



***3-1-3 Distributed Combined Heat and Power  
Philippines  
APERC Annual Conference 2013  
27 February 2013***



Asia-Pacific  
Economic Cooperation



# Outline Of Presentation

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**The Philippine Energy Sector**

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**PEP 2012-2030 Policy Thrusts**

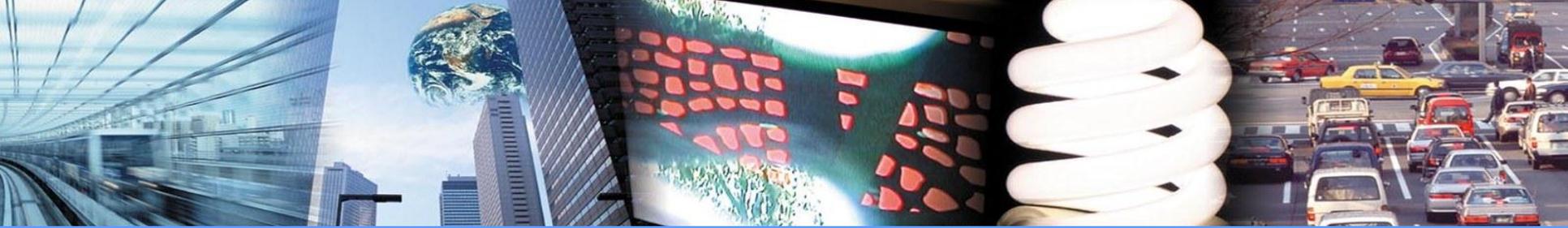
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**Power Supply and Demand Outlook**

4

**Distributed Combined Heat and Power**





# THE PHILIPPINES

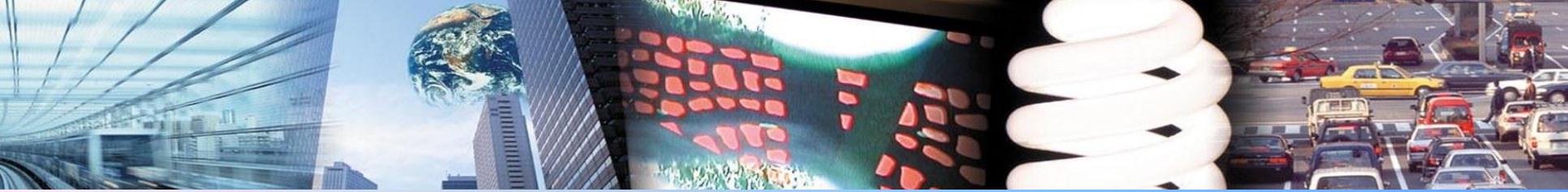




# The Philippine Energy Sector

|                        |          |
|------------------------|----------|
| Population             | 94 Mil.  |
| Land Area, sq. km      | 300,000  |
| Income/capita          | \$4,214  |
| Energy/capita          | 0.49 TOE |
| Households Electrified | 70%      |
| No. Islands            | 7,107    |



