

ITTO Tropical Forest

UPDATE

A newsletter from the International Tropical Timber Organization to promote the conservation and sustainable development of tropical forests



Fellows for SFM

The lack of human capacity has been identified as a key constraining factor to sustainable forest management (SFM) in most of the diagnoses and analyses to assess progress towards SFM carried out in ITTO member countries over the past quarter century. One of ITTO's most effective contributions to addressing this constraint has been its Fellowship Program, among the Organization's earliest and most successful initiatives and probably the world's only such support program focused specifically on tropical forests and their management.

The promise of the Fellowship Program was not immediately grasped by the Committee on Forest Industry where it was first introduced as a Secretariat-drafted project 22 years ago. Some members and observers (including other international organizations) questioned the need for such a program, pointing to various academic scholarships and bursaries available to qualified students, although none of these focused specifically on tropical forests. Only with the persistence of ITTO's second



Special issue on the ITTO Fellowship Program

Contents ▶

<i>Following the fellows</i>	3
<i>Cloudy with a chance of sustainability</i>	8
<i>Fellowships awarded</i>	11
<i>Fellowship applications</i>	11
<i>Cambodia's cut</i>	12
<i>Mucking in</i>	15
<i>Pushing the PCI</i>	18
<i>The limits to agriculture</i>	20
<i>Out on a limb</i>	24

Note to readers: This issue of the TFU is shorter than usual due to funding constraints and is not being circulated to our 15,000 subscribers (it will only be available online, with a limited number of copies printed for the 47th ITTC session). Funding constraints have also affected the publication schedule/frequency of the TFU in 2011. It is hoped that the regular length and publication schedule of the TFU can be resumed in 2012 through the provision of sufficient voluntary contributions or through the inclusion of this work in ITTO's core activities budget under the terms of the International Tropical Timber Agreement, 2006 when it enters into force.



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Design DesignOne

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Cover image: Brazilian Fellow Danielle Celentano carries out research towards her Master of Science degree.

Photo: D. Celentano

... Editorial continued

Executive Director Manoel Sobral Filho (then ITTO's Assistant Director of Forest Industry) and the support of the chair of the Committee on Forest Industry at that time (Markku Simula, who later became chair of ITTO's governing Council) were these objections overcome and the project approved. The rest, as they say, is history.

Over the past two decades, the ITTO Fellowship Program has helped more than 1100 young and middle level professionals from more than 40 ITTO member countries to enhance their professional capacities in forestry and related disciplines and thereby contributed substantially to promoting sustainable management of tropical forests. The Program has also developed a cadre of forestry officials throughout the world who know ITTO's programs and policies and help to promote the Organization's work while simultaneously furthering its objectives.

In 2010, in order to assess the impacts of the Fellowship Program on capacity development in ITTO member countries at the individual, institutional, national and international levels, ITTO undertook an Impact Assessment survey of awardees. This survey was conducted to commemorate the 10th anniversary of the establishment of the Freezailah Fellowship Fund, a mechanism established by the International Tropical Timber Council (ITTC) to ensure financial continuity of the Fellowship Program named in honor of the Organization's first Executive Director.

The lead story in this special issue of the TFU reports the results of the survey, based on responses from more than 200 former fellows from 34 countries (page 3). The survey clearly shows the significant impact of the Program on capacity development in tropical forestry, timber industries and related disciplines in ITTO member countries. The survey also illustrates the Program's breadth, both in terms of the range of people who have benefited from it and the scope of activities for which assistance has been provided.

A sample of the type of work carried out under (and the impacts of) ITTO fellowships is summarized in articles prepared by five ITTO fellows from Peru, Cambodia, Cameroon, Gabon and Nepal in this issue. From the work carried out by

Constantino Auca Chutas (page 8) to train local communities in the utilization, conservation and management of cloud forests in Peru to Rabindra Roy's research to examine the contribution of non-timber forest products (NTFPs) in daily livelihoods in Nepal (page 20), the dedication of the ITTO Fellows and the achievements of the Fellowship Program shine clearly from the pages of this issue. In fact, one of the hardest tasks in compiling this issue of the TFU was in choosing between the many excellent articles submitted by Fellows in response to our request to showcase their work. We thank all of those who submitted articles and hope to be able to publish more of the articles submitted in future TFUs in the regular *Fellowship report* section.

Despite its clear contribution to ITTO's objective of building human capacity to implement sustainable forest management and high returns on the relatively modest investments made to date, the future of the Fellowship Program is by no means assured. As former ITTC chair Stephanie Caswell (who also chaired both the Fellowship Selection Panel and the expert panel charged with reviewing the Program a decade ago) points out in *Out on a limb* (page 24), the Program needs to widen its funding base which currently relies disproportionately on just two donors. Ways also need to be found to reduce the amount of voluntary contributions absorbed by administrative costs (which currently account for more than a quarter of funds pledged to the Program). Ms. Caswell's recommendations for further improvements should be carefully considered by the ITTC in its deliberations on the future of the Program.

As ITTO celebrates its 25th anniversary during the International Year of Forests in 2011, the Fellowship Program is among its proudest achievements. The Secretariat, the Council and all ITTO Fellows must work together to ensure that the Program continues its important contributions to building capacity for SFM over the next 25 years.

**Chisato Aoki
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Following the fellows

An assessment of the ITTO Fellowship Program shows it has had far-reaching impacts

By Chisato Aoki

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Listening: Rina Susanti (right) from Indonesia interviews local people as part of her ITTO fellowship. *Photo: R. Susanti*

In 2010, in commemoration of the tenth anniversary of the establishment of the Freezailah Fellowship Fund, ITTO undertook a survey to assess the impact of the ITTO Fellowship Program over the previous decade. The survey showed that the program has had a significant impact on capacity development in tropical forestry, timber industries and related disciplines in ITTO member countries. After the completion of their fellowships, ITTO fellows continued to promote sustainable forest management at the national and international levels and contributed more to biodiversity conservation, the mitigation of and adaptation to climate change, and the improvement of local livelihoods. This article provides a brief sketch of the history of the ITTO Fellowship Program, presents the results of the impact assessment survey, and suggests future directions for and improvements that could be made to the program.

Two decades of support

The ITTO Fellowship Program began in 1989 as ITTO project PD 60/89 (M,F,I) under the Committee on Forest Industry with the aim of promoting human resource development and institutional strengthening in the forest sectors of ITTO member countries. Initially the program mainly supported participation in study tours, conferences and short training courses (including tailor-made institutional training), especially in forest industry operations and timber marketing.

In 1993, the Fellowship Program was renewed under ITTO project PD 1/93 (M,F,I), which expanded the program's scope, particularly to promote activities that would help in achieving the ITTO Year 2000 Objective. More people were trained in sustainable forest management and reforestation during this phase, which also supported an increasing

number of post-graduate studies although the focus remained on short-term activities.

In 2000, the Freezailah Fellowship Fund was created to honour the achievements of ITTO's first executive director and to expand funding opportunities. The objective of the ITTO Fellowship Program was restated as "to develop human resources and enhance professional expertise in member countries in tropical forestry, tropical timber industries and related disciplines, with a view to promoting sustainable management of tropical forests, efficient utilization and processing of tropical timber, and better economic information on the international trade in tropical timber". More detailed information about the three phases of the program can be found in Aoki (2006).

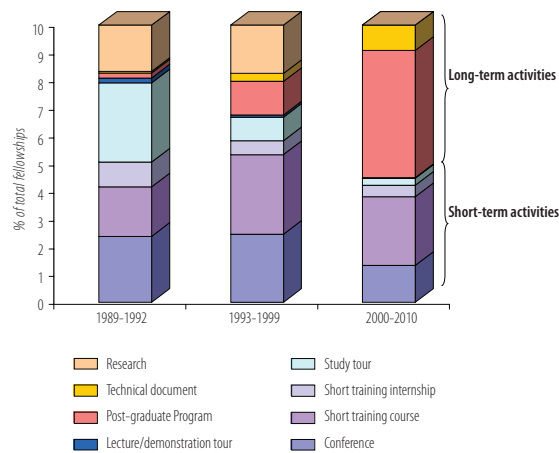
Over the past two decades (1989-2010), the ITTO Fellowship Program has awarded about US\$6.3 million to 1083 mostly young and mid-career individuals from research institutes (32% of all ITTO fellows), governments (28%), universities (17%), NGOs (12%), the private sector (5%) and others (6%) in 44 ITTO member countries. About 30% of all fellowships have been won by women. Fellowships have been distributed to applicants from producer member countries in Asia-Pacific (32%), Africa (30%) and Latin America and Caribbean (23%), from developing consumer countries such as Nepal and China (11%), and from developed consumer countries (4%). In the last decade there were about 3200 applications for fellowships, of which about 540 (17%) were successful, showing the strong demand (and competition) for support under the program.

The program continues to fund short-term activities such as short training courses and internship programs (30%), conference participation (19%) and study and/or

demonstration tours (9%). However, the program has increased its support for post-graduate studies: about half of all fellows since 2000 have obtained master's or PhD degrees in forestry or related disciplines, and the proportion of fellows pursuing post-graduate studies continues to increase (Figure 1).

The rise of post-graduates

Figure 1 Fellowship activities, by phase (1083 fellows)



Of all fellowships awarded, 70% have been for activities related to reforestation and forest management, 21% have been for activities related to forest industry, and 9% have been for activities in the field of economic information and market intelligence. Popular fellowship topics include sustainable forest management, biodiversity conservation, forest rehabilitation and restoration, and community or participatory forestry. The role of forests in the mitigation of and adaptation to climate change, particularly REDD, is a fast-growing subject for fellowship applications.

Survey method and responses

In order to assess the impact of the ITTO Fellowship Program on capacity development in ITTO member countries, a questionnaire was prepared based on the contribution analysis approach recommended and adapted by the 17th Meeting of the Senior Fellowship Officers of the United Nations System (United Nations 2009; Rotem et al. 2010). The questionnaire contained eleven personal questions and 33 questions about the fellowship activity and its impacts. It was sent by email in March and April 2010 to 376 ITTO fellows who completed their fellowships between 2000 and 2009. Due largely to the difficulty of contacting fellows who completed their fellowships in the early years of this period, the overall response rate was 55%.

