

# LEADERS IN ACTION SUCCESS STORIES FROM THE TROPICS

Yale school of forestry & environmental studies

### **COVER PHOTO**

ELTI alumnus and Leadership Program participant leads ELTI staff on a site visit to his Andean community of El Dovio, Colombia

### CREDITS

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# **TABLE OF CONTENTS**

Introduction	3
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### **NEOTROPICS**

<i>Brazil</i> 1. Payment for Environmental Services in Brazil's Atlantic Forest Region
Colombia
2. Applying Restoration Strategies Learned in Training
3. Bringing Structure to Colombia's Restoration Efforts
4. Engaging Younger Generations to Restore Colombian Andean Landscapes
5. Forest Restoration in the Cali River Watershed
6. Turtle Habitat Restoration In Colombia Receives Global Applause
Panama

7. Empowering Women to Lead Sustainable Ranching and Forest Restoration	.18
8. Farmers Inspire Farmers to Improve Conventional Practices	.20
9. Forest Restoration in La Villa Watershed	.22
10. Smallholder Agroecology in the Dry Arc of Panama	.24
11. Supporting Local Communities in Panama's Dry Forest	.26

### **TROPICAL ASIA**

### Indonesia

12. Coal Mining Companies Get Help Rehabilitating Their Sites
13. Forest Encroachers Become Partners in Indonesia
14. Mobilizing Neighbors to Rehabilitate Coal Mine Sites in Indonesia
15. Paddy Field School Helps Restore Mangroves and Economy on Tanakeke
16. Restoring Damage from Coal Mining in East Kalimantan
Philippines
17. Mobilizing the Grassroots for Forest Restoration
18. Rainforestation Benefits Ripple Out from ELTI Trainings
19. Redirecting the Philippines' National Greening Program
20. Rehabilitating Mangroves after Typhoon Haiyan
21. Replacing Exotic Monocultures with Native Tree Species
22. Restoring the Lawigan Watershed with Native Trees
Singapore
23. Assisting with the UWCSEA Rainforest Restoration Program
Programs
Partners



ELTI staff, participants and partners during a field visit in the Colombian Andes

# **INTRODUCTION**

Since 2006, ELTI has trained thousands of people who manage or directly influence tropical, humandominated landscapes in Asia and the Neotropics on a range of strategies to conserve and restore forests, native tree cover and ecological integrity.

ELTI also has provided follow-up support and mentorship through its Leadership Program to over 100 ELTI alumni to help them share and apply what they learned during ELTI 's training events.

This booklet includes a collection of inspirational stories from a small subset of ELTI alumni in the Neotropics and tropical Asia that illustrate the diverse ways in which they have made profound and long-lasting positive impacts that they attribute, in part, to their participation in ELTI's Training and Leadership Programs.

The stories are featured on ELTI's website at elti.yale.edu.





# NEOTROPICS

BRAZIL COLOMBIA PANAMA

### STORY 1 — BRAZIL PAYMENT FOR ENVIRONMENTAL SERVICES IN BRAZIL'S ATLANTIC FOREST REGION



Can a public utility save money on water treatment if it draws from a natural spring in a protected watershed? The answer is yes, at least in the experience of the Supply Company of the State of Pernambuco, Brazil.

The Supply Company was challenged to test this hypothesis by two organizations that had attended a large workshop and applied course supported by ELTI: the Northeast Center for Environmental Research (CEPAN) and the Brazilian Biodiversity Fund.

By using the economic valuation method of replacement cost, the pilot project proved that it's more cost effective to conserve and restore forest cover in the source watershed than to use conventional water treatment methods. The Supply Company's employees were pleasantly surprised by the financial savings.

The results of the pilot project led to Brazil's first contract for a Payment for Environmental Services (PES) scheme between a water supply company and a conservation area. Equipped with these outcomes, and ELTI's support, CEPAN's technical team convinced the State of Pernambuco to institutionalize this conservation strategy with a state policy. Since then, other supply companies in Brazil's Atlantic Forest region have started similar pilot projects to test forest conservation as a means to cut water treatment costs. Conservation biologists are excited with how well this arrangement aligns with the forest remnants' primary long-term conservation strategy.

> Thanks to the Northeast Center for Environmental Research (CEPAN) for carrying out the research that served as the baseline to implement the PES scheme.

View of the Silver Dam located within the Dois Irmãos Park



# STORY 2 – COLOMBIA APPLYING RESTORATION STRATEGIES LEARNED IN TRAINING



### Techniques from a neighboring country help local communities stabilize the land and restore the soil, as overseen by ELTI alumnus and Leadership Program participant Mauricio Carvajal.

Colombia's mountainous slopes have been impacted severely by single-crop coffee farming and cattle ranching pasture. The steep, denuded terrain suffers landslides and widening gullies during each winter's intense rainfall. To compensate for the loss in fertility, farmers require more production supplies like expensive fertilizers and more labor work. When the land becomes too degraded or difficult to work they change their crops or move to new areas to produce.

"It is a cycle of degradation and deforestation. For a long time, the soil has been treated like a machine in which one dumps inputs and extracts crops," says Mauricio Carvajal, researcher at the Ecological

Restoration Department of the Center for Research in Sustainable Production Systems (CIPAV). "This simplifies the real value of soil as a live system that contains life and makes itself live. We needed opportunities to influence farming practices, cattle ranching and the management of slopes in rural landscapes."

66 The first ELTI course gave me new, clear, practical and applicable information for my work and the improvement of ecological restoration processes. I really appreciate and value the coordinators and instructors behind the courses. They are very professional and have motivated me to continue pursuing new courses.

-MAURICIO CARVAJAL

Mauricio and his peers at CIPAV coordinate and facilitate ecological restoration processes in these rural afflicted areas. Most of their work occurs outside of urban areas and without support from the government. Their success relies on close relationships that they have built with local communities and training them to continue the work over the long term.

In May of 2012, Mauricio went to Brazil for two weeks on an internship sponsored and coordinated by ELTI's Leadership Program. There, he wanted to learn about the mass production of native species and methods of reforestation with native species.

Mauricio returned to his work at CIPAV with better techniques and concepts. He and his team taught these ecological restoration methods to over 100 participants who applied this knowledge on 95 hectares of the Tolima department. As the work takes root, many communities will benefit from erosion control, native forest restoration and increased flows in their rural aqueducts and microwatersheds.

"This work would not have been as successful without my training on seed collection, recovery of native seedlings and forest restoration," said Mauricio. "My internship in Brazil was crucial to achieve a favorable impact on these project sites."

Restoration site in La Ceja in the Antioquia Department in Colombia that is part of an applied research project for the selection, study and structuring of alternative technological slope stabilization systems

Thanks to Zoraida Calle and Enrique Murgueitio from CIPAV for keeping alive the interest in strengthening the CIPAV family; ELTI for creating important spaces and learning moments for a positive impact in the rural communities of Colombia, many of which don't have good examples of sustainable production; and the Ecological Laboratory of Forest Restoration (LERF) and Bioflora Nursery personnel for hosting us, guiding us, and being willing to share their knowledge in a practical way.



# STORY 3 – COLOMBIA BRINGING STRUCTURE TO COLOMBIA'S RESTORATION EFFORTS



### ELTI alumnus Wilson Ramirez coordinates international workshop so stakeholders can share best practices and improve their methods.

