Reforestation around the Region with Native Tree Species

Chiang Mai University
November 22-26, 2010

INTRODUCTION TO ELTI

•Joint program:
- Yale School of Forestry and Environmental Studies
- Smithsonian Tropical Research Institute (STRI)

•Capacity-building and training program

•Audience: policy makers, gov't and non-gov't conservation professionals, community members, private sector actors,

• Two geographical foci
- Neotropics, based at STRI in Panama
- Asia, based at the National University of Singapore

elti
Environmental Leadership & Training Initiative

Yale School of Forestry & Environmental Studies

Smithsonian Tropical Research Institute

NUS National University of Singapore

"FOREST CARBON" TRAINING PROGRAMS

Philippines

- National Conference and Training Needs Assessment on Forests and Climate Change, Manila with ICRAF
- Four-Day regional training programs on Forest Carbon Project Development, Los Banos and Davao City with ICRAF
- Two, Two-day Introductions to REDD for NCIP with CodeREDD

Indonesia

- Three-day introductory training on REDD in West Kalimantan with Provincial Forest Service, FFI, Dian Tama, and Titian

NATIVE SPECIES REFORESTATION

- Train the Trainers program on Rainforestation conducted with Visayas State University
- Work with the Rain Forest Restoration Initiative (RFRI)—Haribon, PTFCF, FPE, VSU-ITE and others--as a united front to further promote native species reforestation and forest restoration in the Philippines
- Established and maintain www.rainforestation.ph.
- Mainstreaming Native Species-Based Forest Restoration Conference with University of the Philippines and RFRI


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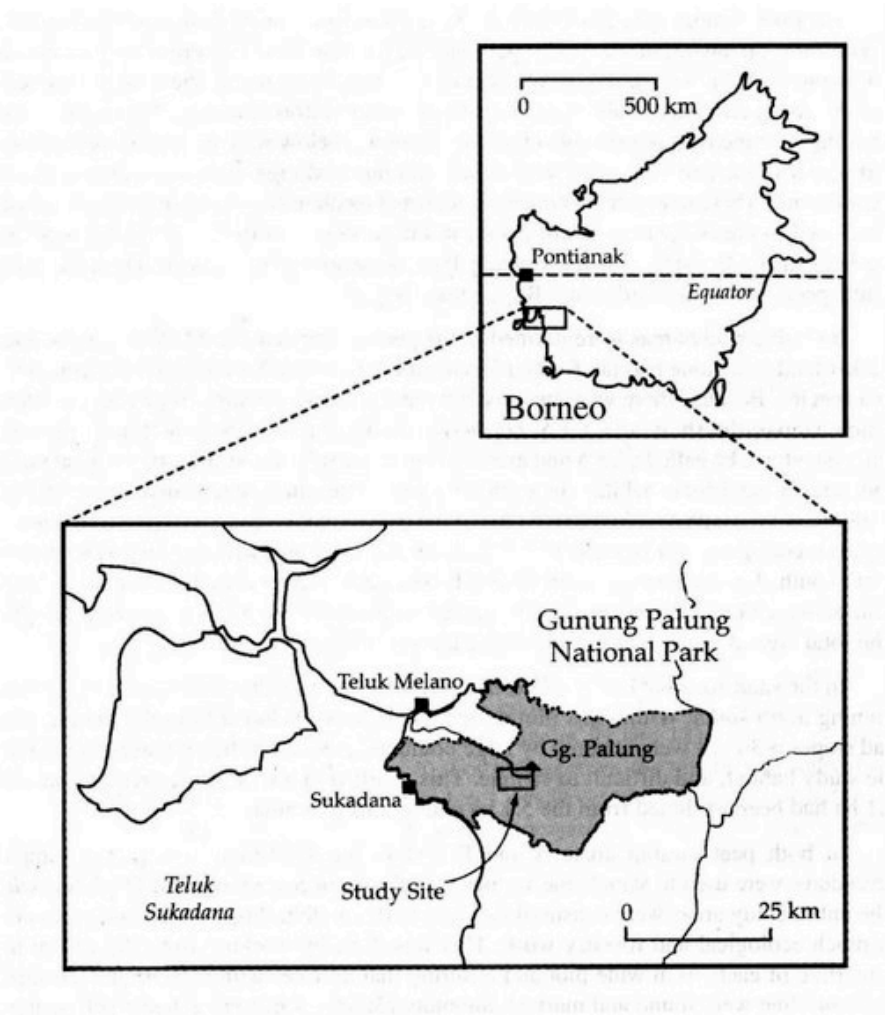
Forest Restoration
Gunung Palung National Park, Indonesia

Klinik Alam Sehat Lestari 'ASRI'

Romadoni Anggoro, Cam Webb, Andrew MacDonald
& Kari S. Malen

- Health in Harmony
  - www.healthinharmony.com

- Yayasan ASRI
  - human & environmental health
  - medical expenses
    - native seedlings
    - labor in organic farm
    - cow and goat manure
    - material exchange programs



Site History

- Illegal logging concession
  ~ 25 years ago
- Burned for agricultural use
- Invaded by exotic grass 'alang-alang' (*Imperata cylindrica)*
- Fire in 'alang-alang' burns every dry season

…preventing natural forest regeneration

Project Goals

- Increase forest habitat
- Provide alternative income & reduce illegal logging
- Encourage community participation in conservation activities
- Increase & share knowledge about tropical rain forest restoration
- Assess effectiveness of different methods

  -seedling sources
  -site preparation
  -fertilization

Site Details

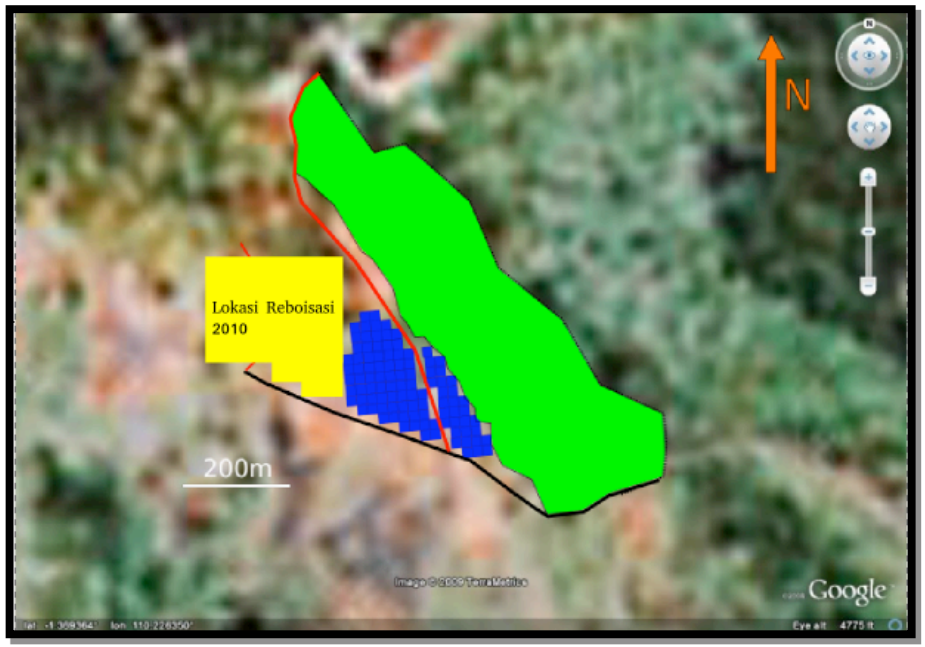
- **Green** = Existing Riparian Forest

- **Blue** = 2009 Planted Site
  - 4 ha of experimental plots
  - 0.5 ha additional plantings

- **Yellow** = 2010 Planting Site
  - 4 ha best method from 2009
  - 2 ha additional experiment

- **Red Line** = Trail into Park

- **Black Line** = Road/Park border



2009 Experiment: Treatment Combinations

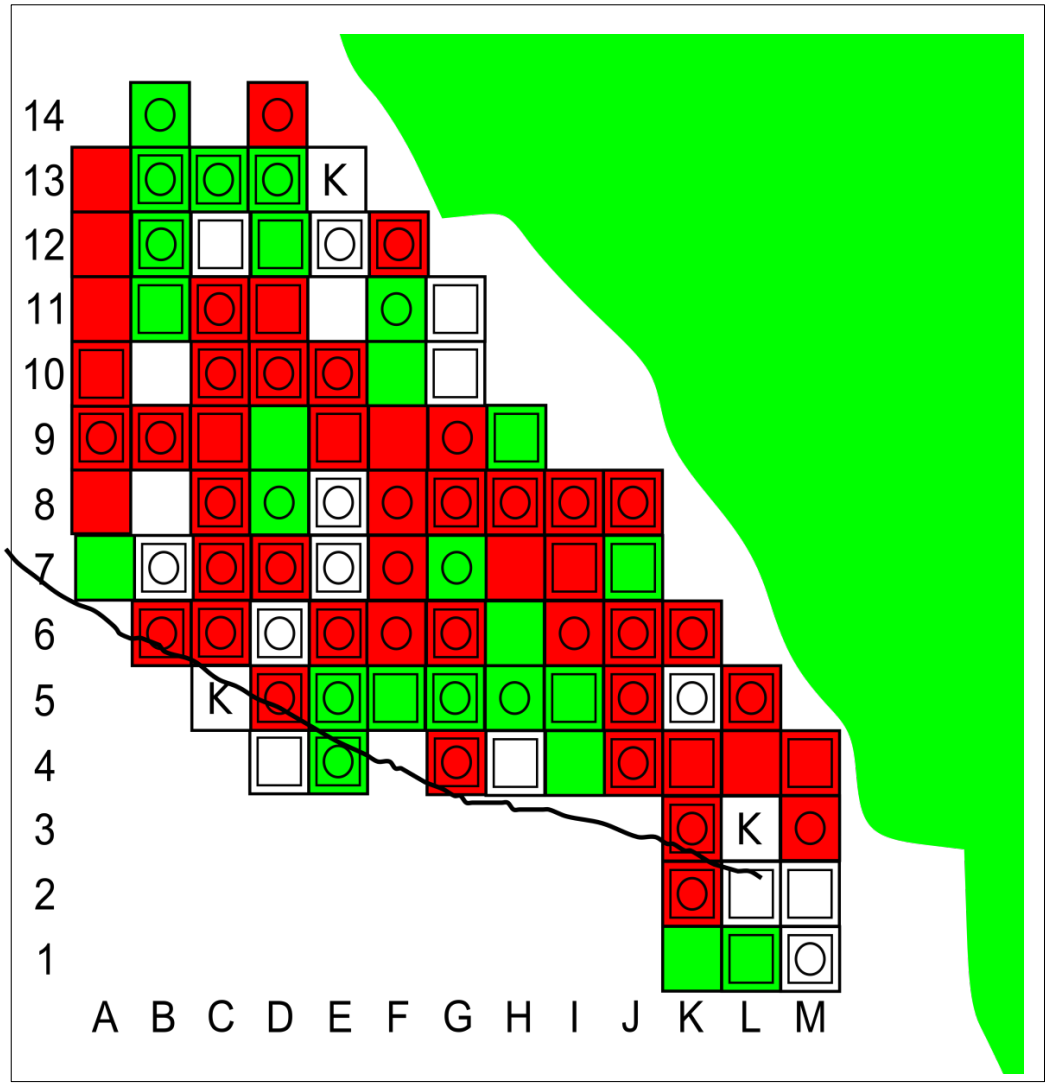
- Plot Layout:
  100 plots, 20 m x 20 m

- Site Preparation
  roundup (**Red**)
  pressing (**Green**)
  control (no color)

- Weeding
  weeding (square)

- Cardboard Mulch
  cardboard mat (circle)

- Additional treatments:
  pioneer additions
  shade plantings
  fertilizer



Successes:

- DATA: 88% survival after 1 year
  - some species over 1.5 m

- Persons employed
  - directly in the field = 95 people
  - through providing material = 800

