OIL AND GAS SECURITY EXERCISE IN THE PHILIPPINES

The 2nd APEC Oil and Gas Security Network Forum
10 March 2016, Kagoshima City, Japan

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Economic Cooperation

Outline of the Presentation

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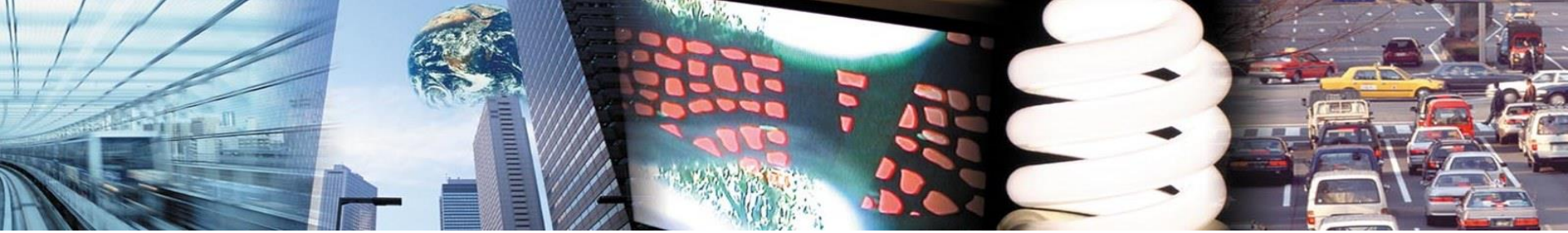
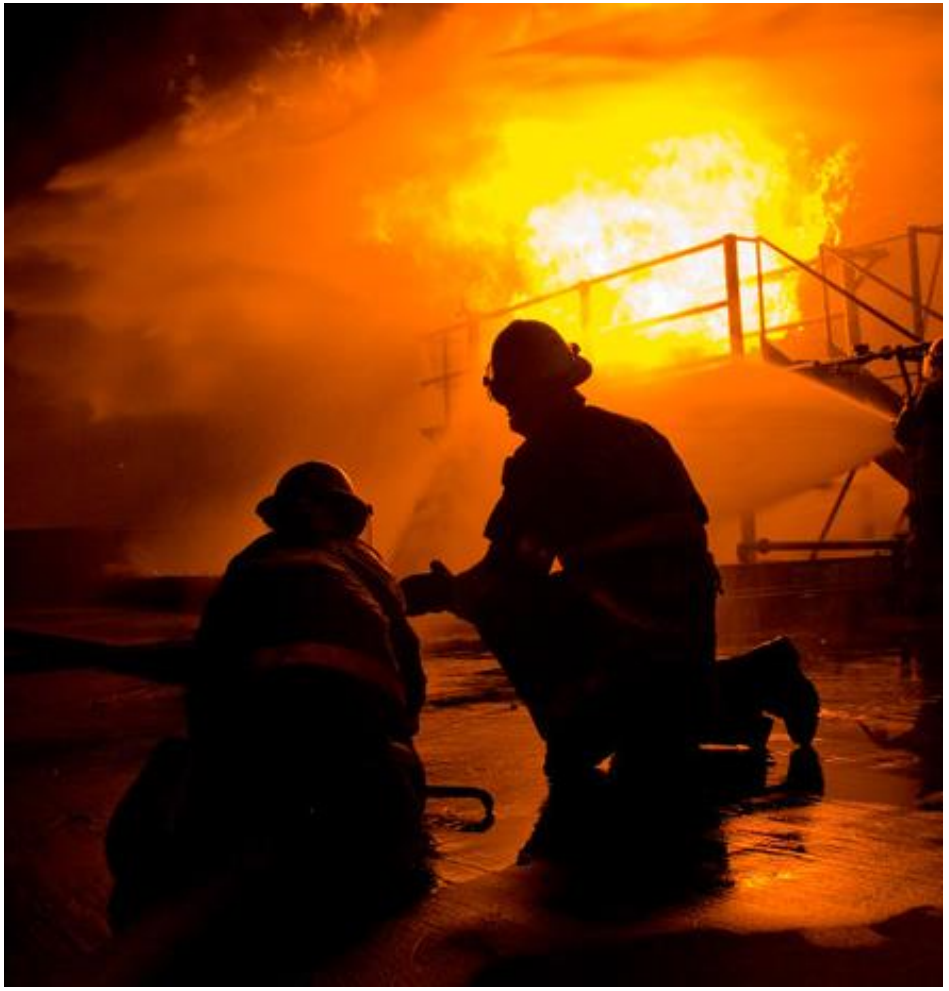
2. 1st Oil and Gas Scenario
   - RP response to 1st scenario

3. 2nd Oil and Gas Scenario
   - RP response to 2nd scenario

4. 3rd Oil and Gas Scenario
   - RP response to 3rd scenario



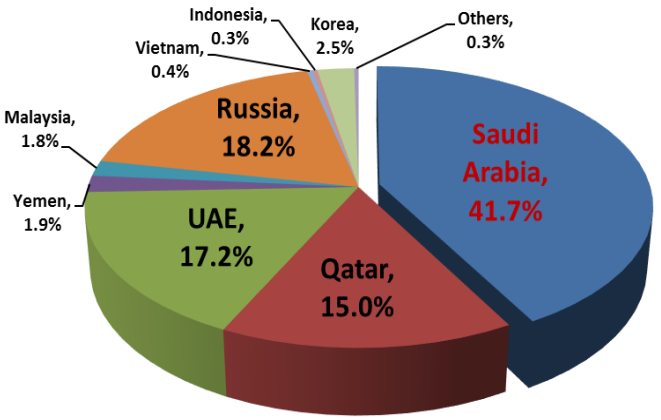
BACKGROUND INFORMATION



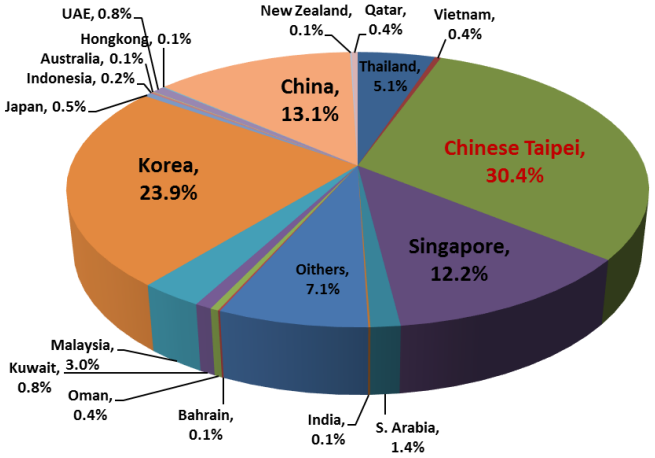
Supply Side – Crude Oil

- **Crude oil production in the Philippines** is **very limited. Crude oil import dependency at around 90%**
- About **76%** of crude oil imports came from **ME** with **Saudi Arabia** providing the largest share
- **Petroleum product imports increased** at AARG of 1.8% (2004-2013).
- In 2013, **30.4%** of total product import was sourced from **Chinese Taipei.**
- There are **2 operational refineries**, namely Petron Bataan Refinery and Pilipinas Shell Refinery with total capacity of 285.2 (MB/D).

