ASIA-PACIFIC NETWORK FOR GLOBAL CHANGE RESEARCH

CAPaBLE Programme Final Report

Project Reference Number: CBA2015-09NSY-Comia

On-the-Ground Promotion of Climate Change Adaptation Strategies via the Establishment of Agroforestry Learning Laboratories (ALLs) in Southeast Asia

The following collaborators worked on this project:

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Final Report submitted to APN

OVERVIEW OF PROJECT WORK AND OUTCOMES

1. Project Information

Project Duration	**:**	One year and six months (June 2015 –December 2016)
Funding Awarded	**:**	US$ 43000
Key organisations involved	**:**	The Philippine Agroforestry Education and Research Network (PAFERN) took the lead in the overall project implementation. Specifically, the collaborating institutions include the University of the Philippines Los Banos-Institute of Agroforestry (Philippines) through Dr. Leila D. Landicho as the collaborator Lampung University and the Indonesia Network for Agroforestry Education (Indonesia),through Dr. Christine Wulandari as collaborator and the Tay Nguyen University and Vietnam Network for Agroforestry Education (Vietnam) through Dr. Bao Huy as the collaborator.

INTRODUCTION

2. Project Summary

The project aimed to promote on-the-ground climate change adaptation strategies through the establishment of Agroforestry Learning Laboratories (ALLs); sustain the partnership of farming communities and local development organizations; and share the lessons and experiences of PAFERN in implementing the APN-funded projects on capacity development of upland communities for climate change adaptation**.** In terms of the project outputs, a total of five (5) ALLs were established in the project sites. These include one in Vietnam; one in Indonesia and three in the Philippines. Meanwhile, a total of 100 farmers participated in the three (3) cross-farm visits were organized to expose the upland farmers on various climate change adaptation strategies that would be appropriate for application in their respective farms. A total of 80 participants have attended the Regional Conference on Distilling Lessons Learned from the Capacity Development of Upland Communities for Climate Change Adaptation in Southeast Asia that was held back-to-back with the 2nd International Agroforestry Congress in Buonmathuot City, Vietnam. Among the project outcomes include the sustained partnership between the state universities, local government units and the upland communities; intensified promotion of climate change adaptation strategies, particularly agroforestry systems and technologies among the upland farming communities because of the presence of a learning laboratory or facility; and, the stronger collaboration of the three agroforestry education networks, namely: PAFERN, VNAFE and INAFE, and their respective focal institutions UPLB-IAF, Lampung University, and Tay Nguyen University.

Keywords: ALLs, adaptation strategies, agroforestry, cross-farm visits, partnership

3. Activities Undertaken

Three major activities were undertaken to achieve the project objectives. These are as follows:

a) **Establishment of ALLs**. ALLs showcase the different climate change adaptation strategies that are appropriate to the biophysical and socioeconomic conditions of the selected upland communities. Specifically, agroforestry systems and practices are highlighted in these ALLs
b) **Cross-farm visit.** These visits were organized to expose the upland farmers to the different agroforestry practices and climate change adaptation strategies that are being employed by other farmers in nearby communities, which could possibly be applied and replicated in their own farms. Three cross-farm visits were organized in the Philippines; one in Vietnam, and one in Indonesia.
c) **Regional Conference on Distilling Lessons from the Capacity Development Program for Climate Change Adaptation in Southeast Asia.** This conference was organized to gather the project implementors of the PAFERN APN-funded projects primarily to distil the lessons and experiences from the four project sequels of the PAFENR APN-funded projects, assess the outcomes and impacts, and share these to the concerned stakeholders for possible scaling-up. This was attended by a total of 80 participants of the 2nd International Agroforestry Congress, including 25 participants involved in the different PAFERN-APN-funded projects.

4. Key facts/figures

a) A total of 85 farmers were exposed to the different climate change adaptation strategies in the three collaborating countries
b) A total of 23 project collaborators have participated in the Regional Conference and provided them an opportunity to share and learn recent research developments in agroforestry from the 2nd International Agroforestry Congress that was held back-to-back with the Conference
c) Five (5) ALLs were established in the three study sites, showcasing different agroforestry farming practices as climate change adaptation strategies

5. Potential for further work

One of the research topics that could be done after this project, is to conduct a field-level impact assessment of the capacity development programs that were implemented by PAFERN and its collaborators under the APN grant. This was expressed during the Regional Conference held in November 2016 in Vietnam. The agroforestry are concerned about the impacts of the project at various levels such as local government units, upland farming communities and the concerned state universities. Surveys and interviews can be done to measure the project impacts.

6. Publications

None; Article submission in process

7. Awards and honours

None

8. Pull quote

"Capacity development for climate change adaptation goes beyond training of farmers and technicians. Establishment of physical learning facilities is essential in promoting climate change adaptation strategies, particularly agroforestry systems, that are suitable to the biophysical and socioeconomic conditions of the upland farming communities. The farmers need to see for themselves about the technologies that are being promoted, before they embrace and adopt such technologies. Indeed, the saying "to see is to believe" applies in technology promotion".

Reynaldo A. Comia
Project Leader
Chair, Philippine Agroforestry Education and Research Network and Director, UPLB Institute of Agroforestry

9. References

10. Acknowledgments

The project team extends its acknowledgments to the upland farming communities and local government units which served as the sites of cross-farm visits of the collaborating communities; the three partner-universities, namely: University of the Philippines Los Banos, Lampung University and Tay Nguyen University, for providing the technical and administrative supports in project implementation through the official involvement of the three country collaborators and their staff; and the Southeast Asian Network for Agroforestry Education, for accommodating the Side Event of PAFERN in the 2nd International Agroforestry Congress, where the Regional Conference on Distilling Lessons from Capacity Development Program Towards Climate Change Adaptation in Southeast Asia, was held.

