

EFFORTS TOWARD THE INTEGRATED MANAGEMENT OF PEATLANDS IN AGUSAN MARSH, PHILIPPINES

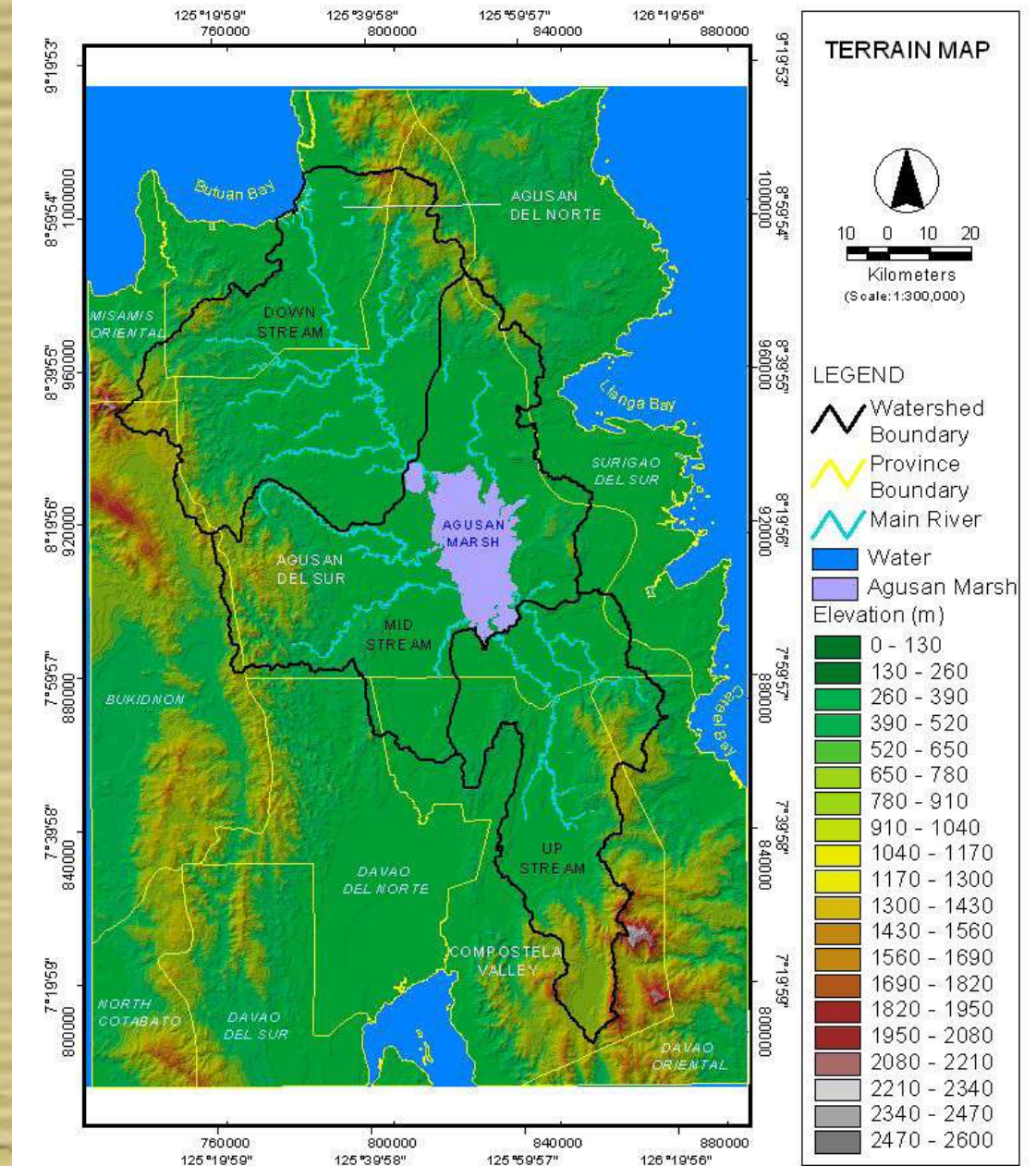


IMPORTANT FACTS

Agusan Marsh is a wetland of local, national, and international importance

- strategically located in the middle reaches of the mighty Agusan River Basin (the 3rd biggest basin in the country), it acts as a retarding basin for the lowland basin of Butuan plains