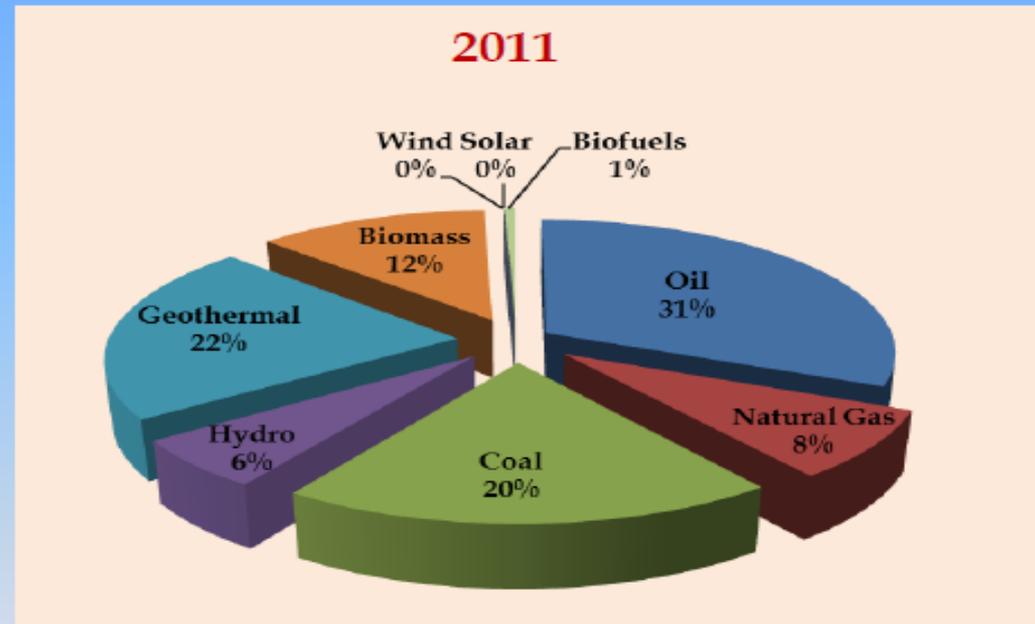


# The Philippine Energy Sector

## *Primary Energy Supply*

|                                       | 2011 |
|---------------------------------------|------|
| Total Energy (MTOE)                   | 39.4 |
| Self-sufficiency (%)                  | 60.0 |
| Shares (%)                            |      |
| <a href="#">Renewable Energy (RE)</a> | 40.7 |
| Green Energy<br>(RE + Natural Gas)    | 48.7 |

Note:  
MTOE - Million Tons of Oil Equivalent

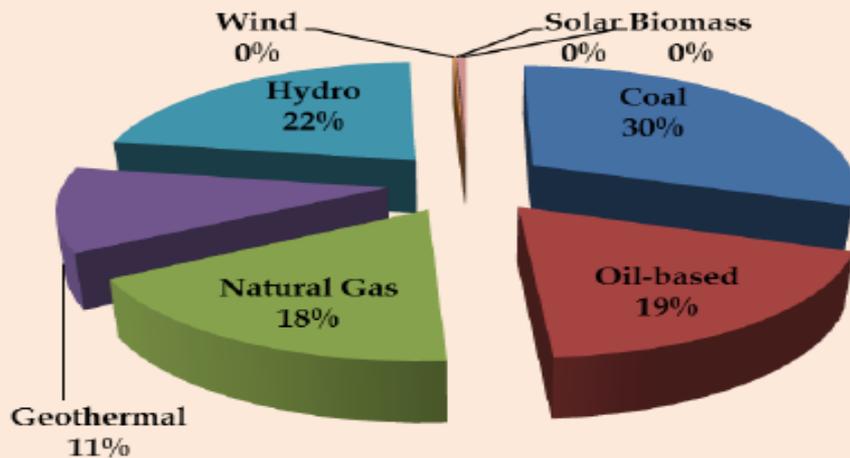




# The Philippine Energy Sector

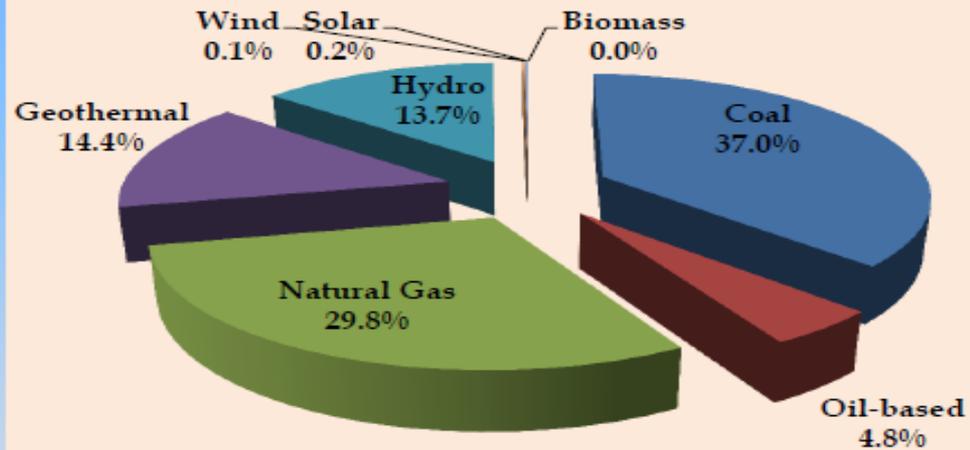
## *Power Generation Mix*

**2011**



**Installed Capacity (MW) - 16,162**

**2011**



**Total Generation (GWh) - 69,050**





# The Philippine Energy Sector

## The Power System

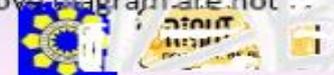
| GRID         | Installed Capacity | Dependable Capacity |
|--------------|--------------------|---------------------|
| LUZON        | 11,739             | 10,824              |
| VISAYAS      | 2,402              | 2,037               |
| MINDANAO     | 2,022              | 1,616               |
| <b>TOTAL</b> | <b>16,162</b>      | <b>14,477</b>       |