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1. Introduction

This project is a capacity-building initiative which aims to promote climate change adaptation strategies on-the-ground through the establishment of ALLS, sustain the partnership of farming communities and the local development organizations, and share the lessons and experiences of PAFERN in implementing the four sequels of the PAFERN APN-funded projects on capacity-building of upland communities for climate change adaptation in Southeast Asia. The farming communities that have been initially worked with the project collaborators will also serve as the partner upland farming communities for this project. These upland farming communities that serve as the pilot areas of the proposed project are the one being capacitated so that they could serve as the role models and facilitators in scaling-up and intensifying the promotion of agroforestry as a climate change adaptation strategy. The last three projects that were implemented by PAFERN through the APN funding made use of consultative and participatory approaches in the selection of these partner upland farming communities. The selection of upland farming communities does not only consider the upland farming communities, themselves, but more importantly the potential or existing support of the local government units. This was made to ensure the sustainability of project initiatives. Because of the four-year working relationship and partnership that has been established with these upland farming communities, the project collaborators have already established mechanisms of regularly or periodically interacting with the farming communities through field monitoring, and engagement of farmers in upland development activities, trainings and seminars. These upland farming communities, have actually become part of the extension our outreach programs that are being carried out by the collaborating state colleges and universities in the last three years (UPLB, Tay Nguyen University and Lampung University).

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1. Introduction

This project is a capacity-building initiative which aims to promote climate change adaptation strategies on-the-ground through the establishment of ALLS, sustain the partnership of farming communities and the local development organizations, and share the lessons and experiences of PAFERN in implementing the four sequels of the PAFERN APN-funded projects on capacity-building of upland communities for climate change adaptation in Southeast Asia. The farming communities that have been initially worked with the project collaborators will also serve as the partner upland farming communities for this project. These upland farming communities that serve as the pilot areas of the proposed project are the one being capacitated so that they could serve as the role models and facilitators in scaling-up and intensifying the promotion of agroforestry as a climate change adaptation strategy. The last three projects that were implemented by PAFERN through the APN funding made use of consultative and participatory approaches in the selection of these partner upland farming communities. The selection of upland farming communities does not only consider the upland farming communities, themselves, but more importantly the potential or existing support of the local government units. This was made to ensure the sustainability of project initiatives. Because of the four-year working relationship and partnership that has been established with these upland farming communities, the project collaborators have already established mechanisms of regularly or periodically interacting with the farming communities through field monitoring, and engagement of farmers in upland development activities, trainings and seminars. These upland farming communities, have actually become part of the extension our outreach programs that are being carried out by the collaborating state colleges and universities in the last three years (UPLB, Tay Nguyen University and Lampung University).

Because this project served as the final phase of the PAFERN Project on "Capacity Development of Vulnerable Upland Communities in Southeast Asia for Climate Change Adaptation", a Regional Conference will be organized by the project team to distill the lessons and experiences from the four project sequels, assess the outcomes and impacts, and share these to the concerned stakeholders for possible scaling-up.

2. Methodology

Three major activities were implemented to achieve the project objectives. These include the following:

a) ***Establishment of ALLs*** where different climate change adaptations strategies, particularly agroforestry farming practices are being showcased to promote farmers' adoption. The establishment of ALLs required the active engagement and commitment of local institutions, and therefore, the project collaborators have coordinated with the local universities that provided and would continue to provide technical expertise in the establishment and maintenance of ALLs. ALLs were established by the community members, and while individual farmers have provided their farms as the demonstration area, the community members have agreed to maintain ALLs by themselves. Initial inputs such as planting and other materials, were provided by the project collaborators, while the labor served as the farmers' counterpart. To ensure that the ALLS are properly maintained, the project collaborators, through their respective universities, conduct periodic monitoring of the demonstration areas.

b) ***Cross-farm visits*** were organized to expose the upland farmers to the different agroforestry practices and climate change adaptation strategies that are being employed by other farmers in nearby communities, which could possibly be applied in their own farms. The sites of cross-farm visits were usually managed by farmers or community members to ensure the applicability and appropriateness of the showcase technologies to the existing conditions of the cross-farm visit participants.

c) ***Regional Conference*** was organized by the project team as a culminating activity of the current project. This conference aimed to distil the lessons and experiences from the four project sequels of APN-funded PAFERN projects; assess the outcomes and impacts; and, share these to the concerned stakeholders for possible scaling-up. The Conference also provided a venue for the project collaborators, selected farmers and officials from the policy-making bodies and academic institutions to share and exchange information through poster and paper presentations about agroforestry as a climate change adaptation strategy, and at the same time, provided an opportunity to draw up plans for sustaining this collaborative undertaking. The paper presentation of the APN project implementors centered on the description of the APN-funded projects on capacity development for climate change adaptation from 2009-2015; experiences in project implementation; significant contributions of the capacity development programs for climate change adaptation of upland farming communities; and major lessons learned from project implementation.

3. Results & Discussion

a) Establishment of ALLs

One ALL in each of the three upland farming communities was established in the Philippines. The first site is located in Barangay Concepcion Banahaw, Sariaya, Quezon, which showcases a vegetable-based agroforestry system. An approximately half-hectare area showcases fruit tree-based multisotrey agroforestry systems with vegetable crops as the understorey. Vegetable trellising is one of the unique features of agriculture/farming in this community. The intervention that was made by the project team is to integrate high value fruit trees around the farm, which could serve as additional source of income in the long-term, and at the same time serve as potential trellis of the vegetables. Among the fruit tree species include coffee, lanzones, rambutan and jackfruit (Figure 1). The second site located in Barangay Masoc, Bayombong, Nueva Vizcaya showcases an alley cropping system, which is designed for gentle to sloping farms. The importance of contouring is highlighted in this demonstration farm, utilizing *Gliricidia sepium* as the contour hedgerows, while alleys are planted to vegetable crops (Figure 2). In addition, the community has established a small water impounding facility to demonstrate the collection of rainwater during the rainy season, which can later on be used to water the crops during the dry season (Figure 3). The third site, which is located in Barangay Baayan, Tublay, Benguet highlights the integration of fruit trees and root crops in the alley cropping system (Figure 4).