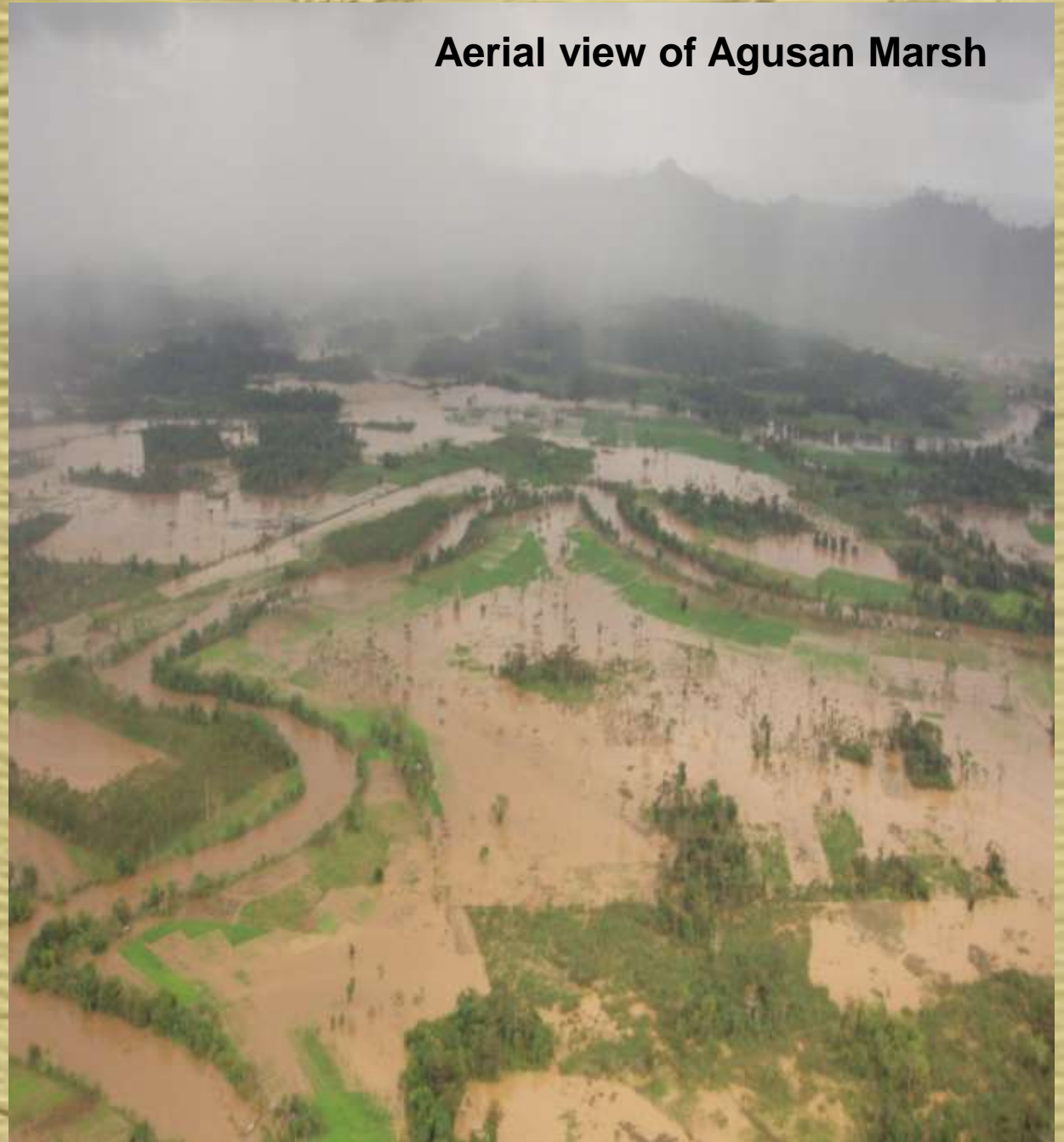
Map of Agusan River Basin showing the Agusan Marsh



Aerial view of Agusan Marsh

One of the most important freshwater marshland in the country along with Ligawasan Marsh in Mindanao and Candaba Marsh in Luzon.

Believed to hold about 15% of the country's freshwater swamp forest and resources.



IMPORTANT FACTS

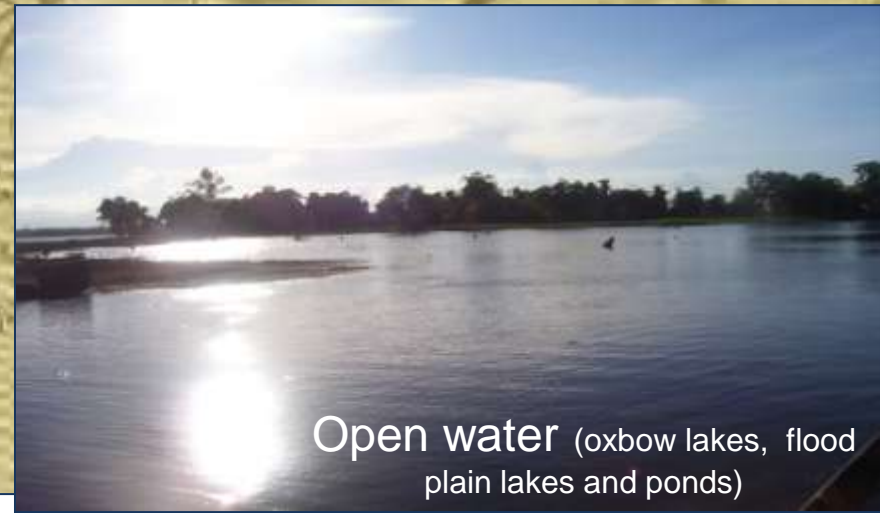
- **An Important Bird Area (IBA)**
- **A Key Biodiversity Area (KBA)**
- Forms part of **Eastern Mindanao Key Biodiversity Corridor (EMBC)**

IMPORTANT FACTS

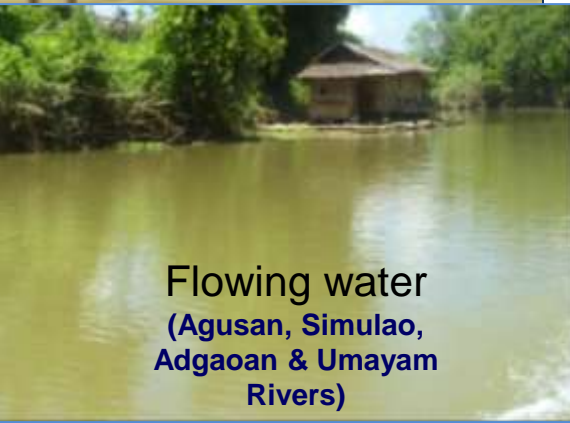
- **Listed as Wetland of International Importance** under the Convention on Wetlands or Ramsar Convention (the first for the Philippines and 1009th in the World's list)
- One of the confirmed peatlands in the country. Exhibits the character of a peat dome and holds the record of **the only remaining example of intact stunted peat swamp forest in country.**