Responses were received from 206 fellows in 34 ITTO member countries: 86% were from producer countries (Africa—30%, Asia Pacific—30% and Latin America/Caribbean—26%), 12% were from developing consumer countries such as Nepal and China, and 2% were from

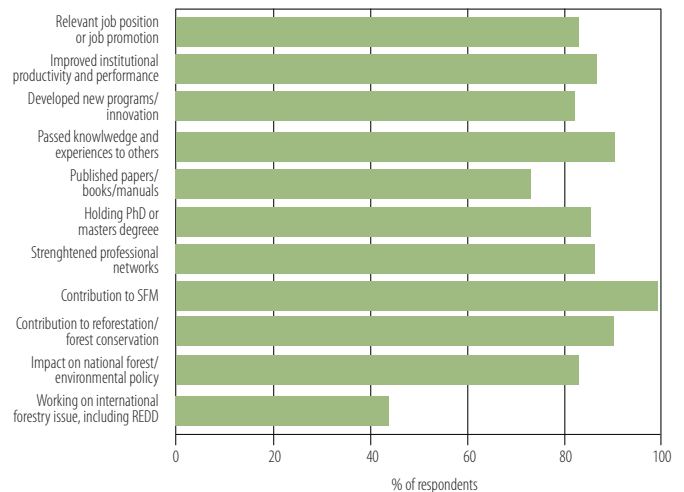
developed consumer countries. Thirty-five percent of respondents were women. Five percent of fellows were aged 20–29 years, 44% were aged 30–39 years, 33% were aged 40–49 years, 16% were aged 50–59 years and 2% were aged 60 years or more. The respondents currently work at universities (27%), research institutes (24%), governments (17%), NGOs (10%), intergovernmental organizations (6%), consulting companies (3%), industry or trading companies (2%) and others (11%). For their fellowships, 41% of respondents undertook post-graduate degree programs, 32% participated in short training courses or internship programs, 12% attended international conferences, 10% published technical documents and 5% undertook study or demonstration tours.

Findings

All respondents gave positive feedback about the benefits of the ITTO Fellowship Program. Figure 2 shows that the program has had significant impacts on careers. Some of these impacts are discussed below.

Great benefits

Figure 2 Impacts of fellowships (206 respondents)



Return home to relevant position

The fellowship awards have clearly benefited fellows' professional development and improved their career prospects. More than half (59%) of respondents obtained a relevant job position or job promotion after completing their fellowship activities. A majority (83%) attributed their promotion or new job position to the skills and knowledge they gained through the fellowship. Seventy-four percent of respondents who undertook a post-graduate degree obtained a relevant job or promotion, compared with 71% of those who completed training internships, 67% of those who used their fellowships to publish a manual or monographs, 47% of those whose awards facilitated participation in short-term training course participation and 42% of those who attended a conference.

Most respondents (89%) returned home immediately on completion of their fellowship activities, 6% continued advanced study (master's or PhD programs) abroad and 2% took a job in a country other than their own. Currently 10% of respondents are undertaking PhD programs abroad and 6% are working outside their home countries for international organizations or global consulting companies related to tropical forestry and sustainable development. Therefore, most ITTO fellows have remained in or returned to their home countries, indicating that the ITTO Fellowship Program—which mainly funds citizens of tropical countries—is contributing to the development of human capacity where it is needed most.



Tracking upwards: Abraham Baffoe (left) from Ghana studies a log-tracking system as part of his ITTO fellowship. *Photo: A. Baffoe*

Positive contribution to work

A majority of respondents (86%) reported that they have improved their productivity and performance in the institution in which they work. More than half (52%) indicated that their fellowships had enabled them to improve institutional capacity, resulting in their achieving a relevant job position or promotion.

Many respondents (82%) stated that they had developed new programs or innovative ways of working that have helped to improve work performance at their institutions. For instance, an ITTO fellow from India developed techniques to process satellite images and light detection and ranging (LIDAR) data for monitoring and assessing forest cover, growing stock and biomass. An ITTO fellow from Ghana developed a smoke dryer to replace conventional kilns, thereby improving timber-processing efficiency. Many university teachers replied that they had improved their teaching and research skills and developed new courses, curricula and research proposals in tropical forestry and related disciplines.

A majority of respondents (90%) passed to others the knowledge and experiences they acquired during their fellowships. For example, many fellows conducted workshops and seminars where they work, trained community members, gave lectures at universities and post-graduate schools, and/or presented the results of the fellowships at national or international conferences. Seventy-three percent of respondents published scientific papers, books, field manuals or national language reports based on the results of their fellowships. Some of the publications produced by fellows during the period are listed in the box on page xx.

Continuing development

Most fellows have continued their professional and personal development. Eighty-five percent of respondents now hold an advanced degree in forestry and related disciplines at the PhD (39%) or master's (46%) level. Among them, 45% of fellows responded that they had received their qualification as

a direct result of their fellowships, while others have continued their higher education inspired by their fellowships.

The fellowships helped fellows to strengthen their professional networks. A majority of respondents (86%) reported that the contacts they developed through their fellowships strengthened their professional networks and enhanced their work performance and productivity; some felt they had succeeded in fostering international collaboration through their work.

Contribution to SFM and conservation

Almost all respondents (99%) reported that they were promoting SFM in their countries and about 90% were also contributing to reforestation and forest conservation. For example, a Cameroonian ITTO fellow became a focal point for mangrove conservation in his country under the Ministry of Forestry and Wildlife as a result of his fellowship research. A Philippine ITTO fellow developed a strategy at the local level for the conservation of Philippine tropical timber species. The top five current interests of ITTO fellows are: sustainable forest management (35%), biodiversity conservation (11%), mitigation of and adaptation to climate change (11%), reforestation and forest conservation (10%) and efficient utilization and processing of tropical timber (8%).

Impact on policy

A majority of respondents (83%) reported that the knowledge, skills and networks they gained from the fellowships helped them to influence national forestry and environmental policy in their home countries. Half said that

they have had a significant impact on policymaking. For example, an ITTO fellow from the Democratic Republic of the Congo led an initiative to improve the legal framework for small-scale logging in the country's Orientale province, contributing to the national effort to combat illegal logging by small-scale loggers. Ghanaian ITTO fellows contributed to an ongoing forest policy review program in their country and played key roles in national policymaking as members of several national committees. An ITTO fellow from Venezuela was commissioned to work with the legal adviser to the Forestry Department's Director General to draft a management plan for Ticoporo Forest Reserve, developing a new management model based on shared responsibility between local communities and the state government which became fully effective in 2008. An Indian ITTO fellow has been requested by the country's federal Ministry of Environment and Forests to investigate diseases affecting teak and to propose appropriate management strategies for the country.

Just under half (44%) of respondents are currently working on international forestry issues. Consistent with global trends, many are working on issues related to climate change, especially REDD.

Host institution and country

A majority of respondents (81%) undertook their activities at either universities or research institutes. The remaining respondents carried out their activities within NGOs (5%), governments (4%), intergovernmental organizations (4%), industries (1%) or other (4%). Almost all respondents (99%) were satisfied with the quality of their host institutions and felt that they provided relevant expertise and adequate resources for their fellowships.

About 80% of the host institutions were located in ITTO member countries. The most popular ITTO host countries accounted for half of all fellows: United States (11%), Nepal (7%), Philippines (7%), Indonesia (4%), Ghana (4%), France (4%), Canada (3%), Germany (3%), Netherlands (3%), Australia (2%) and Gabon (2%). Among non-member countries, Costa Rica was very popular among fellows from Latin America and the Caribbean, accounting for about 40% of the fellowships awarded in that region.

South-south cooperation has gained increasing expression in the ITTO Fellowship Program over the last decade. About two-thirds (64%) of respondents conducted their activities in ITTO developing member countries (45%) or in non-member developing countries (19%). Thirty-six percent of fellows conducted their activities in their own countries—mainly master's or PhD research or the preparation of technical documents. This proportion includes people who enrolled in universities abroad but undertook their thesis research on an issue related to tropical forests, tropical forest industry or community livelihood improvement in their own countries. This phenomenon is at least partly due to the ceiling on the fellowship value (US\$10 000), which is usually



Humming along: Peruvian Constantino Aucca's fellowship promoted community conservation of spatuletail hummingbird habitat. *Photo: ECOAN*

insufficient to support graduate programs in developed countries. On the other hand, most short-course participants took courses abroad, particularly in developed countries such as the United States, the Netherlands, France, the United Kingdom and Australia, since the fellowships are usually sufficient to cover the full cost of such courses.

Towards a third decade

The results of the impact assessment survey show that the ITTO Fellowship Program is having a significant impact on the development of professional capacity in ITTO producer member countries. Admittedly the survey reflects the views of ITTO fellows only; soliciting the views of employers and host institutions as well would provide a more holistic assessment. Nevertheless, based on the findings of the survey it is possible to discern ways in which the program can be improved as it enters its third decade.

Variety of activities

The ITTO Fellowship Program is unique, differing from other programs in the variety of activities it supports and as the only specialized intergovernmental funding source for increasing capacity in the tropical forest sector. Many fellows appreciated the wide range of activities supported by the program because it can meet the needs of diverse applicants at differing stages of their professional careers. For example, a small grant for post-graduate study helps young and mid-career professionals to advance their knowledge and expertise and widen their career prospects. Short-term training courses, internships and study tours help young and mid-career professionals to fill gaps in knowledge and skills and have an immediate impact on improving work performance and efficiency. Conference participation enables young, mid-career and senior professionals to share their knowledge and experiences and to develop international networks for future collaboration. The publication of manuals and books gives recognition to the work achieved by mid-career and senior fellows and helps field workers and other professionals by providing them with up-to-date, practical information. All types of activity had positive effects on career development and work performance. The ITTO Fellowship Program, therefore, should continue to support a broad range of activities.

In the past decade there has been a preponderance of fellowship applications for the activities related to reforestation and forest management (82%) over forest industry (11%) and economic information and market intelligence (7%). To achieve the objective of the program in a balanced manner, more applications to promote the efficient use and processing of tropical timber and improved information on the international trade of tropical forest products should be encouraged.

Increase in the number of host institutions

Fellowship applications are currently concentrated on certain training programs and post-graduate programs in a relatively small number of renowned institutions with excellent training capacities and facilities. Exploring partnerships with other training institutions and universities specialized in tropical forestry, sustainable forest management, wood science and industry and climate change could open new avenues for capacity-building, especially in light of the new objectives set out in the International Tropical Timber Agreement, 2006.

Opportunities for a wider range of nationalities

Another challenge is to expand the benefits of the ITTO Fellowship Program to nationals of a wider range of countries. In the decade to 2010, more than half the fellowships have been granted to nationals of seven countries—Ghana (10%), Nepal (9%), Cameroon (9%), India (8%), Colombia (7%), Indonesia (7%) and Peru (5%)—mainly because many good applications have been received from those countries. The program needs to be better promoted in other ITTO member countries through such avenues as ITTO contact points, forestry schools, research institutes, course and conference organizers and forestry journals.