Figure 1. Demonstration farm in Barangay Concepcion Banahaw, Sariaya, Quezon, Philippines, showcasing the integration of fruit trees in the vegetable production areas

Figure 2. Demonstration farm in Barangay Masoc, Bayombong, Nueva Vizcaya, Philippines showcasing the alley cropping system for farms with gentle to sloping terrains

Figure 3. Demonstration farm in Barangay Masoc, Bayombong, Nueva Vizcaya, Philippines showcasing the rainwater harvesting facility

Figure 4. Demonstration farm in Barangay Baayan, Tublay, Benguet, Phiippines showcasing the alley cropping and the integration of fruit trees

In Vietnam, the ALLs was established in Bu Nor Vilalge in Quang Tam commune, Tuy Duc District, Dak Nong Province in the Central Highlands of Vietnam. The ALL was mainly hilly area with an elevation of 700-1000 masl and 15-20^0 slope. The mean annual rainfall is 2400 mm, with a dry season of three months, and mean annual temperature of 22.2^{0}C. The area is being maintained by the M-Nong indigenous people. The ALLs is characterized with paddy rice, shifting cultivation area, integrated with rubber, coffee and cashew. The Vietnam team formed a Board to manage the ALLS which consist of 14 key farmers, 2 staff of the commune and two staff of district. New cultivation models that are adaptive to climate change were integrated in the ALLs, including the planting of high quality avocado, coffee and annual crops, and cow production as well.

In Indonesia, the goat farm was established as a demonstration site to increase the income of the farmers in Gabungan Kelompok Tani of Wana Tani Lestari, Talang Jakarta, Pekon Datar Lebuay, Tanggamus District. Establishment of the goat farm is also seen as a climate change adaptation strategy in the region because of the high potential of forage/grasses from state forests and clan forests. The farmers can likewise produce organic fertilizers from the goat manure, which can be used in their crop production activities.

The goat pens were constructed in Talang Jakarta at the backyard of the house of farmer groups committee on behalf of Mr. Wastim. This goat pen is located at UTM coordinate point of x: 0471714 and y: 9423047 with the elevation of 309 meters above sea level. Talang Jakarta is located outside the forest area and administratively located in the Datar Lebuay Pekon, Air Naningan Sub District, Tanggamus District. The farmer-cooperators are now maintaining a total of 12 heads of goat (Figure 5).

Figure 5. Goat production was integrated in the agricultural production activities, showcasing its potential as a climate change adaptation strategy

Aquasilviculture is another agroforestry system that was established as a climate change adaptation strategy. The gurame fish aquaculture was introduced to the members of the Gapoktan community in Sumber Bandung Village, Subdistrict of Pagelaran Utara, Pringsewu District to lessen the dependence of the farmers to the forest areas particularly in Register 22 Way Waya. Activities of Agrosilvofishery held by INAFE-UNILA around the management area of Unit Pengelola Teknis Daerah (UPTD) KPH Batutegi especially with Gapoktan Sumber Makmur become one alternative in order to raise the community's income by helping Gurame fish Aquaculture. Availability of water resources and the natural food of gurame that is *kajer/ tales* species would be more beneficial if used by making it as gurame aquaculture.

Construction of the fish ponds were done in Talang Bernung in the forest area of Register 22 Way Waya, the management area of Gapoktan Sumber Makmur. The fingerlings of *Gurame* (local name of their fish) were purchased from the surrounding districts of Air Naningan and Sumberejo, with the fingerlings size of approximately two fingers. The fingerlings are treated carefully, both on calculating and on the go. The species of Gurame are known to be vulnerable to death when moved in place.

To support the availability of Gurame feed apart from purchased pellets feed, it was also conducted forage planting activities. The type of plant is the species with local name of *tales* or *kajer*. This plant is known by the community as favored feed of Gurame. The seedlings are also easily found in the surroundings area. The forage planting activities are done by the workers drawn from the members of Gapoktan Sumber Makmur. Purchasing of fish feed pellets are from the surrounding districts of Pagelaran and transported by landline and waterway. Feeding when the fishes were still small just by using pellets, but when the fishes are getting bigger, the feeding done by mixing pellets feed with the forage. Feeding by forage could increase the fish's resistance from disease in addition to stress medication. In order to prevent the introduction of disease on the Gurame Aquaculture, the drugs are purchased. The types of drugs purchased are enroflox (stress/ crashed drug), pastak (pest killer in the form of *bebes*), and vitamins/ minerals.

Gurame fingerlings cultivated by Gapoktan Sumber Makmur since March 2016 are totaled 500 fishes with the size of approximately 10 cm. In the first six months since developed, there have been disruptions from the emergence of beetle species (local name: *Bebes*) but not significantly affected bad on the fishes. Until the time this report was drafted, the fish mortality is only found less than 1% of the total fingerlings distributed.

Figure 7. Watershed at KPHL Batu Tegi has a potency for agrosilvopasture

b) Cross-farm visits

Cross-farm visits were organized to expose the upland farmers to the different agroforestry practices and climate change adaptation strategies that are being employed by other farmers in nearby communities, which could possibly be applied in their own farms. Three cross-farm visits were organized in the Philippines. The farmers from Nueva Vizcaya province visited the agroforestry farms in Vista Hills, Bayombong, Nueva Vizcaya (Figure 8) on January 16, 2016 while those from Benguet province have visited the agroforestry farms with organic farming practices in Wangal, La Trinidad, Benguet on May 13, 2016 (Figure 9). On June 17, 2016, the farmers from Quezon province visited the agroforestry farms in Silang, Cavite, which specifically showcase the 1:9 agroforestry system (Figure 10).

In Indonesia, 12 farmers from the CF Subgroup in Batu Tegi KPH conducted their cross-farm visits on March 12-13, 2016 in West Lampung District. During the visit, the head of the groups discussed with BW and KWT Melati groups, and then visited and observed the coffee plantation and processing.

In Vietnam, 12 participants, including 10 key farmers and 2 staff members attended the June, 2016, a cross farm visit that was organized by the Tay Nguyen University. The visit was held in the neighboring villages in Quang Tan and Quang Tam Communes, Tuy Duc Distgrict. **Error! Reference source not found.** shows location of the cross visit.

Table 1 shows that a total of 100 farmers from the three collaborating countries have been exposed to the different cross-farm visits organized by the project collaborators.

Table 1. Number of farmers who participated in the cross-farm visits organized in the three collaborating countries.