Crude Oil Import Sources, 2013

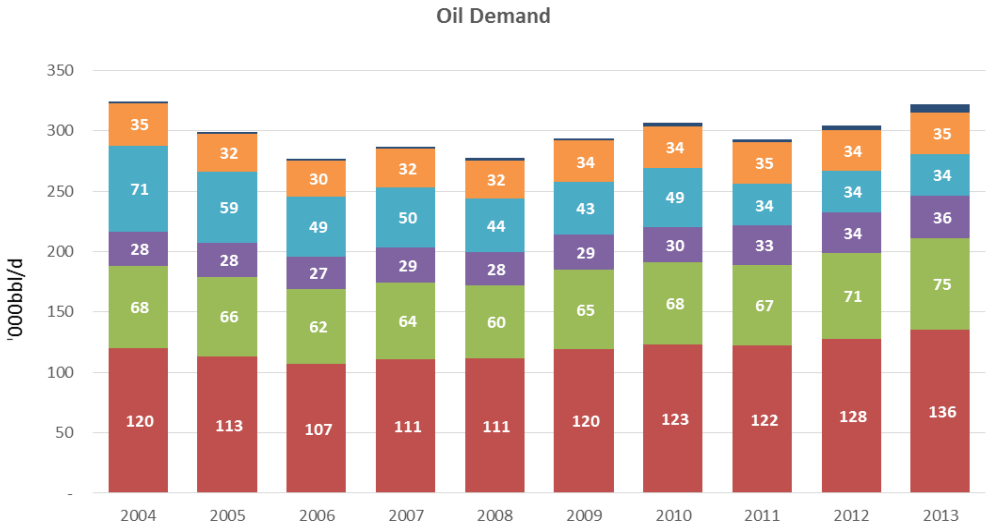


Petroleum Product Import Sources, 2013

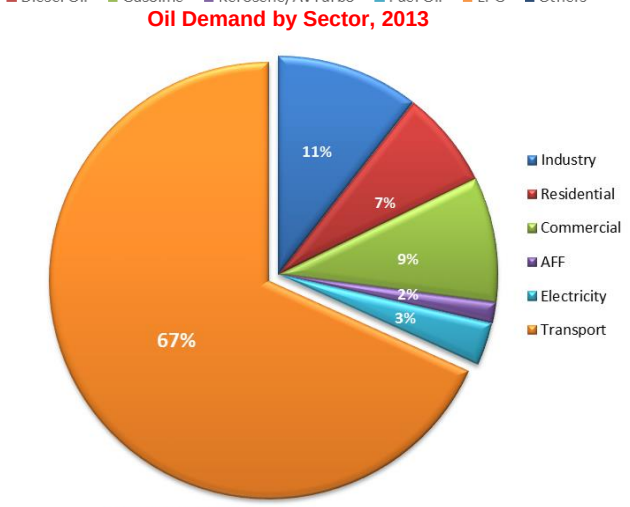


Source: OIMB-DOE

Demand Side – Oil Products



Source: OIMB-DOE



Source: OIMB-DOE

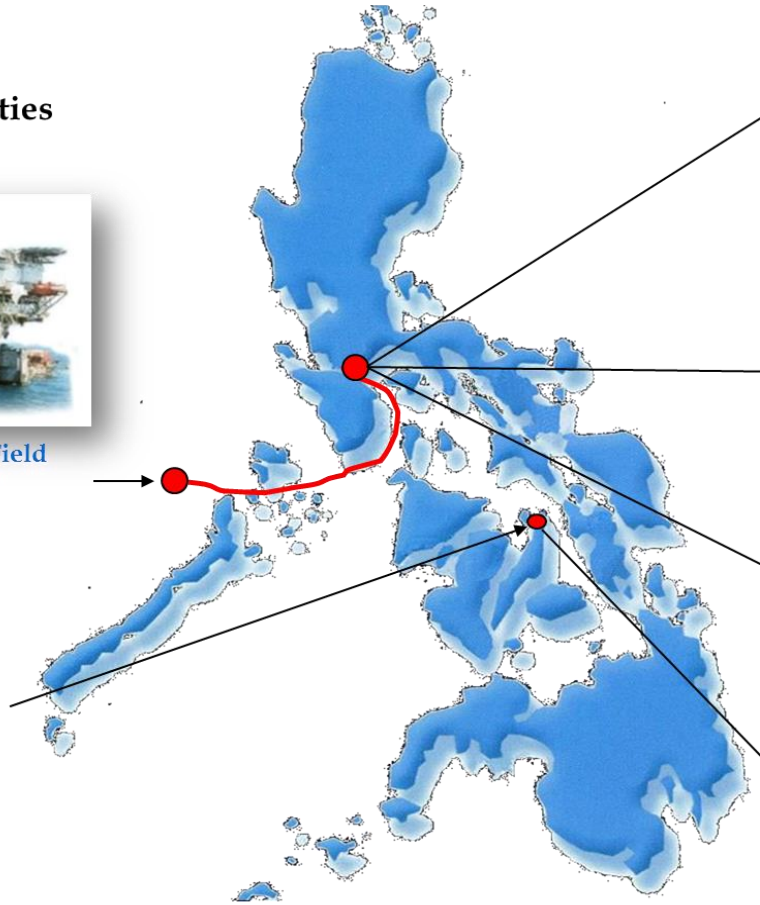
- In 2013, oil demand was at **322 MB/D**
- **Diesel oil** was the most consumed product **(42% share)**, followed by **gasoline** at **23.0%**.
- The **transport sector** accounted for **the largest share (almost 70%)**
- **Fuel demand** is expected to **increase by 3.1% annually** (draft 6th Outlook Edition).
  - More than double in 2040, from 13.5 Mtoe in 2013 to 31.0 Mtoe.

Overview of the Natural Gas Industry

Current Facilities and Users

Malampaya Gas Field
2.7 TCF (2001)

Libertad Gas Field
0.6 BCF (2006)



2,861 MW Installed Capacity

3 Power Plants in Batangas

Industry

Transport

1 MW Desco Power Plant

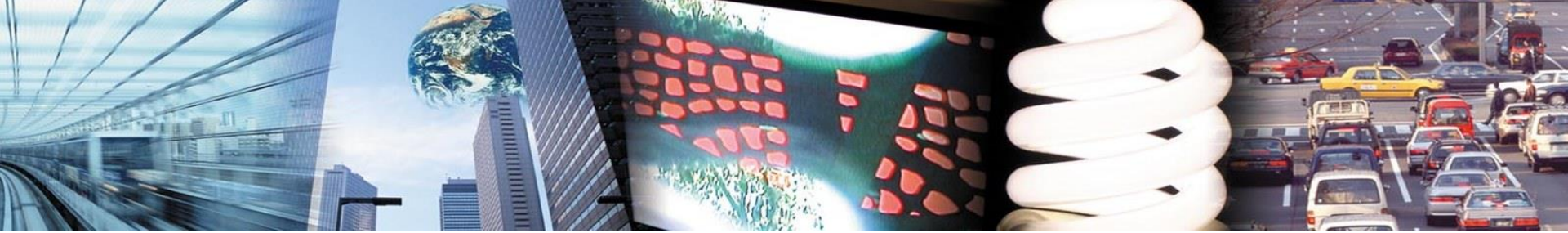
About 98% of gas demand is allocated for power generation

Emergency Measures

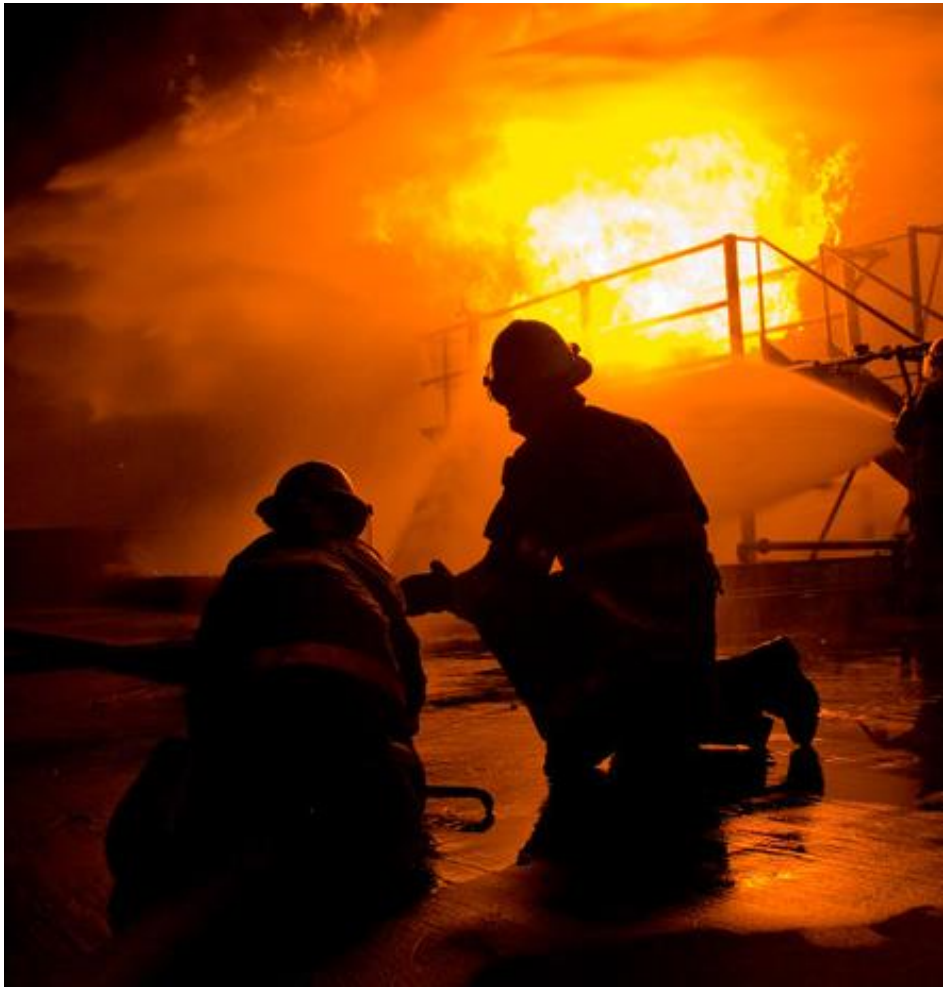
- National Disaster Risk Reduction & Management Council (NDRRMC)
  - Coordinate all efforts and measures to ensure protection and welfare of the public
  - Advise the President on the status of disaster preparedness, prevention, mitigation, response and rehabilitation operations.

