



Investments and Financing Mechanisms in Forest Environmental Services

Managing the Environmental Charge for
Watershed Rehabilitation

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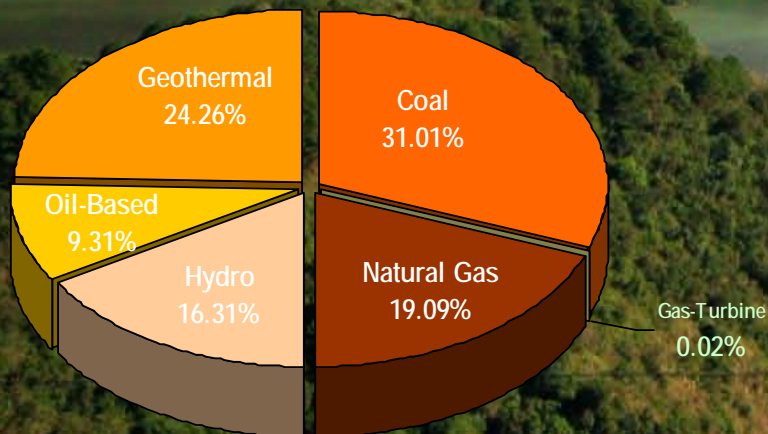
National Power Corporation (NPC)

- **Government-Owned and Controlled Corporation created under Commonwealth Act No. 120 in November 1936**
- **Generates an annual energy sales of more than 35,000 GWh**
- **Distributes electricity to more than 260 distributors and industrial companies throughout the country**
- **Own and operate 30 power plants with a total capacity of 4,649.92 MW**
- **In the process of privatization by virtue of R.A. 9136 (EPIRA). Target: 70% of NPC's eligible capacity in Luzon and Visayas; to date, 70% has been privatized**

Power Generation Mix

	In GWh	In Percent
Hydro	6,639	16.31
Oil-Based	3,790	9.31
Geothermal	9,873	24.26
Coal	12,623	31.01
Gas-Turbine	9	0.02
Natural Gas	7,769	19.09
TOTAL	40,703	100%

Source: NPC Annual Report,



Renewable energy sources accounted for 60% of the mix as against 40% of fossil-based fuels (oil and coal)

BENEFITS FROM NPC OPERATION

- Power benefits: Electrification, prioritization in energy provision, reduced cost of electricity
- Employment in the plant, in energy development and in infrastructure support projects
- Skills development related to energy generation and agro-industrial skills
- Watershed management and rehabilitation projects under EPIRA
- Direct livelihood fund and Reforestation, Watershed Management, Health and/or Environment Enhancement Fund (RWMHEEF) (under DOE ER 1-94)
- LGU Share from National Wealth