- National Park initiated neighboring restoration project in 2010

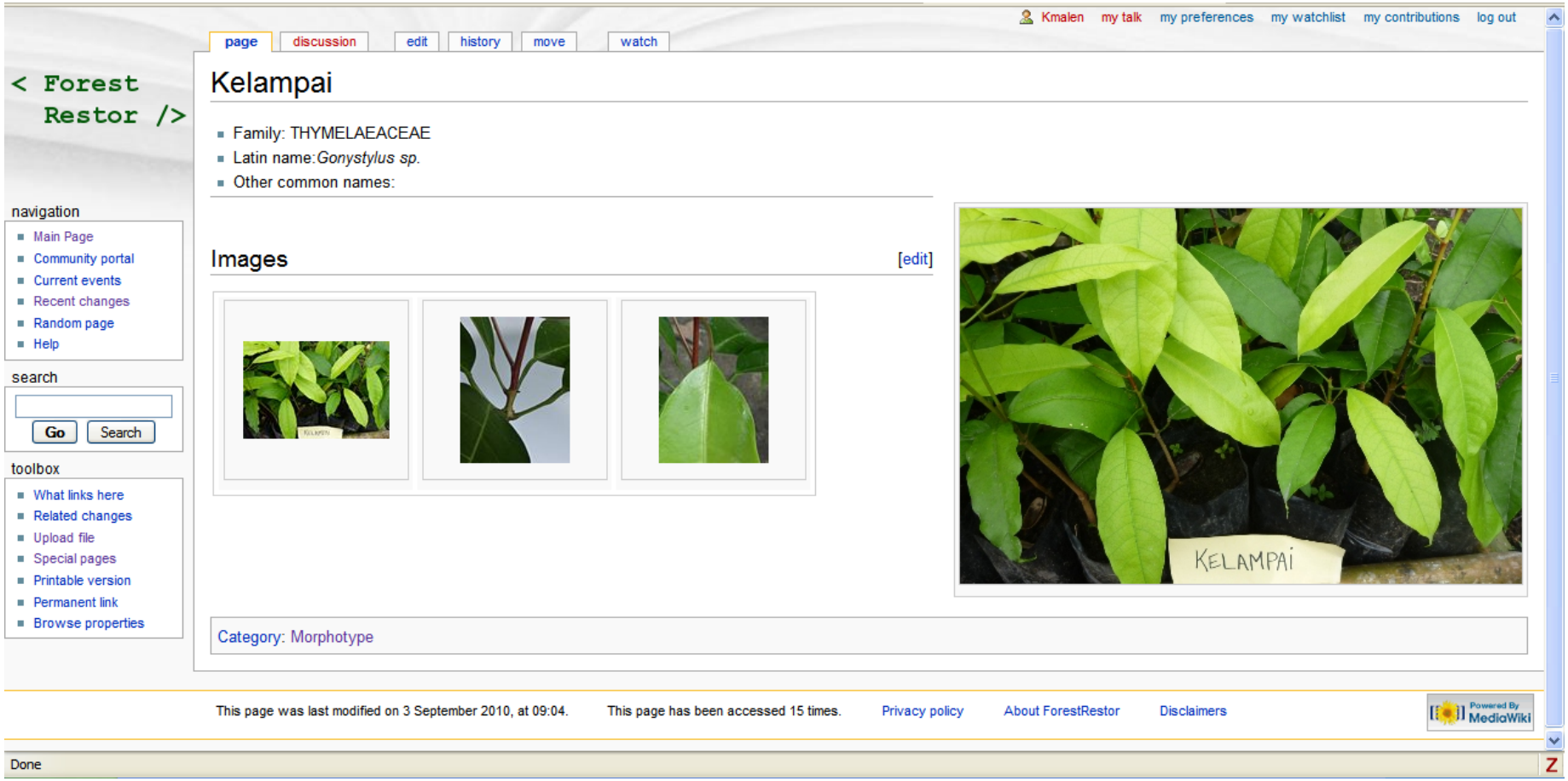
- Educational Presentation Requests

Constraints:

- High cost of experimental design
- Continued illegal logging
- Risk of fire

Information Sharing

www.alamsehatlestari.org/forestrestor/index.php

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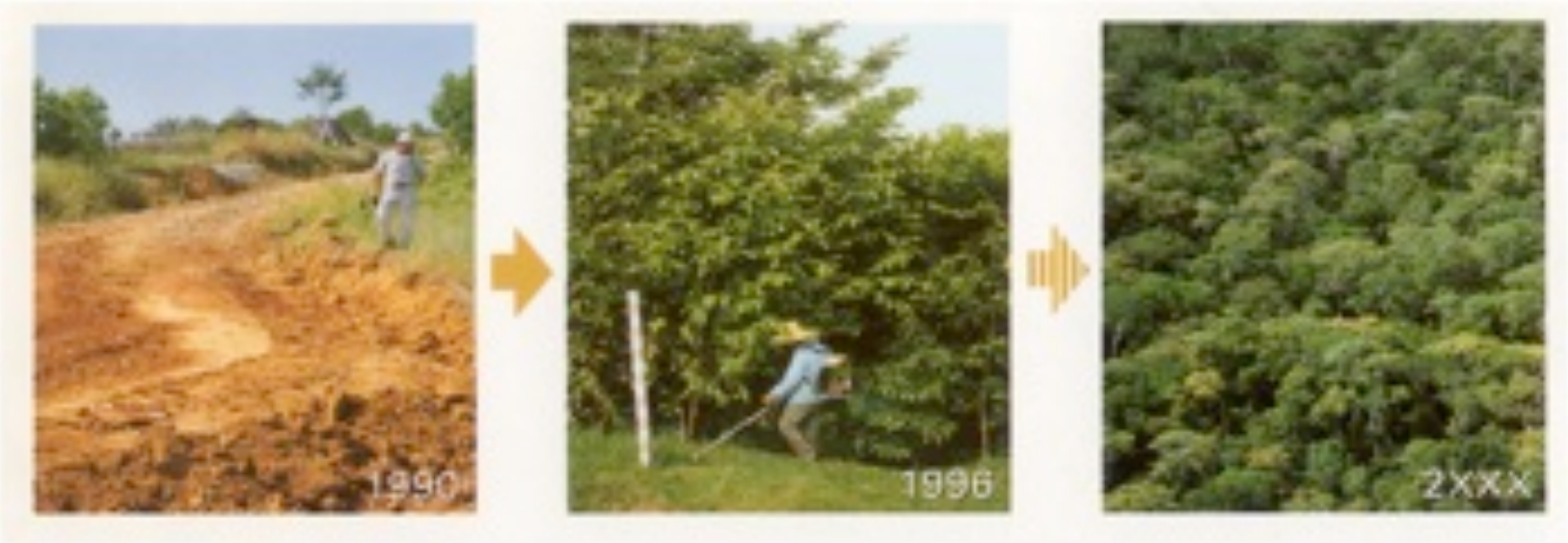
UPM – MITSUBISHI FOREST REHABILITATION PROJECT IN SARAWAK, MALAYSIA



Location of rehabilitation trial? UPM Bintulu Campus, Bintulu, Sarawak.

Size of site? 55 ha.

Objective? Rehabilitate degraded forest area and under-utilized land.

Concept

- Planting for ecological functions
- Planting on different site conditions
- Use of multiple species
- Restoration, Rehabilitation & Reclamation

Planting Systems

- **Open**
  - » Intensive
  - » ‘pot-hole’
  - » ‘mound’
- **Secondary & Degraded Forest**
  - Line
  - Gap
  - Under shade

Species

1. Mixed species
2. Light demanders → Shade tolerant
3. Slow → Fast growing

	Family	Species		Family	Species
1	Anarcadiacea	5	13	Lecythidaceae	1
2	Annonaceae	1	14	Leguminosae	4
3	Apocynaceae	1	15	Melastomataceae	1
4	Bombacaceae	3	16	Meliaceae	1
5	Burseraceae	2	17	Moraceae	4
6	Compositae	1	18	Myrtaceae	9
7	Dipterocarpaceae	56	19	Oxalidaceae	1
8	Ebenaceae	1	20	Sapindaceae	2
9	Euphorbiaceae	2	21	Sapotaceae	3
10	Guttiferae	5	22	Simaroubaceae	1
11	Icacinaceae	1	23	Thymelaeaceae	1
12	Lauraceae	3	24	Ulmaceae	1

Until year 2009, more than 400,000 forest tree seedlings from 126 tree species

Achievements

- Able to rehabilitate 50-odd ha of under utilized land with indigenous species.
- Average survival: 30 – 70%
- Mean total height: 1.5 m – 25 m
- In year 2000, 15 tree species started flowering and fruiting (trees, 7-9 years old). Species, such as: *Shorea leprosula, Eusideroxylon zwageri*
- *No major obstacle encountered.*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Institute of Tropical Ecology

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VISAYAS STATE UNIVERSITY

Visca, Baybay, Leyte

Research and Extension Activities

Terrestrial Ecosystems Division

- Rainforestation Farming

Rainforestation Initiatives

1990 – concept " Close canopy and high diversity farming systems"

1992 – "Rainforestation Farming"

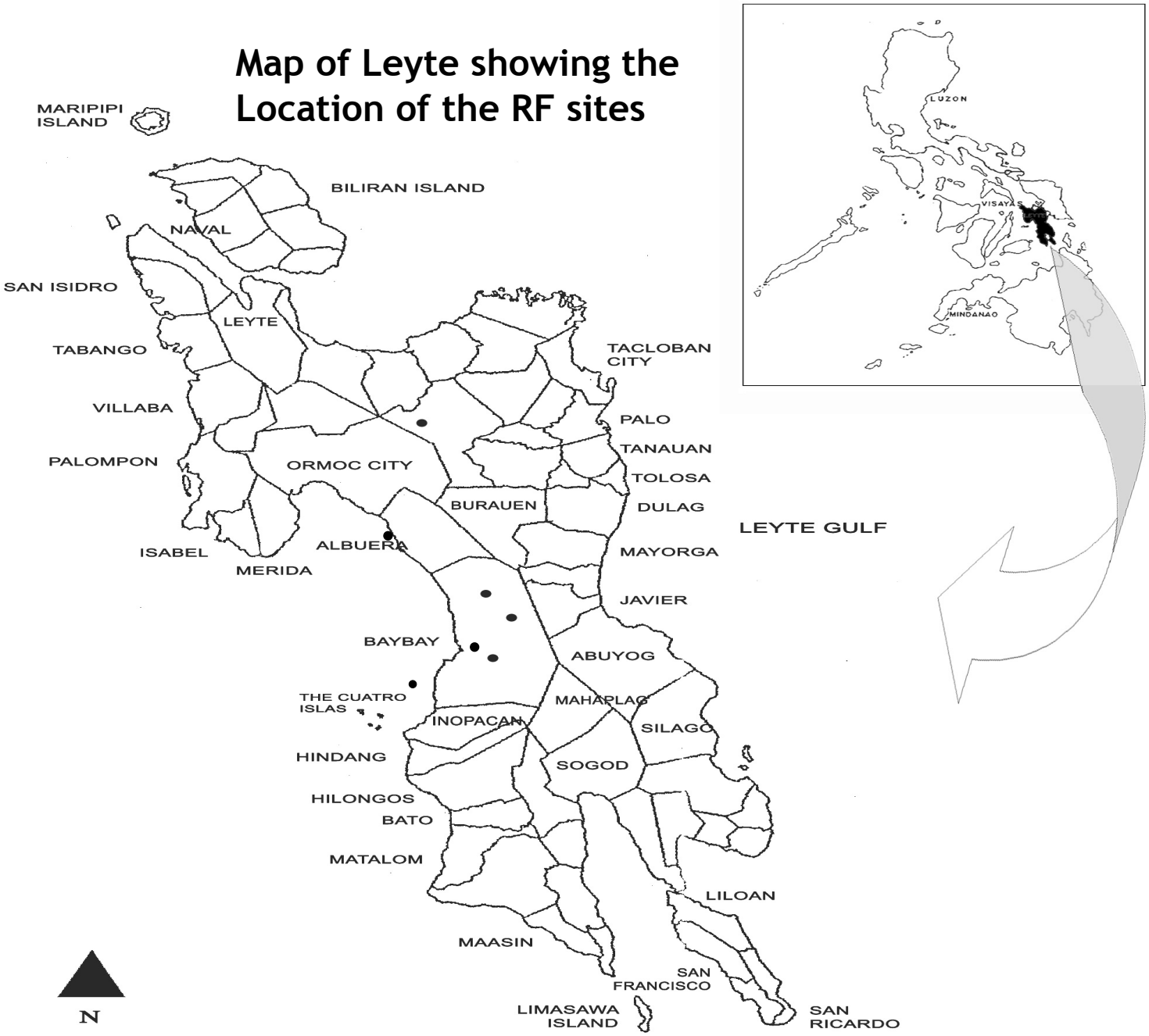
- **VSU RF demo site established**

1995 – 10 pioneer farmer cooperators' and demo sites were established, eg. Cienda, Marcos, Catmon, Mailhi, Pomponan and others