Collaborating Countries	Number of participants	Number of farm visits organized
Philippines	62	3
Vietnam	15	1
Indonesia	12	1
TOTAL	89	5

Figure 8. Cross-farm visits of upland farmers in Benguet, Philippines

Figure 9. Cross-farm visits of upland farmers in Nueva Vizcaya, Philippines

Figure 10. Cross-farm visit of upland farmers in Silang, Cavite, Philippines

Figure 11. Cross-farm visit of farmers in Dak Nongh Province, Vietnam

c) *Regional Conference on Distilling Lessons from the Capacity Development Programs for Climate Change Adaptation of Upland Farming Communities in Southeast Asia*

Held back-to-back with the 2nd International Agroforestry Congress, this Conference was primarily to distill the lessons and experiences from the four project sequels of APN-funded PAFERN projects; assess the outcomes and impacts of the projects; and share these to the concerned stakeholders for possible scaling-up. This Conference was held on November 28,2016 at Tay Nguyen University in Buonmathuot City, Vietnam with 80 participants of the International Agroforestry Congress, including the 26 official participants involved in the implementation of the APN-funded PAFERN projects.

Three paper presentations from the Philippines, Indonesia and Vietnam centered on the description of the APN-funded projects implemented from 2009-2015; experiences in project implementation (i.e. factors that facilitated and constrained the project implementation; strategies employed to ensure smooth project implementation; problems encountered in project implementation, and how these were addressed; significant contributions of the capacity development programs for climate change adaptation of upland farming communities; and major lessons learned from project implementation.

Figure 12. Presentation of country experiences in capacity development for climate change adaptation

Basically, the three collaborating countries have employed similar strategies as these were discussed and levelled off by the project team before the commencement of the project activities. The project implementation of PAFERN APN-funded projects are anchored on multistakeholder participation, particularly the local government units and the local state colleges and universities to ensure the smooth project implementation; simultaneous training of farmers and agricultural technicians on climate change adaptation strategies to enable them establish collaboration and partnership; close coordination among the project collaborators; creating awareness among the policy-makers to encourage them mainstream climate change adaptation programs in their local policy-making processes; and , the establishment of a physical learning facility that will actually showcase agroforestry and other climate change adaptation to enhance farmers' adoption.

It is also apparent, that each collaborating country shares similar experiences in project implementation, despite their cultural and biophysical differences. For instance, the common facilitating factors in project implementation that they have identified are the: timely funding support that helped them implement the project as planned; the active participation of the local organizations and the community members; availability of information materials; and the recognition about climate change impacts and the need to enhance their capacities for adaptation among the local communities and local government units. However, the project implementation is also constrained by factors such as the limited or conditional participation of the farmers in training activities because of their own farm and household activities; communication at the local level. Meanwhile, in Vietnam, one of their constraints is the limited researches on the different agroforestry models that showcase the integration of annual crops and woody perennials, which can be shared to the farming communities. This is because most of the researches dwelled on agroforestry models that focus on the combination of industrial tree crops and fruit trees.

From their experiences in project implementation, the three collaborating countries have drawn major lessons. Among these include the relevance of good and established collaboration not only among the project collaborators, but also with the local government units, state colleges and universities, upland farming communities and other stakeholders. This collaboration did not only ensure the timely and smooth project implementation, but will also pave towards the sustainability of the project initiatives, especially considering that these are short-duration projects. Second, the project collaborators believed that the cross-farm visits are significant component of any technology adoption and/or promotion agenda.

Cross-farm visits served as an opportunity for the farmers to learn from the experiences and farm techniques being used by the other farmers. The farmers could actually see and observe how these techniques are being carried out by the other farmers, and therefore, there is a higher chance that these could be applied in their own farms. The project collaborators have also learned from their project implementation that the establishment of a learning facility or demonstration farm should not only highlight the environmental soundness of the technology or adaptation strategy, but also the viability of the different modules.

In the case of Indonesia, for instance, the establishment of silvipasture with goat as the animal component, increased the revenue of the farmers. This would encourage farmers' adoption of the technology because of economic viability. Indeed, the capacity development programs for climate change adaptation of upland farming communities in Southeast Asia have yielded significant outputs. The sustainability of these project initiatives at the local level, should therefore, be taken into consideration. Thus, the project collaborators recognized the importance of instituting local policies to ensure that indeed these efforts on enhancing capacities for climate change adaptation will be sustained by themselves, even without the financial support coming from external institutions.

Figure 12. Conference participants raise issues and concerns pertaining to the need for measures of project impacts, among others.

Table 2 summarizes the strategies, project experiences and lessons learned in project implementation.

Table 2. Summary of strategies, experiences and lessons learned in the implementation of the capacity development programs for climate change adaptation of selected upland farming communities in Southeast Asia.

	Indonesia	Philippines	Vietnam
Description of the APN-funded projects	1. Promoting Agroforestry as a Climate Change Adaptation Strategy in Southeast Asia (2009-2010) 2. Institutionalizing Agroforestry as a Climate Change Adaptation Strategy of Selected Upland Communities in Southeast Asia (2011-2012) 3. Communicating and Operationalizing Site-Specific Climate Change Adaptation Strategies in Selected Upland Farming Communities in Southeast Asia (2013-2014) 4. Capacity Development of Local Climate Change Communicators in Vulnerable Upland Communities in Southeast Asia (2014-2015) 5. Promoting Climate Change Adaptation Strategies via the Establishment of Agroforestry Learning Laboratories (ALLs) in Selected Upland Communities in Southeast Asia (2015-2016)		
Strategies employed in project implementation	Formation of a working group consisting of representatives from the policy-making bodies at the local and provincial level	Tapping the local state universities as partner in the implementation of capacity development activities among the upland farming communities for an efficient project implementation and monitoring of activities	Facilitate and maintain strong collaboration among stakeholders and with VNAFE, TNU.
	Established a mechanism of communication and coordination to ensure smooth project implementation	Training of both the agricultural technicians and the upland farmers in climate change adaptation strategies to establish partnership and collaboration between the communities and the local government units	Working with extension system at grass root level is basic to support smooth project implementation
	Involvement of various stakeholders in project implementation to ensure sustainability of the project	Formalizing partnerships with the state colleges and universities to ensure the active and sustained involvement of the concerned faculty and staff	Promote a process of field based learning in agroforestry in relations with climate change for all stakeholders.