WATERSHED MANAGEMENT IN NPC



Legal Mandates

- **NPC Charter (RA 6395)**

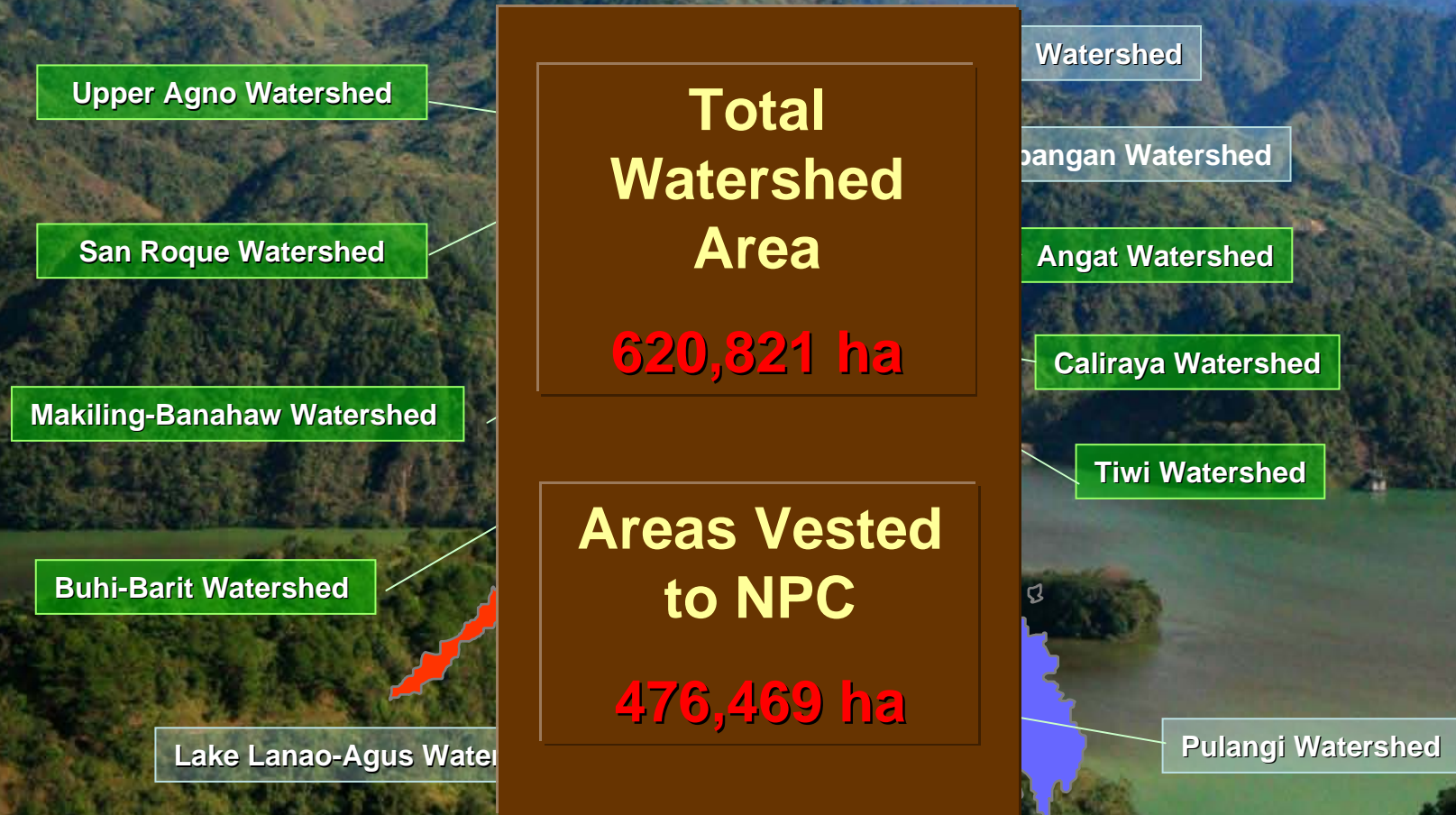
- **Executive Order No. 224**

Vested jurisdiction to NPC for watershed areas supporting power generating plants

- **EPIRA LAW (RA 9136, Sec. 34)**

NPC shall manage and continue to be **responsible for watershed rehabilitation and management** and shall be entitled to the environmental charge equivalent to one-fourth of one centavo per kilowatt-hour sales

WATERSHED RESERVATIONS UNDER NPC MANAGEMENT



MINDANAO

WATERSHED MANAGEMENT

VISION

Healthy watersheds for sustained power generation and stable biophysical and social landscape

GOALS

Increase current forest cover & reduce ecological impacts of power generation

Rehabilitate / Stabilize slopes

Protect the remaining watershed resources

Enhance participation of communities inside watershed

ENVIRONMENTAL SERVICES

Watershed Rehabilitation

- Reforestation
- Agroforestry
- Non-Timber Forest Resource Mgt
- Production Forest Mgt
- Silvicultural Treatment
- Structural Erosion Measures