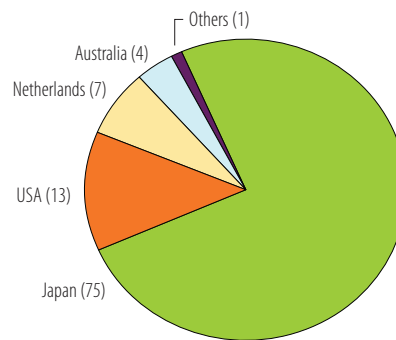
Funding

The ITTO Fellowship Program has received a total voluntary contribution of about US\$7.9 million, three-quarters of which was provided by the Government of Japan (75%), with significant contributions from the governments of the United States, the Netherlands, Australia and others (Figure 3). Eighty percent of these funds have been expended on fellowship awards and the remainder to meet administrative and operational costs.

Annual funding was stable in the last decade at about US\$400 000 thanks mainly to the regular contributions of the governments of Japan and the United States. However, due to increasing demand for support under the program and a gradual increase in the cost of fellowship activities (including administration costs), the program now faces a fundraising challenge. Stephanie Caswell proposes a potential solution in *Out on a limb* in this edition (page 24): that is, the ITTO Fellowship Program could be included as one of the core ITTO activities to be funded under the administrative budget, thereby shifting the allocation of at least the operational costs of the program from voluntary to mandatory contributions. Contributions from other

Contributors

Figure 3 Fellowship voluntary contributions by governments (percentage of US\$7.9 million)



governments, foundations and the private sector should also be sought to ensure that the program continues its important role in building capacity in tropical forestry.

Alumni network

ITTO fellows are important assets for their countries and ITTO and their increasing knowledge and experiences should be shared with others. A majority (93%) of fellows surveyed showed interest in joining an ITTO fellowship alumni network, should one be created, to share their experiences and ideas. Many issues concerning tropical forests are not just local, national or regional but also global, which require collaborative solutions. A web-based discussion group for ITTO fellowship alumni could serve as a platform for innovative ideas on tropical SFM, including the role of tropical forests in climate change mitigation and adaptation.

Two decades of the ITTO Fellowship Program have shown it to be effective in developing capacity in the tropical forest sector. In its third decade, the ITTO Fellowship Program needs to review its scope and objectives in accordance with the ITTA 2006, which will come into force soon, to ensure that it contributes efficiently to meeting ITTO's new objectives and priorities and the demands of its member countries.

A detailed report of the survey (Aoki 2010) is available on request from the ITTO secretariat.

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Cloudy with a chance of sustainability

ITTO Fellowship develops training program on utilization and management of cloud forests in Peru

By Constantino Auca Chutas

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Mr Constantino Auca Chutas (Peru) received his fellowship in 2007 to carry out a lecture/demonstration tour to raise conservation awareness and train community people on the use and management of cloud forests in the Abra Patricia - Alto Nieva Private Conservation Area in Peru.



Cloud forest: Abra Patricia forest area and surroundings. Photo: W. Palomino

The Abra Patricia forest region of Peru and its surrounding areas have remained almost intact for a very long time. There is, however, a void of scientific information about this region, which is also a very important watershed of the Mayo and Nieva river valleys. The Marginal Forest Highway (*Carretera Marginal de la Selva*) was designed and built during the 1960s. This access road was built with the aim of increasing the migration of settlers into the pristine forests of the Amazon Region (as part of the Social and Economic Development Plan promoted by the then President of the Republic, Mr Fernando Belaúnde Terry, in 19681, ZEE, 2008). To alleviate their extreme poverty, these new settlers became involved in logging and shifting agricultural and cattle-raising activities, causing a huge impact in many of these pristine forests (INRENA, 2008). The Alto Mayo Protection Forest (Bosque de Protección de Alto Mayo – BPAM) was established in 1987 over an area of 182 000 ha. Today, there are more than 5400 people illegally settled within the BPAM, endangering the stability of the management and conservation of this area (INRENA, 2008). The Abra Patricia and Alto Nieva areas are located in the buffer zone of the BPAM (INRENA, 2008).

Study objective

Against this background, the aim of the study funded through an ITTO fellowship was to analyze the problem of illegal forest utilization in the area through the exchange of information and opinions in “multi-participatory workshops” that would help provide a real picture of the different implications of proposed management changes on

stakeholders. These multi-participatory workshops represent a tool that can not only provide the quantitative values required to implement the necessary measures, but can also provide access to the communities and provide them with the technical information required to gain awareness and work jointly in the efforts to avoid the deforestation of the area and its consequences. This tool can also provide information on the needs and expectations of these communities.

Throughout the Andes, watershed areas as well as forests and vegetation cover have been degraded, thus affecting their stability. Deforestation and unsound human activities have disturbed the natural balance leading to impacts on water sources such as glaciers, landslides, floods, droughts, etc. The vegetation cover that drains water to various tributaries flowing into the Pacific and Atlantic basins is being increasingly altered, which jeopardizes the existence of the great Amazon valleys and endangers all the life forms found in this area.

Climate change, El Niño and other phenomena can lead to major natural disasters that represent a large economic loss for families and governments. Only through extensive reforestation programs, preferably with native species, and environmental education campaigns will it be possible to prevent and mitigate these problems and stop them from increasingly affecting our daily lives. Afforestation and reforestation activities can greatly contribute to generate resources for local communities, who will benefit from the implementation of strategies to alleviate poverty, an ever-present problem in these areas.

Forest conservation and rehabilitation through the implementation of conservation strategies with local

1 www.congreso.gob.pe/museo/mensajes/Mensaje-1968-1.pdf



Sliding away: In the Amazon and Upper Andean regions, landslides and flash floods are now more frequent because the natural vegetation cover has been severely disturbed by human interventions. *Photos: C. Aucca*

community involvement is the key to finding a strategic partner to ensure the future protection of the environment based on the benefits derived from these actions by the local population.

The general objective of the study was to facilitate a change in attitude with a view to decreasing the indiscriminate logging of forest resources through the implementation of sound and sustainable practices by the local communities.

Study area

The study area was located in the districts of: Florida Pomacochas, Yamborasbamba, Shipasbamba, Jazan, San Carlos and Chisquilla, in the Province of Bongará, Amazon Region. According to the 2008 NatureServe classification, the study sites are part of the Andean Moist Forests and, more specifically, belong to the following ecological systems:

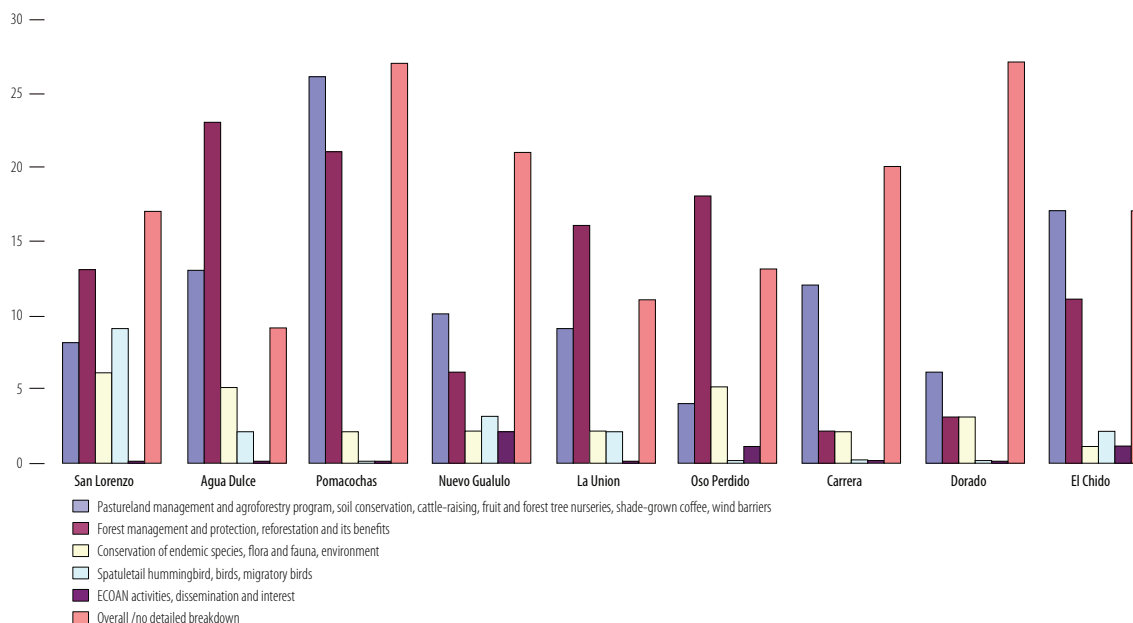
CES409.050 Montane rainforest of the Yungas region and CES409-110 Montane rainforest of the Northern Andes region.

Methodology

The proposed approach was based on participatory methodologies, so it was decided to implement workshops where the participants actively contributed to the process of developing a diagnosis and description of existing problems through a questionnaire approach. The questionnaire on preferred forest management objective(s) was distributed to nine communities (adults and primary/secondary school students) in the study area. A manual for community forest management and reforestation was developed and distributed at the workshops to help in analyzing/refining questionnaire responses. In some cases, in order to complement this process, experience-sharing field trips

Integrated management preferred

Figure 1 Community responses to questionnaire on preferred forest management objective(s).





Planting out: Community reforestation programs in the Pomacochas area, Amazonas. *Photo: W. Palomino*

were organized for both community leaders and students, which resulted in a motivational experience for survey participants. These different processes were based on similar experiences such as those implemented in Maule, Chile (2008). The results of the questionnaire on preferred management objective are shown in Figure 1 on the previous page.

Conclusions

Based on the large number of manuals that were handed out, the total number of participants at the workshops (more than 2000) was higher than the number of survey responses that were received for analysis (1208). This could be due to the fact that there is still a certain level of mistrust among adults and a greater level of information and cooperation among children (who were more likely to attend the workshops).

Adults showed a great interest in the rehabilitation of habitats through the implementation of agro-sylvo-pastoral or agroforestry programs, as these will directly benefit the communities, together with the technological upgrading of agricultural activities and reforestation programs. Clearly, the adult population is more concerned with solving their economic problems than environmental problems. There is a general awareness about the negative processes affecting forests and the environment and the need to curb those processes, but more information is required through ongoing multi-participatory workshops and watershed management and conservation campaigns, as soil and water resources are vital elements for these communities.

Forest and biodiversity management and conservation are issues of great importance and impact and should be complemented with actions such as the establishment of community forest and fruit tree nurseries. It is necessary to provide information to the communities so as to make them aware of the need to care for their forests, which should be supported through long-term programs to help strengthen their weak economies.

Primary school children are more motivated by emblematic topics and beautiful sights; for example, the spatuletail hummingbird tends to attract a great deal of interest since it is emblematic of this region, while more general deforestation and reforestation issues usually draw a lower level of attention. It is clear that socioeconomic issues are not a priority for children, although cultural aspects attract a great deal of interest. Thus, it was concluded that environmental education should be more extensive at the primary school level. The conservation issue can be addressed by avoiding slash-and-burn practices in mountain and forest areas and preventing their pollution based on the slogan: "Let's keep our forests clean", and all of this should be complemented with reforestation activities. In this respect, there is great optimism among children of their ability to safeguard the environment implementing solutions where required.

