

PROCEEDINGS



HARNESSING THE POTENTIAL OF TREES ON FARMS TO CONTRIBUTE TO A GREEN ECONOMY IN THE PHILIPPINES

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and

FORESTRY DEVELOPMENT CENTER

College of Forestry and Natural Resources

University of the Philippines Los Baños

College, Laguna, Philippines

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Harnessing the Potential of Trees on Farms to Contribute to a Green Economy in the Philippines

Table of Contents

Executive Summary	1
Opening Remarks	2
<i>- Presentations -</i>	
The National Greening Program	3
Department of Agriculture's Strategy for Crop Diversification	9
The Role of Agriculture and Forestry for Achieving the Nationally Determined Contributions (NDCs)	12
Mainstreaming Agroforestry into National Programs and Strategies, Successes from India and ASEAN	19

Open Forum and Panel Discussion (AM session).....	25

Enabling Policies to Promote Tree Growing	29
Constraints for Private Investments in Timber Production	34
Lowering Financial Risks Through Climate Index Insurance Products for Smallholders	39

Open Forum and Panel Discussion (PM session)	44

Synthesis and Way Forward	46
Resolution Signing	47
Photo Documentation	49
List of Attendees	52

EXECUTIVE SUMMARY

Eight papers were presented and grouped into two major topics. The four papers dealt with opportunities for including trees on farm targets in national strategies and action plans and three papers on opportunities to attract private investments into agroforestry.

For. Ildefonso L. Quilloy, senior forest management specialist from the Forest Management Bureau discussed the National Greening Program wherein the coverage of program was extended by virtue of Executive Order 193. Its implementation of various activities is not without partners from both government and private organizations. For. Quilloy mentioned how the program will move forward and the policy directions that the program will take for the next years until 2018.

From the Department of Agriculture, Mr. Eduardo Alberto shared department's Strategy for Crop Diversification. It has high value crops development program that consists of priority commodities such as vegetables, fruits, industrial crops and alternative staple food crops. Crop diversification initiatives are undertaken by the Bureau of Soils and Water Management. The technology interventions are applied across slopes.

Dr. Flordeliza M. Andres consultant of the National Development Corporation talked about the connection between climate change and carbon. As a way forward, Dr. Andres discussed the following: adaptation, integration options and GHG reduction targets, implementation/transition planning, financial planning, MRV systems and institutional arrangements and linkages.

For international experiences, Dr. Ravi Prabhu's presentation was on Mainstreaming Agroforestry into National Programs and Strategies, Successes from India and ASEAN. He stressed the need for an agroforestry policy wherein he cited the success of the agroforestry policy of India.

During the open forum, the following issues/concerns were raised:

- Lack of private sector financing and investment in tree growing

- Lack of capital and credit facilities for private lands to support green growth initiatives
- Different interpretations of policies and programs resulting in their improper implementation. Stakeholders need to mainstream trees on farms and national strategy and action plans to address these.
- Although NGP policies are being addressed to encourage private sector investment, the private sector is actually not very actively-involved.
- A concern raised on the possibility of granting a tenurial instrument for biomass production
- Presence of informal settlers in critical watershed areas and the possibility of enrolling them to the agroforestry program.

The afternoon session was started with the presentation of Dr. Priscila C. Dolom on Enabling Policies to Promote Tree Growing. This was followed by experiences of the Industries Development Corporation that was presented by Mr. Michael Ong.

Dr. Felino P. Lansigan discussed the issues in agroforestry insurance and also the strategies on how to reduce financial risks.

The following were the issues/concerns raised during the open forum:

- Policies are unstable and highly regulatory that makes them not investment friendly.
- Barriers for private investment and tree growing like a) market accessibility; b) investment; c) regulatory policies; d) resistance to innovations; and e) role building.
- Roles of different stakeholders such as youth, women, local businesses in advancing agroforestry in the country.
- Information education and communication campaign to build awareness in forestry again and on promoting science-based insurance products and make use of advances in technology like remote sensing technology.
- For the government to come up with policies that are based on science and not just response to sensationalized issues.

The synthesis and way forward was given by Dr. Rodel Lasco who also presented the resolution that was later signed by the participants.

OPENING REMARKS

Dr. Priscila C. Dolom
FDC Director



Good morning ladies and gentlemen!

On behalf of ICRAF and the Forestry Development Center, I would like to welcome everyone who is here today to participate in this seminar. We have representatives from various sectors, particularly the government, private and academic sectors, non-government organizations, civil societies, farmers' associations and most especially donor agencies.

As we may all know, we are gathered here today to discuss opportunities for integrating Trees on Farm targets into sub-national or local plans that support various national greening policies. This is also an active effort on our part to show support to the Philippine Government's commitment to the 21st Conference of Parties (COP21) of the United Nations Framework Convention on Climate Change (UNFCCC). You, were each handpicked to participate in this workshop because we recognize the need for a strong collaboration among our sectors.

This is for us to effectively capitalize on the immense opportunity that trees on farm present to climate change mitigation and adaptation initiatives. The development of innovative climate change policies requires both strengthening of the institutional framework as well as innovative mobilization of resources. Hence, in this seminar we hope to come-up with a tangible output that is our commitment to supporting various national greening policies. Particularly, we commit to identify synergies and opportunities to work together towards a roadmap for integrating trees on farm targets into sub-national or local plans.

This is not an easy task for us. Which is why, we are equally glad and grateful that we have our respectable speakers who are more than willing to share with us their expertise and provide us insights as to how we can achieve our objectives. We also want to thank you, our guests and participants, in advance, for your active participation and support to this initiative.

Again, welcome to this seminar on "Harnessing the Potential of Trees on Farms to Contribute to a Green Economy in the Philippines". May we all have a fruitful and productive day ahead of us.

PRESENTATION

THE NATIONAL GREENING PROGRAM

For. Ildelfonso L. Quilloy
Senior Forest Management Specialist
Forest Management Bureau



NATIONAL GREENING PROGRAM

Sequoia Hotel, Quezon City, March 20, 2018

CONTENTS

1. Forest Cover Trend
2. Executive Order Nos. 26 (NGP) and 193 (ENGP)
3. Development Components
4. Support activities
5. NGP Milestones
6. On-going activities
7. Way Forward



LAND CLASSIFICATION

The official total land area of the Philippines is
30 MILLION HECTARES
 that is legally classified as
FORESTLAND (15.8 M ha) and
ALIENABLE AND DISPOSABLE LAND (14.2 M ha)



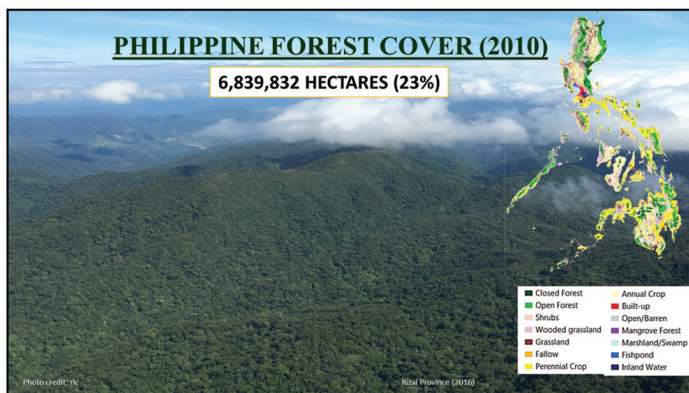
Includes public forest, permanent forest or forest reserves, and forest reservations.

Land of the public domain, which has been classified declared as such and available for disposition

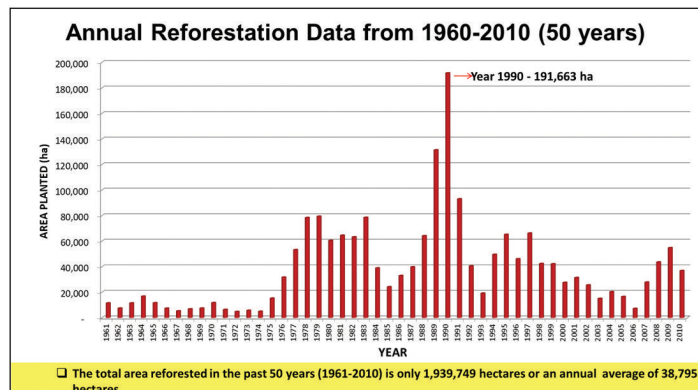
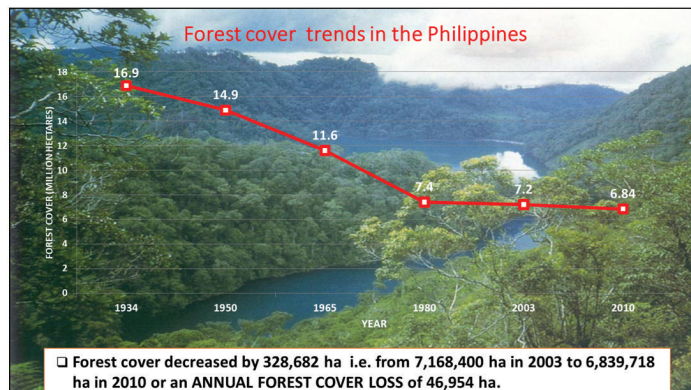


PHILIPPINE FOREST COVER (2010)

6,839,832 HECTARES (23%)



THE NATIONAL GREENING PROGRAM



MAJOR POLICY INTERVENTION TO REVERSE THE DECREASING TREND OF FOREST COVER LOSS

- Issuance of Executive Order No. 23 (Moratorium in the Cutting and Harvesting of Trees in the Natural and Residual Forests) – Intensified Forest Protection Program
- Issuance of Executive Order No. 26 (National Greening Program)
- Issuance of Executive Order No. 193 (Expanding the coverage of NGP)

NATIONAL GREENING PROGRAM

MORE THAN REFORESTATION

The National Greening Program (NGP) is a massive forest rehabilitation program of the government established by virtue of Executive Order No. 26 issued on February 24, 2011. It seeks to grow **1.5 B trees** in **1.5 M hectares** nationwide within a period of six years, from 2011-2016

- Poverty Reduction
- Food Security
- Environmental Stability
- Biodiversity Conservation
- Climate Change Mitigation & Adaptation



Executive Order No. 193

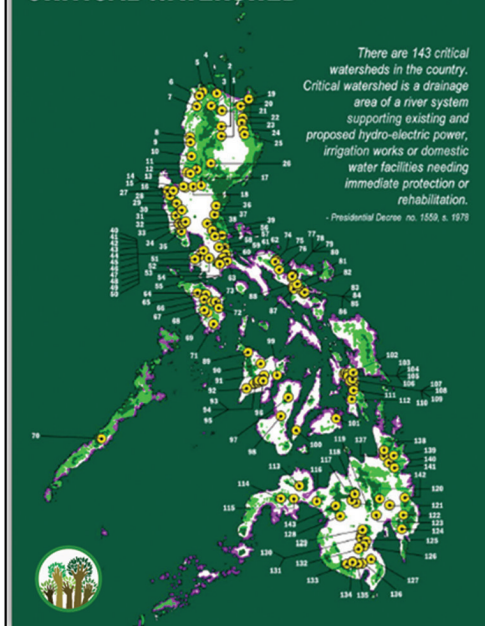
Issuance of Executive Order No. 193: “Expanding the Coverage of the National Greening Program” on November 12, 2015 (eNGP)



- Covers all the remaining unproductive, denuded and degraded forestlands to be managed for production and protection purposes (2016-2028)



CRITICAL WATERSHED



DEVELOPMENT COMPONENTS

- Rehabilitation of degraded areas in priority watershed



10 hectares Coffee Plantation

Brgy. San Luis, Malitbog, Bukidnon

The Coffee plantation is planted with legumes and flamengia along the contour lines for soil fertility and prevention of soil erosion.



ELMIE J. JIMENEZ
PO - President
(Small Community of United Farmers' Association in Rainforest Management (SC-UNIFARM))



PO members harvesting coffee seeds



In 2015, average harvest of 800 and 1000 kilos/week with total earnings of ₱186,000


DEVELOPMENT COMPONENTS

- ☐ Development of upland farms through agroforestry


DEVELOPMENT COMPONENTS



- ☐ Reforestation of grasslands/brushlands

BEFORE



AFTER




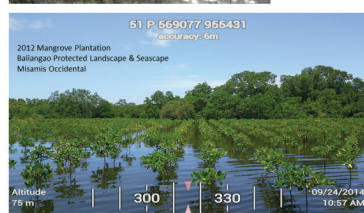
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DEVELOPMENT COMPONENTS

- ☐ Rehabilitation of coastal and mangrove areas in community-managed forestlands, consistent with their respective management plans

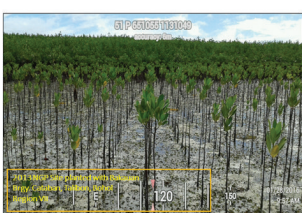


2013 Mangrove Plantation
Cataban, Talibon, Bohol



61 P 569077 955431
accuracy: 6m


2012 Mangrove Plantation
Balingas Protected Landscape & Seascape
Misamis Occidental



61 P 569077 955431
accuracy: 6m

Altitude: 300 | 330 | 09/24/2014 10:57 AM

51 P 537197 1087957
accuracy: 3m



Unique ID: 11-071242-0006-0004
Name of PO: Maolang Fishermen Association | Location: Calaguyan Sur, Loon, Bohol
Area: 3.628 ha.

240 | 5/9/2017 5:30 PM

DEVELOPMENT COMPONENTS

- ☐ Rehabilitation of rivers and stream banks and other suitable areas using bamboo species





Altitude: 200 m | 12/13/2015 2:03 PM

SUPPORT ACTIVITIES TO NGP

- ☐ 11 Mechanized Nurseries

6 Operational
(~250,000 seedlings/day/MN)

5 On-going construction

Ayungon, Negros Oriental





Mechanized Nursery
Ayungon, Negros Oriental



Root system



Mechanized Nursery
Ayungon, Negros Oriental




THE NATIONAL GREENING PROGRAM

CLONAL NURSERIES

- 50 Clonal nurseries
 - 28 SUCs
 - 22 DENR



Region 10

Region 11

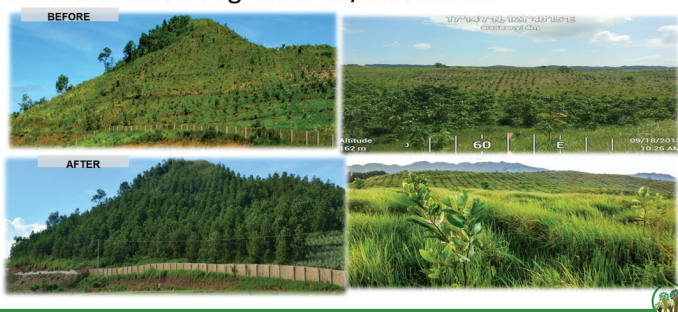
SEED PRODUCTION AREAS (SPA)

- 75 SPAs/Individual Plus Trees
- One per PENRO



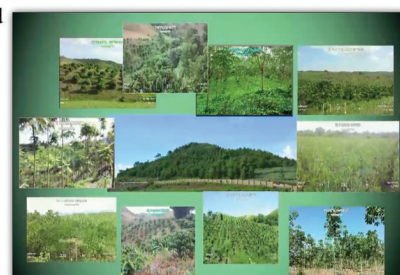
DEVELOPMENT COMPONENTS

- Reforestation of grasslands/brushlands

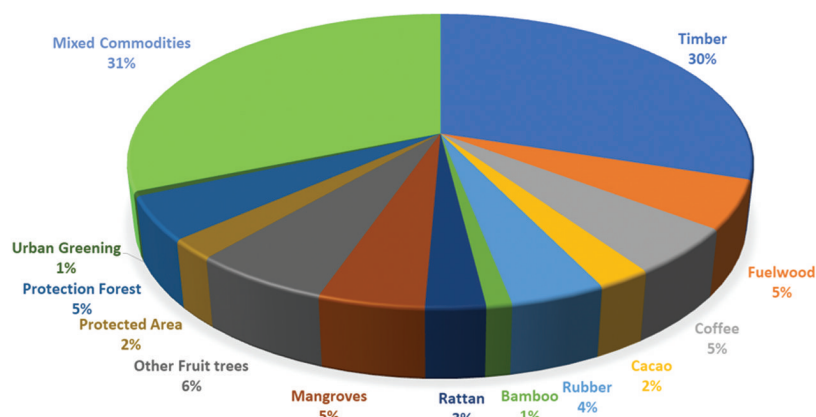


NGP MILESTONES (as of December 2017)