Table 2. continued

	Indonesia	Philippines	Vietnam
	Personally approaching the main actors in the field (i.e. farmers)	Establishment of climate change adaptation strategies that are based on the needs of the farmers; the observed climate change impacts on the community to ensure commitment from the farmers in terms of maintenance	
	Involving the site-level officer to serve as the communication link with the community members		
Facilitating factors in project implementation	Good collaboration and coordination with the member-countries of SEANAFE, which are also co-project collaborators	Engagement of the local colleges and universities in the project implementation as the link and provider of technical expertise to the local communities	Lecturers of Forest Resources and Management have good skills in training of trainors; and training of farmers
	Assured funding from APN including counterpart support from the local universities and government agencies have facilitate junior lecturers to join INAFE agroforestry activities	Active participation and support of the local government units and the community members	Good and strong management of the collaborating communities at the village level
	The agroforestry networks support the communication and dissemination of INAFE activities to the general public	Farmers' recognition about issues of climate change and climate change impacts on their agricultural production	Farmer-to-farmer approach in teaching and training was seen as an effective approach in technology transfer
	The development of information materials provided a cornerstone in creating awareness about the impacts of climate change on forest lands management	Funding support enough for convening the local stakeholders in climate change awareness programs	Actual establishment of ALLs provide a showwindow of agroforestry and other climate change adaptation strategies to enhance technology adoption

Table 2. continued

	Indonesia	Philippines	Vietnam
	General consensus from the different sectors in preparing action plans for climate change mitigation and adaptation	Development and production of information materials related to climate change, climate change adaptation and agroforestry provided an eye-opener among the different stakeholders	Strong collaboration between the Tay Nguyen University and the different stakeholders
	Support from the local government in the development of a plan for climate change mitigation and adaptation		
	Organizing field visit of farmers encouraged the farmers to recognize the biophysical conditions of the agroforestry in forest farmers' areas		
	Existence and accessibility of the Forest Management Unit (KPH) who carried out duties such as physical and social construction of the forest area		
	Existence of farmers' groups in the community has facilitated the field-level project implementation		
	Farmers' desire to learn to enhance their capability and farm productivity as well		

Table 2. continued

	Indonesia	Philippines	Vietnam
Constraining factors in project implementation	The project team dealt with small-scale farmers who have limited access to knowledge and skills on the issue of climate change, but their active participation in knowledge sharing is not always sustained	Sustained communication and participation at the local level is an issue in the implementation of field-level activities	Few good practices and research on agroforestry models to share and learn especially those focusing on the combination of annual and perennial crops
	Limited access of agricultural technicians to the training course information because not all government units have climate change programs	Scheduling of activities and participation of the farmers depend largely on their farm activities, such that project activities should not be disrupted by the training courses	Limited materials and approaches used for climate change awareness activities
	Limited information materials on climate change	The project duration, which is one year, is seen as a constraint in monitoring project activities	Few and limited actions of the community members after the cross-farm visit
			The collaborating community for ALLS has limited resources to main agroforestry projects

Table 2. continued

	Indonesia	Philippines	Vietnam
Major lessons learned from project implementation	The conduct of cross-farm visits has been an effective mechanism of farmer-to-farmer transfer of knowledge because of their actual observation of the agroforestry technologies and climate change adaptation strategies, and direct interaction with the other farmers	The essence of a collaborative activity or project is anchored on the active and sincere participation of the different stakeholders. Capacity development for climate change adaptation requires multidisciplinary and integrated approaches. Hence, active participation of the local community members including the local government units is very important.	Good collaboration with local government units is necessary to ensure the project success
	Establishment of community demonstration farm showcasing the silvipastoral system is an effective climate adaptation strategy because of the increased revenues from goat farming, and therefore, the higher chances that this will be sustained by the community		The project cycle should be longer than one year especially for on-site agroforestry projects with long cycle of woody perennial component
	Team work is an important ingredient in the establishment and maintenance of the community demonstration farm		The collaborating university should carry out more research on specific agroforestry models instead of validating those that have been done by the farmers
			Institutionalization of policies is the key to succeed and sustain the project initiatives on climate change adaptation

4. Conclusions

The project has achieved its three main objectives of: a) promoting on-the-ground climate change adaptation strategies through the establishment of ALLs. Five ALLs were established in the three collaborating countries which now serve as the learning facility of the upland farmers and a show window of agroforestry and other climate change adaptation strategies that could be adopted by the farmers in their own farms; b) sustaining the partnership of farming communities and the local development organizations, through the formation of working groups or project teams that helped facilitate the project implementation, and would serve as a core group that could spearhead the works towards the sustainability of the project activities; and, c) sharing the lessons and experiences of PAFERN in implementing the four sequels of the PAFERN APN-funded projects on capacity development of upland communities for climate change adaptation in Southeast Asia. While the PAFERN APN-funded projects have generated significant outputs for capacity development of upland farming communities, the lessons and experiences that were shared by the project collaborators enabled them to realize the need to conduct further studies, particularly on measuring the impacts of the capacity development programs at three levels: upland farming communities, collaborating state colleges and universities, and the local government units.

5. Future Directions

The project collaborators should sustain the collaboration and partnership that they have established with the local communities and local government units. Specifically, the collaborator for each country should take the lead in the follow-up and monitoring of the ALLs as well as the status of the local policy-making processes as regards climate change adaptation in their study sites.

One of the research topics that could be done after this project, is to conduct a field-level impact assessment of the capacity development programs that were implemented by PAFERN and its collaborators under the APN grant. This was expressed during the Regional Conference held in November 2016 in Vietnam. The agroforestry are concerned about the impacts of the project at various levels such as local government units, upland farming communities and the concerned state universities. Surveys and interviews can be done to measure the project impacts.