Secondary school students are more interested in a higher level of training and motivation. The spatuletail hummingbird is also their emblematic bird and needs to be protected through reforestation programs to safeguard its

habitat and avoid practices that can cause damage to the environment and forests. Their slogan is “Let’s stop slashing and burning our forests” to promote the protection of forest areas and prevent their pollution, and this process should be helped through the implementation of reforestation programs.

Recommendations

Regular workshops should be implemented in the future to breach the information gap and at the same time continue the analysis and training of these communities. The reality of the students and their responses indicate that they are very receptive to new information and cultural awareness.

The three groups surveyed have shown great motivation in the area of reforestation, particularly among the heads of community families (“Comuneros”). The implementation of these strategies is of utmost urgency. This is why the issue of habitat rehabilitation has been met with great acceptance and hope and should be incorporated into the different conservation projects implemented in the Peruvian cloud forests.

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Fellowships awarded

Twenty fellowships were awarded in Autumn 2010. Awardees were:

Ms. Bernal Toro, Francia Helena (Colombia); **Mr. Borokini, Temitope Israel** (Nigeria); **Ms. Espiritu Tellow, Estela Marjorie** (Peru); **Ms. Forbu, Ntengang Innocentia** (Cameroon); **Mr. George, Ratu Vuki** (Fiji); **Mr. Jiofack Tafokou, René Bernadin** (Cameroon); **Ms. Lamichhane, Sabina** (Nepal); **Ms. Low, Shook Ling** (Malaysia); **Mr. Martana, Kadim** (Indonesia); **Mr. Migolet, Pierre** (Gabon); **Dr. Mounguengui, Wenceslas Steeve** (Gabon); **Ms. Nyarko-Duah, Nana Yaa** (Ghana); **Ms. Padakale, Essotebemime** (Togo); **Dr. Quattara, Adama** (Côte d’Ivoire); **Mr. Roopsind, Anand Ramotar** (Guyana); **Ms. Ruiz Osorio, Eugenia Catalina** (Colombia); **Mr. Shrestha, Pratap Sundar** (Nepal); **Dr. Singh, Sanjay** (India); **Mr. Tekpetey, Stephen Lartey** (Ghana); **Mr. Vargas Oro, Carlos Juan** (Panama);

Twenty-five fellowships were awarded in Spring 2011. Awardees were:

Mr. Adefolu, Solomon Olatunji Adefolu (Nigeria); **Mr. Ali, Salissou** (Togo); **Ms. Andeme Ondo, Hortense** (Gabon); **Ms. Barbosa Herrera, Adriana Paola** (Colombia); **Mr. Bhatt, Bharat Prashad** (Nepal); **Mr. Chaudhary, Dinesh Prasad** (Nepal); **Mr. Chhem, Leang Song** (Cambodia); **Ms. Ferreira, Mônica Sousa** (Brazil); **Ms. Gyabaah, Grace** (Ghana); **Dr. Kouadio, Kouassi** (Côte d’Ivoire); **Ms. Loayza Cabezas, Sophia Cristina** (Ecuador); **Dr. López Castañeda, Arelia Jacive** (Mexico); **Mr. Mavah, Germain Aimé** (Congo, Rep.); **Ms. Mbosso Mafomekiet Fouedjo, Philomène Charlie** (Cameroon); **Dr. Mohamed, Azmy** (Malaysia); **Ms. Mokake, Seraphine Ebenye** (Cameroon); **Mr. Nalvarte Armas, Jaime Guillermo** (Peru); **Mr. Paul, Geo Basil** (India); **Mr. Pereki, Hodabalo** (Togo); **Mr. Piñon, Albert Arvisu** (Philippines); **Mr. Rivera Martin, Luis Eduardo** (Colombia); **Ms. Sari, Ritta Kartika** (Indonesia); **Ms. Thwe, Thwe Win** (Myanmar); **Mr. Tupac Espiritu, Henry Aldo** (Peru); **Mr. Wallace, Robert Flomo** (Liberia)

Fellowship applications

The next deadline for applications: 9 March 2012. Proposed activities should begin no sooner than 15 July 2012.

Further details and application forms (in English, French or Spanish) are available at www.ito.int or from Dr. Chisato Aoki, Fellowship Program, ITTO; Fax 81 45 223 1111; fellowship@ito.int (see page 2 for ITTO’s postal address).

An ITTO fellowship helped estimate a sustainable yield from logged-over forests in Cambodia

By Dana Kao¹,
Nobuya Mizoue² and
Shigejiro Yoshida²

Dr Dana Kao (Cambodia) received an ITTO fellowship in 2008 to undertake a Doctoral Program in Forest Management at the Department of Forest and Forest Products Sciences, Faculty of Agriculture, Graduate School of Bioresource and Bioenvironmental Sciences, Kyushu University, Japan. This article is based on his doctoral research.



Stand of foresters: One of the inventory teams. Photo: D. Kao

Tropical forests host a large majority of the earth's biodiversity, representing an invaluable asset both globally and for local communities (see Top *et al.* 2009). Forests are also important for their role in the carbon and water cycles (Clark *et al.* 2001), and well-managed forests can be an ecotourism attraction.

One of the tasks of foresters is to ensure that the extraction of forest products such as timber does not exceed the sustainable capacity of the forest ecosystem, thus ensuring that forests are able to perform their many functions. To assess the sustainability of commercial timber harvesting, estimates are needed of forest increment—that is, the rate at which the forest grows. However, reliable data on commercial tree growth are very limited in the natural tropical forests of Southeast Asia.

In 1998 over 7 million hectares of Cambodia's forests were available for harvesting in forest concessions. In 2001 the government suspended all logging activities in concessions and this ban remains mostly in place, although illegal logging is thought to be widespread (ITTO 2011). Should legal logging resume it is important to know growth and yield characteristics so that a sustainable harvest can be calculated and imposed. Little is known, however, about the growth dynamics of Cambodian forests. Therefore, we carried out a study to estimate forest increment of logged and unlogged tropical evergreen forests in northern Cambodia.

Study site and method

The study area is located at longitude 104°58'E to 105°82'E and latitude 13°48'N to 14°89'N within a forest concession in

Preah Vihear province (Figure 1), with various (logged and unlogged) forest formations covering a total area of 103 058 hectares. In 20 sample plots in logged (1998) and unlogged forests, the diameter at 1.3 m (dbh) and height of each live tree (commercial, non-commercial and non-timber forest product—NTFP) were measured, first in March 2001 and then in October 2008. Immature trees and NTFPs with dbh 10–29 cm were measured in subplots (20×20 m), while mature trees with dbh greater than 30 cm were measured in the main plots (40×60 m).

All measured trees were classified by diameter and tree density, volume and basal area were estimated. The average tree volumes of dipterocarps and non-dipterocarps were estimated based on equations reported in Forest Authority (2004). The periodic annual increment (PAI) was estimated by comparing the densities, volumes and basal areas of logged and unlogged sites in 2001 and 2008.

The structural change in the first three years after logging was estimated by comparing analogous unlogged evergreen forest (UNFE) with the 2001 measurement of evergreen forest that was logged in 1998 (LGFE). The change over ten years was estimated by comparing the 2008 measurements of the UNFE and the LGFE. The annual change in structure was estimated by comparing measurements in 2001 and 2008.

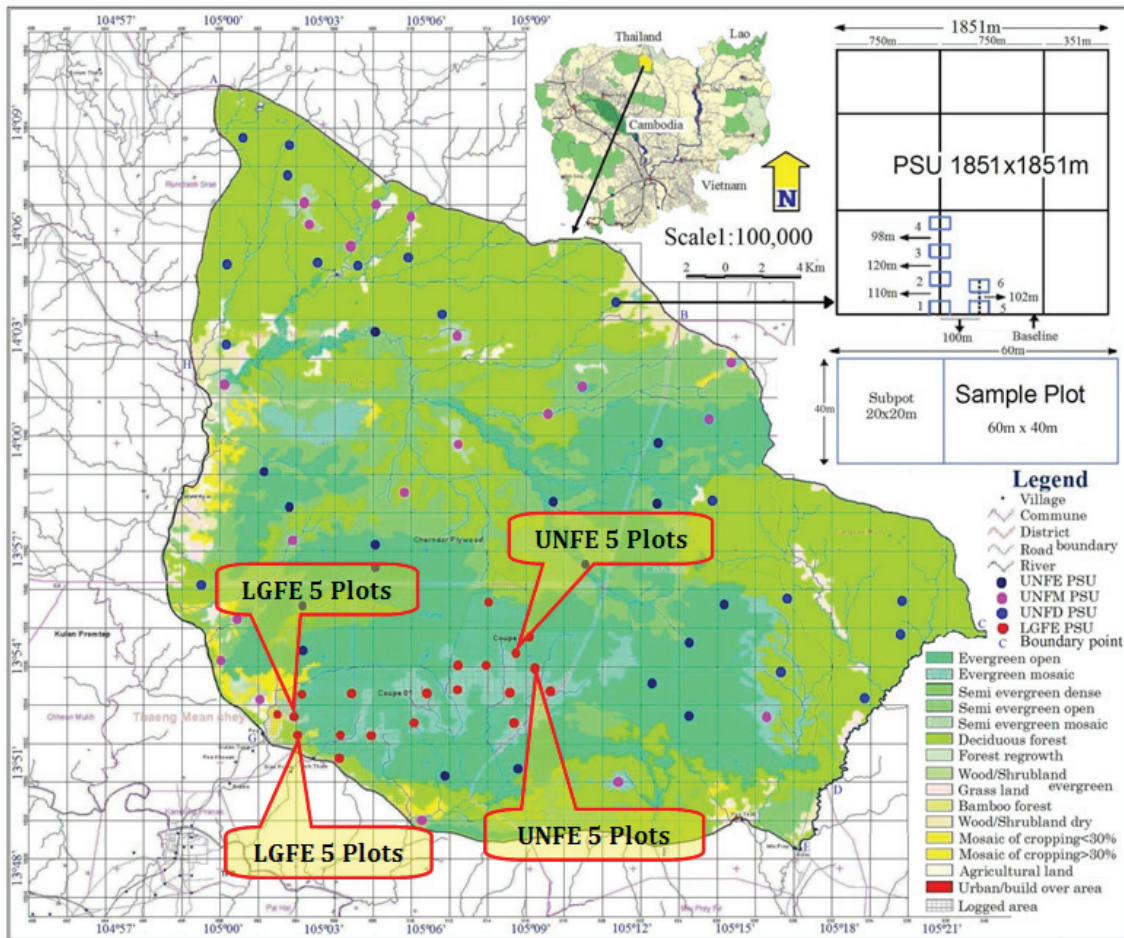
The PAI was assumed to constitute net growth because the remaining live trees and newly recruited trees were considered as live trees in the second measurement. Vanclay (1994) defined yield as $V_n = V_2 - V_1 + V_c$, where V_2 and V_1 are the live stand volume at measurements 2 and 1, respectively, and V_c is the cut volume. Vanclay (1994) defined

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Logged and unlogged

Figure 1 Plot locations



Note: UNFE = unlogged evergreen forest and LGFE = logged evergreen forest.

the net growth of initial volume as $V_{ni} = V_n - V_p$, where V_i is the ingrowth volume. This study considers only $V_2 - V_1$ of each forest type.