Of Colombia's strategic ecosystems that have been highly degraded, only 7% of the endangered and highly fragmented tropical dry forest remains. Years of cattle ranching have compacted and polluted the soil, making this the country's most degraded ecosystem. Recently, these areas have attracted palm oil growers, forecasting new, intensive fertilization and oil pollution.

Early regional efforts to create protected areas and drive restoration efforts for all ecosystem types have been scattered, small in scale and poorly monitored. Without appropriate monitoring, it is very difficult to assess the impact of restoration projects and argue for future efforts.

Wilson Ramirez, Senior Researcher and Coordinator of the Restoration Department at the Alexander von Humboldt Biological Resources Research Institute (IAvH by its Spanish name), knew there had to be a better way. He sought ELTI's support to coordinate a high-level international course for organizations that might become collaborators, and to expand these organizations to monitor restoration projects.

**66** ELTI was an ally before, during and after the course. They supported us at all times with input and advice. This has been a great opportunity to advance in capacity building, a good example of international collaboration, and a good planning example.

-WILSON RAMIREZ

He reached out to officials and strategic researchers who were working in restoration themes already. If he could get them together to share their measures and methods, Wilson knew that they would each come away with greater capacity for monitoring future projects, among other outcomes.

As a measure of the program's success, Wilson has received increasing demand for trainings at the national level. Recently, the IAvH has received several requests from sectors such as the Ministry of Hydrocarbons, Mining and Environment, and from the authority in charge of environmental licensing. Where appropriate, Wilson expects to seek ELTI's support and participation in the future.

Thanks to Colombia's Environmental Ministry for providing economical and technical support; Colombia's National Parks Office for facilitating the course site; Colombia's Center for Research in Sustainable Agriculture *Systems for providing scientific* support; the Yarumo Blanco Association for providing the infrastructure; and Severino Ribeiro, Ignacio Barrera, Mauricio Aguilar and Zoraida Calle for their teaching support.

*Wilson Ramirez teaching course participants during an ELTI field course with the Humboldt Institute in Colombia* 



## STORY 4 – COLOMBIA ENGAGING YOUNGER GENERATIONS TO RESTORE COLOMBIAN ANDEAN LANDSCAPES



### ELTI alumna Adriana Giraldo trains and empowers local youth to ensure the long-term sustainability of agricultural lands and forest stewardship.

The Andean highlands of Colombia are home to a majority of the country's population, with many small farmers that produce annual crops, coffee and livestock. This combination of land-use choices, severe mountainous slopes and high rainfall have caused extensive deforestation and soil degradation that are diminishing farm production and quality of life.

After attending several ELTI training courses on restoration strategies, Adriana Giraldo, a young restoration professional and resident of a rural region of the Andean highlands, has shared what she has learned with multiple stakeholders in her

community, El Dovio. While Adriana often works with landowners and other land-use decision makers, she decided to take a different approach to ensure the future sustainability of her homeland.

**66** The biggest challenge for me as a practitioner was properly addressing restoration processes of forests or degraded areas and how to transmit them to others in the community training workshops I facilitate. Now that I've attended ELTI's courses, I have the necessary tools to develop adequate plans for farm adaptation and restoration of areas to intervene with successful results, and also offer the leadership to pass on the concepts to other land-use decision makers. —ADRIANA GIRALDO With assistance from ELTI's Leadership Program, Adriana spearheaded a project to contribute to the development of community environmental leaders. She worked with a community group named Heirs of the Planet consisting of children and young researchers that has carried out environmental projects since 1996. Adriana led this group on field trips to study the phenology and natural regeneration of a multi-use tree of the Colombian Andes, the white balso, which has proven useful for forest restoration. These field trips also taught the Heirs of the Planet the scientific process required to develop restoration strategies for degraded farmlands.

Adriana helped train over 80 children, youths and other stakeholders from four departments of Colombia. Many have gone on to implement forest restoration projects on their family farms.

Adriana Giraldo (second from right) working with young leaders in the community of El Dovio, Colombia

Thanks to CIPAV for their ongoing support in identifying dynamic leaders and land-use decision makers for ELTI training courses and supporting my work in El Dovio.



# STORY 5 – COLOMBIA FOREST RESTORATION IN THE CALI RIVER WATERSHED



Victor Galindo, a researcher at Colombia's Center for Research in Sustainable Agriculture Systems (CIPAV), has been a key player in facilitating a forest conservation and restoration program that incentivizes improved land-use planning and management in the Cali River Watershed.

The watershed covers approximately 12,000 hectares and provides 20% of the water consumed by the 2.3 million people living in the city of Cali, Colombia. The city's growing population has pushed the agricultural frontier up into the watershed's more marginal mountainous areas. Mature tropical forests have transitioned to a mosaic of uses, impacting the forest's ability to provide and regulate ecosystem services, especially the quality of water.

Alarmed by this threat to the city's future water supply, local environmental authorities, the private sector and other NGOs working in the watershed region implemented an economic incentive scheme to motivate landowners to make more sustainable land-use choices.

I was delighted with the enthusiasm, warmth and professionalism of the ELTI team and the usefulness of the various courses they lead. Learning from and building professional relationships with other restoration experts in Latin America has encouraged me to set my career goals higher and make a profound impact in landscape-scale forest restoration.

-VICTOR GALINDO

Victor coordinated the consolidation phase of the incentive scheme. His team prioritized farms in the watershed to develop interventions for maximum environmental impact. They would need to conduct farm analyses and develop participatory restoration plans—theory and skills Victor learned in ELTI's courses.

Those farmers who rely on the land for subsistence were more reluctant because they would have to take land out of production while converting it to an unfamiliar, more sustainable system. To them, failure would mean food or income insecurity.

The scheme's success hinged on introducing reluctant farmers to neighbors who had already implemented some restoration work and begun to realize the benefits. That exchange built trust between participants, the scheme's manager and accompanying local organizations.

In total, 25 landowners participated to restore over 100 hectares in the Cali River Watershed. The scheme is still working with neighboring landholders to expand the conservation efforts.

Months later, Victor shared his experiences from this project as a facilitator of an ELTI course for other forest restoration practitioners in the region.

The mixed land use mosaic of the Cali Watershed presents a challenge for the conservation of forests that provide ecosystem services such as potable water to the residents of the city of Cali

Thanks to the Center for Research in Sustainable Production Systems (CIPAV) for their ongoing support in identifying dynamic leaders and land-use decision makers for ELTI training courses; the Netherlands Government; the Natural Patrimony Foundation of Colombia; and the Watershed Environmental Authority for funding the economic incentive scheme.



# STORY 6 – COLOMBIA TURTLE HABITAT RESTORATION IN COLOMBIA RECEIVES GLOBAL ATTENTION



### Rubén Darío Palacio taps into international professional network, shares successes, gathers inspiration.

Colombia's Andean region hosts some of the world's greatest pockets of biodiversity.

Nevertheless, its forests are under increasing pressure from expanding farming and ranching practices. Less than 5% of its tropical dry forest cover remains. Increasing urbanization and openpit mining activities add to the strain.

Rubén Darío Palacio, a biologist in Cali, Colombia, and director of the non-profit Fundación Ecotonos, works to restore the region's degraded habitats and conserve its wildlife.

Energized by the success of his early efforts, Rubénhe sought to expand his capacity. But

he couldn't find appealing local programs, nor affordable options abroad. So, in July, 2014, he participated in ELTI's Online Training course, "Tropical Forest Restoration in Human-Dominated Landscapes of Latin America." The course's online format saved him time and money.