Appendix 1

APN Side Event Program in the 2nd International Agroforestry Congress

Schedule	Activity	Person In-charge
November 27	Arrival of participants at Damsan Hotel	
November 28		
8:00 – 9:00	Registration of participants	Conference Secretariat
9:00 – 9:30	Opening Ceremonies	Conference Secretariat and Organizers
9:30 – 10:00	Plenary Paper 1. Agroforestry Towards Sustainable Farming Communities	Dr. Bao Huy VNAFE Chair and Professor, Tay Nguyen University
10:00- 10:30	Plenary Paper 2. Agroforestry for Sustainable Land Management	Dr. Wilfredo M. Carandang SEANAFE Chair and, Professor, University of the Philippines Los Banos
10:30 – 11:00	Plenary Paper 3. Emerging Policies for Agroforestry Development and Promotion	Dr. La Nguyen Agroforestry Specialist World Agroforestry Centre, Vietnam
11:00 – 11:30	OPEN FORUM	Participants
11:30 – 12:00	Viewing of Poster Papers	Poster Paper Presentors and Participants
12:00 – 1:00	Lunch	
1:00 – 4:00	Parallel Sessions	
	Session 1. Role of Agroforestry in Promoting Sustainable Farming Communities	Dr. Roselyn F. Paelmo Moderator Presentors: Dr. Leila D. Landicho Dr. Wilfredo M. Carandang Dr. Anoulom Vilayphone Dr. Engelbert Lalican Dr. Vo Hung For. Romnick S. Baliton For. Nelson Orfiano Dr. Rossyda Priyardarshini Dr. Agustin R. Mercado, Jr.

Schedule	Activity	Person In-charge
	Session 2. Agroforestry for Sustainable Land Management	Dr. Reynaldo A. Comia Moderator Presentors: Dr. Mahrus Aryadi Prof. Rommy Qurniati Dr. Maryann S. Dagunan For. Reynaldo Tababa, Jr. Dr. Rossyda Priyardarshini Prof. Valentino Macanes Dr. Rico A. Marin Dr. Tran Trung Dung For. Pitojo Budiono
	Session 3. Emerging Policies for Agroforestry Development and Promotion	Dr. Roberto G. Visco Moderator Presentors: Ms. Catherine C. de Luna Dr. Vida Q. Carandang Dr. Ma. Eugenita C. Capaciete For. Raoul T. Geollegue Dr. Emerson V. Barcellano Dr. Mahrus Aryadi
4:00 – 6:00	APN Side Event: Capacity Development for Climate Change Adaptation in Southeast Asia: Distilling Lessons	Dr. Leila D. Landicho Moderator Presentors Dr. Bao Huy, Vietnam Dr. Emerson V. Barcellano, Philippines For. Pitojo Budiono, Indonesia
6:00 – 9:00 PM	Dinner/Socials/Fellowship	Conference Organizers and Participants
November 29	Field Visit to Agroforestry Projects and Farms	Participants and Local Organizers

Appendix 2

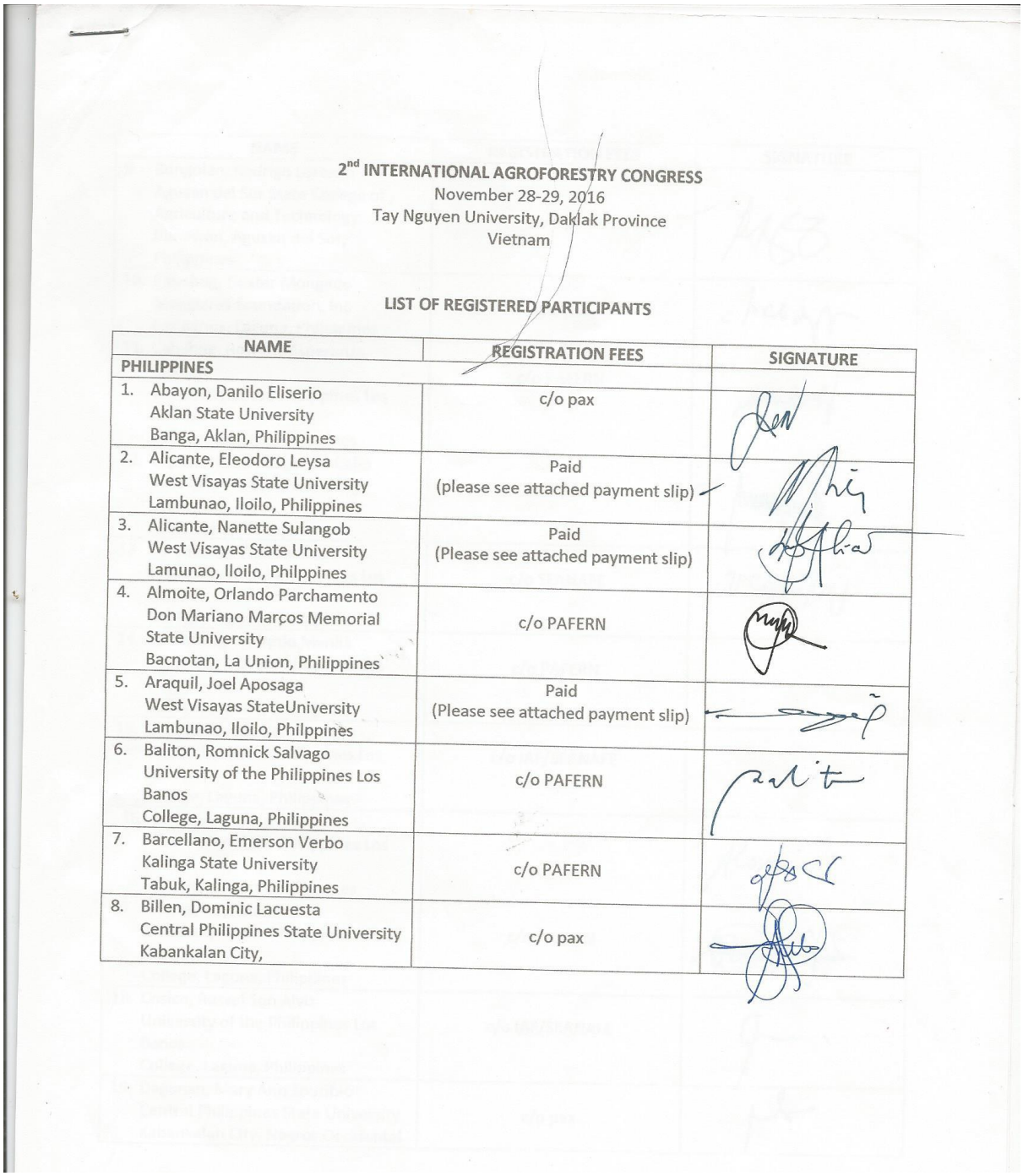
Official participants of the APN Side Event (APN-supported)