Results

In 2008 the density, volume and basal area (for trees with dbh ≥ 10 cm) of the LGFE were 431.7 trees/ha, 202.6 m³/ha and 26.0 m²/ha, respectively; those of the UNFE were 483.3 trees/ha, 199.7 m³/ha and 22.2 m²/ha (Table 1). The average annual recruitment of trees with dbh ≥ 10 cm in the LGFE (5.7%) was higher than that in the UNFE (3.3%), due to the open canopy created by harvesting (Table 2).

For trees with dbh ≥ 50 cm the PAI of commercial tree volume was 1.1 m³/ha in the LGFE and 0.2 m³/ha in the UNFE, while the PAI of basal area was 0.6 m²/ha and 0.2 m²/ha, respectively (Table 2). About 2.4% of trees with dbh ≥ 10 cm were assessed as dead in the LGFE in 2008, compared with 5.5% in the UNFE (Table 1). The annual growth rate of tree density (all stems with dbh ≥ 10 cm) was higher in the LGFE (5.7%) than in the UNFE (3.3%), as was the annual volume increment (3.5% compared with 1.6%) (Table 2).

Conclusion

In 1998, the harvest of the LGFE site involved the removal of 3.0 trees/ha (dbh ≥ 50 cm), which resulted in a yield of 22.2 m³/ha by volume and 1.6 m²/ha by basal area (Kao and Iida 2006). The volume and basal area increments for trees with dbh ≥ 50 cm can be used to set the sustainable yield (although logging damage, planned silvicultural treatments and the forest's capacity to provide ecosystem services such as those related to biodiversity, carbon, water and aesthetic values should also be taken into account).

The *ITTO criteria and indicators for the sustainable management of natural tropical forests* (ITTO 2005) state that forest resource assessments carried out periodically are vital for ensuring the sustainable production of forest goods and services for society; this includes determining the sustainable yield. In the study area, the total volume increment of trees with dbh ≥ 50 cm 25 years after logging is estimated at about 27 m³/ha (i.e. 1.1 m³/ha x 25), which is greater than the previously harvested volume. Therefore, harvesting on a 25-year cutting cycle should be possible in the LGFE. Since the initial logging was in 1998, the next harvest could take place in 2023. However, we recommend

Showing their classes

Table 1 Forest parameters, 2001 and 2008, by dbh class and logged and unlogged

dbh class (cm)	2008						2001					
	LGFE			UNFE			LGFE			UNFE		
	De	Vol	BA	De	Vol	BA	De	Vol	BA	De	Vol	BA
[dbh < 0.5 cm; height > 1 m]	9440	NA	NA	7960	NA	NA	5100	NA	NA	3900	NA	NA
0.5–9	810	115.8	3.3	900.0	146.1	3.5	691.7	NA	NA	712.5	NA	NA
10–19	230	47.6	3.6	327.5	77.0	4.8	143.8	35.6	2.1	250.0	62.7	4.2
20–29	120	50.2	5.4	87.5	28.4	3.3	62.5	29.3	2.8	62.5	23.9	2.8
30–39	37.1	18.8	2.6	25.4	13.7	2.0	22.9	18.2	2.0	17.2	11.3	1.5
40–49	12.9	12.8	2.0	13.3	13.1	1.9	2.8	3.5	0.4	10.9	11.7	1.7
>50	31.7	73.1	12.4	29.6	67.4	10.1	16.7	64.7	7.7	22.9	65.9	8.8
Total (dbh ≥ 10 cm)	431.7	202.6	26.0	483.3	199.7	22.2	248.6	151.4	15.1	363.5	175.6	18.9
Grand total	10682	318.4	29.2	9343.3	345.8	25.7	6040.3	151.4	15.1	4976.0	175.6	18.9
[Total dead]	40.4			54.6								
[Total dead dbh ≥ 10 cm]	10.4			24.6								

Note: LGFE = logged evergreen forest, UNFE = unlogged evergreen forest, dbh = diameter at breast height (1.3 m); De = density (trees/ha); Vol = tree volume (m³/ha); BA = basal area (m²/ha); NA = data not available; TD ≥ 10 cm = total number of trees with dbh > 10 cm.

Growing back

Table 2 Periodic annual increment, by diameter class, logged and unlogged

dbh class (cm)	Annual growth						Annual growth (% of dbh ≥ 10 cm)					
	LGFE			UNFE			LGFE			UNFE		
	De	Vol	BA	De	Vol	BA	De	Vol	BA	De	Vol	BA
[dbh < 0.5 cm; height > 1 m]	578.7	NA	NA	541.3	NA	NA						
0.5–9	15.8	NA	NA	25.0	NA	NA						
10–19	11.5	1.6	0.2	10.3	1.9	0.1	2.7	0.8	0.8	2.1	1.0	0.4
20–29	7.7	2.8	0.3	3.3	0.6	0.1	1.8	1.4	1.3	0.7	0.3	0.3
30–39	1.9	0.1	0.1	1.1	0.3	0.1	0.4	0.0	0.3	0.2	0.2	0.3
40–49	1.3	1.2	0.2	0.3	0.2	0.0	0.3	0.6	0.8	0.1	0.1	0.1
>50	2.0	1.1	0.6	0.9	0.2	0.2	0.5	0.6	2.4	0.2	0.1	0.8
Total (dbh ≥ 10 cm)	24.4	6.8	1.5	16.0	3.2	0.4	5.7	3.4	5.6	3.3	1.6	2.0

See Table 1 for abbreviations.

that damage caused by logging should be studied in detail before putting this conclusion into effect, as should the effects of logging at this intensity on other forest values. Long-term monitoring of yield, growth and regeneration is especially important to ensure that harvest levels and the mix of forest products are sustainable.

Acknowledgements

The authors thank H.E. Sokhun Ty, former Director General of the Cambodian Forestry Administration, for his approval to enter the forests for setting up and measuring the permanent sample plots; local authorities and indigenous people who willingly contributed to the project through a consultation process and gave the authors their trust; reviewers, who gave valuable comments and suggestions on the draft manuscript; and ITTO, which provided crucial support through the ITTO Fellowship Program.

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Community participation in mangrove ecosystem restoration can be improved in Cameroon's Douala-Edea Wildlife Reserve

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Mr. Moudingo Ekindi (Cameroon) received his fellowship in 2008 to carry out DESS research titled Assessment of community participation in mangrove forest restoration in four selected villages of the Douala-Edea Wildlife Reserve: a contribution to improved social resilience of coastal communities to climate change at the University of Yaoundé in Mouanko, Cameroon.



Senses working overtime: Villagers gather at a sensitization meeting. Photo: J.H. Moudingo Ekindi

Cameroon has about 196 000 hectares of mangrove forest, which is rich in vertebrate fauna (Spalding *et al.* 2010). The 160 000-hectare, IUCN category IV Douala-Edea Wildlife Reserve (DEWR) was created in 1932 and selected as a category 1 operational technical unit (a government land-use classification) in 1994. The reserve covers part of the Cameroonian inshore plain (Ajonina and Usongo 2001), and about 10% of it is occupied by mangroves. There are six villages in the vicinity, in which foreign nationals, including from Benin, Ghana and Nigeria, comprise 80% of the population. Fishing, fish-smoking and mangrove fuelwood harvesting are their main livelihood activities; fishing is conducted mainly by men and fish-smoking mainly by women.

Very few fish-smokers have adopted the improved ovens introduced in 2003 by the Cameroon Wildlife Conservation Society (CWCS), a national NGO, to minimize fuelwood usage. This is shown by the sharp increase in the number of traditional ovens in the area, from 340 in 1997 to over 850 in 2008. There is increasing demand for mangrove wood (*Rhizophora racemosa*) due to population growth on one hand and the demand for smoked fish and fuelwood by villages on the other. These set the grounds for unremitting encroachment and the overexploitation of mangrove wood. A traditional oven can use over 5 m³ of mangrove wood per day (Ajonina 2008). More than 84% of mangrove deforestation and degradation in the DEWR is caused by fish smoking (Ajonina *et al.* 2005).

In order to find a win-win solution to the over-use of mangrove resources, the CWCS used a participatory wetland appraisal to involve poor coastal communities in mangrove

restoration activities. This approach was taken because it gives local people the opportunity to learn by doing. The key was to change attitudes to mangrove deforestation and degradation because mere protective measures have been ineffective.

Little or no study has been done in the DEWR to characterize community participation in mangrove restoration efforts. My study was conducted as part of an effort to do so. I set out to answer the following question: "Does the involvement of local people in mangrove nursery establishment and subsequent out-planting phases have a significant impact on the restoration of mangrove forests in the DEWR?"

Methods

The study was conducted in four villages—Mbiako, Yoyo 1, Yoyo 2 and Youme 2. All are located in the mangrove-dominated part of the reserve, where the CWCS has been working for over ten years. Community participation was examined through three stages: sensitization, community organization and nursery out-planting.

Both primary and secondary data were used in the analyses. The primary data were derived over a period of 14 months through two approaches, namely observational studies (phase 1; Moudingo 2007) and a questionnaire survey (phase 2). Phase 1 consisted of taking stock of the number of individuals involved in each stage, while phase 2 used a semi-structured questionnaire to interview 400 individuals to gauge recent community perceptions. The interviewees were selected using a stratified random sampling approach. The linear settlement pattern in the selected villages facilitated this sampling design. Secondary data came from



Participatory research: The author plants a mangrove seedling in the Douala–Edea Reserve. Photo: J.H. Moudingo Ekindi

various sources, such as articles in scientific journals, books, newsletters, and reports on community participation and on mangrove work.

