

Asec. Davis named some Philippine schools that were recipients of the ASEAN Eco-Schools Award. They were products of the National Search for Sustainable and Eco-friendly Schools of DENR that started way back in 2009.

Environmentally Sustainable Cities, on the other hand, gives recognition to cities that are clean, green and livable while being centers of economic and industrial activity. They are cities that are pro-poor, low-carbon, environmentally-sound, resource-efficient and recovery-oriented. They are leaders and front runners of sustainable urban development and have a clear vision, goals and action plans to develop in line with the principles of sustainability.

POWERPOINT PRESENTATION

SUSTAINABLE LIFESTYLES & EDUCATION

CORAZON C. DAVIS
Assistant Secretary, DENR
10YFP Sustainable Lifestyles & Education Programme

10YFP SLE Term 2 MAC Members

The 10YFP Sustainable Lifestyles and Education Programme

- A **global platform** with the goal of generating concrete projects and impact
- Launched in November 2014 at UNESCO's world conference on education for sustainable development, Nagoya, Japan
- Co-leads: Japan and Sweden

10 YFP Sustainable lifestyles and Education Programme

Core elements:

- Generating concrete and measurable results!
- Scaling up sustainable consumption and production practices at a global level!
- Not re-inventing the wheel!
- Collaborating with stakeholders including business, consumers, youth and other "change agents in society"

Sustainable lifestyles= Boring Attractive lifestyles!

USED-A-PORTER

Sustainable Lifestyle

A "Sustainable Lifestyle" is a **cluster of habits and patterns of behavior** embedded in a society and facilitated by institutions, norms and infrastructures that frame individual choice, in order to minimize the use of natural resources and generation of wastes, while supporting fairness and prosperity for all.

Key Lifestyles Domains and the Environment

FOOD – what we eat and drink – how it is produced, processed and provided;

HOUSING – how we live, where we live, what is used to build, heat and cool our living spaces and what we install in our houses;

MOBILITY – forms of transport we choose, how often we travel and the distance travelled.

Key Lifestyles Domains and the Environment

CONSUMER GOODS – product we buy, type and quantity of materials that are used in producing them, how we use them, how often we replace them;

LEISURE – how we spend leisure time, our choice of tourism destinations and activities;

Priorities

Focus on: **speeding up, up-scaling, being progressive and innovative.**

1. Communicate SLE globally
2. Education!
3. Impact policy makers & Institutions



Image credit: Story of Stuff

NAME: SUSTAINABLE LIFESTYLES AND EDUCATION



NAME: SUSTAINABLE LIFESTYLES AND EDUCATION



NAME: SUSTAINABLE LIFESTYLES AND EDUCATION



ASEAN Working Groups on Environmental Education (AWGEE)

National Search for Sustainable and Eco-Friendly Schools

ASEAN Working Group on Environmentally-Sustainable Cities (AWGESC)

The National Environmental Education Action Plan 2018-2040
(VERSION II)

Bayanihan Pagtitipid Malasakit

Philippine Environmental Education Model

The spirit of Luntiang Puso

LUNTIANG PUSO

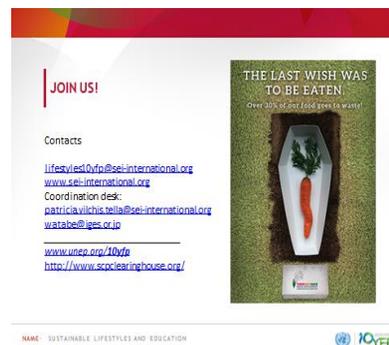
BAYANIHAN · PAGTITIPID · MALASAKIT

National Search for Sustainable and Eco-Friendly Schools

2009
Elementary: Peflabianca East Central School in Cagayan High School: La Castellana National High School in Negros Occidental Tertiary: Palawan State University in Palawan

2011
Elementary: Iliranan Elementary School in Negros Occidental High School: Camarines Sur National High School in Naga City Tertiary: De La Salle University- Daamarinas in Cavite

2013
Elementary: Dubinan Elementary School in Santiago City, Isabela High School: Ateneo De Davao University-High School in Davao Tertiary: Visayas State University in Baybay City, Leyte



1. Topic: **Payao Elementary School**

by Annabelle Alipo-on

Principal, Payao Elementary School, Negros Occidental

Using the school's name as acronym, Principal Alipo-on discussed the several factors that led to their school's best environmental practices. **P** - people empowerment. Campaigns and advocacies developed the sense of responsibility and leveled-up the involvement and commitment of everyone. **A** - advance advocacy. The school continued to innovate and campaign for more environmental programs with high impact on the community. They were inspired after winning two (2) national contests. **Y** – Yes thinkers. Programs, advocacies and school initiatives excited academic community stakeholders and invoked positive responses. People readily accepted tasks and stood up to challenges. **A** – award. To boost teachers' and staff morale, maintain positive and proactive behavior, and project effectiveness, Payao Elementary School designed an incentive scheme for teachers like rewards, promotions and recognition that has led to increased self-confidence that elicited greater achievement. **O** - optimism. School community has people who were optimists, who view things with the right perspective, anticipate success, and believe that obstacles and difficulties can be hurdled.



POWERPOINT PRESENTATION

FACTORS THAT FOSTER
THE BEST
PRACTICES AT
PAYAO
ELEMENTARY SCHOOL

People Empowerment
Advance Advocacy
YES Thinker
Award
Optimistic

People Empowerment

Engage and Empower the
Community

Engaging and empowering community is a new way of working. We are very fortunate that through our campaigns and advocacies, our internal and external stakeholders have developed a sense of responsibility and display a high level of involvement and commitment in school and in the community.

But, of course, it doesn't happen overnight or in just a snap of a finger, we literally shed sweat, blood and tears just to put Payao Elementary School on the map, not only in the Division of Negros Occidental but all through out the country.

People Empowerment
Advance Advocacy

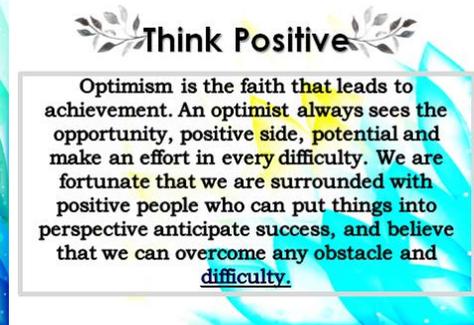
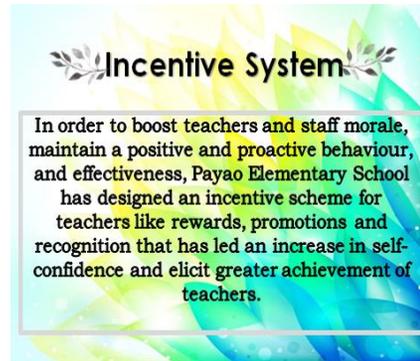
Advance Advocacy and
High Expectancy

A passionate and committed community is the biggest asset in driving to hit the target. Modesty aside, winning two national contest prompted us to continue to innovate and campaign for more environmental programs that will have a huge impact to the community and continue to maintain the prestige of our school through active involvement and concerted efforts of everybody.

People Empowerment
Advance Advocacy
YES Thinker

Excite People

Believe that good things will happen. Learn always to accept task and challenge. In every programs, advocacies, campaigns and initiatives of our school, the key question for us is "how" to inform and excite our academic community, stakeholders and community around. The excitement of our internal & external stakeholders will give them affirmative response in our every endeavor.



2. Topic: **Divisoria High School**

by Eloisa Dizon

Principal, Divisoria High School, Santiago City, Isabela



Principal Dizon, discussed their “Kailangan ko’y Kalikasan Program (KKK)” that brought about a safe, clean, and motivating environment to their school.

The program also made the institution conducive to learning. Ms. Dizon proceeded to discuss the scheme which focuses on 4 elements: water, energy, earth and air. These were the basis of their different programs and activities.

The program on water consists of the following:

- Divisoria riverside outreach program and adopt a creek program in partnership with the local government unit.
- Simulated water treatment level for water concentration
- Dextrose watering system to save water
- Purifying water that runs through the canals
- Water harvesting and banking skills
- Water services scheduling scheme
- New moist water harvesting through the use of humid model

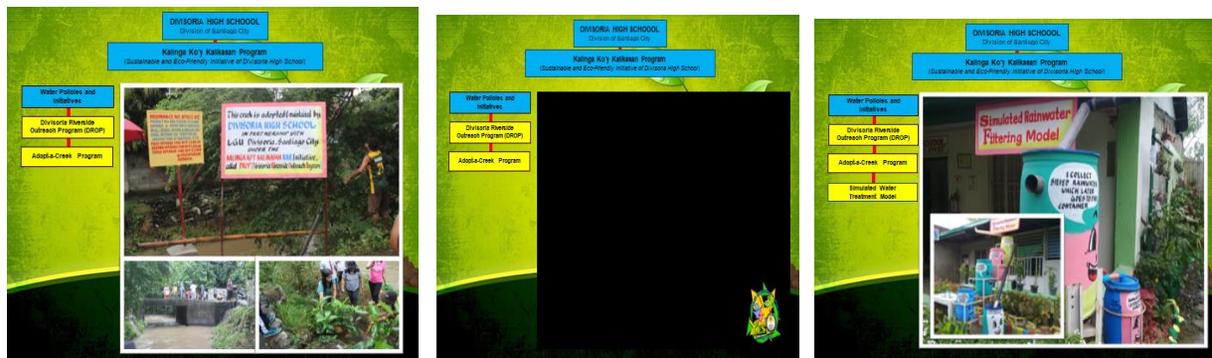
The energy program and initiatives are:

- Implementation of “12 o’clock habit” to engage the students in becoming environmental stewards
- Annual inspection and assessment of all electrical layout
- Skylight roofing for alternative source of light
- Installation of solar panel and use of solar lamps
- Dissemination of LED multimedia instructional materials

Air and water programs are:

- Vertical and horizontal gardens
- Anti-pollution campaigns
- Tree planting and replanting
- Anti-smoking policy

POWERPOINT PRESENTATION





DIVISORA HIGH SCHOOL
Division of Saranggani City

Kalinga Key Kalkasan Program
(Sustainable and Eco-Friendly Initiative of Divisora High School)

Energy Policies and Initiatives

The 12:00 Noon

DIVISORA HIGH SCHOOL
Division of Saranggani City

Kalinga Key Kalkasan Program
(Sustainable and Eco-Friendly Initiative of Divisora High School)

Energy Policies and Initiatives

The 12:00 Noon

Annual Inspection and Assessment

DIVISORA HIGH SCHOOL
Division of Saranggani City

Kalinga Key Kalkasan Program
(Sustainable and Eco-Friendly Initiative of Divisora High School)

Energy Policies and Initiatives

The 12:00 Noon

Annual Inspection and Assessment

Bright Roofing Treatment: None

DIVISORA HIGH SCHOOL
Division of Saranggani City

Kalinga Key Kalkasan Program
(Sustainable and Eco-Friendly Initiative of Divisora High School)

Energy Policies and Initiatives

The 12:00 Noon

Annual Inspection and Assessment

Bright Roofing Treatment: Model

Electrical Layout: Regular Assessment and Improvement

DIVISORA HIGH SCHOOL
Division of Saranggani City

Kalinga Key Kalkasan Program
(Sustainable and Eco-Friendly Initiative of Divisora High School)

Energy Policies and Initiatives

The 12:00 Noon

Annual Inspection and Assessment

Bright Roofing Treatment: Model

Electrical Layout: Regular Assessment and Improvement

Installation of Solar Panel

DIVISORA HIGH SCHOOL
Division of Saranggani City

Kalinga Key Kalkasan Program
(Sustainable and Eco-Friendly Initiative of Divisora High School)

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Energy Policies and Initiatives

The 12:00 Noon

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Bright Roofing Treatment: Model

Electrical Layout: Regular Assessment and Improvement

Installation of Solar Panel

Use of LED Multi-Media Instructional Materials

DIVISORA HIGH SCHOOL
Division of Saranggani City

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(Sustainable and Eco-Friendly Initiative of Divisora High School)

Energy Policies and Initiatives

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Use of Solar Lamps

DIVISORA HIGH SCHOOL
Division of Saranggani City

Kalinga Key Kalkasan Program
(Sustainable and Eco-Friendly Initiative of Divisora High School)

Energy Policies and Initiatives

The 12:00 Noon

Annual Inspection and Assessment

Bright Roofing Treatment: Model

Electrical Layout: Regular Assessment and Improvement

Installation of Solar Panel

Use of LED Multi-Media Instructional Materials

Use of Solar Lamps

ARAW Advisory on Reducing Appliance Wastage

DIVISORA HIGH SCHOOL
Division of San Diego City

Kalinga Koy Kalkasan Program
(Sustainable and Eco-Friendly Initiative of Divisora High School)

Earth Politics and Initiatives

Every Learner is an Environmental Keeper

DIVISORA HIGH SCHOOL
Division of San Diego City

Kalinga Koy Kalkasan Program
(Sustainable and Eco-Friendly Initiative of Divisora High School)

Earth Politics and Initiatives

Every Learner is an Environmental Keeper

Vertical and Horizontal Gardening

DIVISORA HIGH SCHOOL
Division of San Diego City

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Vertical and Horizontal Gardening

Seminar and Advocacies

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LEAD-Lingo: Eskansa Advocacy Development

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Division of San Diego City

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LEAD-Lingo: Eskansa Advocacy Development

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LEAD-Lingo: Eskansa Advocacy Development

The Eco-Food Consequence

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The Eco-Food Consequence

Dr. M. Auler

DIVISORA HIGH SCHOOL
Division of San Diego City

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Dr. M. Auler

DIVISORA HIGH SCHOOL
Division of San Diego City

Kalinga Koy Kalkasan Program
(Sustainable and Eco-Friendly Initiative of Divisora High School)

Air Politics and Initiatives

Anti-Pollution Campaigns

DIVISORA HIGH SCHOOL
Division of Saranggani City

Kalinga Key Kalkasan Program
(Sustainable and Eco-Friendly Initiative of Divisora High School)

- Air Pollution and Initiatives
- Anti-Pollution Campaigns
- Tree Planting Initiatives

TOL-Tree of Life

DIVISORA HIGH SCHOOL
Division of Saranggani City

Kalinga Key Kalkasan Program
(Sustainable and Eco-Friendly Initiative of Divisora High School)

- Air Pollution and Initiatives
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DIVISORA HIGH SCHOOL
Division of Saranggani City

Kalinga Key Kalkasan Program
(Sustainable and Eco-Friendly Initiative of Divisora High School)

- Air Pollution and Initiatives
- Anti-Pollution Campaigns
- Tree Planting Initiatives
- Anti-Smoking Policy

DIVISORA HIGH SCHOOL
Division of Saranggani City

Kalinga Key Kalkasan Program
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- Air Pollution and Initiatives
- Anti-Pollution Campaigns
- Tree Planting Initiatives
- Anti-Smoking Policy
- BANTAM-Bantay (Tamboles) (Anti-Smoke Beaching Scheme)

DIVISORA HIGH SCHOOL
Division of Saranggani City

Kalinga Key Kalkasan Program
(Sustainable and Eco-Friendly Initiative of Divisora High School)

- Air Pollution and Initiatives
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- Trash to Cash Program

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Re usable Show

DIVISORA HIGH SCHOOL
Division of Saranggani City

Kalinga Key Kalkasan Program
(Sustainable and Eco-Friendly Initiative of Divisora High School)

- Air Pollution and Initiatives
- Anti-Pollution Campaigns
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- Trash to Cash Program

Project PAPER
Policy Advocacy on Paper
Environmental Leadership

DIVISORA HIGH SCHOOL
Division of Saranggani City

Kalinga Key Kalkasan Program
(Sustainable and Eco-Friendly Initiative of Divisora High School)

- Air Pollution and Initiatives
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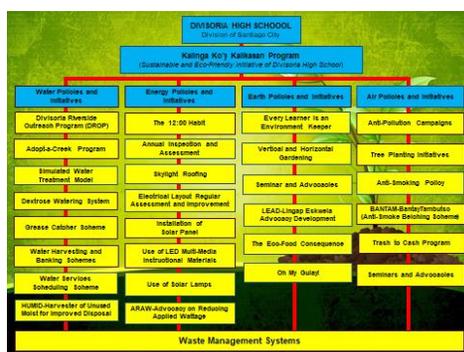
Charcoal Making

DIVISORA HIGH SCHOOL
Division of Saranggani City

Kalinga Key Kalkasan Program
(Sustainable and Eco-Friendly Initiative of Divisora High School)

- Air Pollution and Initiatives
- Anti-Pollution Campaigns
- Tree Planting Initiatives
- Anti-Smoking Policy
- BANTAM-Bantay (Tamboles) (Anti-Smoke Beaching Scheme)
- Trash to Cash Program

Polygons Paper Recycling
MathTanghali Program



3. Topic: **Don Mariano Marcos Memorial State University**
 by Leonora Ngilangil, Ph. D.
 Head, Environmental Science Dept., Don Mariano Marcos Memorial State University,
 Bacnotan, La Union



Dr. Ngilangil discussed the university's environmental policies and its operationalization related to their environmental mantra of "developing a perfect environment for excellent learning." Their campus is situated at the heart of a 900 hectare forest/watershed with various diversified ecosystems in place. All 2,057 students, faculty members and non-teaching staff are involved in their environmental projects and programs. Concepts and principles of environmental protection and conservation are integrated in the curriculum. Extension services are continuously strengthened in partnership with communities and organizations. Complimentary to their education strategies are policies and activities to inculcate

environmental practices and habits: No smoking, no open burning, annual tree planting activity, earthquake drills and basic life support and first aid trainings, workshops on disaster risk reduction and management, composting and physical facilities for persons with disability.



Through our policy issuances, the Campus challenges the administrators' leadership, continuously improves our curricular programs, encourages our researches, promotes community involvement, and enhance students engagement so that, collectively, we will be creative in our systems, procedures, and ways as we embrace and observe our environmental mantra **"developing a perfect environment for excellent learning"**

JAME I MANUEL, JR.
Chancellor

DID YOU KNOW?

DMMSU NLUC

- Situated at the heart of a 900 hectare forest or watershed
- A really-diversified ecosystem with 442 tree species and 189 plant

DID YOU KNOW?

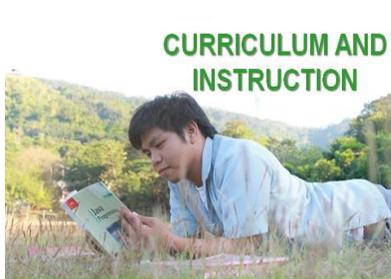
- Established and manages around 13.8 hectares of plantation crops
- Composed of around 2,057 pupils, students, faculty members and non-teaching staff who are cooperatively involved in all the environmental programs and projects
- Integrates in its curriculum and teaching, concepts and principles of environmental protection &

DID YOU KNOW?

- Conducts researches to create more innovative ways to further improve its learning environment
- Continuously strengthens its partnership with communities/organizations in the implementation of programs and projects

"At DMMSU-NLUC, we are in harmony with nature"





Curricular Offerings & Enrollment

COURSE	Number of Students
BS Environmental Science	59
BS Forestry	34
BS Agroforestry	60
BS Agriculture	113
Animal Science	98
Crop Science	29
Crop Protection	13
Soil Science	13
BS Agribusiness Management	147
BS Agricultural Engineering	107
Doctor of Veterinary Medicine	90

Curricular Offerings & Enrollment (continued)

COURSE	Number of Students
Bachelor of Elementary Education	102
Bachelor of Secondary Education	182
BS Biology	33
AB English Language	27
BS Information Systems	229





Nursery Management (IAWM)



Rabies Vaccination (IVM)



Composting



Vermi-Composting



Organic Pesticides



Organic Fertilizers



Rice Planting



Riverside Clean-Up (EE)



Coastal Clean-Up



Rehabilitation of Sports Facilities



Rip rapping



IT Literacy (CIS)



Mangrove Planting



Tree Planting by the NLUC Alumni



Environmental Education (Organic)



Environmental Education (CURE the Sea -



Environmental Education (Life-Saving Seminar -



Paper Conservation



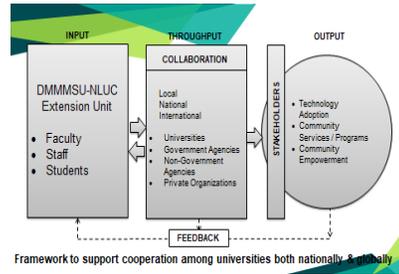
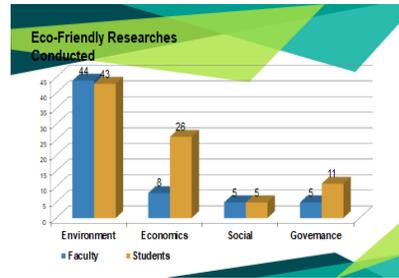
Energy Efficiency and Conservation



Plantations

CROPLANT	AREA	No of Trees
1. Coffee	2 hectares	4,000 trees
2. Citrus	2 hectares	350 trees
3. Mulberry	3 hectares	
4. Mango		645 trees
5. Cacao	2 hectares	2,900 trees
6. Rubber	0.50 hectares	500 trees
7. Guapple		200 trees
8. Rambutan	1.17 hectares	468 trees
9. Dragon Fruit	0.20 hectares	640 plants
10. Oil Palm	1 hectares	
11. Banana	0.10 hectares	
12. Road-side Trees		700 trees
13. Ornamental Plants	1.5 kms	







4. Topic: **Towards a Holistic Approach in Community-based Forest Conservation: Miriam College Experience**

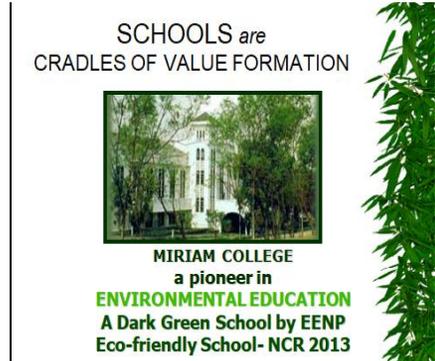
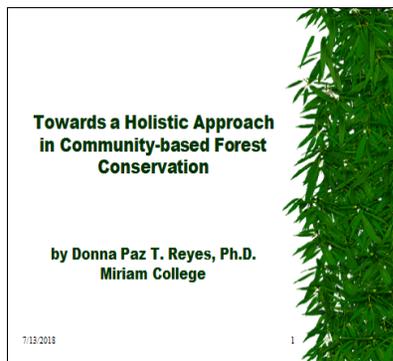
by Donna Reyes, Ph. D.

Head, Environmental Programs of Miriam College



Dr. Reyes traced how the school’s outreach program in Sierra Madre evolved from a mere Reforestation Project in Dona Remedios Trinidad (1990) to Biak-na-bato National Park Conservation Project (1992-2002) and eventually to the Southern Sierra Madre Wildlife Center (2004 – present) where community environmental education, capability building and empowerment were the main thrusts. Through the program they were able to grow forest, grow advocates, grow livelihood, and grow partnerships.

