

Development Plans in the Emerging Downstream Natural Gas Industry

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Presentation Outline

- I. Overview of the Downstream Natural Gas Industry
- II. Policy Thrust/Directions
- III. Development Plans and Programs
- IV. Challenges in the Development Plans



Overview of the Downstream Natural Gas Industry



414 MW San Gabriel
First Gen/ IPP



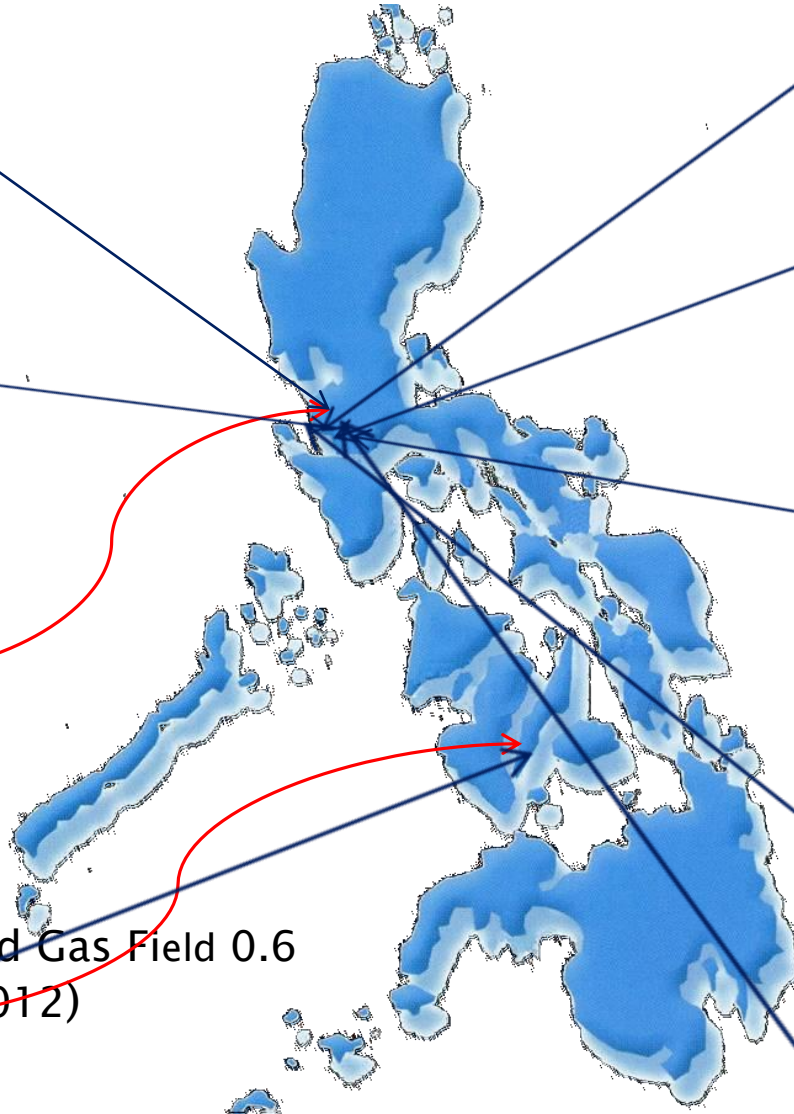
Shell Refinery



Malampaya Gas Field
2.7 TCF (2001)



Libertad Gas Field 0.6
BCF (2012)



97 MW Avion
First Gen/ IPP



560 MW San Lorenzo
First Gen/ IPP



1,000 MW Sta. Rita
First Gen/ IPP



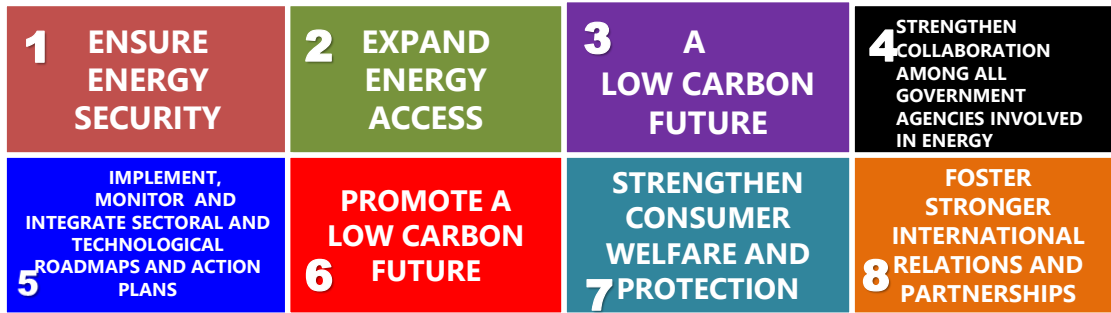
1,200 MW Ilijan Power Plant
NPC IPP(KEPCO)







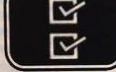
CNG Bus (2008)