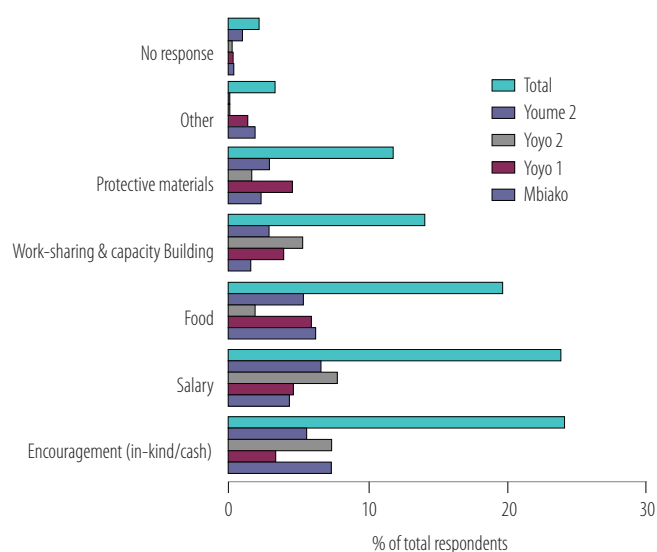
User-friendly statistic software (Microsoft Excel and the Statistics Package for Social Sciences) was used to encode and analyse raw data and to process the participatory data matrices from phases 1 and 2 respectively. To support and corroborate these results, descriptive statistics as well as inferential statistics, namely Pearson's χ^2 test and Spearman's correlation, were used.

Findings

The degree of community participation in mangrove restoration activities was highly variable and there was a marked disparity between the four villages. Fish-smokers and woodcutters were the most represented at the sensitization stage and led to the formation of village steering committees. Overall, eight committees were formed. Each village had two committees, one on mangrove restoration (known as village mangrove restoration steering committees) and the other on improved smoke ovens (known as common initiative committees). Overall, women were the majority on these committees. The efforts of and synergies between participants of these two types of committee, coupled with the efforts of some other villagers, yielded close to four hectares of *R. racemosa* plantation. During the nursery and out-planting stage, most of those who participated in the *in situ* production of seedlings were men. For all stages community participation analysis revealed discrepancies in age, nationality, gender, marital status, educational level, occupation, longevity at site and

The importance of rewards

Figure 1 Community responses on willingness to participate in mangrove restoration vs the provision of incentives, DEWR



origin within and across villages but gave no clear typology of community participation.

Communities differed significantly in their responses to reforestation proposals. In the phase 2 questionnaire, many people responded that the mangroves were degraded, while others replied 'not at all degraded'. Thus, there were differing views on whether replanting was necessary. Many people were unaware of the stages involved in a successful reforestation operation. Community participation in nurseries and out-planting activities was variable: some people were eager initially to participate in the program but eventually abandoned or resisted it, while others refused outright. Most people were willing to participate in activities, but conditioned such participation on factors such as more training and especially the provision of incentives (Figure 1).

Owing to the importance of mangroves to human wellbeing, the restoration of these ecosystems and their ecological functions cannot be overemphasized. Community involvement in such efforts is essential: not only is it a low-cost approach, it also helps to educate communities on the benefits of reversing degradation and deforestation and promotes the sustainable use of resources and the protection of coastal areas. This study sets the ground for adaptive measures (anticipatory, short-term and reactive options) to broaden community participation and awareness in biological management and mitigation strategies. Although in many cases community participation in mangrove restoration in the DEWR was incidental, it was an 'eye-opener' for the communities as they organized in an attempt to secure tenurial rights. This collaboration will increase their scope to participate in the wise use of resources in the proposed Douala-Edea National Park and Wetlands of International Importance, which is about 296 000 hectares in size.

Recommendations

Based on the results of this study, the following recommendations can be made to strengthen community participation in future resource management initiatives.

Sensitization

More long-term sensitization efforts should be made to enhance the visibility of project objective(s), benefits, communication and environmental awareness. These could involve:



Mud larks: Putting mud into bags for the seedling nursery, Douala–Edea Reserve.
Photo: J.H. Moudingo Ekindi



Swamped: Village men plant-out *Rhizophora racemosa* seedlings. Photo: J.H. Moudingo Ekindi

- The organization and introduction of environmental mangrove education in schools.
- The enactment of ‘community days’ for mangrove restoration.
- The use of community opinion leaders to pass the message of mangrove restoration to other members of the community.

Community organization

There is a need to establish more community groups and bring adjacent villages together, regardless of whether mangroves are important for those villages. Whatever the organizational structure chosen by collaborators, the roles and responsibilities of participants must be clearly delineated. Leadership and organizational structures should have legal ramification and should be provided with sufficient technical information and support.

Nursery and out-planting initiatives

Youth should be targeted in mangrove restoration activities because of their tremendous energy. Facilitators and villagers should monitor the success of restoration because feedback will help to inspire and empower others. Credits should be provided for the provision of assistance materials in the form of grants rather than loans. Equally, graduated sanctions should be imposed for the violation or disturbance of restored sites.

General

Overall there is a need for:

- long-term planning
- the integration of other conservation initiatives into restoration works
- increased incentives and motivation
- prudent diplomatic approaches
- further research.

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The author thanks ITTO for the timely granting of the fellowship and especially Dr Chisato Aoki for her kind assistance; Professor Pelz Dieter and Dr Ajonina Gordon for information on mangroves, data analyses and statistical interpretations; Professor Amougou Akoa, Dr Mbarga Bindzi and Dr Biye Elvire for their various contributions to my knowledge; the DEWR

conservator and his team of eco-guards for their collaboration; and, the chiefs and inhabitants of the selected villages for their contribution to the success of this work.

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Action is needed to speed up the implementation of SFM principles, criteria and indicators in Gabonese forests

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Ms Nkoulou received an ITTO fellowship in 2007 to undertake a master's program in economics and SFM at the Institut National des Sciences de Gestion in Libreville, Gabon. This article is based on her master's thesis titled The operationalization of principles, criteria and indicators of sustainable management of forests in Gabon.



Outreach: The author in a biodiversity reserve near Libreville, Gabon. Photo: P. Nkoulou

Principles, criteria and indicators (PCI) for sustainable forest management (SFM) are a planning framework for the sustainable management of production forests and a tool for operationalizing SFM. Gabon, which is a member of both ITTO and the African Timber Organization (ATO), has developed a harmonized, national set of PCI based on ATO/ITTO PCI (hereafter referred to as the Gabon PCI) to conserve and sustainably manage its forests. It is dismaying to note, however, that the Gabon PCI have been largely unimplemented since they were validated in 2004.

To determine the reasons why this tool is not being used by forest stakeholders and to propose solutions to optimize its use, I conducted master's research in Libreville and surrounds. The study was supervised by Dr François Hiol Hiol, coordinator of ITTO project PD 124/01 Rev.2 (M), and Dr Rose Ondo Ntsame, chair of the Pan African Forest Certification (PAFC) program in Gabon.

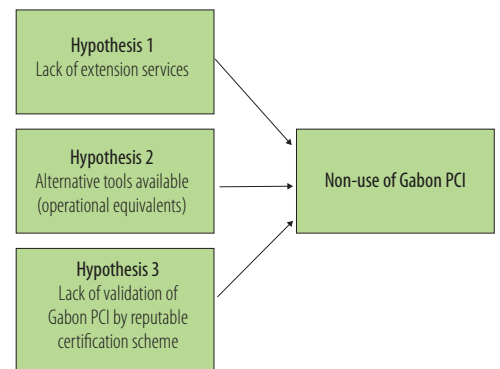
We conducted a survey of potential Gabon PCI users in the forest administration, the private sector and civil society, in order to test the three (not mutually exclusive) hypotheses shown in Figure 1.

Table 1 shows that a majority of stakeholders are aware of the Gabon PCI and Table 2 shows that only about 12% of stakeholders are using them. Table 3 suggests the reasons behind the lack of use.

The majority of stakeholders know of the Gabon PCI. However, only a minority has a copy of the Gabon PCI document that was validated during a national workshop conducted in July 2004. More than half of respondents

Testing ideas

Figure 1: Hypotheses for the lack of implementation of the Gabon PCI



confessed that they were not aware of its contents or relevance.

More than half of respondents indicated a lack of outreach, dissemination, training and extension work as a reason for the non-use of the Gabon PCI. The lack of dissemination is partly because the PCI are unofficial, despite their 2004 endorsement. Their non-binding nature is another reason for their current low use in Gabon.

Solutions

To better promote the effective use of the Gabon PCI, the following actions should be pursued:

- Conduct extension work on Gabon PCI among potential users.
- Make the use of the Gabon PCI binding by making forest audits based on them mandatory in production forests.

Know about them ...

Table 1 Awareness of the Gabon PCI among stakeholders

Response	Respondents			Total	%
	Forest administration	Private sector	NGOs		
Yes	14	14	10	38	68
No	5	11	2	18	32
Total	19	25	12	56	100

Source: Survey conducted in January–March 2009.

... Don't use them

Table 2 Use of Gabon PCI by Gabonese forest stakeholders

Response	Respondents			Total	%
	Forest Administration	Private sector	NGOs		
Yes	5	2	0	7	12.5
No	14	23	12	49	87.5
Total	19	25	12	56	100

Source: Survey conducted in January–March 2009.

The reasons why

Table 3 Reasons for the non-use of Gabon PCI

Reasons	Stakeholders			Total	%
	Forest Administration	Private sector	NGOs		
Lack of outreach, dissemination, training and extension work	15	16	12	43	58
Unofficial status	0	13	0	13	18
Non-binding status	1	8	0	9	12
Lack of linkage to certification	0	6	0	6	8
No response	3	0	0	3	4
Total	19	43	12	74*	100

* The total number of responses exceeds the number of respondents because some respondents selected more than one reason.

Source: Survey conducted in January–March 2009.

- Consider the regional-scale development of an audit manual adapted to Gabonese forests by drawing on the audit manual produced by the regional ATO/ITTO project.
- Facilitate the operationalization of the national PAFC system for Gabon.
- Promote the use of the Gabon PCI through legal compliance initiatives, such as the voluntary partnership agreement, the Forest Concession Monitoring System in Central Africa and other schemes (e.g. the Forest Stewardship Council).
- Build the capacity of Gabonese forestry stakeholders through appropriate training programs.

Recommendations

A number of recommendations are directed at specific stakeholders.

To the Government of Gabon:

- Prioritize the promotion of the Gabon PCI.
- Ensure the consistency of various tools used in forest management in Gabon with the Gabon PCI.
- In the development and implementation of its forest policy, impose, through its Ministry of Water and Forest Resources, the national PAFC scheme for Gabon.

To the ATO/ITTO regional project:

- Develop a joint action plan with the forestry administration to build capacity in the use of the Gabon PCI and a regulatory framework for internal audits of forest concessions based on the Gabon PCI.
- Continue to provide all stakeholders with training on the role, importance, benefits and use of the Gabon PCI.

To ATO:

- Raise awareness in Gabon of the importance of the ATO/ITTO PCI and the Gabon PCI and the need to use them.
- Revive and support Gabon's National Working Group, which is a key actor in the SFM process at the national level.
- Encourage member countries, including Gabon, to promote pan-African certification.