POWERPOINT PRESENTATION



3 Projects of Miriam College in the Sierra Madre Mountains

1. DRT Reforestation Project (1990s)
2. Biak-na-Bato National Park Conservation Project (1996-2002)
3. Southern Sierra Madre Wildlife Center (2004- present)

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Reforestation Project in Dona Remedios Trinidad, Bulacan

- ☞ The first project in DRT, Bulacan was a reforestation initiative, with tree planting and community-organizing.

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Miriam-P.E.A.C.E.
(Public Education and Awareness Campaign for the Environment)



7/13/2018

Contract Reforestation Projects

- ☞ Early 1990's
- ☞ National Forestation Program of the DENR

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Reforestation Strategies:

Planting – 2x3 m

- ☞ **Nurse trees:** *Gmelina*, *Acacia auriculiformes*, *Eucalyptus*
- ☞ **Hardwood species** – Narra
- ☞ Bamboo
- ☞ The community workers were paid for labor primarily for planting

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- ☞ Miriam College students, staff and other environmental groups are involved, to the extent that they can be in one-day field trips on, for example, seedling preparation, planting, re-planting, weeding, or monitoring.

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- ☞ Miriam College also uses the area as one of its sites for ecological and social investigation.

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Community organizing

- ☞ One people's organization
- ☞ Livelihood: Making of brooms (walis tambo)

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Funders/partners

- ☞ Funders: Department of Environment and Natural Resources
- ☞ Universal Motors
- ☞ Manila Hotel
- ☞ Community: one cooperative

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Challenges

- ☞ The area got burned three times
- ☞ Additional costs for labor and planting materials

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Output:

- 75 hectares reforested
- One PO (community cooperative)
- One spring revived

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"The site is a two-hour ride and two hour climb away, located in a thinly spread-out village. Rough as the ascent (and descent) is, all who have gone through the experience feel it is worth being close to nature, being exposed to life in the mountain communities and doing their bit through tree-planting and/or monitoring."
Source: MC Website

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"It's greener at the other side of the mountain..."

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Biak-na-Bato National Park Conservation Project

- ☞ focused on capacity-building of people's organizations and participatory approaches in protected area management, ecotourism and environmental education

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Miriam-P.E.A.C.E.

- ☞ Funders: Foundation for the Philippine Environment (1996-2002)
- ☞ Office of the President – Assistance to NGOs and POs (Model Farms)
- ☞ AusAID (Community-based Ecotourism)

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Emerging ideas about protected areas

1. Protected areas exist for the primary purpose of preserving wildlife habitats.
2. Protected areas are social space.
3. Biodiversity is a global common.
4. Protected areas arise from political decisions.

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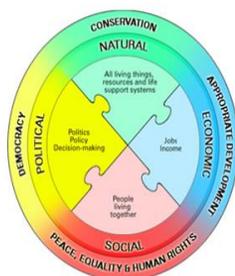


Figure 3.1 Four dimensions of sustainable development
(Source: UNBSCD, 2002)

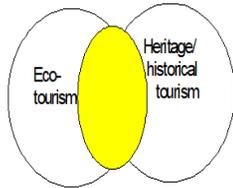
Protected area

- ☞ identified portions of land and water set aside by reason of their unique physical and biological significance, managed to enhance biological diversity and protected against destructive human exploitation. (NIPAS Act, 1995, p. 2)

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Ecohistorical tourism



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Table 3.6 Summary of issues in capacity-building

	Capacity building as a means	Capacity building as a process	Capacity building as an end
Capacity building in the NGO	To strengthen the organisation to perform specific activities (one of which may help build capacity among primary stakeholders)	As a process of reflection, learning, inspiration, selection and action for greater coherence between NGO mission, its structure and its activities	To strengthen the to survive and fulfil its mission, as defined by the organisation
Capacity building in civil society	To strengthen the capacity of primary stakeholders to implement defined activities	To foster communication processes of debate, negotiation-building, conflict resolution and management, ability of the society to deal with its differences	To strengthen the capacity of primary stakeholders in particular in the political and socio-economic arena according to objectives defined by them

Source: Eade, 1997, p. 35

Environmental education

Education
about the environment
In the environment
for the environment

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Biak-na-Bato National Park

Situational analysis

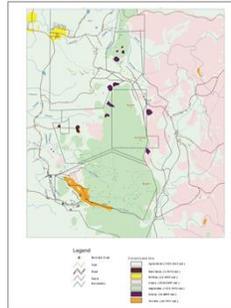
Conservation values: history, geology (caves, aquifer), biodiversity

Problems and issues in conservation: quarrying, extensive gathering of wildlife, kaingin, charcoal making, land tenure issues, poor tourism practices, poverty



7/14/2018

Figure 4.1 Land-use map of Biak-na-Bato National Park



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Figure 2.1 The action research spiral

Source: Seymour, 2000



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Biak-na-Bato National Park

Cycle 1 – Establishing the project (1997-1998)

- Biak-na-Bato National Park Conservation Project of Miriam-P.E.A.C.E. commences
- People's organisations are formed
- Protected Area Management Board is convened
- Centennial Celebration



7/14/2018

Biak-na-Bato National Park

Cycle 2 – Towards institutional strengthening and collaboration (1999-2000)

- PAMB formulates Integrated Protected Area Plan
- People's organisations become PAMB members
- Community-based ecohistorical tourism and sustainable agriculture projects of Miriam-P.E.A.C.E. commence
- PAMB explores co-management schemes for stakeholders
- Schools get involved



7/14/2018

Community Training

- Para-legal training
- BNBNP management planning
- Eco-Tour/Cave guide training
- Catering service field trip and practicum
- Bamboo handicrafts for making souvenirs
- DOT tour guide training and accreditation
- Guides' information, education and communications management training
- Basic catering training
- Food packaging and presentation skills
- Budgeting and financial management training
- Goat management training Bamboo propagation training
- Sustainable agriculture training and establishing pilot farms
- Basic leadership training
- Team building and conflict management



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Biak-na-Bato National Park

Cycle 3 – Enhancing capacity, collaboration and sustainability (2001-2002)

- Phase-out period of Miriam-P.E.A.C.E.
- Federation of POs organised and prepares for project management
- Convenors Group formed
- BNBPN earns PhP .4M



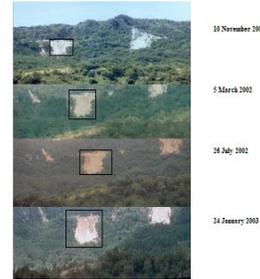
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“The rent of our floaters is PhP 30-35 daily. The boat rent is PhP 25 per hour. The picnic cottages can be rented at PhP 200 per day for the big ones and PhP 100 for the small ones. A tourist guide earns PhP 50 per person. Tourism activity is high during the months of December to June and we have been able to build these facilities with a loan. We are repay the loan from our income, and the rest goes to the cooperative and to the bank as savings.”

(Translated from Filipino - Tata Toning)

7/14/2018

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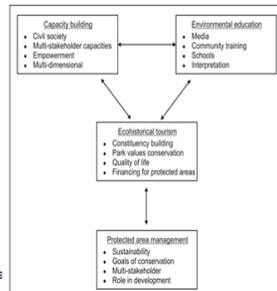
10 November 2001

2 March 2002

28 July 2002

14 January 2003

The framework for enhancing protected area management through ecotourism, capacity-building and environmental education



7/14/2018

Key Outcomes (for various projects in BNS funded by the Foundation for the Philippine Environment) Source: FPE Website

- The strong anti-mining campaign of partner POs and the local government led to the suspension of mining operations permit of Rosemoor Mining and Development Corporation, a limestone quarrying company, in 2006.
- Capacity-building activities including vigorous advocacy work strengthened the people's organizations and led to the formation of the Buklod-Unlad ng Dalitang Umaasa sa Kalikasan (BUNDUK).

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- Improvement in confidence and ethical and political maturity among the POs involved, which now allows them to be more vocal and proactive with their conservation concerns for the site. Case in point: The POs were involved in the drafting of the Initial Protected Area Plan (IPAP), which has led to the inclusion of Biak-na-Bato National Park as a protected area under the National Integrated Protected Areas System Act of 1995 (RA 7856).

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- A significant number of individuals formerly involved in extractive activities such as illegal logging and quarrying have exhibited a dramatic change in perspective regarding valuing the rich ecological resources of the National Park. Now, they are at the forefront in defending and protecting this natural heritage from further exploitation.

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- Alternative livelihood activities such as food catering, tour-guiding, goat-raising, and rice and cassava production
- A socio-economic profile of the six barangays alongside the biological profile
- Land and resource-mapping, by way of community training
- Greater public support for the conservation of the BNBPN's natural resources

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“One day we will turn over the work of developing their communities completely to them. Then, we will leave so we could start work in other areas.”

Maning Sambale

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- SOUTHERN SIERRA MADRE WILDLIFE CENTER is a 25-year project that aims to catalyze sustainable development in Barangay Laiban and the Kaliwa Watershed and will serve as a model of wildlife conservation and sustainable development in the Sierra Madre.



The Southern Sierra Madre Wildlife Center aims to

Protect and rehabilitate forest, caves, freshwater ecosystems and wildlife within the project site and Kaliwa Watershed;

- Provide a venue for constituency-building for sustainable development through the conduct of outdoor environmental education, ecohistorical tourism, community education and media coverage;

- Increase the capacities of the host communities specifically upland farmers and indigenous peoples through training, community-based projects, livelihood and other socio-economic endeavors;



- Promote conservation and natural resources management approaches through field-based research and site development activities;
- Propagate plants and animals to showcase agroecological practices;
- Develop a field study site for the academic and environmental outreach programs of ESI and Miriam College; and
- Enhance linkages for research, educational and public services within Rizal Province and Region 4.

Environmental Studies Institute



Whole School Approach:

Towards developing a culture of environmental care

EE incorporated in school:

- I. Policy and administration
- II. Curriculum and research
- III. Campus practices
- IV. Outreach and extension
- V. Production and Income Generating Projects

Miriam College Policy: Institutional commitment

- ☞ Vision and Mission Statement
- ☞ Core values:
 - 4 K's – *Katotohanan* (Truth)
 - Katarungan* (Justice)
 - Kapayapaan* (Peace)
 - Kalikasan* (Integrity of creation)

MC Environmental Policies:

- ☞ Integration of 7 Environmental Principles in the curriculum
- ☞ MakiTIPS Program (Conservation program)
- ☞ Ecological Solid Waste Management

School Environmental Policy

- No smoking**
- No smoke belching**
- No idling**
- No soft drinks**
- No balloons**
- No styrofoam**

Ecological Solid Waste Management Program



THE SEVEN ENVIRONMENTAL PRINCIPLES

1. NATURE KNOWS BEST
2. ALL FORMS OF LIFE ARE IMPORTANT
3. EVERYTHING IS CONNECTED TO EVERYTHING ELSE
4. EVERYTHING CHANGES
5. EVERYTHING MUST GO SOMEWHERE
6. OURS IS A FINITE EARTH
7. NATURE IS BEAUTIFUL AND WE ARE STEWARDS OF GOD'S CREATION

Curriculum:

Training environmental professionals

Formal Tertiary Environmental Programs

- BS Environmental Planning and Management
- MS Environmental Management and Studies
- Ph.D. Environmental Management and Studies

National Service Training Program

Beyond community immersion to action that benefits the community and environment



OUTCOMES OF MIRIAM COLLEGE EDUCATION

Community and Society



Source: Miriam College Service Learning Program

Subject	Project
Ecotourism	Horseback Riding Comfort Room
Environmental Planning and Management	Training on environmental protection in ecotourism Feasibility Studies
Biology	Identification of Medicinal Plants
Childhood Education	Local Alphabet

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Outreach and extension programs

Towards community involvement and multistakeholder participation

EE can be incorporated in outreach and extension programs in:

- Immediate community - urban
- Watersheds and protected areas
- Focusing on poor and marginalized communities and sectors

Funders:

South Supermarket
MC, faculty, students, alumni and parents
Shoppersville
Forest Foundation Philippines

PO: Leyban Farmers Cooperative

LGU: Municipality of Tanay
Barangay Council of Laiban

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Networking and Advocacy:

representation in various decision-making bodies, advocacy and professional groups

- Protected Area Management Board of Kaliwa Watershed
- Convergence for Safe Food, Healthy Environment and Sustainable Economy
- Philippine Network of Environmental Educators
- Catholic Educational Association of the Philippines
- PATLEPAM

Forest protection and rehabilitation



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Backyard nurseries

- Use of rainforestation techniques and indigenous species



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The forest area



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Livelihood

- Selling of seedlings
- Ginger ale
- Coffee production
- Honey



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Scholarships



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Training



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Positive Responses

- Students: traditional Christmas party from MC community donations
- Student /faculty volunteers: INSA, NSRC,
- PTC involvement
- Alumni:
 - South Supermarket,
 - Alumni Batch '61, '85, '59
- Fund raisers: Fun Run (Run Forest Run 2012), cards and poster contest
- Student debut in Laiban



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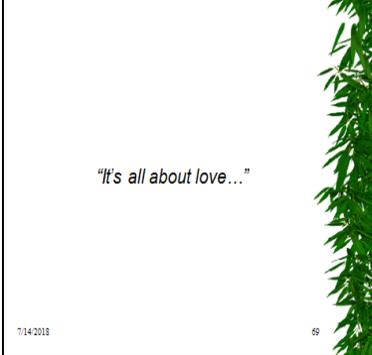
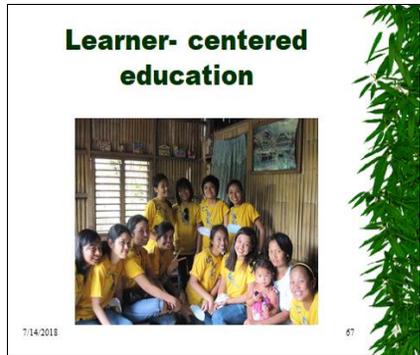
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- Grow Forests
- Grow Advocates
- Grow Livelihood
- Grow Partnerships

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DAY 3 (February 23, 2018)



The third day began with an intergenerational invocation led by **Lynn de Lara** of Knights of Columbus representing senior citizens, **Eleonor Rivera**, Founder of Healing Present Nature and Wellness Farm representing Adults and **Rhianne Marie C. Quisumbing**, a seventh grader of Ateneo de Cebu to represent the youth. They prayed for guidance, unity and teamwork among all stakeholders for the environment.



This was followed by a recap of Day 2 delivered by the emcees, **Quennie Dianon** and **Mark Lim** faculty members of St. Theresa's College Cebu.



The first plenary speaker was **Federico Lopez**, Chair and CEO of First Philippine Holdings, who discussed, “An Energy Revolution for a Vibrant Philippines and a Livable Planet.” He discussed their journey as an energy company that’s navigating the turbulent problems of climate change, technological disruption, public interest, and economic development.

After November 12, 2013, when its largest geothermal plant in Leyte was directly hit by typhoon Yolanda, with 704 of their employees affected, communities suffering with the loss of loved ones and possessions, Energy Development Corporation decided that as an energy company, it can no longer be business as usual. The incident was a root wakeup call. It had a sudden enormous impact on their decision on how to move forward as a company.

Mr. Lopez continued to discuss more devastating effects of climate change like the 100 landslides caused by typhoon Urduja; the possible rise in global temperature by more than 1.5 degrees Celsius as announced by experts, with devastating rise in sea level from 4-6 meters to 25 meters high depending on the increase in global temperature; massive financial instability as predicted by global financial leaders. He also named other factors like the intense price competition, the continued financing of coal production and coal-fired power plants by major banks, the short-term perspective of a government that’s ambivalent about climate change issues with priorities set on building more coal-fired power plants for power adequacy and cheap electricity prices instead of prioritizing our countrymen’s vulnerability to the effects of global warming.

Faced with all the challenges, the Lopez Group of companies made a categorical announcement at the annual stakeholder’s meeting that their companies would never invest in or develop any coal-fired power plant. Instead its energy corporation will lead the way in protecting the environment and qualify this with the significant projects and successful endeavors of Energy Development Corporation (EDC) in terms of renewable energy resources.

He went on to discuss their motivations to continue despite of all the obstacles. For one, millennial consumers are starting to demand clean production. In response, companies are becoming conscious about bringing their footprints and supplies checked. RE100, Renewable Energy 100, which consists of 125 of the world’s largest companies are pledging to use 100% renewable energy in their supply. Companies are doing it because positive effects are reflected in their bottom line. Addressing consumers’ environmental demands redounds to consumer patronage which is inevitably good for the bottom line. There is also the guilt factor and desire for legacy building. Companies are starting to realize that they can never bring back the original state of the environment that they have damaged. Business leaders are at the point in their lives where legacy building is of prime concern. They want their company to be well remembered for the good that it has contributed.

Another factor that keeps them going are the awards and recognition that their companies have been getting; Asia’s CEO Awards recognized First Gen as the Green Company of 2017; Philippine Stock Exchange Bell Award cited them as Best Sustainability

Program; EDC was bestowed the International Finance Appropriations Client Leadership Award in 2011 for its commitment to environment, social sustainability and good corporate governance. Just recently, EDC was included in Quarter 1 Carbon Clean 200, listed as the only Filipino company recognized for leading the way with solutions for the transition to clean energy in the future.

Mr. Lopez ended his talk with the hopeful note that the forces of clean technology are moving fast. Solar, wind and battery storage technology are improving in leaps and bounds.



Another highlight was the speech of **Senator Grace Poe**. She emphasized that she had always been a staunch advocate of safe food for Filipino children. Sen. Poe mentioned the enacted bills and laws that she authored on safe food and healthy environment. Senate Bill No. 1624, or the “Right to Adequate Food Act” establishes a legal framework for the right to food. The “Young Farmers” bill or ang “Tulong Kabataan sa Agrikultura” Act seeks to give scholarship grants to agricultural students, provide easy credit and start-up capital for young farmers, free seedlings/farming implements, mentoring and extension services. It is meant to encourage young farmers to pursue careers in farming. Sen. Poe also filed SBN 1687 or the “Sustainable Coastal

Tourism Act of 2018”. The bill seeks to reconcile the social and economic growth from coastal tourism with the people’s right to a balanced and healthful ecology in accord with the rhythm and harmony of nature. Senate Bill 1279, or the Masustansyang Pagkain Para sa Batang Pilipino Act was finally passed by the Senate and the House of Representatives. It will institutionalize a program that provides for one healthy meal a day for every undernourished child, for at least 120 days a year. Furthermore Sen. Poe discussed future projects that she intends to pursue.



The audience was delighted with the energetic performance of the **Adelante Dance Troupe** of University of San Jose Recoletos.

Another well appreciated talk was the personal video message of **Al Gore**, founder of Climate Reality Project, and newest member of Green Convergence.

Mr. Gore highlighted three questions that we face today about the climate crisis: (1) *Must we change?* (2) *Can we change?* (3) *Will we change?* He hopes the answer to the 3 questions is a resounding YES. He related how individuals and organizations around the world are fighting for change. He mentioned it was good news that every nation on earth has joined the Paris Agreement and that we are going to meet and exceed the US commitments, regardless of who occupies the White House.





The last speaker of the Plenary Session was **Bradnee Chambers**, Executive Secretary of United Nations Convention on Migratory Species (CMS). He gave an overview of the impacts of climate change on migratory species, CMS activities and policy developments on Climate Change and on the development of a Climate Resilient Network for the East- Asia – Australasia Flyway.

