires smaller space with more crops, it brings about more varieties of production and higher productivity to contribute to more income generated. For example, “Madroñal” group was able to increase their annual group income from 600 dollars to 6,000 dollars. In addition, 4 farmers groups have implemented their business plan, which had been prepared at the completion of the project, to keep improving their activities by the Follow Up Cooperation Program of JICA in 2013. For example, the group of “San Juan de Pequeni” produced hot chili sauce with a greater quantity and</p>

<sup>1</sup> The following communities were prioritized to organize the farmers’ groups for the project activities: Boquerón Arriba, San Juan de Pequeni, Victoriano Lorenzo, Boquerón Abajo, Chilibrillo, Salamanca, Salamanquita, Nuevo Vigía, Santa Librada, Peñas Blancas, Tranquilla, Quebrada Ancha, Madroñal, and Santa Cruz

obtained the health registration for the product. The members of other 3 groups participated in the business plan creation training by the Micro, Small and medium Business Authority (AMPYME). The 4 Japanese volunteers supported 14 groups in total for environmental education, vegetable production and marketing activities in order to reinforce the environment-friendly techniques during the period from 2012 to 2015.

The Extension Guideline developed by the project is currently applied by MIAMBIENTE nationwide for 9 other watersheds. MIAMBIENTE also introduced the Guideline to the national environmental authorities in 10 Latin American countries through the third country training of “the International Course on Participatory Integrated Watershed Management (2014-2016)” and the projects in Honduras and Paraguay. The Guideline was presented at a seminar in Mexico.

No negative impact on environment and other aspects has been observed.

<Evaluation Results>

The Project Purpose was achieved and the project effects, such as application of the environment-friendly techniques in the target area, implementation of environmental education and reforestation activities, have been sustained by the members of the farmers’ groups in the target area. The Overall Goal of the extension of the environment-friendly techniques has partially been achieved. In addition, continuation of the activities introduced by the project brought about reduction of swidden cultivation, expansion of reforested areas and improvement of income generation of the group members. Therefore, effectiveness/impact of this project is fair.

Achievement of project purpose and overall goal

Aim	Indicators	Results
(Project Purpose) Sustainable production technique implemented using environment- friendly and participatory methods are practiced by the established group members through extension system of ANAM.	(Indicator 1) The members of the groups use, as a whole, at least 75% of the techniques promoted by the Project*.  *40 types of environmental friendly techniques were introduced by the project.	<u>Status of achievement: Achieved</u> (Project Completion) • 97.5% of the techniques promoted by the project were utilized by the group members as necessary. (Ex-post Evaluation) Partially continued. • Out of 40 types of environmental friendly techniques, more than 20 types have been practicing by the group members, including the groups ceasing their activities.
	(Indicator 2) At the end of the project, 80% of the groups have an action plan for coming 3 to 5 years that incorporates environment friendly techniques.	<u>Status of achievement: Achieved</u> (Project Completion) • 100% of the groups (14) prepared an action plan incorporating environment-friendly techniques. (Ex-post Evaluation) Partially continued. • 8 groups out of the 14 keep practicing the environment-friendly techniques introduced by the project. • Individual farmers from the other 6 groups ceased have been practicing the techniques at individual level.
(Overall goal) The environment-friendly and sustainable production is practiced in middle and lower watershed of Alhajuela Lake.	(Indicator 1) The number of the community members practicing at least two techniques promoted by the project is increased more than two times from the time of the project implementation.	<u>Status of achievement: Not achieved</u> (Ex-post Evaluation) • The number of the community members in the target area practicing at least two techniques promoted by the project is only 72 in 2015, which decreased from 133 at the time of project completion.
	(Indicator 2) By 2014, the number of community members who practice farming activities according to PUF (Plan for Use of Farmland) or “farmland management plan” reaches at least one hundred in the Chagres National Park.	<u>Status of achievement: Partially achieved</u> (Ex-post Evaluation) • 72 farmers practicing the farming activities in accordance with PUF of farmland management plan in 2015 in the Chagres National Park

Source : Terminal Evaluation Report, Interviews with PNCh, MIAMBIENTE, APC and the farmers’ groups in the target area at the time of ex-post evaluation

3 Efficiency

The project cost and period were within or as planned (ratio against the plan: 99%, 100%, respectively). Therefore, efficiency of this project is high.

4 Sustainability

<Policy Aspects>

There is no change in the environmental policy regarding to the conservation of Alhajuela Lake watershed in “the National Plan for Integrated Water Resources of the Republic of Panama 2010-2030”.

<Institutional Aspects>

In order to continue the activities introduced by the project, including extension service, in the target area, the exit policy<sup>2</sup> for the post project period was formulated by MIAMBIETE as recommended by the terminal evaluation.