To ITTO:

- Continue providing technical and financial support to Gabon in its efforts to honour its policy commitments to adapt the ATO/ITTO PCI to the local context and to use them effectively.

The limits to agriculture

A greater focus on NTFPs could help improve livelihoods in Nepal's upper Humla

By Rabindra Roy

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Dr Rabindra Roy (Nepal) received his fellowship in 2005 to conduct PhD research at the School of Environment, Resources and Development, Asian Institute of Technology, Thailand. This article is based on his PhD dissertation titled Contribution of NTFPs to livelihood in upper Humla, Nepal.



Rooms with a view: Syaandaa village, Syaandaa VDC, Humla, Nepal. *Photo: R. Roy*

Situated in the northwestern corner of Nepal bordering the Tibet Autonomous Region of China, Humla is one of the country's poorest and least developed districts. It possesses harsh climatic conditions—it is in a rain shadow—and rugged mountainous terrain. The district belongs geographically to the Karnaali region and administratively to the Mid Western Development Region. It spans an area of 5655 km², with elevations ranging from 1219 m to 7337 m above sea level. Subtropical and arid vegetation are found on the valley floors and the Tibetan plateau, respectively (DDC 2004).

Humla has a population of about 41 000 people distributed in 7000 households. The average household size is 5.8 people, the population density is 7.21 persons per km² and the population growth rate is 1.99% (CBS 2003). The people of Humla (known as Humlis) live in compact settlements with flat-roofed, two-and-half-storied houses built in the Tibetan style.

The study was conducted in two village development committee (VDC)¹ areas in upper Humla—Khagaalgaun and Syaandaa—with the aim of examining the contribution of non-timber forest products (NTFPs) to livelihoods in the two VDCs. The Khagaalgaun VDC has a total of 195 households with a population of about 1300 and the Syaandaa VDC has 302 households with a population of 1800. Family size per household was 6.8 people in Khagaalgaun and 6.1 in Syaandaa (Roy 2010).

¹ Nepal is divided administratively into five development regions, 14 zones and 75 districts. It is further divided into 3915 village development committees (VDCs), 58 municipalities and one city. Every VDC is composed of nine wards, which is the smallest administrative unit in Nepal (CBS 2006).

Study area

The Khagaalgaun and Syaandaa VDCs have unique attributes in terms of social groupings. All four villages in the Khagaalgaun VDC are peopled by the Lama social group, which belongs to the Tibeto-Burman language group. The Chhetri-Thakuri and Dalit social groups dominate all four villages of the Syaandaa VDC; they belong to the Indo-Aryan language group. The language spoken by the Lama social group is known as Lama. The language spoken by the Chhetri-Thakuri and Dalit is generally called Humlis Khas, which is similar to Nepalese (the national language of Nepal), although the pronunciation differs. The Lama social group is known locally as *bhote* and *jadaan*, and the Chhetri-Thakuri and Dalit social groups are called *topitaale* and *khasaan*.

Bishop (1990) remarked that very few studies had been carried out in the Karnaali region and that it was therefore difficult to find reliable secondary data on the region. To some extent this statement is still true, and Humla is still neglected. Government officials posted in Humla tend to feel that they are being punished (Adhikari 2008), and try to get transferred to other districts as soon as possible. Thus, development in Humla has lagged behind other parts of Nepal. This neglect was part of the motivation to conduct this research.

Methods

Quantitative and qualitative information was collected in June–August 2007 and May–September 2008. Fifty-seven percent of all households in the two VDCs were surveyed. Semi-structured questionnaires were administered at randomly selected households without replacement.

Questionnaires were pre-tested (10% of the total sample size) and revised accordingly. This primary data collection was supplemented by social and anthropological tools such as key informant interview, focus group discussion, informal interaction and participant observation. A herbarium was collected to identify the scientific names of NTFP species.

Findings

Livelihood activities in upper Humla

In Humla, agriculture combined with trading is the mainstay of livelihoods. Most cultivated lands, however, are marginal in terms of soil fertility and situated in difficult terrain (Fürer-Haimendorf 1975). As a result, agricultural production alone cannot support households year-round. This study revealed that the total average food-sufficient months in both Khagaalgaun and Syaandaa VDCs was 7.83 months (235 days) per year. Food deficits are generally experienced from mid February to mid June and from mid August to mid October.

Trade is the other important pillar of livelihoods in upper Humla; it involves NTFPs, timber, pack-animal transportation, *furu*² trading, and the operation of small shops. However, the movement of traders has been inhibited by internal changes in Nepal such as the establishment of community forestry, which is closing off areas to herders and obstructing the passage of traders who use sheep and goat caravans (Roy *et. al.* 2009). Some residents of Humla also find regular and seasonal employment in governmental and non-governmental organizations. Cash income from these activities is used to buy food, clothes, medicine and other household requirements, and to meet expenses associated with children's education.

NTFP species: a livelihood option

The author collected a wide range of NTFP specimens from settlements and from agricultural lands within one-and-a-half hour's walk of the settlements. The primary focus of the inventory was to document NTFP species that were being used directly in daily lives. Thus, most specimens were collected from the *aoul*³, although some were also collected from the *lek*⁴, where livestock is grazed during summer.

The study found that 47 species were used in households in the VDCs for food, medicine and other purposes. Of these, 22 species were wild edible plants, 15 species were used as medicine, and ten species were harvested for other uses. Wild edible plants were consumed with daily meals, while medicinal plants were used in households as required for primary health care and were also traded for cash income.

Wild edible plants in daily meals

Humlis eat two meals a day. *Lakkad*, *roti* and *chino bhaat* are the major foods consumed in regular meals in the study areas. *Lakkad*, the most commonly and regularly consumed food, is made from bitter buckwheat and prepared as a pancake. *Roti* (flatbread) is made from wheat flour or a mixture of wheat and millet flour. Humlis eat *chino bhaat* prepared from panicum millet (*Panicum miliaceum*) and cooked as rice *bhaat*.

The *lakkad* and *roti* are supplemented with wild edible plants such as the tender leaves of stinging nettle (*Urtica dioca*); these are available throughout the year except between mid May and mid June when the plant is often



Honoured: The author (left) receives a 'Nepal Bidhyabhushan-Ka' award for his research from Nepal's president, Dr Ram Baran Yadav. Photo: R. Roy

infested with insects, and between mid December and mid January, when the plants are dry. The period of peak consumption is between mid March and mid May, when food grain supplies are diminished and the household food deficit peaks. Humlis mix stinging nettle with bitter buckwheat flour and cook it in water and prepare soup they call *faando*.

Humlis actually prefer stinging nettle to vegetables such as cauliflower, cabbage, pumpkin and brinjal: they say that vegetables grown from the hybrid seeds supplied by the District Agricultural Office and some NGOs working in the sector do not taste as good as wild edible plants and they need chemical fertilizers and pesticides, while the stinging nettle is found in the natural environment and is organic. Additionally, stinging nettle is readily available in nearby settlements, farmlands and pasturelands.

Dry leaves of *baanko* (*Arisaema flavum*) and *bhaande paaltaa* (uncultivated bitter buck wheat—*Fagopyrum tataricum*) are used as curry in winter, when stinging nettle is less available due to snowfall. Tender leaves of *baanko* are collected between mid May and mid July, sun-dried and stored for winter.

Tubers of *baanko* are used as the main course in meals between mid August and mid September, when there is less food grain in store (the food grain harvested from *jethaansi baali*—summer crops—has been consumed by this time and the winter harvest—*kaartike baali*—is yet to take place). When *baanko* tubers are consumed in regular meals the Humlis call it *chhaaka taarne*, meaning 'saving food grain'.

Tradable NTFPs

The sale of NTFPs is a key livelihood strategy in both VDCs. People in the study area collect NTFPs in nearby government forests and pasturelands and sell them to local brokers. About 72% of households are involved in this business as primary collectors. The main tradable and economically valuable NTFP species are *atis* (*Delphinium himalayai*),

² *Furu* is a wooden bowl used for drinking Tibetan tea and local liquor known as *chhyaang*.

³ *Aoul* is land at lower elevation than the settlement that can be used for agricultural production. *Aoul* is warmer than *lek*.

⁴ *Lek* is land at higher elevation than the settlement that can be used for agricultural production and livestock grazing.

jatamansi (*Nardostachys jatamansi*), *kutki* (*Picrorhiza scrophulariiflora*) and *guchchi chyaau* (*Morchella conica*).

At the time of the survey, primary collectors were selling *atis* at the rate of NPR600–800 per kg at village markets. *Jatamansi* was priced between NPR60 and NPR100 per kg, while the price of *kutki* was fixed at around NPR180–230 in village markets. *Guchchi chyaau* was sold at NPR10 per piece (NPR10 000 per kg). The price was fixed according to market demand at *Nepalgunj* and the quantity available at the household level. Thus, if a household collected more of any NTFP it earned more and the household had more bargaining power with local traders. People from both Khagaalgaun and Syaandaa used only their free time to collect NTFPs—it was considered as a secondary source of income.

Economically valuable NTFPs were found to be depleted due to over-collection and premature harvesting. Because of the food deficit, people are under pressure to make money from NTFP collection. There is competition among primary collectors to collect more NTFPs, sometimes encouraged by local traders.

Conclusion

In the upper Humla, Humlis are engaged in agriculture, trade and employment in governmental and non-governmental organizations to fulfill their basic household needs. Agriculture alone is incapable of addressing the problem of food insecurity. The cultivation and trade of economically valuable NTFPs has considerable potential to mitigate the existing food deficit problem in the two VDCs. Humlis invest most of their time and labour in agriculture, and government agencies and NGOs working in the development sector have also given priority to boosting agricultural production, even though production will always be limited by the harsh climate and rugged terrain. In this context, this study concludes that the cultivation of economically valuable NTFPs on otherwise unproductive private agricultural land has greater potential to improve the precarious livelihoods of people in Khagaalgaun and Syaandaa, but this development pathway does not yet receive due attention from development agencies.

Acknowledgements

The author acknowledges the generosity of the people in the Khagaalgaun and Syaanda VDCs, upper Humla, for their kind participation in the household survey as well as in individual and group discussions. Financial assistance from ITTO, Japan, and the Norway Development Fund is greatly appreciated.