A complex mix of freshwater
habitat and ecosystem

Seven habitat types in Agusan Marsh



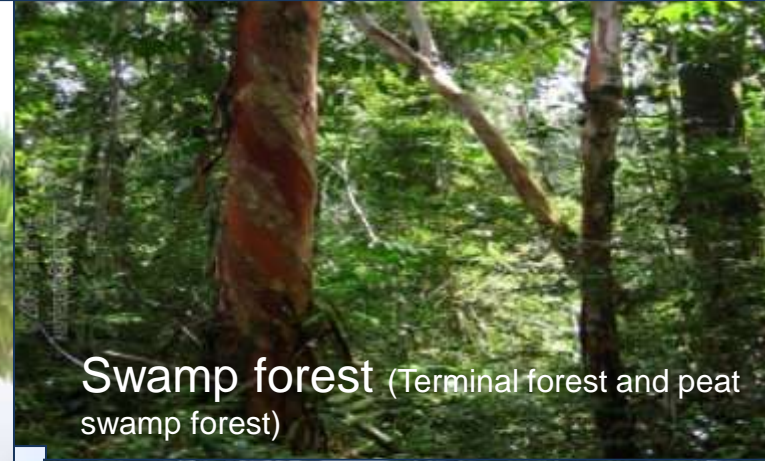
Open water (oxbow lakes, flood plain lakes and ponds)



Flowing water
(Agusan, Simulao,
Adgaoan & Umayam
Rivers)



Herbaceous swamp
(composed mainly with sedges,
grasses & ferns)



Swamp forest (Terminal forest and peat
swamp forest)



Scrub swamp (herbaceous
swamp mixed small groves of low growing
stunted trees of Barringtonia and Nauclea)



River bank



Inundated forest

Home to “LOLONG – the famous Crocodile”

- Measures 20.24 feet long (6.17 meters)
- Guinness Book of Records has declared Lolong as the largest in captivity in the World



Unique Biophysical Features



Methane spring in
Mambagongon, La Paz



Bat Roosting Area in Caimpugan peatdome



Wintering ground for
Migratory Birds



Woodpeckers park in Mambagongon, La
Paz



Manobo culture



Tristaniopsis sp. of trees



Pitcher plants



Stilt roots of Palomaria sp.

“The Caimpugan peatdome”



Image © 2006 DigitalGlobe

© 2006 Google

Locals refer to peatlands as
huyong huyong.





Photo by Jon Davies

Issues and Threats to the Peatlands Ecological Character and Biodiversity :

- **Conversion of Peatlands area into Agricultural land. Some areas of the Marsh have been declared as Alienable and Disposable lands.**
- **Large scale development projects including irrigation components**
- **Extensive soil erosion along rivers and embankments**

Issues and Threats to the marsh:

- **Siltation and Sedimentation from denuded watersheds**
- **Timber Poaching**
- **Proliferation of the janitor fish**



AGUSAN: PEAT SWAMP FOREST NEAR BUNAWAN (1991)



AGUSAN: PEAT SWAMP FOREST EDGE



AGUSAN: PEAT SWAMP FOREST CONVERSION TO RICE (2006)



UNDER THE “BUSINESS AS USUAL SCENARIO”:

- Stakeholders would remain ignorant of the presence of peat and the ecological values and benefits they provide.
- Peatlands would continuously be converted to agriculture and later abandoned.
- Increased risk of fire and more flooding due to subsidence.

**WITH THE ASEAN PEATLAND
MANAGEMENT INITIATIVE, NATIONAL
ACTION PLAN ON PEATLANDS (2008)
AND THE PHILIPPINE COMPONENT OF
THE ASEAN PEATLAND FOREST
PROJECT (2010).....**

**the PEATLANDS SCENARIO IN
AGUSAN MARSH HAS CHANGED AS
EVIDENCED IN THE FOLLOWING
INITIATIVES:**

Effort # 1 Capability Building on Peatland Assessment and Management

- **Key Agencies** (Department of Environment and Natural Resources, Department of Agriculture, Department of Agrarian Reform)
- **Concerned Local Government Units:**
Provincial Government of Agusan del Sur, Municipalities of San Francisco (Caimpugan and New Visayas), Talacogon (Causwagan, Maharlika, Sabang Gibong, La Flora and Zillovia) Bunawan (San Teodoro), and Sta. Josefa (Pag-asa)
- **Academe, NGOs and POs** – Caraga State University, Human Ecological Environment and Development (HEED) Foundation and the Caimpugan Native Farmers/Fisherfolks Multi-purpose Cooperative (CANFFMULCO)



DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES



TRAINING-WORKSHOP ON PEATLAND ASSESSMENT AND MANAGEMENT



LIFAD
Eradicating poor rural people
to overcome poverty

NOVEMBER 22 - 26, 2010
Butuan City



Global Environment
Centre



LOCAL AND INTERNATIONAL TRAININGS ON PEATLANDS

- Training Workshop on Peatlands Assessment and Management (Nov. 2010)
- Best Management Practice (BMP) Workshop in Central Kalimantan (June 2011)
- Philippines Peatlands Study Tour in Rajah Musa and Klias Peat Swamp Forest in Malaysia (October 2011)
- Seminar Workshop on Sustainable Use and Protection of Peatlands through Prevention and Suppression of Wildland Fires (October 2011, Agusan)
- OJT Training for Local Communities of Agusan Marsh on Peatlands Assessment and Management(November 2011, Agusan)
- International Conference on Wetland Forests, Brunei Darussalam (March 2012)
- Peer Learning Programme on Best Management Practices on Peatlands for Community Groups (Thailand, May 2012)