POWERPOINT PRESENTATION

Convention on Migratory Species | 2nd Philippines Environment Summit
20 – 22 February 2018
Cebu, Philippines

Migratory Species and Climate Change
Bradnee Chambers, Convention on Migratory Species

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Convention on Migratory Species | 2nd Philippines Environment Summit
20 – 22 February 2018
Cebu, Philippines

An Overview of Climate Change Impacts on Migratory Species

- Migration as a biological phenomenon is determined in many cases by climatic factors → Investigations to date show that migratory species are particularly sensitive to climatic disturbances and corresponding impacts
- Level of impact on the conservation status of species can vary greatly, and at the moment is still more presumed and based on projections and model than on absolute scientific evidence
- Vulnerability assessments have now been undertaken for a good number of species → For those assessed as highly vulnerable, climate change effects are considered to have the potential to lead them to extinction in a rather short time frame

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Convention on Migratory Species | 2nd Philippines Environment Summit
20 – 22 February 2018
Cebu, Philippines

Structure of the Presentation

- Overview of Climate Change Impacts on Migratory Species
- Overview of CMS Activities and Policy Developments on Climate Change
- Development of a Climate Resilient Network for the East-Asia – Australasia Flyway

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Convention on Migratory Species | 2nd Philippines Environment Summit
20 – 22 February 2018
Cebu, Philippines

Increasing Temperatures

- Loss of vital habitat**
 - Polar Bear
 - Narwhal
- Collapse of food webs in the oceans** linked to changing zooplankton abundance
 - Baleen whales
 - Penguins
- Altered Sex ration** (feminization of populations)
 - Marine turtles

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Convention on Migratory Species | 2nd Philippines Environment Summit
20 – 22 February 2018
Cebu, Philippines

Changes in Precipitation

- Reducing Wetland Habitats for Breeding and Feeding**
 - Andean flamingos
 - Aquatic Warbler
- Reducing Grazing Habitat for Terrestrial Mammals**
 - Addax, Cuvier's Gazelle and Dama Gazelle
- Variation in Rainfall Affecting Breeding Success**
 - Relict Gull
 - Kemp's Ridley Turtle

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Convention on Migratory Species | 2nd Philippines Environment Summit
20 – 22 February 2018
Cebu, Philippines

Erratic Weather Regimes

- Increased Storm Frequency and Intensity**
 - Green Turtles
- Extremes in Temperature**
 - Saiga Antelope

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Convention on Migratory Species | 2nd Philippines Environment Summit
20 – 22 February 2018
Cebu, Philippines

Sea Level Rise

- **Loss of Low-Lying Coastal Habitats**
 - Swan Goose
- **Loss of Nesting Sites**
 - All sea turtles



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Convention on Migratory Species | 2nd Philippines Environment Summit
20 – 22 February 2018
Cebu, Philippines

Ocean Acidification

- **Impacts on Food-Webs**
 - Changes in plankton composition and abundance
- **Habitat loss**
 - Coral Reef crisis



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Convention on Migratory Species | 2nd Philippines Environment Summit
20 – 22 February 2018
Cebu, Philippines

Ocean Circulation

- **Changes in Food Distribution and Abundance**
 - Humpback Whale, Basking Shark
- **Altering Migrations**
 - Hawksbill Turtles, Loggerhead Turtles



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20 – 22 February 2018
Cebu, Philippines

Spatial and Temporal Responses

- **Habitat Shifts**
 - Balearic Shearwater
- **Phenological Shifts**
 - Changes in time of migration and other life-history events
- **Habitat Loss**
 - Siberian Crane



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20 – 22 February 2018
Cebu, Philippines

Tertiary Effects

Used to indicate the changes in human behavior resulting from climate change that in turn result in additional impacts

- **Development in areas previously inaccessible**
 - Siberia, Arctic Ocean
- **Human activities aimed at mitigating climate change**
 - Renewable energy infrastructure



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1997 Recommendation 5.5 Climate Change and its Implications for the Bonn Convention
→ Set up Scientific Council Working Group, tasked with review of scientific work

2005 Resolution 8.13 Climate Change and Migratory Species

2008 Resolution 9.7 Climate Change Impacts on Migratory Species

2011 Resolution 10.19 Migratory Species Conservation in light of Climate Change

2014 Resolution 11.26 Programme of Work on Climate Change and Migratory Species
→ Adopts the Programme of Work on Climate Change and Migratory Species

2017 Resolution 12.21 Climate Change and Migratory Species
→ Consolidates all previous Resolutions and Recommendations on Climate Change



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Studies and Publications

- Climate Change and Migratory Species (2005)
- Migratory Species and Climate Change: Impact of a Changing Environment on Wild Animals (2006)
- Indicators of the Impact of Climate Change on Migratory Species (2008)
- Preliminary Assessment of Vulnerability to Climate Change of CMS Appendix I species (2011)



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Cebu, Philippines

Technical Meetings and Workshops

- Technical Workshop on the "Impact of Climate Change on Migratory Species: the Current Status and Avenues for Action" (Arlés, France, 2011)
- Technical Workshop: Towards a CMS Programme of Work on Climate Change (Limon, Costa Rica, 2014)
- Workshop on Migratory Species and Climate Change: Regional Approach, Practical Measures and Examples (Bonn, Germany, 2017)



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Action Now (as recommended by 2017 workshop)

- Review of evidence for climate change impacts on migratory species (update of 2005 review)
- Review of vulnerability assessment of Appendix I species and extension to include Appendix II species (update of 2011 review)
- Development of guidelines for adaptation measures for migratory species
- Develop case studies on the impact of Climate Change on selected migratory species and fragile ecosystems
- Building climate-resilient site networks for migratory species



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CMS Convention on Migratory Species 2nd Philippines Environment Summit 20-22 February 2018 Cebu, Philippines

Focal Species and Climate Change

Example species case studies

- Narwhal
- Common Loon
- Penguin sp.
- Loggerhead Turtle
- African Wild Dog
- Monarch Butterfly
- Snow Leopard
- Caribou
- Saiga Antelope
- Blue Whale



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Migratory Species and Fragile Ecosystems

Case studies to be developed

- African savannah – major migratory system
- Coral reefs – key for many migratory species
- N E Atlantic – change to plankton species and fisheries
- Central Asian steppe ecosystem
- Mangroves
- Congo basin



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Developing a Climate Resilient Network for the East-Asia – Australasia Flyway

Goal

Conservation and management requirements of Critical Sites for EAAF waterbirds are systematically integrated into climate-change adaptation and disaster risk reduction and development planning at international, national and local level



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Scale of Impact

- Flyway scale**
 - Critical Site Network tool adapted for the EAAF, applying existing information
 - Modelling predictions on potential impacts of climate change and developmental changes on landscapes and species
- National scale**
 - Linking to landscape and flyway scale, influencing policy and practice
- Demonstration sites**
 - Applying landscapes approach at selected sites
 - Option of coastal and inland



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Objectives

- Assess and develop distribution models for selected species for present situation and future selected development, climate and sea-level rise scenarios
 - Select waterbirds based on data availability and habitat use
- Assess vulnerability of Critical Sites/ to climate change.
 - Use direct changes in habitat availability and identify Critical Sites vulnerable to large changes in wetland habitat availability
 - Use predicted changes in the distribution of waterbird populations



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Demonstration Sites Options

Potential activities

- Vulnerability assessment at landscape scale
- Identification of key stakeholders and needs
- Development of adaptation action plan
- Facilitate adaptive management capacity-building and learning
- Implementation of multi-stakeholder habitat restoration and management
- Monitoring of outcomes
- Awareness raising



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The Way Forward

- Adopt an interdisciplinary approach to climate change (close cooperation between environment, energy, mining, agriculture, national development and other ministries at the national level);
- Developing guidelines for mitigation and human adaptation projects to ensure that they are not harmful to migratory species;
- Developing action plans for species most vulnerable to climate change;
- Minimize other anthropogenic impacts particularly on species most vulnerable to climate change;
- Identifying and prioritizing migratory species habitats most affected by climate change;
- Protecting important sites for migratory species, through a range of measures;
- Monitoring environmental change to key areas used by migratory species.

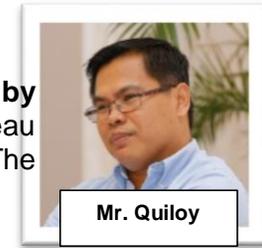


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Ms. Corrales

Session A tackled the topic on **Preserving Our Heritage of Native Trees**, chaired by **Idefonso Quiloy**, Senior Forest Management Specialist of Forest Management Bureau and moderated by **Joezen Corrales**, Biology Professor of Cebu Normal University. The Session had 3 speakers.



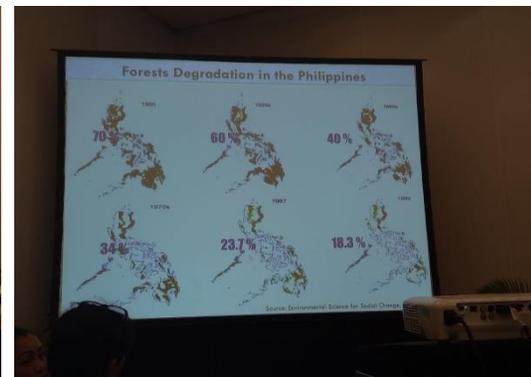
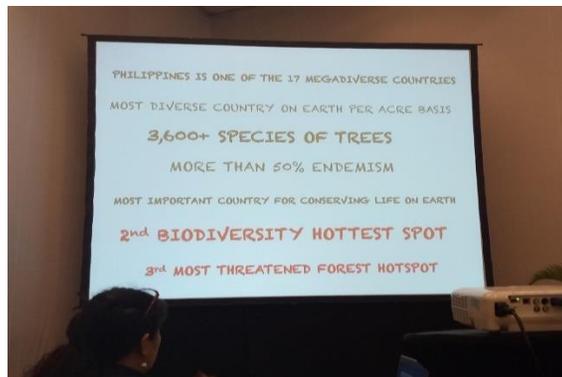
Mr. Quiloy

1. Topic: **BINHI Program**
by *Pastos Malabrigo*
Professor & Chair, Forest Biological Sciences, College of Forestry & Natural Resources, UPLB



BINHI's vision is to improve people's awareness while promoting the planting of threatened native tree species. He also discussed the learning experiences and successes of BINHI's Tree for the Future project – a corporate social program of Energy Development Corporation that created a book showcasing BINHI's adventures on the search and rescue of native trees.

POWERPOINT PRESENTATION



CURRENT STATE OF PHILIPPINE FORESTS

World's 10 Most Threatened Forest Hotspots

Rank	Hotspot	Remaining Forest	Predominant Vegetation Type
1	Indo-Burma (Asia-Pacific)	5%	Tropical, Subtropical moist broadleaf forests
2	New Caledonia (Asia-Pacific)	5%	Tropical, Subtropical moist broadleaf forests
3	Southeast Asia (Asia-Pacific)	7%	Tropical, Subtropical moist broadleaf forests
4	Philippines (Asia-Pacific)	7%	Tropical, Subtropical moist broadleaf forests
5	Atlantic Forest (South America)	8%	Tropical, Subtropical moist broadleaf forests
6	Mountains of Southwest China (Asia-Pacific)	8%	Temperate coniferous forests
7	California Floristic Province (North America)	10%	Tropical, Subtropical dry broadleaf forests
8	Coastal Forests of Eastern Africa (Africa)	10%	Tropical, Subtropical moist broadleaf forests
9	Madagascar and Indian Ocean Islands (Africa)	10%	Tropical, Subtropical moist broadleaf forests; Montane grasslands and shrublands
10	Eastern Afromontane (Africa)	11%	Tropical, Subtropical moist broadleaf forests; Montane grasslands and shrublands

Source: Conservation International 2011

MOST THREATENED TREES

The mightier fall down first

Threatened tree species

- 28 CR
- 47 EN
- 159 VU
- 83 DD

REHABILITATION EFFORTS

	Colonial Period (1910-1945)	Post-war Period (1946-2010)	CBFM et al. (2011-2010)	NGP (2011-2010)
No. of projects	35	90	5,503	No data
Distribution	26L:6V:3M	46L:31V:14M	All regions	All regions
Target area (ha)	535,000	166,877 (1948-1960)	7.9M	1.5M
Area planted (ha)	26,660	17,390	1.6M	1.85M (Nov. 2017)
Total costs	3.574M	16.693M	No data	28.8B
% survival	15%	No data	71%	No data

Modified from Pulhin et al. 2006



ADVOCACY AND DOCUMENTATION

Tree for the Future

Tree for the Future

BINHI

A book narrating the stories behind the search and rescue efforts for the 96 priority species of BINHI



- ### ADOPT-A-WILDLIFE SPECIES (AAWS) PROGRAM
- What are the sub-activities under BINHI-AAWS: Species Rescue Activities
- Activity 1: Coordination**
 - Coordination and meeting with Security group, DENR and other key institutions
 - Data Gathering (Literature, Key Informants, Local guides)
 - Activity 2: Propagation**
 - Geo-tagging and Marking (Tin can or Spray Paint)
 - Measurement, Recording and Photo Documentation (Measure and count $\geq 10cm$ BINHI, 100%. Tree inventory for area $< 5ha$ w/ contiguous population and strip sampling method for area $> 5ha$ w/ contiguous or scattered population)
 - Activity 3: Conservation**
 - Labeling and Protection (Labels: 2 Kinds – Population or location & Individual tree marker)
 - Monitoring and Maintenance



ADOPT-A-WILDLIFE SPECIES (AAWS) PROGRAM

To date, under the criteria for mature individuals, EDC is proposing to update 10 species at least 1 notch lower

Species	Number of Populations	Actual count	Estimate	CI 95% 2002-2012	CI 95% 2017-2018	Recommendation	Remarks
1) Baguioficus	1 area	8874	1300	CR	CR	VI	Reorganize to 1 population only 2 notch down
2) Anisakis	8 areas	5,084	30300	CR	VI	OTI	Reorganize to 10 populations 1 notch down
3) Palawan Mang	2 areas	316	130	VI	VI	VI	REASSESS DATA
4) Palawan Mangrove	8 areas	470	1400	CR	CR	CR	Reorganize to 10 populations
5) Mapiit	10 areas	1,074	1400	CR	CR	CR	Reorganize to 10 populations
6) Samar Grass	2 areas	237	1400	CR	CR	VI	Reorganize to 10 populations 2 notch down
7) Samar Grass	4 areas	261	1400	CR	CR	CR	Reorganize to 10 populations 1 notch down
8) Sierra Madre Sabalwood	3 areas	2880	14100	CR	CR	OTI	Reorganize to 10 populations 1 notch down
9) Malabon	3 areas	4,243	20000	CR	VI	OTI	Reorganize to 10 populations 1 notch down
10) Palawan Mangrove	2 areas	5,255	11000	CR	VI	OTI	Reorganize to 10 populations 1 notch down

With BINHI's 9 years of research and exploration, EDC has the greatest authority to determine the true conservation status of our priority species...

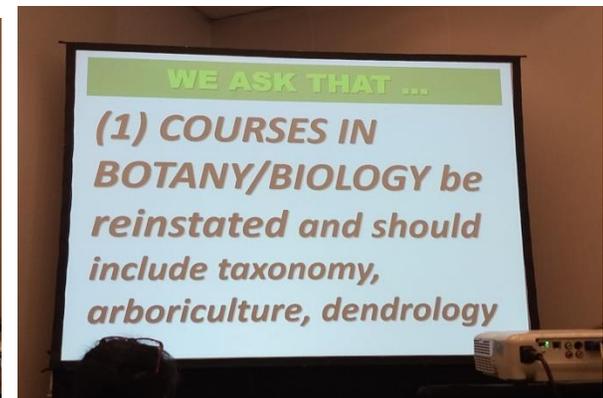
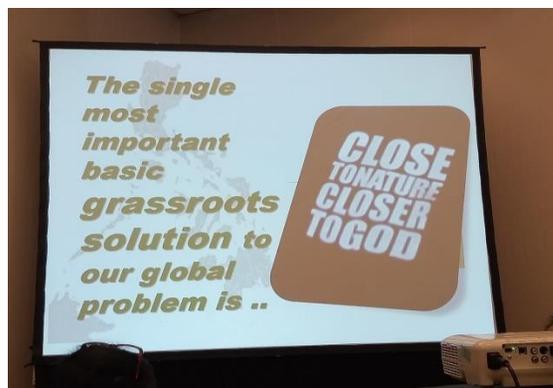
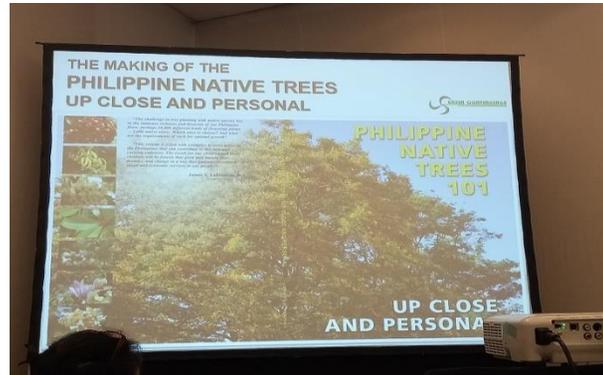
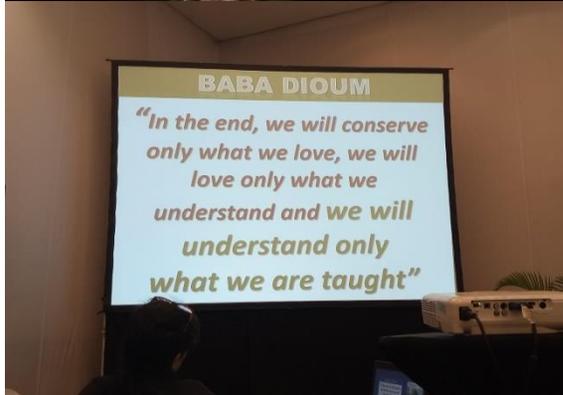
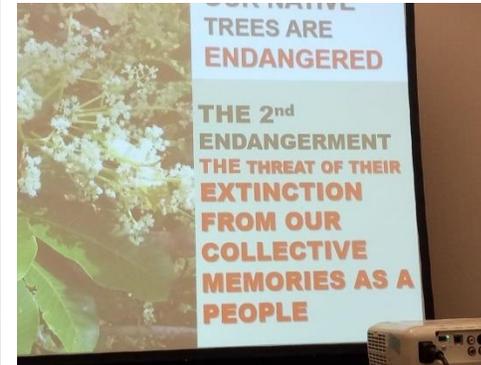
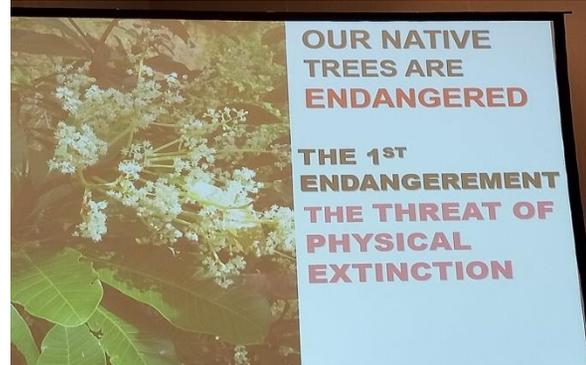


2. Topic: **Gardens of Native Trees**
by Imelda Sarmiento
Head, Philippine Native Trees Program, Green Convergence



Ms. Sarmiento discussed the factors that threatened the existence of our native tree species and the merits enjoyed in caring for them. She explained the rationale why native species should be planted instead of exotic ones. She also highlighted successful projects on creating gardens planted with native trees and the publication and launching of series of books on native trees to create awareness especially among those living in urban areas.

POWERPOINT PRESENTATION



WE ASK THAT ...
(2) RESEARCH GRANTS / scientific studies zero in on further 'discovering' values of native flora

WE ASK THAT ...
(3) (native) trees in your parks, public places, schools be identified with a tree marker that states: "PINOY AKO!"

WE ASK THAT ...
(5) MERALCO, DPWH, LGU, private estates maintenance: PRUNE existing native trees properly

WE ASK THAT ...
(6) LOBBY FOR a "NATIVE RE-GREENING" law, ordinance, policy

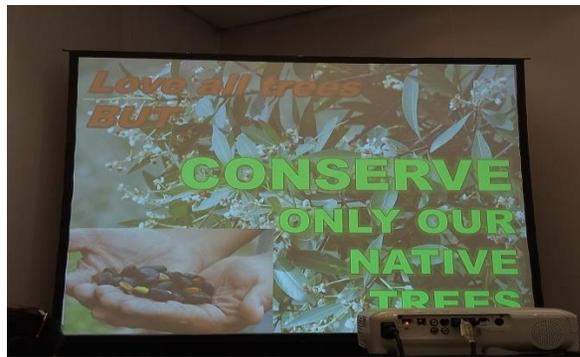
WE ASK THAT ...
(7) PLANT NO MORE MAHOGANY, GMELINA & ALIEN SPECIES esp INVASIVE ONES ... 'nuf is enough

WE ASK THAT ...
(8) UN-TEACH DENR!! Mandate / convert 700-some DENR nurseries nationwide to only natives!

WE ASK THAT ...
(9) Mandate DPWH to include tree planting verges on new & re-constructed/ rehabilitated roadways

Love all trees BUT
PLANT ONLY OUR NATIVE TREES

Love all trees BUT
NURTURE ONLY OUR NATIVE TREES

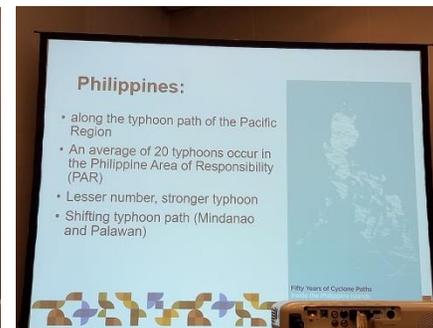
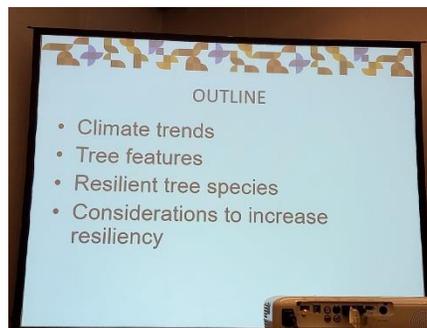


3. Topic: **Typhoon Resilient Native Trees**
By *Eric Buduan*
Senior Program Officer, Forest Foundation Philippines



Mr. Eric Buduan talked about how climate change affects typhoons and how typhoon resilient native trees are effective in combating such disaster. Features of these typhoon resilient trees were mentioned and how it enhanced resiliency in a particular area.

POWERPOINT PRESENTATION



Disastrous typhoons with damages of at least Php1.0 billion.

Name of Tropical Cyclone	Date of Occurrence	Total Damage (in Php Billion)
TY PABLO (Bopha)	Dec 3 –9, 2012	Php 36.95 B
TY PEPENG (Parma)	Sep 30 - Oct 10 2009	Php 27.30 B
TY PEDRING (Nesat)	SEP 24- 28, 2011	Php 15.55B
TY FRANK (Fengshen)	Jun 18 – 23, 2008	Php 13.50 B
TY JUAN (Megi)	Oct16 – 21, 2010	Php 11.5 B
TS ONDOY (Ketsana)	Sep 24 – 27, 2009	Php 10.95 B
TY YOLANDA (Haiyan)	Nov. 8, 2013	Php 35.24 B

Source of data: NDRRMC, 2011 & 2013.

Typhoon-resilient tree features:

- ✓ Presence of buttress

"Buttresses therefore contribute around 60% of the anchorage of buttressed trees, producing around six times more anchorage than the thin laterals of unbuttressed trees"

M. J. Crook, A. R. Ennos and J. R. Banks
Journal of Experimental Botany Vol. 48, No. 314 (SEPTEMBER 1997), pp. 1703-1716

Mangrove species observed to be resilient and quickly recovering from storm surge damage during Super Typhoon Haiyan

Species resilient to storm surge		Species with fast recovery from the effects of storm surge	
Ranking	Species	Ranking	Species
1	<i>Pongamia pinnata</i> (bani)	1	<i>Pongamia pinnata</i> (bani)
2	<i>Nypa fruticans</i> (nipa)	2	<i>Sonneratia caseolaris</i> (pagatpat)
3	<i>Sonneratia caseolaris</i> (pagatpat)	3	<i>Hibiscus lilaceus</i> (malubago)
4	<i>Avicennia marina</i> (bungalon)	4	<i>Avicennia officinalis</i> (api-api)
5	<i>Avicennia officinalis</i> (api-api)	5	<i>Avicennia alba</i> (miyapi)
6	<i>Avicennia alba</i> (miyapi)	6	<i>Avicennia marina</i> (bungalon)
7	<i>Hibiscus lilaceus</i> (malubago)	7	<i>Nypa fruticans</i> (nipa)

Source: B+WISER as cited by Durst (2015)

"And because they're not native, they are not naturally resistant to typhoons."
 Ulysses Ferreras (PNPCS).

"One of the main incentives for starting the plantation work in eastern Mindanao was the almost total absence of typhoons. While most of the Philippines is affected by an average of 12-16 typhoons per year, the frequency of strong typhoons in eastern Mindanao is only about once every 40 years. This was important because the fast-growing tree species that were chosen for planting were not very storm resistant, whereas the indigenous species generally tolerate typhoons quite well (as evidenced during the 1981 typhoon when the east coast of Mindanao was hit by 180 km/h gale-force winds)".

http://www.fao.org/docrep/x5596E/x5596e03.htm

Flora of Calayan Island, Cagayan

Knema glomerata
Shorea contorta
Agathis philippinensis
Strombosia philippinensis

Beach Forest Species and Mangrove Associates in the Philippines

Jorge B. Primavera
Suzanne S. Sakala



Session B was on Landscape and Seascape Governance, chaired by Anabelle Plantilla, UNDP Biodiversity Finance Project Manager, and moderated by Atty. Rosa Eisma Osorio, CES Director of University of Cebu. The Session had 3 speakers.