Country	Name of Official Participants
Indonesia	**Rommy Qurniati** University of Lampung
	Pitojo Budiono University of Lampung
	Eny Puspasari Forestry District Office, Bandar Lampung
	Mahrus Aryadi Lambung Mangkurat University
	Sunarni Widjastuti University of Lampung
	Yayan Ruchyanshah Forestry District Office, Bandar Lampung
Philippines	**Wilfredo M. Carandang** University of the Philippines Los Banos
	Reynaldo A. Comia PAFERN, University of the Philippines Los Banos
	Roberto G. Visco University of the Philippines Los Banos
	Leila D. Landicho University of the Philippines Los Banos
	Rowena D. Cabahug University of the Philippines Los Banos
	Romnick S. Baliton University of the Philippines Los Banos
	Emerson V. Barcellano Kalinga State University
	Orlando P. Almoite Don Mariano Marcos Memorial State University
Vietnam	**Bao Huy** VNAFE, Tay Nguyen University
	Điểu Nơi Bu Nor Village, Quang Tam Commune, Tuy Duc District, Dak Nong Province
	Điểu Hạp Bu Nor Village, Quang Tam Commune, Tuy Duc District, Dak Nong Province
	Điểu Sê Bu Nor Village, Quang Tam Commune, Tuy Duc District, Dak Nong Province

Country	Name of Official Participants
	Thị Xuân Bu Nor Village, Quang Tam Commune, Tuy Duc District, Dak Nong Province
	Vũ Văn Tuấn Bu Nor Village, Quang Tam Commune, Tuy Duc District, Dak Nong Province
	Đoàn Lê Anh Bu Nor Village, Quang Tam Commune, Tuy Duc District, Dak Nong Province
	Đậu Văn Toàn Bu Nor Village, Quang Tam Commune, Tuy Duc District, Dak Nong Province
	Kiều Quý Diện Bu Nor Village, Quang Tam Commune, Tuy Duc District, Dak Nong Province

Appendix 3

Participants of the 2nd International Agroforestry Congress (attended the APN Side Event



2nd INTERNATIONAL AGROFORESTRY CONGRESS
November 28-29, 2016
Tay Nguyen University, Daklak Province
Vietnam

LIST OF REGISTERED PARTICIPANTS

NAME	REGISTRATION FEES	SIGNATURE
PHILIPPINES		
1. Abayon, Danilo Eliserio Aklan State University Banga, Aklan, Philippines	c/o pax	
2. Alicante, Eleodoro Leysa West Visayas State University Lambunao, Iloilo, Philippines	Paid (please see attached payment slip)	
3. Alicante, Nanette Sulangob West Visayas State University Lamunao, Iloilo, Philppines	Paid (Please see attached payment slip)	
4. Almoite, Orlando Parchamento Don Mariano Marcos Memorial State University Bacnotan, La Union, Philippines	c/o PAFERN	
5. Araquil, Joel Aposaga West Visayas StateUniversity Lambunao, Iloilo, Philppines	Paid (Please see attached payment slip)	
6. Baliton, Romnick Salvago University of the Philippines Los Banos College, Laguna, Philippines	c/o PAFERN	
7. Barcellano, Emerson Verbo Kalinga State University Tabuk, Kalinga, Philippines	c/o PAFERN	
8. Billen, Dominic Lacuesta Central Philippines State University Kabankalan City,	c/o pax	

NAME	REGISTRATION FEES	SIGNATURE
9. Bongolan, Rodrigo Lorenzo Agusan del Sur State College of Agriculture and Technology Bunawan, Agusan del Sur, Philippines	c/o pax	
10. Cabahug, Dexter Mongado Manglares Foundation, Inc Los Banos, Laguna, Philippines	c/o pax	
11. Cabahug, Rowena Esperanza Dicolen University of the Philippines Los Banos College, Laguna, Philippines	c/o PAFERN	
12. Capaciete, Ma. Eugenita Callo Iloilo Science and Technology University Leon, Iloilo, Philippines	c/o pax	
13. Carandang, Vida Quilloy University of the Philippines Los Banos College, Laguna, Philippines	c/o SEANAFE	
14. Carandang Wilfredo Manila University of the Philippines Los Banos College, Laguna, Philippines	c/o PAFERN	
15. Castillo, Arnold Karl Agcopra University of the Philippines Los Banos College, Laguna, Philippines	c/o IAF/SEANAFE	
16. Comia Anchilla L University of the Philippines Los Banos College, Laguna, Philippines		
17. Comia, Reynaldo A. University of the Philippines Los Banos College, Laguna, Philippines	c/o PAFERN	
18. Cosico, Russel Son Alviz University of the Philippines Los Banos College, Laguna, Philippines	c/o IAF/SEANAFE	
19. Dagunan, Mary Ann Souribio Central Philippines State University Kabankalan City, Negros Occidental	c/o pax	

NAME	REGISTRATION FEES	SIGNATURE
20. De Luna, Catherine Cargo University of the Philippines Los Banos College, Laguna, Philippines	c/o SEANAFE	
21. Evangelista, Regine Joy Pantig World Agroforestry Centre, IRRI Campus College, Laguna, Philippines	Paid (please see attached payment slip)	
22. Lalican, Engelbert De Los Reyes FERD-PCAARRD Los Banos, Laguna,Philippines	c/o pax	
23. Landicho, Leila Dimayuga University of the Philippines Los Banos College, Laguna, Philippines	c/o PAFERN	
24. Lumbo. Susanita Guanita Occidental Mindoro State College San Jose, Occidental Mindoro	c/o pax	
25. Macanes, Valentino Liwan Benguet StateUniversity La Trinidad, Benguet, Philippines	c/o pax	
26. Malaki, Archiebald Baltazar Bughad Cebu Technological Institute Argao, Cebu, Philippines	c/o pax	
27. Marasigan, Cristina Patrocenia Tiaong, Quezon, Philippines		
28. Marin, Rico Arellano Central Mindanao University Musuan, Bukidnon, Philippines	c/o pax	
29. Mercado, Agustin T. World Agroforestry Centre Claveria, Misamis Oriental, Philippines	c/o pax-	
30. Montano, Noel University of Antique Antique, Philippines	c/o pax	
31. Navarra, Victor Estrella University of Antique Antique, Philippines	c/o pax	
32. Orfiano, Nelson Occidental Mindoro State College San Jose, Occidental Mindoro, Philippines	c/o pax	