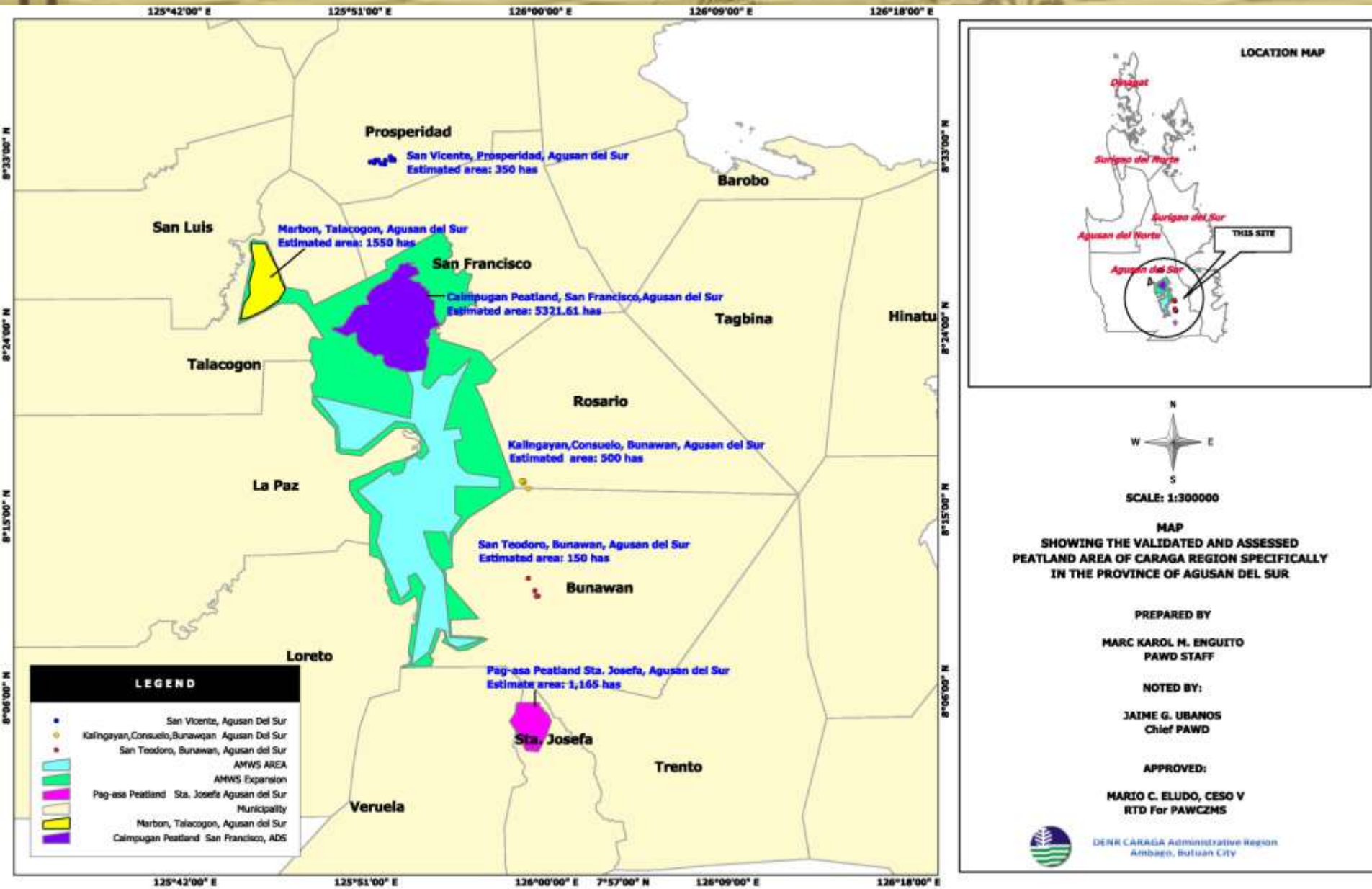


Seminar Workshop on Sustainable Use and Protection of Peatlands through Prevention and Suppression of Wildland Fires (October 2011, Agusan)

EFFORT # 2 Mapping and Assessment of Peatlands in Agusan Marsh



MAP SHOWING THE IDENTIFIED PEATLANDS IN AGUSAN MARSH



Effort #3 Land Use Planning and Zoning of Peatlands

- A moratorium was imposed on the issuance of titles over proposed protected areas, including the Agusan Marsh
- Some of the Peatlands that are proposed to be declared as Alienable and Disposable lands did not materialize

8000 m	784000 m	790000 m	796000 m	802000 m	808000 m	814000 m	820000 m	826000 m	832000 m	838000 m	844000 m	850000 m	856000 m	862000 m
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Effort # 3 Land-Use Planning AND Zoning for Peatlands

- Community level Workshop on determining community land-use for peatlands (May 2012)
- Inclusion of recommended land uses in the Updating of the Municipal Comprehensive Land-Use Plans (CLUPs)
- To be translated into Zoning Ordinance

Workshop on Determining Best Land-Use for Peatlands (May 2012)



Effort # 3 Land-Use Planning AND Zoning for Peatlands

- Inclusion of the Caimpugan Peat Dome and Talacogon peatlands in the Agusan Marsh Wildlife Sanctuary
- Proposed Establishment of Peatlands harbouring important flora and fauna as Critical Habitat in Alienable and Disposable Lands or privately owned lands.

Effort # 4 Information Education and Communication Campaign

- Community Dialogues for the sustainable use and protection of peatlands in 9 Barangays with confirmed peatlands
- Lecture and presentation with the Municipal Councils of confirmed peatlands (6 municipalities) and Wildlife Enforcement officers
- Video Production on “Saving the Philippine Peatlands

Lecture and Presentation with the Municipal Councils of Confirmed Peatlands and Wildlife Enforcement Officers



Video Production on “Protecting Philippine Peatlands”