One the course's highlights for Rubén was the monitoring module: "I learned fundamental aspects of monitoring the process of restoration and acquired very useful resources such as the Monitoring Protocol for the Brazilian Atlantic Forest Restoration Pact," explains Rubén. "Thanks to this information, I produced a monitoring protocol for the habitat restoration of the Dahl's Toad-headed Turtle (Mesoclemmys

I felt compelled to take this course because of the stature of the professors leading the course as well as ELTI's high reputation in South America. –RUBÉN DARÍO PALACIO dahli), an endangered species in the threatened dry forests of northern Colombia." Ruben designed and executed this project in collaboration with the Wildlife Conservation Society (WCS) and the local community.

With support from ELTI's Leadership Program, Rubén presented his work restoring threatened turtle habitat at the 6th World Conference on Ecological Restoration, 23-27 August, Manchester, UK. Through his presentation, Rubén introduced his organization's work to an international audience of peers in the field of ecological restoration.

"The conference helped me to grow my network of contacts and potential collaborators for future conservation and restoration projects in Colombia," he explains. "I returned to my work with fresh energy and ideas."

Rubén hopes to continue collaborating with ELTI, and recommends the online course and leadership program to colleagues. "ELTI fills a very important niche within the environmental field. We receive scant support of this type. ELTI closes that gap in a brilliant way."

Fundación Ecotonos, Wildlife Conservation Society, and the local community about to begin a day of planting for the restoration of Dahl´s Toad-headed Turtle habitat in Chimichagua, Cesar, Colombia Thanks to William Vargas for introducing me to the field of ecological restoration, and Germán Forero-Medina for giving me the opportunity to create and direct the project to restore turtle habitat in Chimichagua, Cesar, Colombia.



# STORY 7 — PANAMA EMPOWERING WOMEN TO LEAD SUSTAINABLE RANCHING AND FOREST RESTORATION



"I was surprised that ELTI could convince so many farmers and ranchers to change their conventional systems to more sustainable practices. People here have been ranching and farming this way for over 300 years."

Meet Odielca Solis, a self-employed accountant, cattle rancher and small-scale farmer in Panama's Azuero Peninsula.

The region has lost most of its forest to agriculture and extensive cattle ranching. Today, land users rely on many inputs to yield results. Drought years bring heavy losses. Fires are very common during the five-month dry season. Biodiversity has suffered. Cow manure and agrochemicals contaminate many of the region's rivers and streams.

Odielca's interest in implementing more sustainable practices was personal; "I have a young son and I want him to be able to keep farming on my land in the future, without it all being infertile and degraded."

I am very proud of the results. My farm's production has increased. The streams don't dry up in the summer. You can see the difference. What's more, our ranching association is recognized as an expert in the region. We have received many visitors interested in replicating what we have achieved.

-ODIELCA SOLIS

Before ELTI's Training and Leadership Programs, Odielca had little access to information about silvopastoral, agroforestry or general sustainable agriculture systems: "As one of the few female cattle ranchers in a male-dominated sector, it was very difficult to gain the support to learn about and implement alternative systems," she says. "ELTI introduced me to the way forests and biodiversity help increase agricultural production. The Leadership Program also helped [many alumni] develop into community leaders, especially with our association (APASPE)."

Today, Odielca serves as the treasurer of APASPE, leads trainings on her farm, and communicates project objectives to other members and during meetings. As an ELTI course exercise, other farmers now visit Odielca's farm and create restoration plans for the most degraded parts. In addition, course participants learn how and why reforesting long corridors of trees between existing riparian forests aids biodiversity.

Odielca's goals have grown with her capacity; "We want to expand APASPE, and I would like to keep improving my farm by converting it all into silvopastoral and agroforestry systems."

Odielca Solis and other members of APASPE in her community of Los Asientos, Panama, during a training led by the Peace Corps on native tree species propogation

Thanks to the Small Grants *Programme of the Global* Environment Facility for two rounds of funding to support APASPE's projects; to Colombia's Center for Research and Sustainable Agricultural Systems (CIPAV) for technical support on the establishment and management of APASPE's silvopastoral systems; and to Peace Corps Response for technical, professional and managerial assistance to APASPF.



## STORY 8 – PANAMA FARMERS INSPIRE FARMERS TO IMPROVE CONVENTIONAL PRACTICES



Led by local rancher Belgis Madrid, a small group has a big impact on their land, and on their neighbors' entrenched beliefs about best farming practices.

Extensive agriculture and conventional cattle ranching has led to substantial deforestation in Panama's Azuero Peninsula. The consequences: less water available in the dry season, decreased biodiversity, less soil fertility, more erosion, and more agrochemical pollution.

When Belgis Madrid, a local rancher, sought help to make enduring change, he couldn't find support. The community lacked technical knowledge. If a farmer's pasture still has any standing trees they're ridiculed as messy or lazy.

"We wanted to increase the amount of farmers implementing sustainable ranching practices in order to recuperate the ecosystem services and to increase production of milk, meat, and calf births,"

said Belgis. "We also wanted to become local experts so we could teach our fellow Panameños how to achieve these goals."

I recommend ELTI to others on a regular basis. Due to the support of ELTI, our organization is a leader in the region. Personally, I have become a stronger community leader and a professional with a clear understanding of the importance of forests in agricultural landscapes. –BELGIS MADRID Belgis and some of his neighbors found just what they needed from ELTI. The field training courses on reforestation, agroforestry and silvopastoral systems integrated traditional practices with more modern and environmentally friendly practices. Just the combination Belgis sought.

Following the training, Belgis and some of his fellow ELTI alumni worked with ELTI's Leadership Program to form Panama's first legally recognized sustainable rancher's association: APASPE. When the new association needed project funding, ELTI identified potential donors and helped Belgis and his colleagues write two successful grants.

APASPE continues to lead a growing effort to integrate more trees into ranching areas, restore riparian areas, and develop more sustainable agricultural systems.

"We are proud of the results we have achieved," said Belgis, now APASPE's Production Secretary. "Many other ranchers in the community have adopted the practices we demonstrate on our farms. Since 2012, we have received over 700 farmers and professionals to our community to see our achievements, and we continue to cofacilitate training courses with ELTI."

Belgis Madrid explaining the benefits of an intensive silvopastoril system (ISPS), established on one of APASPE's model farms, to another group of visiting cattle ranchers interested in learning about alternatives to conventional ranching practices

Thanks to the Small Grants *Programme of the Global* Environment Facility for two rounds of funding to support APASPE's projects; Colombia's Center for Research and Sustainable Agricultural Systems (CIPAV) for technical support on the establishment and management of APASPE's silvopastoral systems; and Peace Corps Response for technical, professional and managerial assistance to APASPF.



# STORY 9 – PANAMA FOREST RESTORATION IN LA VILLA WATERSHED



### Cattle ranchers learn how increasing forest cover on their land could improve on-farm production and nurture a watershed that provides potable water to over 150,000 people.

In June of 2014, the La Villa River, which drains approximately 1,284 square kilometers of Panama's Azuero Peninsula, and serves potable water for over 150,000 people, was contaminated with a toxic agriculture herbicide. The local government declared a state of emergency and spent US\$2.5 million to supply residents with bottled water for two weeks.

In response, ELTI's work in the Rio La Villa Watershed offers field-based trainings to cattle ranchers and other community leaders to increase forest cover and sustainable ranching activities. These courses take place in one of ELTI's Panama focal training sites, which was designed to teach

participants the theory and practice needed to develop restoration strategies that are appropriate for their local landscapes.