1996 – to date

- **monitoring and assessment of these pilot and demo sites**
- **Conduct of research on impacts of Rainforestation, silvicultural management and socioeconomic and marketing studies**
- **Start of cross visits and orientation trainings of interested clienteles**

Map of Leyte showing the Location of the RF sites



RAINFORESTATION SITES IN LEYTE

Baybay, Albuera ,Ormoc & San Miguel, Leyte

- VSU demo farm = 2.44 has
- 20 RF adopters = 29.50 has
- Private adopters= 7.00 has
- TransCo = 10.00 has
- CBFM (Cienda) = 15.00 has
- NSTP = 2.70 has

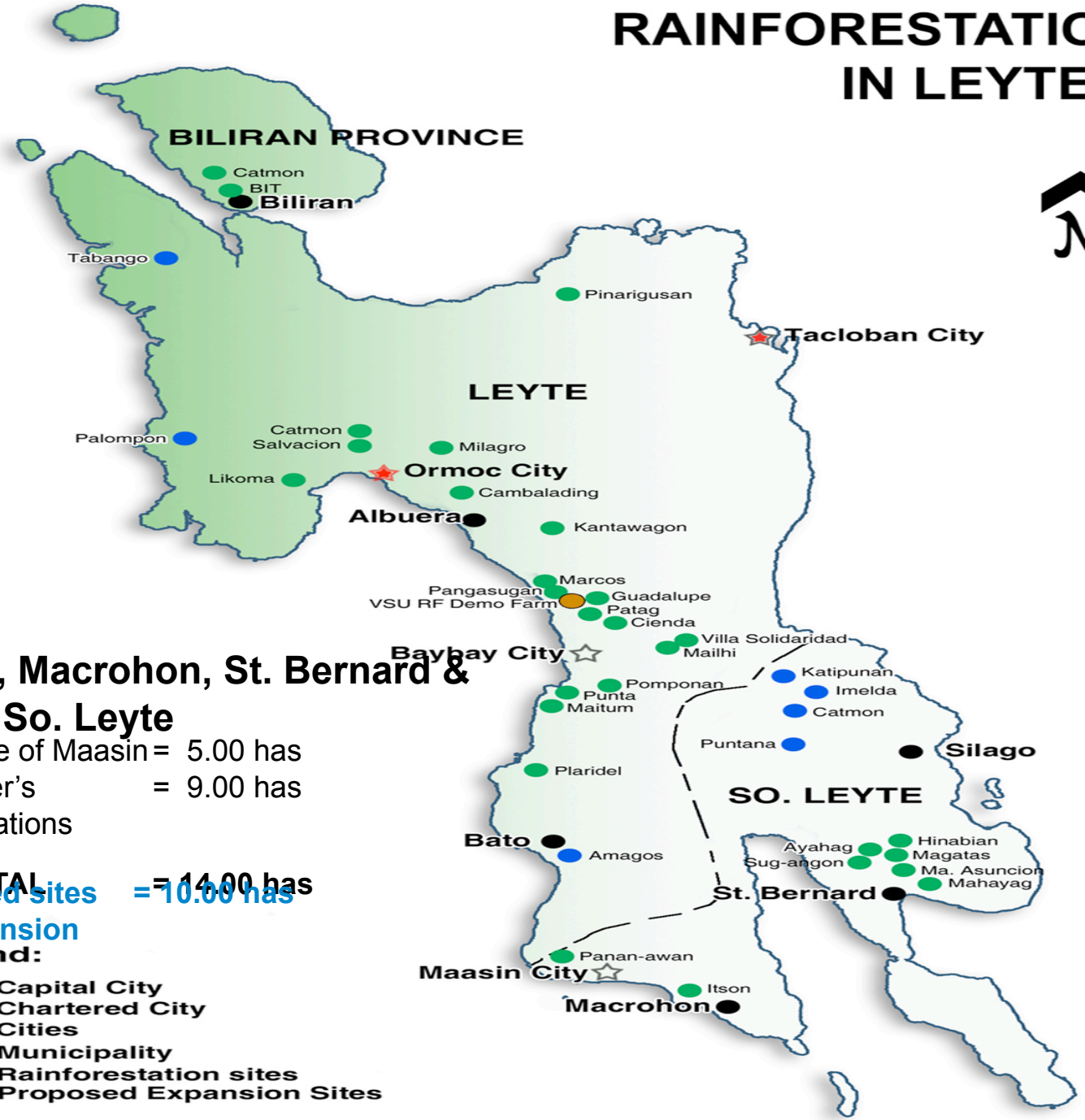
Proposed sites for expansion = 20.00 has

TOTAL = 66.60 has

Legend:

- Capital City
- Chartered City
- Cities
- Municipality
- Rainforestation sites
- Proposed Expansion Sites

RAINFORESTATION SITES IN LEYTE



Maasin, Macrohon, St. Bernard & Silago, So. Leyte

- Diocese of Maasin = 5.00 has
- 6 farmer's associations = 9.00 has

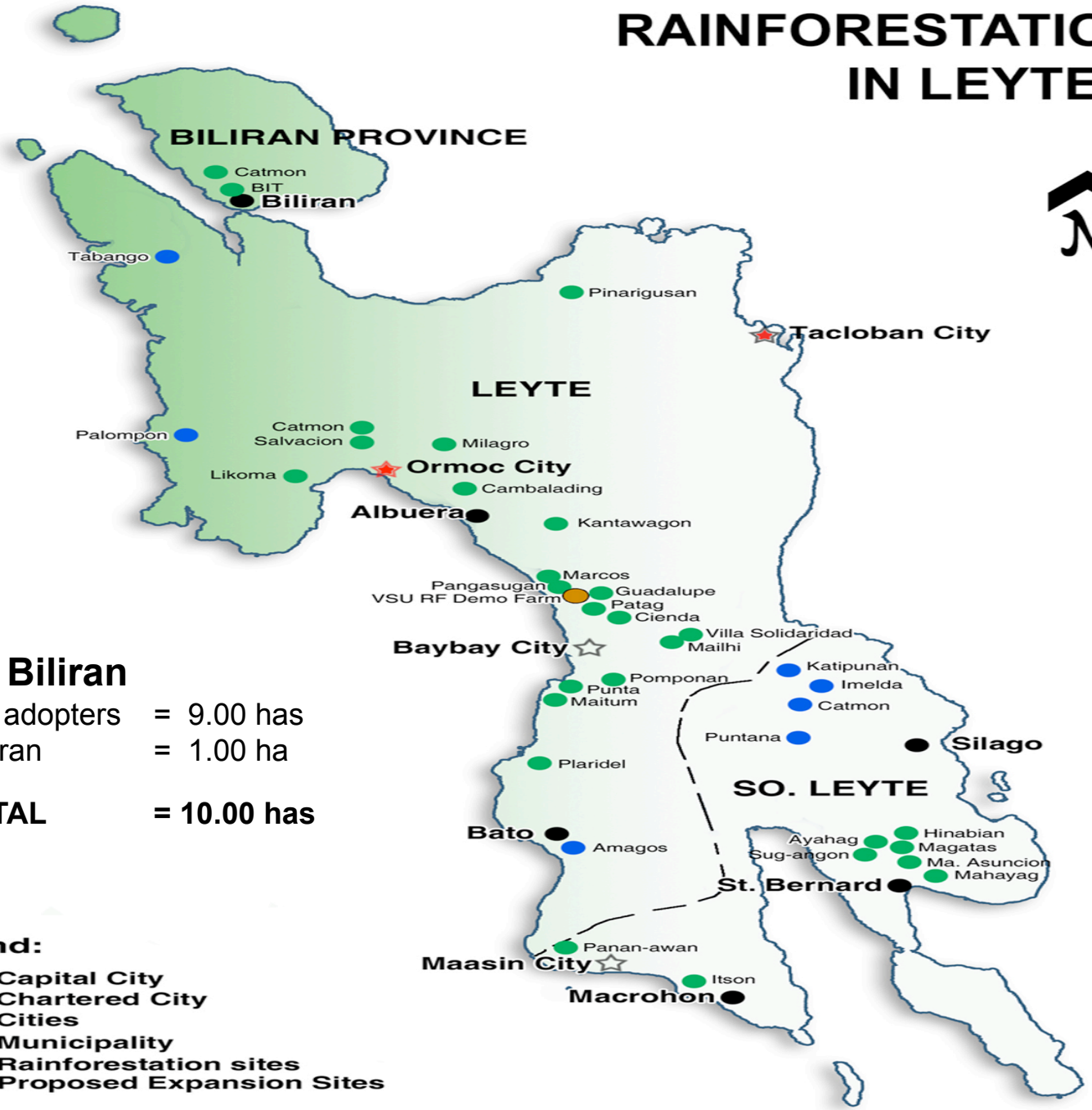
TOTAL = 14.00 has

Proposed sites for expansion = 10.00 has

Legend:

- ☆ - Capital City
- ★ - Chartered City
- ☆ - Cities
- ● - Municipality
- ● - Rainforestation sites
- ● - Proposed Expansion Sites

RAINFORESTATION SITES IN LEYTE



Biliran, Biliran

- Private adopters = 9.00 has
- NIT-Biliran = 1.00 ha

TOTAL = 10.00 has

Legend:

- ☆ - Capital City
- ★ - Chartered City
- ☆ - Cities
- ● - Municipality
- ● - Rainforestation sites
- ● - Proposed Expansion Sites

RAINFORESTATION SITES IN THE PHILIPPINES

Sablayan, Mindoro Occidental

- HARIBON sites = 5.00 has

Roxas, Mindoro Oriental

- FPE site = 1.00 ha

TOTAL = 6.00 has

LEGEND:

- VSU supported
- PO supported
- HARIBON supported
- FPE supported
- Tribal Filipino Program/ Volens Iterenans supported
- SWCF supported
- Religious Group supported
- LGU supported
- Barit BWP Rural Waterworks & Sanitation Association, Inc. supported

RAINFORESTATION SITES IN THE PHILIPPINES

Aborlan, Palawan

- WPU = 3.00 has

Brooke's Point, Palawan

- FPE site = 1.00 ha

TOTAL = 4.00 has

LEGEND:

- VSU supported
- PO supported
- HARIBON supported
- FPE supported
- Tribal Filipino Program/ Volens Iterenans supported
- SWCF supported
- Religious Group supported
- LGU supported
- Barit BWP Rural Waterworks & Sanitation Association, Inc. supported

RAINFORESTATION SITES IN THE PHILIPPINES

Bilar, Bohol
- CVSCAFT = 2.00 has
- SWCF = 1.00 has

Alcoy, Cebu
- CBCF site = 3.00 has

Pilar, Camotes Island, Cebu
- LGU = 1.00 ha

TOTAL = 8.00 has

LEGEND:

- VSU supported
- PO supported
- HARIBON supported
- FPE supported
- Tribal Filipino Program/ Volens Iterenans supported
- SWCF supported
- Religious Group supported
- LGU supported
- Barit BWP Rural Waterworks & Sanitation Association, Inc. supported