- Inter-agency Energy Contingency Committee (IECC)
  - Created through Administrative Order (A.O.) in 2011
  - Precautionary measure to ensure that the necessary preparations are in place
  - Recognizes the need to study and evaluate the existing strategy and contingency plan.

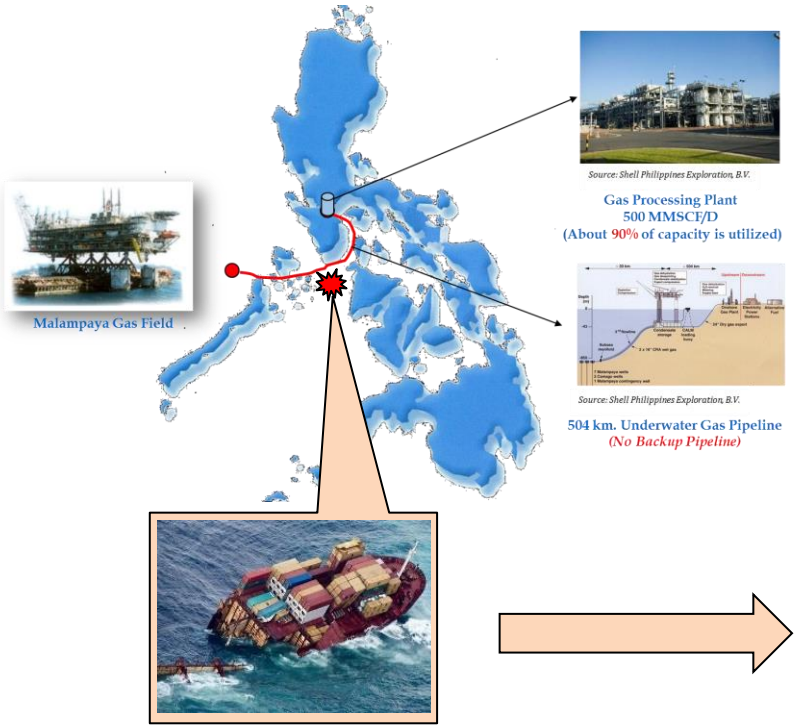
- Oil Contingency Plan of 2002



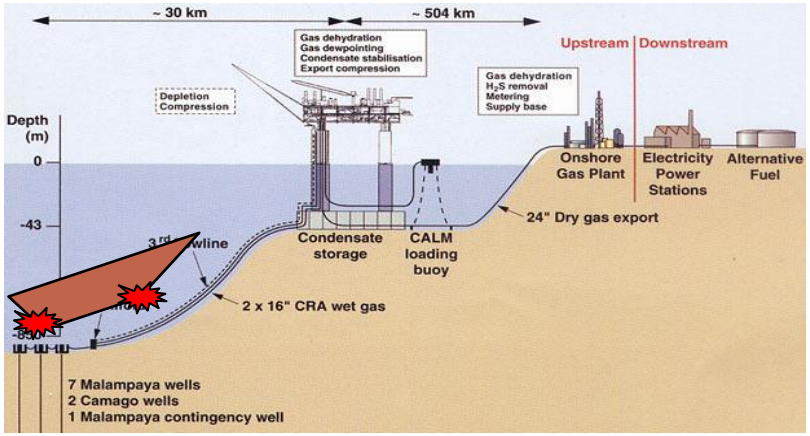
1ST STAGE SCENARIO



1st Stage of Oil & Gas Emergency Scenario



No backup pipeline for transporting natural gas



- A collision of cargo ship and oil tanker due to mishandling resulted in **cargo ship to sink** in waters between Mindoro and Palawan where the Malampaya underwater gas pipeline is situated. The sank cargo ship reached the seabed and **hit the pipeline causing leaks**.
- The **leaks** resulted in **total shutdown of Malampaya** as natural gas cannot be transported to the Gas Processing Plant in Batangas.

1st Stage of Oil & Gas Emergency Scenario

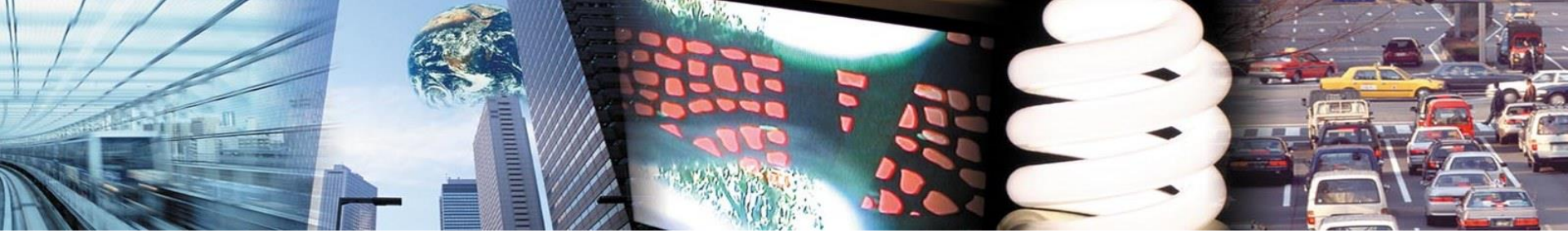
Video

Situation of the Incident

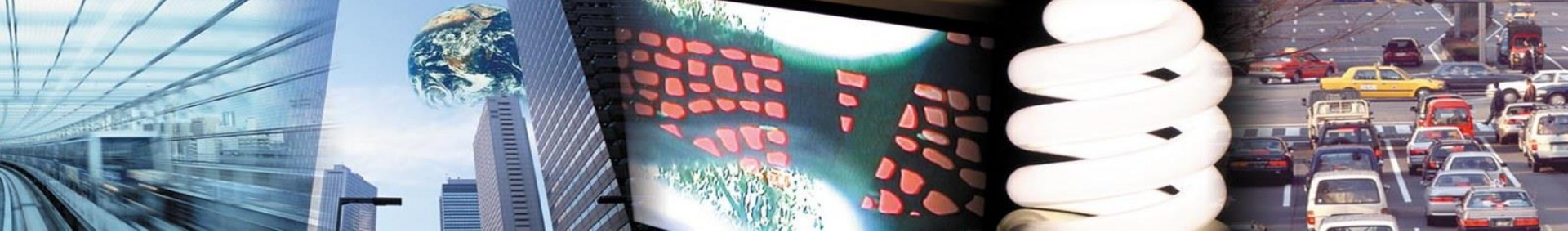
- Repair of underwater pipeline

Underwater Pipeline → Time Duration for Restoring → **at least 1 month**

- Shutdown causes a loss of **312 MMCF/D *(8.83 MMCM/D)*** to fuel the 3 gas power plants, or equivalent to around 60 MB/D of diesel (if diesel will be used as substitute fuel).

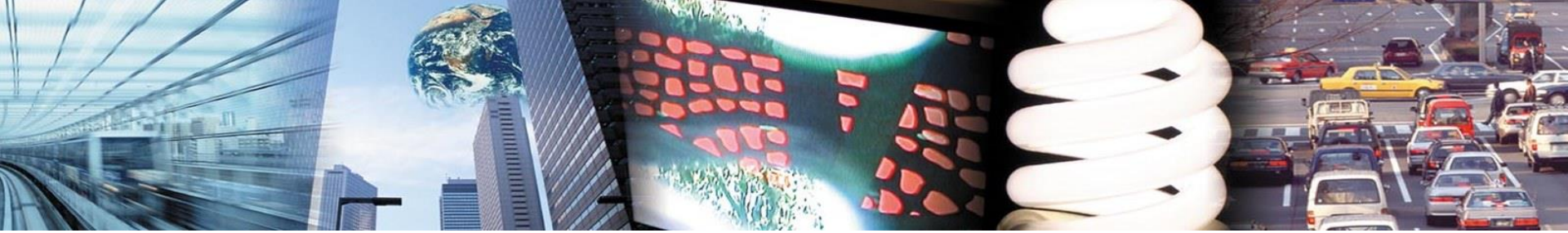


Philippines Response to 1st Scenario



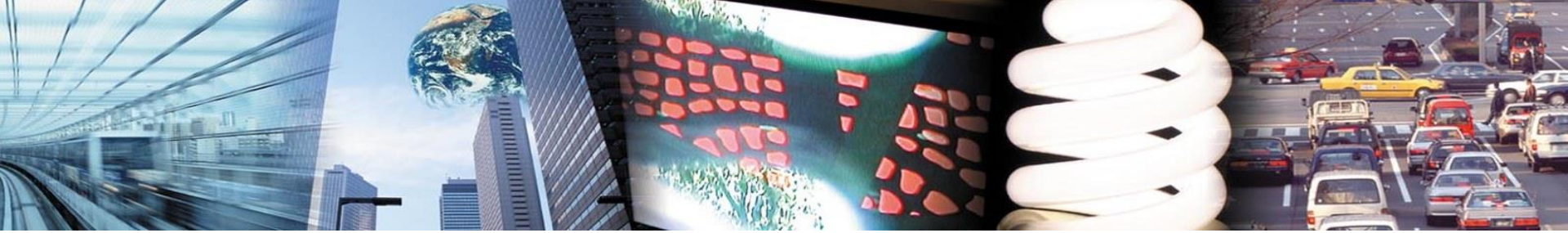
Emergency Arrangements

- Convene a coordination meeting among concerned energy companies for the initial assessment of damage/impact
- Conduct Inventory of available supply of electricity including schedule of maintenance shutdown by other power plants
- Issue official press release on the current gas supply situation
- Assess impact on power rates
- Heighten the security in the pipeline leg that has been affected by the accident