- Reforested/ rehabilitated 1.86 Million ha of denuded/denuded area (114% accomplishment)
- Planted 1.55 Billion seedlings of various species
- Target of 125,200 ha for CY 2018



COMMODITY ROADMAP 2011-2016



COMMODITY ROADMAP 2011-2016

Commodity	Target		Accomplishment	
	Target (ha)	Percentage	Accomplishment (ha)	Percentage
Timber	393,821	25.06%	498,156	29.97%
Fuelwood	182,118	11.59%	88,219	5.31%
Coffee	90,457	5.76%	85,303	5.13%
Cacao	62,202	3.96%	39,366	2.37%
Rubber	116,864	7.44%	69,178	4.16%
Bamboo	54,416	3.46%	18,530	1.11%
Rattan	27,978	1.78%	43,389	2.61%
Mangrove	39,726	2.53%	77,295	4.65%
Other Fruit Trees	178,527	11.36%	100,564	6.05%
Protected Area	127,407	8.11%	36,078	2.17%
Protection Forest	98,231	6.25%	79,196	4.76%
Urban Greening		0.00%	8,434	0.51%
Mixed Commodities	200,000	12.72%	518,520	31.19%
Total	1,571,747	100%	1,662,228	100%

Emerging commodities:

- Essential oils (e.g. Ilang-ilang)
- Natural dye (e.g. Achuete)
- Resins (e.g. Almaciga)
- Fiber (e.g. Salago)
- Sugar Palm (e.g. Kaong)
- Medicinal plants
- Nipa

Partnership with Private Sectors/corporation, Civil Society and Peoples' Organizations, SUCs, other government agencies

<div> <div> </div> <div> </div> </div>				
REGION	People's Organizations	Local Government Units	Other Government Agencies and Volunteers	TOTAL
TOTAL	4,340	3,913	1,706	9,959
CAR	614	347	66	1,027
REGION 1	367	326	111	804
REGION 2	237	218	120	575
REGION 3	275	205	38	518
REGION 4A	120	261	-	381
REGION 4B	262	278	28	568
REGION 5	237	268	160	665
REGION 6	235	248	267	750
REGION 7	429	363	482	1,274
REGION 8	239	287	1	527
REGION 9	273	189	77	539
REGION 10	401	276	49	726
REGION 11	204	241	44	489
REGION 12	249	73	92	414
REGION 13	198	333	171	702

10

Enhanced National Greening Program On-going Activities



Watershed as the planning unit
Site Assessment & Survey, Mapping and Planning (2019 sites)



Enhanced National Greening Program On-going Activities



Community Consultation and Stakeholders' Meeting

Enhanced National Greening Program On-going Activities

Seedling Production



Enhanced National Greening Program

Planting Activity

(to be done during the rainy season)



Enhanced National Greening Program Social Enterprise Development



Development of Social Enterprises in established NGP sites



THE NATIONAL GREENING PROGRAM

Maintenance and Protection of Established Plantations, Reforestation Sites and Existing Second-Growth Forests

- ❑ Establishment of Firebreaks
- ❑ Strip brushing and ring weeding
- ❑ Replanting
- ❑ Regular monitoring and patrolling



WAY FORWARD

- ❑ Sustain the rehabilitation effort of the remaining open, degraded and denuded forestland (E.O. No. 26 and E.O. No. 193)
- ❑ Rehabilitation of critical watersheds and proclaimed watershed forest reserves nationwide through the use of indigenous/native tree species
- ❑ Intensified protection of the remaining natural forests including established NGP and eNGP plantations



- ❑ Encourage private sector engagement in forest rehabilitation and restoration initiative as part of the Carbon Offsetting Program



- ❑ Validation of NGP sites through state-of-the-art technology like the use of satellite e.g. Worldview and other technology, drone, etc.



Siaosio East Multi-purpose Cooperative, Sual, Pangasinan

POLICY DIRECTIONS

1. Development of Social Enterprises/Value-adding in established NGP sites
2. Policy on harvesting and benefit-sharing mechanism on timber
3. Encourage private sector engagement in forest rehabilitation and restoration initiative as part of the Carbon Offsetting Program/ Industrial Tree Plantations (ITP)



POLICY DIRECTIONS

4. Updating of Commodity Roadmap (2017-2022)
5. Enrichment Planting and Assisted Natural Regeneration (ANR) as additional modalities
6. Enhance systems to ensure transparency, accountability and good governance
7. Conduct of External Program Assessment



PRESENTATION

DEPARTMENT OF AGRICULTURE'S STRATEGY FOR CROP DIVERSIFICATION

Mr. Eduardo Alberto

Agriculturist IV

Bureau of Soils and Water Management - DA



DA STRATEGY FOR CROP DIVERSIFICATION

Forum on Harnessing the Potential of Trees on Farms to Contribute to a
Green Economy
March 20, 2018
Sequoia Hotel, Quezon City

OUTLINE OF PRESENTATION

- DA Organizational Structure
- High Value Crops Development Program
- BSWM Initiatives for Crop Diversification
 - Soil Conservation Guided Farm Project
 - Sustainable Corn Production in Sloping Areas (SCoPSA)

DA ORGANIZATIONAL STRUCTURE

- Banner Programs (Rice, Corn, HVCDP, Organic Agriculture, Livestock)
- National Offices
 - 7 Bureaus
 - 7 Attached Agencies
 - 7 Attached Corporations
- Regional Offices – 16 Regional Field Offices

HIGH VALUE CROPS DEVELOPMENT PROGRAM

GOALS:

- Increase production, income and livelihood opportunities among small producers
 - Access to affordable, safe and healthy food
- PRIORITY COMMODITIES:**

- Vegetables
- Fruits – banana, pineapple, mango, regional local fruit champions
- Industrial crops – coffee, cacao, rubber
- Alternative Staple Food Crops – Rootcrops: cassava, sweet potato, yam and taro

HVCDP PRIORITY PROGRAM AREAS

PROGRAM AREA	OBJECTIVE	COMMODITY
Area expansion	Increase production and productivity	Coffee, cacao, rubber
Productivity enhancement	Enhance productivity and production	Fruits, vegetables, rootcrops
Cost competitiveness towards import substitution	Lessen importation through increased local production	Garlic, onion, mungbean, peanut, achuete, black pepper, white potato

HVCDP PRIORITY PROGRAM AREAS

PROGRAM AREA	OBJECTIVE	COMMODITY
Support to production of local/traditional commodities	Increase production and promotion in the local and global market	Regional local fruits and commodities (e.g. jackfruit, pili)
Value adding/Product development	Provide additional income to farmers	Fruits, vegetables, rootcrops
Support to climate change mitigation/adaptation	Provide CC mitigating/adaptation measures	Vegetables

HVCDP INTERVENTIONS

- Production/procurement and distribution of seeds and planting materials
- Establishment and maintenance of production facilities (e.g. nursery, greenhouse/rainshelter, tissue culture laboratory, clonal garden, etc.)
- Mapping of suitable production areas
- Market assessment
- Funding, assistance and participation in market related events
- Training and training related events

HVCDP INTERVENTIONS

- Information and Advocacy Campaign (IEC materials, radio and TV plugs, info caravan)
- Technology demonstrations
- Support to agricultural extension workers
- Funding of production and post harvest researches
- Provision/Installation of irrigation systems
- Provision of production machines (e.g. tractors, sprayers, etc.)
- Provision of post harvest and processing equipment and facilities (e.g. banana chipper, cacao grinder, coffee dehuller, fruit processing facility, etc.)

BSWM INITIATIVES ON CROP DIVERSIFICATION

SOIL CONSERVATION GUIDED FARM PROJECT (SCGFP):

- Disseminates appropriate soil and water conservation technologies for sustainable land management
- Involves the selection of proper crop mix based on the bio-physical conditions (slope, texture, soil depth, climate)
- Considers the socio-economic conditions of the farmers
- Technology demonstration farms are established to showcase SWC technologies & serve as learning sites

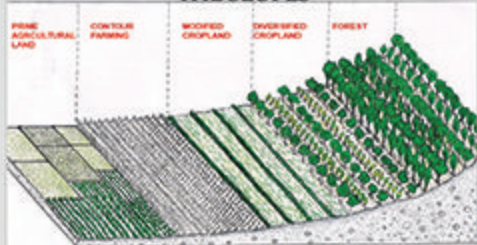
BSWM INITIATIVES ON CROP DIVERSIFICATION

SCGFP Focus Areas:

- Drainage areas of DA's Small Water Impounding Projects
- Upland areas within the Manila Bay Watershed



TECHNOLOGY INTERVENTIONS ACROSS THE SLOPES



DEPARTMENT OF AGRICULTURE'S STRATEGY FOR CROP DIVERSIFICATION

Technology Interventions Across the Slopes



0 - 3% slope



3 - 8% slope



8 - 18% slope



18 - 30% slope



orchard/tree plantation

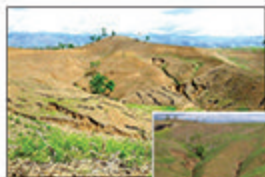
30 - 50% slope



above 50%

BSWM Initiatives on Crop Diversification

Sustainable Corn Production in Sloping Areas (SCoPSA)



PRESENTATION

THE ROLE OF AGRICULTURE & FORESTRY FOR ACHIEVING THE NATIONALLY DETERMINED CONTRIBUTIONS (NDCs)

Dr. Flordeliza M. Andres

NDC Consultant

CCC-UNDP Low Emission Capacity Building Philippines Project (LECB-PHL)



The Role of Agriculture and Forestry for Achieving the Nationally Determined Contributions (NDCs)

Forum on Harnessing the Potential of Trees on Farms to Contribute to a Green Economy in the Philippines

20 March 2018
Sequoia Hotel, Quezon City

Flordeliza M. Andres, Ph.D.
NDC Consultant – CCC-UNDP Low Emission Capacity Building (LECB) Philippines Project

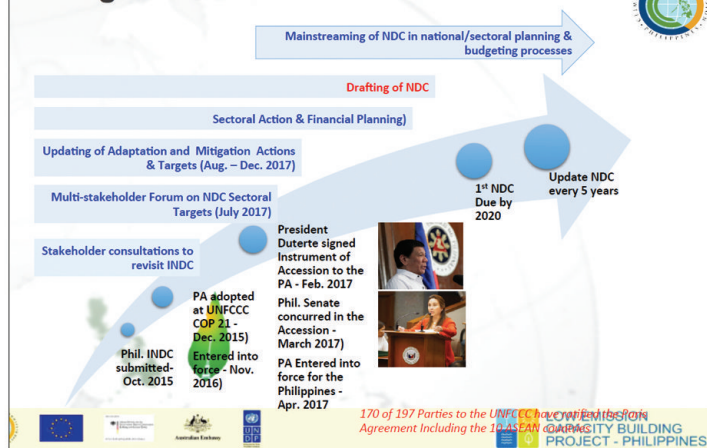


Presentation Topics

- NDC Process & Context
- INDC vs. NDC (tentative) targets
- Historical/Baseline Emissions
- Mitigation Options and Potential
- Implementation Requirements
- Summary & Way Forward



Paris Agreement – NDC Process Timeline



Paris Agreement – Goals & Key Provisions

Long-term temperature goal - Limit global temperature increase to well below 2°C above pre-industrial levels, while pursuing efforts towards 1.5 °C

Adaptation - Enhance adaptive capacity, strengthen resilience and reduce vulnerability to climate change through support to developing countries.

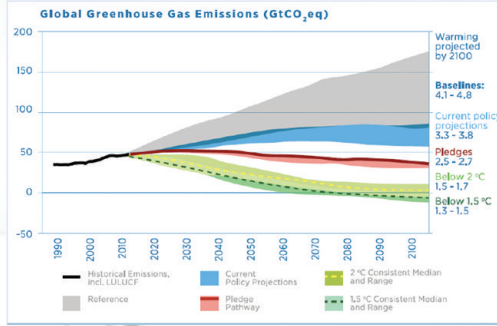
NDC/Mitigation – All Parties required to submit “nationally determined contributions” (NDC), which must include domestic mitigation measures.

Climate Finance – Developed countries to provide financial resources to developing countries for adaptation and mitigation.

Vision:
To strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty.



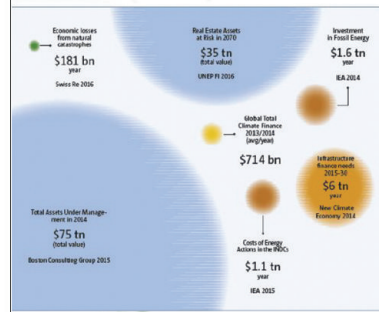
Effect of INDCs on Global Temperature



Implementing INDCs, while showing a significant improvement over the baseline, results in GHG emissions amounting to 53-55 GtCO₂e, leaving a gap of 15-17 GtCO₂e by 2030 to reach the 2°C target.

Business-as-usual (BAU) emissions would lead to a 4°C-5°C increase by 2100, while the current INDC emission reduction pledges would lead to a 2.5°C-2.7°C increase by 2100.

Global Climate Finance in Context



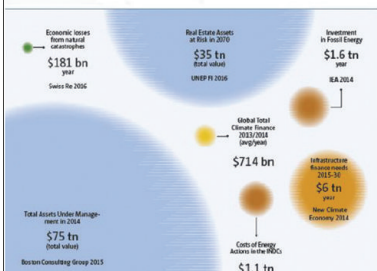
The estimated cost of energy actions in INDCs is USD 1.1 trillion a year (IEA), less than 1/3 of the annual requirement for total energy investments

But this amount is already 1.5 times the average global total climate finance (\$714 bn) in 2013/2014.

Mitigation activities accounted for an average of 93% of climate finance between 2015 and 2016, of which, 74% was for renewable energy generation.

Energy efficiency has overtaken renewable energy as the major focus of public sector mitigation investment, increasing its share from 24% during the 2013/2014 period to 35% for the 2015/2016 period (CPI, 2017)

Global Climate Finance in Context



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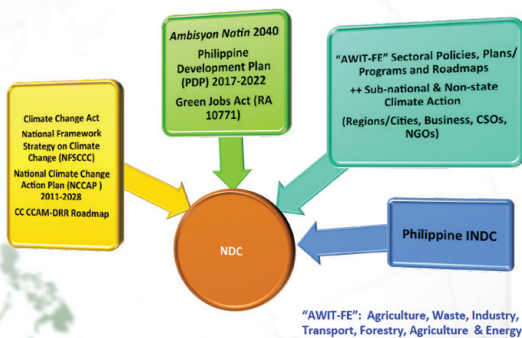
17 UN Sustainable Development Goals (SDGs)



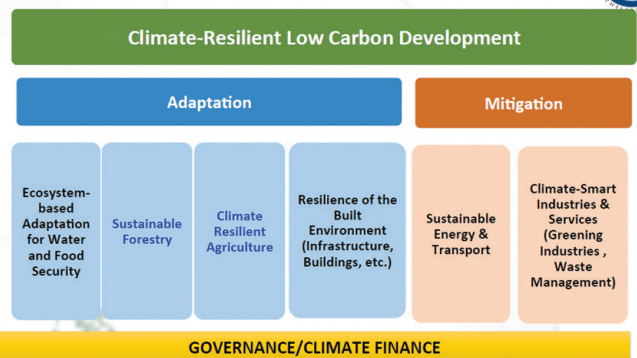
Within the SDGs, goal 13 on climate action is a clear link to the Paris Agreement.

part from SDG 13, strong arguments exist that progress towards any of the SDGs is likely to increase resilience to climate change (as is the case with the SDGs on hunger, water, health, gender and ecosystems) or address some of the fundamental causes of climate change (captured in part by the SDGs on energy, infrastructure, cities, and consumption and production).