I was very concerned that my grandchildren would never see a forest in our region, and its rich flora and fauna. I wanted to conserve our land, but wasn't sure how. ELTI's training course and forest restoration demonstration sites inspired me to organize my neighbors to establish a forest reserve in our community. Our hope is that we will both restore forests and teach future generations about the importance of forest conservation for our livelihoods.

-JOSE OLGUIN

After the June 2014 contamination, two local farmers and community leaders from the upper region of the La Villa River Watershed, José Olguin and Clímaco Marciaga, attended one of ELTI's field courses.

Following the training, José and Clímaco explored ways to conserve and restore forests with the support of neighbors, community officials and regional environmental authorities. They decided to focus on an abandoned, highly degraded mountainous area in the upper watershed.

With the support from ELTI, local farmers and the regional office of the National Environmental Authority (ANAM), José and Clímaco initiated the first steps to establishing the 400 hectare El Peñon Forest Reserve.

Currently, ELTI is assisting them to develop educational trails and forest restoration demonstration areas that illustrate the practices taught in the ELTI course. This area will demonstrate the importance of forests to farmers and offer hands-on, transferable experience with restoration strategies.

*The planned El Peñon Forest Reserve, located within the upper La Villa River Watershed, Province of Herrera, Panama*  Thanks to the United States Peace Corps for their ongoing support of the environmental endeavors of ELTI alumni and for coordinating field logistics and the National Environment Authority of Panama (ANAM) for their ongoing support to help establish El Peñon Forest Reserve.



# STORY 10 – PANAMA SMALLHOLDER AGROECOLOGY IN THE DRY ARC OF PANAMA



A booming tourism sector is driving rapid growth in Panama's dry arc. Across the region's foothills, increasing employment and income levels drive the expansion of small villages.

That's not all. Demand for food, forest products and water has also increased. Water consumption is exceeding the capacity of rural aqueduct systems fed by natural springs from forested areas.

Additional pressure on these watersheds comes from common slash-and-burn farming practices. Due to low soil fertility, farmers grow crops for a few years only, then move on. Before the degraded forest can reseed these areas, grasses and shrub species invade and arrest natural forest regeneration. These threats to the watershed foretell a future of water shortages for downstream consumers.

While the government encourages tree planting, past initiatives have focused on exotic timber species which displace subsistence crops and pressure nearby native forests.

Armando Muñoz, a small-scale farmer in this region, first learned about the benefits of native tree planting as a participant of the On-Farm Trials of the Native Species Reforestation Project (PRORENA).

66 We must think about our children and grandchildren and the world they will grow up in. I want my successors to know how to work with nature, how to produce but also to conserve. My farm will be my legacy to them.

-ARMANDO MUÑOZ

Armando later acquired other forest restoration strategies through an ELTI field-based training course in 2009.

With ELTI's assistance, Armando began to replace his conventional agricultural systems with agroforestry and agro-successional systems. These systems contain high diversity of native timber and fruit tree species inter-cropped with traditional annual crops, meeting shortterm food security needs and promising future financial benefits from selective timber sales. Since he has moved away from slash-and-burn farming, his work will protect water resources with forest cover.

The agroforestry system is flourishing. Not only is Armando meeting his family's food-security needs, he has increased his sale of fruits and other annual crops.

Since his participation in the 2009 course, Armando has hosted approximately 100 farmers per year on his 10 hectare farm. Many of these visitors leave inspired to apply Armando's lessons on their land.

*Armando Muñoz explains agroforestry and native tree plantation to other farmers in the region* 

Thanks to the United States Peace Corps for supporting Armando with technical assistance and follow-up to improve sustainable agriculture and agroforestry skills.



# STORY 11 — PANAMA SUPPORTING LOCAL COMMUNITIES IN PANAMA'S DRY FOREST



# Reversing damage caused over generations restores hopes for the future.

Decades of deforestation and conventional cattle ranching have exhausted Panama's Azuero Peninsula. The people in this area, one of the country's primary agricultural regions that still contains remnants of tropical dry forest rich in biodiversity, have begun to suffer from dwindling farming productivity and ecosystem services.

The decrease in soil fertility has cascaded into many consequences for the farmers' cattle: less edible forage, less shade and more heatstroke, less milk and meat production, and fewer healthy calf births.

In 2008, ELTI began providing training courses to local farmers to help them increase production while reversing the environmental impacts of conventional agricultural practices. The farmers rapidly absorbed the more sustainable forms of cattle ranching (silvopastoral systems), agriculture

(agroforestry systems) and protection of watersheds (reforesting riparian zones).

Eager to expand on their learning, several of the farmers leveraged support from ELTI's Leadership Program to create the region's first legally recognized agroforestry and silvopastoral association, known by the Spanish acronym APASPE.

ELTI's support has been instrumental in helping us develop into community leaders and promoters of sustainable ranching practices. –MANUEL CEDEÑO 66 Before we planted silvopastoral systems, our milking rates were cut in half during the long dry season. Many times, cattle would die of starvation. Now there is enough forage for them to eat all dry season and to sustain our milking rates.

#### -ALCIBIADES "CHIVI" VERGARA

Armed with this legal entity, APASPE has the opportunity to receive direct ministry support and donor funding to implement projects. They also receive financial discounts on agricultural inputs.

With ELTI's continued support, APASPE was awarded a grant from the Small Grants Programme (SGP) of the Global Environment Facility (GEF) to establish on-farm demonstration sites for intensive silvopastoral systems and to reforest riparian areas with native species. They have since facilitated field visits to their projects for more than 700 farmers, practitioners and students interested in learning about alternative farming practices.

APASPE's membership has doubled since it was first established. With additional assistance from ELTI's Leadership Program, APASPE developed a second and more ambitious project proposal for the GEF's SGP. In September 2013, APASPE was awarded funding. This second phase of funding will increase silvopastoral, agroforestry and riparian restoration systems over a two-year period.

APASPE members participating in an ELTI field course in the Azuero Peninsula, Panama

Thanks to the Small Grants Programme (SGP) of the Global Environmental Facility (GEF) for providing the funding for APASPE's sustainable ranching *project; the United States* Peace Corps for providing community-based technical assistance for the facilitation of APASPE's sustainable ranching project; and the Center for Research in Sustainable Agriculture Systems (CIPAV) for providing technical training and assistance during APASPE's project implementation.





# TROPICAL ASIA

INDONESIA PHILIPPINES SINGAPORE

# STORY 12 — INDONESIA COAL MINING COMPANIES GET HELP REHABILITATING THEIR SITES



A career in land rehabilitation combined with ELTI's Training Program leads ELTI alumnus Banjar Yulianto to help one of the area's biggest mining operators improve its restoration processes and outcomes.

Over 1,200 mining companies operate in Indonesia's East Kalimantan province. Though rehabilitation of these sites is their legal responsibility, extensive environmental degradation remains at both the site and downstream.

Unfortunately, government regulators responsible for providing the technical expertise to work with highly degraded and sometimes toxic soils and evaluate mine site rehabilitation often don't have knowledge and expertise to implement this process.

That's why the Bayan Resources Group, one of the biggest international mining operators in Indonesia, hired ELTI alumnus Banjar Yulianto as an advisor to the company's seven subsidiaries that are located in South and East Kalimantan.

**66** ELTI's mission is in line with the work that I do in rehabilitating mined land across Indonesia, much of which is toxic. I think it is important to have ELTI's support in this field because there has been very little attention on this issue. We need to create more champions on the ground like Mr. Yulianto, who can provide the rehabilitation efforts with adequate technical capacity.