Watershed Protection & Biodiversity Conservation

- Patrolling & Regulation
- Confiscation
- Land & Occupancy Mgt. Program
- Military Assistance
- Aerial Surveillance
- Formation and Strengthening of Watershed Task Force

IEC & Community Development

- Community-Based Forest Protection Program
- Awareness Program
- Livelihood Projects



ENVIRONMENTAL CHARGE OF EPIRA

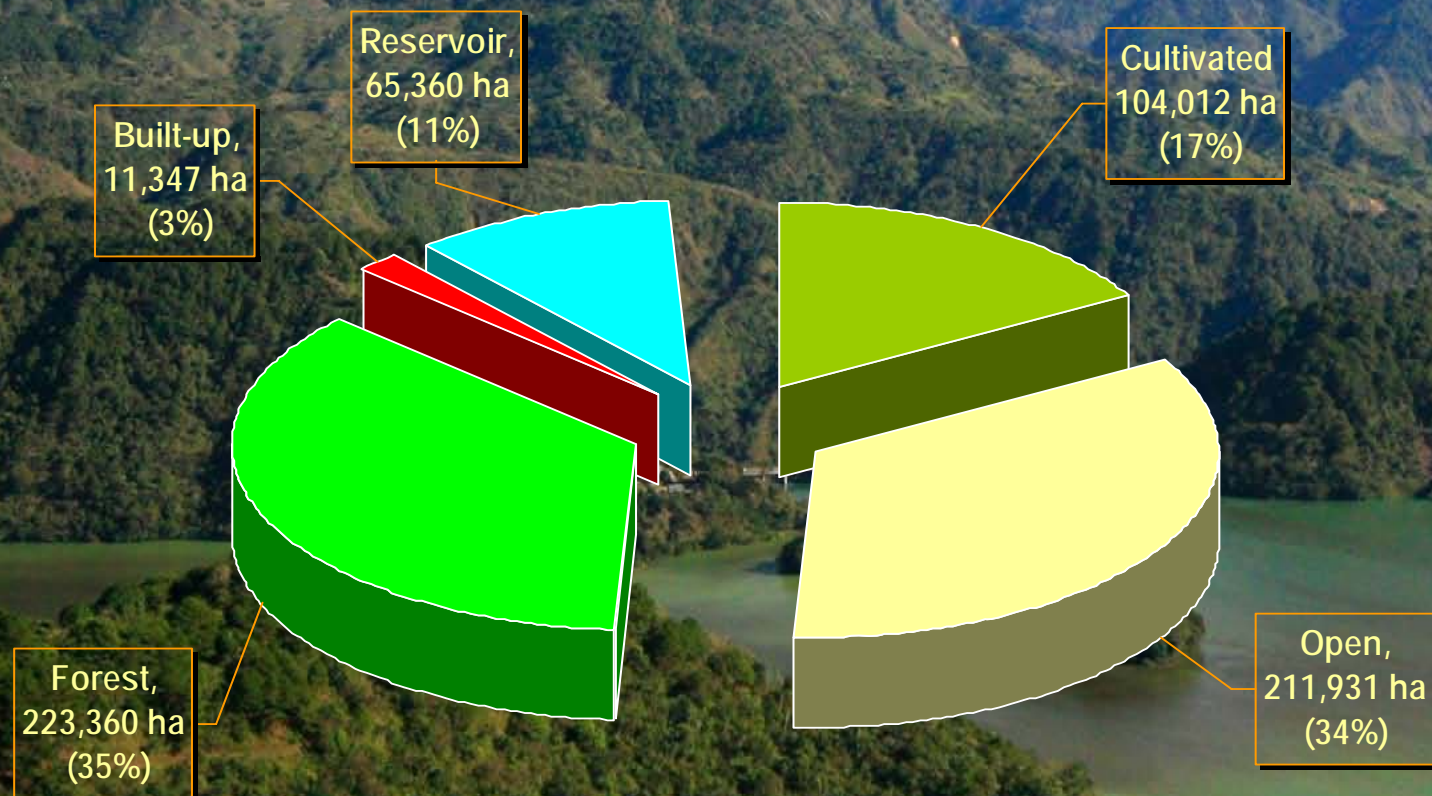
PREMISES FOR PLAN PREPARATION

- Based on 5-Year Development Plan for the 11 watersheds under NPC submitted to ERC in 2002
- Target areas were identified based on the established guidelines / criteria for rehabilitation
- Adoption of local prices using CPI to account for price escalations
- Labor costs are those directly required for the project
- Inclusion of vat and e-vat on the standard cost in rehabilitation projects
- Use DENR circular as basis in the computation of standard cost in rehabilitation
- Standard reforestation period (Nursery to Maintenance) is 3 years.
- Land-based projects are geo-referenced using GPS
- Integration of Information, Education and Communication (IEC) and empowerment of the host communities into the Watershed Protection Program
- Consideration of stakeholders/IP's interests and needs on Community Development