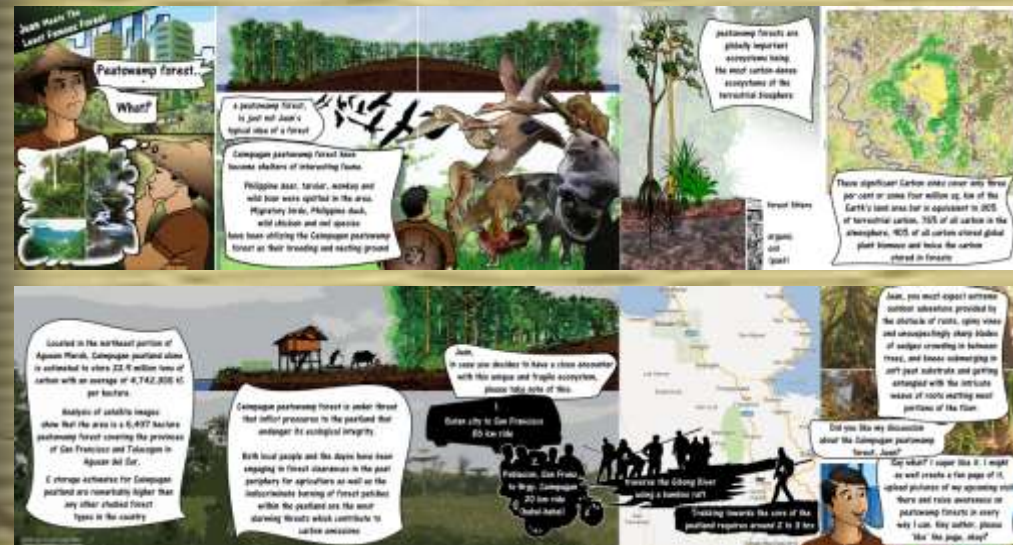


Height: 5in.
Length: 19in.

Height: 5in.
Length: 19in.




- Production of Peatland Comics



Effort # 4 Information Education and Communication Campaign

- IEC Boards from Rajah Musa translated into Bisaya dialect



Unsay kapuslanan (functions) sa mga huyong-huyong?

Nagkadaliyang kinabuhi (biodiversity) - Ang huyong-huyong usa ka puluy-anan sa mga nagkadaliya ug talagsaong tanom sama sa tiga ug lakuwako; ug mga mananap, sama sa amag, binaw, kabog ug uban pa.

Pondohan sa carbon - ang бага nga kakahoyan sa huyong-huyong makatigum ug carbon, diin makatabang sa pagpugong sa pagpagawas sa kawatanan.

Pagkontrol sa tubig - Ang huyong-huyong adunay gibana-bana nga 90% nga tubig sa yuta. Kini nagsilbi nga pundohan sa tubig aron mamentenar ang gitason sa tubig ug nagsilbi usab nga tigpugong sa baha ngadto sa ubos nga bahin.

huyong-huyong (peat)
a klase nga yuta nga
ay 65% nga wala ma-
nga parte sa mga
l, sama sa mga dahon,
l, ug mga gamot, nga
ok sa usa nga katubi-
nga lugar nga walay
n. (oxygen)

**Unsa ang
huyong-
huyong
(peat)?**



Ang pagkamugna sa huyong-huyong (peatland)

The diagram illustrates the process of peat formation in three stages: 1. Dead plant matter (leaves, twigs, etc.) falls to the ground. 2. The matter decomposes into a soft, spongy mass. 3. The mass dries out and becomes a solid, brown peat layer. Labels include 'Tubig' (water), 'Suba' (river), and 'Mga nagkamatay nga tanom' (dead plants).



Source:
Peatland in Southeast Asia. A profile (2011) ASEAN Peatland Forests Project
Rehabilitation & Sustainable Use of Peatland Forests in Southeast Asia
ASEAN Secretariat & Global Environment Centre



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Effort # 4 Information Education and Communication Campaign

- Submission of popular articles to Mindanao News and Manila Bulletin
- Peatlands Appreciation Walk with the Caraga Young Artists (June 2012)
- Exhibit on Peatlands (Comics launching, artist's rendition in the form of paintings, poems and songs about peatlands scheduled in August 2012)

Peatlands Appreciation Walk with the Caraga Young Artists



Effort # 4 Information Education and Communication Campaign

- Wetlands Caravan: Mobilizing Communities for the Conservation of Agusan Marsh and Wildlife Sanctuary (20-24 June 2011)



Effort # 5 Ecotourism Planning for Peatlands

- Site Assessment for the Ecotourism Potential of Agusan peatlands



Effort # 5 Ecotourism Planning for Peatlands

- Workshop on Community Based Ecotourism for Agusan Peatland

Guiding Principles

Tenets of ecotourism (the 5Es):

Visitor
Enjoyment

Economic
Benefit

Conservation
Education

Stakeholder
Engagement

Environmental
Protection

Ecotourism development by R.P. Cerenio



Effort # 5 Ecotourism Planning for Peatlands

- Workshop on Community Based Ecotourism for Agusan Peatland

The 5 As of Ecotourism

1. **Attractions:** peatland forest, waterbodies, farms, rare flora & fauna, historical landmarks, festivals/events, OTOP products
2. **Activities:** nature walk, trail running, camping, biking, birding, fishing, river cruising & rafting, kayaking, photo safari, nature education, farming activities, arts & crafts, native food cooking, etc.
3. **Accommodation:** homestays, pension house, inns, campsites
4. **Amenities:** visitor center, nature interpretation, tour guiding, info materials
5. **Access:** road network, travel mode & duration, transport service, communication

Effort # 5 Ecotourism Planning for Peatlands

Ecotourism Vision

English Version:

“Agusan peatland is a sustainable, world class and unique ecotourism destination managed by responsible, empowered and peace loving community working together for the benefit of the future generation without sacrificing the cultural heritage nor the environment.”

Bisaya Version:

“Panglantaw: Ang huyong huyong sa Agusan del Sur, usa ka malahutayon, bantogan, ug talagsaon nga destinasyon nga gidumala sa mga responsable, makusganon, malinawon ug mahigugmaon nga kumonidad nga nagtinabangay para sa kaayuhan sa umaabot nga henerasyon, nga walay pagsakripisyo sa kulturang kabilin ug sa kinaiyahan.