-DR. YADI SETIADI

Having worked on the rehabilitation of industrially degraded land as the head of the Center for Forestry Development Control (CFDC) in Sumatra, Banjar knew that a lack of technical capacity was one of the primary constraints for successful rehabilitation. He also knew the massive scale of the problem.

Just before retiring from the CFDC, Banjar participated in ELTI's training course on Coal Mine Site Rehabilitation for Practitioners. The course greatly improved his capacity to provide technical advice on reclamation and restoration.

According to Dr. Yadi Setiadi, one of the trainers during the ELTI course who also works widely as a consultant to the mining industry, Banjar has been very forceful in fostering progressive rehabilitation practices at the company's mining sites, which total 8,500 hectares. He also has made progress addressing the rehabilitation of 17,000 hectares of watershed areas.

Because of the example set by Banjar, ELTI is now working with in-country partners from the Bogor Agricultural University and the Research Institute of Natural Resources Conservation Technology (Balitek-KSDA) to plan a training course designed specifically for policy advisors from other companies throughout Indonesia.

Dr. Yadi Setiadi of Bogor Agricultural University training participants on soils and proper tree planting techniques, PT. Singlurus Pratama rehabilitation site, East Kalimantan, Indonesia Thanks to PT. Bayan Resources, Tbk. who entrusted me with a mandate to provide advice on rehabilitation efforts on their seven sites in Kalimantan.



# STORY 13 — INDONESIA FOREST ENCROACHERS BECOME PARTNERS IN INDONESIA



ELTI alumnus Rochim Auliandra's management organization significantly reduced illegal forest harvesting by convincing the Ministry of Forestry to entrust a portion of the land to local groups and supporting their stewardship with customized training.

Since the establishment of Indonesia's Sungai Wain Protection Forest in 1934, a petroleum refinery has been pumping water out of the area for its production. Fires in 1997 and 1998 scorched the landscape, proving that the forest needed a new management system.

Since those fires, the City of Balikpapan has taken on the land's stewardship. Rather than fighting illegal harvesting, Balikpapan entrusted 14% of the forest's 9,782 hectares to 10 local Farmer Working Groups for their stewardship and management.

"The specific issue of my interest is building

capacity and economic development for forest-dependant people," said Rochim Auliandra, the Head of Balikpapan's Social Economy Community Forest Program Division. "That way, they could help

66 We used to approach them to stop illegally logging the forest. They were easily provoked when outsiders approached them about these and other sensitive issues. After the trainings, not only have they stopped logging, they're even persuading others to stop logging.

-ROCHIM AULIANDRA

conserve the forest and still use it as their main source of income for their families."

With support from ELTI and its partners, Rochim and his staff have organized two trainings for representatives of the Farmer Working Groups. There, the participants learned the importance of protecting biodiversity and how to earn a livelihood cultivating cloned rubber and fruit trees.

Balikpapan's agroforestry program is working well. A governmentrun nursery provides planting materials. Community members have increased production of their fruits, and are working to supply rubber- and fruit-tree seeds in Kalimantan.

> Thanks to the ELTI team for their full support from the very beginning to the end of the activities at Sungai Wain Protected Forest.

Illegal logging inside the protected forest of Sungai Wain, East Kalimantan



# STORY 14 — INDONESIA MOBILIZING NEIGHBORS TO REHABILITATE COAL MINE SITES IN INDONESIA



# ELTI alumnus proves that coal mine site rehabilitation pays.

In S. Kalimantan, Indonesia, neighbors are quick to copy the successes of others. If a monoculture of non-native rubber or teak proves lucrative for one landholder, his or her peers will remove more native forest to grow the same crops. Likewise, if a local coal vein becomes profitable, others will dig up the land nearby.

Pak Madroji chose a different path. A pioneering farmer, he developed agroforestry on his land, growing a broad array of native fruit and wood species for the past 15 years. In recognition of Madroji's progressive farming techniques, local, regional and national governments awarded him opportunities to attend a variety of trainings. Also, he was the recipient of the Kalpataru award, Indonesia's National Award for Environmental Pioneers.

Early on, at one such training with Dr. Yadi Setiadi, a leading expert on mined-land rehabilitation, Madroji discovered compost production, nursery establishment and species collection. Using this knowledge, Madroji offered small nearby mining

I need to prove that we can make a livelihood from restoring the land. I developed a profitable bio-fertilizer production and native species nursery in the back of my home. I believe others can, too. I've partnered with ELTI to show my neighbors that it's easy and cheap to restore the degraded lands in our area.

-PAK MADROJI

companies his services replanting the mined land in compliance with national law. Since 2007, Madroji has worked with four companies to rehabilitate 48 hectares of mined land with native species.

In September 2015, Madroji participated in ELTI's Mined-Land Rehabilitation training in S. Kalimantan and learned more about mining regulations, nursery production, and land preparation for revegetation.

During the event, Madroji recognized an opportunity to get his neighbors involved. He received a grant from ELTI's Leadership Program to conduct two trainings in his village and present the lessons that he had learned.

As of the time of this writing, Madroji and his neighbors are working to determine how best to rehabilitate areas that have already been impacted, and address an aggressive expansion of illegal coal mining nearby. Meanwhile, Madroji's land serves as a research and demonstration site for students from the local state university.

Abandoned sites of small scale illegal coal mining in South Kalimantan

Thanks to Dr. Abdi Fitria from Lambung Mangkurat University for providing technical guidelines for Madroji's rehabilitation efforts in South Kalimantan.



# STORY 15 — INDONESIA PADDY FIELD SCHOOL HELPS RESTORE MANGROVES AND ECONOMY ON TANAKEKE



# Villagers cultivate new economic and environmental benefits on degraded land.

Before the 1980s, 1,776 hectares of mangrove forest surrounded Tanakeke Island, a 4,252-hectare coral atoll. Residents made their livelihoods farming rice and fishing.

Over the ensuing decade, commercial fish and shrimp ponds replaced about 70% of the mangrove forest. The aquaculture proved unsustainable: the majority of the ponds were abandoned during the 1990s. But their local and global impacts remained: fertilizers and other chemicals leached into the surrounding waters, many sea creatures suffered for lack of nursery habitat, and the mangroves' unparalleled carbon sequestration services laid dormant.

Between 2011-2014, Blue Forest Foundation (Yayasan Hutan Biru, formerly Mangrove Action Project), coordinated four villages to restore 492 hectares of the heavily degraded ponds back to mangrove forests. They employed Ecological Mangrove Rehabilitation (EMR): breaching dyke walls, restoring the hydrology, and allowing seeds to come in naturally. Since then, the tides have continued to rinse away the damage.

In 2014, prior to a second period of EMR, Blue Forest Foundation partnered with ELTI to give participants a field training. The goal:

The field school taught us many things that we previously hadn't understood, especially the benefit of organic fertilizer. We learned about the importance of regulating planting distance, the best timing for replanting rice seedlings, the best strategy for applying fertilizer, and numerous other techniques. restore another 100 hectares of abandoned ponds in the village of Balangdatu, the fifth of Tanakeke's five villages.

Participants like Daeng Malik, a village head, were originally concerned that EMR wouldn't succeed. Without developing alternative livelihoods, some villagers would continue destroying the remaining mangroves for charcoal production.

These concerned participants applied for a grant through ELTI's Leadership Program to hold a field school that would address the village's economic needs. The most promising solution: organic rice cultivation.