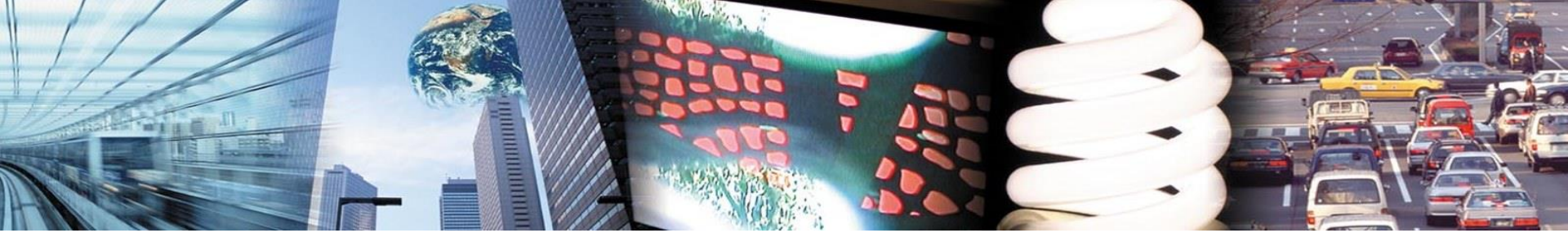
Economic and Social Impacts (Direct and Indirect)

- Loss of 312 MMCF/D (8.83 MMCM/D) due to shutdown of Malampaya or a total of 9,360 MMCF for 30 days
- Loss of gross revenue of around USD 56 million from production share of government
- Reduce power generation output by almost 1200 MW
- Increase in estimated price of electricity from USD 0.16/kwh to USD 0.50/kwh or translated to USD 422 million for 30 days



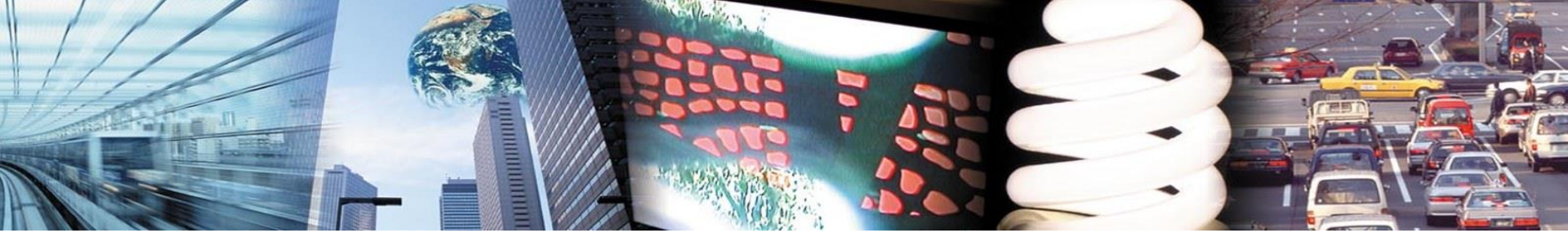
Measures to Secure Energy Supply

- Optimize use of line pack (gas that remains in the pipeline)
- Secure supply of alternate fuels
- Re-scheduling of maintenance schedule activities of other power generating plants
- Utilize available existing capacities from IPPs
- Ensure immediate run of standby oil based power plants, if needed/required



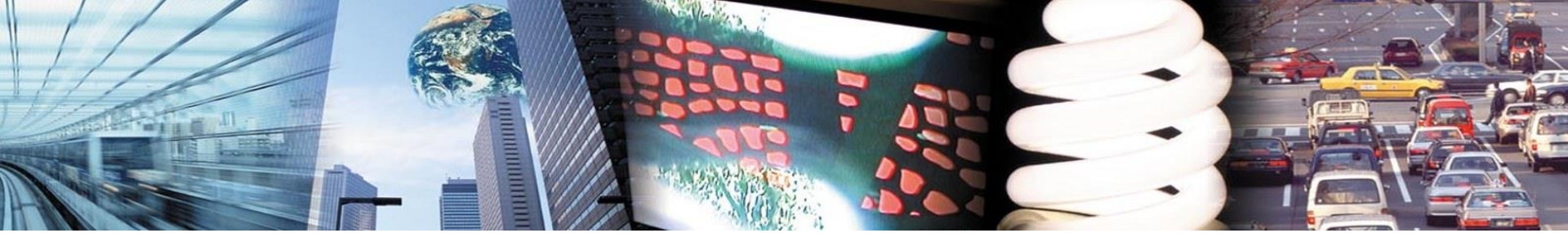
Measures to Control Energy Demand

- Employ Interruptible Load Program (ILP) to reduce demand during peak hours
- Schedule rotating black out with priority to sectoral requirements
- Implement Energy Conservation Measures
  - Demand side management – shifting of operating hours of manufacturing plants to off-peak hours
  - Mandate all government agencies, shopping malls and commercial establishments to set their air conditioner units to 25 degrees Celsius

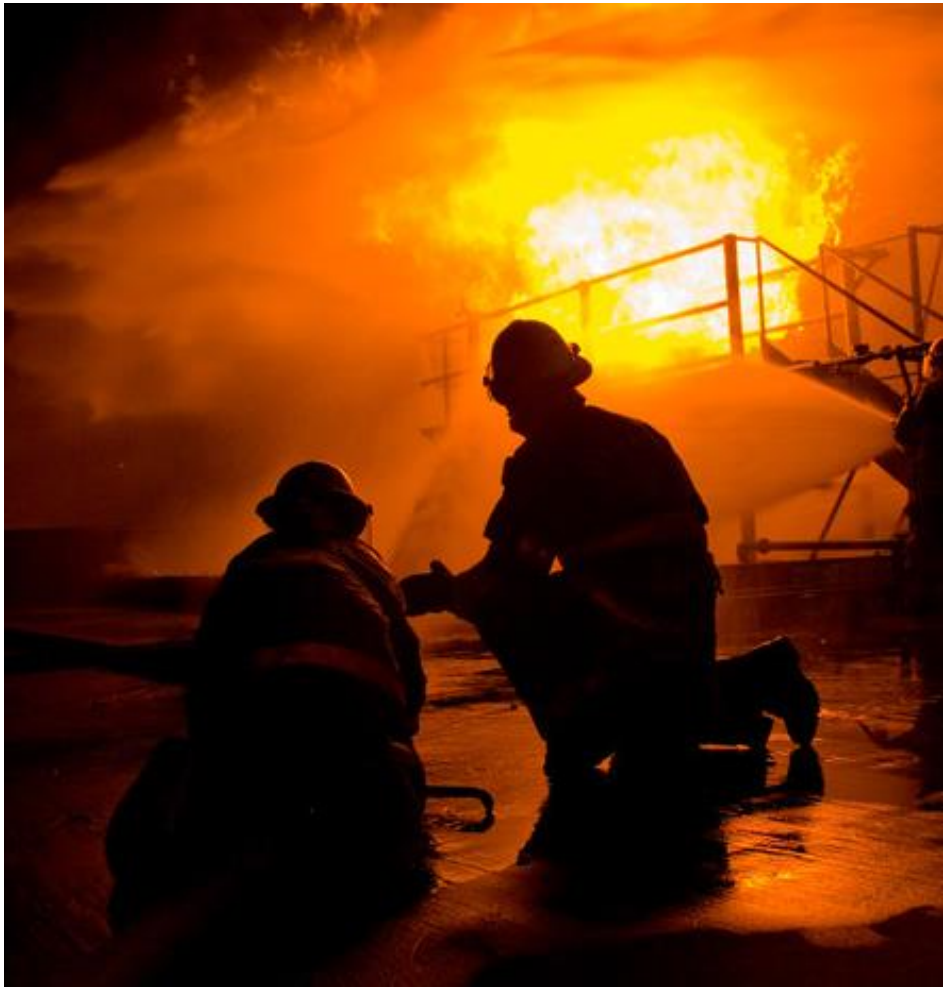


Challenges for Improvement in Emergency Responses

- Restriction in importation of natural gas due to absence of required infrastructure
- Investment intensive in development of upstream exploration and downstream infrastructure
- No strategic gas reserves.
- Absence of Natural Gas Contingency Plan



2ND STAGE SCENARIO



Petron Bataan Oil Refinery

Source: Petron

- Located in Limay, Bataan.
- Consists of 3 distillation units: Distillation Unit 1 with 55 MBSD capacity; Distillation Unit 2 with 100 MBSD capacity; and Distillation Unit 3 with 25 MBSD.
- Contributes about 63% to total domestic refinery capacity.
- Also threatened by natural disaster

2nd Stage of Oil & Gas Emergency Scenario

- **After three (3) weeks after the Malampaya incident, a very strong typhoon** similar to typhoon Haiyan in 2013, hit Bataan province, which **caused damage to Petron Refinery**.