National Context



Phil. NDC Goal & Priority Areas



THE ROLE OF AGRICULTURE & FORESTRY FOR ACHIEVING THE NATIONALLY DETERMINED CONTRIBUTIONS (NDCs)

Philippine INDC- Salient points

Adaptation

- Adaptation is a priority
- Financial resources, technology transfer and capacity building support are needed for the following priority adaptation measures:
 - Downscaling climate change models, climate-scenario building, and climate monitoring and observation;
 - Mainstreaming climate and disaster risk reduction in national and local development plans, programs and projects;
 - Developing climate and disaster-resilient ecosystems
 - Systematic transition to a climate and disaster-resilient social and economic growth; and
 - Research and development on climate change, extremes and impacts for improved risk assessment and management

Loss-and-Damage

- Ensure that Loss & Damage are minimized to ensure achievement of development goals

Mitigation

- GHG emission reduction of about 70% relative to the business as usual scenario by 2030
- Mitigation actions will come from the energy, transport, waste, forestry and industry sectors; Implementation conditional on the financing, including technology and capacity building support to be received from developed countries

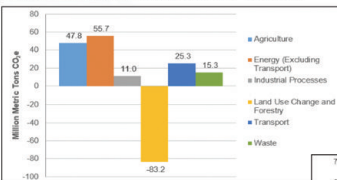
Philippines Historical GHG Emissions

Sector	In Million tons CO ₂ equivalent (MtCO ₂ e)			Change (%), 2000 vs. 1994	Change (%), 2010 vs. 2000	Shares (%) to Total, excl. Forestry	
	1994	2000	2010			2000	2010
Agriculture	33.10	37.00	47.80	12%	29%	29%	31%
Forestry/LUCF	-0.13	-105.10	-83.20		-21%		
Energy		43.70	55.70		27%	34%	36%
Transport	50.04	25.90	25.30	39%	-2%	20%	16%
Industrial Processes	10.60	8.60	11.00	-19%	28%	7%	7%
Waste	7.09	11.60	15.30	64%	32%	9%	10%
Total Incl. Forestry	100.70	21.70	71.90	-78%	231%		
Total Excl. Forestry	100.83	126.80	155.10	26%	22%	100%	100%
Total Incl. LUCF, WRI (2014)			157.59				
Total Excl. LUCF, WRI (2014)			159.23				

Sources: Phil. National Communications to the UNFCCC- 1994 and 2000 data; USAID Study, 2010 estimates. Difference between 1994 and 2000 emissions is mainly due to the adjustment in the Forestry emissions (definition of forests)

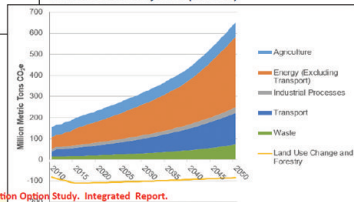
Phil. GHG Emissions – Historical & Projected

Phil. GHG Emissions and Removals (MtCO₂e) – 2010 (est.)



The Philippines accounts for only 0.3% of global emissions in 2012 (based on WRI data). However, the country's emissions have increased by 26% from 126.8 MtCO₂e in 2000 to 155.1 MtCO₂e in 2010.

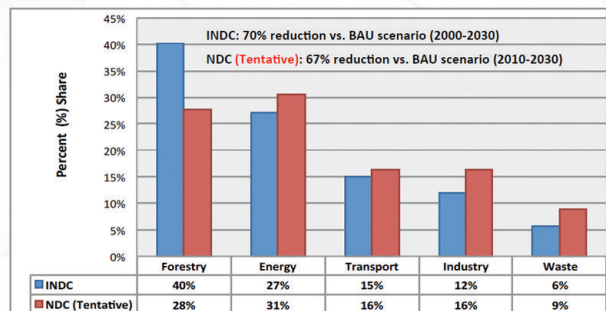
2010-2050 BAU Projection (MtCO₂e)



The country's GHG emissions are projected to almost triple between 2010 and 2050 in the baseline or BAU scenario. The energy and transport sectors will remain as the biggest sources of emissions.

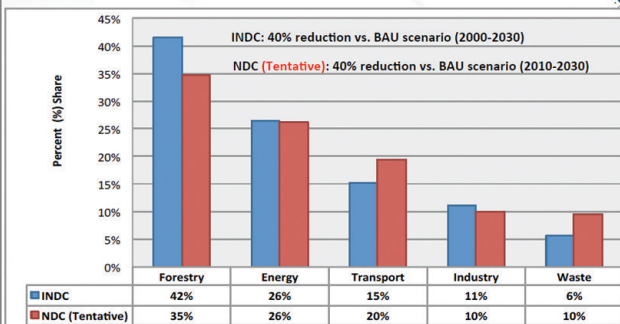
Source: USAID/B-LEADERS, 2015. Cost Benefit Analysis of Philippines Mitigation Option Study. Integrated Report.

INDC vs. NDC Mitigation Targets – All Options



Data Sources: INDC : Phil. INDC, 2015; NDC (Tentative): CCC/USAID CBA Study, 2015

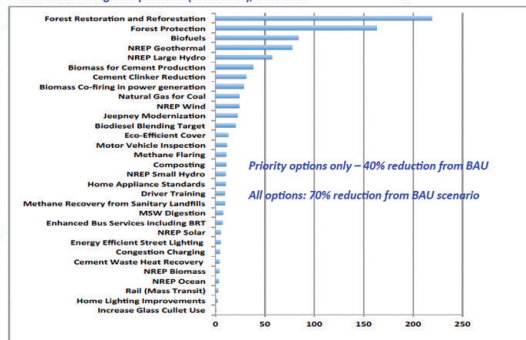
INDC vs. NDC Mitigation Targets – Priority Options



Data Sources: INDC : Phil. INDC, 2015; NDC (Tentative): CCC/USAID CBA Study, 2015

Philippine INDC Mitigation Options

Cumulative mitigation potential (in MtCO₂e), 2000-2030



Source of Data: CCC/Philippine INDC, 2015.

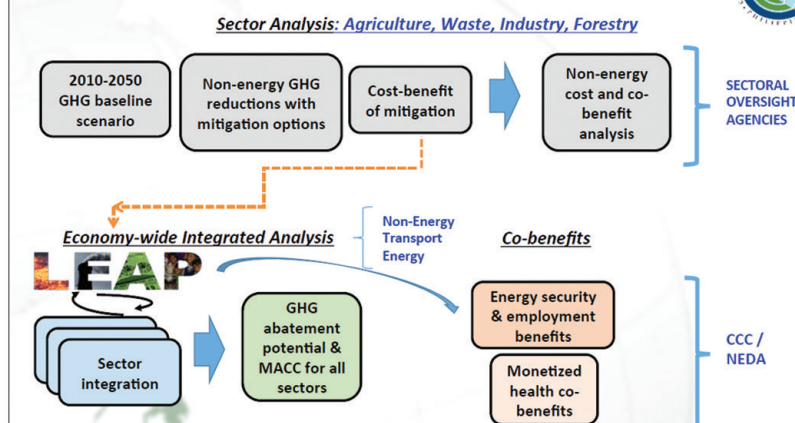
Proposed NDC Adaptation & Mitigation Actions

ENERGY	<ul style="list-style-type: none"> Energy Efficiency (Residential/Commercial) Renewable Energy/Other Clean Energy Vulnerability Assessment/Resiliency of Energy Infrastructure
TRANSPORT	<ul style="list-style-type: none"> Improving Road Transport efficiency Promotion of Mass Transit Systems Shift to cleaner fuels and vehicles Greening Logistics and Aviation/Maritime Transport*
INDUSTRY	<ul style="list-style-type: none"> Energy Efficiency/Fuel switching (Energy-intensive Industries) Energy Efficiency/HFC Substitution w/Low-GHG Refrigerants
WASTE	<ul style="list-style-type: none"> Solid Waste Management Wastewater Treatment (Domestic and Industrial)
FORESTRY	<ul style="list-style-type: none"> Forest protection and Management Forest Restoration and Rehabilitation
AGRICULTURE	<ul style="list-style-type: none"> National Color-Coded Agricultural Guide Map (NACCAG) Climate Risk Vulnerability Assessment (CRVA) Climate-Resilient Agriculture (CRA) Practices AMIA (Adaptation and Mitigation Initiative in Agriculture) Villages Climate Investment Program for Agriculture and Fisheries

Based on the NDC Multi-sectoral Forum, July 2017

Adaptation or A/M actions in blue font

Cost-Benefit Analysis of Mitigation Options



INDC vs. Proposed NDC Contributions – Forestry & Agriculture Sectors

MITIGATION ACTIONS - INDC	Cum. Mitigation Potential (MtCO ₂ e)	PROPOSED SECTORAL CONTRIBUTIONS *	Responsible Agency
FORESTRY	382		FMB
<i>Priority Options</i>	382		
Forestry Protection and Management	219	Programs under the Masterplan for Climate-Resilient Forestry Development – Also the basis for the INDC mitigation actions	
Forestry Rehabilitation	163		
<i>Additional Options</i>			
Biochar Technology	10.6		
AGRICULTURE**	148.9**	AGRICULTURE	DA
Organic fertilizers	48.1	Will only pursue mitigation actions with adaptation benefits	
Alternate Wet & Dry (AWD)	91.2		
Crop diversification	8.5		
Biodigesters	1.1		

*From FMB, DA at the NDC Multi-stakeholder Forum, July 2017

**Not included in INDC values for 2010-2050

Proposed Mitigation Actions – Forestry Sector

MITIGATION OPTIONS	DESCRIPTION/ASSUMPTIONS
Forest management and protection (M1)	Improved forest protection, sustainable management, and enforcement to reduce loss of remaining natural closed and open forests and restored protection areas (to avoid emissions of carbon dioxide and non-CO ₂ gases from timber harvesting, fuel wood gathering, and other forest disturbance, e.g. fire)
Forest Restoration and Reforestation (M2)	<p>Forest restoration, reforestation, afforestation/tree plantations, agroforestry development, and mangrove rehabilitation to restore degraded forests)</p> <p>Assumes implementation of specific programs, including:</p> <ul style="list-style-type: none"> The National Greening Program in tenured and non-tenured forests, NIPAs, and some ancestral domains; River basin/watershed management programs; and Mangrove rehabilitation program administered by DENR with extension assistance from DA Bureau of Fisheries and Aquatic Resources.

THE ROLE OF AGRICULTURE & FORESTRY FOR ACHIEVING THE NATIONALLY DETERMINED CONTRIBUTIONS (NDCs)

Forestry Mitigation Actions – CBA Assumptions

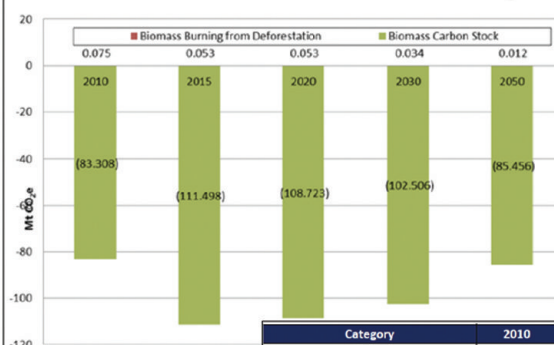


Associated with Gains in Carbon	Associated with Losses in Carbon
<ol style="list-style-type: none"> 1) Closed forest area gradually decreases from 1.63 million ha in 2015 to 1.11 million ha in 2050 2) Open forest area gradually increases from 5.15 million ha in 2015 to 5.85 million ha in 2030, then starts to decrease gradually until it reaches 5.84 million ha in 2050 3) Mangrove area gradually increases from 373 thousand ha in 2015 to 454 thousand ha in 2050 4) Plantation area gradually decreases from 23.31 thousand ha in 2015 to 12.86 thousand in 2050 	<p><u>On Timber Harvest:</u> Assumed to increase from 3.58 million cubic meters in 2010 to 5.16 million cubic meters in 2050</p> <p><u>On Fuelwood Gathering:</u> Assumed to increase from 50 million cubic meters in 2010 to 56.34 million cubic meters in 2050</p> <p><u>On Deforestation Rate:</u> Assumed to decrease gradually from 2.86% in 2015 to 0.5% in 2050</p> <p><u>On Disturbance Rate:</u> Assumed to be minimal at 0.1% of A&D land open forest area (with trees >20 years of age), until 2050.</p>

Source: USAID/B-LEADERS, 2015. Cost Benefit Analysis of Philippines Mitigation Option Study. Forestry Sector Results

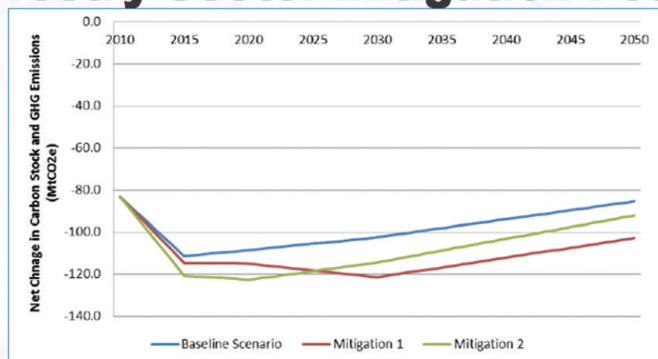


GHG Emissions and Removals under the Baseline Scenario (MtCO₂e)



Category	2010	2015	2020	2030	2050
Changes in biomass carbon stock (MtCO ₂ e)	-83.308	-111.498	-108.723	-102.506	-85.456
Emissions from biomass burning - Deforestation (MtCO ₂ e)	0.075	0.053	0.053	0.034	0.012
Emissions from biomass burning - Forest Gain-Loss (MtCO ₂ e)	0.000422	0.000347	0.000303	0.000269	0.000280
Net Carbon Stock (MtCO ₂ e)	-83.233	-111.445	-108.670	-102.472	-85.444

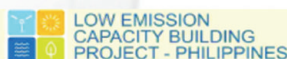
Forestry Sector Mitigation Potential



M1 = Forest management and protection

M2 = Forest Restoration and Reforestation

Scenario	2010	2015	2020	2030	2050
M1 Potential	0.000	-3.201	-6.324	-19.121	-17.476
M2 Potential	0.000	-9.324	-14.084	-12.074	-6.670
M1/M2 Ratio	0.000	0.343	0.449	1.584	2.620



Proposed Adaptation Measures - Agriculture



Priority Actions	Expected Outcomes
<ul style="list-style-type: none"> Institutionalize Climate Information Services (CIS) Increase access to insurance and financial coverage to emergency services in times of disaster Increase access to technologies and other resiliency measures Organize communities to support community-based climate actions Build Capacity for LGUs in developing own climate change adaptation and DRR plans 	<ul style="list-style-type: none"> Climate-resilient livelihoods and affordable farming methods and technologies Reduced if not prevented weather/climate-related losses and damages to life, livelihoods and assets Combat uncertainties brought about by climate change Enhanced agro-ecological systems Diversified income and and increased investments in climate support services

PROPOSED CONTRIBUTIONS

- National Color-Coded Agricultural Guide Map (NACCAG)
- Climate Risk Vulnerability Assessment (CRVA)
- Climate-Resilient Agriculture (CRA) Practices
- AMIA (Adaptation and Mitigation Initiative in Agriculture) Villages
- Climate Investment Program for Agriculture and Fisheries

Source: Dept. of Agriculture (DA). Presentation at the Multi-Stakeholder Forum on the NDC

Sectoral Targets. July 2015

Potential Mitigation Options - Agriculture^[1]