In December 2015, 25 participants learned all aspects of organic rice production and worked together for five months to complete one full cycle of paddy production on a communally held piece of land. Organic production brings economical and environmental benefits: it removes the need for costly fertilizers and pesticides which have to be brought to the island by boat and can easily damage islanders' health and the environment.

Following the field school, the participants intend to develop their own agricultural fields—helping to reduce pressure on the existing mangroves and aiding the restoration of mangrove forests in the abandoned fish ponds.

Thanks to the Canadian International Development Agency and GoodPlanet Foundation for providing funding for the mangrove rehabilitation efforts on Tanakeke.

Walking through a Tanakeke mangrove rehabilitation site



# STORY 16 — INDONESIA RESTORING DAMAGE FROM COAL MINING IN EAST KALIMANTAN



Since partnering with BALITEK and ELTI in 2012, PT. Singlurus Pratama, a coal mining company in East Kalimantan, Indonesia, has taken positive steps to restore the sites where it operates.

Before the Research Institute of Natural Resources Conservation Technology (Balitek-KSDA) and ELTI, the company's restoration efforts were limited to planting monocultures of fast-growing species, the common practice in the region. But monoculture plantations don't support the ecosystem's long--term recovery.

Working in close cooperation with Dr. Ishak Yassir, a Senior Researcher and one of ELTI's training partners from Balitek, company staff have planted native species that grow in harsh open conditions and attract wildlife.

The animals have started to return, bringing other tree species with them. Inspired by this early success, PT. Singlurus Pratama has applied this strategy to 83 hectares. The old mining site is returning to a more natural state.

66 People I know regularly ask me when the next ELTI event will be, and if they'll have a chance to be selected to participate. They know that the events always cover topics that match the needs and conditions on the ground.

-DR. ISHAK YASSIR

PT. Singlurus Pratama hasn't stopped there. They've also acted on Dr. Yassir's recommendations of a better social strategy. Instead of using its staff to do this work, the company has engaged two local groups to grow, transplant and maintain the replanted native seedlings—a boost for the local economy.

These efforts have caught the attention of Indonesia's natural resource ministries, local politicians and other coal mining companies.

PT. Singlurus Pratama is also working with ELTI, Balitek-KSDA, Tropenbos International, and other partners to develop the nearby Bukit Bangkirai Eco-Tourism Area as a permanent training site. The recovery areas will serve as demonstration and practice sites for other groups inspired to start similar projects.

Dr. Ishak Yassir of Balitek-KSDA explaining tree planting experimental design to visitors, PT. Singlurus Pratama rehabilitation site, East Kalimantan, Indonesia Thanks to Balitek-KSDA, Tropenbos International; PT Inhutani I; and PT. Singlurus Pratama for their ongoing support in developing the mine site rehabilitation training program.



# STORY 17 — PHILIPPINES MOBILIZING THE GRASSROOTS FOR FOREST RESTORATION



ELTI alumnus Eufracio Maratas, a young politician, has built his capacity for leadership, a local movement of constituents, and momentum for restoring the watershed of his hometown.

During the dry season, water is scarce in Pilar, a small town in the Cebu province of the Philippines. That's because less than 1% of the forest cover remains in the municipality's watershed. There is also very little biodiversity in the area.

Eufracio, a Councilor for the Municipality of Pilar, wanted to change that: "I am very much involved in policy-making, networking, community organizing, and implementing and managing projects for the conservation and protection of Pilar's natural environment. I want to raise a family and grow old in Pilar. It's very important for me that our island's environment and government is steered towards a path of sustainable development." Though he was determined to make a difference, he faced an uphill battle.

ELTI has contributed a lot to my growth as an environmental leader by providing me with opportunities to learn new skills and knowledge, to connect with my constituents, to implement high-impact projects, to travel in very interesting places, and to meet people who share my passion for forest restoration.

-EUFRACIO MARATAS

"First, I had very little knowledge and experience on forest restoration and management, so convincing the stakeholders was awkward. As a young politician, some people doubted my intentions. Second, I did not know the right people who could help put my ideas into action."

Eufracio's efforts gained traction after he enrolled in ELTI's Leadership Program: "They opened my eyes to the variety of trainings that I could attend. After participating in many capacity building activities across Southeast Asia, I began to develop new policies relevant to the needs of my hometown, organize and conduct Rainforestation trainings, and draft project proposals for funding. ELTI's Leadership Program Coordinator helped me with all of this."

He is particularly proud of the more than 200 hectares (50%) of Pilar's local watershed now rehabilitated with native species seedlings: "It somehow sums up all the work that I have been doing. Some of these reforestation efforts are not direct results of my projects, but I would like to believe that the policies that I passed, the trainings that I conducted, the projects that I implemented, and advocacies that I pushed played a big role in this accomplishment."

*Eufracio with some members of CaRFA, a People's Organization which he helped organize and train, and which he supported in terms of watershed management and alternative livelihood option (honey production)* 

Thanks to Mr. Salazar, Dr. Marlito Bande and the staff of Visayas State University-Institute of Tropical Ecology & Environmental Management for their support; Bandera Rainforestation Cooperators Organization (BaRCO) and Anahaw-Patag-Imelda Rainforestation Association (APIRA) for supporting the SWARM-Rainfo Project; Can-ugkay Rainforestation Farmers Association (CaRFA) and Nagkahiusang Katawhan Sa Esperanza (NAKASE) for their biodiversity conservation work; the Local Government Unit of Pilar for financial assistance; funding agencies Plan International, Rufford Small Grants and the Global Environmental Facility and United Nations Development *Program; and the Department* of Environment & Natural Resources for financial support. And thanks to my wife and family members for providing inspiration and emotional, financial and material support.



# STORY 18 — PHILIPPINES RAINFORESTATION BENEFITS RIPPLE OUT FROM ELTI TRAININGS



### ELTI Leadership alumni Rene Vendiola and Apolinairo Carino pass on the benefits of their training to their neighbors.

Over the past 50 years, Negros Island in the Philippines has lost over 95% of its primary forest cover to logging, agriculture and development. Residents have suffered from this loss of the forest's services: topsoil has washed away, fewer forest products are available for their needs, and there's less protection from landslides and floods.

Rene Vendiola, a former slash-and-burn farmer, saw this devastating sequence of events play out with alarming frequency.

In 2005, Rene, together with his conservation biologist friend, Apolinario "Pol" Carino, attended a Rainforestation Orientation by Visayas State University (VSU) and Haribon Foundation. Upon returning to their hometown, the friends decided to raise a native forest in their adjacent properties.

In 2009, Rene and Pol participated in a Rainforestation Trainer's Training by VSU and ELTI. With an established demonstration site and more indepth knowledge and skills on Rainforestation, the friends

We're very pleased that the area we reforested has fewer landslides. We're thankful for the support and trainings from Ms. Depra, Mr. Vendiola and Mr. Cariño, and the alternative livelihood opportunities, such as organic farming and processing of non-timber forest products, that have become available to us.

-PEOPLE'S ORGANIZATION ADOPTER AND FOREST GUARD VOLUNTEER

took their environmental advocacy full-scale and officially opened The Liptong Woodlands Training Center to the public in 2010.

In 2011, one of Rene and Pol's participants was Ms. Rose Depra, Executive Director of the Negros Economic Development Foundation. Ms. Depra sought ideas for a small Rainforestation project in her region. She was so impressed by her training at the Liptong Woodlands that she has returned to the site on four additional occasions, bringing along 100 forest guard volunteers, staff from local municipalities, and representatives from a nearby college.