Source: NASA on typhoon Haiyan

- **Distillation Units 1 and 2 installation process were damaged** after the typhoon that resulted in **total loss of production of fuel products**. While **Distillation Unit 3** is also **somewhat damaged**.

Source: Charisma Sayat/AFP

2nd Stage of Oil & Gas Emergency Scenario

Video

Situation of the Incident

1st Incident

Underground Pipeline

Time Duration for Restoring → **at least 1 month**

3 weeks after

2nd Incident

Refinery Plant **(Shutdown)**

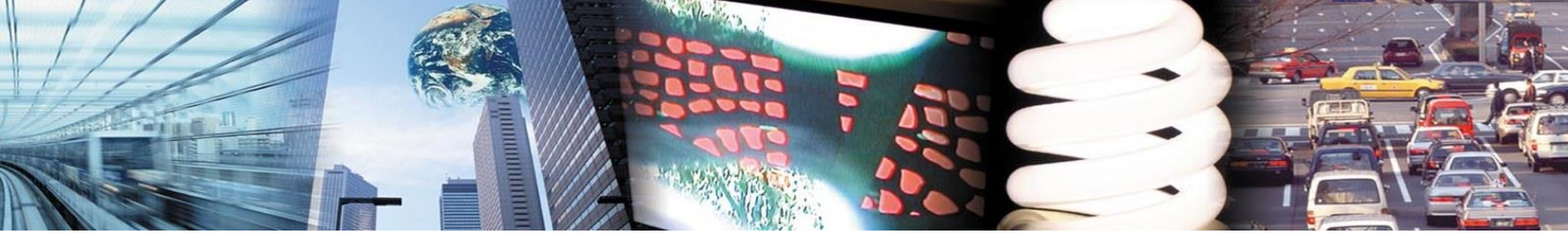
Units 1 & 2

Units 3

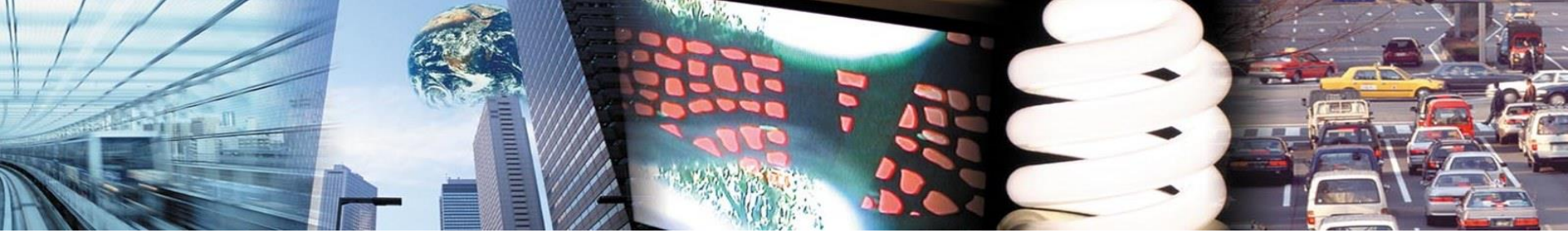
Time Duration for Restoring → **at least 3 months**

Loss of 3 refinery units reduces total refinery production by about **60% (98 MB/D)**

→ **at least 2 weeks**



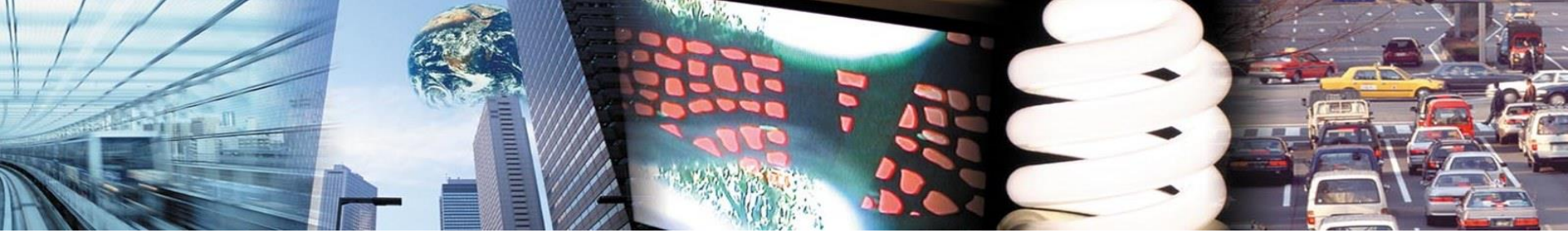
Philippines Response to 2nd Scenario



Emergency Arrangements

Upon Detection, and During and Post Typhoon

- Convene NDRRMC
  - Pre-Disaster Risk Assessment
  - Energy – Convene Inter-agency Energy Contingency Committee
- Request oil companies to update their action plans before the typhoon
- Rapid Damage and Needs Assessment
- Post Disaster Risk Assessment
- Daily reporting and monitoring of inventory and replenishment

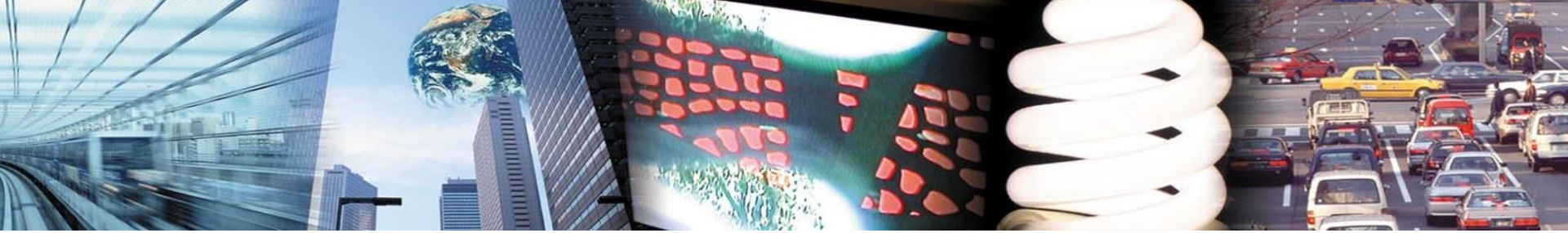


Economic and Social Impacts (Direct and Indirect)

- Loss of 98 MB/D of oil supply due to shutdown of Petron, which is about 30% reduction in total oil supply

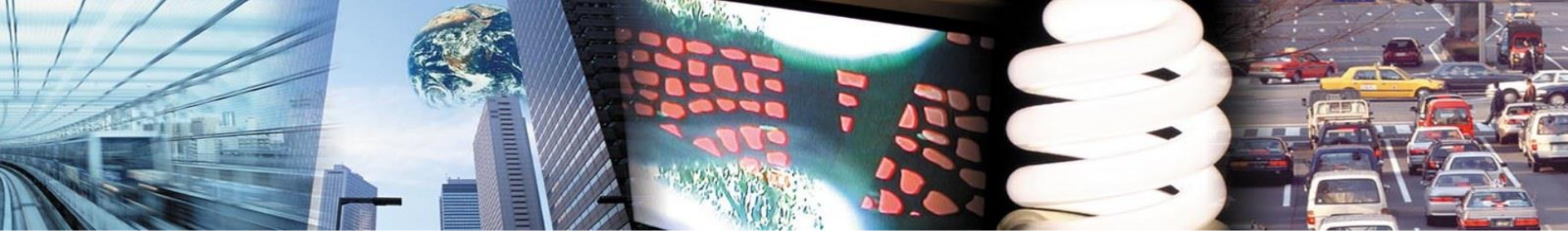
- Transport will be greatly affected as 70% of oil supply is consumed by the sector
  - 42% of oil supply is diesel
  - About 40% of refinery production is diesel

- Power sector, specifically in missionary areas, will also be affected (although less than 10% of total supply is devoted for power generation)