1. Topic: **Payment for the Ecological Services of Mount Katalungan in Mindanao**

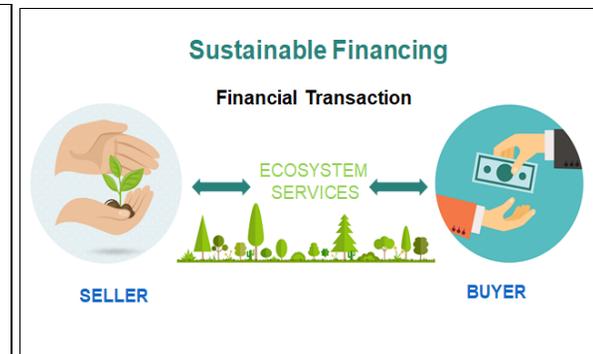
by *Roel Ravanera*

Executive Director, Xavier Science Foundation



Mr. Ravanera discussed the sustainable mechanism on Payment for Ecosystem Services that is applied in Mount Kalatungan, the 5th highest mountain range in the country situated in Bukidnon, Mindanao and the major water source of Cagayan de Oro, Bukidnon and North Cotabato. The program was launched in 2014 financed by DENR and World Bank in partnership with the Cagayan de Oro River Basin Management, Xavier University and nearby municipalities. The main objectives are to protect the watershed, regulate the waters and conserve biodiversity.

POWERPOINT PRESENTATION



FAST CHANGING WORLD

Crowded
12th
in the world

Liberalized
Integrated economies
i.e. AEC

Imbalanced
3 in 4 poor live in rural
areas; mostly Mindanao

Fragile
Ranked 4th in world
climate risk index

Sustainable Development Goals

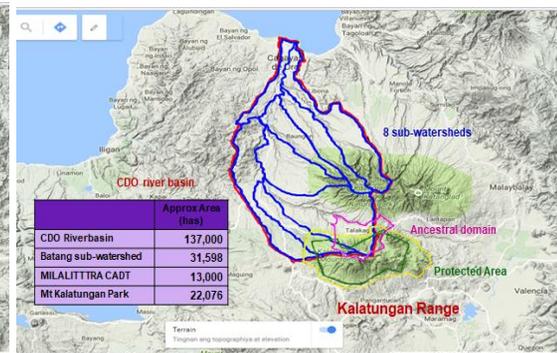
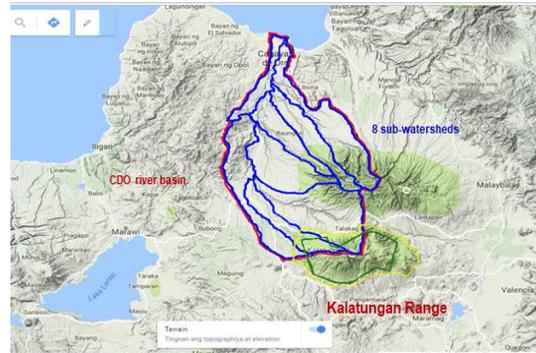
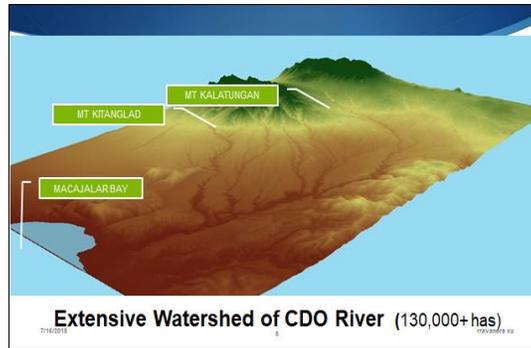
1 NO POVERTY	2 ZERO HUNGER	3 GOOD HEALTH AND WELL-BEING	4 QUALITY EDUCATION	5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION	7 AFFORDABLE AND CLEAN ENERGY	8 DECENT WORK AND ECONOMIC GROWTH	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES	THE GLOBAL GOALS For Sustainable Development			12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION	14 LIFE BELOW WATER	15 LIFE ON LAND	16 PEACE AND JUSTICE, STRONG INSTITUTIONS	17 PARTNERSHIPS FOR THE GOALS



Mt Kalatungan Range



- ◆ Fifth highest range in the country
- ◆ A Key Biodiversity Area: 342 plants, 129 animal species
- ◆ Major water source of CDO, Bukidnon and North Cotabato



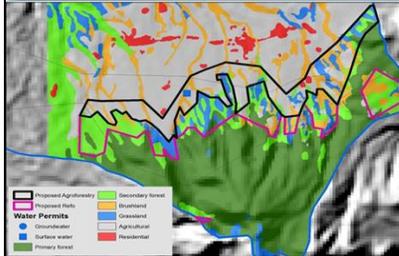
A healthy forest cover should ideally be above 40%, as of 2016, we are down to 24%
-CDORBMC

Inadequate Vegetative Cover

Typhoon Washi (Sendong) December 2011

PES in Mt Kalatungan

Targeted Areas

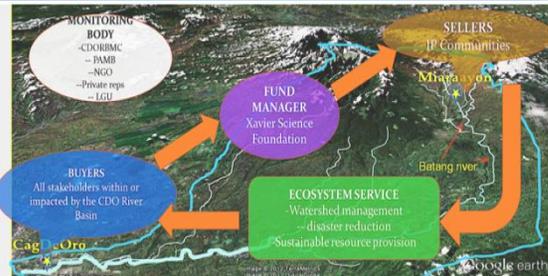


- where water sources are located
- Adjacent to natural forests

Funding Requirements

Particular	Year 1	Year 2	Year 3	Year 4	Year 5	TOTAL
A. REFORESTATION						
1. Mapping						
• Consultation, Mapping, Geo Tagging and Profiling						₱800.00
2. Materials & Preparation						₱0.00
• Fertilizer/pesticide	₱1,100.00					₱1,100.00
• Coffee Trees	₱11,000.00					₱11,000.00
3. Planting						₱0.00
• Layout and Planting Prep.	₱500.00					₱500.00
• Tracking and distribution of seedlings	₱500.00					₱500.00
• Planting (Polysax)						₱0.00
• Forest trees	₱1,500.00					₱1,500.00
• Coffee trees	₱2,000.00					₱2,000.00
4. Maintenance (Years)						₱0.00
• Forest trees (1st month)		₱6,000.00	₱6,000.00	₱6,000.00	₱6,000.00	₱24,000.00
• Coffee trees (1st month)		₱1,440.00	₱1,440.00	₱5,720.00		₱28,600.00
B. SUSTAINABILITY SUPPORT FUND						₱0.00
• Forest Protection (Forest guards incentives & fee lines establishments)		₱1,250.00	₱1,250.00	₱1,250.00	₱1,250.00	₱5,000.00
• Organizational Strengthening		₱1,000.00	₱1,000.00			₱2,000.00
• Advocacy & Linkaging	₱500.00	₱500.00				₱1,000.00
• Monitoring, Documentation and Assessment	₱500.00	₱500.00	₱500.00	₱500.00		₱2,000.00
• Management and admin support	₱4,000.00	₱4,000.00	₱4,000.00	₱4,000.00	₱4,000.00	₱20,000.00
TOTAL BUDGET	₱23,900.00	₱23,690.00	₱23,190.00	₱18,470.00	₱12,750.00	₱100,000.00

PES Mechanism



Where are we now?



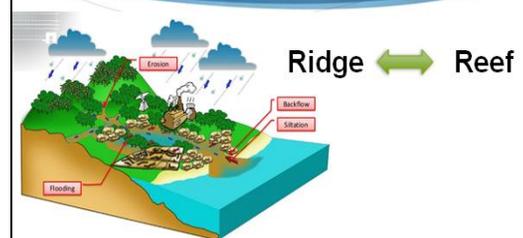
LESSONS LEARNED

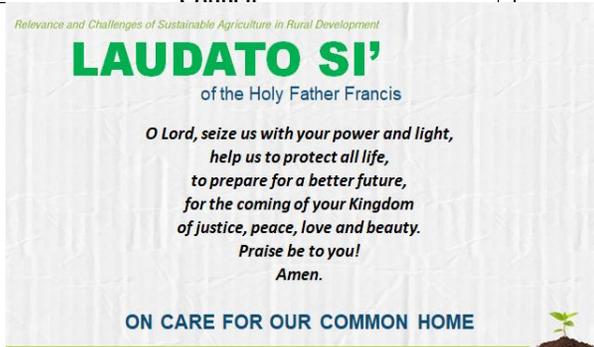
Land tenure security is requirement

- MILALITTRA, Talaandig Tribal association
- Secured CDT in 2003 covering 11,000 hectares
- Allowed them to act as the seller



Ecological awareness is essential



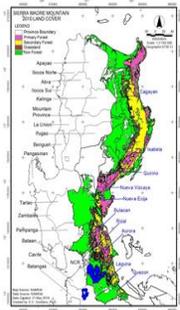


2. Topic: **Biodiversity Framework for Sierra Madre**
By Fr. Pete Montallana
Chair, Save Sierra Madre Network



Fr. Montallana narrated how they were able to come up with the Biodiversity Framework for Sierra Madre. By conducting several summits with various stakeholders participating, they were able to gather relevant data on the problems encountered in Sierra Madre and suggestions on how to address these. After consolidation of outputs, group reflection and analyses, they crafted the Biodiversity Framework. The framework recommends the provision of bio-diversity livelihood programs, empowerment of indigenous peoples as guardians of the forest and awareness and educational activities to improve people's appreciation and mindset on forests to relearn the spirituality of creation.

POWERPOINT PRESENTATION



The Summits

COMING TOGETHER OF
IPS, DENR, NCIP, CSOS, LGUS, FUNDING AGENCIES

- Logging
- Infrastructure developments such as road widening that harms the environment
- Slash-and-burn
- Charcoal-making
- Soil erosion and contamination
- Loss of biodiversity

- Construction of large-scale dams. – Diduyon Dam- Nueva Vizcaya, Kaliwa Dam – Nakar, Quezon at Tanay, Rizal; Wawa Dam
- Forest conversion
- Forest land titling
- Road widening
- Large-scale mining
- Quarry

- Usage of agricultural lands, widespread construction of subdivisions, changing land use
- Poorly managed agricultural practices and use of chemicals
- Informal settlers or immigrants from other areas
- No CADT or no formal recognition of CADT held by indigenous peoples, IP rights trampled

Vision

To ensure preservation of Sierra Madre's abundant forests and bodies of water that nourish biodiversity because "Sierra Madre abounding with life is our life!".

MISSION

All stakeholders of Sierra Madre to actively participate, develop and implement biodiversity and environment-friendly policies, programs and projects geared towards protecting the Sierra Madre and limiting the threats to its biodiversity, forests and waters.

Sierra Madre Biodiversity Framework (2018-2022)

1. Pro-humanity and pro-environment spirit (spirituality)
2. Culture - Recognize and respect culture based on "symbiotic relationships" (interrelatedness between humans and nature)

3. Protection of Biodiversity

Ensure sustained growth, care, and utilization of biodiversity

- Permaculture
- Studies about Sierra Madre's biodiversity

<p>4. Livelihoods</p> <p>Develop sufficient livelihoods in the community that will help nurture the environment (Biodiversity-friendly livelihood)</p>	<p>5. Institutional Concerns</p> <p>A strong and effective institution from the CSO which is in partnership in governing the Sierra Madre</p> <ul style="list-style-type: none"> -unity among CSOs -MOA between DENR and CSO -IP federation SSMNAI youth 	<p>6. Governance</p> <p>A strong presence of CSOs in implementing environmental laws</p> <ul style="list-style-type: none"> -formal forest and sea patroller group in different govt. agencies -amend NGP to provide benefits to volunteers -formation of Sierra Madre Council
<p>6.1. Systematic implementation of various operations in the Sierra Madre</p> <ul style="list-style-type: none"> - At least one (1) assigned area in each province will be designated to have appropriate mechanisms in caring for the Sierra Madre mountains - Promote the Watershed Continuum Approach as a management unit - Strengthen and increase LGUs who support the protection of the Sierra Madre 	<p>6.2. Recognize the tenurial instruments:</p> <ul style="list-style-type: none"> - CADT and CADC - Indigenous People Structure (IPS) - Facilitate the empowerment of the whole indigenous population and not only their leaders on the implementation of their indigenous laws, beliefs and customs 	

3. Topic: **Sustainable Management of Tañon Strait Protected Seascape: An Evolving Success Story**
by Atty. Gloria Estenzo-Ramos
Professor, College of Law, University of Cebu & Vice President, Oceana Philippines

Atty. Estenzo-Ramos presented their impressive work in Tañon Strait Philippines, one of the largest marine protected area located in the heart of the Visayas. It covers more than 500,000 hectares and serves as a major fishing ground, surrounded by local government areas that are heavily populated. It is also a migratory pass of whales and dolphins and was declared in 1998 as a protected seascape by past President Fidel Ramos. It encountered problems in overfishing, since commercial fishing and oil exploration were allowed. To protect the whales and dolphins, Atty. Ramos and her team filed a case in the Supreme Court invoking the rights of the whales and dolphins to life. These were eventually granted. To ensure continued protection of the seascape and its natural biodiversity, they drew up a management plan as mandated by the National Integrated Protected Areas System (NIPAS) Act, taking into account climate resiliency,

ecological as well as socioeconomic development. Atty. Ramos discussed the various programs implemented to attain their vision.



Session C was on Environmental Architecture, chaired by **Aristedes de Paz**, Member of Philippine Green Building Council and moderated by **Architect Socorro Atega**, Executive Director of Cebu Uniting for Sustainable Water Foundation. The session had 3 speakers:



POWERPOINT PRESENTATION

2ND PHILIPPINE ENVIRONMENT SUMMIT
 February 22, 2018
 Waterfront Hotel
 Lahug, Cebu City, Philippines

"Maintaining Innovations for Sustainable Development"

**DAY 3 BREAKOUT SESSION C
 ENVIRONMENTAL ARCHITECTURE**

FROM-THE-EARTH HOUSING DESIGN
 Beau Baconguis
 beau.baconguis@gmail.com

THE LLDA BUILDING
 Erickson de Guzman
 e.deguzmanilda@yahoo.com

GENTLE NATURAL BUILDING STRATEGIES
 Bert Peeters
 bbertpeeters@gmail.com

**TOP TEN MEGATRENDS IN GREEN BUILDING
 AND THE PHILIPPINE RESPONSE**
 Ted de Paz
 teddepaz.miriam@gmail.com

GREEN Building

- Green building (also known as green construction or sustainable building), as defined by the **US Environmental Protection Agency (2009)**, refers to:
 - both a structure and the application of processes that are environmentally responsible and resource-efficient throughout a building's life-cycle: from planning to design, construction, operation, maintenance, renovation, and demolition.

GREEN Building

- This requires close cooperation of the contractor, the architects, the engineers, and the client at all project stages.
- The Green Building practice expands and complements the classical building design concerns of economy, utility, durability, and comfort.

GREEN Building

- Currently, this concept of cooperation is still in the infancy stage in the Philippine Construction Industry
- Many building stakeholders still have a compartmentalized mindset
- However, green building has gained traction with new buildings geared towards sustainability

**OVERVIEW ON TOP TEN MEGATRENDS
 IN GREEN BUILDING AND THE
 PHILIPPINE RESPONSE**

Ted de Paz, UAP, MSA, CBP

- Jerry Yudelson, a LEED Fellow and former president of the Green Building Initiative identified ten megatrends in his book "Reinventing Green" published in 2016



- MEGATRENDS, as defined by John Naisbitt, are trends building on an exceptionally large scale (Naisbitt, 1982)
- Yudelson mentions that green building will continue to grow especially that there is a global pivot towards Asia in the 21st Century
- Annually, government agencies, universities, property developers, and corporate real estate developers incorporate green design ideas and measures into their buildings and facilities

MEGATREND #1: Green Building Certification's growth rate has slowed in the United States

- North America, Europe, the Middle East and Asia Pacific will continue to grow but at a slower pace
- Of the new construction in the US in 2014, only 2% of total square footage is towards certified green building



- At the end of 2015, LEED Certification is still slow at 3.8% of commercial buildings

MEGATREND #1: Green Building Certification's growth rate has slowed in the United States



As shown here, malls have adapted open space management and green building typology

MEGATREND #2: Energy Efficiency leads the way.

- Beginning in 2012, energy efficient green building retrofits have shown growth than energy efficient new construction
- This is strongest in corporate and commercial real estate



- The government is the best facilitator of this paradigm, both as proponent and as regulator

MEGATREND #2: Energy Efficiency leads the way.

- The Don Emilio Abello Energy Efficiency Awards are presented to private companies that make significant improvements in their energy consumption patterns.* (APERC, 2010)



- Use of simple tech like CFLs in your homes or work places is the beginning of simple energy efficient practices

MEGATREND #3: Zero net energy buildings are on the rise.

- A zero-energy building, also known as a zero net energy (ZNE) building, net-zero energy building (NZEB), or net zero building, is a building with zero net energy consumption.



- The production of energy in the building is equal to its every day consumption or even more

MEGATREND #4: Competition among rating systems will increase.

- Several green building rating systems are competing for clients and recognition most of them at a national level
- All of them are about creating a green and sustainable buildings



MEGATREND #4: Competition among rating systems will increase.

- The same is true for the Philippine setting
- There are several initiatives or councils seeking dominance in the rating systems
- As with their international counterparts, they all wish to assist in achieving sustainability



MEGATREND #5: A sharper focus on existing buildings will emerge.

- The global financial crisis of 2008-2010 created a refocus on renovation and refurbishment of existing buildings into newer developments
- Although green building rating may directly not benefit from this developers and investors now look to existing structures with potential



MEGATREND #6: Cloud computing and Big Data analytics will provide much needed direction

- **Cloud computing** is the use of the world wide web in the management of information via online storage
- It relies on sharing of resources to achieve coherence and economies of scale, similar to a public utility.
- Building owners and property developers now manage their properties via platforms available on the world wide web



MEGATREND #6: Cloud computing and Big Data analytics will provide much needed direction

- Many developing companies in the Philippines are now using cloud software to manage their buildings or consult with overseas counterparts to improve project delivery and design
- All they need to do is go online and collaborate with other stakeholders and make the process paperless



MEGATREND #7: Cities and states will demand building performance disclosure.

- The 2010 Energy Performance of Buildings Directive and the 2012 Energy Efficiency Directive are the EU's main legislation covering the reduction of the energy consumption of buildings.
- This is also part of the requirements aligned with the sustainable development goals from COP 21



MEGATREND #7: Cities and states will demand building performance disclosure.

- The Philippines is one of the first countries to develop a referral code for green building which has requirements for energy performance
- Being a referral code, it specifies tolerances on energy use, mechanical and electrical requirements, among others



MEGATREND #8: Debate over healthy building materials will become more vexatious.

- The occurrence of sick building syndrome will be debated on even further
- There is a current concern of corruption in the green building materials industry but as the guidelines form DOLE and OSHA indicate, these are already being addressed
- However, we must reconcile EPDs and HPDs



MEGATREND #9: Solar Power will finally break through.

- Solar power generating cell costs have dropped dramatically in the last 5 to ten years
- The IEA projects that by 2050, solar PVs would contribute about 16% of the worldwide electricity consumption
- As of 2016, solar power provides just 1% of total worldwide electricity production but is growing at 33% per annum.



MEGATREND #9: Solar Power will finally break through.

- The Philippines has become involved in the green power initiative by having its own solar panel factory
- Located in Santo Tomas, Batangas, it is expected to produce 2.5 million panels per year
- Although the panels will be primarily exported to other countries it is a sunrise industry for sustainability



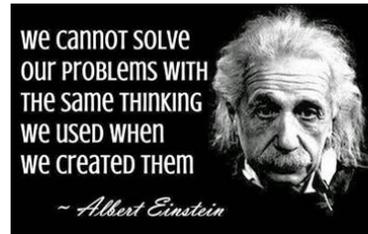
MEGATREND #10: Expect a heightened emphasis on water conservation

- Many international brands for bathroom fixtures have already venture in fixtures that have emphasis water conservation
- As the western market becomes more sophisticated with their standards on water conservation and use
- Droughts occurring worldwide have further stressed the need for water conservation



SUMMARY

- As stressed by Jerry Yudelson, these ten megatrends will continue to grow as our focus on green building becomes clearer.
- However, we need to support those members of the industry that are actually involved in green building
- We must be careful with the concept of green wash as many businesses pivot towards the green market where growth is emerging, especially with potential clients
- Technology may be critical but it is not the turnkey to all of our environmental concerns.

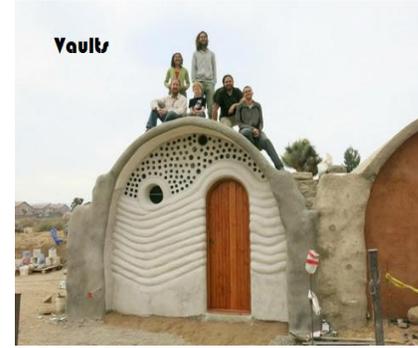
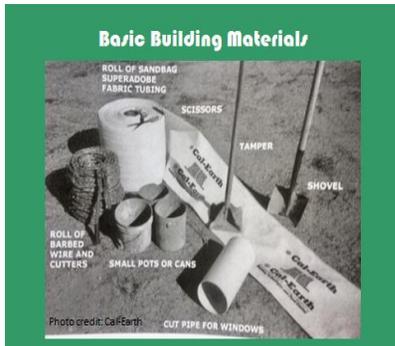


1. Topic: **From-the-Earth Housing Design**
by Beau Baconguis
Natural Builder of Earth Architecture



Ms. Baconguis discussed Super Adobe, a kind of architecture that uses the principle of an arch, considered the strongest structure on earth. Super Adobe uses basic materials like sandbags, super adobe fabric tubing, roll of barb wires and cutter, pots and cans, pipes, scissors and shovel. A course is offered in California Institute of Earth and Architecture. Super Adobe is an innovation by Nader Kahlili, an Iranian architect. Ms. Baconguis went on to discuss the advantages in building structures using earth and showed different models and their interior.

POWERPOINT PRESENTATION



2. Topic: **LLDA Building**

by *Engr. Erickson de Guzman*

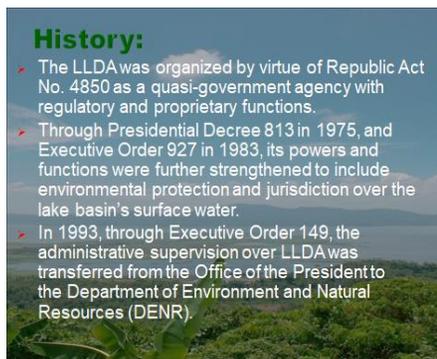
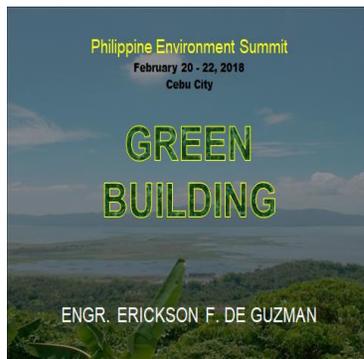
Engr. III, Laguna Lake Development Authority



Engr. de Guzman defined Green Building as the practice of increasing efficiency with which buildings use resources such as energy, water and materials while also reducing the buildings' impact on human health and the environment. They may not be buildings that have zero emissions nor totally environment-friendly, but they are energy and resource efficient throughout the building's life-cycle from siting to design, construction, operation, maintenance, renovation and deconstruction. As early as 2007, BERDE or Building for Ecologically Responsive Design Excellence, a non-stock, non-profit organization promoted the sharing of knowledge practices to the industry and served as a non-partisan venue for the development of a green building rating system. In the Philippines, Green Building Certification is awarded by the Philippine Building Council.