NTFP soup: A Lama woman prepares food using stinging nettle, Kermi village, Khagaalgaun VDC. Photo: R. Roy

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- Dr. Roy's work as summarized in this article has been published online; see <https://www.morebooks.de/store/de/book/mountain-livelihoods-in-upper-humla,-nepal/isbn/978-3-8433-6374-7>*

Out on a limb

Continued from page 24

- **Award distribution.** Since 2000, a majority of the fellowship applications and 60% of the awards have involved nationals of seven ITTO producer countries: Ghana, Nepal, Cameroon, India, Colombia, Indonesia, Peru and the Philippines. This suggests there may be a need to raise awareness of and promote the program in other countries, with a view to generating fellowship applications from a wider field of ITTO members.
- **Program support and Secretariat costs.** About 25% of the US\$400,000 available in the FFF each year is used to cover program support and Secretariat costs related to processing the 300-400 applications received, as well as managing more than 100 ongoing fellowships. In order to maximize the funds available for fellowships from the FFF, it may be worthwhile to consider other arrangements for covering the operational and overhead costs of the program.
- **Short-term versus long-term activities.** Over the years, there has been a steady increase in applications (sometime half of all received) requesting support for post-graduate studies, which are “high price tag” awards compared with most short-term activity costs. In view of this trend, it may be useful to review the relative benefits of short- versus long-term fellowship activities, with a view to determining to what extent and at what level the ITTO program should continue to help finance advanced studies.

Making the program even better

With 10 years of experience to look back on and in anticipation of entry into force of the ITTA 2006, now seems a good time to take stock of the Fellowship Program's performance and accomplishments since the FFF was established and consider whether and how to address the above issues, as well as others that might emerge through a stock-taking process. To this end, I suggest Council convene a second expert panel as soon as feasible charged with reviewing the program and identifying ways to make it more efficient and effective, taking into account the relevant provisions of the ITTA 2006 and the results of the Fellowship Impact Assessment Survey. Going “out on a limb”, I offer the following ideas in this regard:

- In the new sub-account of the Administrative Account that covers “core operational costs” (ITTA 2006, para 17.2.b) include: (1) the full Secretariat costs to manage the Fellowship Program and (2) an annual allocation (e.g. \$100,000) for fellowship awards. This would spread the cost of program support, as well as a modest “core”

portion of award financing, across all ITTO members while maximizing the funds available for fellowships from voluntary contributions to the FFF, which would remain the main source of fellowship funds.

- In developing Thematic Program Documents for the new Thematic Programs provided for under the ITTA, 2006, include a small line item to support fellowship activities integral to each Thematic Program.
- Each year, award 1-2 fellowships for internships (perhaps of 6-12 months duration) with the ITTO Secretariat in Yokohama to introduce aspiring professionals to the ITTO and its work while enhancing the Secretariat's personnel capacity.
- Develop a web-based fellowship “alumni” network or association linked to the ITTO website to facilitate professional contacts among alumni, foster information sharing and the exchange of experiences and lessons learned, and raise awareness of the program and its benefits in member countries.
- Request ITTO members to take steps to increase the visibility of the program in their respective countries (e.g. through contacts in research institutions, secondary programs, field forestry, etc.) and report to Council on actions taken.
- Make Fellowship Program outreach a formal element of the responsibilities of ITTO regional officers.
- Review the program's current objective in light of Article 1 of ITTA 2006. Consider establishing a limited number of “priority areas” based on ITTO's operational Thematic Programs and reviewing these priorities each biennium.
- Consider the merits of continuing and perhaps increasing the budget limit for fellowships for post-graduate study.

In my view, the ITTO Fellowship Program is a great investment in young people and therefore in the future of tropical forests, including the sustainability of forest management, forest-based livelihoods and the tropical timber trade. It's also a great investment in the future of the Organization which will likely see many delegates from among its former fellows. That said, I believe more can and should be done to increase the value of the investment for grantees and individual member countries, as well as increase the return on the investment to ITTO.

ITTO's Fellowship Program – can we make it even better?

By Stephanie J Caswell (former ITTC chair)

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Investing in sustainable forest management means investing in people, as well as forests. The ITTO Fellowship Program does that. Indeed it is the only Fellowship Program focused on building human resources virtually worldwide in disciplines related to tropical forests and the tropical timber economy. Looking back, there's no doubt the program has come a long way since it was launched in 1989 by the Committee on Forest Industry at the initiative of its Chairman, Dr. Marku Simula, and its Assistant Director, Dr. Manoel Sobral. But there may still be room for improvement.

The early years

My experience with the Fellowship Program began in 1997 when I was Vice-Chair of the Council, which meant I also chaired the Fellowship Selection Panel. At that time, the Council handled the program on a largely ad hoc basis. The selection panel (comprised of busy Committee Chairs and Vice-Chairs) met over lunch and after hours on the margins of (the then) biannual Council and Committee sessions, with each panel member responsible for reviewing and evaluating a tall stack of applications. Had it not been for the excellent preparations and documentation by the ITTO Secretariat we would have been hard pressed to complete our task.

Despite the panel's informality, I was impressed by the breadth and vigor of the program, which in 1997 supported 59 grants to nationals of 17 member countries for a variety of activities in the field of tropical forestry. Most were short-term proposals of less than US\$5,000 to attend professional conferences, publish and disseminate technical documents, or participate in short-term training courses or internships. I was struck by the fact that with so little financial investment, ITTO could make a concrete contribution to developing the skills and expertise of aspiring and young professionals in producer countries.

With my new appreciation of the Fellowship Program's reach and impact, the United States made its first contribution of US\$25,000 in support of the program in 1997. Although a modest amount, it was to be the first of regular annual contributions which in 2010 totaled more than US\$1 million.

Establishing the Freezailah Fellowship Fund

In 1999, after completing my term as ITTC chair, I had the opportunity to chair the expert panel charged with reviewing the Fellowship Program and making recommendations for improvement. The panel's report led to Decision 4(XXVII) by which Council adopted a number of measures to enhance the functioning of the program,

including, *inter alia*, revised objectives and priority areas (based on the ITTA 1994 and Libreville Action Plan), streamlined application and screening processes, and setting an upper limit of US\$10,000 per fellowship.

The decision also established the Freezailah Fellowship Fund (in honor of ITTO's first Executive Director) as a sub-account of the Special Account to receive voluntary contributions earmarked for the Fellowship Program. The Freezailah Fellowship Fund (FFF) put the program on a new and enhanced financial footing within the ITTO.

Trends since 2000

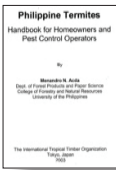


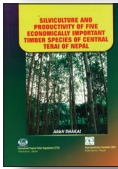


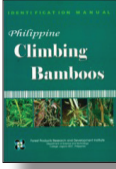
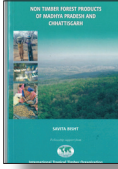





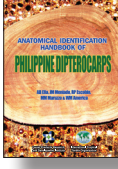



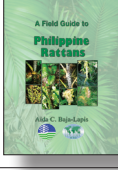
In the last 10 years, the ITTO Fellowship Program has flourished under the able management of the Secretariat, providing a total of US\$3.1 million in fellowships to more than 500 recipients from 40 member countries to support a wide range of activities, some of which are highlighted in this TFU issue. As the Secretariat's Fellowship Impact Assessment Survey (page 3) shows, the program has been highly successful in helping to build human resources in tropical forestry and related fields, especially in producer countries.

At the same time, a look at the following trends over the last decade suggests there may be scope to further improve the effectiveness, efficiency and attractiveness of the program:

- **Funding base.** Since 1999, the program has enjoyed a sustained voluntary funding base of about US\$400,000 per year from the FFF. However, 95% of the funds have been contributed by Japan (75%) and the USA (20%). The remaining 5% has come from Australia, the Netherlands, Sweden, the United Kingdom and Sub-account B of the Bali Partnership Fund. Just as the Council has stressed the need to broaden its funding base for project and pre-project activities, it may be useful to explore ways to attract other donors to the Fellowship Program, which is open to and benefits all ITTO members.



Selected publications based on work carried out under ITTO Fellowships

Publication Cover	Author(s) * Country Year	Publication	Publication Cover	Author(s) * Country Year	Publication
	Acda, Mernandro N. Philippines 2003	Philippine Termites: A Handbook for Homeowners and Pest Control Operators		Borges, Vag-Lan Brazil 2008	The Economics of Babassu Tree Products and Derivatives in the Amazon: Trade and Forest Conservation
	Huang, Qinglin China 2003	Key Techniques of Continuous Cover Forestry and Their Possible Applications in Tropical Forest Management in China		Dhakal, Arun Nepal 2008	Silviculture and Productivity of Five Economically Important Timber Species of Central Terai of Nepal
	Escobin, Ramiro P. and Banaticla, Maria Celeste N. Philippines 2005	Identification Handbook of Philippine Commercial and Potentially Commercial Woody Forest Vines		Aucca Chutus, Constantino Peru 2008	Manual de Manejo de Bosques y Aprendamos a Plantarlos (<i>Manual of Forest Management and Tree Planting</i>)
	Escobin, Ramiro P., Pitargue, Jr, Fernando C., Ramos, Mario, Maruzzo, Mario M., and America, Wilfredo M. Philippines 2005	Identification Manual: Philippine Climbing Bamboos		Bisht, Savita India 2008	Non Timber Forest Products of Madhya Pradesh and Chhattisgarh
	Saavedra Ruiz, Eutimo Colombia 2005	Manual Orientado a la Planificación y Manejo de Parques Nacionales Aplicado a Colombia (<i>Manual for Planning and Management of Colombian National Parks</i>)		Kywe, Thein Myanmar 2008	The Properties of Hardwoods, Identification and its Utilization in Myanmar. Fifty Tree Species
	Akindede, Shadrach Olufemi Nigeria 2005	Volume Functions for Common Timber Species of Nigeria's Tropical Rainforests		Win, San Myanmar 2009	Investigation on Shifting Cultivation Practices Conducted by the Hill Tribes for the Development of Suitable Agroforestry Techniques in Myanmar
	Editors: Orozco, Lorena; Brumér, Cecilia; and Quirós, David Authors: Carrera, Fernando and others Peru 2006	Aprovechamiento de Impacto Reducido en Bosques Latifoliados Húmedos Tropicales (<i>Reduced Impact Management of Humid Broadleaved Tropical Forests</i>)		Ella, A.B., Menniado, J.M., Escobin, R.P., Maruzzo, M.M. and America, W.M. Philippines 2009	Anatomical Identification Handbook of Philippine Dipterocarps
	Shanmughavel, P. India 2007	A Digitized Inventory of Tropical Timber Resources of India		Robiglio, Valentina Italy 2009	The Invisible Forest: High-Value Trees In Shifting Cultivation Farmland of Cameroon
	Ella, Arsenio B., Toñigacan, Arsenio L., Escobin, Ramiro P. and Pitargue, Jr., Fernando C. Philippines 2008	Philippine Woods: Principal Uses, Distribution and Equivalent Woods in the Asia - Pacific		Baja-Lapis, Aida C. Philippines 2010	A Field Guide to Philippine Rattans

* Bolded name is the Fellowship Awardee if there are multiple authors.

Readers interested in obtaining copies of any of these or other publications arising from ITTO Fellowships should contact Dr. Chisato Aoki at ITTO Fellowship Program (aoki@itto.int); original languages only.