- Adoption of NPC wage rate in the labor cost
- Consultation with the LGUs and other stakeholders in project identification

Availment of the Environmental Charge Plans 1-3

COMPONENT	AMOUNT (P '000)							
	PLAN 1	%	PLAN 2	%	PLAN 3	%	TOTAL	%
1. Watershed Rehabilitation Program	40,137	57	47,172	26	36,690	42	123,999	37
2. Watershed Protection & Biodiversity Conservation Program	8,428	12	60,041	33	28,869	33	97,338	29
3. Information & Technology Generation Program	13,172	19	39,164	21	12,179	14	64,515	19
4. Project Management Support and Operation	8,184	12	35,625	20	9,269	11	53,078	15
GRAND TOTAL	69,921	100	182,002	100	87,007	100	338,930	100

Land Classification Distribution





WATERSHED REHABILITATION

Areas for Rehabilitation

Watershed Areas	Open Areas (hectares)
Angat	9,097
Buhi-Barit	3,922
Caliraya-Luzon	5,040
Lake Lanao	
Magat	
Makban	
Pantabangan	
Pulangi	
San Roque	5,249
Tiwi	9,737
Upper Agno	41,952
Total	211,931

**Total
Open Areas**

211,931 hectares



Classification/Allocation of Areas for Rehabilitation

Total Open Areas

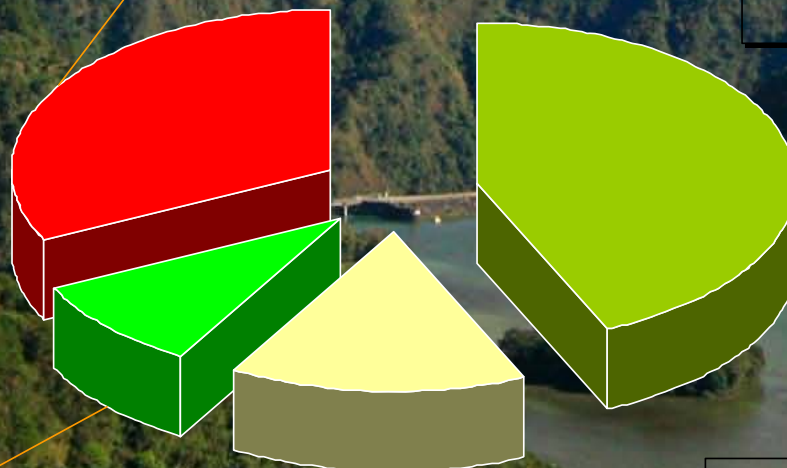
211,931 ha

Non-Plantable Areas
68,231 ha
(32%)

Riparian Zones/Priority Areas
91,900 ha
(44%)

Low-Lying Areas
20,000 ha
(9%)

Production Areas
31,800 ha
(15%)