MITIGATION OPTIONS	DESCRIPTION/ASSUMPTIONS
Improved management of organic and inorganic fertilizers	<ul style="list-style-type: none"> Reduction in the use of synthetic fertilizers in rice production by 5%, 10%, and 20% in 2020, 2030, and 2050, Reduction in rice crop residue burning from approx.90% in 2010 and down to 85% in 2020, 75% in 2030, and 70% in 2050; Increase in the amount of chicken manure composted from 0% in 2010 to 5% in 2020, 10% in 2030, and 20% in 2050
Alternate wetting and drying (AWD) in rice production	<ul style="list-style-type: none"> Conversion of approximately 10,000 hectares per year to alternate wetting and drying to prevent conditions conducive to methane emissions from rice cultivation;
Crop diversification	<ul style="list-style-type: none"> Increase in the planting of nitrogen-fixing legume crops, such as mungbean, cowpea, or soybeans, in rotation with other cash crops and a resulting decrease in synthetic fertilizer use; Increase in the amount of leguminous crop area by 5% in 2020, 10% in 2030, and 20% in 2050.
Use of biodigesters	<ul style="list-style-type: none"> Capturing the methane generated from the decomposition of livestock manure to be used for electricity generation or other domestic uses. Assumes an increase in the amount of swine waste handled in bio-digesters from 2% in 2010 to 7% in 2020 to 12% in 2030 and 2050

Source: USAID/B-LEADERS, 2015. Cost Benefit Analysis of Philippines Mitigation Option Study. Agriculture Sector Results

Forestry Sector - Requirements to Address Barriers to Implementation of Mitigation Options



Mitigation Options	Implementation Requirements
Cross-cutting/ sector-wide	<p><u>Policy/ Institutional</u></p> <ul style="list-style-type: none"> Passage of a Sustainable Forest Management Act to harmonize forest management and protection policies and regulations Passage/Enactment of National Land Use Policy/Act Harmonize forest management and protection policies (PD 705) and regulations with other laws, e.g., forest resource conservation (NIPAS Act) Review of the Community-Based Forest Management Agreements (CBFMA) and Integrated Forest Management Agreements (IFMA) Strengthen the development and enforcement of Forest Land Use Plans (FLUP) and Comprehensive Land Use Plans (CLUP) including integration with NCCAP Develop/implement the Forestry Investment Road Map (FIRM) Link People's Organizations (POs) with CBFMAs and IFMAs with donors and investors Compliance with municipal CLUP/CDD/DRR plans Implementation of Cagayan River Basin Master Plan (CRBMP) LGUs to undertake forest protection work Community members to be tapped as forest rangers



LOW EMISSION
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26

THE ROLE OF AGRICULTURE & FORESTRY FOR ACHIEVING THE NATIONALLY DETERMINED CONTRIBUTIONS (NDCs)

Forestry Sector - Implementation Requirements

Mitigation Options	Implementation Requirements
Cross-cutting/ sector-wide	<u>Technology/ Capacity Building</u> <ul style="list-style-type: none"> Technical assistance to build capacity of LGUs to develop and implement Forest Land Use Plans (FLUP) and Comprehensive Land Use Plans (CLUP) Technical assistance to access information and new technologies Technical assistance to conduct Information, Education and Communications (IEC) campaign Empower LGUs thru capability building/ training/IEC Para-legal training for LGUs
Forest Management and Protection	<u>Policy/ Institutional</u> <ul style="list-style-type: none"> Enforce responsible waste management for tourists going to forest areas <u>Finance</u> <ul style="list-style-type: none"> Identifying and hazard-mapping for fire-prone areas to determine action plans Pre-positioning of firefighting equipment to fire-prone areas for immediate response to forest fires <u>Technology/ Capacity Building</u> <ul style="list-style-type: none"> Train/equip/ strengthen forest rangers regimen
Cross-cutting/ sector-wide	<u>Technology/ Capacity Building</u> <ul style="list-style-type: none"> Technical assistance to build capacity of LGUs to develop and implement Forest Land Use Plans (FLUP) and Comprehensive Land Use Plans (CLUP) Technical assistance to access information and new technologies Technical assistance to conduct Information, Education and Communications (IEC) campaign Empower LGUs thru capability building/ training/IEC Para-legal training for LGUs
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Forest Restoration and Reforestation (cont.)	
National Forest Protection Program (NFP)	<u>Policy/ Institutional</u> <ul style="list-style-type: none"> Enforcement of Fire Code relative to forest fire protection <u>Technology/ Capacity Building</u> <ul style="list-style-type: none"> Secure resources for the use of cost-effective drones LIDAR technology to gather forest data
Biochar technology	<u>Policy/ Institutional/ Technology</u> <ul style="list-style-type: none"> Technical assistance to pursue R&D or demonstration project and establish institutional arrangements for the adoption of this technology

Way Forward for the NDC

- Adaptation –
 - Integration with NDC
 - Identification of synergies with mitigation
- Mitigation options and GHG reduction targets
 - Finalize prioritization of options
 - Sectoral GHG targets/Economy-wide goal
 - Conditional/Unconditional Targets?
- Implementation/Transition Planning
 - Green jobs & safeguards for affected sectors
- Financial Planning
 - Development of project pipeline
- MRV Systems
- Institutional arrangements and linkages



LOW EMISSION
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PROJECT - PHILIPPINES

PRESENTATION

MAINSTREAMING AGROFORESTRY INTO NATIONAL PROGRAMS AND STRATEGIES, SUCCESSES FROM INDIA AND ASEAN

Dr. Ravi Prabhu

*Deputy Director General for Research,
ICRAF*



Mainstreaming agroforestry for sustainable development

Lessons from elsewhere

Ravi Prabhu, with Ingrid Oborn and Javed Rizvi ICRAF

www.worldagroforestry.org



MAINSTREAMING AGROFORESTRY INTO NATIONAL PROGRAMS AND STRATEGIES, SUCCESSES FROM INDIA AND ASEAN



Agriculture or forest? Does it matter?
As long as we know we're getting what we need.

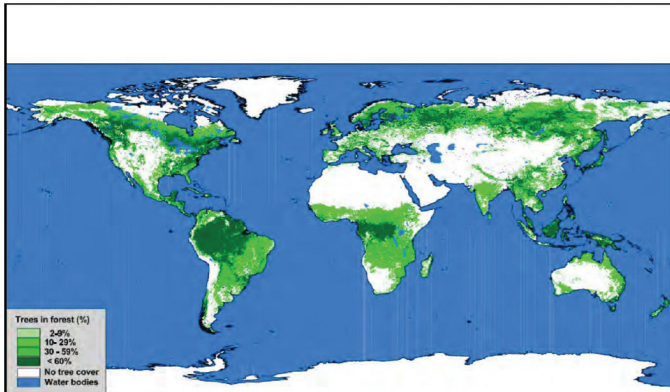
Trees on farms



Farming in forest

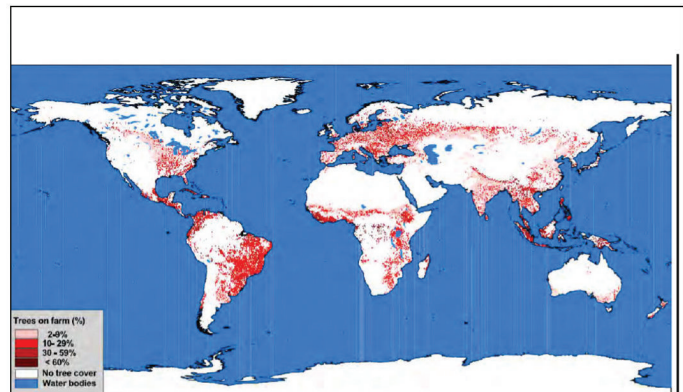


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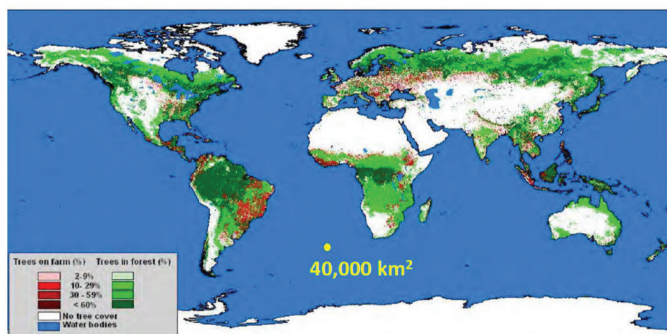
The foresters' view of the world

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The agroforesters view of trees on farmland

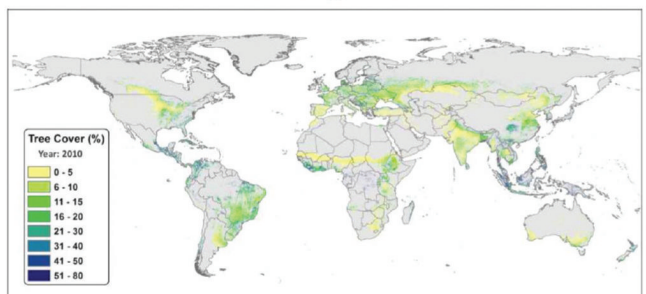
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The integrated view of the world

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Trees outside forest
Tree cover on agricultural land



43% of agricultural land had at least 10% tree cover, and 23% at least 20% tree cover, in 2010.

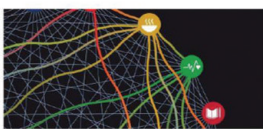
Increased 2% since 2000: decrease in Myanmar, Sierra Leone, Argentina

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Interlinkages

Global Goals Mapping: The Environment-human Landscape

A contribution towards the Natural Environment Research Council, The Rockefeller Foundation and Economic and Social Research Council initiative, Towards a Sustainable Earth: Environment-human Systems and the UN Global Goals



A GUIDE TO
SDG INTERACTIONS:
FROM SCIENCE
TO IMPLEMENTATION



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levels of plants, the accelerated adoption of no-till agriculture, and additional support to agroforestry systems. By integrating action on sustainability with action on productivity improvement (smart agriculture) and soil organic matter sequestration, agriculture could be seen as part of the solution not only to mitigate agricultural GHG emissions but also to strengthen adaptation strategies.

Agroforestry, biofuel crops, and the use of agricultural waste can enable an increase in renewable energy in the global energy mix

and mitigation. Climate Smart Agriculture can help provide practical solutions to climate change challenges, as well as food security through the use of farming methods that match local conditions (e.g. agroecology, agroforestry, conservation agriculture, landscape management).

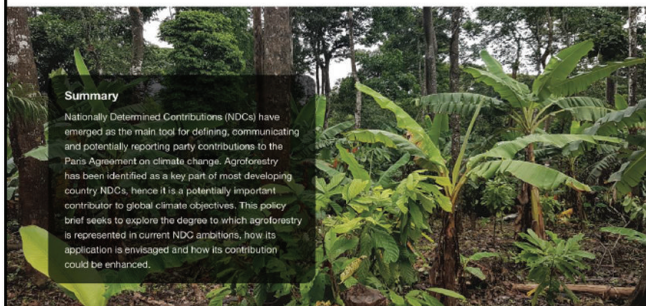
Directionality: Bidirectional. A change in agriculture practices is necessary to limit global climate change over the long term, and food production is reinforced by a stable climate.

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How Agroforestry Propels Achievement of Nationally Determined Contributions

Policy Brief No.34, 2017



Summary

Nationally Determined Contributions (NDCs) have emerged as the main tool for defining, communicating and potentially reporting party contributions to the Paris Agreement on climate change. Agroforestry has been identified as a key part of most developing country NDCs, hence it is a potentially important contributor to global climate objectives. This policy brief seeks to explore the degree to which agroforestry is represented in current NDC ambitions, how its application is envisaged and how its contribution could be enhanced.

Key Messages

- Agroforestry is among the leading land uses with potential to fulfill commitments set out in NDCs and reduce emissions from agriculture; estimates of its potential to sequester vary widely, between 1.1–34.2 Pg C¹ globally.
- Over 85% of the 22 NDCs assessed mentioned agroforestry as a strategy for achieving unconditional NDC commitments.
- By converting 25% of deforested areas to agroforestry, about 80% of the non-annex I countries could achieve their unconditional commitments.
- The widespread use of agroforestry (about one billion hectares) and the familiarity of smallholder farmers and local practitioners makes it a potential low-hanging fruit for achieving NDC commitments, emission reduction in agriculture and resilience.
- However, there are financial, policy and technology challenges that should be addressed including land and

Policy Implications

- Increased investments in tree planting material infrastructure and agroforestry knowledge systems is necessary to overcome current market deficiencies and technical knowledge shortfalls;
- Innovative blended financing mechanisms – including blending mitigation and adaptation finance, and impact investments could facilitate rapid transformation through the effective implementation of agroforestry practices;
- Devising policy instruments that clarify tree tenure and carbon rights are fundamental to motivate local actors to implement agroforestry;
- Research should continue to provide technical and policy guidance on a number of issues needed for the advancement of agroforestry in NDCs, including, among others, domestication of potential trees species, improved germplasm, potential impacts of climate change on the growing niches of tree

1 Billion Ha of
Agroforestry = Up
to 34.2 Pg C globally
with resilience co-
benefits given
appropriate and
supportive policies

Equivalent of holding
20 Years of
Deforestation at
current rates

www.worldagroforestry.org or www.asb.cgiar.org

Table 1: Forest and Tree cover of India in 2013

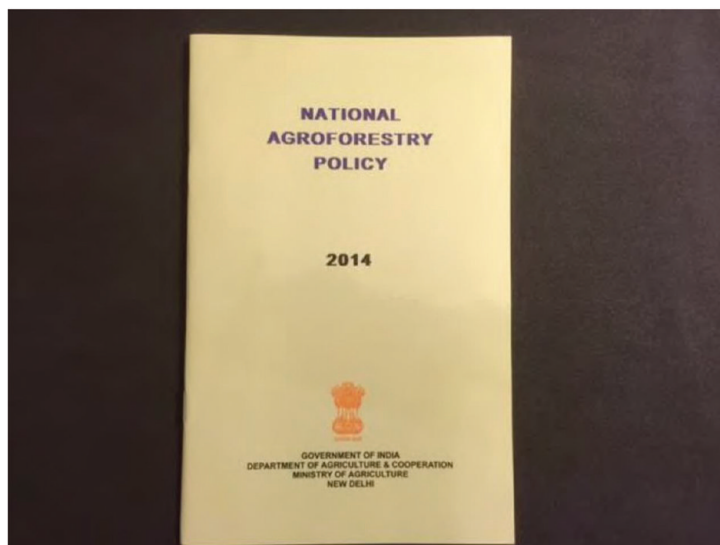
Class	Area (km ²)	% of Geographical Area
Forest Cover		
Very Dense Forest	83,502	2.54
Moderate Dense Forest	318,745	9.70
Open Forest	295,651	8.99
Total Forest Cover*	697,898	21.23
Tree Cover	91,266	2.78
Total Forest and Tree Cover	789,164	24.01
Scrub	41,383	1.26
Non Forest	2,547,982	77.51
Total Geographical Area	3,287,263	100.00

India set a goal of moving from 24% tree cover to 33% tree cover by 2030

Now part of India NDC

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MAINSTREAMING AGROFORESTRY INTO NATIONAL PROGRAMS AND STRATEGIES, SUCCESSES FROM INDIA AND ASEAN



Why agroforestry policy?