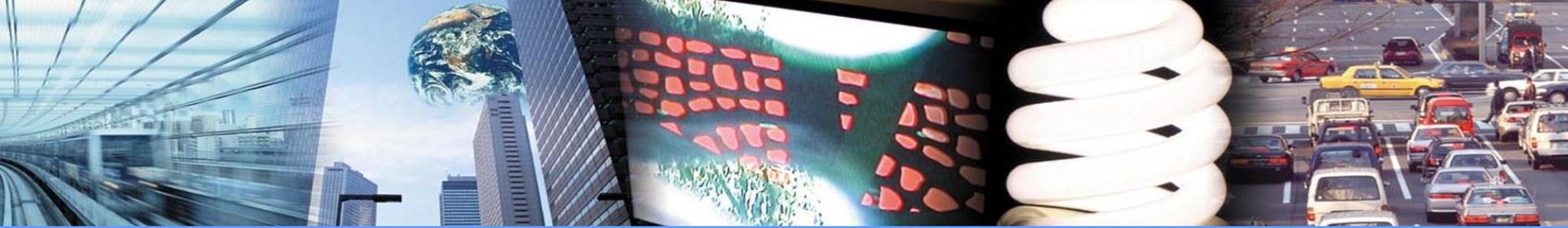
### Interconnection Line Capacity

- Leyte-Luzon (440 MW)
- Leyte-Cebu (400 MW)
- Cebu-Negros (200 MW)
- Negros – Panay (100 MW)
- Leyte-Bohol (100 MW)



Note: Transparent islands in the above diagram are not covered by NGCP's network.





# Policy Thrusts

*PEP 2012-2030*

- Ensure Energy Security
- Expand Energy Access
- Promote Low-Carbon Future
- Climate Proof the Energy Sector
- Promote investment in the energy sector
- Develop Regional Energy Plans