Measures to Secure Energy Supply

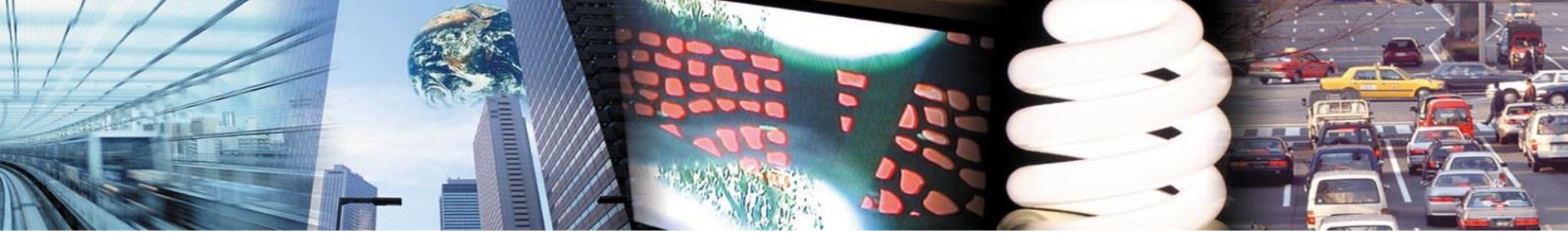
- Increase imports from existing sources
- Diversify import sources of refined products from other potential sources
- Allow post compliance of import documents
- Propose temporary lifting of 15-day inventory for refined petroleum products
- Enforce Mutual Product Sharing (Big 3 oil companies)
- Propose increase biofuels blend rate
- Ensure forex availability for oil imports



Measures to Control Energy Demand

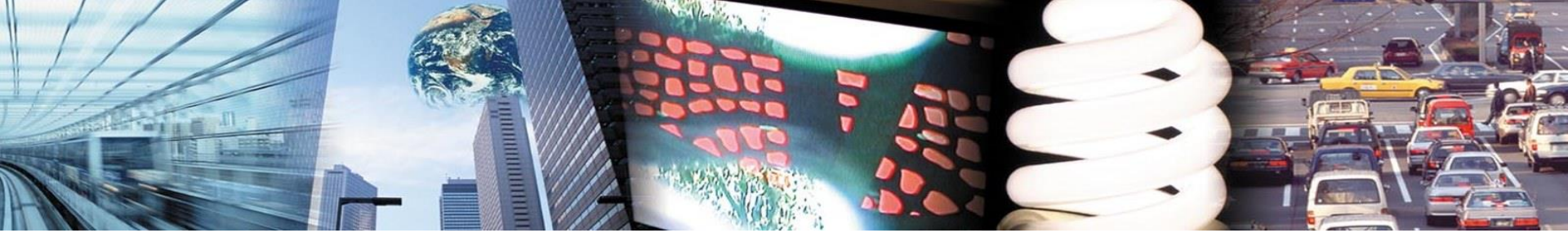
- Enforce Energy conservation measures
  - Limit operating hours of gas station, shopping mall, stores and other entertainment places
  - Car pooling
  - Four-day work and school in urban areas
  - Limit use of government vehicles (prioritization)
  - Implement “transport volume reduction” scheme
  - Ban of vehicles except in line of public service (12mn-4am)
  - Implement carless days

- Implement fuel allocation

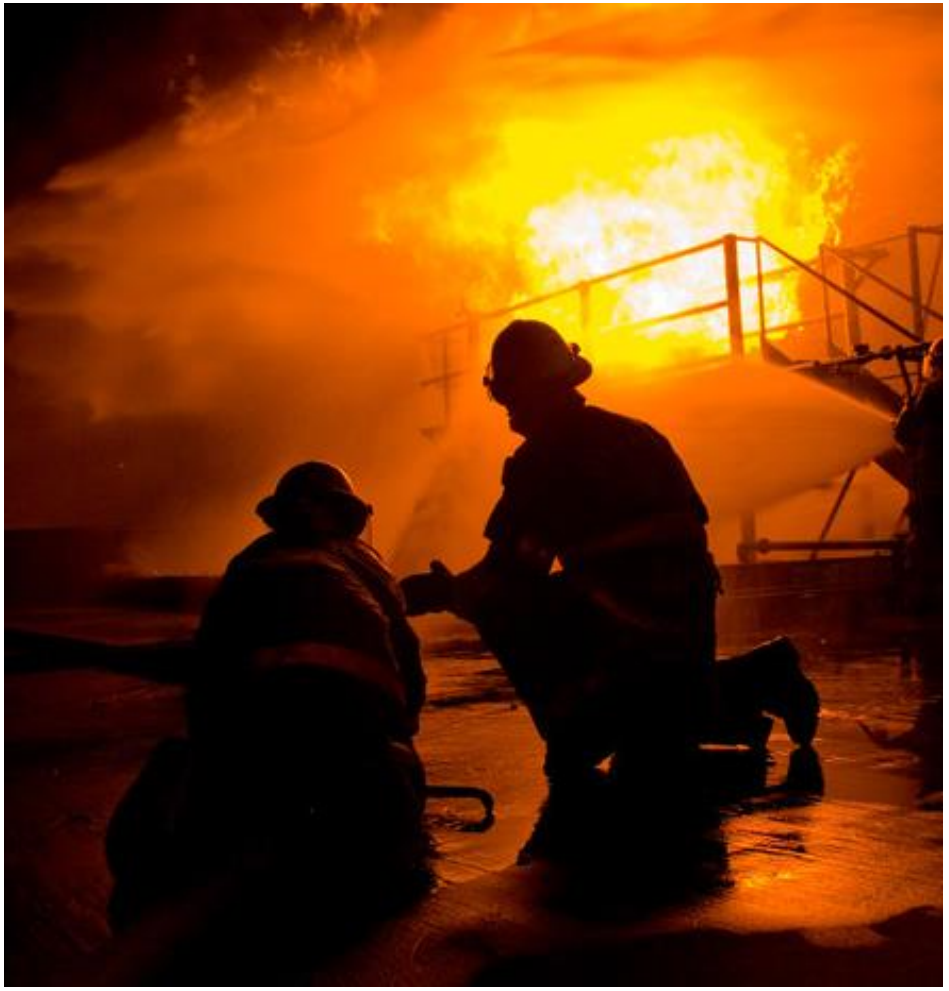


Challenges for Improvement in Emergency Responses

- Timely delivery of foods/goods
- Assuring business continuity plans are crafted by all oil stakeholders
- Conducting of simulation and drills of emergency preparedness plan
- Updating contingency plan
- Implementing effective and timely dissemination of information to the public



3RD STAGE SCENARIO



3rd Stage of Oil & Gas Emergency Scenario

- **The strong typhoon** that hit the Philippines also **made a landfall in Chinese Taipei 3 days after,** specifically in the southern part, and **caused damage to two (2) Oil Refinery Facilities (Kaohsiung and Dalin).** As a result, **these refinery facilities will be out of operation.**

- Since Kaohsiung distillation unit will be retired in December 2015, then **repair of damaged installation process** is applied **for Dalin** distillation unit, which is expected to **take at least one (1) month**.

Overview of Chinese Taipei Oil Refinery

: owned by CPC Corporation

: owned by Formosa Petrochemical Corporation

- Chinese Taipei has 4 oil refineries with total capacity of 1,260 MB/D in 2013.
- Kaohsiung distillation unit will close by the end of December 2015 and its oil-refining operations will be gradually transferred to the Dalin Refinery.
- The Philippines imported 30.4% of oil product from Chinese Taipei in 2013.
- Around 70% of imports from Chinese Taipei was diesel (2013).

3rd Stage of Oil & Gas Emergency Scenario

Video

3rd Stage of Oil & Gas Emergency Scenario

- Considering this situation, **the Chinese Taipei Government** decided, one week after the incident, to **reduce oil product export**.

- As a result, **export quantity of oil product to the Philippines reduces by** 30% (import from Chinese Taipei in 2013 was about 51 MB/D), or about 9% reduction in total imports.