RAINFORESTATION SITES IN THE PHILIPPINES

San Carlos, Kabankalan & Himamaylan, Negros Occidental

- Haribon/JF Ledesma = 2.00 has
- Haribon/NEDF = 1.00 has
- BIND = 1.00 has

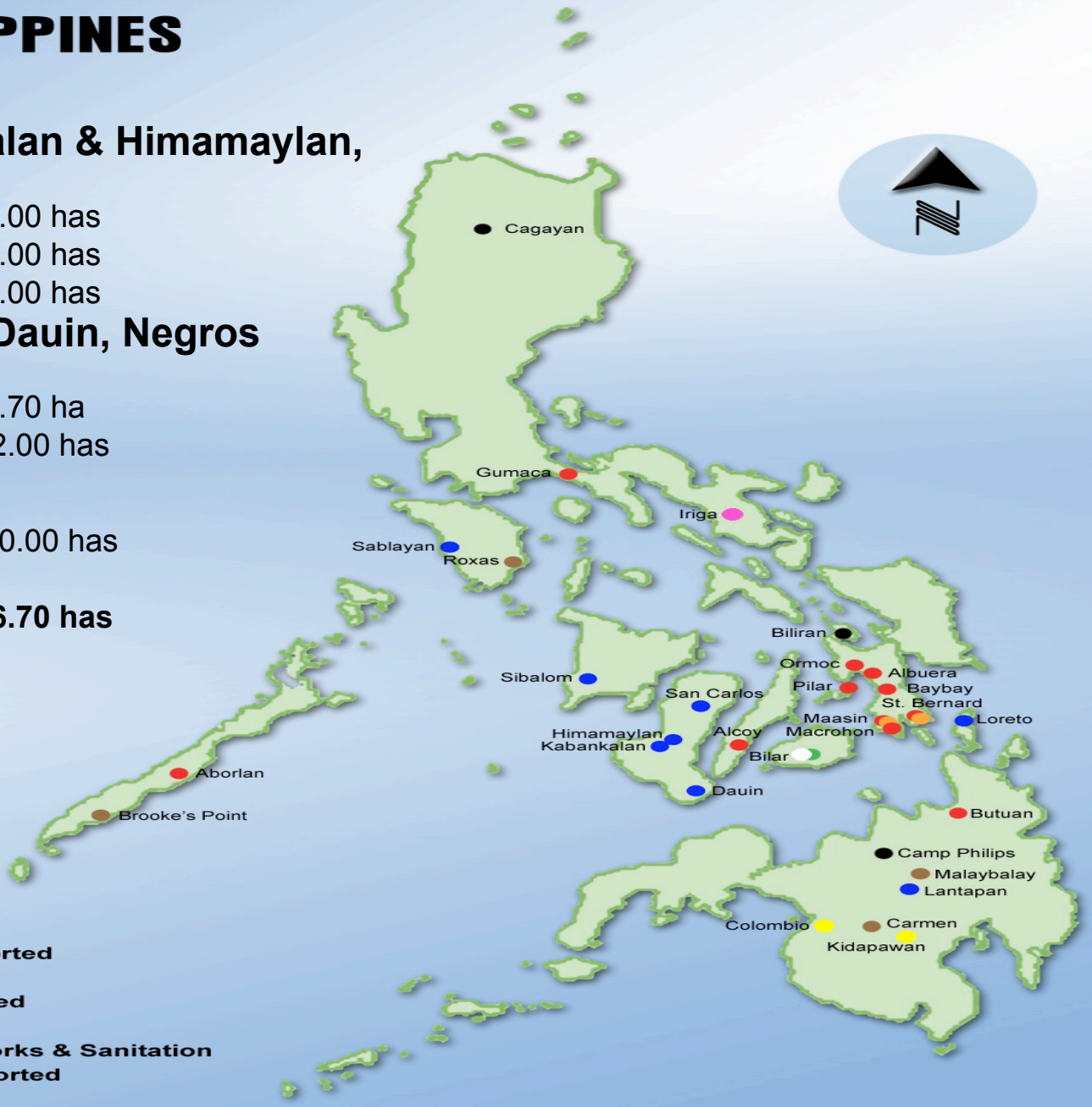
Valencia, Bacong & Dauin, Negros Oriental

- Haribon/Ting Matiao = 0.70 ha
- Paul Carino = 12.00 has

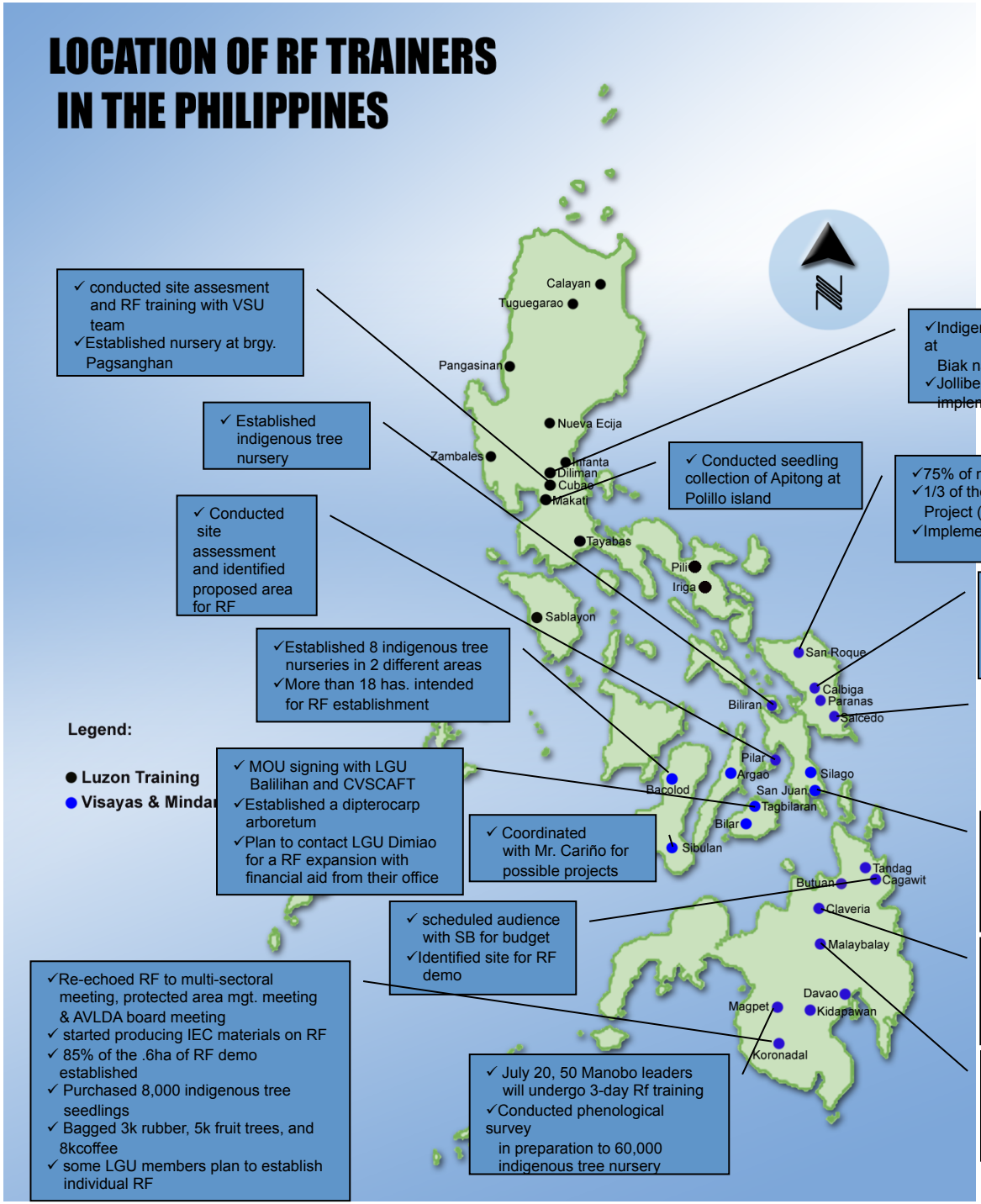
Sibalom, Antique

- Haribon/PENRO = 10.00 has

TOTAL = 26.70 has



LOCATION OF RF TRAINERS IN THE PHILIPPINES



✓ conducted site assesment and RF training with VSU team
✓Established nursery at brgy. Pagsanghan

✓ Established indigenous tree nursery

✓ Conducted site assessment and identified proposed area for RF

✓Established 8 indigenous tree nurseries in 2 different areas
✓More than 18 has. intended for RF establishment

✓ MOU signing with LGU Balilihan and CVSCAFT
✓Established a dipterocarp arboretum
✓Plan to contact LGU Dimiao for a RF expansion with financial aid from their office

✓ Coordinated with Mr. Cariño for possible projects

✓ scheduled audience with SB for budget
✓Identified site for RF demo

✓Re-echoed RF to multi-sectoral meeting, protected area mgt. meeting & AVLDA board meeting
✓ started producing IEC materials on RF
✓ 85% of the .6ha of RF demo established
✓ Purchased 8,000 indigenous tree seedlings
✓ Bagged 3k rubber, 5k fruit trees, and 8kcoffee
✓ some LGU members plan to establish individual RF

✓ July 20, 50 Manobo leaders will undergo 3-day Rf training
✓Conducted phenological survey
in preparation to 60,000 indigenous tree nursery

✓Indigenous tree seedling nursery established at
Biak na Bato
✓Jollibee franchiser linked with FPE3 to implement RF

✓ Conducted seedling collection of Apitong at Polillo island

✓75% of nursery completed
✓1/3 of their 100 has. for Upland Development Project (UDP) intended for RF
✓Implementers are their Farmers' Organization

✓Formulated MOU
✓Conducted tree planting
✓Established nursery

Salcedo
✓ Site assessment and land use planning
✓ Identified mother trees
Hernani
✓Assisted GK management team with 3

✓ Changed location from SIlago to St. Bernard to ride on UDP project
✓Arrangemenbts made with PO president

✓Established nursery at Man-ibay community
✓Raised 5,000 Ani-i (*Erythrina fusca*)
✓PO members to intercrop abaca
✓32 members of farmers organized

✓Has 60,000 indigenous tree seedlings
✓ Established 50 has of RF
✓Conducted 500 has of Assisted Natural Degeneration project

Strengths:

- The technology and pool experts are readily available;
- Established RF farms in different biophysical conditions are accessible and manage by diverse adopters ; and

Weaknesses:

- Limited financial resources to extend the technology to other islands of the country;
- Restricted jurisdiction on massive country-wide implementation (AFMA); and
- Limited knowledge on species-species-area matching

Opportunities:

- Increase number of adopters and advocates;
- Extremely supportive peoples' organization and local government units; and
- Increase number of third party funding support

Threats:

- Frequent revision and conflicting DENR policies (i.e., UDP project); and
- Changes of government priorities (i.e., mining);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BURMA
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Pulau Simeulue
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Kuching
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Banjarmasin
Jayapura
PEGUNUNGAN BARISAN
Billiton
Kendari
Ambon
Buru
PEGUNUNGAN MAOKE
Tanjungkarang-Telukbetung
Java Sea
Makassar
New Guinea
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Darwin
Ashmore and Cartier Islands (AUSTRALIA)
Gulf of Carpentaria
Indian Ocean

THE REFORESTATION PROGRAM OF THE PHILIPPINES

Department of Environment and Natural Resources

The Forest Management Bureau

A staff Bureau of the DENR created under EO 192 which advises the DENR Secretary and field offices, and formulates policies and programs in:

- Forest management, development, conservation, protection
- Proper use of forest resources

Areas to be Reforested

A. Public forest lands

- Bare or grass-covered tracts of forestlands;
- Brushlands or tracts of forest lands generally covered with brush, which need to be developed to increase their productivity;
- Open tracts of forest lands interspersed with patches of forest;
- Denuded or low density forest cover areas proclaimed by the President as forest reserves and reservations as critical watersheds, national parks, game refuge, bird sanctuaries, national shrines, national historic sites.

Areas to be Reforested

A. Public forest lands (Cont'd)

- Inadequately stocked forest lands within forest concession
- Portions of areas covered by pasture leases or permits needing immediate reforestation; and

- River banks, easements, road right-of-ways, deltas, swamps, former river beds, and beaches.