Effort # 5 Ecotourism Planning for Peatlands

- Theme: Its More fun in the peatlands
- Possible Ecotourism Project:
- **Peatlands Ecosystems Awareness Tour (PEAT)**

It's more fun in the
Peatlands



Proposed Ecotourism Loop/Circuit prepared during the stakeholders ecotourism planning

Group 3: OPTION 1

DAY	PLACE/VENUE	WHAT ACTIVITIES TO DO	REMARKS
Day 1			
12:45-3:00 Pm	Butuan to Bunawan	Hot Spring (deep) Lolong visit	
4- 5 PM	Caimpugan (Overnight)	homestay dinner	cultural presentation
Day 2			
6-6:30 AM	Caimpugan		Breakfast
6:30-9:30	at Caimpugan	rafting, hiking, peat walk	flora and fauna appreciation
9:30-10AM	Back to Gibong River		
10:30-11	Caimpugan to Sabang Gibong	boat	
11AM-12 PM	Sabang Gibong to peat Forest	peat walk	lunch- inihaw na hito, fried lambuo, binaga na dalag, ginataang dalag
12-1PM	Sabang Gibong to Maharlika	hike	
1-2PM	Maharlika to peat forest	peat walk	
2-4PM	Peat forest to Maharlika	hike	
4-5PM	Maharlika to Talacogon	Boating	
6PM	Dinner		Pinaputok na tilapia
6-8PM	Butuan		

DAYON SA AMONG HUYONG-HUYONG (Welcome to our Peatland)

DAY	PLACE/VENUE	WHAT ACTIVITIES TO DO	REMARKS
Day 1	Butuan Airport	pick up tourist	in coordination with Caraga Transportation Group
		Lunch at Aling Cora's or atbp.	
		Butuan City Tour	
		proceed to San Francisco lodging house	
Day 2	to Caimpugan	early morning trip to Caimpugan breakfast at Caimpugan Registration at the Brgy.Center Orientation by Eco-guide start trekking at Gibong River Stop over at the PO hub where they will sell water, towel, hats, etc. river crossing First Stop: Organic Farm Second Stop: Amakan weaving, basket making, hat making, roofing	native delicacies - ampalaya
	Tamboon Creek	Third Stop: Show Degraded Peatland trekking based on the capacity of the tourist do birding, flora and fauna familiarization	
		Awarding of certificates (I survive the peatlands)	Depending on the distance traversed with corresponding amount
		Refreshment	gulaman at sago
	Sabang Gibong	Lunch on the boat	local delicacies- kinilaw na carpa, binagang haluan, guisadong pasayan, palagsing
	Maharlika	proceed to Maharlika to see the floating houses exit via Talacogon OR GO TO OTHER BARANGAYS	

Effort # 6 Implementation of Guided Demonstration Farm and Reforestation/Rehabilitation on degraded peatlands

- Memorandum of Agreement with the Bureau of Soils and Water Management to establish guided demo farm for sustainable agriculture in degraded peatlands
 - Conducted on-site inspection/ reconnaissance survey at the selected demonstration sites in Agusan Marsh peatlands on April 10-14, 2012.
 - Prepared development proposal for Guided Demonstration Farm Sites for Sustainable Agriculture in Agusan Marsh

Reconnaissance Survey at the Selected Demonstration Sites in Agusan Marsh Peatlands

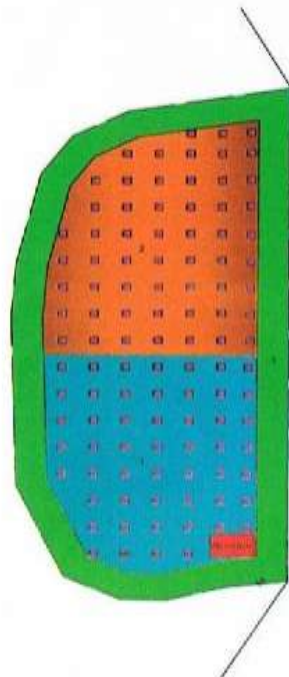


Example of Proposed Development and Intervention Plans

Site1

Barangay Caimpugan, Agusan Del Sur

Brgy. Caimpugan, San Francisco, Agusan Del Sur



Bar Scale



LEGEND:

- Boundary of techno-demo farm
- Bench Mark, Lumbia tree, GPS elevation - 44 m.a.s.l.
- Waterway/ drainage canal

FARM DEVELOPMENT PLAN

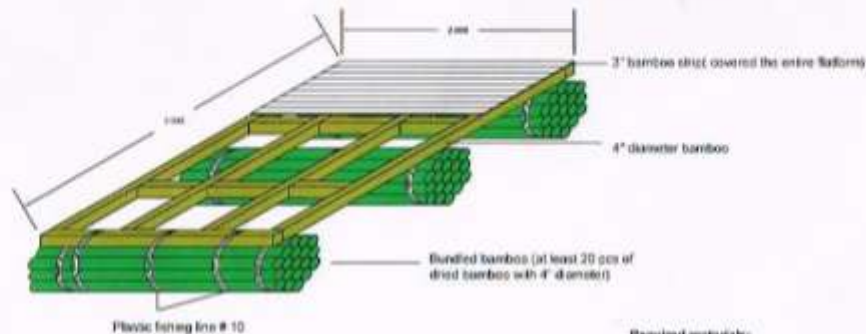
LOT NO.	LAND-USE VEGETATION	CROPS TO BE RAISED	PLANTING CALENDAR	RECOMMENDING SOIL CONSERVATION AND CULTURAL PRACTICES	AREA	
					ha	%
1	RANGBANG CHIKOPETA	Rangbang	March-June	Proper timing of planting crops. Planting of crops on ridges or raised bed of at least 20 cm high for drainage. Proper application of organic fertilizer to be well-manured with composted manure. Application of herbicides around of planting and after weeding/soil based on soil analysis of the area (crop). Proper crop rotation for field crops to improve soil fertility. Proper periodic monitoring.	0.98	33.32
2		Chikopeta			0.97	29.47
3	LAMBAN LAMBAN	Lamban	July-October	Proper timing of planting crops. Planting of crops on ridges or raised bed of at least 20 cm high for drainage. Proper application of organic fertilizer to be well-manured with composted manure. Application of herbicides around of planting and after weeding/soil based on soil analysis of the area (crop). Proper crop rotation for field crops to improve soil fertility. Proper periodic monitoring.	0.97	29.47
4		Lamban			0.97	29.47
5	BUILT UP AREA	-	-	Provision of fencing for field plots to prevent entry for propagation of weeds/crops and production of high value commercial crops (e.g. rice, sugarcane, etc.). Provision of drainage of at least 50 cm deep to avoid water logging.	0.01	0.17
TOTAL					0.24	100