Source: www.viator.com

Situation of the Incident

2nd Incident

Refinery Plant
(Shutdown)

Units 1 & 2

Units 3

Time Duration for Restoring

Loss of 3 refinery units reduces total refinery production by about **60% (98 MB/D)**

at least 3 months

at least 2 weeks

3rd Incident

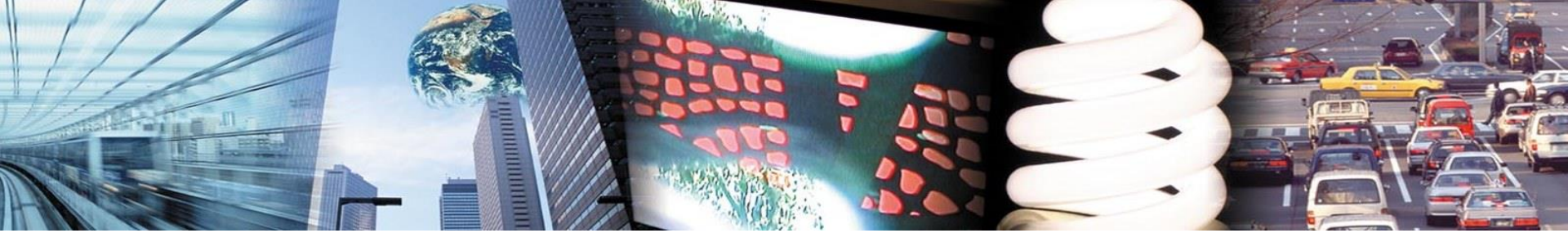
3 days after

Refinery Plant
(Shutdown)

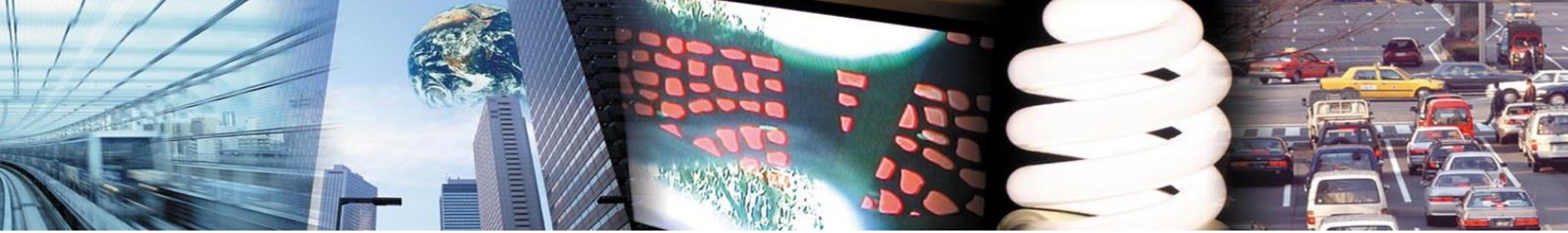
Dalin Refinery Unit

Time Duration for Restoring

at least 1 month



Philippines Response to 3rd Scenario

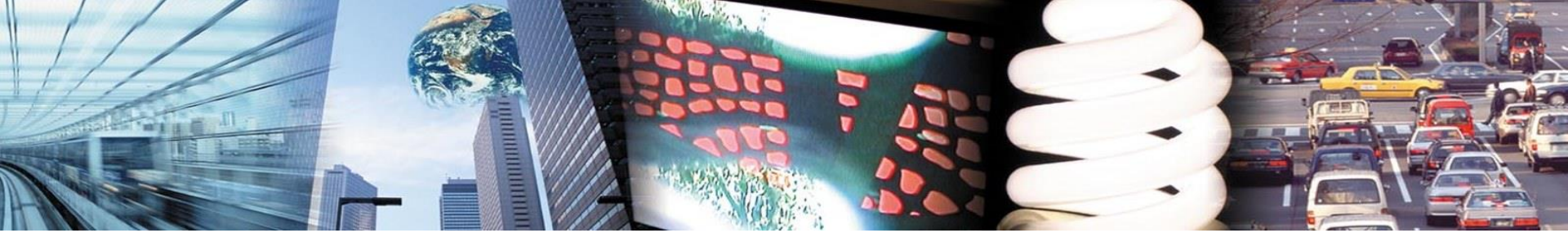


Emergency Arrangements

- Continue meeting with the Inter-Agency Energy Contingency Committee

- Advice the oil company/ies concerned to look for other supply sources, other than ASEAN.

- Request other oil company/ies to increase their importation

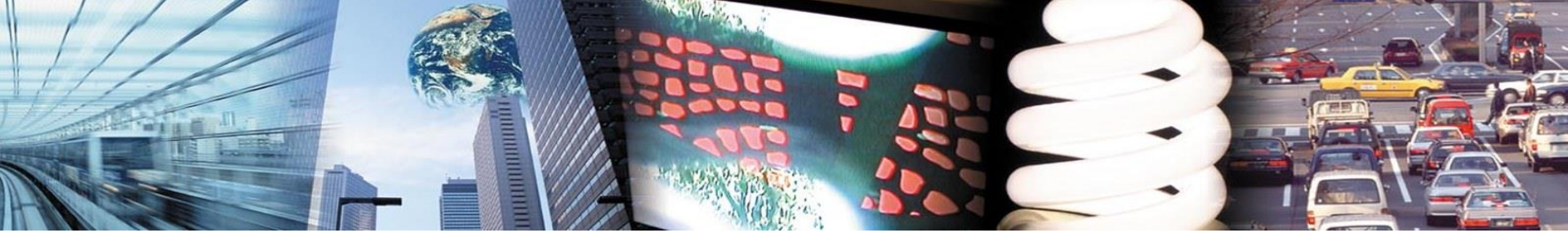


Economic and Social Impacts (Direct and Indirect)

- Deficit of around 35% in the total oil supply (compounded supply shortfall)
  - 9% reduction in imports due to Chinese Taipei's decision
  - 30% reduction in oil supply from Petron refinery shutdown

- 35 % reduction in oil supply for all sector
  - Reduced mobility of goods and people (all modes of transport)

- Reduced available capacity for peak load (from oil-based power plants) with 15 thousand barrels per day of diesel requirement.

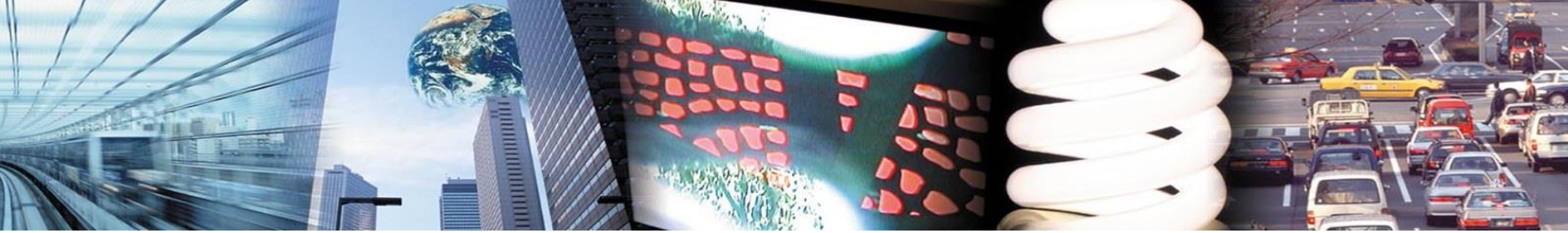


Measures to Secure Energy Supply

- Intensify securing import sources from existing and potential suppliers (spot market)

- **Invoke/tap the regional supply cooperation in the ASEAN (APSA)**

- Continue to ensure FOREX availability for oil imports

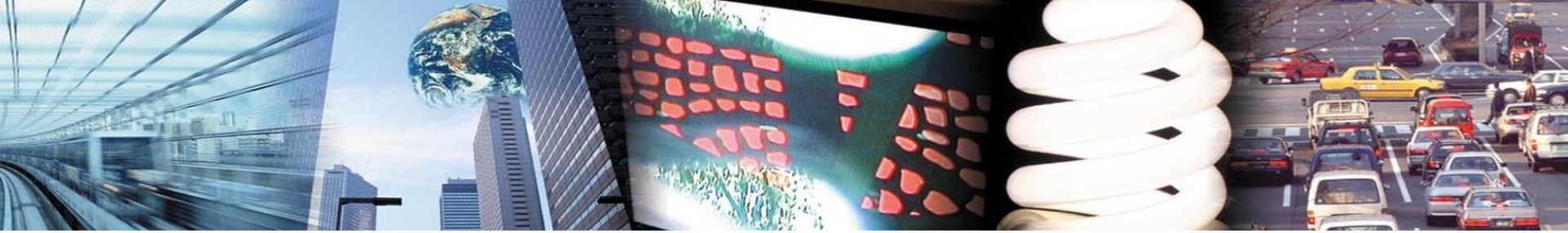


Measures to Control Energy Demand

- Continue enforcement and intensify energy conservation measures as implemented in the 2nd Scenario

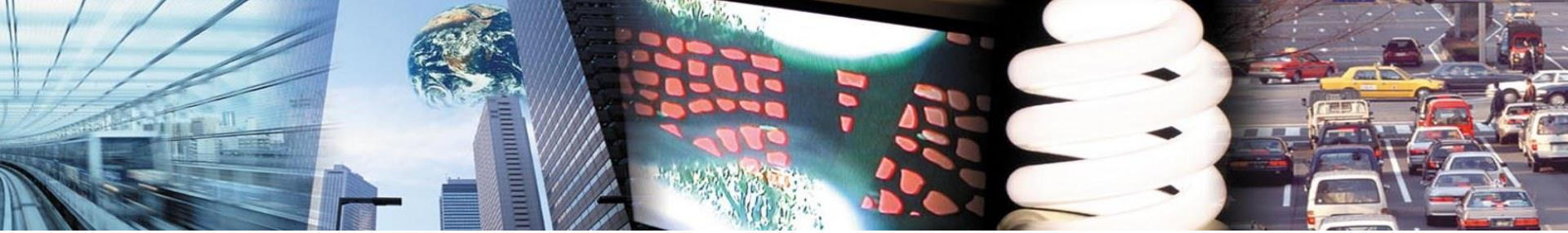
- Continue implementation of Fuel Rationing