Areas to be Reforested

B. Private Lands

- Portions of private lands required to be reforested or planted to trees pursuant to PD 953

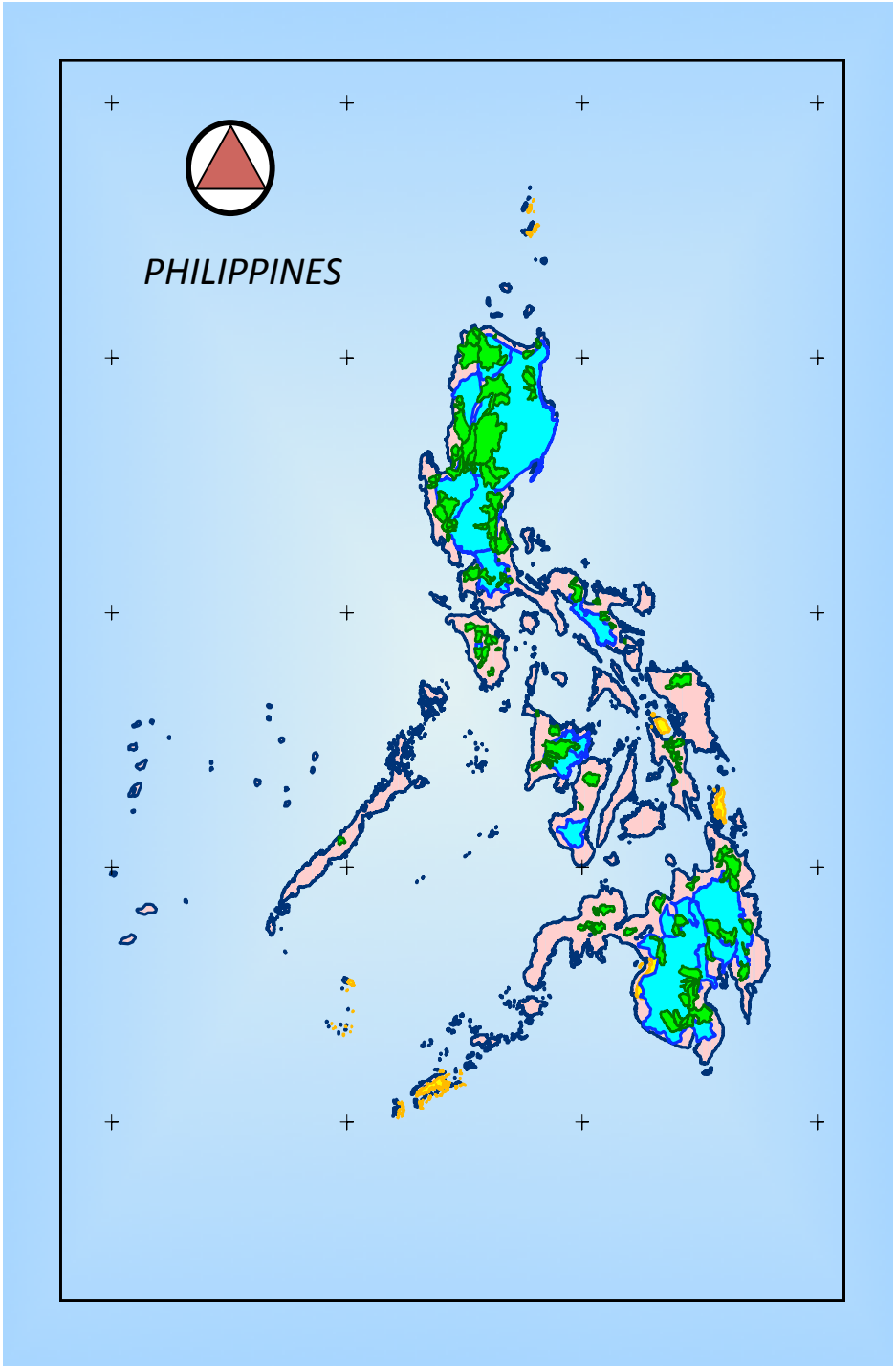
1) Private lands extending at least 5m adjoining the edge of the bank of river or creek, except when such land cannot be planted to trees due to permanent improvement;

2) Open space in existing subdivisions required to be reserved for common use and enjoyment of lot owners;

PRIORITY TARGET AREAS FOR REFORESTATION

- 20 Major River Basins

- 172 Priority Critical Watersheds supporting irrigation, domestic supplies & industries



OVER ALL OBJECTIVES

- To place every square meter of forest lands under appropriate management systems and tenure for sustainable management for :
  - production purposes
  - protection purposes
- To expand the area under forest cover
  - At least 12.0 M ha or about 40% of the total land area should ideally be with forest cover

Reforestation Approaches

- Tree Plantation establishment particularly in areas for production purposes
- Assisted Natural Regeneration in open and brushland areas with existing vigorous wildlings of pioneer species
- Enrichment Planting in inadequately stocked logged over areas
- Rainforestation in protection forests and other suitable forestlands

Biggest Successes to Date

- Increase in forest cover to 7.2 million hectares as of 2003
- Enhanced participation both from the government and private sectors
- Forest communities have been recognized as partners in forest development and management

Biggest Obstacles

- Delay in the completion of forestland boundary delineation
- Inadequate financial support
- Political interference in the implementation of the reforestation program

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HARIBON®
FOUNDATION
protecting nature. preserving life.

Protect forest biodiversity

ROAD (Rainforest Organizations and Advocates) **to 2020**

ROAD to 2020: A Call to Action!

- A vigorous movement for the **rebirth** of our **Philippine rain forests.**
- Our vision for 2020 is at least **1 million hectares** of restored rain forests.


Palosapis


Sierra Madre

ROAD to 2020: A Call to Action!

Location of Forest Restoration Sites

SITE	No. of Seedlings Planted	No. of Hectares Planted
Antique	12500	5.00
Bukidnon	7500	3.00
Bulacan	5284	2.11
Caliraya	60166	23.27
Cavite	3090	3.00
Cebu	3250	1.30
General Nakar	3000	1.20
Iloilo	1750	0.70
Mangatarem	18430	7.37
Mindoro	157550	63.02
Pangasinan	185000	74.00
Rizal	16718	6.68
Surigao del Sur	108875	92.85
Zambales	18200	7.28
TOTAL	601313	290.78

DONOR	NO. OF SEEDLINGS PLANTED	ESTIMATED NO. OF HECTARES
Company	81191	31.97
School	3251	1.30
Projects	279009	160.91
Individuals	11942	4.47
Cluster	225920	92.13
TOTAL	601313	290.78

Caliraya-Lumot Watershed Reservation

- **The Caliraya-Lumot Watershed reservation (CLW) is located about 105 km. southeast of Metro Manila via Calamba-Los Banos-Sta. Cruz Road. It covers 10 barangays of three municipalities of Laguna, namely: Barangays Caliraya and Lewin in Lumban, barangays Bukal, Cansuso, Inao-awan, East Talongan, West Talongan, Lumot and Paowin in Cavinti; and barangay San Antonio in Kalayaan.**

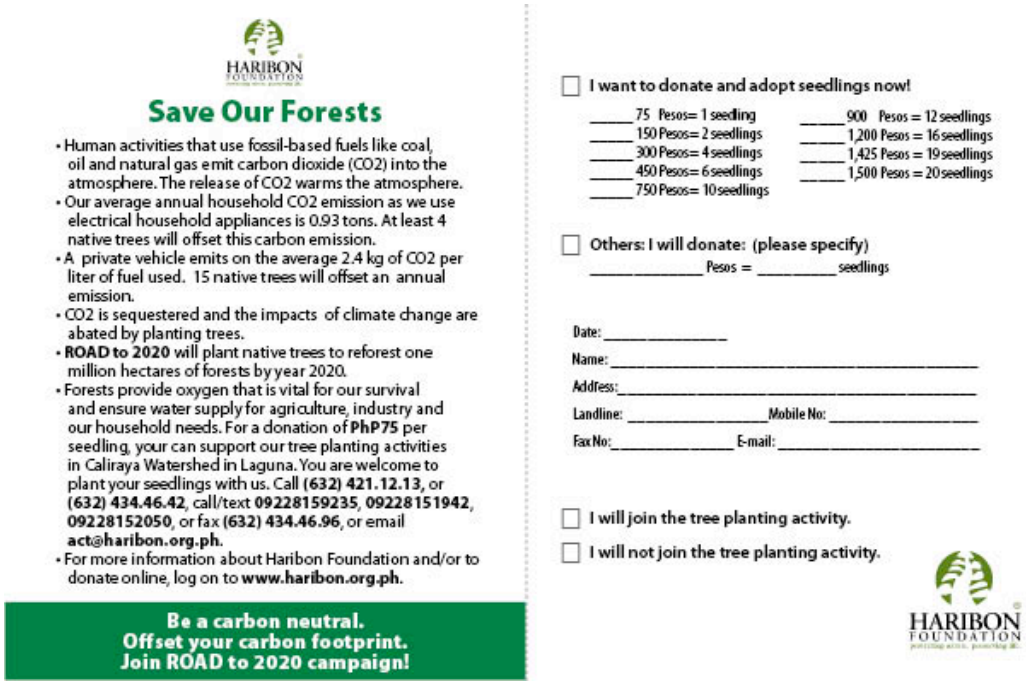
Marikina Watershed Reservation

The Marikina watershed consists of the last remaining rainforest in Metro Manila covering 26,000 hectares of land that extend to Antipolo, Tanay, San Mateo, Baras, Marikina and Montalban (now Rodriguez).

Strategy

ROAD to 2020: A Call to Action!

Membership, general public and corporate involvement in forest restoration promoted through “Adopt-a-Seedling” campaign



HARIBON FOUNDATION

Save Our Forests

- Human activities that use fossil-based fuels like coal, oil and natural gas emit carbon dioxide (CO_2) into the atmosphere. The release of CO_2 warms the atmosphere.
- Our average annual household CO_2 emission as we use electrical household appliances is 0.93 tons. At least 4 native trees will offset this carbon emission.
- A private vehicle emits on the average 2.4 kg of CO_2 per liter of fuel used. 15 native trees will offset an annual emission.
- CO_2 is sequestered and the impacts of climate change are abated by planting trees.
- **ROAD to 2020** will plant native trees to reforest one million hectares of forests by year 2020.
- Forests provide oxygen that is vital for our survival and ensure water supply for agriculture, industry and our household needs. For a donation of **PhP75** per seedling, your can support our tree planting activities in Caliraya Watershed in Laguna. You are welcome to plant your seedlings with us. Call **(632) 421.12.13,** or **(632) 434.46.42**, call/text **09228159235**, **09228151942**, **09228152050**, or fax **(632) 434.46.96**, or email **act@haribon.org.ph.**
- For more information about Haribon Foundation and/or to donate online, log on to **www.haribon.org.ph.**

Be a carbon neutral.
Offset your carbon footprint.
Join ROAD to 2020 campaign!

☐ I want to donate and adopt seedlings now!

_____ 75 Pesos= 1 seedling
_____ 150 Pesos= 2 seedlings
_____ 300 Pesos= 4 seedlings
_____ 450 Pesos= 6 seedlings
_____ 750 Pesos= 10 seedlings
_____ 900 Pesos = 12 seedlings
_____ 1,200 Pesos = 16 seedlings
_____ 1,425 Pesos = 19 seedlings
_____ 1,500 Pesos = 20 seedlings

☐ Others: I will donate: (please specify)
_____ Pesos = _____ seedlings

Date: _____
Name: _____
Address: _____
Landline: _____ Mobile No: _____
Fax No: _____ E-mail: _____

☐ I will join the tree planting activity.
☐ I will not join the tree planting activity.