Development and Intervention Plans for Site 1

- 1. Planting of water loving diversified crops (kangkong, gabi and Palau etc.)
- 2. Enhancement planting of Agro-forest trees species (Bamboo and Lumbia and endemic peatland forest tree species)
- 3. Mini nursery.
- 4. Floating Vegetable Garden
- 5. Portable plastic covered Greenhouse using the raised bed method
- 6. Floating Fish Cage (The floating garden can accommodate a fish net as an attachment during flooded conditions)
- 7. Water Table Depth Monitoring Stations (Piezometers using 2inches diameter PVC pipes for all sites)

The proposed Floating Garden

Floating Garden



PERSPECTIVE VIEW OF THE FLOATER



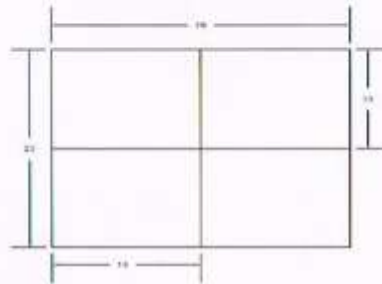
Bamboo pole for HVCC production

Required materials:

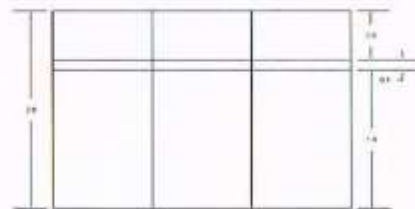
Qty	Unit	Item Description
Breakdown of bamboo requirements:		
54	pcs	4" dia x 2 m bamboo (kawayan)
4	pcs	4" dia x 3 m bamboo (kawayan)
40	pcs	3" x 2 m bamboo strips (kawayan)
20	pcs	6" dia x 1.8 m bamboo (kawayan)
Total:		
20	pcs	4" dia x 2 m bamboo (kawayan)
5	pcs	6" dia x 1.8 m bamboo (kawayan)
1	kg	1 1/2" nail
1	kg	3" nail
5	kg	Plastic fishing line #10

The Proposed Plastic Covered Greenhouse

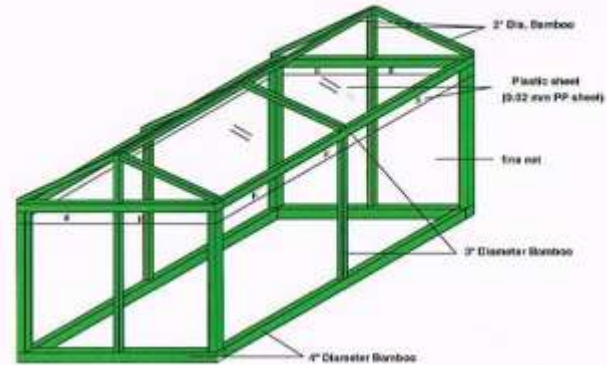
Portable Plastic Covered Greenhouse



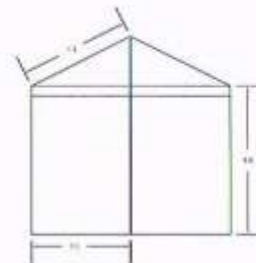
TOP VIEW



SIDE VIEW



PERSPECTIVE VIEW



FRONT VIEW

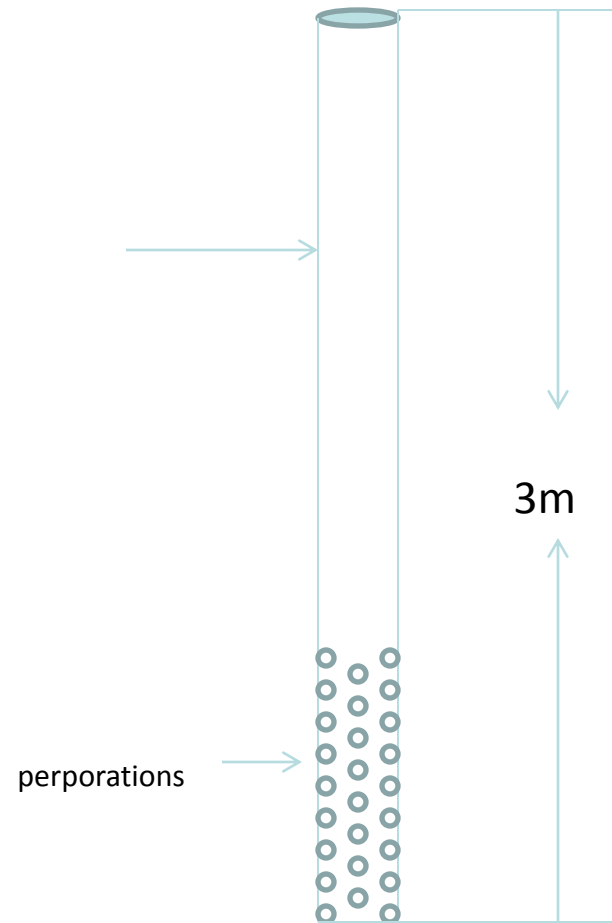
Notes:
-All units in the design concept in the perspective view) are in metric.
-The nursery side wall could be covered with fine net to protect plants from insects and to shield wind and shower rain.
-The plastic line as well as the fine net can be nailed or clipped with a string of bamboo.