The LLDA Building was constructed in 2012 and finished in 2014. It is the first government office facility to be certified by the Philippine Green Building Council, last November 18, 2016. It was awarded with Three – Star Certification using BERDE standards for New Construction. Aside from its low building footprint and green design, it has environment-friendly features: 3-unit rainwater harvesting tank, inverter air-conditioning units, LED for lighting system, operable Altair louvre and awning type windows, insulated walls and double low - emitting glass used in offices.

POWERPOINT PRESENTATION



Mandate:

- To promote and accelerate the development and balanced growth of the Laguna Lake area and the surrounding provinces, cities and towns and to carry out the development of Laguna Lake region with due regard for environmental management and control, preservation of human life and ecological system and prevention of undue ecological disturbance, deterioration and pollution.

What is a Green Building?

- is a practice of creating structures and using processes that are environmentally responsible and resource – efficient throughout a building's life-cycle from siting to design, construction, operation, maintenance, renovation and deconstruction.

- US EPA

Green Building

- practice of increasing efficiency with which buildings use resources such as energy, water and materials while also reducing the buildings' impact on human health and the environment



Green Building



Buildings or homes that are more energy efficient, produce less waste and healthier to be inside

Buildings that produce zero emissions or totally green or totally environment-friendly

We need **Green Buildings** to promote resource management efficiency and site sustainability while minimizing negative impact of buildings on health and environment

Green Building Certifications

- Australia: Nabers / Green Star
- Brazil: AQUA / LEED Brasil
- Canada: LEED Canada / Green Globes / Built Green Canada
- China: GBAS
- Finland: PromisE
- France: HQE
- Germany: DGNB / CEPHEUS
- Hong Kong: HKBEAM
- India: Indian Green Building Council (IGBC) / GRHA
- Indonesia: Green Building Council Indonesia (GBCI) / GreenShip
- Italy: Protocollo Itaca / Green Building Council Italia
- Japan: CASBEE
- Korea: KGBC
- Malaysia: GBI Malaysia
- Mexico: LEED Mexico
- Netherlands: BREEAM Netherlands
- New Zealand: Green Star NZ
- Philippines: **BERDE / Philippine Green Building Council**
- Portugal: Lider A
- Qatar: QSAS
- Republic of China (Taiwan): Green Building Label
- Singapore: Green Mark
- South Africa: Green Star SA
- Spain: VERDE
- Switzerland: Minergie
- United States: LEED / Living Building Challenge / Green Globes / Build it Green / NAHB NGBS / International Green Construction Code (IGCC) / ENERGY STAR
- United Kingdom: BREEAM
- United Arab Emirates: Estidama
- IAPGSA Pakistan Institute of Architecture Pakistan Green Sustainable
- Jordan: EDAMA
- Czech Republic: SBToolCZ

Philippine Green Building Council

- Incorporated on March 22, 2007 as a national non-stock, non-profit organization that promotes the sharing of knowledge on green building practices to the industry to ensure a sustainable environment. It was organized to serve as a single voice in the promotion of holistic and market-based green building practices, to facilitate the sharing of green building information and practices in the building industry, and to serve as a non-partisan venue for the development of a green building rating system.
- Member of World Green Building Council – Asia Pacific Network, member of International Initiative for Sustainable Built Environment (iiSBE) and a global partner of GLOBE Alliance.

What is BERDE?

- Stands for Building for Ecologically Responsive Design Excellence
- Established in 2009 by the PHILGBC
- The program was established to develop the Philippines' own national voluntary green building rating system to facilitate green building projects in the country, inspire confidence in the industry, and build trust in the industry.
- Recognized by the Philippine government, through the Department of Energy as the National Voluntary Green Building Rating System

Why Go Green?

- * Lower Energy and Water Use
- * Increased Productivity
- * Increased Property Value
- * Enhanced Comfort
- * Positive Public Image
- * Creating Community

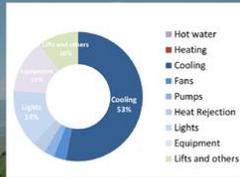


Lower Energy and Water Use

Often the number one motivation, reduced energy and water costs are a major benefit. Green buildings typically have lower energy and water usage, reducing both your cost as well as overall demand for these utilities.

How Conventional Office Building Use Energy?

Office buildings uses an average of 170 KW-HR of electricity per square meter annually



Energy Efficiency

is the adoption of efficient practices, designs, methods and technologies with the goal of reducing energy consumption that will result in savings without compromising safety, health and product quality

Energy Efficiency

a. Building envelope

encompasses the entire exterior surface of a building, including **walls, doors, and windows**, which enclose, or envelop, the interior spaces.



Energy Efficiency

b. Natural Ventilation

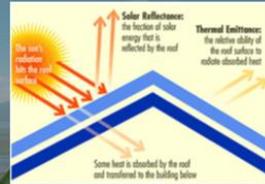
Use of operable windows; opening shall be equal to at least 10% of floor area



Energy Efficiency

c. Building Envelope Color

High solar reflectance index (SRI) of building envelope surface can reduce heat transfer from the outside to the inside



Energy Efficiency

d. Roof Insulation

Reduction of heat transfer at the roof through proper insulation thus improving thermal comfort, acoustic quality and load reduction for air conditioning system



Energy Efficiency

e. Efficiency of Mechanical System

- e.1. Efficiency of Air-conditioning Equipment
 - use of higher EER
- e.2. Energy Efficient Water Heating System
 - observation of minimum performance requirements in water heating

Energy Efficiency

e. Efficiency of Mechanical System

- e.3. Variable Speed Drives and High Efficiency Motors
 - devices that control speed of machine by adjusting frequency of motor to match actual demand
- e.4. Enthalpy Recovery of Fresh Air
 - recovering energy from the building exhaust air stream to pre-condition fresh air intake

Energy Efficiency

f. Efficiency of Electrical System

- f.1. Daylighting Provision
 - Harvest natural daylighting through use of windows, light shelf, clerestory, skylight and light scoop
- f.2. Daylight Controlled Lighting System
 - Controlled use of artificial lighting due to daylighting

Energy Efficiency

f. Efficiency of Electrical System

f.3. Lighting Power Density

- Regulated power consumption due to lighting; lower watts per sq. meter (Office = 10.8 watts / sq. mtr)

f.4. Occupancy Sensors

- Controlled use of artificial lighting in areas with variable occupancy

Energy Efficiency

f. Efficiency of Electrical System

f.5. Lifts and Escalator Efficiency

- Use of energy-efficient conveyance control systems (with motion sensors)

f.6. Transformer

- Use of high efficient transformer (>98%)

f.7. Overhead or Elevated Water Storage

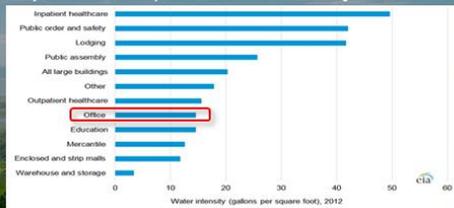
- Water distribution system that utilize reduced pump requirements

Simple Ways to Reduce Electricity Consumption

1. Replace old incandescent bulbs and fluorescent light with LED bulbs and lights
2. Use Occupancy sensors
3. Install programmable thermostat
4. Replace burn-out motors with energy-efficient motors

Water Use in Office Building

Office buildings uses an average of 15 gallons per square foot (529 liters per square meter) of water annually



Water Efficiency

- is the adoption of efficient water-use practices, designs, method and technologies with the goal of reducing water consumption that will result in savings

Water Efficiency

a. Efficient Water Fixtures

are technologies that use less water in order to perform the same function of cleaning as effectively as standard models

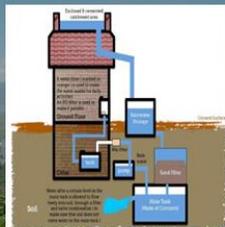
Type of Fixtures	Maximum Flow Rate	
Dual Flush Water Closet	≤6 full 3 low	liters/flushing cycle
Single Flush Water Closet	4.9	liters/flushing cycle
Shower	≤9 (80PSi)	liters/min at 551.6 kPa
Urinals	≤1	liters/flushing cycle
Lavatory taps	≤4.8 (60PSi)	liters/min at 417.7 kPa
Kitchen faucets	≤4.8 (60PSi)	liters/min at 417.7 kPa
Handheld bidet sprays	≤4.8 (60PSi)	liters/min at 417.7 kPa

Water Efficiency

b. Water Management

b.1. Rainwater Harvesting

is the process of collecting rainwater from roof and hardscapes thereby reducing use of potable water



Water Efficiency

b.2. Water Recycling

Resulting water from sewage treatment plants (STP), toilet flushing, cooling towers can be re-used for non-potable purposes



Simple Ways to Reduce Water Consumption

1. Check faucets and pipes for leaks
2. Check toilet bowls for leaks
3. Use your water meter to check for leaks
4. Install water-saving shower heads and low-flow faucet aerators
5. Put plastic bottles or float booster in toilet bowl tank
6. Install low flush or dual-flush toilet bowl

Increased Property Value

Reducing a building's operating costs, the net operating income of that building is increased. According to the New Buildings Institute, increasing a building's net operating income increases the building's appraised value by ten times the annual cost savings.

Studies Show the Benefits of Building Green

A recent study published by Singapore's Building & Construction Authority and the National University of Singapore found renovated commercial buildings to be more energy efficient with higher valuations attributable to lowered operating expenses (Marusiak, 2012). The literature also suggests that a building's performance and green building certification impact its assessed value (AV) and market value (MV). One study that encompassed all buildings in the United States over 50,000 square feet found that LEED certification has a positive effect on market values and assessed values (Dermisi, 2009)

Enhanced Comfort

Green buildings can reduce drafts, minimize floor-to-ceiling temperature stratification, and control noise. Furthermore, many green buildings enable tighter control of individual spaces/offices, thus meeting the diverse needs of occupants. Individuals often benefit psychologically from knowing they have control over their workspace environment

Improving Occupant Comfort

Indoor Environment Quality

- refers to the thermal, luminous, acoustic and olfactory environments. It affects human response factors (occupant comfort, well-being, health and productivity).

- requires adoption of efficient design & operation practices that considers building environment to improve occupant health, productivity and safety

Indoor Environment Quality

a. Minimum Fresh Air Rates

- Maintaining good indoor air quality thru the constant replacement of indoor air in buildings

Occupancy Category	People Outdoor Air Rate		Area Outdoor Air Rate		Max. Outdoor Occupancy Density Person/1,000 sq ft (50 sq m)
	(liters / person)	(inh / person)	(liters / sq ft)	(inh / sq m)	
General					
Conference / meeting	5	8.5	0.06	0.1968	50
Corridor	-	-	0.06	0.1968	-
Break room	5	8.5	0.12	0.3756	-
Storage rooms	-	-	0.06	0.1968	25
Coffee room	5	8.5	0.06	0.1968	25
Class / lecture room	20	34	0.06	0.1968	100
Health club (sauna room)	20	34	0.06	0.1968	40
Health club (sauna room)	20	34	0.06	0.1968	10
Smoking gallery (vestibule)	10	17	0.12	0.3756	40
Gaming casino	7.5	12.75	0.18	0.5604	120
Game arcade	7.5	12.75	0.18	0.5604	20
Stages, Spectator	10	17	0.06	0.1968	50
Public Assembly Spaces					
Auditorium seating areas	5	8.5	0.06	0.1968	150
Shops of religious worship	5	8.5	0.06	0.1968	120
Classrooms	5	8.5	0.06	0.1968	70
Laboratory (children)	5	8.5	0.06	0.1968	50
Libraries	5	8.5	0.12	0.3756	10
Offices	5	8.5	0.06	0.1968	100
Museums (children's)	7.5	12.75	0.12	0.3756	40
Museums - galleries	7.5	12.75	0.06	0.1968	40

Indoor Environment Quality

b. Designated Smoking Area

- Restricting tobacco smoke to specified areas to maintain good indoor air quality



Positive Public Image

Operating efficient buildings improves public image through positive media coverage, which can result in increased community support for your organization.

Creating Community

Green development in your district may encourage other building owners to do the same. When implemented on a community-wide scale, green buildings can help return communities to people-focused neighborhoods. Setting an environmentally conscious example can help you gain support throughout your community.



LLDA GREEN BUILDING

- Built in 2012 and finished in 2014
- First government office facility to be certified by the Philippine Green Building Council
- Awarded with Three – Star Certification using BERDE for New Construction last November 18, 2016



LLDA GREEN BUILDING

Features:

- Gross Total Floor Area = 5,600 sq. mtr.
- Building Footprint = 700 sq. mtr.
- Electric Consumption = 20,000 KW-Hr average monthly consumption (3.57 Kw-Hr / sq. mtr)
- Water consumption = 800 cubic meter average monthly consumption (140 liter / sq. mtr)
- Waste Generation (biodegradable) = 35 kilogram average monthly generation
- Waste Generation (non-biodegradable) = 265 kilogram average monthly generation

LLDA GREEN BUILDING

Features:

- Pocket Garden at 2nd, 3rd Floor and Roofdeck
- 3 unit Rainwater Harvesting Tank
- Inverter Airconditioning Units
- Uses LED for Lighting System
- Operable altair louvre windows and awning type windows are used for offices
- Insulated walls and double low - emitting glass used for offices

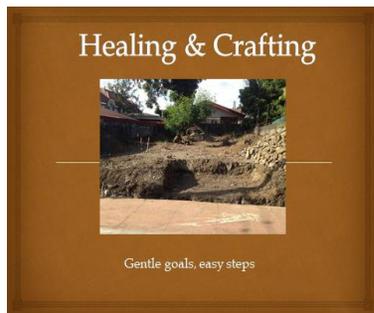
1. Topic: Gentle Natural Building Strategies

by Bert Peeters

Coordinator, Philippine Permaculture Association



Mr. Peeters shared his experience in building an innovative, off-grid house in the suburb of Manila. Using materials that were readily available in the area, coupled with playful creativity, they were able to design and build a structure that was energy efficient and environment-friendly. Bamboo and earth/soil, solar panels, natural ventilation, rainwater harvesting system, compost toilets and gentle crafting with nature maintained the pleasing and most enjoyable ambiance that is natural.



SEEING ENERGY



beautiful soil



gentle structure



plastered perfection



WATER CARE



collection tanks



filtering systems



RESOURCE USE



EYE FOR DETAILS



EYE FOR DETAILS



INNOVATIVE



GREAT COMPANIONS



ATTRACTIVE HABITAT



Healing & Crafting a gentle eco-system



Gentle goals, easy steps



Atty. Ibay

Session D was on Renewable Energy chaired by **Atty. Angela Consuelo Ibay**, Climate Change and Energy Programme Head of World Wildlife Fund for Nature and moderated by **Marisol C. Ellima** of Colegio de la Inmaculada Concepcion.



Ms. Ellima

POWERPOINT PRESENTATION OF ATTY. IBAY



OUR PHILIPPINE REALITY
FACTS AND FIGURES

- Archipelago of **7,614 islands**
- 36,289 kms** of coastline
- One of the fastest expanding economies in the world – **6.9% GDP Q3 2017**
- 90.3% Functional Literacy**

OUR PHILIPPINE REALITY
FACTS AND FIGURES

ESTIMATED TOTAL POPULATION: **102 MILLION** FILIPINOS

27 MILLION LIVING BELOW THE POVERTY LINE

The root causes:
DEFORESTATION
DEGRADED COASTS AND OCEANS
DIMINISHING FARM YIELDS

OUR PHILIPPINE REALITY
FACTS AND FIGURES

Degradation of the environment leads to more poverty.

OUR PHILIPPINE REALITY
FACTS AND FIGURES

Around 11 million of Filipinos are deprived of access to electricity sources, relying mainly on expensive and highly dangerous kerosene lamps for lighting especially at night.

Stories from the frontline CLIMATE

National developments

- Philippines is #1 country with greatest exposure to climate change (2016 Global Climate Risk Index)
- Chair of the Climate Vulnerable Forum (CVF) in 2015-2016 that called for the 1.5C goal
- Philippine INDC: undertaking GHG emissions reduction of about 70% by 2030 relative to its BAU scenario of 2000-2030. This is still to be confirmed as country's NDC.
- Climate Change Commission undertook National Policy Review and Framework Development on Energy
- Review of PEP and NREP

2nd National Communication GHG Estimates

Energy Sector 2000 GHG Emissions Per Sub Sector

Sub sector	a	b	c	d	e	f	g
	CO ₂ (in Gg)	CH ₄ (in Gg)	CH ₄ GW Potential	N ₂ O (in Gg)	N ₂ O GW Potential	CO ₂ eq emission in Gg	% Share
Energy Industries	21,227.35	0.40	21	0.27	310	21,229.45	30%
Manufacturing Industries and Construction	9,015.30	1.91	21	0.28	310	9,142.21	13%
Transport	25,792.01	3.45	21	0.23	310	25,935.78	37%
Other Sectors	6,364.42	130.29	21	1.74	310	6,839.91	14%
Solid Fuels	1.60	21	21			33.90	0%
Oil and Natural Gas	166.49	21	21			3,496.29	5%
Total	62,499.10	394.34		2.52		69,667.24	100%

The Energy Sector accounts for the biggest source of emissions. Transport sector accounted for 38% of the energy sector GHG emissions

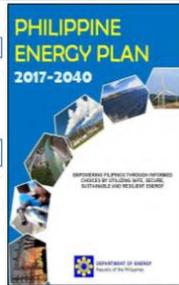
Some Basic Metro Manila Mobility & Transportation Statistics

- 8 out of 10 people** in Metro Manila take public transport
- 1 in every 10** Filipinos has some level of disability.
- In 2010, **10 road crashes** took place every hour in the Philippines, every day of that year, 5 people died and 79 people were injured in those road crashes.
- 7 out of 10 poor families** have to arrange loans to cover the loss of income a family member who is killed or disabled in a road crash.
- Motor vehicles** are the major source of particulate pollution in Metro Manila

Source: UNCRD, WHO, VDB Studies. Photo: Inclusive Mobility Network and flickr

Energy Plan Outline PEP 2017 – 2040

- Responding the Country's Energy Needs
- Renewable Energy for a Clean Energy Future
- Harnessing Conventional Fuels
- Advocating Infrastructure Development in the Downstream Sector
- Promoting Emerging Energy Technologies
- Empowering the Filipino
- Making Energy Efficiency a Way of Life
- Addressing the Environmental Impacts of Climate Change
- Gearing Towards Energy Resilient Communities
- Fostering Stronger International Relations and Partnerships
- Enabling the Energy Sector's Legislative Agenda



Department of Energy
Empowering the Filipino

Why we should go RE?



Renewable energy is sustainable
It is clean and does not emit carbon and other greenhouse gases
Renewable energy does not cause air pollution
RE helps minimize the impact of climate change



Renewables provides energy security
It is an indigenous resource
With RE, we don't need to import fuel from other countries
Renewable energy powers our remote islands with distributed energy systems



RE is good economically
Decreasing cost of renewable energy
Global investments in new RE is more than double than that of new coal and other fossil based generation
RE promotes local job generation
RE sources can lower the cost of electricity



Current State of RE in the Philippines

RE makes up about 25.44% of the generation mix (in 2015)

- One of the country's competitive advantages (abundant RE resources)



Electricity rates in PH are among the highest in the world and will continue to soar due to high prices of imported fossil fuels



RE Act of 2008 (RA 9513)

Created the NREB and REMB

NREP: Increase RE-based capacity to about 15,304 MW by 2030, or triple the 2010 values

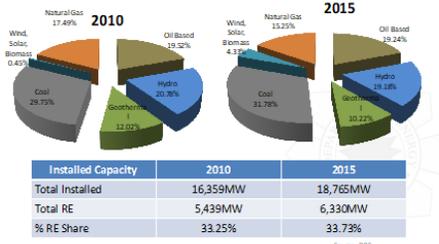
- Focus is on increasing capacity for power generation

Sector	Installed Capacity (MW as of 2010)	Target Capacity Addition by				Total Capacity Addition (MW) 2011-2030	Total Installed Capacity by 2030
		2015	2020	2025	2030		
Geothermal	1,966.0	2,250.0	1,000.0	95.0	80.0	1,495.0	3,461.0
Hydro	3,400.0	341.3	3,161.0	1,891.8	0.0	5,394.1	8,724.1
Biomass	33.0	276.7	0.0	0.0	0.0	276.7	319.7
Wind	33.0	1,048.0	855.0	442.0	0.0	2,345.0	2,378.0
Solar	1.0	269.0	5.0	5.0	5.0	284.0	285.0
Others	98.0	8.0	34.8	35.0	0.0	78.8	78.8
TOTAL	5,438.0	2,155.0	5,196.5	2,468.8	85.0	9,865.3	15,304.3



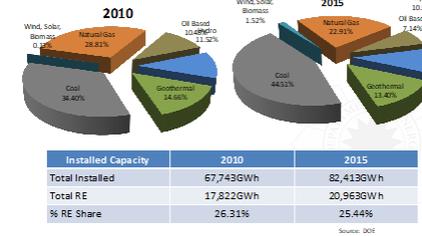
Current State of RE in the Philippines

2010 and 2015 Total Installed Capacity Mix (MW)

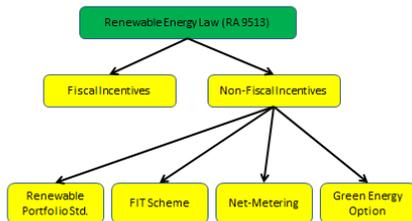


Current State of RE in the Philippines

2010 and 2015 Total Generation Mix (GWh)