Motivated by Rene and Pol's example and having gained funding through a USAID project, Ms. Depra and her colleagues have since established three more Rainforestation farms in three villages, expanding to more than 100 hectares in 2013.

Rene (rightmost) with the People's Organization (PO) adopters in Ilog-Hilabangan Watershed Area, one of the PO partners of Ms. Rose Depra Thanks to the Local Government Unit of Bacong for paving 100 meters of rough road leading to Liptong Woodlands with concrete, based on 2000 visitors logged to date; and the Local Government Unit of the Negros Oriental Province for allocating some budget in 2015 to support promotional materials and possibly some other potential projects within the rainforestation farm.



# STORY 19 — PHILIPPINES REDIRECTING THE PHILIPPINES' NATIONAL GREENING PROGRAM



ELTI and its partners guide the government's latest reforestation effort toward more sustainable success for forests and communities across the country.

In February of 2011, the president of the Philippines declared an ambitious goal: to plant 1.5 billion trees on 1.5 million hectares by 2016. Past large-scale government reforestation projects have stumbled from exotic monoculture plantings, young trees dying for lack of long-term maintenance, and employing local communities as labor rather than engaging them as collaborators.

With this latest effort, ELTI and members of the Rain Forest Restoration Initiative (RFRI) recognized an opportunity to implement a more effective approach.

After signing a partnership agreement with the Department of Environment and Natural Resources (DENR), RFRI members committed to mobilize

their network of partner communities to supply native tree seedlings. Instead of hiring these local people as laborers, they were engaged throughout the whole process for a more adaptive management approach.

For its part, ELTI has been providing upland and mangrove restoration trainings that emphasize the importance of using a variety of native species suitable for the designated areas, and caring for the seedlings from the nursery all the way to maturity. Since 2012, RFRI partners have produced more than 9 million native seedlings and planted over 12,000 hectares. Though various challenges have limited these early results, the partnership agreement represents a significant step towards localized, flexible native species reforestation in the Philippines.

Partner communities report a variety of initial benefits: funding has brought new construction, irrigation and transportation resources; seedling production has provided alternative livelihood and another reason to protect the remaining forests; and the program has fostered greater camaraderie and empowerment.

This is just the beginning of a long-term effort to steer the Philippines' reforestation programs to produce substantially better ecological and social outcomes.

*ELTI training participants learning to prepare wildings for transfer to the nursery* 

Thanks to the Philippine Tropical Forest Conservation Foundation and the Foundation for the Philippine Environment for taking the lead in negotiating and signing the Partnership Agreement with the DENR, and to the other members of RFRI for supporting the agreement and mobilizing the partners on the ground.



# STORY 20 — PHILIPPINES REHABILITATING MANGROVES AFTER TYPHOON HAIYAN



### ELTI and several partner organizations leverage the Philippine government's recovery program to diversify the replanting efforts and empower local communities.

In November of 2013, one of the strongest tropical cyclones ever recorded caused massive devastation and loss of life in central Philippines, particularly in the provinces of Leyte and Eastern Samar. The damage could have been worse. Intact mangrove and beach forests lessened the blow to some coastal communities.

Acknowledging the critical role that these ecosystems play in disaster-prone coastlines, the Philippine government allocated PhP 1 billion for a Mangrove and Beach Forest Development Project.

This special fund would also provide a cash-for-work clean-up and planting scheme for the typhoon-stricken communities.

We appreciated that ELTI initiated the partnership and offered to support our partner communities affected by the typhoon. Beyond simply providing funds for the mangroves training, ELTI was very engaged in the whole learning process: from the refinement of the modules, to the preparations and logistics, to the actual conduct of the training. The immediate deployment of the key leaders of community organizations in the offsite mangroves training and the convergence of support from the other organizations would not have been possible without ELTI's active involvement.

-FOUNDATION FOR THE PHILIPPINE ENVIRONMENT (FPE)

Before it began, the project risked failure. Past similar efforts replanted single species, often in unsuitable areas, and without plans for maintenance.

Even prior to the disaster, ELTI had partnered with the Zoological Society of London (ZSL) and the Southeast Asian Fisheries Development Center (SEAFDC) to promote a different approach. In support of the typhoon rehabilitation efforts, ELTI collaborated with the Foundation for the Philippine Environment (FPE) to provide customized trainings on proper mangrove conservation, management and restoration for their partners from Eastern Samar.

To ensure follow-through on the ground, ELTI and FPE also worked with the local NGO Guiuan Development Foundation, and the Philippine Tropical Forest Conservation Foundation (PTFCF). These groups provided technical and financial support for a communitybased mangrove and beach forest assessment and planning in Eastern Samar. Training participants applied what they learned and passed on what they had learned to other members of the community.

With their new management plans in hand, the training participants are now awaiting another round of funding for the actual mangrove rehabilitation activities, and are working closely with the local government to rebuild more resilient forests and communities.

*Eastern Samar participants of the ELTI-ZSL-SEAFDEC Mangrove Conservation, Management and Rehabilitation Training with FPE and PTFCF staff*  Thanks to the ZSL, especially Dr. Jurgenne Primavera, for providing the technical skills and know-how in mangrove conservation, rehabilitation and management; the FPE; the SEAFDEC; the Guiuan Development Foundation for providing logistical support during the training and follow up; and the PTFCF for providing financial support for the training follow up.



# STORY 21 — PHILIPPINES REPLACING EXOTIC MONOCULTURES WITH NATIVE TREE SPECIES



### Greater variety of native trees provides the foundation for the return of biodiversity, thanks to forester and ELTI alumnus Vincent B. Concio.

Between 1980 and 1998, secondary forest cover in the Caliraya-Lumot Watershed Reservation (CLWR) dwindled from 69% to about 7% in favor of coconut plantations and other uses. Most of the watershed areas in the country have suffered a similar fate. These areas have been negatively impacted through a mix of inappropriate land uses, including illegal titling and speculation, charcoal-making and timber poaching.

In the past, the official approach was to grow monocultures of fast-growing non-native species in all reforestation projects, even going so far as to clearing out successional stage native trees that had begun to regrow.

Frustrated by this replacement of native species with non-native species, forester Vincent B. Concio, then a Senior Watershed Management Specialist of the National Power Corporation's CLWR Team, felt compelled to do something to conserve and restore the environment and natural ecosystem: "replanting with exotic species wastes funds and manpower resources while destroying the natural ecosystem that had begun to regenerate."

With the right knowledge and determination, I believe I can gain support and eventually influence the local stakeholders to restore the natural ecosystem of the watershed.

-VINCENT B. CONCIO

When the opportunity appeared, Vincent eagerly enrolled in ELTI's Field Training and Leadership Programs.

Empowered by his new knowledge and skills, Vincent organized trainings for local communities, leaders, and People's Organizations (PO) in the CLWR, as well as students and teachers of South Luzon Polytechnic University (SLPU). He covered the importance of native biodiversity, how to bring it back through the Rainforestation technique, and how to manage a native species nursery.

With assistance from the Haribon Foundation, local POs and leaders have applied Vincent's trainings in the CLWR. Several communities have replanted a total of 50 hectares with native species. SLPU adapted their plans to establish a model Rainforestation site in their compound and to construct a nursery for indigenous species.

In September 2014, Vincent was promoted to Section Chief in the Pantabangan-Carranglan Watershed Forest Reserve (PCWFR). There, he plans to continue the work he started in CLWR by providing technical assistance and guidance to local POs and partner companies, including orientations, guidance on outplanting activities, monitoring and evaluation of the tree nurturing sites.