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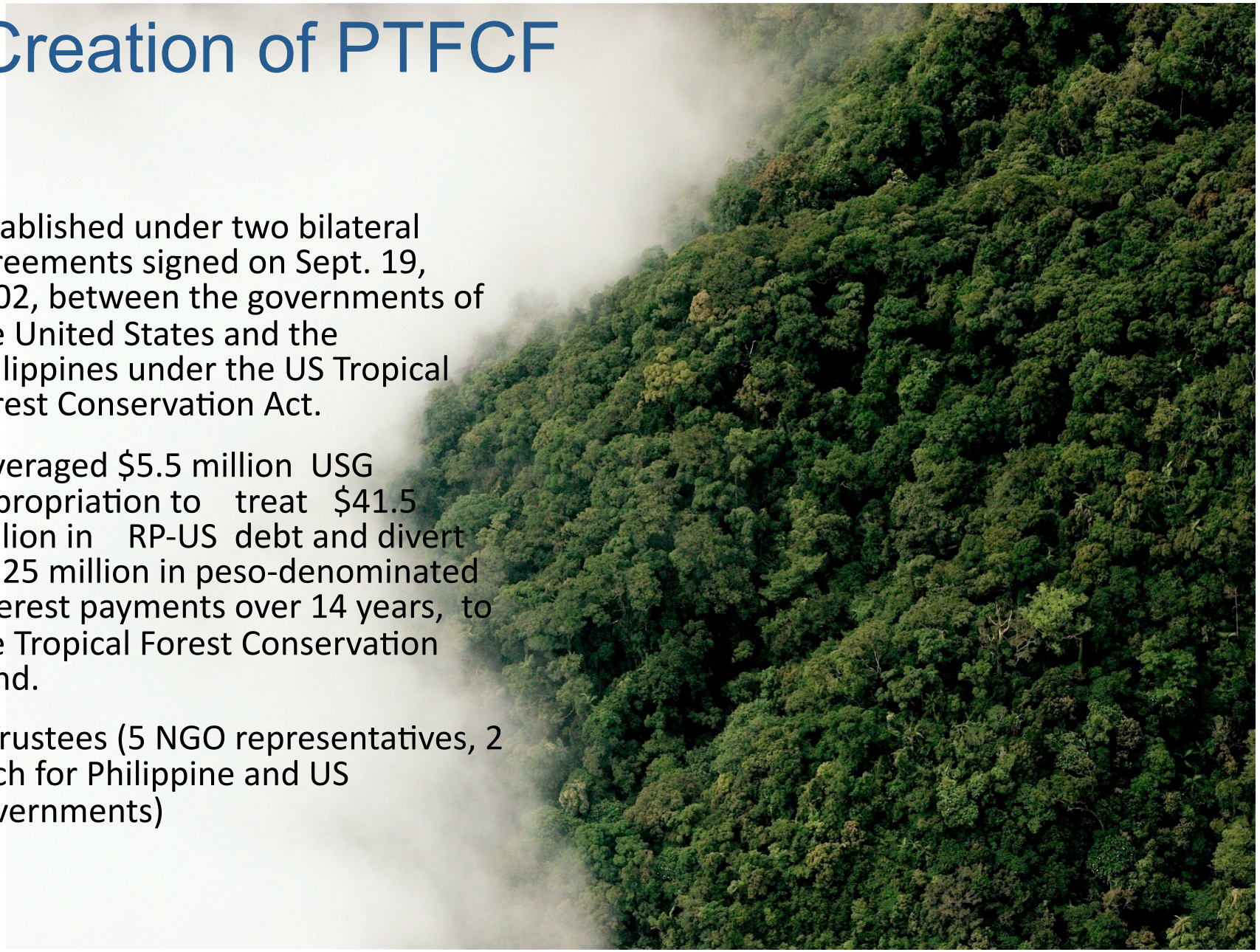
Philippine Tropical Forest
Conservation Foundation (PTFCF)
Rain Forest
Restoration Initiatives

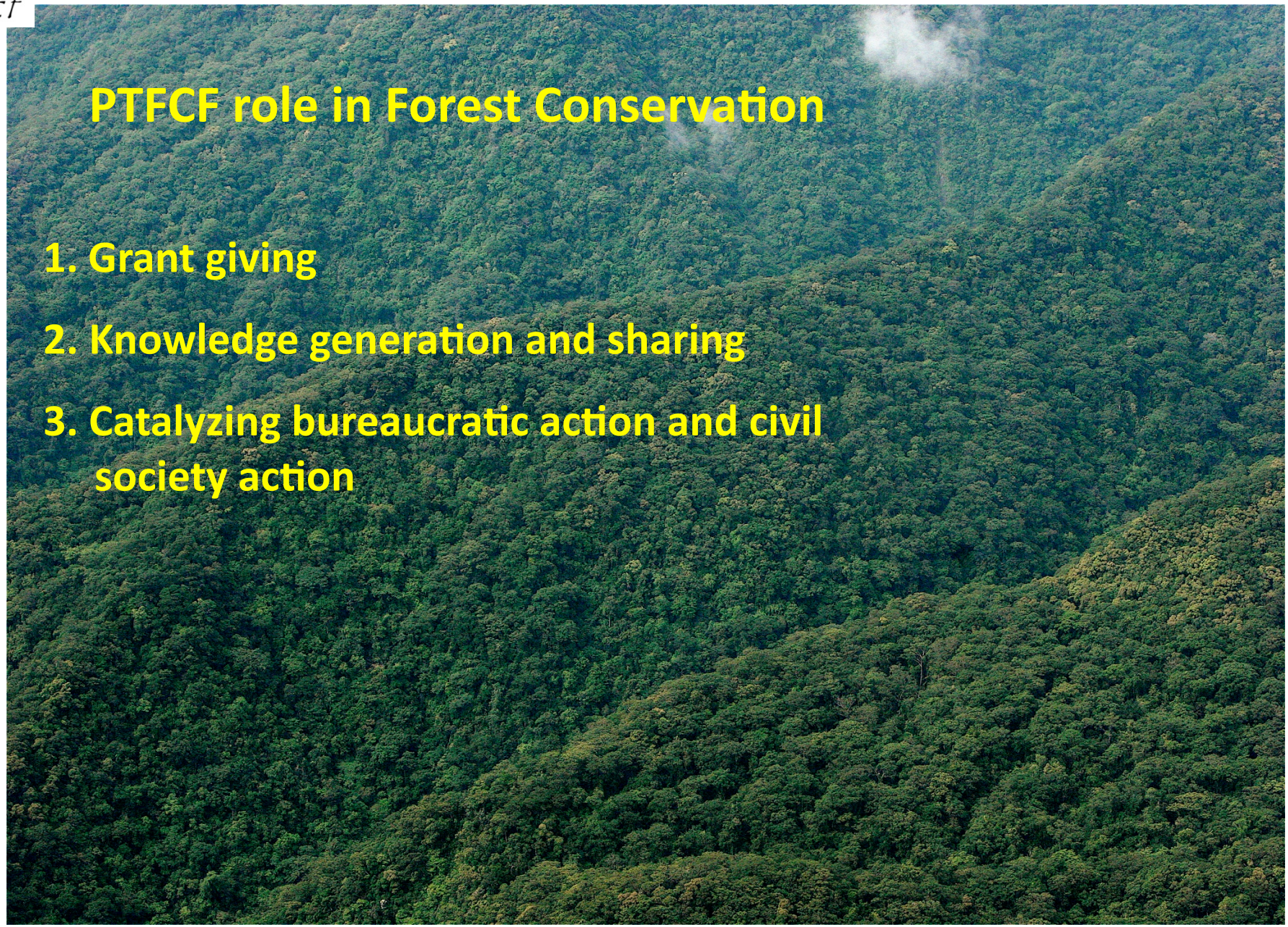
Creation of PTFCF



- Established under two bilateral agreements signed on Sept. 19, 2002, between the governments of the United States and the Philippines under the US Tropical Forest Conservation Act.
- Leveraged $5.5 million USG appropriation to treat $41.5 million in RP-US debt and divert $8.25 million in peso-denominated interest payments over 14 years, to the Tropical Forest Conservation Fund.
- 9 Trustees (5 NGO representatives, 2 each for Philippine and US governments)

Philippine Tropical Forest Conservation Foundation, Inc.

We envision lush and biologically diverse Philippine forests that are sustainably managed and equitably accessible to responsible stakeholders, as a collective responsibility for the greater good.


PTFCF role in Forest Conservation
1. Grant giving
2. Knowledge generation and sharing
3. Catalyzing bureaucratic action and civil society action

Eligible Activities

Establishment, **restoration**, protection, and maintenance of parks, protected areas and reserves.

Training programs to increase scientific, technical, and managerial capacities of individuals and organizations involved in forest conservation efforts.

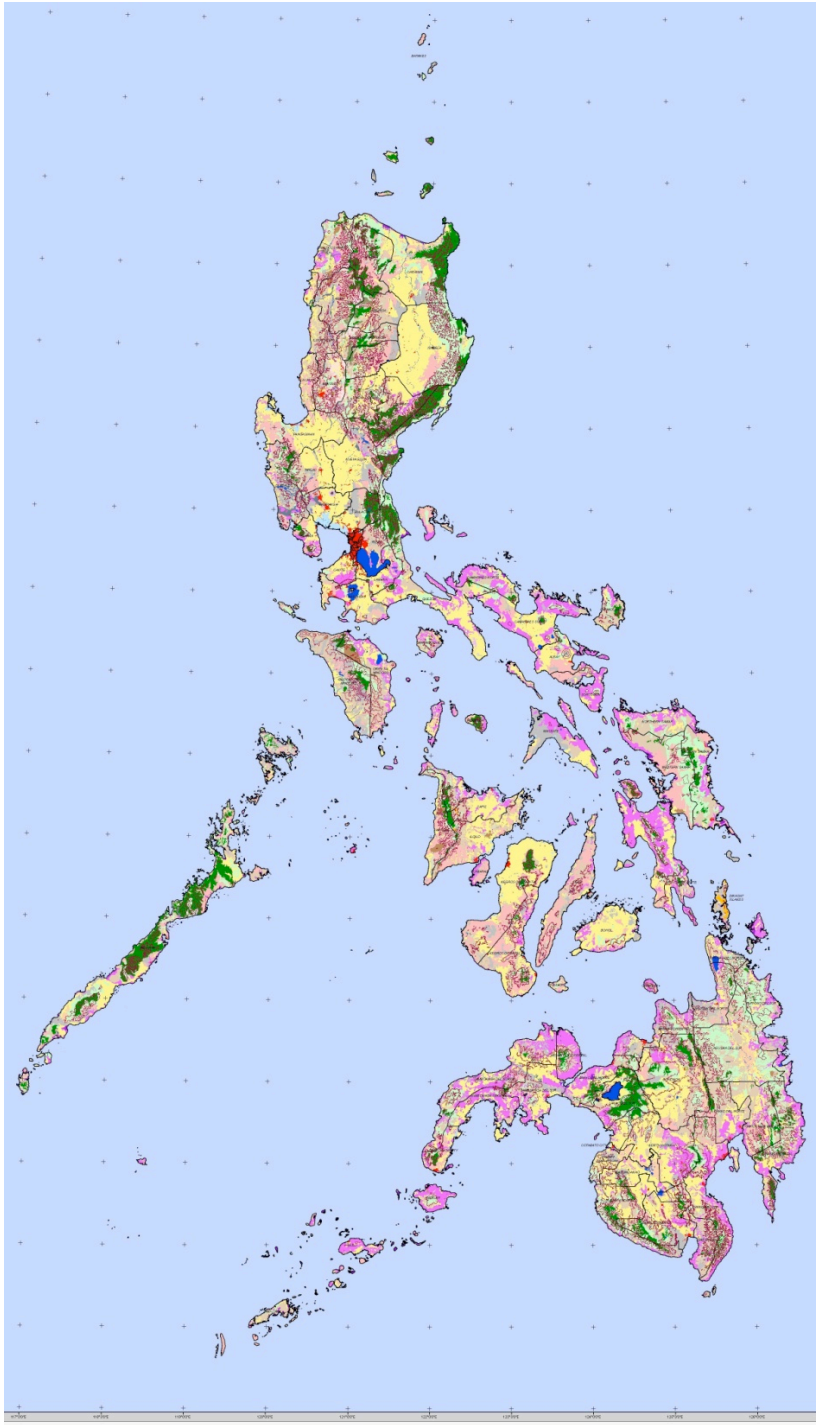
Development and implementation of scientifically sound systems of natural resource or ecosystem management.