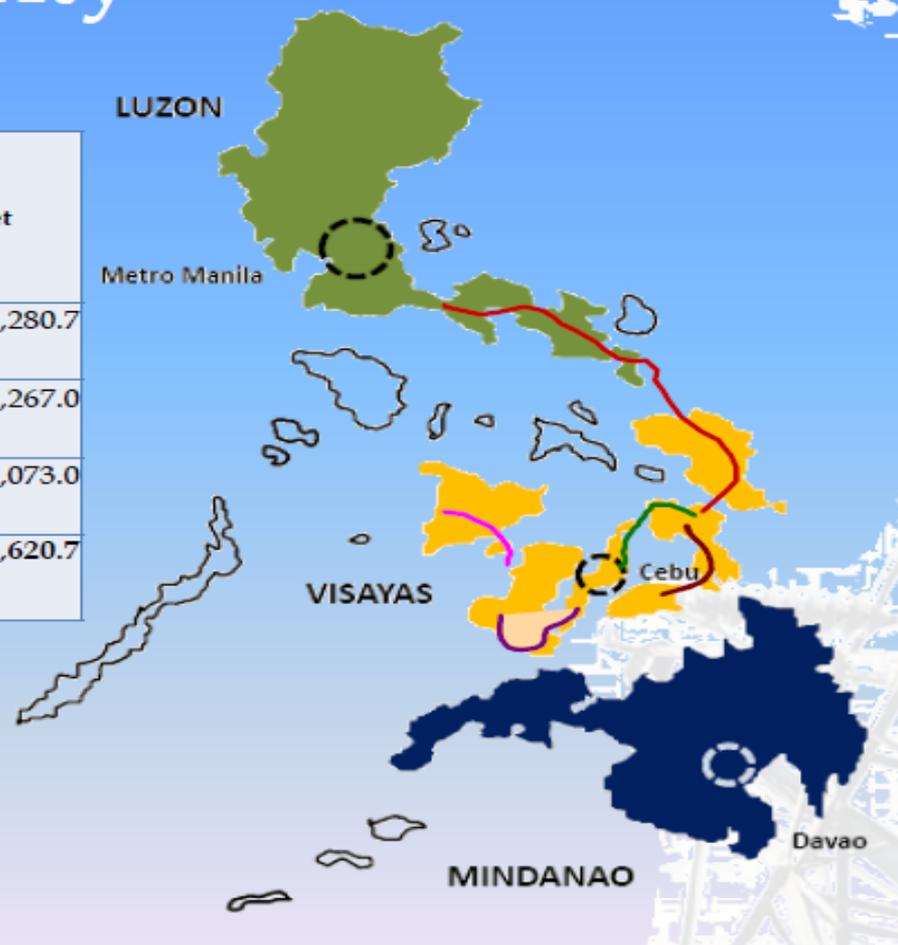


# Ensure Energy Security

*Reliable and efficient power sector*

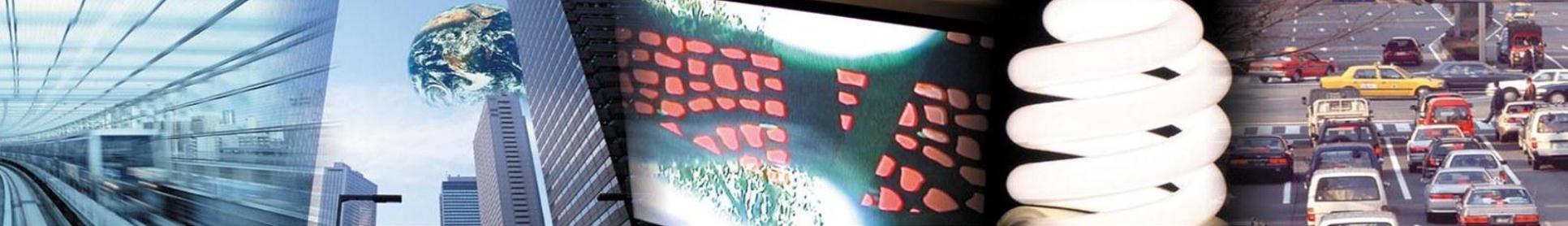


| Grid         | Required by 2030 | Installed (end 2011) | Committed      | Indicative     | Net            |
|--------------|------------------|----------------------|----------------|----------------|----------------|
| Luzon        | 20,707.7         | 11,739.0             | 868.7          | 6,819.3        | 1,280.7        |
| Visayas      | 4,412.0          | 2,402.0              | 310.0          | 433.0          | 1,267.0        |
| Mindanao     | 4,210.0          | 2,022.0              | 588.0          | 527.0          | 1,073.0        |
| <b>TOTAL</b> | <b>29,329.7</b>  | <b>16,163.0</b>      | <b>1,766.7</b> | <b>7,779.3</b> | <b>3,620.7</b> |



- A. Increase installed capacity
- B. Upgrade and expand transmission and distribution network
- C. Interconnect the island grids
- D. Expand energy market from Luzon-Visayas to Mindanao and include RE.





# Expand Energy Access

*Ensure system reliability and integrity*

- Upgrade and expand the transmission lines
- Interconnect Mindanao with the Visayas
- Batangas-Mindoro Interconnection



