Decentralized Renewable Energy Applications in the Philippines

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Introduction

- 4 Million HH in Philippines no access to grid electricity
- Only 27 of the 2,800 Inhabited Islands have local grids
- Cost of grid extension is high at $ 8,500/km
- Renewable energy sources available in rural areas

Energy Sources in Rural Areas

- Kerosene lights and dry cell batteries
- Rechargeable automotive batteries
- Diesel/ Gasoline generator sets

Entry of Renewable Energy Systems

- Solar lanterns and SHS for kerosene lamps

Entry of Renewable Energy Systems

- On site battery charging using Solar or Wind Battery Chargers

Entry of Renewable Energy Systems

- Solar Home System for domestic energy needs

Scale up Strategy: Rural Photovoltaic Electrification

- Solar Battery Charging Stations
  - Strategic operation of SBCS to build up loads of battery users
- Solar Home Systems
  - implemented by electric utilities, the National Electrification Administration with funds from GTZ

Solar Battery Charging Station

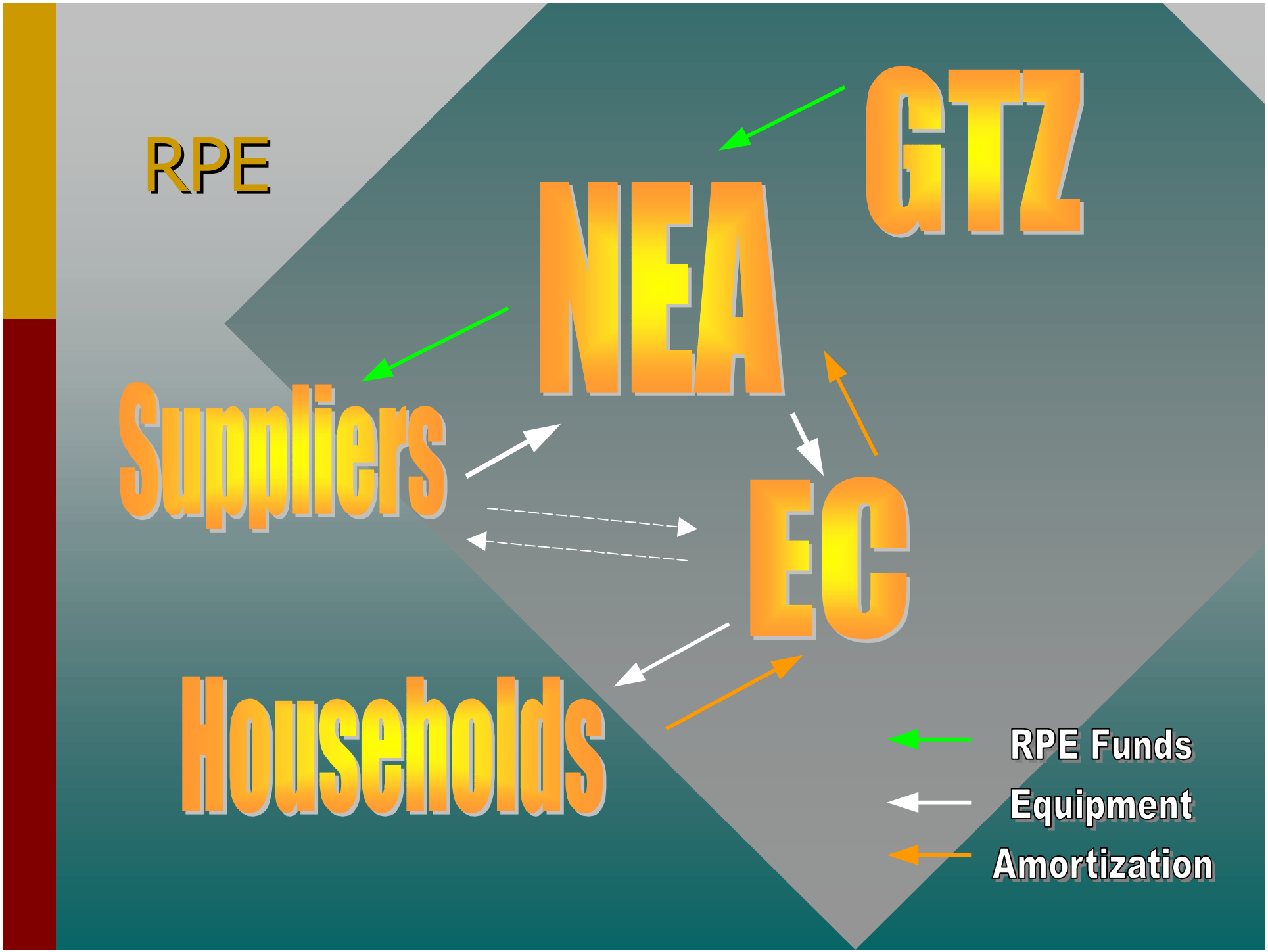
- Suits the current practice of charging batteries in remote areas
- PV can compete with cost of battery charging with grid electricity
  - Grid Battery Charging $ 1.04/kWh plus transport VS $ 0.97/kWh for SBCS