- AF is scattered in various departments/ Ministries – Many actors, no one responsible
- Activities scattered convergence absent
- Traditional knowledge is at work scientific approach missing
- Focus on timber and pulp production high, potential for food and nutrition security ignored
- Environmental services seldom estimated as benefits towards CC

- Potential for CC mitigation and adaptation is ignored
- Agroforestry saving India \$ 24 billion/ year through timber production
- Several restrictions and requirement of permits for cutting and transport of trees grown on non-forest land discouraged farmers to adopt agroforestry
- Issues of land and tree tenure
- 21 countries included agroforestry in their INDC
- Nepal recognized both the need and benefits of having Agroforestry policy,

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India Agroforestry Policy-2014: A success story

To fast track agroforestry adoption and expansion, and to remove the strict rules against felling and transporting trees, India approved and implemented its national Agroforestry Policy in 2014,

For 2016-2020, India committed \$ 410 million to implement the agroforestry policy,

India's Finance Commission allocated additional \$ 9.0 billion for states with high tree cover,

- Policy supported agroforestry to be included for funding through Corporate Social Responsibility mechanism (3.5 billion annual investment)
- A dedicated national agroforestry research institute established ,
- Success of India prompted Nepal and Bangladesh to develop agroforestry policies to remove legal restrictions on trees prohibiting large scale adoption of agroforestry,

www.worldagroforestry.org

<http://onlinelibrary.wiley.com/doi/10.1111/connl.12416/abstract>



42% of all Government Tax Revenue goes back to States
\$85 billion p.a. total

7.5% (\$6 billion) allocations now by change in tree cover

One of largest PES in world (\$120 per ha p.a.)

Supported by an Agroforestry Mission (\$160 m)

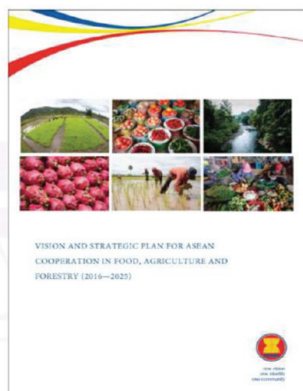
(a) the distribution between the Union and the States of the net proceeds of taxes which are to be, or may be, divided between them under this Chapter and the allocation between the States of the respective shares of such proceeds.....

Pub. Sector Impact finance (%?)

Vision and Strategic Plan for ASEAN Cooperation in Food, Agriculture & Forestry 2016-2025

Strategic Thrust 4: Increase resilience to climate change, natural disasters and other shocks;

4.5 Expand resilient agroforestry systems where ecologically and economically appropriate



ICRAF's role – translating science to policy and practice

Policy Briefs: Agroforestry options for ASEAN series

1. Agroforestry in Southeast Asia: Bridging the forestry-agriculture divide
2. Swidden-fallow agroforestry for sustainable land use
3. Agroforestry for sustainable mountain management
4. Agroforestry on peatlands: combining productive and protective functions as part of restoration
5. Agroforestry in the uplands
6. Agroforestry in rice production landscapes (FAO)



- Agroforestry in coastal zones
- Agroforestry with oil palm
- Agroforestry in peri-urban areas
- Agroforestry on small islands

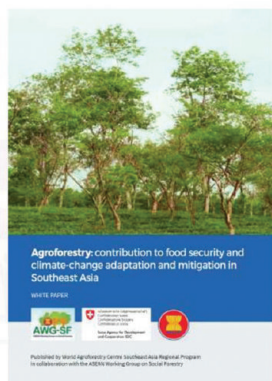
Read more and download: <http://blog.worldagroforestry.org/index.php/2016/12/03/role-agroforestry-climate-change-adaptation-southeast-asia/> ...

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White Paper

Agroforestry: contribution to food security and climate change adaptation and mitigation in Southeast Asia

- Introduction
- Southeast Asia at a glance
- Agroforestry: an evolving concept
- Overview of agroforestry in southeast Asia
- Contribution to food security an adaptation
- Contribution to climate change mitigation
- Adoption of agroforestry: issues and gaps
- Agroforestry policies
- A call for action



ASEAN Guidelines for Agroforestry Development Stakeholder consultation & time plan

- ICRAF developed draft, reviewed internally and ASFC partners. ASEAN cross-sectoral meeting on food security and climate change Lombok (Jan)
- Mekong Agroforestry Expert group 26-27 January 2018
- 1st Draft circulated to member states (MS) - agriculture & forestry - by the ASEAN Secretariat (7 February to March)
- 2nd Draft will be circulated to MS by ASEAN secretariat (April)
- Final draft to be ready 8 June. Presented to the ASEAN Agroforestry Conference (theme of the Social Forestry Conference) 26 June, Danang, Vietnam
- Considered for endorsement by the AWG-SF meeting, 27-29 June 2018, , Danang, Vietnam
- Considered for endorsement by ASOF, July 2018; and by
- AMAF, September 2018
- Implementation by member states - voluntary

- 9 EU Countries with National Agroforestry Policy
- 2013 AF included in new CAP in EU
- Nov 2014, AF added as eligible in CDM for LULUCF
- AF is one of two eligible mitigation actions in EC 2020 Climate Policy

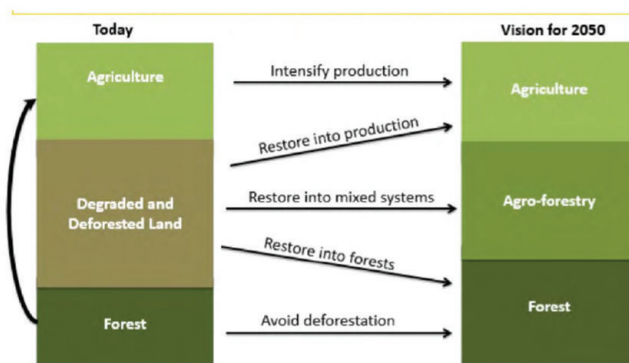
Advancing Agroforestry on the Policy Agenda

A guide for decision-makers



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Area restored to resilient, integrative productivity



www.worldagroforestry.org GLOBAL RESTORATION COUNCIL WORLD RESOURCES INSTITUTE

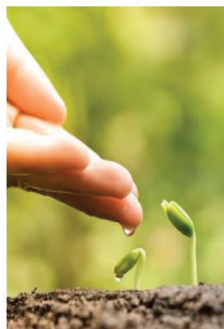
MAINSTREAMING AGROFORESTRY INTO NATIONAL PROGRAMS AND STRATEGIES, SUCCESSES FROM INDIA AND ASEAN



TLFF
TROPICAL LANDSCAPES FINANCE FACILITY

First transaction scheduled to close Feb. 23rd

- USD 95 million, 15-year loan for sustainable rubber in Indonesia managed to IFC Performance Standards and TLFF ESG policy
- The Indonesian company receiving finance has concession rights over 88,000 ha of land, half of which will be set aside for land restoration and conservation
- An inaugural bond issue (verified as a sustainability bond) will finance the first phase
- The Tropical Landscapes Finance Facility ("TLFF") is a new initiative incubated by UN Environment, BNP Paribas, ADM Capital and World Agroforestry Centre (ICRAF)
- TLFF was designed to attract long term capital to support landscape rehabilitation with clear environmental and social benefits

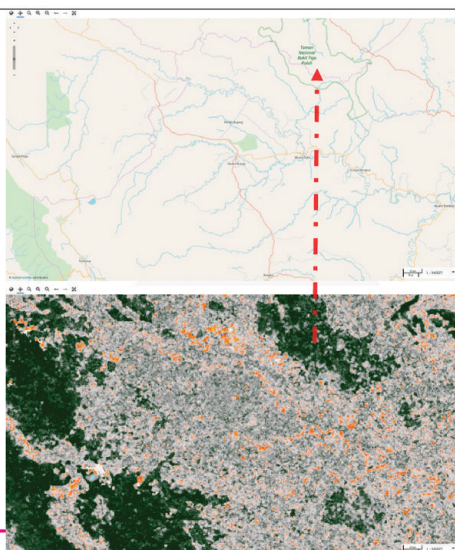


Pvt Sector Impact finance (%)

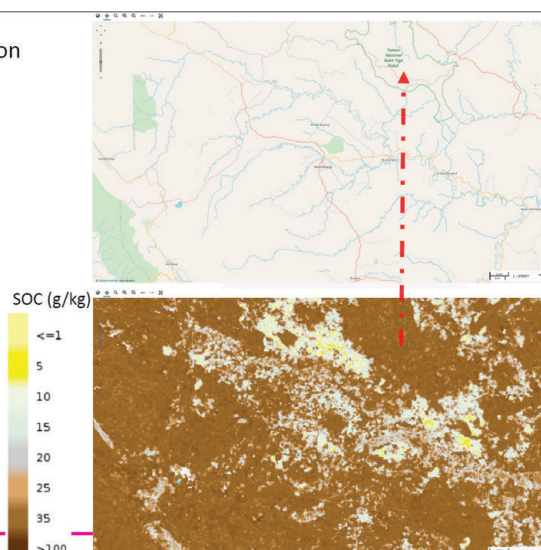


Thank you!

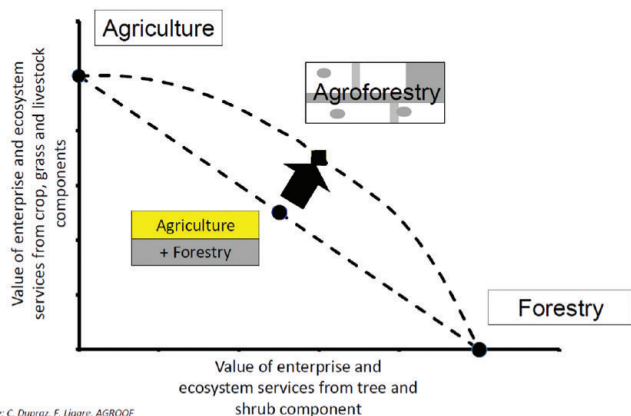
Erosion prevalence -
Sumatra



Soil organic carbon
(SOC) - Sumatra



Agroforestry and Land Equivalent Ratios (LERs)





PANEL DISCUSSION & OPEN FORUM

Moderator: Dr. Anja Gassner

Senior Livelihood Specialist and Head of Research Methods Group, ICRAF

1 How integrated are trees and private farms [and yet, that's the real difference is that we're talking about private agriculture farms] in your existing initiatives, plans, projects, and others?

ILQuilloy: Right now, the DENR is encouraging the private sector and engaging private tree plantations. Actually, DENR provided incentive for those private tree plantation owners in engaging that endeavor. For instance, if we have private tree plantation registered under the DENR, there's no need to secure a harvesting permit. Only transport document if you are going to transport that forest products.

EAlberto: As I have presented a while ago, the Agriculture Department is working on better programs. Unfortunately, for the rice and corn programs in flat areas, the integration of trees is not much in tree areas but when we look at the sloping lands, it is in these places where trees are integrated. Actually, we encourage the growing of trees as a part of crop diversification, and also as a way of diversifying income sources of farmers.

2 What additional opportunities do you see for private land to support your green growth initiatives?

ILQuilloy: I think, what additional opportunities? Most of the private or the tree plantation owners, or let's say backyard plantation owners lack some capitals. Maybe the DENR should make this private. Household tree growers to, let's say, credit facilities as well as for the DENR to provide technical assistance and even seedlings. If you notice in my presentation, our mechanized nurseries' activity right now is to distribute seedlings to the farmers.

EAlberto: Actually, there is still opportunity in what is

happening in sloping lands. But in our case is the corn areas in most parts of the country like Cagayan Valley, I think what encourages the farmers to plant in this sloping areas is also the development of agricultural technologies, particularly the advent of herbicide and corn varieties. Through the use of these corn varieties, the farmers apply herbicides and the area is now ready or planting. But through the years, most of the farmers have noticed that their yield is declining, and now they are coming to us to help them in disseminating technologies that will arrest erosion and what we are telling them is you incorporate trees especially in areas where the slope is beyond 80 degrees. So, there is an opportunity in this bad experience of the farmers.

3 Who are the stakeholders that would help in mainstreaming trees on farms and national strategy and action plans?

ILQuilloy: I think there's a lot of stakeholders to consider. First, the whole processing plant operator, the tree growers. In CARAGA, in Region 13, there's an association of tree farmers, as well as tenure holders, CBFM holders, IFMA holders - these stakeholders are important to consult in order for them to participate more in these activities.

EAlberto: I think the local government units have a primary role in mainstreaming trees on farms, perhaps through their comprehensive land use plan. I think in their comprehensive land use plan, they are now preparing this forest land use, is it right? So, LGUs need to be serious and the incorporation of trees in the farms will be alright. I think there are some good experiences that we have observed in region 2. Again, in corn areas in the sloping lands, the provincial government of Quirino has passed a local ordinance encouraging farmers to adapt what we call sustainable corn production in sloping areas. So they should adapt to solid water conservation technologies as well as the planting of trees so that they will be allowed to utilize these sloping lands for corn production. So I think this is a good model incorporating some legal reform at the local level. Thank you.

RPrabhu: Just listening to the earlier presentation, some of the most well thought-out policies for managing land are right here in the Philippines. The challenges in the implementation of these policies and part of that is I suspect that the private sectors are not following these. The private sectors are seen as somebody that is immune of the rules. So just thinking about you know implementation of these policies and part of that is I suspect that the private



PANEL DISCUSSION & OPEN FORUM (AM SESSION)

RPrabhu: sectors are not following these. The private sectors are seen as somebody that is immune of the rules. So just thinking about you know the ideas of the guidelines of sloping lands where you are above 50% here are forests, I know what 20-50% you are, you know you've got mixed greens farming systems. Whatever the percentages, what I'm hoping that 20-50% integrated lands to agroforestry concessions which you could you know on a long term period can invite you know corporates, cooperatives, local communities to take the concessions on these conditions that they keep.

So, the question is, how do you use the policy's face to get investment in from the private sector, not just from private farmers, but from the sectors of whole private finance, the large corporates, small and medium-sized enterprises that due process them so they and you get a much more vibrant economy and then I think we'll go much faster than the 38,000 ha per year and agroforestry could then become very much more a part of the industry that it currently is in.

FMAndres: I'm not sure I can answer each of these questions in detail, but as far as the NDC is concerned, from the consultations that we have conducted, I understand the industry or business they're very much interested in this offsetting scheme for them to undertake forestry carbon projects and to upset as a way of upsetting their emissions. And I understand a lot of them are doing forestry projects as part of their CSR, but I think that can be mainstreamed through this carbon neutrality program or forestry carbon projects.

In terms of the stakeholders, I think there is a big potential for this business industry to mainstream these trees on farm in national action plans.

Mendoza: I am Marlo Mendoza from the College of Forestry, UP Los Baños. I'm directing my question to Dr. Ravi. I am interested with your financing program; I think we have something similar with the Development Bank of the Philippines. My question is, in this financing program to encourage private sector participation, do the financing institution allow trees as collateral? Because here in the Philippines, we only have one bank that recognizes trees as collateral and I think that's the DBP tree plantation program and there's no other financing institution in the Philippines that allows that. Because the problem here is that our greening program and investments is mostly government-lent. But private sector is actually not very actively involved although policies



are being addressed to encourage private sector investment. So I think that will be a good start. So that's my question, thank you.

RPrabhu: The financing is basically private sector financing. There is no government involved so far, at least none in probably the last few financings. About three other fundings have been up. So the first one which, a few weeks ago, is obtained by official length, the rubber in Indonesia, and they're improving rubber production around a national farm so that basically forms a buffer zone to the national parks so it has that benefit.

So in principle, you do not need to have the kind of collateral as long as there is some kind of technical arrangement. But there's no reason why, if we are looking at timber, trees could not be used for that. As long as that has a ten year arrangement on the land, whatever it is, communal or private, there has to be some kind of secure payment. And then essentially, what you're looking at is the supply chain and delivering the benefits. There is another one that we're involved in which is in Kenya which is looking at milk production. And the planting issue, planting of forage to recede forage, bushes, and shades and the payment would be through milk production and water benefits downstream because of prevention of erosion. So, each of these is quite innovative in the way it does business, there is really no reason why you can't use collab. But what we're trying to do is get away from the classic problems of providing credit to farmers which was — and these are current calculations, probably 6% return in investment so that when they keep that down, there is money available. The private sectors are looking for investment.

The question is can we create the policy environment and the instruments to channel that kind of investment into the landscapes and deliver a return for the private

RPrabhu: sector as well as for the public and I think what we're assuring the number of these you can provide we need to look out and think out into.