Thanks to the POs in CLWR (Mahipon-Lumot Farmers MultiPurpose Cooperative, Caliraya Ecosave, Muling Pagsibol ng mga Punla para sa Kinabukasan) for opening their minds to Rainforestation technology and for the trust to organize them; the University of the Philippines-Los Banos for trusting the competency of the resource person in the training-seminar; the Southern Luzon Polytechnic University for their openmindedness, hospitality and trust during the trainingseminar; and the Haribon Foundation for their continued support and trust to organized POs in CLWR.

Vincent (center) with his PO partners in CLWR in their restoration area (left)



# STORY 22 — PHILIPPINES RESTORING THE LAWIGAN WATERSHED WITH NATIVE TREES



Two ELTI alumni convince their local municipality that restoring the watershed is the better long-term investment not only for their water supply but also for other environmental services.

Every dry season, the municipality of Bacong in Negros, Oriental, Philippines faces water shortages. It spends more than PhP 700,000 per month, 12% of the of the municipality's total annual budget, to pump well water for its residents, even though a river flows nearby.

In 2010, with strong encouragement from ELTI alumni Rene Vendiola and Apolinario "Pol" Cariño, the municipality began a Watershed Development Program. The goal: restore 120 hectares of forest along a 12-kilometer corridor of the river. If the municipality could satisfy its water needs with the river, it could use its water-pumping budget elsewhere.

Logging, smallholder agriculture and cattle grazing have heavily degraded the watershed over the past decades. To begin its restoration, the mayor of Bacong had the entire area surveyed and

Manifestations of the initial success of the restoration program are now being enjoyed by the people. We're confident we'll reap the full benefits of our hard work. Ensuring tomorrow's sustainability means planting appropriate trees today.

-POL CARIÑO

marked, and deputized barangay captains to protect the land from encroachment.

So far, government employees and local community members have replanted 15 hectares with a wide variety of native species. Flash floods from a strong typhoon in 2011 tested these initial accomplishments.

In spite of the storm's damage, the municipality has already noticed benefits; the restored area suffered significantly less erosion from the heavy rains than other parts of the river. Instead of a setback, the contrast in the extent of the damage has encouraged the local government and community to support the program and approach nearby municipalities to restore other parts of the watershed.

Thanks to all the staff of the Local Government Unit, particularly the engineering department and the 4Ps beneficiaries for their unparalleled devotion and volunteerism in outplanting and maintenance of the Lawigan rainforestation and watershed area; the Mayor of Bacong for his strong political will in pushing the project forward despite meager funding available from the Local Government Unit; and ELTI and Vasayas State University (VSU) for providing us the technical and logistical training on Rainforestation.

Five-year old restoration area in Lawigan watershed



# STORY 23 — SINGAPORE ASSISTING WITH THE UWCSEA RAINFOREST RESTORATION PROGRAM



# ELTI partners with local international school to conserve critically endangered forest tree species.

In 2012, ELTI held a workshop on Native Species Reforestation in Singapore. Among the topics discussed was Singapore's highly touted greening program and how it has focused primarily on growing trees from outside the region, which don't contribute to the country's biodiversity conservation goals.

The workshop also highlighted the lack of nurseries devoted to growing native rainforest trees, and that if planting material were available, many of these trees could be planted both in Singaporean protected areas and across the broader Singaporean landscape.

Following the workshop, ELTI started working with Nathan Hunt and Mireille Couture, teachers from the United World College of South East Asia (UWCSEA), and Elango Velautham, head of the

Singapore Botanic Garden's Plant Resource Center, to establish a native species nursery on the UWCSEA-East Campus and expand an existing nursery on the UWCSEA-Dover campus.

66 With the guidance from ELTI, our school nursery project developed from a very amateur activity raising tree seedlings to a genuine conservation and educational project. ELTI's involvement has made a genuine impact in building our collaboration, preparing our proposals for funding and infrastructure as well as developing our knowledge base. We now feel we are a part of a regional movement for forest conservation.

-NATHAN HUNT

Funded by the Kirtida and Bharat Mekani Sustainability Fund, the UWCSEA Rainforest Restoration Project engages UWCSEA students to raise and plant hundreds of rainforest trees across Singapore, especially critically endangered dipterocarps, which have been heavily logged across southeast Asia.

In order to increase its impact, the UWCSEA Rainforest Restoration Project is also starting to engage with a faculty member and students from Yale-NUS College in conducting collaborative citizen science. By examining the response of native tree seedlings to variances in factors such as light, water and soil nutrients, the goal is to enhance propagation and silvicultural techniques for future forest restoration.

Thanks to the Kirtida and Bharat Mekani Sustainability Fund for providing funding for the UWCSEA Rainforest Restoration Project; the UWCSEA Foundation for their assistance in raising the funds for the project; the Singapore Botanic Gardens for providing UWCSEA with training on nursery management skills, technical advice on nursery establishment, and other forms of guidance in ex-situ plant conservation; and the Yale-NUS College for developing the proposal for the citizen-science research project.

United World College (UWC) Group Weeding at Tyersal Forest



# **ELTI PROGRAMS**

Our training programs empower participants from all sectors with knowledge and hands-on experience they can apply to their own projects, or share with their community or organization.

### **FIELD TRAINING**

Blending cutting-edge research, local wisdom and hands-on experiences, we explore the natural and social sciences aspects of conservation and restoration policy and practice. We frame the learning process and guide discussions at multiple scales from the global to the local. We help empower people to manage land sustainably in ways that support their regions' long-term needs and interests.

### **ONLINE TRAINING**

Participants connect with world-renowned scholars and professionals from a range of countries working on applied forest restoration projects in the tropics. They learn how to design and implement effective, inclusive restoration policies and initiatives in their local communities. Each course features materials developed at Yale University, in collaboration with our in-country partners.

### LEADERSHIP

Our alumni's creativity and passion makes the Leadership Program a unique component of our capacity-building paradigm. Rather than promote specific actions, we listen to the needs and interests of each individual and work with them to make their goals a reality. We provide technical assistance and guidance, but the ideas always come from our alumni.

# **ELTI PARTNERS**

# We place great value on our collaborative efforts and work closely with partners in our focal areas.

#### BRAZIL

Laboratory of Ecology and Forestry Restoration (LERF) at the University of Sao Paulo (USP) Living Forest Institute (IFV) Northeast Center for Environmental Research (CEPAN) State University of Santa Cruz (UESC)

### COLOMBIA

Alexander von Humboldt Research Institute of Biological Resources (IAVH) Center for Research on Sustainable Agricultural Production Systems (CIPAV) Colombian Cattle Ranching Federation (FEDEGAN) El Hatico Nature Reserve

### **INDONESIA**

Blue Forests Forestry Faculty of Bogor Agriculture University Ministry of Forestry's Nature Conservation Technology Research Agency (Balitek-KSDA) Tropenbos Indonesia

### PANAMA

Association of Livestock and Agrosilvopastoral Producers of Pedasí (APASPE) Inter-American Tropical Tuna Commission (IATTC) Panama's Native Species Reforestation Project (PRORENA) Smithsonian Tropical Research Institute (STRI)

### PHILIPPINES

Institute of Tropical Ecology and Environmental Management (ITEEM) at Visayas State University (VSU) Philippine Tropical Forest Conservation Foundation (PTFCF) Rain Forest Restoration Initiative (RFRI) Zoological Society of London (ZSL)



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