Incentives under the RE Act



RE Projects in the Philippines

12 MW (Phase 1) San Jose City I Power Corporation



20 MW Malbarara Geothermal Power Plant



22 MW San Carlos Solar Power



Source: DOE

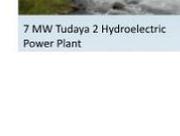


RE Projects in the Philippines

150 MW Burgos Wind Power Project

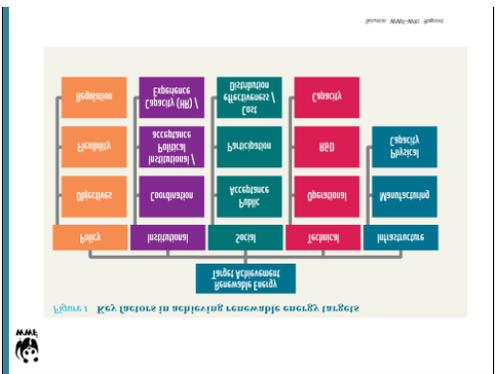
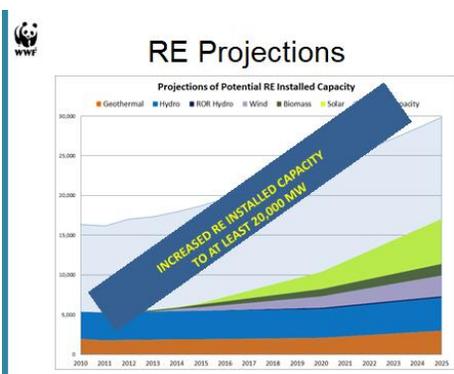
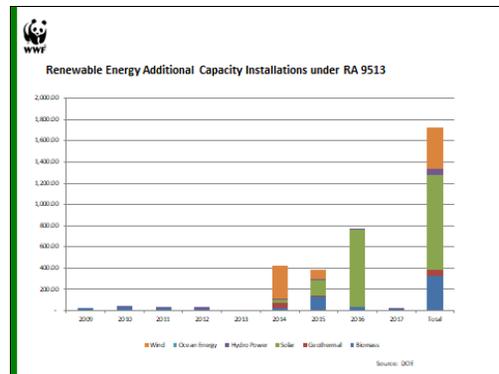
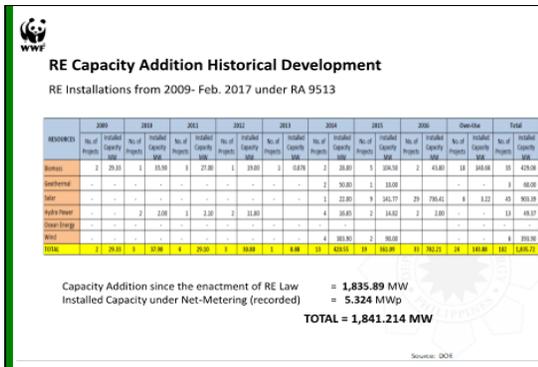
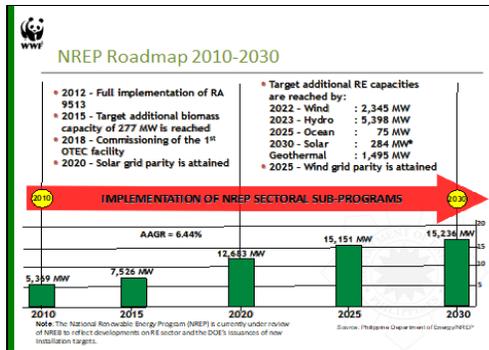


7 MW Tudaya 2 Hydroelectric Power Plant



54 MW San Lorenzo Wind Power Project (Guimaras)

Source: DOE

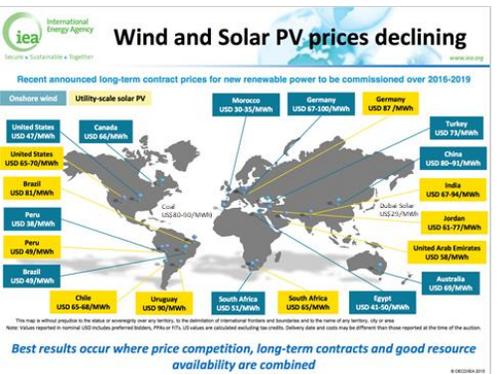


Misconceptions on RE cost

RE feed-in tariff seen to push power rates up

FIT to hike power rates soon

FIT to unfairly burden power consumers'



OBSTACLES AND BARRIERS

- Awareness and social acceptance
- Streamlining of Administrative Process
- Full implementation of RE Policy Mechanisms
- Policy support and harmonization of laws/policies



OBSTACLES AND BARRIERS

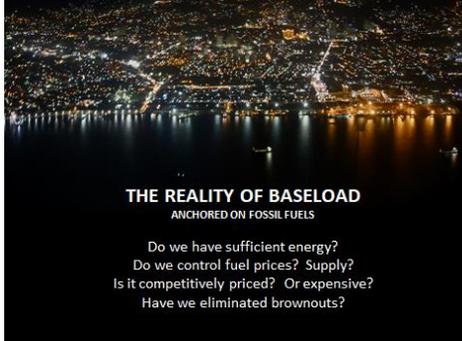
- Accessibility
- Security
- Market risk
- Operational risk
- Reliability of resource
- Infrastructure readiness
- Technology improvement



THE REALITY OF BASELOAD

ANCHORED ON FOSSIL FUELS

Do we have sufficient energy?
Do we control fuel prices? Supply?
Is it competitively priced? Or expensive?
Have we eliminated brownouts?




KRA

- Seize Control of your Energy Mix
- Reduce Grid Dependence
- Build Indigenous Energy Sources
- Acquire Prior Dispatch Rights
- Scale up Integrated Approaches

Let's practice **Avoid-Shift-Improve.***

Starting point:
Employee who needs to get to work

Decisions:
How far do I have to go?
Can I work from home?

Decision:
Can I walk, bike or take public transit?

Decision:
What type of vehicle will I use?

AVOID
Reduce the need to travel.

SHIFT
Choose more efficient transport modes.

IMPROVE
Opt for clean fuels and technologies.

http://enclimateshift.org



Mitigations Options for Sustainable Transport



Avoid **Shift** **Improve**

- Transit-oriented development
- Promote use of intelligent transport solutions
- Promote integrated land use and transport planning in urban areas
- Increasing the share of public transport
- Promote use of intelligent transport modes
- Non-motorized transport modes in urban areas
- Vehicle maintenance
- Diversify the fuel basket of transport sector - encouraging use of fuels other than petrol and diesel
- Encourage energy efficient road-based movement
- Fuel efficiency standards
- Shift to rail freight
- Encourage and optimal mix of rail, water and road transport for inter-city movement

Proposed Overall EST Strategy	
C	Capability Building -including institutional strengthening for mainstreaming EST at local and national levels
L	Legal Instruments -including institutional and financial mechanisms
I	Infrastructure -including both environment and people-friendly facilities and vehicle design
M	Mobility Management -including Transport Demand Management and Transport Supply Strategies covering both private and public transport as well as logistics
A	Alliances -linkages among organizations/entities/agencies to promote/advocate implement EST at local and national level
T	Technology -including development of tools and innovations to enable EST like Intelligent Transport System (ITS)
E	Empowerment of Communities-including public involvement/participation for ownership of EST Initiatives

02.07.2018

SUMMARY

- Huge potential for renewable energy sources
- Major uptake in renewables
- Positive developments in favor of RE and EST
- But there are still key risks to RE development
- How to push for a faster shift to a power mix largely based on sustainable renewables and efficiency
- Encouraging the shift to energy efficient transport modes
- Maximizing opportunities



2 July 2018 37



SESSION OBJECTIVES

- Showcase the breadth of renewable energy resources found in the country
- Provide the business and economic case for the uptake of more renewable energy generation and use of sustainable transport
- Understand the benefits of and challenges facing these sectors and see how we can help promote their utilization



1. Topic: **Solar Energy: Sunrise Industry for Sun-blessed Philippines** *by Anna Mapolon* *Buskowitz Group of Companies*



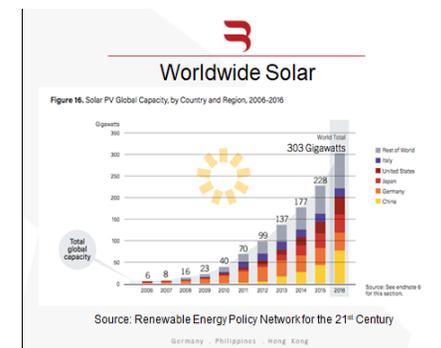
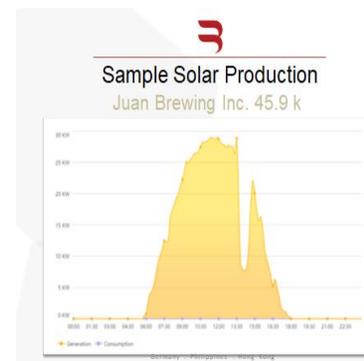
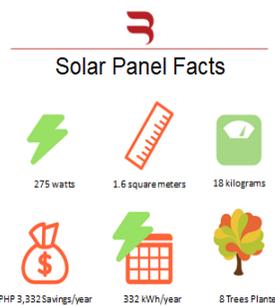
Ms. Mapolon gave an orientation of developments happening in the Solar power industry both globally and in the Philippines. She discussed the benefits enjoyed by different sectors that have adopted solar power, its growing demand worldwide and enumerated establishments that are currently using it.

POWERPOINT PRESENTATION



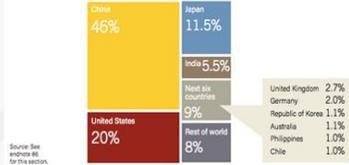
Solar Energy: the Sunrise Industry for Sun-Blessed a Philippines

Anna Mapolon
Business Development Manager
BUSKOWITZ
Finance | Energy | Development



Worldwide Solar

Figure 18. Solar PV Global Capacity Additions, Shares of Top 10 Countries and Rest of World, 2018



Source: Renewable Energy Policy Network for the 21st Century

Germany · Philippines · Hong Kong

Future of Power



Source: Bloomberg Finance

Solar for the Philippines



Solar for Rural India



Source: Greenpeace

Germany · Philippines · Hong Kong

Solar Growth in the Philippines

	TOTAL END-2015	ADDED 2016	TOTAL END-2016
TOP COUNTRIES BY ADDITIONS			
China	43.5	34.5	77.4
United States	26.2	14.8	40.9
Japan	34.2	8.6	42.8
India	6.1	4.7	9.7
United Kingdom	9.7	2	11.7
Germany	39.8	1.5	41.3
Republic of Korea	3.5	0.9	4.4
Australia	4.9	0.9	5.8
Philippines	0.1	0.8	0.9
Chile	0.8	0.7	1.6

Germany · Philippines · Hong Kong

Solar for Rural Philippines



Source: Manila Bulletin

Germany · Philippines · Hong Kong

Solar for Schools



Germany · Philippines · Hong Kong

Solar for Hospitals



Germany · Philippines · Hong Kong



Germany · Philippines · Hong Kong

1. Topic: **Wind and Geothermal Energy**

by: *Jay Joel L. Soriano*

Asst. Vice President, Negros Island Geothermal Business Unit



Mr. Soriano gave an encouraging presentation on renewable energy (RE). EDC is the Philippines’ leading RE company, the world’s largest integrated geothermal producer and credited to be the only Filipino company listed with the prestigious Carbon Clean 200 – a listing of the largest publicly traded companies that lead the way with solutions for the transition to a clean energy future.

EDC cuts across four critical technology platforms: geothermal, wind, hydro and solar generating some 1,458 MW of clean power (21% of total installed RE in the Philippines). Its geothermal energy accounts for 61% of the country’s total geothermal capacity while its Burgos, Ilocos Norte wind power farms is the biggest nationwide.

Currently, EDC’s focus is on geothermal energy production given its low carbon emissions compared to coal, and its natural ability to uninterruptedly supply energy 24/7 and thru all the seasons year round. Further, this energy resource is available to a limited number of countries that include the Philippines.

To protect its ability to sustainably deliver hydropower, EDC has committed to 1) support government programs in accordance to the RE Act by raising awareness on clean energy through various platforms; 2) ensure optimal operation of their power plants by investing further to make their facilities typhoon resistant; and 3) invest heavily in forest restoration and biodiversity preservation thereby sustaining geothermal resources that depend on having healthy watersheds. These reforestations are also effective carbon sinks.

Soriano also pointed out that China (the world’s largest carbon emitter) and India are aggressively engaging in the Renewable Energy space. Worldwide, some 125 companies already committed to going 100% renewable.

RENEWABLE ENERGY FOR ALL

Jay Joel L. Soriano
Head, Negros Island Business Unit
(NIGBU)
Energy Development Corporation

Largest Geothermal Plant/Field Operators

OPERATOR	COUNTRY	CLASS	CAPACITY (Mw)
#1 Energy Development Corporation (EDC)	Philippines	IPP	1,159
ENEL Green Power	Italy	IPP	1,031
Comision Federal de Electricidad (CFE)	Mexico	Nat Utility	839
Calpine Corporation	USA	IPP	725
Ormat Industries	Israel	IPP	697
Perusahaan Listrik Negara (PLN)	Indonesia	Nat Utility	562
Kenya Electricity Generating Company	Kenya	Nat Generator	474
Mighty River Power	New Zealand	Nat Generator	466
Chevron Corporation	USA	Oil & Gas-IPP	435
Aboitiz Power	Philippines	Public Utility	430

Source: World Energy Resources 2016

EDC is the leading RE company in the Phils generating 21% of the TOTAL INSTALLED RE in the country

GEOTHERMAL	WIND	HYDRO	SOLAR
1,169 MW	150 MW	132 MW	6.8 MW

ENERGY DEVELOPMENT CORPORATION
TOTAL CAPACITY
1,457.8 MW

1,169 MW GEOTHERMAL

Total Installed Geothermal in the Philippines

EDC	62%
OTHER PLAYERS	38%

Bac-Man	2 power plants Capacity : 130 MW
Leyte	5 power plants Capacity : 700.9 MW
Southern Negros	3 power plants Capacity : 221.5 MW
Mindanao	2 power plants Capacity : 106 MW

RENEWABLE ENERGY?

150 MW
Burgos Wind Project

WHY RENEWABLE ENERGY

- By 2050 : Transition to 100% wind, water, and solar (WWS) for all purposes (electricity, transportation, heating/cooling, industry)
- Jobs created : 52 Million
Jobs lost : 27.7 Million
- Will facilitate meeting Philippine target to the Paris Agreement

PARIS AGREEMENT

- WWF: The Philippines, represented by DENR Sec. Ramon Paje, signed the Paris Climate Agreement in New York with 174 other countries. The Agreement binds countries to work towards keeping global warming well within the 1.5 degrees Celsius threshold.
- Mariel Ubaldo (Super Typhoon Yolanda Survivor) "I really want to show the world that in the Philippines, Climate Change is a reality. It's not just an idea; we have to live with it." #COP21

RA 9513: RENEWABLE ENERGY ACT OF 2008

Accelerate the development of the country's renewable energy resources by providing fiscal and non-fiscal incentives to private sector investors and equipment manufacturers / suppliers.

RENEWABLE PORTFOLIO STANDARDS (RPS)

- A policy which places an obligation on the electric power industry participants such as generators, distribution, utilities, or suppliers to source or produce a specified fraction of their electricity from eligible RE resources.
- Purpose: To contribute to the growth of the renewable energy industry by diversifying energy supply and to help environmental concerns of the country by reducing greenhouse emissions.

GREEN ENERGY OPTION (GEO)

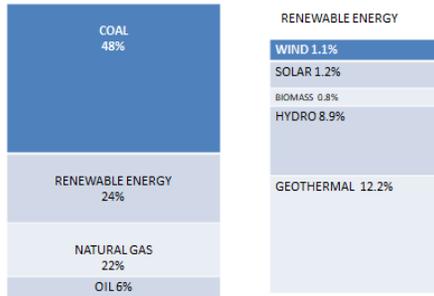
- A mechanism to be established by Philippine Department of Energy which shall provide end-users of the option to choose RE Resources as their source of energy.

TOP 10 ENERGY SECURITY	TOP 10 ENVIRONMENTAL SUSTAINABILITY	TOP 10 ENERGY EQUITY
1. Denmark	1. Philippines	1. Luxembourg
2. Slovenia	2. Ireland	2. Qatar
3. Finland	3. Switzerland	3. Netherlands
4. Canada	4. Denmark	4. Switzerland
5. Latvia	5. Sweden	5. Bahrain
6. Venezuela	6. France	6. Kuwait
7. Romania	7. Costa Rica	7. Czech Republic
8. United States	8. Norway	8. Austria
9. Sweden	9. United Kingdom	9. Oman
10. Netherlands	10. Uruguay	10. Ireland

Energy Security– Environmental Sustainability – Energy Equity

TOP 10 OVERALL RESULTS
1. Denmark
2. Sweden
3. Switzerland
4. Netherlands
5. United Kingdom
6. Germany
7. Norway
8. France
9. New Zealand
10. Slovenia

2016 PHILIPPINE ENERGY MIX



GEO vs COAL

GEO= 0.09 tons CO₂ per MWh = 225 miles of driving

COAL= 0.97 tons CO₂ per MWh = 2,325 miles of driving

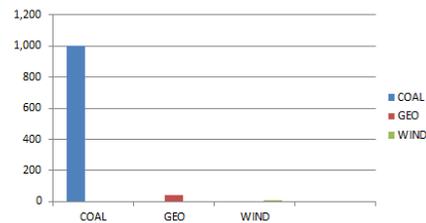
WIND POWER

- WIND = 0.01 tons CO₂/ MWh of emissions
- A 3MW turbine can displace around 7,800 tons of CO₂

GEO THERMAL

- 24/7
- DAY, NIGHT, CLOUDY, SUNNY

CARBON INTENSITY OF ELECTRICITY GENERATION



Source: IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation

BUSINESS CASE FOR RENEWABLE ENERGY

SHIFTING TO RENEWABLE ENERGY: Harnessing and utilizing the country's huge RE resources is key to reducing its carbon emissions and addressing energy security.

	GEO	HYDRO	BIOMASS	SOLAR	WIND	OCEAN
Existing capacity as of June 2015	1,918 MW	3,556 MW	183 MW	110 MW	373 MW	0 MW
Estimated potential capacity as of 2008	4,600 MW	10,500 MW	235.7 MW	Untapped vast potential	76,600 MW	170,000 MW

11 COUNTRIES LEADING THE SHIFT TO #RENEWABLE ENERGY

1. SWEDEN: One of the first nations to go 100% fossil fuel-free
2. COSTA RICA: 99% of the country's electricity in the 2015 came from renewables.
3. NICARAGUA: In 2015, they said goodbye to foreign oil and sourced 54% of electricity from renewables.
4. SCOTLAND: Wind power produced 97% of their household electricity in 2015.
5. GERMANY: It leads the world in solar PV and has met 78% of a day's electricity from renewables
6. URUGUAY: It gets 95% of its electricity from renewables.
7. DENMARK: It aims to be 100% fossil fuel-free by 2050. 42% of its electricity comes from the wind.
8. CHINA: As the world's largest carbon emitter, it had the most installed wind energy capacity in 2014.
9. MOROCCO: The largest concentrated solar plant on earth recently opened in this country.
10. USA: A new solar energy system was installed every two minutes and 30 seconds in 2014
11. KENYA: Africa's largest 310 MW wind farm can be found here. 71% of its energy is renewable.

CHINA'S 2016 POWER GENERATION MIX

COAL	65.2%
HYDRO	19.7%
WIND	4.0%
NUCLEAR	3.6%
OTHER THERMAL (Biomass & Oil)	3.3%
GAS	3.1%
SOLAR	1.1%

INDIA'S RENEWABLE ENERGY (comparing 2016 & 2022)

Year	SOLAR	WIND	BIO-POWER
2016	Installed capacity 5.8GW	Installed capacity 25GW	Installed capacity 4.5 GW
2022	Target capacity 100 GW	Target capacity 60 GW	Target capacity 10 GW

TOP CORPORATE CLEAN-POWER BUYERS
Cumulative U.S. renewable energy

Google	1,850.5 MW
Amazon	1,218.9
Apple	699.0
US Department of Defense	663.4
Microsoft	492.0
Wal-Mart stores	463.3
Facebook	375.8
Dow Chemical	349.9
Equinix	349.5
Ikea	312.5

Source: Bloomberg New Energy Finance

- First Gen, Unilever forge a mutual journey to 'clean' energy future (published June 19, 2017)
- Unilever PH factories set to be fully energized by RE by 2018. (published June 2, 2017)

OUR LEADERSHIP IS COMMITTED TO SUPPORT A GREEN ENERGY PATH.

“Let me state unequivocally and for the record that FPH and its subsidiaries **will not build, develop or invest** in any coal-fired power plant.”

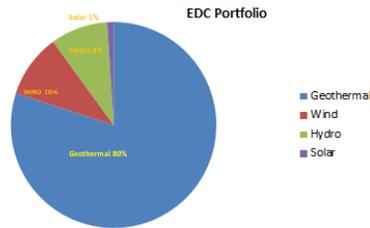
FEDERICO R. LOPEZ
Chairman
First Philippine Holdings Corporation

SALES & AVOIDED CO₂

- Generated Total Energy Sales: 8,531.5 GWh
- Avoided CO₂ : 7,469,325 tons CO₂ based on EDC's 0.1 tons CO₂/MWh intensity

= to GHG emissions from 1,577,772 passenger vehicles driven for 1 year
 = 17,901,399,671 miles driven by an average passenger vehicle
 = 338,634 garbage trucks of waste recycled instead of landfilled
 = 264,775,789 incandescent lamps, switched to light emitting diode (LED) bulbs.

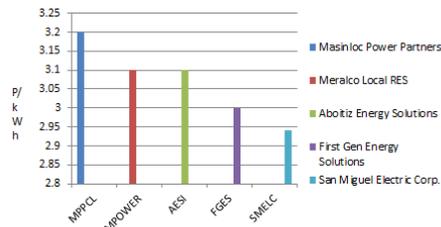
EDC PORTFOLIO



ENERGY SOURCES CAPACITY FACTORS %

96% capacity :
Geothermal power outperforms all other sources of clean energy

RENEWABLE ENERGY CONTINUES TO COMPETE AGAINST COAL IN THE RETAIL MARKET SEGMENT



BINHI: OUR GREENING LEGACY

BINHI:
An innovative Filipino solution to climate change, environmental crisis
BINHI aims to restore the rare tree species

EDC's BINHI is a nationwide reforestation and biodiversity restoration project that aims to secure and propagate premium and endangered Philippine tree species – trees that are essential to preserve our forests' biodiversity; trees that hold significance to our socio-cultural roots; and trees that provide sustainable livelihood for forest communities.

BINHI: LET THE FUTURE TAKE ROOT

- 9,196 HECTARES REFORESTED
- 6.3 MILLION TREES PLANTED
- 67,835 ASSISTED REGENERANTS
- 96 OF 96 THREATENED NATIVE TREES RESCUED
- 1,047,753 ESTIMATED tCO₂e SEQUESTERED

- EDC is carbon positive: its footprint of 806,117 CO₂e is only 30% of the carbon absorption of the forests and plantations it has nurtured for the past four decades.