NGCP's Grid Development Map



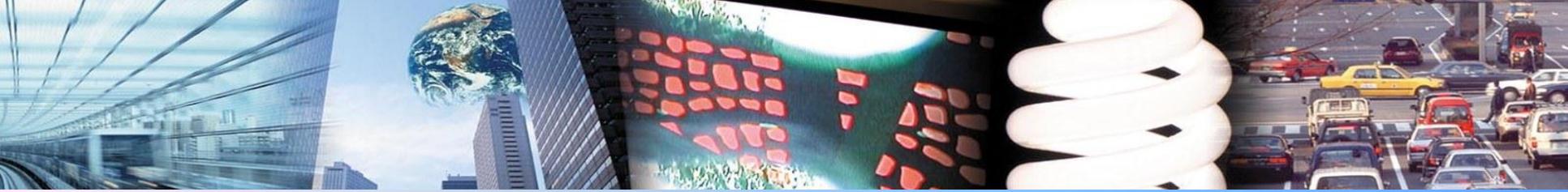


# Expand Energy Access

*Achieve 90% Household Electrification by 2017*

*Achieve 100% Sitio Electrification by 2015*





# Distributed Combined Heat and Power

## The Philippine Distribution System

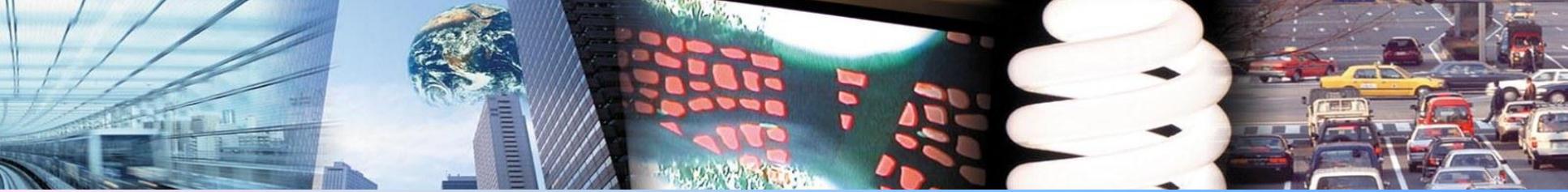
- Electric Cooperatives - ECs

- Privately-owned Distribution Utilities

- Local Government Unit Owned-and-Operated Distribution System

- Entities Duly Authorized to operate within EZ's





# Distributed Combined Heat and Power

Potential of CHP

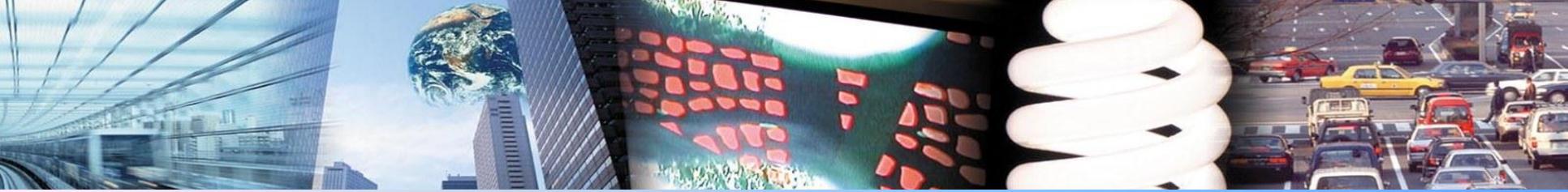
Industrial and Commercial Sectors



Agriculture Sector



Residential Sector



# Distributed Combined Heat and Power

Challenges in the Distribution of Electricity

Cross Country Terrain

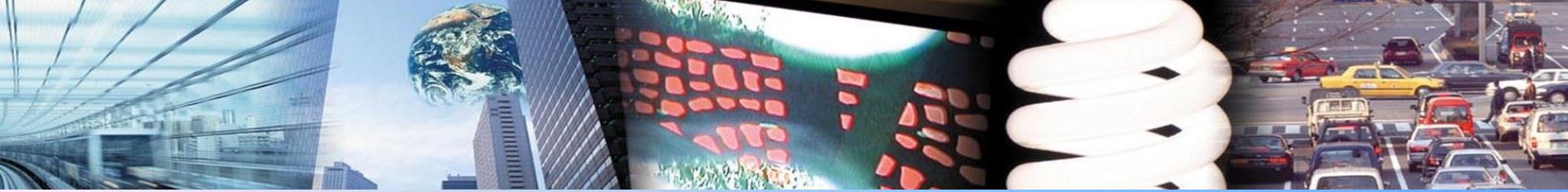
Right of Way

Difficult Terrains

No Road Network



*Cross country/difficult terrains*



# Distributed Combined Heat and Power

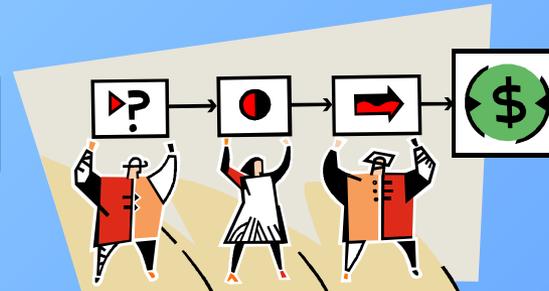
BARRIER



OPPORTUNITY



INVESTORS/FINANCES





**Thank you for your  
attention!!**