Development and support of the livelihoods of individuals living in or near a tropical forest in a manner consistent with protecting that forest.

Research and identification of medicinal uses of tropical forest plant life to treat human diseases, illnesses, and health concerns.

Restoration, protection, or sustainable use of diverse animal and plant species.

Coastal forest resources management and protection



1. **Total Projects supported from year 2005 – 2010 = 139.**
2. **Area coverage = Upland forest (1,056,795 hectares); mangrove forest (48,423 hectares) mostly in areas with remaining forest.**
3. **Forest restoration approaches include Assisted Natural Regeneration (ANR), Rainforestation and use of native pioneer tree species, dipterocarp tree species and multiple mangrove tree species. Forest fire prevention is promoted to enhance natural regeneration.**

Rain Forest Restoration Highlights

- produced 1,376,224 forest tree seedlings and wildlings

Rain Forest Restoration Highlights

• collection of seeds and use of seedbed to store and propagate available seeds

Rain Forest Restoration Highlights

- produced 3,762,896 multiple species mangrove seedlings and propagules)

Rain Forest Restoration Highlights

- the use of wildlings recovery chamber resulted to 80-90% survival rate.

Rain Forest Restoration Highlights

•Protection of Mother Trees as source of seeds and wildlings (such as identification and marking and inclusion in the Municipal Environment Code and local ordinance)

Rain Forest Restoration Highlights

- Environmental law enforcement resulting to confiscation of significant volume of lumber and timber, chainsaws and implements for timber poaching.
- EnDefense program as support to environmental cases
- Local media coverage, exhibit, seminars, advocacy and manifesto signing

Challenges

- Frequency of seed year (e.g. Dipterocarps: 2-10 years) limiting the availability of planting materials.
- Limited information on native trees (e.g. site requirements; growth performance; dendrology/tree identification; phenology and seed technology)
- Need for delineation of production and protection forest including appropriate land-use and management plans.
- Continued use and promotion of exotic tree species for restoration.
- Overlapping claims and tenure in some forestlands.
- Lack of alternative livelihood of the upland communities, contributing to continued forest destruction.


Thank you!
Philippine Tropical Forest Conservation Foundation (PTFCF)
Unit 11-3A VGP Center, 6772 Ayala Avenue
Makati City, Philippines
www.ptfcf.org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Ambon
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Flores
Lombok
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Java
Madura
Java Sea
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Banda Sea
Celebes Sea
Sulu Sea
South China Sea
Philippine Sea
North Pacific Ocean
Indian Ocean
Andaman Sea
Gulf of Thailand
Gulf of Tonkin
Hainan Dao
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SPRATLY ISLANDS
Pratas Island
Luzon Strait
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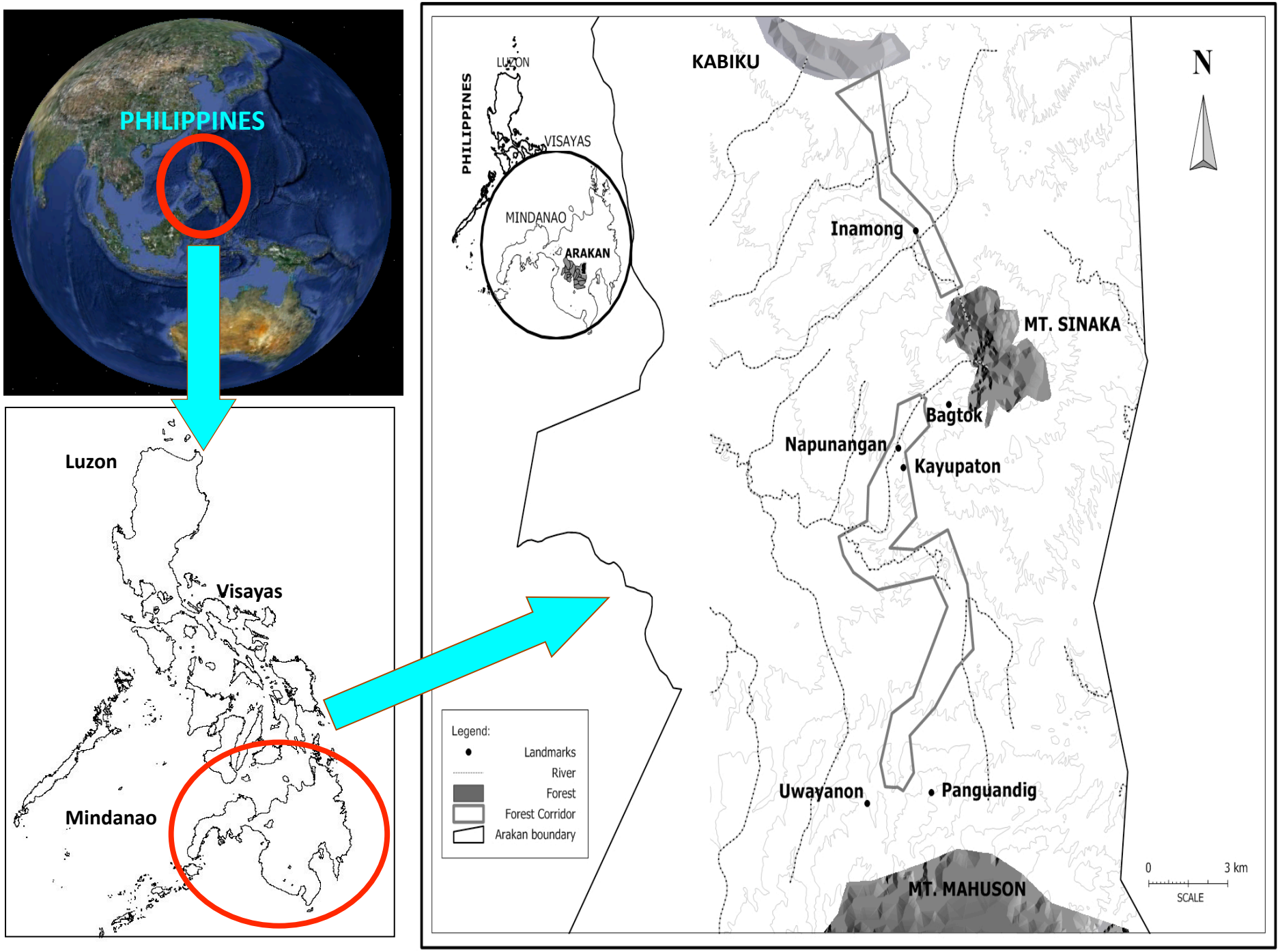
Arakan Forest Corridor Development Program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Inamong
MT. SINAKA
Bagtok
Napunangan
Kayupaton
Uwayanon
Panguandig
MT. MAHUSON
Legend:
Landmarks
River
Forest
Forest Corridor
Arakan boundary
0
3 km
SCALE

Total of 2, 915 hectares to build the forest corridor

For the next 3 to 4 years at least 216 hectares in three barangays and 3 indigenous ancestral domains

Purpose of the project

The Arakan Forest Corridor Program will conserve 3 forest remnants within Arakan Valley Conservation Area (AVCA) and catalyze sustainable development through community forestry. Specifically, the project will establish habitat corridors for wildlife dispersal, to allow gene exchanges between local populations of plants and animals. These same corridors will be developed as a viable source of forest or tree products, e.g. rubber, abaca, fruit trees, timber, etc. for rural livelihood. Broadly, the project aims to meet both wildlife and human needs. It is also meant to revive the ecological functions of barren landscapes and mitigate against and adapt to global climate change.

Specific Objectives:

- 1. To maintain 42 hectares of reclaimed grasslands and establish 40 hectares of new reforestation plots.

- 2. To strengthen the capability of 4 local peoples organization in the management of their institutions toward sustained growth, development and cultural enhancement.

(cont.) Specific Objectives:

3. To increase productivity and income of the stakeholders through the development and adoption of environment – friendly economic enterprises.

- 4. To strengthen networks and partnership with other like – minded and development players toward the fulfillment of the vision, missions and Objectives of the Arakan Valley Forest Corridor.

Community-Based Reforestation approach

- Rainforestation farming (see Margraf and Milan 1996)
  - Establishment of nursery
  - Collection of native trees in the forest patch
  - Rehabilitate native wildlings into the nursery
  - Land preparation
  - Tree planting
  - Protection and Maintenance

  Conservation Agreement with POs and participating landowners
  - Support for backyard farming
  - Water system
  - Tribal hall

Biggest Success

- Technical Working Group was created to develop a management plan for the three protected areas using the "forest corridor" as a flagship program

- Multi-stakeholder alliance has been formed for the protection and monitoring of Mt Sinaka.

- Three new institutional partners were successfully invited.
  - The Philippine Long Distance Telephone (PLDT) Company provided funds for community and individual incentives.
  - The World Agroforestry Centre (or ICRAF) funded a case study that filled-up a number of data gaps for the program.
  - In 2010, PEF and Allied Botanical Corporation agreed to implement a community-based organic farming demonstration in Tumanding.
  - Other partners also provided minor in-kind support.

- Organized and built the capacity of four People's Organizations

Biggest Success

- a five-year strategic plan was developed in 2008. With funding from FPE and other partners, the first installment of that plan was implemented between 2009 and the first half of 2010.

- Conservation Agreement approach strengthened community commitment to reforestation

Biggest Obstacles

- Funding constraints: Reforestation is not cheap
- Short term economic returns from land and labor from reforestation is substantially lower than that gained from grain or cash crop production in steep hill slopes.
- Limited community interest in planting native trees unless reforestation is accompanied by economic incentives


Thank you


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EAST TIMOR
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Christmas Island (AUSTRALIA)
Timor Sea
Cocos (Keeling) Islands (AUSTRALIA)
Ashmore and Cartier Islands (AUSTRALIA)
Darwin
Gulf of Carpentaria
Indian Ocean

FOREST RESTORATION APPROACHES OF PYRITE MINED OUT/DUMP AREAS IN HINABANGAN WESTERN SAMAR, PHL.