Bien: I am Bien I am a farm-owner, I have a small dairy farm near UPLB. This is a sensitive question. I don't think things are gonna move that fast, given the priorities of this current government. But, do our representatives on the government feel federalism would accelerate or decelerate these types of programs? Because the context of the question is when you get into agriculture, you have to look anywhere from three to ten years/twenty years down the line. It's good to be prepared early on. If you're gonna shift to federalism, what might be the stumbling blocks or the media opportunities for the program that you insist..

EAlberto: I don't want to answer the question about federalism — if it will be a better arrangement when it comes to managing the country. But yeah, I share your sentiments about the change in policies sometimes especially in the local government level and even at the national government, say the Department of Agriculture, I think all of us at the Department of Agriculture, all battle programs are inconsistent. At times there will be some changes in the name just like during term of President Gloria Macapagal Arroyo [I call it GMA] What is GMA core, but the programs are still there.

I think one of the problems is we do not have people up to the local government level. The presence of our test rep. is up to the regional government unit. That is where we have a manpower. If we give orders to help you at the local level, it's a different playground. When the mayor says we don't support this kind of program of the Department of Agriculture, we cannot do anything. But in some instances, we are linking directly to farmers organizations. That is some of the opportunities if you want to seek our technical assistance in your agricultural development projects. Of course your goal is permanent. The people at the local government unit and even at the Department of Agriculture are changing very fast: program leaders are changing every administration. So sometimes the focus area will be changed from one place to another.



When it comes to some of our priorities in agricultural development, I think I can see a lot of opportunities in the development of the coffee and cacao industry and it is not only us who is working among this line. Even in the NGP accomplishments a while ago, I have seen that the DENR have distributed a lot of coffee and cacao seedlings and even between coconut authorities also working on this development. So with coffee and cacao, I think there is profit there. Not only Department of Agriculture but also the NGP as well as the Philippine Coconut Authority.

ILQuilloy: Based on my personal opinion, there might be positive effect with the releasing in terms of project implementation because the region might or the area might create specific policy or specific model that suite to their locality. They are not tight-bound to follow the format of the national government. The region or the specific areas has the liberty to develop their own policy or project implementation mechanism. Thank you.

TValdez: I'm Tom Valdez from the Society of Filipino Foresters. For the NDC, can we think of biomass as one way of solution in expanding the forest areas, halting deforestation? Same time producing heat energy. I did not see in the presentation but I think it's one way of producing our carbon emission and at the same time, poverty elimination. Poverty is the main cause of forest degradation in all ways.

FMAndres: Yes, we do have biomass utilization in other sectors, which unfortunately, I didn't have time to talk about. But for the energy sector, we have the biomass for power generation. We have the specific fascitarians for biomass that is being simulated in this mitigation option for the energy sector. For the industry, we have biomass for use in cement production, for firing fumes as well as for substituting or cofiring with coal for power generation. And then for the waste sector, we also have biomass or agricultural waste in general for composting.

TValdez (to ILQuilloy): Like in region 1, we cannot use the lands of the human for timber production. Why cannot we allow that for biomass production, for biomass energy. If DENR and DOE have an agreement about the biomass power, I think that will be about the best use of forest lands in Pangasinan, in Region 1, and in other area.

ILQuilloy: Their concern is actually an area, or grant them a tenure instrument so that this private sector can engage on this biomass production, which is very, I think, logical and timely. So maybe we can raise that to Dir. Noni for him to present in DENR excomm. Thank you.

EAlberto: I am not going to answer the question about the possible utilization of the idle lands for/as a source of energy for dethrothermal plants, for instance. But I would like to share that there are now some energy plants using rice hull. So this is a biomass source of energy. I don't know if we already have in Central Luzon but I know a plant using rice hull as source of biomass energy and I think it's in Isabela. So if we already have some existing

OPEN FORUM (AM SESSION)

EAlberto: plants in the country using biomass, some decades ago I think there are some energy plants using fuel wood. Do we call it detrothermal plants? Yes? But I do not know if there is still existing plants using wood as a source of biomass energy.

ESantos: I'm Elsa Santos from the College of Forestry and Natural Resources of UPLB and I have a very good question for our representative from DENR. Dr. Ravi was talking about you know, if you want to circumvent this problem about reestablishing, rehabilitating our 684M ha of forest lands, it will take 206 years. The only way we can reduce this number is to get all people to participate in tree farming. And to get trees in the farm requires a lot of change, we have to change the world view, making people understand that we are not going for short term but are going for long term. But that means also you have to get ready with market, with financial incentives, all these policy incentives and so on. But I think we are not successful in policy things; tenure is a problem in the Philippines. IFMA SIFMA they are already there but they are not implemented at large, people are waiting when you can deregulate some of these forest trees, some species in the forest that all people want to plant in their own farms. I think there are so many problems related to this. For example, in the IFMA and SIFMA thing, how long does it take to process a SIFMA for an IFMA because the private sector is waiting and some of these people who want to plant trees, who want to go into these forest investments, they have been waiting for 10 years. What are we doing? Why are we putting up all these policies and not implement these?

ILQuilloy: There are times that applicants cannot comply to the requirements especially the NCRP clearance. We know the applicants' dilemma. In fact, the Forest Investment Development Division, are packaging a project called the portfolio approach. We help them in gathering necessary files to complete their requirements so that the investors may come in without hassle. So that's the innovation that we are doing right now. And for the tree plantation to the private farms, like I said earlier we encourage and we even provide them seedlings and incentives from harvesting. They don't need to secure permit from us; just the transport documents. Thank you.

Person from NPC: I am from the National Power Corporation. We are managing 500,000 forest land and we manage it as political watersheds. By that, that is corporate wide from Mindanao to Luzon. So we observed that it's really a pain in us, that we have informal settlers in



our land. This is not the IPs, but the informal settlers ever since. So my questions is, to contain them, how do we enroll them in this AF program? Because they do not have tenure, we have instrument. Even though there is IPAS law which is mandated for them to be tenured migrant. But then, still, they proliferate. Just by telling them to get out from their own roof is not an option because that could be a great problem for the political units. But then, if they really proliferate. So even though we practice giving the families 1 hectare each under the fuel wood program. So in this agroforestry, can we practice this? In critical watershed? And how do we enroll these millions of informal settlers? I hope we can put a policy on this so that once and for all, we solve this kind of issue here in the Philippines. Thank you.

ILQuilloy: We must organize the informal settlers so that the approach that will be introduced to them in just one way, not scattered so that there may be one common approach that will be followed. In terms of planting within critical watershed, if it is only at a household scale, their expansion as well as their tree-cutting should be prevented through the family approach. I think that can be done through coordination and management.

P R E S E N T A T I O N

ENABLING POLICIES TO PROMOTE TREE GROWING

Dr. Priscila C. Dolom

Director

Forestry Development Center

College of Forestry and Natural Resources

University of the Philippines Los Baños



Enabling Policies to Promote Tree Growing

P.C. Dolom, L.A. Bugayong, H.L.L. Capinpin, L.A. Donoso,
J.C. Nicmic, F.B. Pulhin and M.M.B. Villanueva



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College, Laguna

Objectives

- To present the different policies related to tree farming
- To determine whether these policies promote or constrain development of tree farms
- To identify gaps, issues and concerns
- To recommend enabling policies or policy reforms for tree farming

Importance of Tree Growing

- Wood production
- Livelihood
- Energy
- Watershed protection/rehabilitation
- Biodiversity
- Climate change mitigation and adaptation/carbon sequestration

Policies Related to Tree Growing

Year	Policy/Program	Highlights
1960	R.A 2706 <i>An Act Creating the Reforestation Administration</i>	The Reforestation Administration was created under the then Department of Agriculture and Natural Resources In 1972, 91 reforestation projects were established throughout the country with a total area of 182,000 hectares

Enabling Policies

Year	Policy/Program	Highlights
1975	PD 705 Revised Forestry Code of the Philippines	Sections 33, 34, 35, and 36 - Establishment of industrial Tree Plantations, Tree Farms and Agroforestry Farms in Public Lands - Lease agreement was issued to qualified applicants for a period of 50 years (25 years renewable for another 25 years)
1978	PD 1559 Further Amending the Presidential Decree No. 705 Known as the Revised Forestry Code	- Minimum area of 1,000 ha for industrial tree plantations - 100 ha for tree farm - No lease shall be granted in critical watershed

Enabling Policies

Year	Policy/Program	Highlights
1975	PD 705 Revised Forestry Code of the Philippines	Incentives - No rental shall be collected during the first 5 years from the date of lease. - On the 5 th – 10 th yr. = P 0.50/ha and thereafter P1.00/ha - Forest charges on timber and other forest products grown, cut and gathered equivalent to 6% of current market value - The BOI shall classify areas of investment under its annual priority plan, to be governed by the rules and regulations of the Board

ENABLING POLICIES TO PROMOTE TREE GROWING

Enabling Policies

Year	Policy/Program	Highlights
1979	LOI 818 For existing timber license holders, leases or permits	- Require tenure holders and permittees to reforest one hectare of denuded areas or brush land for every hectare logged.

Shift from TLA to Upland Development Programs

Year	Policy/Program	Highlights
1971	Forest Occupancy Management Program	<ul style="list-style-type: none"> • Reforestation preferably tree farming, agroforestry • Income generating livelihood activities • Forest production and utilization
1976	Family Approach to Reforestation Program	
1978	Communal Tree Farming Program	
1982	LOI 1260 Integrated Social Forestry Program	<ul style="list-style-type: none"> • Integrates all reforestation program (FOM, FAR and CTF, ITP, FIFPP)
1989	DAO 123 Community Forestry Program	<ul style="list-style-type: none"> • For communities, organized POs
1987	EO 226 The Investment Code of 1987	<ul style="list-style-type: none"> - Forest activities and/or services are considered as one of the pioneer enterprises eligible for the following incentives <ul style="list-style-type: none"> - Tax holiday - Tax credits - Tax and duty exemption from imported raw materials and equipment - Exemption from contractors' tax - Simplified custom procedure and other incentives - Hiring of farming laborer

Reforestation Programs Implemented and Corresponding Tenurial Instruments

Year	Policy/Program	Highlights
1995	E.O. 263 CBFM (Community-based Forest Management Agreement)	For organized communities who are dependent on the forests for their livelihood
1996	DAO 96-24 SIFMA (Socialized Integrated Forest Management Agreement)	For family or small farmer stakeholder
1991	DAO No. 91-42 Revised Regulations and Guidelines Governing the Establishment and Development of Industrial Forest Plantations (IFPs)	All the trees and other forest products planted under IFMA belongs to the lessee who have the right to harvest, sell, and utilize specified time and volume based on the development plan approved by the DENR
1999	DAO 99-53 IFMA (Integrated Forest Management Agreements)	For private corporation partnership

Other Programs/Agreements

Year	Policy/Program	Highlights
1987	Republic Act 8371 Indigenous Peoples' Rights Act (IPRA)	In case where areas applied happen to be partly or entirely inside ancestral domain, the grant of FPIC by the IPs/ICCs is a condition for the award of the tenure instruments over the area

Policies on Private Plantations/Tree Farms in A & D

Year	Policy/Program	Highlights
1987	DAO No. 4 Deregulations of the Harvesting, transporting, and sale of Firewood, Pulpwood or Timber Planted in Private Lands	<ul style="list-style-type: none"> the restrictions on the harvesting, transporting and sale of firewood, pulpwood or timber produced from Ipil-ipil (<i>Leucaena spp</i>) and falcate (<i>Albizia falcataria</i>) planted in private lands are hereby lifted in order to promote the planting of trees by owners of private lands
1989	DAO No. 89-38 Development of a minimum of 20% of the Land Allocation in Integrated Social Forestry (ISF) Projects in Tree Farms and/or Tree Plantations	<ul style="list-style-type: none"> ISFP participants shall allocate a minimum of 20% of their allocated lands for tree farming and/or tree plantation Tree farm/plantation development shall be incorporated in the individual agro-forestry development plan
1991	DAO No. 91-42 Revised Regulations and Guidelines Governing the Establishment and Development of Industrial Forest Plantations (IFPs)	<ul style="list-style-type: none"> All the trees and other forest products planted under IFMA belongs to the lessee who have the right to harvest, sell, and utilize specified time and volume based on the development plan approved by the DENR
1991	RA 7160 The Local Government Code	<ul style="list-style-type: none"> Plantation logs are exempted from payment of forest charges However, some provinces impose taxes on plantation-grown trees under the environmental protection fees Environmental fee is from P12-35 / m³ Disincentives to smallholder farmers in developing tree plantations
1992	DAO No. 92-16 -- Addendum to DAO 42 which Provides Regulations and Guidelines governing the establishment and Development of IFPs	<ul style="list-style-type: none"> The PFDA holder shall develop and manage his land in accordance with the approved plan harvesting of timber or other forest products shall be in accordance with the approved development and management plan PFDA holder may process or sell or transport the forest products harvested from his land Certificate of origin is needed when transporting the harvested forest products

ENABLING POLICIES TO PROMOTE TREE GROWING

Policies on Private Plantations/Tree Farms in A & D

Year	Policy/Program	Highlights
1994	DENR Memorandum Order No. 94-16 Lifting the prohibition of the Transport of Timber/Lumber cut within Private Land Timber Permit (PLTP/SPLTP) areas outside the Province of Origin	<ul style="list-style-type: none"> The movement of lumber/timber shall be accompanied by the required transport documents
1995	DAO No. 09, March 29, 1995 – Regulation of Forest Tree Seed Production, Collection and Disposition	<ul style="list-style-type: none"> Identification/documentation of the potential SPAs Natural stands, existing forest plantations and private forest tree plantations which are potential sources of seeds and planting stocks of the various reforestation projects are to be identified, surveyed, assessed and evaluated except for private lands. An application for accreditation for private SPAs is to be submitted to the CENRO/PENRO for review and initial evaluation
1997	DMC No. 97-09 (May 27, 1997) – Documentation of Tree Plantations in Private Lands	<ul style="list-style-type: none"> This guideline aims to: <ul style="list-style-type: none"> -determine the tree plantations established within private lands; - facilitate the processing of documentation requirements for future harvests; and -means to recognize the participation of private land owners in the tree plantation development program of the government
1999	DAO 99-20 Supplemental Guidelines Governing the Registration, Harvesting, Transport and Marketing of Timber By-Products Coming from Private Plantations within Private lands or Tax Declared A & D Lands	<ul style="list-style-type: none"> In harvesting, cutting permit is no longer required from the plantation owner except for premium species like Narra
2000	DAO 2000-12 Requiring the planting of permanent trees in portions of A&D areas susceptible to soil erosion	<ul style="list-style-type: none"> Requiring A&D land owners to plant permanent trees in areas susceptible to soil erosion such as steep slopes (15% up) for issuance of patent
2000	DAO 2000-21: Revised Guidelines in the issuance of private land timber permits/special private land timber permit	<ul style="list-style-type: none"> Authorization of cutting, gathering, transport, disposal and utilization of naturally grown trees or planted premium tree species in private lands
2004	DAO No. 52, Series of 2004. The Revised Guidelines in the Issuance of Cutting/harvesting Permits in Private Titled Lands	<ul style="list-style-type: none"> Private Land Timber Permit (PLTP) is issued to landowner for the cutting, gathering and utilization of naturally grown trees in private lands, regardless of species. prescribed the guidelines on the utilization and transport of planted trees in private lands.