793,563 tCO₂
Carbon sequestered via BINHI Program

2,425,275.94 tCO₂e
Carbon sequestered in biomass in
geothermal reservations

10M IN 10: A GREENER NEGROS MOVEMENT

- Was formed to answer the prevalent forest deforestation in the country, especially in the island.
- Envisions and aims for Negros Island to have a stable and productive watersheds, its biodiversity is improved and protected, and with resilient communities and ecosystems, able to adapt to the impacts of climate change.
- Has a compelling and determined mission to inspire active and potential partners to PLANT, GROW, and PROTECT 10 million trees in 10 years.

10M in 10 in 2 Years.....

- **5 Planting modules piloted:** School Greening, Fuelwood Plantation, Riverbank Planting and Critical Watersheds, Tree Parks and Roadside Planting, Tree Growing by Individuals and Groups.
- **40+ Host Cities and Municipalities**
- **193 planting activities** conducted
- **2 Partner Cluster Meetings** held
- **138 Partners** from government, academe, LGUs, corporations, socio-civic groups, and individuals
- **4,068,978 trees planted!**

BE OUR PARTNER

Email: 10Min10years@gmail.com

Tel: 0917-803-7115

www.10Min10.org

Fb: 10M in 10 Years

Tweeter: @10Min10years



Session E dealt on environmental programs undertaken by academic institutions to transform students into environmental citizens, possessing attitudes and behavior conducive to a culture of sustainability. The session was chaired by **Andrew Tan**, President of Philippine Network of Educators for the Environment and moderated by **Yolina Castañeto**, Ph. D., College of Forestry & Agroforestry Chair of Nueva Vizcaya State University.



1. Topic: **Carbon Neutral University: De La Salle Philippines**

by: *Bro. Armin Luistro*

President, De La Salle Philippines



Bro. Luistro discussed how La Salle developed into a carbon - free campus using careful planning system, having full commitment to the advocacy and strong determination to make a difference. He discussed the Lasallian Institute for the Environment (LIFE) which envisions a healthy environment sustained by a society knowledgeable about and aware of their environment through education. Its objectives are to educate formally and experimentally, raise awareness and form values. Under this institute are several programs some of which are:

- (a) The Facilities and Environmental Programs Management (FEPM) that guides the schools to a more efficient and environmental performance towards sustainability;
- (b) Project Carbon Neutral (PCN) that assess the carbon footprint of De La Salle schools and reduce / replace carbon-emitting practices. It is achieved in two stages: (1) measurement of the university's carbon footprint from energy usage, transportation, and waste production; and (2) Direct reduction by adopting green practices through policy formulation and implementation, process or engineering changes, research and evaluation and education.
- (c) One Million Trees and Beyond provides the venue for pro-active responses through tree-planting and reforestation programs using native trees.
- (d) La Salle Botanical Gardens is a themed garden that will serve as leisure areas / laboratory/ breeding ground that will be opened to the public for appreciation.

These initiatives merited De La Salle Philippines to be escalated from the 70th to the 50th WORLD'S GREENEST UNIVERSITY in 2015.

2. Topic: **Environmental Initiatives of Cebu Academe Network**

By *Brenette L. Abrenica*

Coordinator, Cebu Academe Network



Ms. Abrenica introduced the Cebu Academe Network (CAN) and discussed its various advocacies. The Cebu Academe Network is composed of academic leaders committed to educating individuals and establishments to become responsible environmental stewards. They involve students, faculty, administration and target communities and establishments in their programs. CAN has undertaken researches, conducted teaching and learning activities, extension and production projects. Their main activities revolve around the adopt-a-river program with periodic river clean-up as one of its activities. They educate and partner with

industries located along the major rivers of Cebu to ensure cleaner and improved effluence before these are discharged to the river. CAN is recognized in Cebu as a moving force for ecological initiatives.

Participants gathered into Plenary for the Declaration of Partnership and Statement on the Summit Output. Assistant Secretary Corazon Davis closed the Summit with heartfelt gratitude to all the participants, guests and organizers. She emphasized that change is the key driver to protect the environment and that change should start with each individual.

POWERPOINT PRESENTATION



Environmental Initiatives of the Cebu Academe Network

Brenette L. Abrenica, MAPA, NIPSS
 Director, USG-Community Extension Services and Coordinator, Cebu Academe Network

Context

- Cebu City
- Established in Oct. 20, 1934
- Situated in the central part of Cebu Province
- 80 barangays
- Total land area: 5,088.4 km²
- 4 watersheds which are now declared Central Cebu Protected Landscape (CCPL)



Challenges of the Context

- Water crisis of Cebu
- Environmental degradation is widespread
- Some of the river systems are declared biologically dead due to pollution

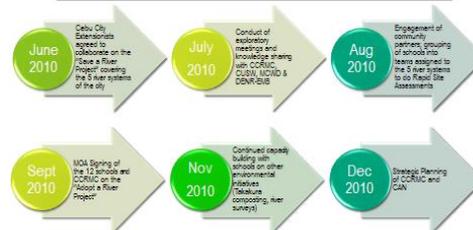


Response

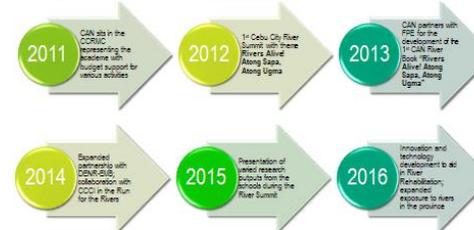
- Cebu City government created (via an EO) the **Cebu City River Management Council**
- Convening of the non-government **Central Cebu River Basin Management Council**
- Leadership and collaboration among civil society groups such **CUSW, RAFI, among others**



CAN Journey



CAN Journey



CAN Journey onwards...

2017-2018

- CAN revisits its existence vis-à-vis dissolution of CORMC and member schools commit to continue to work together;
- Will pursue Institutional Development
- CAN sits in the Butuanon WQMA;
- River rehabilitation projects are outline for implementation (planting of *Cyperus Alternifolius*L. or Umbrella plant);
- Writing of CAN River Book 2
- Collaborates with Mandaué City for the preparation of the International River Summit 2018

Cebu Academe Network

CAN Member-Schools



Cebu Academe Network

CAN Vision

- The Cebu Academe Network envisions itself to be a network of academic leaders committed to educating individuals to become responsible environmental stewards.

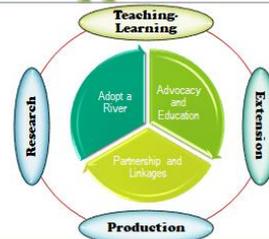
Cebu Academe Network

CAN Mission

- To values formation with that prepares them to meet the demands and challenges of solving environmental problems.

Cebu Academe Network

CAN Programs and Approach



Cebu Academe Network

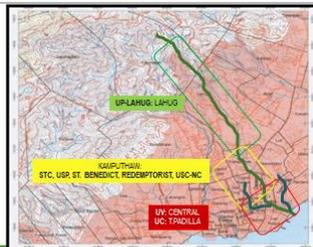
1. Adopt-a-River

- Schools are assigned to specific segments of the river system/s
- Accessibility
- Research/Extension areas
- Primary roles of Academe:
 - Social Marketing
 - Advocacy and Education (students and community)

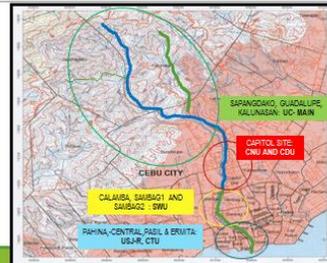


Cebu Academe Network

Lahug River



Guadalupe River



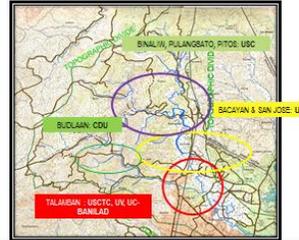
Buhisan River



Bulacao River

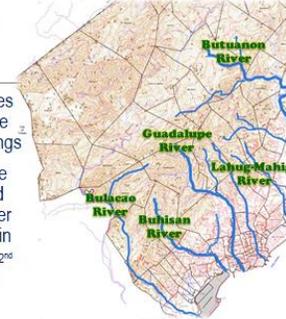


Butuanon River



1. Adopt-a-River

- Sharing of experiences and activities are done during monthly meetings
- Efforts and knowledge outputs are presented during the annual River Summit and featured in the CAN River Book (2nd edition is currently developed)



Cebu Academe Network

2. Advocacy and Education (for the general public)



Cebu Academe Network

2. Advocacy and Education (for students & faculty)



Climate Walk

- IWRM Seminars and Capacity Building
- Module Development for Environmental Education (with CUSW and FPE)
- Knowledge sharing in assemblies of Extension and NSTP implementers

Cebu Academe Network

2. Advocacy and Education (for the community)

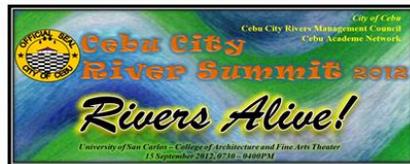
- Annual Clean-ups with the community
- Values Formation sessions on the care for the environment
- SWM and IWRM sessions with community partners
- River researches that encourage participation from the community as the local resource



River researches

Cebu Academe Network

2. Advocacy and Education (for all stakeholders)



- Conduct of Annual River Summit
- Engaging with as many strategic partners as possible

Cebu Academe Network

Atong Sapa, Atong Ugma Annual River Summit



Cebu Academe Network

River Summit 2012



Cebu Academe Network

3. Partnership and Linkages

<ul style="list-style-type: none"> Cebu City Rivers Management Council Cebu City SK Federation Concerned Barangays Cebu Provincial Government Mandaue City DENR-EMG7 Regional Inter-Agency Steering Committee on Environmental Education <p>Government</p>	<ul style="list-style-type: none"> Cebu Uniting for Sustainable Water Foundation, Inc. Central Cebu River Basin Management Council Mega Cebu Movement for Livable Cebu Foundation for the Philippine Environment Let's Do It Philippines Community Partners of each Member-school <p>Civil Society</p>	<ul style="list-style-type: none"> Cebu Chamber of Commerce & Industry (CCI) <p>Industry</p>
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Cebu Academic Network

Approach

Teaching-Learning

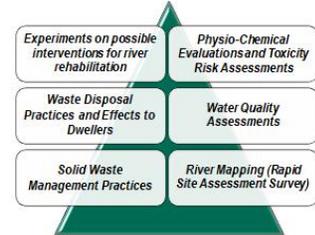


- NSTP students are deployed for exposure in river communities
- Students are tasked to share their experiences from the community to their respective classes
- Service-learning activities of students in river communities

Cebu Academic Network

Approach

Research



Cebu Academic Network

Approach

Extension

<ul style="list-style-type: none"> Annual Clean-ups with the community Values Formation sessions with communities Conduct of SWM and IWRM capacity building sessions with community members Organizing community advocates 	
--	--

Cebu Academic Network

Approach

Production

<ul style="list-style-type: none"> CAN River Book IEC materials distributed to communities 	
--	--

Cebu Academic Network

Advantages of being a Network

- Advocacy-centered collaboration is easier to handle
- Sharing of practices, experiences and knowledge outputs
- Partnership with other CSOs and funding institutions (agreements will have to be arranged with school heads)

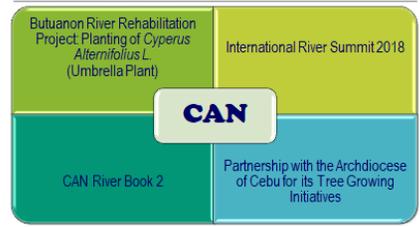
Cebu Academic Network

Challenges of the Network

<p>CCRM is created only via an Executive Order (original MOU of CAN was with CCRM)</p>	<p>Limitation in expanding partnership and in entering into contracts due to absence of the legal personality of the network</p>	<p>Multi-dimensionality of river rehabilitation (government-industry-community)</p>
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Cebu Academic Network

CAN Projects onwards...



Cebu Academic Network

There is much HOPE!

Kay ang kasapaang kanhi gimahal, gihan-okag abuso ug pagdagma!
 Hibaw-I higala, kamatayon niya kapildihan ta
 Kay ang kasapaan ug katawhan kabahin lang
 Sya usa sa buhing kalibotan
 Busa higala, motabang ka ba, kahimog sa kasapaan
 O kalibutan iuk ta?
 Sigi sugdan ta karon dayon king bililhong gasa
 Alang sa mosunod nga henerasyon!

Excerpt from Kasapaan by Ms. Rosalinda Capito (STC)

Cebu Academic Network



DECLARATION OF PARTNERSHIP



The program culminated with two sets of Declaration of Partnerships:

(1) Care for Endangered Native Tree Species undertaken by Energy Development Corporation in partnership with various sectors in Cebu: University of the Philippines Cebu, University of San Carlos, St. Theresa's College Cebu, Cebu Academe Network, Rotary Club of Manadaue East, Archdiocese of Cebu, Let's Do It Philippines and Sustainable Energy and Enterprise Development. They all agreed to cooperate to promote, plant, and sustain endangered native tree saplings that will be planted and cared for in their respective prescribed area.

(2) Support for Sierra Madre Biodiversity Framework (SMBF) was undertaken by Sierra Madre Network, Philippine Permaculture

Association, Green Convergence, Indigenous People's Structure of General Nakar, Quezon and Un-gabay et Manbunat Association. They all agreed to cooperate with DENR to promote environmental projects in implementing the SMBF, cooperate with the National Commission on Indigenous Peoples (NCIP) to promote the welfare of the IPs in their ancestral domains implementing the SMBF and mobilize support from civil society organizations to conduct environmentally sustainable activities within the Sierra Madre Mountain Range and across the country in adopting the SMBF.

STATEMENT ON THE SUMMIT OUTPUT



The statement of summit output was read by **Rodne Galicha**, Manager of Climate Realty Project Philippines. It outlined action points that emerged from the resource speakers and the participants. The action points were clustered according to the three key thrusts of Green Convergence: Safe Food, Healthy Environment and Sustainable Economy. To these, the audience gave a resounding applause of agreement to support the next plan of actions.

Statement on the Summit Output

Climate Change is impacting seriously on our planet – its ecosystems and all of biological life. It endangers sustainability of the planet and deprives future generations of the beauty, nourishment and other benefits of creation. The causes are mainly human in nature – the way we live that lacks care for the quality of life of generations to come.

Change, therefore, is necessary and may be the only response. It is change that is holistic, systemic and personal. Change will have to happen in the heart and mind, in the spiritual and scientific realms, in government, organizations and individuals. It is change that will bring about the solutions we seek.

The 2nd Philippine Environment Summit, jointly organized by Green Convergence for Safe Food, Healthy Environment and Sustainable Economy and the Department of Environment and Natural Resources, aimed to bring out both idealistic and realistic solutions. We call them innovations. We aspired bigger this time, desiring to mainstream these innovations to be enjoyed by everyone in our lifetime and beyond.

The three-day gathering of representatives from different sectors, the exchange of ideas and experiences, and the weaving together of the one dream to save the environment bring us one step closer to achieving our common goal for our common home.

As echoed by Pope Francis in Laudato Si, hope is not a strategy but the light that guides our way.

This Summit is our way to influence the youth, the successor generation of stewards of the environment who will hopefully continue working for the health of the planet. It is also a way to influence the adults who can still reform and enjoy the benefits of sound environmental behavior.

Through this Summit, we worked to increase awareness of the issues that affect us. And we strengthened the network of support coming from the government, non-government, business, civil society and religious sectors.

During the Summit proceedings, these are the action points that emerged from both our expert resource persons and enthusiastic participants which we will want to see. We have clustered them according to the key thrusts of Green Convergence:

Safe Food

- Monitor compliance to ban toxic chemicals and monoculture plantations and farms;
- Promote organic farming;
- Develop plant nurseries in barangays to promote local and safe food, i.e. vegetables, corn, fruits using organic fertilizers.

Healthy Environment

- Revive urban greening, coastal and river rehabilitation through employing various bioremediation techniques;
- Help minimize or solve accumulation of solid waste in coastal areas, educate and campaign regarding proper disposal of solid waste materials;
- Strengthen sustainable training and education to complement actual land development;
- Capacitate local government to launch a massive campaign to promote waste segregation, waste management and composting and update existing MRFs;
- Popularize biogas digesters and construct facilities in communities;
- Build more Zero Waste cities, Zero Waste municipalities and barangays;
- Create a database on best practices in treating special wastes such as biohazard waste materials;
- Institute notice of violations to non-compliant communities on proper solid waste management;
- Strengthen community watershed protection.

Sustainable Economy

- Popularize community-based approaches in social enterprising;
- Include handicraft course in K-12 curriculum;
- Adopt programs for resource-based products;
- Partner with environmentally-oriented cooperatives, local and international;
- Espouse fair trade practice in businesses;
- Capacitate women to engage in community-based social enterprises;
- Adopt international standards on green building;
- Patronize products from recognized protected landscapes and seascapes.

More importantly, the attendees are mainly in agreement on key elements required to realize the above actions:

- Alignment of different sectors on the same course including adopting and mainstreaming innovations towards sustainable development;
- Cooperation among sectors involved – government, non-government, communities, particular sectors – in carrying out the actions agreed upon;
- Educating, capacitating society especially the youth to become stewards of the environment in their communities and for the future.

We call on government, business and all stakeholders to seriously take to heart and consciously incorporate in all their forthcoming plans and actions the solutions recommended by the participants of the 2nd Philippine Environment Summit held on February 20 to 22, 2018 in Cebu City.

II. WORKSHOP OUTPUT: MAINSTREAMING PLANS

DAY 1

Session A - SUSTAINABLE PLANT- BASED MANUFACTURING INDUSTRIES

Chairperson: Brenette Abrenica

Director of Community Extension Services, University of San Carlos

Moderator: Dolores Saldivia

Cebu Doctors University

Talk 1: Bio Chemicals from Coconut

by Emerson John Tiu Ng

Applications Manager, Chemrez Technologies

Talk 2: Zero Waste Mango Industry

by Dr. Evelyn Taboada

Dean, College of Engineering, University of San Carlos (USC)

Talk 3: Hibiscus-Based Livelihood of Dumagats in Tanay, Rizal

by Elizabeth de Castro

Convenor, Earth Day Network

PROJECT NAME	DESCRIPTION OF PLAN	PLAYER & ROLE	NEXT STEPS
For Shumei: polyphenols (natural product available in the plant)	Production of supplements, ink, natural dye, etc.	UST, UPLB research team on Natural Products	Tie up with academic partners
for Shumei: stalk of the Hibiscus plant	Fiber (like hemp)	Textile industry (DOST textile for the non-woven industry)	Contact the textile industry and DOST
For Shumei: ensure the security of tenure of the CADT areas of Daraitan	Community or local entrepreneurs need to understand the legal requirements needed to ensure the sustainability of the project	CSO: Tanggol Kalikasan Alternative Lawyers	Work with CSOs and lawyers in understanding the legal requisites in fighting for CADT rights
Popularize community-based approaches in social enterprising	Work with the community; make the community both the source and beneficiaries of innovations	(Learn from) Human Nature	Learn from the models of GK and Human Nature for the production of organic products
Utilize information and communication technology in marketing products	Engage the youth in developing the ICT platform for the promotion of locally produced products	Students and those in ICT discipline	
Tap corporations (corporate social responsibility section) in the marketing of products	Engage corporations to help create awareness and interest on the innovation outputs/products	PH marketing associations, 4As (advertising associations)	Work with Green Convergence in tapping corporations for this purpose

Use MAP technology	Extending shelf lives of products	ChemRez Technologies	Work with CT in the R & D of Hibiscus
Continue massive education about the value of the environment and nature	<ul style="list-style-type: none"> - Engage young people / students in appreciation of nature - Outline the psychological and spiritual dimensions of the environment 	Academe (teachers) advocates	<p>Continue this kind of engagement</p> <p>For the youth to share their passion for the environment and nature</p> <p>For the schools to work together to pursue the advocacy for the environment and nature</p>
Address Resiliency to Climate Change	<ul style="list-style-type: none"> - Ensure that the resources are not too badly affected by the effects of climate change 	coordinate with inter-agencies (e.g. DENR, DAR, BFAR, National and Local DRRMs)	
Continue R&D, capacity-building, technical efficiency efforts	Ensure that the quality of the products is not relegated to sub-standard products that are not saleable	Other emerging innovation industries	Collaborate with emerging innovation industries (ChemRez and GEMS)
	become financially literate (investments)		

Session B – HEALING THE EARTH THROUGH ENVIRONMENTAL TECHNOLOGIES

Chairperson: Julie Otadoy, Ph.D.
Professor, Department of Biology, University of San Carlos

Moderator: Dann Diez
Founder/Convenor, Let’s Do It Philippines

Talk 1: Environmental Biotechnology
by Edgar Maranan
Chairman, Greenenvironment

Talk 2 : Umbrella Plant for Heavy Metal Pollution
by Dr. Josephine Castañares
Professor, Chemistry Dept. University of San Carlos

Talk 3: Landscape and Wildlife Indicators
by Asec. Ricardo Calderon
Asst. Secretary for Staff Bureaus, DENR

Talk 4: Solar Home System
by Dr. Aladino Moraca
Member, Foundation for the Philippine Environment Visayas Regional Advisory Committee

PROJECT NAME	DESCRIPTION	PLAYERS	NEXT STEP
Project Lazarus	Revival of Urban Greening Rehabilitation of rivers and coastal areas using bioremediation techniques	STC and its partner communities	Sustainability of rehabilitation efforts
Fruit Peel Conversion (FPC) Hindi Lahat ng “Peelings” Tinatapon c/o University of San Jose Recoletos	Proper segregation and processing of fruit peelings into useful products	DOST, Biochemists, NGOs	Look for alternatives. Expansion of knowledge and practices aside from converting them into fertilizers
“Sagip Quiaoit” c/o Mariano Marcos State University, Ilocos Norte	Quiaoit is one of the rivers of Ilocos Norte that flows into the city of Batac. To save the river, umbrella plants will be used to mitigate or lessen heavy metals.	Academe, Environment Science department of MMSA, Batac LGU and community	Upon approval of the project, planting of umbrella plants on the river banks will proceed.