[Extension of environment-friendly techniques]

Although 2 extension officers who have been engaged in the follow-ups of the extension services in accordance with the exit strategy in the target areas, have been deployed in the PNCh Management Office, the number of the extension officers has not been sufficient to conduct necessary extension services for all the 14 farmers’ groups in the target areas as the farmers did not reach (or

<sup>2</sup> The exit policy includes the recommendations by the terminal evaluation, such as clear divisions of responsibilities of ANAM and PNCh for extension services in the buffer zones, additional deployment of officers for PNCh, deployment of extension officers in watersheds other than the project area by ANAM, and so on.

maintain) the maturity level of the technique and they are not independently conducting the production activities with those techniques.  
[Environmental Education]

The Directorate of Watersheds (the counterpart of the project) of MIAMBIENTE is no longer in charge of environmental education in the target area. However, MIAMBIENTE assigned one officer for supervising environmental education in the target area and two officers for environmental education and sensitization activities in the PNCh Management Office in accordance with the environmental education plan of PNCh. The number of officers is sufficient to cover environmental education in the target area. In addition, from 2012 to 2015, 2 JOCVs specialized in environmental education collaborated for implementation of the activities in the target area. Also, the Chagres Foundation (NGO) has been collaborating with the PNCh Management Office for environmental education.

[Farmers' Groups]

8 farmers' groups (Chiribrillo, Madronal, Nuevo Vigia, Santa Cruz, Salamanca, Salamaquita, Santa Librada, Tranquilla) out of 14 groups organized by the project continue to hold weekly meetings in order to sustain the group activities despite of the decrease in the number of members. Other 6 groups were disbanded as mentioned above. One group (Cerro Azul) was formed after the project completion. The main reason why the number of the groups decrease is that MIAMBIENTE has not proactively taken roles to promote and expand the extension service of the environment-friendly techniques in PNCh after the project completion following the exit strategy as mentioned above.

<Technical Aspects>

[Extension Officers]

The Extension Guideline developed by the project has not been institutionalized for the extension service for new farmers' groups to practice the environment-friendly techniques in the target area because of no commitment of MIAMBIENTE and the limited number of the extension officers deployed by the PNCh Management Office. The extension officers of the PNCh Management Office, who have been trained by the project, have sustained their skills and knowledge for the extension services as well as environmental education and sensitization activities.

[Farmers' Groups]

The farmers' groups trained by the project have sustained their knowledge and skills on the environment-friendly techniques. As mentioned above, the farmers' groups have continuously practiced the environment-friendly farming techniques which they had learned through the project.

<Financial Aspects>

MIAMBIENTE has secured the own budget to assign 2 extension officers and 2 environmental education officers in the PNCh Management Office in the target area. Also, the budget for the activities has been secured for not only the follow up work in the target area but also other activities in the PNCh. However, the PNCh Management Office considers that the budget is not sufficient to fully cover the follow up work of the project in the target area, to train other new extension workers and to expand the extension activities to other areas. In addition, according to the interviews with the 14 farmers' groups, 8 groups obtained funds to implement their action plan or to receive trainings through the JICA's follow up cooperation in the fiscal year of 2012. However, most of the 14 groups did not obtain necessary funds to practice the environment-friendly techniques in order to achieve the self-sufficient level.

<Evaluation Results>

Some problems have been observed in institutional, technical and financial aspects. Therefore, sustainability of the project is fair.

#### 5 Summary of the Evaluation

The project achieved the Project Purpose and partially achieved the Overall Goal due to the limited extension activities of the environment friendly techniques introduced by the project. However, the project brought about the positive impacts of reduction of swidden cultivation, expansion of reforested areas and improvement of livelihood in the target communities. As for sustainability, since MIAMBIENTE did not continue the extension activities in the target areas following the exit strategy (less human/financial resources to support the area) after the completion of the project, the number of the farmers/ communities that practiced the environment-friendly production techniques decreased by the time of ex-post evaluation.

In the light above, this project is evaluated to be satisfactory.

### III. Recommendations & Lessons Learned

Recommendations:

[For MIAMBIENTE]

- In case where MIAMBIENTE aspires to expand the use and application of the Extension Guidelines, it is necessary first to institutionalize the Extension Guidelines and to secure adequate financial resources, via its budget, to carry out these programs.

[PNCh Management Office]

- In order to keep motivating and expanding the farmers' groups, it is recommended to retake the work of reinforcing the PUF and farmland management plan. To retake this work, workshops/trainings for newly incoming PNCh officers (park rangers too) by MIAMBIENTE and PNCh officers who have the experience of this project are encouraged.

Lessons learned for JICA

[Preparation of a more realistic exit strategy for the post project period]

- Although the exit strategy for the post project period was prepared for ensuring continuation of the activities of the farmers groups organized by the project, including practices of the environment-friendly farming techniques, some of the groups were disbanded and the extension of the environment-friendly farming techniques has not been proactively promoted by ANAM/MIAMBIENTE. In order to ensure sustainability of the activities introduced by the project, it was necessary to prepare more realistic exit strategy for ANAM/MIAMBIENTE, incorporating not only activities based on self-motivation of the farmers but also necessary technical and budgetary support by ANAM/MIAMBIENTE.

[Takeover of project effects by the successors of the implementing agency through the third country trainings]

- On the other hand, the project effects of the Extension Guidelines for the environment-friendly techniques, as a part of experience

from the 3 technical cooperation projects supported by JICA for integrated watershed management, have been disseminated to other Latin American countries through the third country trainings (2014-2016) supported by JICA. Although the personnel of MIAMBIENTE working with JICA for the trainings were not involved in the project, they were able to take over the experience of this project through implementation of the third country trainings. Effective extension guidelines can be helpful to disseminate technical knowledge and skills through trainings conducted by personnel of an implementing agency, even for those who are not directly involved in the project.



Community Meeting (Quebrada Ancha)



Plant nursery (Tranquilla)