Recent Policies

Year	Policy/Program	Highlights
2011	Executive Order 23. Declaring the Moratorium on the cutting and Harvesting of timber in the National and Residual Forest and Creating the Anti-Illegal Logging Task Force Executive Order 26. <i>National Greening Program</i>	<ul style="list-style-type: none"> Allows the development and utilization of planted trees Develop 1.5 M ha of open, degraded and denuded public lands into forest plantations Over-arching goals includes: <ul style="list-style-type: none"> Food security Poverty alleviation Environmental stability Biodiversity conservation Climate change mitigation and adaptation
2017	Executive Order 193. Enhanced National Greening Program	<ul style="list-style-type: none"> Covers all the remaining unproductive, denuded and degraded forestlands to be managed for production and protection purposes as well as to achieve carbon neutrality Includes development of new plantations and sustainable management of established plantations as well as protection of existing plantations
2016	<i>Philippine Master Plan for Climate Resilient Forestry Development</i>	<ul style="list-style-type: none"> Updated the 2003 Revised Master Plan for Forestry Development Target 1.439 million ha of Communal Forest Plantations to meet the total demand for roundwood from 2026-2038

Issues and Concerns

1. Lack of securitization of tree plantations
2. Problems in accessing incentives for tree farming (i.e., too many requirements, high transactions cost, etc.)
3. Unstable policy environment in relation to tree farming and investment
4. High capital and long term payback period for ROI

Recommendations

1. Simplify bank requirements for loans from DPB related to tree farming
2. Simplify and harmonize requirements in accessing incentives offered by DOI, DENR, etc. (market, prices of materials)
3. Ensure stability of forest policies and effective implementation of policies
 - Assure security of tenure in public forestlands
4. Implement forest certification/group certification. Government policy on green procurement for construction and other projects using wood products
5. Institutionalize/mainstream a "One stop shop" in DENR Offices where tree growers can secure permits from government agencies

PRESENTATION

CONSTRAINTS FOR PRIVATE INVESTMENT IN TIMBER PRODUCTION (PITP)

Mr. Michael Ong

President

Industries Development Corporation



Constraints for Private Investment in Timber Production (PITP)

By Michael Ong

Industries Development Corporation

Why is "Private Investment in Timber Plantation" important?

"Private equity investment generates sustainable forestry projects"



What are the constraints in Private Investment in Timber Plantations?

- **Bankability of Timber Plantations** which requires stable government policies
 - Plantation Risk
 - Investor Credibility
 - Policy Risk
 - Lack of Implementing Rules and Regulation on Executive Order No 23
 - Lack of tenurial instrument for open areas
 - Plantation development regulations are not clear
 - Lack of manpower from the Cenro offices to implement DENR regulations on plantation timber harvesting
 - Lack of upto date data from the DENR regarding open access areas, and current status of forest land.
 - JV with CBFM is a highly bureaucratic process and lacks mechanics to make it bankable.
 - NGP was planted in CBFM, Open & Protected Areas

How to enable Private Investment in Timber Plantation

Intercrop fuelwood species with high value timber species can give a sustainable financial model for the investor and planter

- Short Rotation (3-4 years)
- Coppicing
- IRR of Investor vs Daily income of planter

Opportunities for Fuelwood Investment

- Wood chip or pellet export: Japan
- Biomass Power: Feed-In-Tariff and SPUG Projects
- Various Industries Environmental Sustainable Requirements

Opportunities for Fuelwood Investment

Wood Chip and Pellet Export

Japan	PHP 17.60 per kWh (plants < 2MW)
	PHP 14.08 per kWh (plants > 2MW)
Sri Lanka	PHP 9.16 per kWh
Thailand	PHP 7.66 per kWh (plants < 1MW)
	PHP 6.92 per kWh (plants > 1MW, < 3MW)
	PHP 6.08 per kWh (plants > 3MW)
Philippines	PHP 6.63 per kWh

Virgin Biomass FIT rate per Country

Biomass Power: FIT and SPUG

Renewable Technology	FIT Rate (PHP/kWh)	2017 Target Capacity (MW)	Operational Capacity (as of Dec 2016) (MW)
Hydro	5.90	250	26
Biomass	6.63	250	105
Wind	8.53	200	393
Solar	8.69	500	525

CONSTRAINTS FOR PRIVATE INVESTMENT IN TIMBER PRODUCTION (PITP)

Aurora Biomass Project (SPUG)

Fuelwood intercropped with High Value Timber

Biomass Resource

Municipality of Dilasag, Province of Aurora

Development Area

Particulars	Amount
Years of Project (yrs)	22
Current Plantations (has)	1,200
New Plantations (has)	6,933
Total area of Project (has)	8,133
Average areas maintained (yearly)	5,426

Plantation Design

Species Planted (Site-Specie matching)	Ipil-Ipil, Swietenia Mahogany	
Dry-Density (Bone-dry)	600	kg/m3
Tree Plantation		
Trees per Hectare (Less 10% roads)	4500	Trees per Hectare
Plantation Block	36	Hectares per Block
Weight per Tree @30% MC (90% of PSP Data)	4.83	kgs/Tree/year
High Value Timber Plantation (HVT – Swietenia Mahogany)		
Trees per Hectare (Less 20% roads)	221	Trees per Hectare
Volume per tree (12 years)	0.369	m3/Tree
Fuelwood Plantation (FP) – Ipil Ipil, Madre De Cacao		
Trees per Hectare (Less 10% roads and easement)	4279	Trees per Hectare
Total Tonnage per Hectare per year (@30% MC)	20.69	tons/Ha/yr



Chip Production

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Total Chip Production																					
34,704	34,704	34,704	106,312	72,987	72,987	118,396	118,396	118,396	163,806	162,427	162,427	237,755	192,346	218,545	223,780	178,371	178,371	223,780	178,371	178,371	223,780
Demand Power Plant (Chips @30%MC)																					
	11,500	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000	23,000
Yearly Excess Chips (@30%MC)																					
34,704	23,204	11,704	83,312	49,987	49,987	95,396	95,396	95,396	140,806	139,427	139,427	214,755	169,346	195,545	200,780	155,371	155,371	200,780	155,371	155,371	200,780



Bottoms Up Approach

Farmer Income In Mind

1 Hectare Labor component for 13 years

	1	2	3	4	5	6	7	8	9	10	11	12	13	Totals
S&W Silviculture	13,875	4,500	4,500	2,250	4,500	2,250	2,250	4,500	2,250	2,250	4,500	2,250	0	49,875
S&W Harvesting				6,647			6,647			6,647			6,647	26,589
Total Labor per ha	13,875	4,500	4,500	8,897	4,500	2,250	8,897	4,500	2,250	8,897	4,500	2,250	6,647	76,464
Profit Share	0	0	0	14,251	0	0	14,251	0	0	14,251	0	0	14,251	57,006
Royalty	0	0	0	0	0	0	0	0	0	0	0	0	36,779	36,779
Labor+Royalty	0	4,500	4,500	23,149	4,500	2,250	23,149	4,500	2,250	23,149	4,500	2,250	57,677	170,249



Minimum Agri-Wage-Rate Comparison

LABOR	Minimum Wage (R3)	Target Yearly Wage (YW)	Years/cycle	Salary/cycle	Number of Ha.
Silviculture + Harvesting Activities	320	99,840	13	1,297,920	17
Profit Share (Fuelwood)	187	58,339	13	758,404	17
Profit Share HVT (13th Year Bonus)	154	48,095	13	625,238	17
Net Benefit	661			2,681,562	



CONSTRAINTS FOR PRIVATE INVESTMENT IN TIMBER PRODUCTION (PITP)

Financials

Community Benefit

Woodlot Farmer	Yearly average	Hectares
Avg. Profit Share Fuel Wood PO (Php)	7,168,612	1,468
Avg. Road Construction Labor Component (Php)	14,912,022	
Avg. Plantation Labor Component (Php)	31,588,461	5,205
Avg. Harvesting Labor Component (Php)	5,258,554	1,468
Avg. Yearly Benefit to Farmer (Php)	58,927,649	
Maximum Laborers (1000 hectares)	720	

PRESENTATION

LOWERING FINANCIAL RISKS THROUGH INSURANCE FOR SMALLHOLDERS

Dr. Felino P. Lansigan

Dean

College of Arts and Sciences

University of the Philippines Los Baños



Lowering Financial Risks Through Insurance for Smallholders

Felino P. Lansigan

Professor and Dean, College of Arts and Sciences
Chair, Climate and Disaster Risks Studies Center
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ICRAF-UPLB Forum on *Harnessing the Potential of Trees on Farms*
to Contribute to a Green Economy in the Philippines
Sequoia Hotel, Quezon City, 20 March 2018

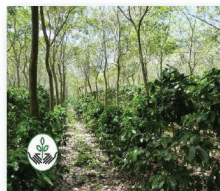
Track of Presentation

- Insurance as risk sharing/transfer mechanism
- Opportunities for insurance in agroforestry in the Philippines
- Issues and strategies in implementation of insurance in agroforestry
- Take home messages



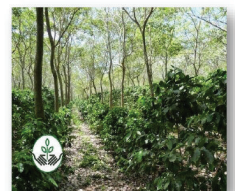
Hazards in Agroforestry

- Pests and diseases resulting to losses and damages
- Climate variability and changing climate
 - extreme events (e.g. more intense typhoons, strong winds, etc.)
 - erratic rainfall distribution (irregular cropping period)
 - Results: reduced yields, low farm income



Hazards in Agroforestry

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• LOWERING FINANCIAL RISKS THROUGH INSURANCE FOR SMALLHOLDERS

Insurance as Risk Sharing and Transfer Mechanism

- Insurance products c/o PCIC - only for major/ priority crops (rice, corn, HVCs)
- Insurance for agroforestry species - need for more attractive insurance products for agroforestry



Issues in Agroforestry Insurance

- Formulating more objective insurance products (e.g. weather index-based insurance)
- Providing adequate monitoring/ gauging stations for WIBI
- Lowering premium for insurance coverage
- Providing opportunities and institutional support for more insurance providers



Strategies for Reducing Financial Risks

- Minimize/ reduce risks through use of S & T in better crop management, seasonal climate forecasting, etc.
- Distribute/ share the risks – group/ cooperative?
- Transfer the risks
- Better estimation of risks – e.g. location-specific risk profile
- LGU support for group insurance – e.g. subsidy, calamity support fund, etc.
- Enhancing technological support and technical assistance to lower risks

Take Home Messages

- Agroforestry insurance is imperative to enhance resilience of smallholders to risks due to different hazards, and to achieve inclusive growth
- LGU support to smallholders: investment on calamity support fund through agroforestry insurance in lieu of high rehabilitation costs whenever a calamity occurs.



Take Home Messages

- Technological support to smallholders to reduce risks
- Institutional support mechanisms to operationalize attractive agroforestry insurance program – i.e. location-specific risk assessments; insurance providers; etc.



Thank you for your time.

[<fplansigan@up.edu.ph>](mailto:fplansigan@up.edu.ph)





PANEL DISCUSSION & OPEN FORUM

Moderator: Dr. Leonida A. Bugayong
University Researcher, Forest Development Center

1 Are the existing policies sufficient to enable private investments into agroforestry and tree growing?

PCDolom: I think we have enough policies the problem is that they are unstable. Most of our policies are for investments – for those who are interested in engaging tree plantations or tree farming. But the problem is, they are always saying that due to the changing of policies, this is not investment- friendly. We have enough policies both in the public lands and private lands – but the problem is we are changing always the policies. It is not that stable. And also, it is highly regulatory. From establishments, in procurement, the choice of seedlings, the area, the cutting, harvesting, and transport of what we have planted. We have enough policies regarding these but we have to simplify and study it further and even its implementation.

FPLansigan: Yes. Unfortunately, as I have mentioned our insurance policy in the Philippines covers only the priority crops, rice and corn, and sometimes sugarcane and other high value crops, so I think we need to change that policy. Perhaps, the academic community – particularly the Agroforestry stakeholders should be running in making this part of crop insurance programs in the Philippines.



MOng: I think we have enough policies in the Philippines, I think we have too much. Dr. Bugayong, she asked me in our interview, if the DENR were supposed to lift the logging moratorium, would I be in favor of that? I said no because it is a long term investment. If you do not have stable policies, you cannot invest for the long term. Then you can only invest but you really are not interested in – in the environment. We need stable policies that is very important. During the time of my grandparents, they want to focus on extraction but today is different – it is really

about planting. Forestry is such a complicated field, the slope will affect the topsoil; the microclimate will affect the growth of the plant... it is a long process towards creating a successful project, if we do not have stable policies; this is just not going to be possible.

2 What do you perceive as the main barriers for private investors and tree growing?

PCDolom: I think the main barriers are (1) market accessibility, (2) investment, and (3) regulatory policies.

FPLansigan: Relative to crop insurance, I think the resistance to innovations is actually the barrier. I think we need to change the attitude of the people in the Philippine crop insurance corporation. They have to be open in using the doses in science and technology. It has been demonstrated in at least three pilot projects on the advantages of whether in that space or insurance. It has been also demonstrated in India, for example, in some countries in South East Asia and Africa. So I think we just need to be open to promoting additional crops in expanding that particular program. You could just imagine after 39 years the subscription rate for PCIC products is only less than 15% – that will say something. I think we need to make this more attractive because farmers are forced to subscribe because they need to have their loans approved. Just like in rice insurance, they get their insurance also because it's part of the loan – built-in.

MOng: I think the major barrier would be role building. Right now, the DENR just allow you to create the roles in forestry development projects. Like NGP, we have planters walking 4-5 km planting seedlings to plantation sites and hauling 5 km down in a small walkway. So creating roles in forestry areas is a key factor in providing a key product.

3 What can be the roles of different stakeholders, examples are youth, women, local businesses, in advancing agroforestry in the country?

PCDolom: For the local businesses, I think, market, the technologies. We have to process what we can do. Actually, that is one of the questions of tree farmers – where is the market? And how can we market the product?

FPLansigan: Everybody has a role to play this will include in particular the information education communication campaign on promoting science-based insurance products. We

PANEL DISCUSSION & OPEN FORUM

FPLansigan: We need to make use advances in technology, like remote sensing technology. You know, at this point in time, our good friend from DA will be building a group of people to make the assessment after each calamity. You can actually make use of remote sensing and we are now promoting that in our project. You have probably heard of a relative of NOAH – we call it our Project SARAI after the wife of Abraham, SARAI means Smarter Approaches to Reintegrate Agriculture in the Philippines. So we make use of advances in Science and Technology – that's our role in the academe. I hope the other stakeholders particularly in the local government units, the eight government agencies, particularly in regulations operations also do their part and we can work together to achieve inclusive law. Thank you.

MOng: I think we have to build awareness in Forestry again, it has become a scapegoat for government officials, like if there is flood, oh it is Forestry's fault but really it is because of a lack of political will by local politicians. I mean we have geohazard maps we know where we should be building but still we build there, so why is it forestry's fault? Forestry is science I think we need to make people aware of what Forestry can provide, what the forests can provide. In terms of calamities, what are the things we have to watch out for. There is a lot of Forestry issues and it would take all of us to create awareness and hopefully make it so that people will trust the science behind it. It is so easy to blame forestry for all the calamities that we have. Sometimes, it is Forestry's fault but at the end of the day we have to be able to fight for what is right.

DBP: Thank you for mentioning the availability of DBP (Development Bank of the Philippines). In DBP, we offer collaterals – we can combine so that in helping our proponents or our borrowers, we can assist them in meeting the requirements of the loans. It can be an established value or real-estate corkage – so many combinations can be negotiated for that. It is also mentioned that we have a lot of requirements. Actually, it is not really much different from what other banks are requiring. My message is that we can talk, we can give as much as long as 15 years for your project. The interest rate will of course be based on the risk of the proponents.

LABugayong: How about the subscription rate? How many have applied for the loans in the forestry sector?

DBP: For this particular tree plantation project, there's not much but we have about several millions – close to



Php 500, 000,000.00 – there may be about 12 borrowers here.

LABugayong: Probably it is also small-scale, medium-scale, and large-scale businesses that could define how many borrowers you could get from this project.

DBP: For as low as five hectares, we can accommodate small farmers actually, 5 – 500 hectares. We have project proposal for James Ramon Perez to put up a production somewhere in Mindanao – 13,000 hectares where we can also accommodate.

LABugayong: So there's a lot of money for loans. How about Dr. Armand? Before we call on Mr. David.