SBCS in the Philippines

SBCS for the Underground River in Puerto Princesa

Solar Home Systems

- Meets higher domestic energy demand for lights, radio and TV
- Autonomous operation of stand alone systems
- Expandable for increasing demand


RPE
GTZ
NEA
Suppliers
EC
Households
RPE Funds
Equipment
Amortization

Solar Generator $ 480

- 50 to 75 Wp solar module
- Mounting frame and post
- Charge/Discharge Controller
- Wires and Accessories

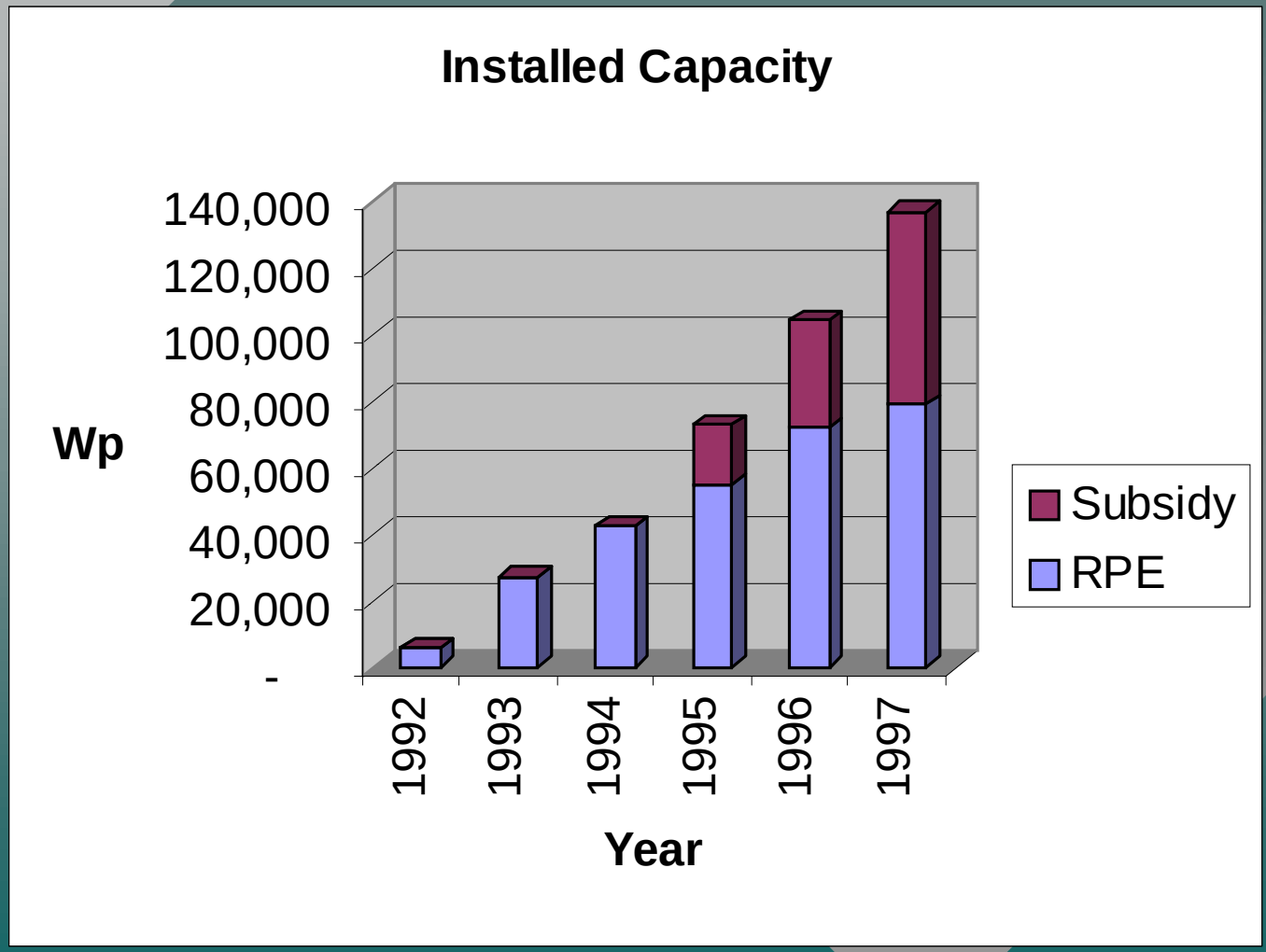
SHS Balance of System $ 108

- Battery 100 AH, 12V
- House wiring
- loads - lights, TV, radio, karaoke

Payment Schemes

- P 190/ month rental
  - P 12,000 at 12% for 10 years
- P 420/ month for 36 months
  - P 12,000 at 16% for 3 years