Seasalt Processing by PNU Visayas, Don Mariano Marcos Memorial University in La Union	Provide livelihood for Cadiz fishermen through proper training with seawater treatment facilities	LGU	Proposal
Hydro Poso Filtration c/o USC Main Campus	Planting of Umbrella Plants	LGU, Academe, CACEC	Ocular Inspection and Lakbay Aral
Eco Talk c/o CIC Cebu, Mandanue and Vincentian	A form of raising awareness among students about the realities of the environment and how they can preserve it.	Academe, student leaders	Propose project to academic administration
Micro Hydroelectric Generator	Converts 1.5 cubic meters of second water flow of SPUD creek from mechanical energy to electrical energy	Students, leaders, EDC, school administration	Conduct proposal to the respective stakeholder
Solid Waste Management c/o CFA Cebu	Biotech as trade off to environmental conservation	IP community	Start planning, fund raising, residential mobilization
Money in a single waste	Help minimize or solve accumulation of solid waste in coastal area, educate and campaign on proper disposal of solid waste materials, convert solid waste into energy	LGU, NGO, community	Coordinate with DENR to draft policy and guidelines to manage the project
TRIM or Talisay River Management Program	A comprehensive program for Talisay River ecosystem rehabilitation - protection and rehabilitation and utilization, highlighting various technologies with socioeconomic, education and advocacy approach.	Youth, academe, LGU, NGO	Create and research on possible model and coordinate with LGU and NGO

Sludge / biodegradable segregation c/o DLSU Balayan	Sludge materials accumulated can be processed, then gathered for final disposal in upland areas or wide area trees. These decomposed increasing CO2 absorbency	LGU, DENR	Give LGU idea on the biodegradable materials gathered and its potential to increase absorption of carbon from the atmosphere.
Water Supply Collector c/o DLSU Ozamiz	With the use of mesh, humid air is gathered and converted into water.	Urbanites,, NGO, government	Make proposal, implement/activate as part of extension service
YOSI Iwana #forever c/o EMB Region 8	Detoxification among smokers	National agencies and LGUs, community volunteers	Conduct research interviews, craft program, analyze proposal, implement program.
ENR Oil Absorber Material c/o St. Scholastica	Hair as oil absorber	LGU, marine organizations	Write project proposal
Harnessed School Waste c/o Kabankalan Catholic College	Aims to help the school to strengthen our clean and healthy program	Grade 11 and 12 students	Present to school community Engagement Office for implementation
Green Chemistry c/o Holy Cross HS, Lanao del Norte	Promote sustainable management of resources	School student body	Start with self, share thoughts and helpful possibilities to have the project approved.
Food Tunes c/o St. Theresa's College Cebu	Growing vegetables and herbs inside the campus for the consumption of the school canteen and school nuns; improving, speeding the growth through intervention of classical music for a better yield.	School, student, staff and administration	Submit proposal

Session C – ORGANIC AGRICULTURE

Chairperson: Vic Tagupa
 Visayas Head, League of Agriculture Municipalities & Cities

Moderator: Arch Socorro
 Elicon House

Talk 1: Healthy Rice Varieties
 by Jayson B. Baliber
 ICS Staff, Pecuaría Development Cooperative

Talk 2: The Gentle Wild
 by Bert Peeters
 Coordinator, Philippine Permaculture Association

Talk 3: Learning from the Organic Agriculture of Netherlands
 Gordon Alan P. Joseph
 Honorary Consul , Consulate of Netherlands in Cebu

NAME OF PROJECT	SHORT DESCRIPTION	SECTOR INVOLVED/ROLE	NEXT STEPS
No conversion of rich agricultural lands for settlements and industrial lands	Land use classification	DA and CLUP of LGUs, DENR	Boundaries on forest lands or public lands
NAPC (National Anti-Poverty Commission) Programs to combat poverty and malnutrition	Condition: Those granted land area should apply organic farming	DEPED for education on natural farming and appropriate technologies	Education and Monitoring at LGU level
Incentives for organic farmers	Tax reduction	LGU	Recommend to council for adaption

Agro forestry	Sustainable training and education to compliment actual land development	LGU and DA	50% education should be supported
Network of organic farmers/cooperatives	Strengthen partnerships	DA	Mapping of organizations/cooperatives
Values in the Philippine Agenda	Example: Sustainable Development Goals	LGUs and DA	Highlight Filipino Values; Tangible projects should be undertaken
Organic Certification	Participatory Guarantee System (PGS) for Philippine Market		Consumers education
Revisit land laws, map out the best practices, support for sustainability	Support best practices or make available for replication	DA and DILG	Map out the best practices, support for sustainability
Awareness on proper nutrition and sources of food		DA and DEPED	Agri-tourism as a venue for tourism and livelihood for farmers
Monitor compliance to ban toxic chemicals and mono culture plantations and farms		EMB, DOH, DENR, DA	Mapping of plantations and commercial producers

Session D: EFFECTIVE STRATEGIES FOR ADVOCACY

Chairperson: Huberto Zanoria
Professor, Mandaue City College

Moderator: Grace Magaizo-Bualat, MpolSC
Chair, Department of Political Science, University of San Carlos

Talk 1: Creative Advocacy (Break Away from Plastic)
by Von Hernandez
Head, Break Away from Plastics

Talk 2: Environ Mentor (Mobile App by DENR)
by Asec. Daniel Nicer
Assistant Secretary, DENR

Talk 3: Turning Clicks Likes and Shares to Volunteers and Sponsors
by Junard Catingub
Consultant, Data Driven Rocks

<u>PROJECT NAME</u>	<u>DESCRIPTION OF PLAN</u>	<u>PLAYERS AND ROLE</u>	<u>NEXT STEP</u>
BREAK FREE FROM PLASTIC	Massive Involvement of the public from various sectors to participate and support the concept of break free from plastic by (1) registering as advocates, (2) considering a specific area to work on in auditing waste and (3) submit to the organization the audit report	Education Group, Business Companies (young and old)	Massive campaign to promote waste segregation, waste management and composting
BREAK UP WITH PLASTIC	School-oriented campaign that aims to encourage youth participation by relating to environmental problems that include talks and forums to different schools and designing information materials in social media	Various environmental organizations, governmental and most especially the academe	BREAK UP WITH PLASTIC

ENVIROMENTOR APP	It is an app that will give information on the quality and nature of the environment and the community where they belong and who will be involved and the steps that you will be doing	Those who are involved	Continuous development and updating to include other sectors, watershed, sanitary land fills
Online Campaign for the protection of the environment	Online system developed by the resource person to insure the various steps to be undertaken in effective campaign to reach out to bigger audience to ensure results on how to save the environment. The emphasis is given to analysis to improve the reach of the campaign to a larger group.	All sectors including corporations, schools, religious sectors	Trying out the steps, do the test and analysis to see how effective the campaign is

Session E - SOLID WASTE MANAGEMENT ISSUES AND SUCCESS STORIES

Chairperson: Jorge Emmanuel, Ph.D.

Adjunct Professor, Engineering & Environmental Science, Siliman University

Talk 1: Heath Care Waste using Autoclave
by Julito T. Pogoy
Pollution Abatement Systems Specialists Inc.

Talk 2: Biodigesters for Municipal Biodegradable Waste
by Michael Templonuevo
Municipal Environment & Natural Resources Officer, GMA City Cavite

Talk 3: Informal Waste Sector
by Daniel Alejandre
Zero Waste Campaigner for Eco-Waste Coalition

PROJECT NAME	DESCRIPTION OF PLAN	PLAYERS AND ROLE	NEXT STEPS
Massive nationwide information campaign and training on zero waste	Zero waste will be proliferated around the country by launching a nationwide campaign to promote Zero Waste, developing Zero Waste resources like guidelines and case studies, training LGUs and stakeholders on Zero Waste methods, Zero Waste model communities, and establishing funding mechanisms to support LGUs.	Key players include LGUs; NGOs such as Mother Earth Foundation, GAIA and EcoWaste Coalition that have been building Zero Waste cities and barangays; multi-sectoral groups; social entrepreneurs; and national agencies	Write proposals to finance such undertakings
Popularizing technologies to address bio waste	Biodigestion will be promoted along with other technologies and methods for biodegradable waste, such as composting, vermi-composting, bioenzymes such as Bokashi, Takakura, EM, and Biosolutions. These could be popularized by teachers, by developing guidebooks to help LGUs choose the best and cost-effective methods for their biodegradable waste, providing data on economic analyses, and creating a publicly available database of these best practices (such as through the GC virtual library). The cultural angle (i.e., how people view biodegradable waste including manure, night soil, etc.) and safety issues can be addressed.	Teachers to integrate in Senior High curriculum DENR, NSWMC, NGOs, LGUs to develop guidebooks to help communities /LGUs choose the best and cost-effective methods for their biodegradable wastes. GC Virtual Library to create a publicly available database of these best practices DILG /EMB to monitor and award LGUs, schools, communities that have working models to address bio waste.	Convene group to plan out next steps. Conduct training on safety issues.
Popularizing environment-friendly alternative technologies to	Produce a guidebook on various technologies that can be used to address different kinds of waste. Example: use of autoclave, hydroclave and microwave to address medical waste; bio digesters to process biodegradable waste that can also produce biogas for	NGOs (Ecowaste Coalition, GC, Dr. Emmanuel's grp) - to assist in drafting NSWMC, DENR – to finance and	-Convene the technical working group (NGOs, DOST, NSWMC, DENR, LGUs) and hold workshop to work on the contents to

address Solid Waste Management and Medical waste	cooking.	publish DOST, LGUs, private sector, technology providers, and Scavenger group – to be included in the TWG	be included in the publication -Brainstorm on how to popularize the publication
Institutionalize and Operationalize Extended Producers Responsibility	Brand audits of waste from coastal clean-ups have identified the major culprits of plastic packaging waste found in coastal areas. The companies responsible should be pressured to develop environmentally sound and sustainable alternatives to their packaging.	DENR, NSWMC, DTI and NGOs to take note of company products, inform companies of findings and pressure them to either plan a retrieval process and recycling of waste or develop environmentally and sustainable packaging.	Incorporate this in the next coastal clean up drive.
Strengthen ban on single-use plastics provided by food stalls	Plastic bags, straws and stirrers are filling our dumpsite and contaminating our rivers and marine environments. Banning plastic bags, stirrers, and straws is one of the techniques for Zero Waste. EcoWaste Coalition studies have shown that only 5% of consumers ask for straws when straws are not provided by restaurants and fast food joints. Stainless steel and bamboo straws are alternatives to plastic straws. Restaurants and fast food joints should be asked to stop providing plastic straws and to use alternatives if requested by a customer.	Strengthen ban on single-use plastics provided by food stalls	Advocate banning plastic bags, stirrers, and straws. Campaign to Restaurants and fast food joints to stop providing plastic straws and to use alternatives if requested by a customers.

DAY 2

Session A – ENTERPRISE WITHOUT ENVIRONMENTAL HARM

Chairperson: Alvin Duazo
Marketing Communications Manager, Consolacion Youth Organization

Moderator: Dan Diez
Founder/Convenor, Let's Do It Philippines

Talk 1: Developing Sustainable Enterprise thru Fair Trade Principles
by Voltaire Alferez
Executive Director, Community Crafts Association of the Philippines

Talk 2: Ecopreneurship: The Pinay Boracay
Ma. Ninfa Desiree Segovia
Chairperson, Boracay Women Producers Coop

PROJECT NAME	DESCRIPTION OF PLAN	PLAYERS AND ROLE	NEXT STEP
Handicraft course in curriculum K-12	Include handicraft in K-12 curriculum	TESDA, CHED	Program proposal development
Local/enviro products innovations awarding	Local products exhibit and awarding for next summit	GC, partner organizations	Discuss feasibility
Shared knowledge	Make all resources available on the website	GC	Virtual library contents announcement and upload
Adoptive programs for resource-based products	Establish mechanism assessment	Coops, social enterprises	Capacity building, learn from CCAP program

Session B – GREEN CHURCH

Chairperson: Sr. Angie Villanueva, RC
Head, Green Church Program – Green Convergence

Moderator: Joanna de Catalina, Ph. D.
Head, INFECOP, University of San Jose – Recoletos

Talk 1: Malate Church Environmental Programs
by Atty. Margierose Condes
Coordinator, Education Ministry of Our Lady of Remedies Parish

Talk 2: Parish-based Pocket Forests of Archdiocese of Cebu
by Fr. Murphy Sarsonas
Cahir, Cebu Archdiocesan Commission on Env'tal Concern

Talk 3: Kaunlaran Climate Change & Poverty Alleviation Program of Malolos Diocese in the Mission Parish of Sta. Cruz
by Fr. Leopoldo S. Evangelista III
Director, Diocesan Ecological & Environmental Program and Parish Priest, Sta. Cruz Mission Parish, Paombong Bulacan

Project Name	Description of Plan	Players and Role	Next Steps
Installation of solar panels in the parishes	Switch to solar panels for the parishes	CBCP-NASSA, parishes, parish pastoral council (PPC), We-Gen	Sharing of documents
Youth engagement in tree planting			
Organic farming	Planting and growing edible organic vegetables in parishes (PPC)	PPC	

Social mobilization about project(s)	Participatory planning, implementation, monitoring and evaluation; plus: baseline and capacity assessment		
Pocket forest in collaboration with other parishes			Explore MOA with potential partners
Seed saving project (seed bank)	Collective effort involving different parishes and other CSOs	Academe & Parishes	
IEC about renewable energy (RE)	Involve youth in IEC		
Eco-spirituality formation customized for the youth and other sectors	Through Social Media involving the youth	Church	
Planting of native trees		Lopez group and other environment friendly private or business groups Parishioners with vast tracts of land, etc. w/ MOA	
GCCM - Pilipinas Laudato Si Animators Training		GCCM	
Interfaith and multi-sectoral dialogue about urgent environmental issues		CEC, other CSOs	
Interfaith dialogue with LGUs and other government agencies			Policy Advocacy through Collective Position Statement(s) on certain urgent environmental issues (ex. proposed reclamation projects threatening mangroves)

MOA with certain LGUs about certain environmental action/program/project ("Greening the LGUs")	Strict participatory monitoring and evaluation		
Laudato Si' Cebu research	Ongoing initiative	Greenresearch	

Session D – TOOLS FOR RESILIENCY

Chairperson: Romell Antonio Cuenca
Deputy Executive Director, Climate Change Commission

Moderator: Edgar Gahisan
Professor, University of Southern Philippines Foundation

Talk 1: Integrated Geohazard Mapping
by Josephine Aleta
Supervising Geologist, Mines & Geosciences Bureau, Region 7

Talk 2: Tools for Adaptation from Private-Academe Partnerships
by Marianne Quebral
Executive Director, Oscar M. Lopez Center, Lopez Foundation

Talk 3: National Research and Development Project for Watershed Management – INWARD (Integrated National Watershed and Research Development)
by Engr. Rex Victor Cruz
Overall Project Leader, Integrated National Watershed Research and Development Project, PCAARD

Talk 4: NACI Dike River Technology: Riverbank Rehabilitation Strategy
by Engr. Alvin Quer
Program Manager, Tribal Leaders Development Foundation, Inc.

PROJECT NAME	DESCRIPTION	STAKEHOLDERS INVOLVED	NEXT STEP
<p>1. Information delivery to barangay level about climate change</p> <p>*from Bohol Private Companies</p>	<p>Conduct seminars/talks in barangay levels about climate change and their responsibility to mitigate the effects of climate change, how to adapt with the changes and other information that is necessary for all communities to be well aware of the situation</p>	<p>DENR, Environment groups, LGU, Barangay</p>	<p>Monitoring of actions of the community after learning about climate change</p>
<p>2. Development of plant nursery in barangays to promote local and safe food, ie. vegetables, corn, fruits using organic fertilizers</p> <p>*from Tessie Jagmoc (Executive director, CebuBohol Relief and Rehabilitation Center (CRRC), Inc.)</p>		<p>Disaster preparedness councils at the barangay levels with the LGUS and NGO support</p>	<p>Solicit CSR funds from big corporations in companies in Cebu and Bohol</p>
<p>3. Strengthening community watershed protection</p> <p>Note: Livelihood program depends on the type of community and abundant resource available</p>	<ul style="list-style-type: none"> • Bringing scientific knowledge to community • Providing livelihood programs that will minimize the extraction of resources from watershed 	<p>LGUS, locals, POs, NGOs, Academe, DENR, DA</p>	<p>Implementation monitoring, assesment</p>

<p>*from Mindanao State Univ –Iligan Institute of Technology (IIT)</p>	<ul style="list-style-type: none"> Enhancing the presence of symbiotic fungi that facilitates water retention and nutrient absorption 		
<p>4. School-based rain water collector</p> <p>*from Philippine Normal University Visayas, Cadiz City, Negros Occidental</p>	<p>Aims to level up the resiliency of the school when heavy rains occur</p>	<p>School officials, local government of Cadiz City</p>	
<p>5. Mangrove Planting</p> <ul style="list-style-type: none"> Task force Kalinisan in the school of Kabankalan Catholic College <p>*from Kabankalan Catholic College, Negros Occidental</p>	<ul style="list-style-type: none"> Plant mangroves alongside the Baywatch in Kabankalan City Implement the project to keep the campus clean and environment friendly 	<ul style="list-style-type: none"> Students of KCC Students/student leaders 	<ul style="list-style-type: none"> Implementation In the upcoming school year 2018-2019, apply in the city and every school in Kabankalan
<p>6. Fish Sanctuary</p> <p>*from Holy Cross High School, Kolambugan, Lanao del Norte</p>	<p>Mangrove Planting (Imitation of Naci River Dike)</p> <p>Improve Marine Life</p>	<p>Barangay Captain, Municipal Mayor, DENR, local people (fishermen)</p>	<p>Share to the next barangay</p>

<ul style="list-style-type: none"> • Real time PH map with data • Gaps of research and research community problems are also written in the platform • Crowdsourcing solutions for community problems <p>*from Ilyana Tan, DLSU</p>		Academe, NGO, and industry if possible	
<p>8.</p> <ul style="list-style-type: none"> • Creek Water treatment • Banica River (Dumaguete City) <p>*from St. Paul University Dumaguete</p>	<ul style="list-style-type: none"> • Treat the water from the creek before it outflows to the sea • Make a dike to control the situation of the river before it discharges to the sea 	<ul style="list-style-type: none"> • Academe, Stakeholders, community • DENR, LGU 	<ul style="list-style-type: none"> • Empowerment of the community
<p>9.</p> <ul style="list-style-type: none"> • Implementation of the CLUP in each municipality or city • Natural 	<ul style="list-style-type: none"> • Review and implementation of CLUP 	<ul style="list-style-type: none"> • LGU, HLURB, key government agencies 	<ul style="list-style-type: none"> • Approval of the National Land Use Act of the Philippines

<p>Resources/Biodiversity Assessment</p> <ul style="list-style-type: none"> • Risk Assessment <p>*from Jacklyn C. Andrada, Don Mariano State University, Bacnotan, La Union, Northern Philippines</p>	<ul style="list-style-type: none"> • Conduct natural resources/biodiversity assessment • Transfer of technology/tools to different stakeholders 	<ul style="list-style-type: none"> • DENR, LGU, Academe, NGO • Academe, NGO 	<ul style="list-style-type: none"> • Training of personnel from different sectors and collaboration among the different sectors • Training on the use of different tools (e. LIDAR/SAVER, Geo-mapping)
<p>10.</p> <ul style="list-style-type: none"> • Create Module for LGUS using watershed management framework 	<ul style="list-style-type: none"> • Training for HEU representatives 	<ul style="list-style-type: none"> • HEI/CCC/CHED • DILG, LGUs 	<ul style="list-style-type: none"> • Meeting with prospective institutes
<p>11. Rainwater Collector for university</p> <p>*Brian P. Ropa, USLS – Balayan</p>	<p>This idea may be adapted by our university in collecting rainwater. Rain water may be used for the school’s needs and later may be processed and treated to become potable</p>	<p>University, students, faculty, and staff</p>	<p>Design is necessary for this kind of project, so engineering services of the university may be requested to participate</p>

Session E: ECO-FRIENDLY AND SUSTAINABLE SCHOOLS

Chairperson: Corazon Davis
 Assistant Secretary
 Department of Environment and Natural Resources

Moderator: Elenida Basug
 Chief, Environmental Education Division, EM8 - DENR

Talk 1: Payao Elementary School
 by Anabelle Alipo-on
 Principal, Payao Elementary School, Negros Occidental

Talk 2: Divisoria High School
 by Eloisa Dizon, Ph. D.
 Principal, Divisoria High School, Santiago City, Isabela

Talk 3: Don Mariano Marcos Memorial State University
 by Leonora Ngilangil, Ph.D.
 Head, Environmental Science Department
 Don Mariano Marcos Memorial State University, Bacnotan, La Union

Talk 4: Towards a Holistic Approach on Community-based Forest
 Conservation: Miriam College Experience
 by Donna Reyes, Ph. D.
 Chair, Environment Department, Miriam College

RECOMMENDATION	SHORT DESCRIPTION	SECTOR/INSTITUTIONS	NEXT STEPS
Recognizing green heart schools	To expand some of the initiatives of 3 schools in Cebu	DENR schools	
Indigenous learners	Particular programs for Indigenous learners (i.e. environmental seminars and trainings)		
Environmental activity in Biak-na-Bato		DENR Communities near Biak-na-Bato	

Environmental co-ownership programs with community “bystanders”	To get people/bystanders to act or move People empowerment	Barangay Municipal	
Instill discipline among students about wastes		Schools Students	

DAY 3

Session B – LANDSCAPE AND SEASCAPE GOVERNANCE

Chairperson: Anabelle Plantilla
Project Manager, Biodiversity Finance, UNDP-DENR

Moderator: Dr. Mauro Allan Amparo
CES Director, University of Cebu

Talk 1: Payment for Ecological Services of Mount Kalatungan
by Roel Ravanera
Executive Director, Xavier Science Foundation Cagayan de Oro

Talk 2: Biodiversity Framework for Sierra Madre
by Fr. Pete Montallana
Chair, Sierra Madre Network

Talk 3: Sustainable Management of Tañon Strait Protected Seascape: An Evolving Success Story
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Project Name	Description of Plan	Players and Role	Next Steps
Rehabilitation of Butuanon River in Mandaue City	Paknaan, Mandaue City: These are industries and neighbourhoods near the river. With just small rain the river will easily flow.	LGU, DENR, Industries, Proponents, Academe/Youth, Religious Affiliations	Seminar about the importance of Proper Wastes Disposal; Conduct Education and Information Campaign; Clean-up drive Adopt a River Program
Water Resources Conservation	Regulated users fee (water) (business industries, irrigation, domestic potable water use, etc.) Reforestation & protection	LGU, DENR, NCIP, Water Districts, NIA	Creation of TWG & preparation of Forest LUP
National Action on LUAP and Tenorial Certification of CADT	Urge national government to act on and finalize on Land use Act and Tenorial Certification of CADT	Civil Society, DENR, Church, Academe	File a resolution on acting on this to submit
National Program of Mt. Katalungan	Governance in the Protection of Mt. Katalungan <ul style="list-style-type: none"> - Organize the local community - Deputize and train PA wardens - Organize the players and designate roles - Trainings - IEC - Mobilization of community for protection 	Community and Community Leaders <ul style="list-style-type: none"> - LGUs (Barangay Province) - NGOs (Church, Academe) - CLUIC Organizations (Rotary, ILAC) - DENR - PAMB - Law Enforcement Units 	Multi-Sectoral Effort in the Protection of Mt. Katalungan with the involvement of the local community
Better Tañon	Expand information about the protection for the strait through conducting seminars and orientation	Fishermen, community near the Strait, Barangay Official (LGU), Schools	Community Involvement Program (CIP) of the people in the community especially from schools and their partner areas