NAME	REGISTRATION FEES	SIGNATURE
33. Paelmo, Roselyn Furoc University of the Philippines Los Banos College, Laguna, Philippines	c/o IAF/SEANAFE	
34. Pampolina, Nelson Manguiat University of the Philippines Los Banos College, Laguna, Philippines	c/o pax	
35. Papag, Ana T Los Banos, Laguna, Philippines		
36. Posadas, Mae Flor Gregori Central Philippines StateUniversity Kabankalan City, Negros Occidental, Philippines	c/o pax	
37. Predo, Gregorio Dagohoy Central Philippines StateUniversity Kabankalan City, Negros Occidental, Philippines	c/o pax	
38. Reyes, Jans Nexus Iglesia University of the Philippines Los Banos College, Laguna, Philippines	c/o pax	
39. Romaquin, Marilyn Espiritu Aklan State University Banga, Aklan, Philippines	c/o pax	
40. Silang, Maria Trinivic Lardizabal DENR-Cordillera Administrative Region Baguio City, Philippines	c/o pax	
41. Tababa, Reynaldo Tabio Central Philippines State University Kabankalan City, Negros Occidental	c/o pax	
42. Venturina, Arnold Nicdao Occidental Mindoro State College San Jose, Occidental Mindoro, Philippines	c/o pax	
43. Visco, Roberto G. University of the Philippines Los Banos College, Laguna, Philippines	c/o PAFERN	
44. Geollegue, Raoul T. Hineleban Foundation, Inc. Cagayan de Oro City, Philippines	c/o pax	

NAME	REGISTRATION FEES	SIGNATURE
45. Geollegue, Maryloid Hineleban Foundation, Inc. Cagayan de Oro City, Philippines	c/o pax	
46. Abubacar, Sabdullah Environment Management Bureau Cagayan de Oro City, Philippines	c/o pax	

47. RAFAEL J. PADRE
Kalinga State University

NAME	REGISTRATION FEES	SIGNATURE
INDONESIA		
47. Bakti Wisnu Widjajani University of Pembangunan Nasional Veteran Jawa Timur, East Java, Indonesia	Paid (please see attached payment slip)	
48. Eny Puspasari Suwito Rejo Bandar Lampung, Indonesia	c/o PAFERN	
49. Fatima Ahmad Mahrus University of Lambung Mangkurat, Indonesia	c/o PAFERN	
50. Mahrus Aryadi Abdul Kadir University of Lambung Mangkurat, Indonesia	c/o PAFERN	
51. Pitojo Budiono University of Lampung Bandar Lampung, Indonesia	c/o PAFERN	
52. Rommy Qurniati University of Lampung Bandar Lampung, Indonesia	c/o PAFERN	
53. Rossyda Priyadarshini University of Pembangunan Nasional Veteran Jawa Timur, East Java, Indonesia	- Paid (please see attached payment slip)	
54. Sunarni Widyastuti University of Lampung Bandar Lampung, Indonesia	c/o PAFERN	
55. Yayan Ruhyansyah Dachlan Bandar Lampung, Indonesia	c/o PAFERN	
56. Yudi Firmanul Arifin University of Lambung Mangkurat, Indonesia	c/o PAFERN	
LAO PDR		
57. Anoulom Vilayphone National University of Laos Vientianne, Lao PDR	paid 11/8/14	

NAME	REGISTRATION FEES	SIGNATURE
VIETNAM		
58. Nguyen Tan Vui Tay Nguyen University	-	
59. Tran Quang Han Tay Nguyen University	-	
60. Tran Trung Dung Tay Nguyen University	-	
61. Van Tien Dung Tay Nguyen University	-	
62. Y Trung Nie KDam Tay Nguyen University	-	
63. Nguyen Thuy Van Nhi Tay Nguyen University	-	
64. Vo Thi Thu Nguyet Tay Nguyen University	-	
65. Nguyen Van Nam Tay Nguyen University	-	
66. Điểu Nơi	c/o PAFERN	
67. Điểu Hạp	c/o PAFERN	
68. Điểu Sê	c/o PAFERN	
69. Thị Xuân	c/o PAFERN	
70. Vũ Văn Tuấn	c/o PAFERN	
71. Đoàn Lê Anh	c/o PAFERN	
72. Đậu Văn Toàn	c/o PAFERN	
73. Kiều Quý Diện	c/o PAFERN	
74. Vo Hung Tay Nguyen University	-	
75. Cao Thi Ly Tay Nguyen University	-	
76. Pham Doan Phu Quoc Tay Nguyen University	-	
77. Hoang Trong Khanh Tay Nguyen University	-	
78. Ho Dinh Bao Tay Nguyen University	-	

79. Bao Huy Tay Nguyen University	c/o PAFERN	
80. Dr. La Nguyen ICRAF-Vietnam	c/o pax	

81 Nguyen Hoai Duong.
Director of DARD in Dak Lak.

82. Y Zina Ksor.
Tay Nguyen University.

Appendix 7

List of institutions that provided support (financial and in-kind) in project implementation

1. University of the Philippines Los Banos-Institute of Agroforestry for providing the manpower support particularly during the conduct of cross-farm visits, establishment of ALLs and the Regional Conference where the staff served as the Conference support staff
2. University of Lampung in Lampung, Indonesia for providing the manpower support during the conduct of cross-farm visits and the establishment of ALLs
3. Tay Nguyen University in Buonmathuot, Vietnam for providing the manpower support during the conduct of cross-farm visits, establishment of ALLs and in hosting the Regional Conference

Appendix 8

Powerpoint presentations of APN Side Event (please see attached files)

Appendix 9

Proceedings of the Regional Conference (please see attached file)