  - Food production and transport
  - Hospitals and health care facilities
  - Power generation
  - Transport (Public and cargo land transportation; Private land transportation; Domestic shipping; Domestic aviation)
  - Industry
  - Government, Armed Forces and Police
  - International shipping and aviation
  - Residential
  - Diplomatic

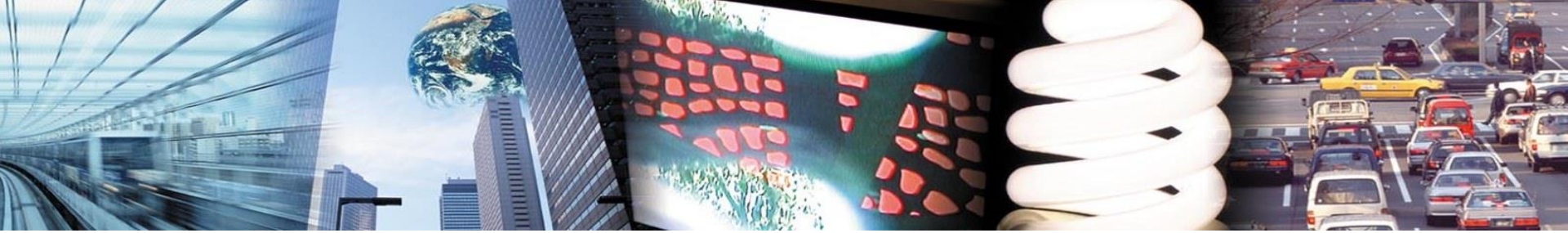


Challenges for Improvement in Emergency Responses

- Establishing strategic stockpiling (crude oil and refined products).
- Exploring development of joint emergency stocks with other countries through bilateral or regional framework.
- Exploring securing emergency stocks of other countries with large strategic oil stockholding.

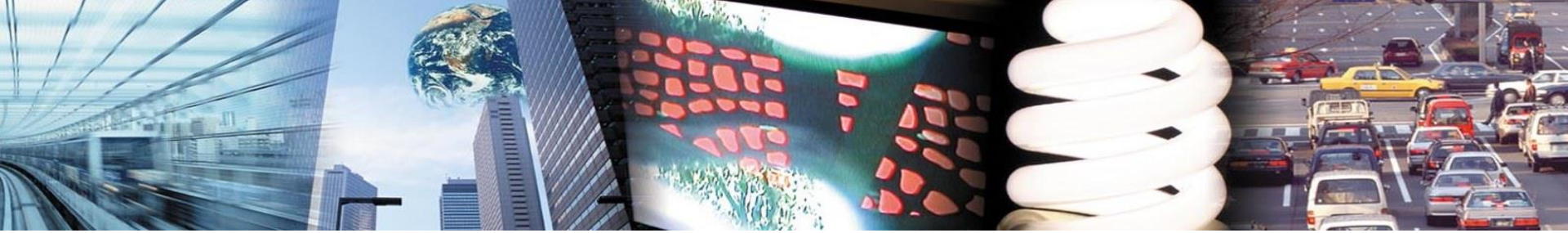


General Comments from Experts on Philippines Response



Comments/Suggestions (Scenario 1)

- Importance of governance, structure and reporting process to bring information to higher levels are critical.
- Understand how the grid can easily tap other available resources.
- Create a special communication team.
- LNG infrastructure must be put in place as part of solution.
- Consider redundancy to avoid total shutdown



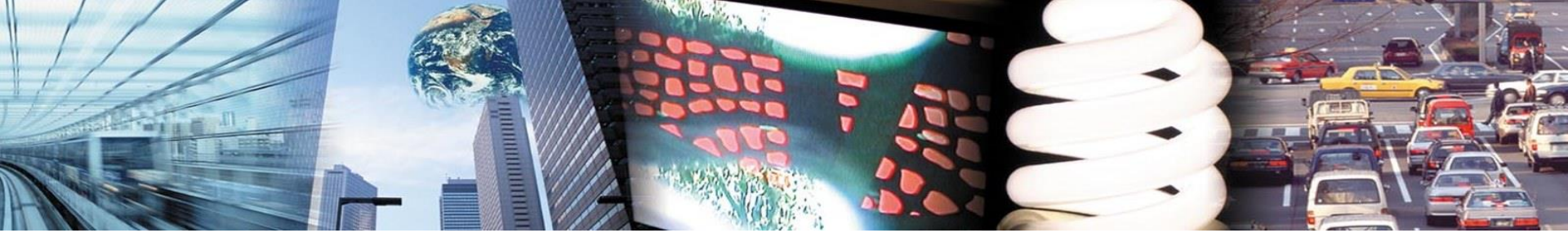
Comments/Suggestions (Scenarios 2 & 3)

- Prioritize the increase in supply rather than demand measures taking into account the economic and social impact of such.

- Important to know the market system to determine the availability of products including shipping time.

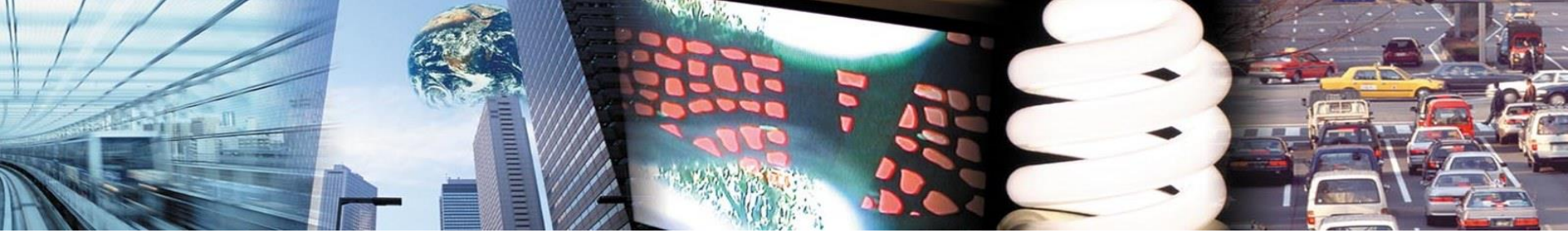
- There must be plan A and B in securing additional supply. Where is the available supply (spot markets)?
  - Mapping of import sources of products.

- Consider larger inventory or stockpiling to give more time to secure additional imports.



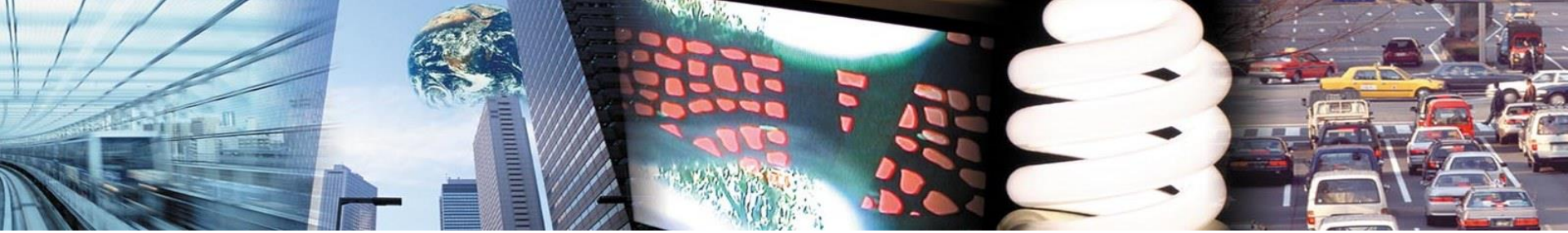
Comments/Suggestions (Scenarios 2 & 3)

- There must be full knowledge of economic impact as without proper assessment policies will be misled.
  - How much of the public transport system would be affected?
- Establish a cooperation framework with those economies with emergency stocks
  - Access emergency stocks of other economies
- Communication campaign nationwide calling to save fuel and energy.



General Comments

- Focus on the policy barriers to be better prepared on what to do.
- Institutionalize the conduct of exercise or simulation to be jointly conducted by the government and industry.
- Get the historical actual cases on how the economy or government responded or addressed the supply emergency as these will serve as learning exercises.
- Need for good governance to ensure that the welfare of the people is addressed



Thank you very much for your attention

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