Rafael T. Cadiz, Ph D

Senior Science research Specialist

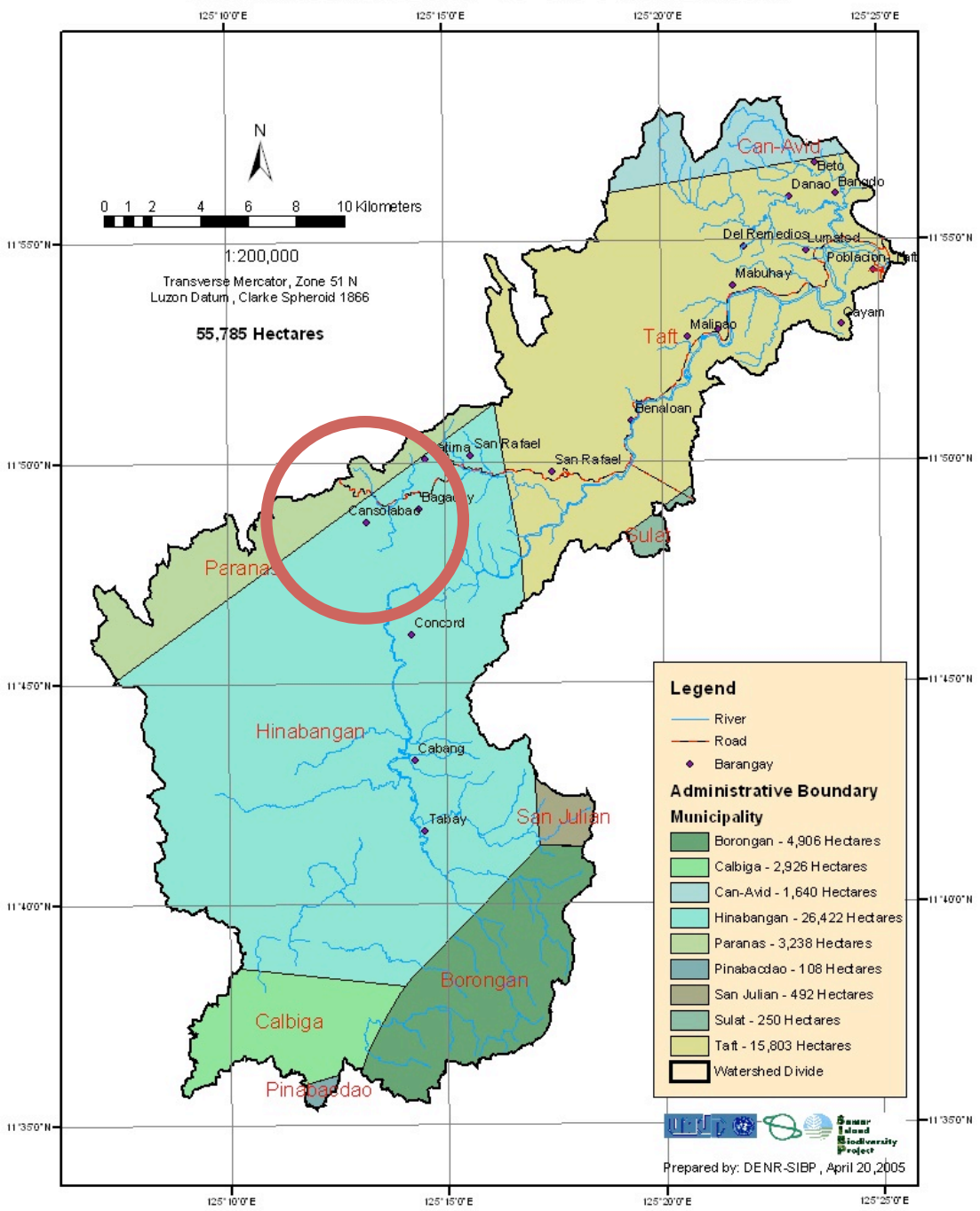
ERDB-DENR, College, Laguna Philippines

Regional Training on Forest Restoration November 21-27, 2010

Chiangmai, Thailand

I. LOCATION AND AREA OF THE SITE

The 137.5-hectare Bagacay Mined out/dump area, is located at the central section of Samar Island in Brgy. Bagacay, within the political jurisdiction of Hinabangan, Samar. The experimental site occupies 3 has. of the total area



PANORAMIC VIEW OF THE AREA

II. Significance of the Project

Why is it urgent to rehabilitate Bagacay Mined Out/Dump Area?

- Prevent pollution
- Accelerate recovery and development of biodiversity
- Erosion control in post-mining landforms

III. Objectives

General Objective :

To rehabilitate identified sites in Bagacay
Mined out/dump area to improve soil condition through phytoremediation using potentially tolerant plants.

IV. Methodology

Soil Amendments used:

a. Control (No treatment)
B. Organic (chicken manure) + Bio-fertilizer
d. Inorganic (14-14-14) + Bio-fertilizer
Note: Bio-fertilizer will be applied one month after outplanting

Species Used:

a. Acacia auriculiformis + Vetiver grass
b. *A. mangium* + Vetiver grass
c. Pterocarpus indicus + Vetiver grass
d. *Gymnostoma rumphiana*+ Vetiver grass

Planting spot enclosed with stones as barrier to hold soil amendments applied

Limestones collected were used to surround the planting spot filled with mountain soil

Newly outplanted seedlings

Newly outplanted seedlings of A. auriculiformis, *A.mangium*, P.indicus G. rumphiana and V. zizanioides (vetever grass)

Four months after planting

Flourishing *Acacia mangium.*

BIGGEST SUCCESS:

Soil amendments - e.g. forest soil, lime, organic material and mycorrhiza prior to and after outplanting enhanced growth and survival of the species in extremely degraded mined out/dump soil area

BIGGEST OBSTACLES:

- Soil is extremely acidic and nutrient deficient
- Soil is unstable and vulnerable to erosion
- Labor intensive

Acknowledgement:

- Mines and Geosciences Bureau (MGB), Dept of Environment and Natural Resources (DENR)
- Ecosystems Research and Development Bureau, DENR
- World bank

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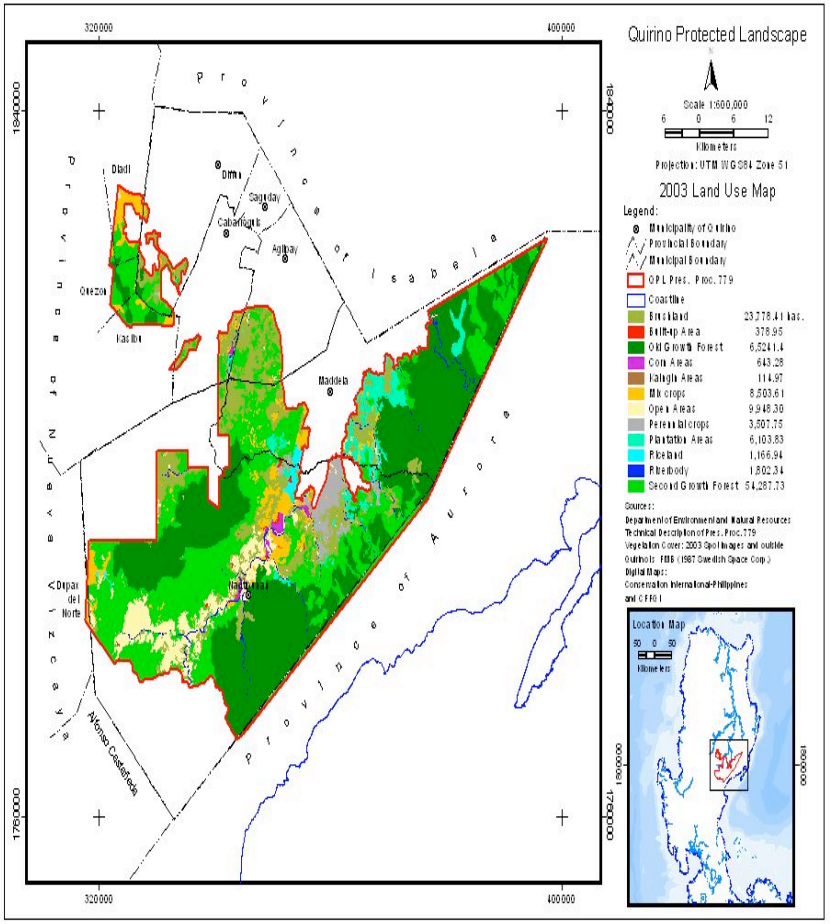
QUIRINO FOREST CARBON PROJECT (QFCP)

CONSERVATION INTERNATIONAL

Project Location: Luzon Island, Quirino Province, Philippines



CONSERVATION INTERNATIONAL

Project goals and objectives

The project aims to contribute to sinking GHG mainly carbon through the establishment of agroforestry farms and reforestation areas. It is projected that the project could generate 41,576 metric tons of CO2e

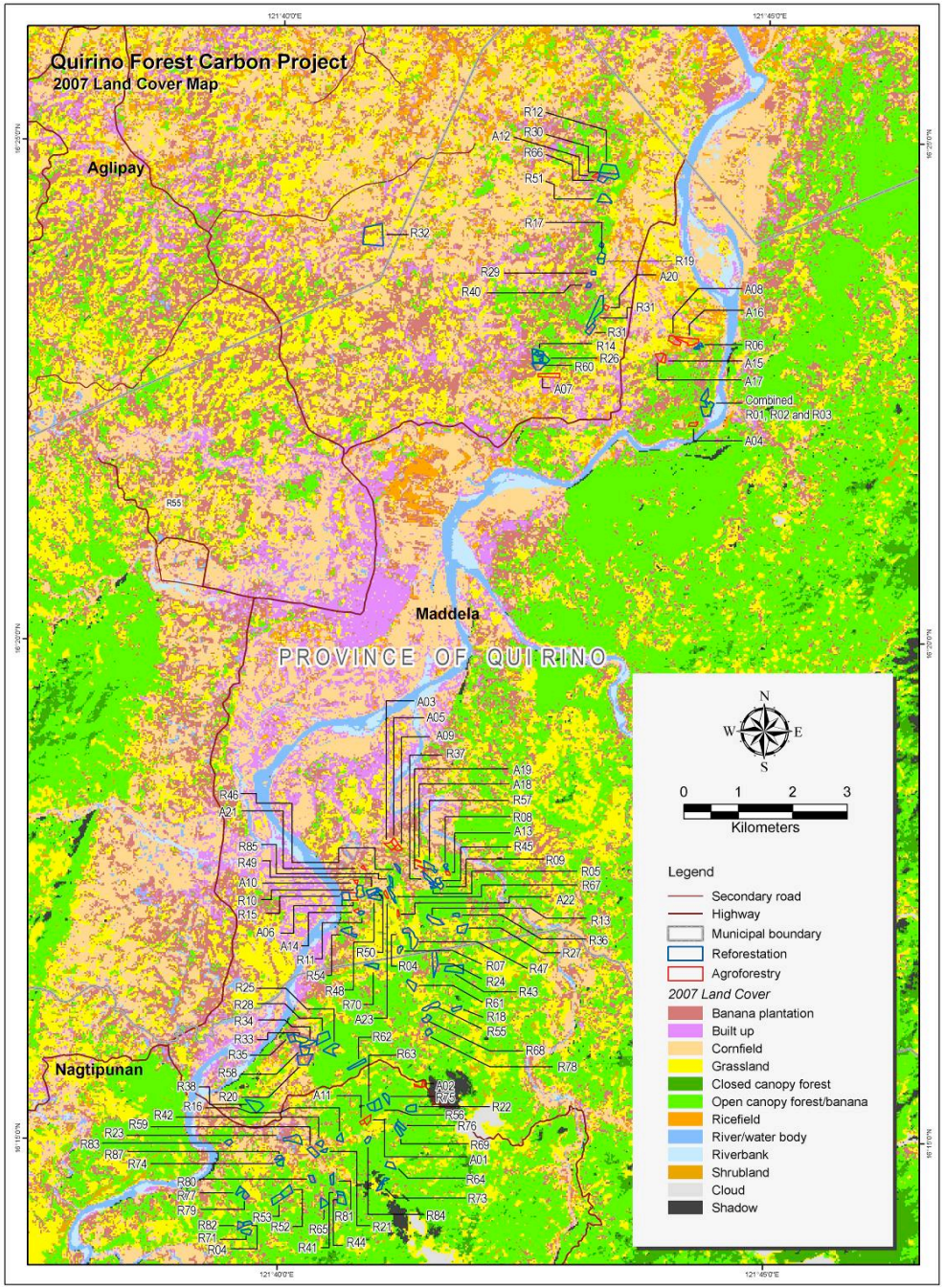
will be sequestered over the life of the project.

The project seeks to establish 177 ha of agroforestry farms and reforestation within selected ISF and privately-owned farms in five years; maintain the developed areas for at least three years after establishment; and protect the same for all years until the end of the total 20-year crediting period of the carbon project.

CONSERVATION INTERNATIONAL

Desired Target Benefits

- Intended to achieve multiple-benefits:
  - Create carbon credits—about 41,576 tCO2—for voluntary carbon market
  - Provide livelihood for communities involved through agroforestry and reforestation
  - Improve habitat for biodiversity
  - Enhance ecological services like watershed functions, soil/ water conservation.



- A total of 177 ha
- 41 ha (established -2009)
- 136 ha (to be established -2010
- 108 lot parcels
- 95 (Farmer-participants with Certificate of Stewardship Contract)
- 1 (Private land owner)

CONSERVATION INTERNATIONAL

Biggest Success to Date

QFCP Certification

- June 17, 2010: The project has earned validation at the Gold Level (for exceptional biodiversity and community benefits

CONSERVATION INTERNATIONAL

Biggest Obstacles

1. *The stringent criteria for area eligibility rendered the task of getting farms on the ground qualify, and it was quite difficult especially that ideal areas should be contiguous for efficiency reason.*

2. *The great issue of carbon ownership and revenue sharing dragged the firming up of partnership agreement vis-à-vis constraints of local communities not totally empowered to become project proponent; and the preparation of project documents without clear decision as to what registry the project will be submitted for registration.*

CONSERVATION INTERNATIONAL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