RPE Installations



Status of RPE

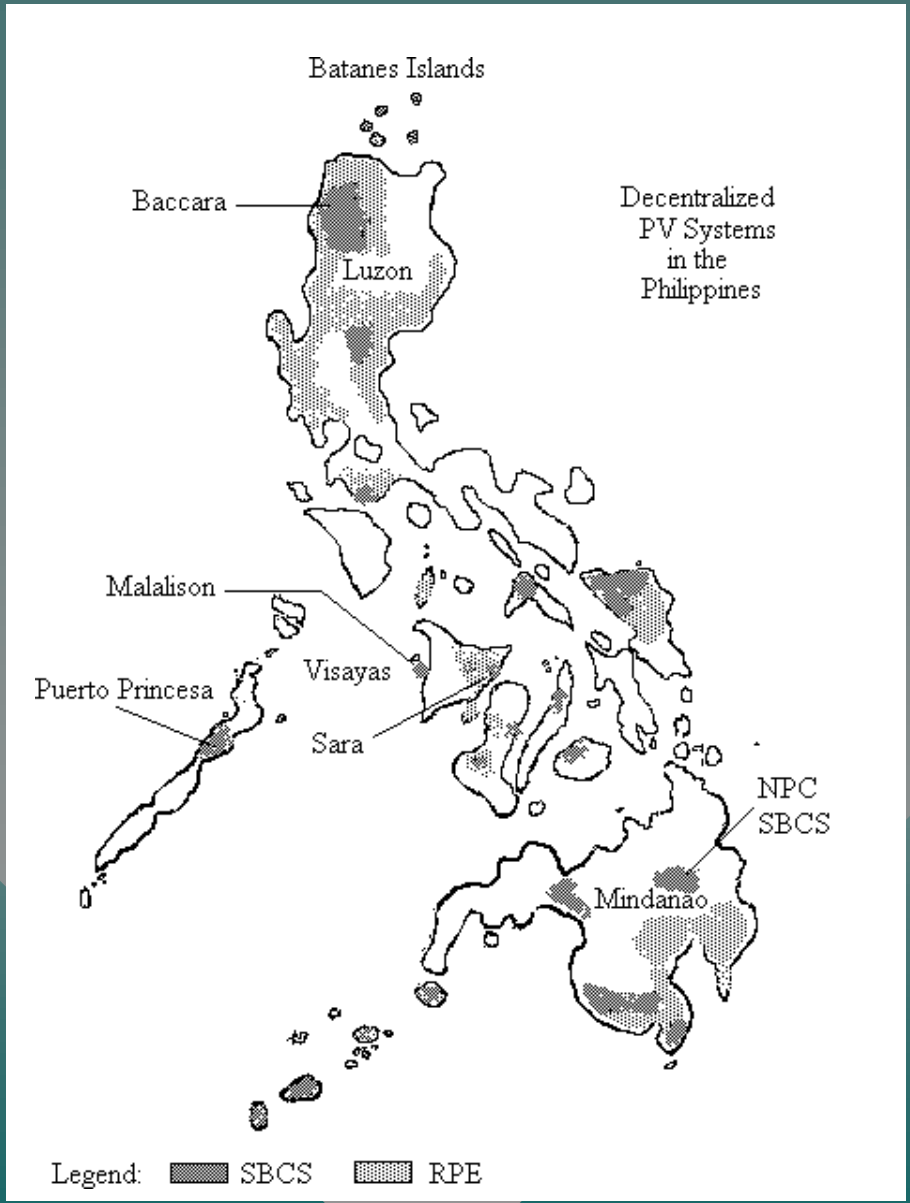
- 2,220 systems with 144.4 k Wp installed capacity
- 4,800 communities to be energized for CYEAR 2000 - 2010
- Funding requirement is $ 90 Million

PV installations in Batanes

- 1,3671 Wp PV installed by 1998
- 3 wind-solar Hybrid pumping systems
- SHS, Municipal buildings, hospitals, health centers, telecom, freezer

PV installations in Batanes

PV Installations in the Philippines



Factor Affecting the Use of RE Systems

- Density: Scattered HH tend to use SHS
- Access to Fuel: Remote & isolated areas prefer PV
- Income Level: Proportional to the demand

Factor Affecting the Use of RE Systems … continued

- Access to financing: Soft loan and Subsidy
- Specific Applications: Underground River