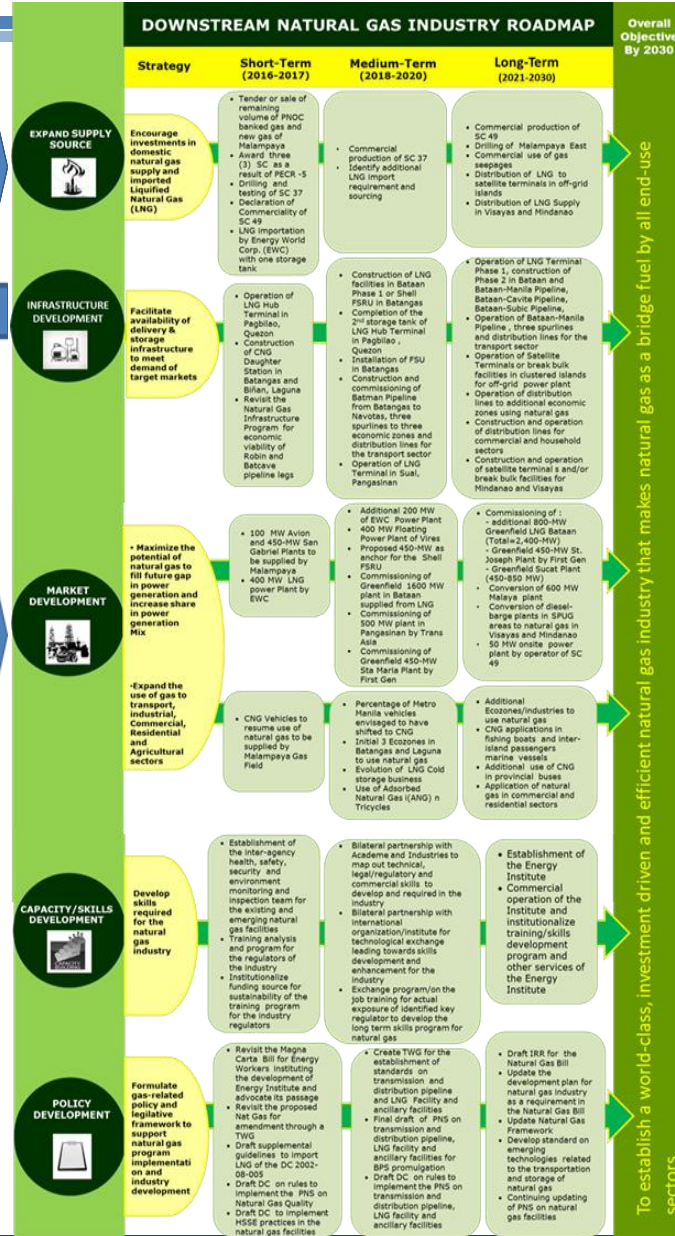
Policy Thrust/Directions



DOE's NINE POINT ENERGY AGENDA

-  **ACCESS TO BASIC ELECTRICITY FOR ALL FILIPINOS BY 2022**
-  **ADOPTING A TECHNOLOGY NEUTRAL APPROACH FOR AN OPTIMAL ENERGY MIX**
-  **IMPROVING THE SUPPLY OF POWER THAT IS RELIABLE, TO MEET DEMAND NEEDS BY 2040**
-  **DEVELOPING LNG NEEDS FOR THE FUTURE IN ANTICIPATION OF THE MALAMPAYA DEPLETION**
-  **FACILITATING THE COMPLETION OF TRANSMISSION PROJECTS BY 2020**

-  **PRO-CONSUMER DISTRIBUTION FRAMEWORK FOR AFFORDABILITY, CHOICE AND TRANSPARENCY**
-  **STREAMLINING DOMESTIC POLICY TO CUT RED TAPE**
-  **DOE TO DELIVER ON PSALM PRIVATIZATION**
-  **PROMOTING EFFICIENT USE OF POWER AMONG CONSUMERS THROUGH AN IEC**



To establish a world-class, investment driven and efficient natural gas industry that makes natural gas as a bridge fuel by all end-use sectors



Development Plans and Programs

To increase the utilization of natural gas :

- **Expand Supply Source**

- intensifying exploration for indigenous gas deposits and studying options for economically using imported LNG

- **Market Development**

- vigorously promoting its use in the industrial, transportation, commercial and residential sectors

- **Develop Critical Infrastructures**

- that will efficiently deliver gas to the demand centers

- **Establish Public-Private Partnership**

- continue to encourage the private sector to assist government in developing the natural gas industry.

- **Capacity Building**

- develop skills and competencies to manage the industry



Development Plans and Programs

- ▶ Malampaya has six gas sales and purchase agreements
- ▶ Fuels 2,700 MW of power stations as baseload resources for the most part and additional 500+ MW operating as mid-merit and peaking plants and a refinery
- ▶ Inflexible output from Malampaya with an average production of 380 million standard cubic feet (mmscf) per day
- ▶ Given the production level and continuous drop in pressure, drop in supply is expected in 2022.