Required materials:

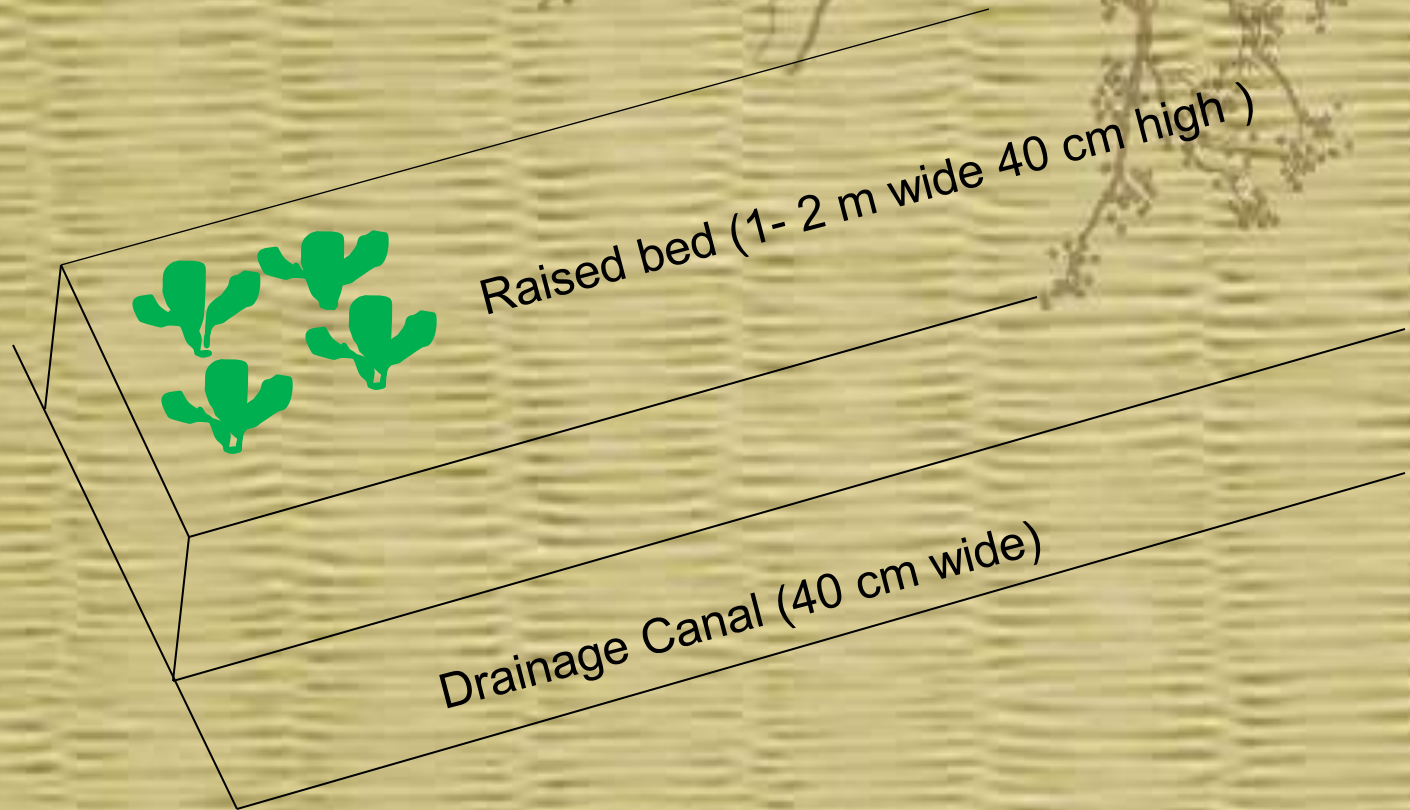
Qty	Unit	Item Description
2	pcs	2" dia x 6 m bamboo
7	pcs	3" dia x 9 m bamboo
2	pcs	4" dia x 6 m bamboo
1	kg	2" nail
2	kg	3" nail
1	roll	1.3 m x 12 m fine net
1	roll	2.5 m x 3 m Plastic sheet (0.02 PP sheet)

Piezometer

2" pvc pipe



Schematic Representation of the Raised Bed Method of Planting under Peatland Conditions



Effort # 8 Improving the Policy Environment for Peatlands

- Proposed Ordinance by Hon. Lerriza de Leon of Municipality of San Francisco, ADS
 - Ordinance for the Protection of the Unique Stunted Peat Swamp Forest (PSF) in Caimpugan and New Visayas, San Francisco, Agusan del Sur and Providing Fines and Penalties for the Violators and Allocating Funds Thereof
- Unified Ordinance for peatlands in Agusan Marsh

Effort # 9 Identification of Sustainable Financing Options for peatlands management

- Concerned stakeholders from Agusan Marsh pilot sites participated in the Philippine Roadshow on REDD-PLUS and the Philippine National REDD-PLUS Strategy
“PANGANGALAGA NG KAGUBATAN NANG MAY PANANAGUTAN” in Butuan City.
- CODE-REDD

Challenges for IMP Implementation

- **EFFORTS** need to be sustained and implemented beyond the APFP and SEApeat project life.
- **Participatory** and **Multi-stakeholder** approach remains to be the key elements
- Comprehensive **land use plans** need to be adopted and transformed into zoning ordinance
- **Integration with the Master Plan of Agusan Marsh Wildlife Sanctuary** and **Province-Wide Framework Plans**.

**THANK YOU AND
GOOD DAY!**