Riparian/Priority Areas

- Planting of indigenous forest species in areas requiring immediate land cover (i.e. riparian areas)
- Active natural regeneration, other vegetative measures

**Rehabilitated more than
10,000 hectares (1985-2009)**

Currently with 288 beneficiaries (Agroforestry Plantations) covering 806 hectares planted to Durian, Mango, Rambutan, Marang, Coffee, Cashew, Citrus

For Durian alone, around 2,000 tons of produce per season



Low-lying Areas

Produced 11,500 seedlings
during the launching last May 2008

Planted about 15,000
trees covering 8.5 hectares

Partnership with 32 institutions such as
Haribon Foundation, ERDB-DENR,
Phil. Army, CFC, SMART, GMA 7,
Lakbay Kalikasan, UPLB, De la Salle,
San Miguel Corp., Carmelite Missionaries, etc.

- Local LGU/NGO as partner for project implementation



BENEFITS

- ✦ **Reduction of sedimentation and soil erosion inside NPC reforestation areas of about *17,000 tons***
- ✦ **Improved hydrologic regime**
 - ✦ Rainfall interception from 42-47 % of gross rainfall
 - ✦ Entry of water from 10.91-16.21 cm/hr compare to grassland of around 6.28 cm/hr
- ✦ **Sequestration of about 75,000 tons/year of CO₂-e**



WATERSHED PROTECTION & BIODIVERSITY CONSERVATION

Current Forest Cover

Watershed Areas	Forest (hectares)
Angat	45,262
Buhi-Barit	4,225
Caliraya Forest	8,464
Lake Linao	1,467
Magat	2,853
Makba	1,467
Pantabangan	38,092
Pulang	2,853
San Roque	2,853
Tiwi	1,467
Upper Agno	38,092
Total	223,360

**Total
Forest Cover
223,360 hectares**



Protection of existing forest cover through:

➤ **Enforcement of Rules/Regulations**

- 163 forest officers implementing forest protection
- Confiscation of about 761 cu.m of lumber
- Filing of 45 cases to court in violation of PD 705

➤ **Community-based forest protection (Bantay Watershed Task Force)**

7 BWTF formed consisting of 502 Deputized Forest Officers

➤ **Military/Police**

Formation of SCAA (Special CAFGU Active Auxillary) with already 100 members

➤ **Joint Forest Operations with DENR/ LGUs/NGOs/POs**



BENEFITS

- ✦ Reduction of sedimentation and soil erosion inside remaining forest cover of about *1.7 M tons*
- ✦ Carbon sequestration of an estimated 55 million tons CO₂-e/year
- ✦ Increased biodiversity in terms of species richness and flora and fauna population
- ✦ Healthy watersheds for sustainable production of water for power generation, irrigation and potable water supply
- ✦ Improved forest cover to sustain agricultural areas for better food production



Other Efforts of NPC

Clean Development Mechanism

- Created NPC-CDM Team to oversee realization of registering NPC projects
- Recently made efforts to register a pilot small scale reforestation project (140 hectares) which already undergone the Global Stakeholder process; eventually validated not eligible
- Currently collaborating with World Bank (BioCarbon Fund) and another government agency for the registration of a 200 hectare Small-Scale Reforestation Project
- Proposed registration of established plantation to the voluntary carbon offset market
- Other possible projects currently being explored under CDM: energy efficiency and renewable energy

Other Efforts of NPC

- ✦ MOA SMC, KUOK Group and other agencies re: Food Security Program
- ✦ MOA with the Military /PNP
- ✦ MOA with the University of Kansas
- ✦ MOA with the Philippine Eagle Foundation
- ✦ MOA with the New Power Owner
- ✦ MOA with Gawad Kalinga Foundation (GK)
- ✦ Compliance to AO 225-A to deposit 5 % of 2007 NPC Surplus to the Agricultural Guarantee Fund in support to the “Rice Production Program”



THANK YOU