Armando M. Palijon: I really pity the investors because there is a lot of cases where they lose a lot of money because of trees investments. One example is the case in Pangasinan. There is an investor who promoted the planting of malapapaya. Because every time there is a calamity here in the Philippines, they will blame Forestry. The reaction of the DENR Secretary or the President is to ban logging – that would include the harvesting of trees in private lands. This investor pre-invested a lot of money to plant malapapaya in his private lands and in lands of small-farm holders. Do you know what happened to the processing plant? It became a basketball court because of that unstable policy. There are many policies but the implementation is bad. I would like to suggest that based on the presentation of Mr. Ong whose company is engaged in biomass production. There are a lot of species that we can use in a short span using high cost or the hybrid of high cost. Since I am a member of the Bamboo Professionals, Inc., we normally suggest the integration of bamboos in farms. This will really shorten the station period. If you are concerned about producing biomass in a short period of time then

probably you can think of a species like bamboo. I think there are a lot of studies that would show that investing in or integrating bamboo on farms would really be profitable.

LABugayong: Thank you Sir Armand. Now, Mr. David...

Mr. David: This is not a question but more of a reinforcement of what Mr. Ong has said earlier. The youth of today are in a very, very special place. I have worked in Agriculture, I have worked in Food, and I have also worked in Education. Is there an opportunity for the young to make it to a decent class life? Reinforcing what Michael was saying, if all of the agencies and NGOs do not come up with a unified message in the absence of government, I have seen private work without government. Example is Ayala Corporation – if government will not build a road, I will build a road. If we do not have that unified message and awareness and at least an objective vision, we might lose this current young generation that is very energetic. I do not want my son to take a business management course, it is too general. I want to get him to the sciences, I would love to send him to UPLB but it is just because I was exposed to it. There are a lot of young people who are interested in doing this right now. And if it cannot be taken advantage of right now, it will only go to waste. I hope that everyone here can get together more often and come up with a unified way of broadcasting to these young people – “hey if you do this, you do not only have a sustainable lifestyle, you are also helping the environment, and you are helping the country. I came here because last month, I wanted to study about this on a



personal level. I want to get into plantation soon if I have resources, I am studying it. I feel it should not just be me. I feel that every person in the micro, small, medium level should have a fighting chance in following their dreams. So my question, but it does not necessarily have to be answered is – “May the people here come together and formulate that message and communicate it together?” Because the more you are and you have followers, the youth will go there.

Josh: I am with the Philippine Center for Environmental Protection Sustainable Development and we are the current Secretariat of the Interim National Governing Body of the Philippine Forest Certification System. Dr. Dolom is with us, FDC. My question is for Mr. Ong, it was



mentioned a while ago that your company has its own chain of custody. Can you elaborate more of this? Just for the information, there is also an initiative with DTI-Bureau of Philippine Standards. They are developing a national standard for forest and forest products and there are TSCs and ISOs chain of custody as will work for you.

MOng: We basically had a chain of custody and it expired now. We have this from 2008 to 2010, I think for three years and so market-driven. I know the initiative that you guys are pushing through PFC as a third party certification. It really depends on your market, that is the problem. When we implemented, we have custody project that was a project by FAO. We wanted to train and try to certify COC from furniture manufacturing plants. We realize that there is really, really small interest. There is a lot of legal stand – example is Japan I think they are focused on FSC and if you want to sell to Japan biomass, to be considered fit, you have to be an FSC certifier. There are a lot of issues now for example if I need a forest certification and the PFC fundamental stand is not there yet then I would probably go for FSC because that is fastest station period to actually apply for rather than waiting for the national standard that has to be approved by the Philippines. To clarify, do not forget that it is very market-driven. You can create a standard but if the market is not ready to take it. That is something you guys actually have to think about. How do you force people to use it? Else no one is going to join.

AGassner: I have a question to Michael. I am going to repeat a suggestion Ravi had earlier today about having agroforestry concessions in unproductive and degraded forestry areas. Both of them be questioned to Alfonso. You presented to having a more integrated timber trees was a biomass. Could you see yourself actually investing on managing tree plantations where you would have an agricultural component in between which is managed by communities which is also under your control.

MOng: Yes. We have an ongoing project with the Tabaco industries. It is really interesting because there is a sustainability in Tabaco industries... they require the buyers from the Philippines a proof of legality for fuel use. Based on our talks with cocaine and some tabaco companies, with a 20,000 hectares, that would be a direct investment from

PANEL DISCUSSION & OPEN FORUM

MOng: the local governments and CBFM. We are looking into investing or not in CBFM areas but again, it is complicated because there is a lot of people in the Philippines. The social component of Forestry is probably 80% of the work that you have to do.

MMendoza: I would like to bounce off this idea as I have come from the DENR also. For the three speakers, three challenges. Some of the things we tried doing when I was with the DENR and I hope it continues to be done is identifying areas where Forestry has competitive advantage. (1) We have a high risk index in terms of climate change. We are one of the top 3 in the world. We are archipelagic. In terms of infrastructure, we have very poor infrastructure – not very competitive. Now to address that, we have this inter-agency cluster when I was there. We have several map overlays. I think we have identified 15 overlays: rainfall, soil, infrastructure, elevation, everything. And then we tried identifying forestry and agroforestry economic zones where forestry would definitely have a competitive advantage. Then that is where the government should converge like DA, DPWH. If indeed it has a competitive advantage, DA, and public roads, DPWH roads should be there. And farmers should be supported – that is where land, tenure reforms, tenure instruments have to be provided. Because if we do not have such clusters, we have very limited resources, definitely the government cannot finance everything. I just hope that it would continue. Would you think that would be – as an investor might – it is part of the portfolio planning approach that is why I recreated this investment division in the FMB. That is supposed to be the mission.



DLopez: This is in response to Mr. Ong a while ago about untenured/ open access areas. We have developed this forestry investment roadmap and identified potential investment areas nationwide limited to categories such as grazing, plantations, eco-tourism potential of the area using assessment tools. The priority of the first phase of the program is to identify untenured open



access areas but because of the unstable policies of such areas, we agreed to focus instead on CBFM and NGP areas. The portfolio approach aims to help investors in terms of passing the requirements needed to invest as this has become the bottleneck for them. They have difficulty in securing requirements because of different barriers such as the NCIP. Aside from this, FMB-DENR is implementing case development studies or feasibility studies in investment potential areas to provide data that the potential area is indeed marketable.

MOng: Forestry is very – it depends on each culture. Forestry in Aurora and forestry in Caraga is different. I think the major issue that we see in the DENR is your policies within your own organization because sometimes the FMB has one idea and the other has a different one. Sometimes it just gets confusing within the DENR itself. I think you can come up with a more clear procedure for your administrative orders and I think that would be more helpful than you guys trying to develop a project. Investors have different criteria to invest anyway. They have different ideas.

RPrabhu: What Michael is saying is absolutely right. I think for somebody who is looking at forest products or tree products industry as carrying the burden of the environment itself and not compensated. So one of the schemes that we are working on is dairy production but also with downstream water because the problem with upstream, the water is being disturbed. When you work with development practitioners in some city the problem was they are short of water. All the water came up from the watersheds. We should start looking at the whole bundle of services. The Philippines may have stable policies but what you have is stable, fragmented policies that will really contradict each other.

AGUILON: SUDECOR is a company that has existed for more than 50 years. We are a logging manufacturing company and our tenure agreement has ended/ expired last June 2011 and we were expecting a trophy because we have not destroyed the forest after 50 years of logging we have kept intact. We call ourselves managers of permanent forests. But instead we were penalized with the EO 23 so we are forced to shut down our operations.

Aguilon: Relative to keeping the forests and at the same time addressing the needs of society for instance, we believe that there are different wood products needed by society — there are certain wood products that might not be made available by plantation species so that there is a need, by a certain degree, of harvesting in the natural forests. Considering that forests are renewable resources would it be reasonable that the government should look into this and allow some degree of harvesting and require companies to do tree plantations and all that. My point is — how do we make sure that our government can come up with policies that are based on science because we have policies that are just in response to sensationalized issues. For instance, EO 23 was a response to the flooding in Caraga and PNoy saw this logs floating along Agusan river and when he arrived in Manila, he declared the moratorium of harvesting trees from natural forests. But because of the logging moratorium, we are actually losing 1,090 hectares of closed forests every year from the concession area. I am not sure if we totally stopped harvesting from the natural forests by means of tree plantation establishments. I am not sure if we can ever prevent people from cutting trees from our natural forests. I do not see furniture shops even plywood-manufacturing companies using only planted species. Even in Caraga, in Butuan, and in some parts of Agusan Del Sur. Many companies are still using dipterocarps harvested from forests of PICOP, SUDECOR, and Carrascal, and Lianga bay in the context of EO 23. So since this morning we have been talking about unstable and contradicting policies. I think this is a high time for us while the private sectors can do negotiations on cutting but we also expect from the academe and the NGO from the working and the government to make sure to come up with policies that should govern the utilization and management of our natural resources. And these policies should be based on science and not on emotions and sensationalized issues only to please the politics at any given moment.

SYNTHESIS & WAY FORWARD



Good afternoon to all of you. It is quite amazing that all of you are still here. Normally there is much less people after lunch, but you stayed which shows your interest and commitment on this topic. My job is easy now which is synthesizing but at the same time, showing the draft resolution, which the organizers prepared for us so that we can look at this and see whether this reflects accurately the proceedings of this workshop and our aspirations on what we should do in the future. Just looking at that, just a quick synthesis in the morning, we saw how trees on farms can be integrated on national plans and programs. That was the thrust in the morning. The first speaker talked about the national greening program, which is very familiar to a lot of us. Then the DA gave the crop diversification program that was followed by a talk on the carbon climate change connection thru the NGC, and of course we heard Ravi talked about what other countries are doing. And this afternoon we just heard how trees on farms or how we can intensify and make the private sector more engaged in promoting trees on farms. One additional comment there, we are talking not just of large private companies but also thinking about small holders. That is how we should look at the private sector. Now given all of this, we are now ready, with your permission to quickly look at this. If you have any violent objection, just raise your hand, if not then we will just go to reading this and at the end of this, if you agree that this is the way forward, then you may sign the resolution.

Resolution
Harnessing the Potential of Trees on Farms to Contribute
to a Green Economy in the Philippines
Sequoia Hotel, Quezon City

Recognizing the significance of agriculture and forestry sectors in the Philippine economy.

Recognizing the government's ambitions for a greener economy, which are manifested in several of its current laws and programs, namely:

- the Philippine Green Jobs Act of 2016, the "carbon-neutral" initiative that certifies public and private sector organizations;
- the National Greening Program that sees planting of trees on degraded land as a catalyst to poverty reduction, food security, biodiversity conservation, climate change mitigation and adaptation;
- the Department of Agriculture's strategy for crop diversification; and
- the government's commitment to the 21st Conference of Parties to the United Nations Framework Convention on Climate Change (UNFCCC), Convention on Biological Diversity, United Nations Convention to Combat Desertification, with ambitious targets for climate change adaptation and mitigation, Aichi, and reducing land degradation.

Acknowledging the critical role trees on farm play in maintaining high levels of landscape biodiversity through in-situ conservation, connecting fragmented wild habitat, and conserving soil biodiversity and agrobiodiversity.

Acknowledging the critical role trees on farm can play for carbon sequestration and for offsetting of greenhouse gas emissions from agriculture and other sectors.

Acknowledging the critical role tree products play as safety nets and part of income diversification and adaptive strategies in communities facing increased climate variability and climate-related crop failures.

Realizing the need to integrate trees-on-farms targets into sub-national or local plans, supporting the various national greening policies.

Therefore, we, the participants of the forum on *Harnessing the Potential of Trees on Farms to Contribute to a Green Economy in the Philippines*, being advocates of climate-smart, sustainable agriculture and forestry practices, hereby support

the following key plans of action:

1. Participate in the development of a road map for integrating trees-on-farms targets into sub-national or local plans to support various national greening policies;
2. Promote intersectoral collaboration to mainstream widespread practice of agroforestry as one of the strategies to achieve green growth;
3. Encourage the formulation of a national agroforestry policy to support agroforestry as means to bridge forestry, agriculture and conservation policies and guidelines to achieve the Sustainable Development Goals;
4. Encourage the development of policy instruments to provide financial incentives to stimulate smallholders' investments in mixed systems (for example, lower insurance premiums, micro-credit, tax breaks, performance-based payments through rewards for environmental services' schemes);
5. Encourage the development of enterprises or business models that can contribute to poverty alleviation of agroforestry farmers and forest communities.
6. Promote climate-smart agriculture, agroforestry and smallholder timber production;
7. Encourage more participation on related initiatives and foster greater appreciation from the general public;
8. Advance agroforestry research in the Philippines to guide policy-makers in crafting evidence-based policies and to enable farmers in designing attractive and effective agroforestry farming systems;

... PHOTO DOCUMENTATION ...



Some FDC staff as registration committee welcomed participants and speakers to the forum.



Dr. Florencia Pulhin hosted the forum.



Speakers Dr. Ravi Prabhu, Dr. Flordeliza Andres, Mr. Eduardo Alberto (left to right, above photos), and For. Ildelfonso Quilloy (lower left photo) delivered their lecture and accepted their certificates from Dir. Rodel Lasco and Dir. Priscila Dolom with Dr. Anja Gassner, the moderator of the forum.



Speakers answer questions during the panel discussion and open forum of the morning session.

... PHOTO DOCUMENTATION ...



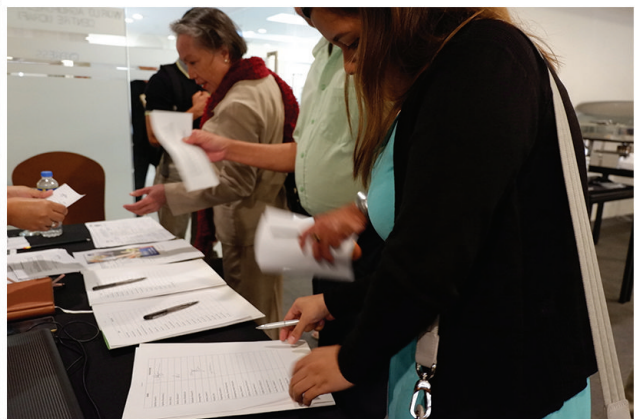
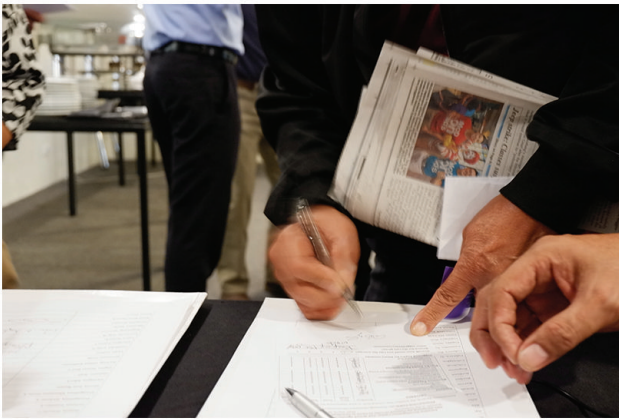
Speakers Dr. Priscila Dolom, Mr. Michael Ong (from left to right, above photos), and Dr. Felino Lansigan (lower left photo) delivered their lecture and accepted their certificates from Dir. Rodel Lasco with moderator, Dr. Leonida Bugayong



Speakers answer questions during the panel discussion and open forum for the afternoon session.



Dr. Rodel Lasco, presented the synthesis and way forward and facilitated the crafting of the resolution as conclusion for the technical forum.



All participated in the resolution signing immediately after crafting it.



The participants, organizers, and the speakers of the technical forum.

ATTENDANCE

NAME	AGENCY
Aguillon, Rowil O.	Surigao Development Corporation
Alaira, Sofia A.	School of Environmental Science and Management, UPLB
Alberto, Eduardo V.	Department of Agriculture- Bureau of Soils and Water Management
Balahadia, Nicasio M.	Makiling Center for Mountain Ecosystems, CFNR-UPLB
Barcenas, Allan	Energy Development Corporation
Borbon, Janeth F.	Forest Management Bureau
Buduan, Eric	Forest Foundation Philippines
Cabahug, Rowena Esperanza O.	Institute of Agroforestry, CFNR-UPLB
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