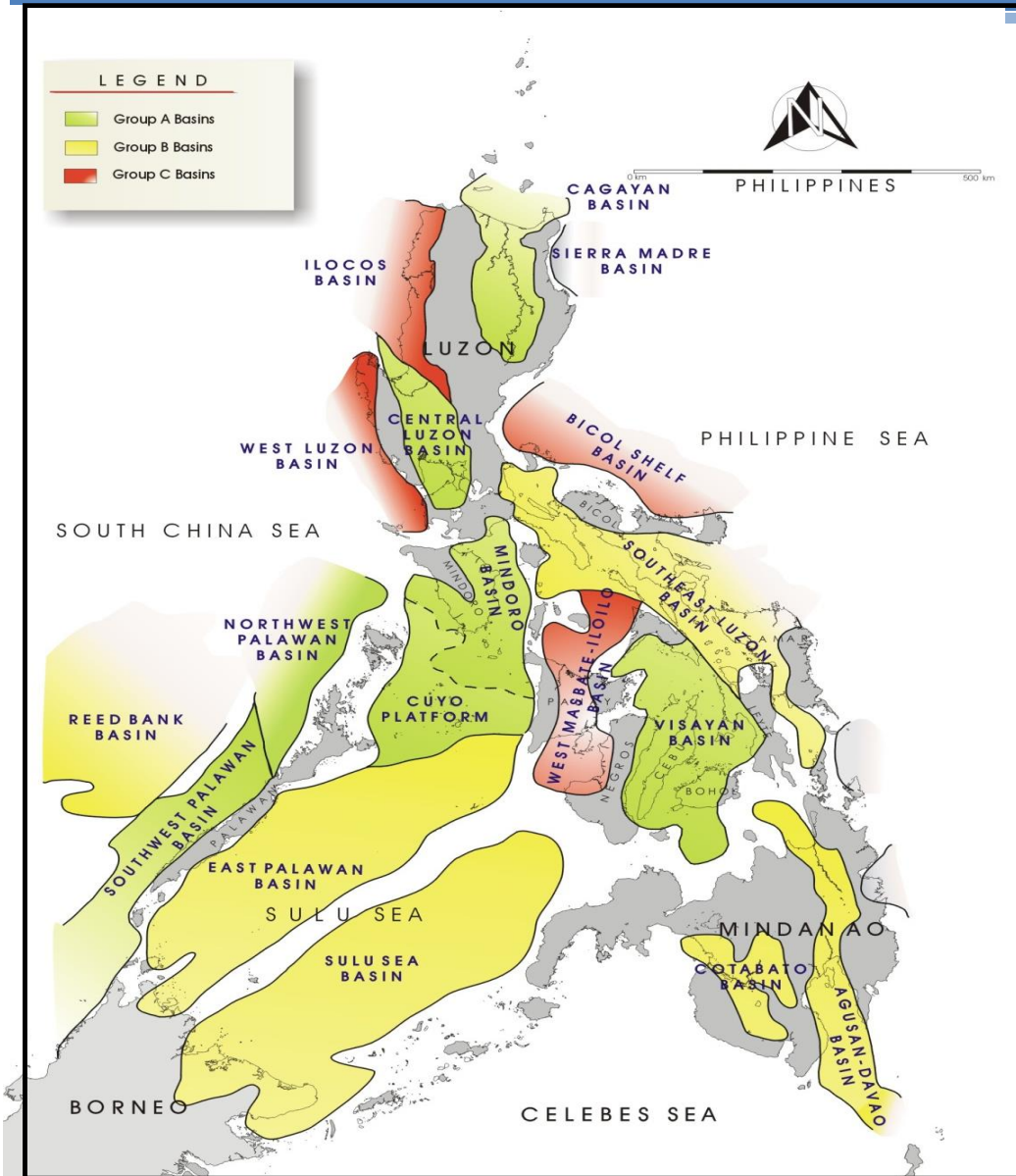


▶ Recoverable Reserve end of field life is 3.08 to 3.29 TCF

▶ The Malampaya concession expires in 2024 and while it may have enough gas for some further expansion, this is not considered sufficient for more than about 5 years to provide the future natural gas requirements particularly on the plan to expand the application of natural gas in industrial, commercial, residential and transport sectors.



Development Plans and Programs



PETROLEUM BASIN PROSPECTIVITY MAP

Most Prospective Basins

1. NW Palawan Basin
2. SW Palawan Basin
3. Sulu Sea Basin
4. Cagayan Basin
5. Visayan Basin
6. Central Luzon Basin
7. Mindoro-Cuyo Platform

Prospective Basins

1. East Palawan Basin
2. Reed Bank Basin
3. SE Luzon Basin
4. Agusan-Davao Basin
5. Cotabato Basin

Frontier Basins

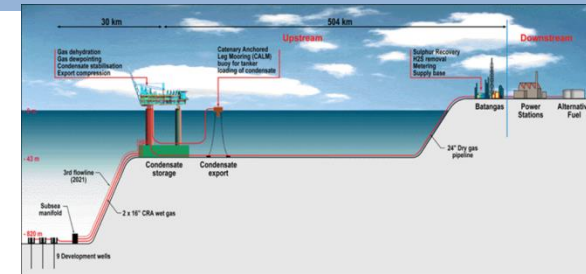
1. West Luzon Basin
2. West Masbate-Iloilo Basin
3. Ilocos Basin
4. Bicol Shelf Basin



Development Plans and Programs

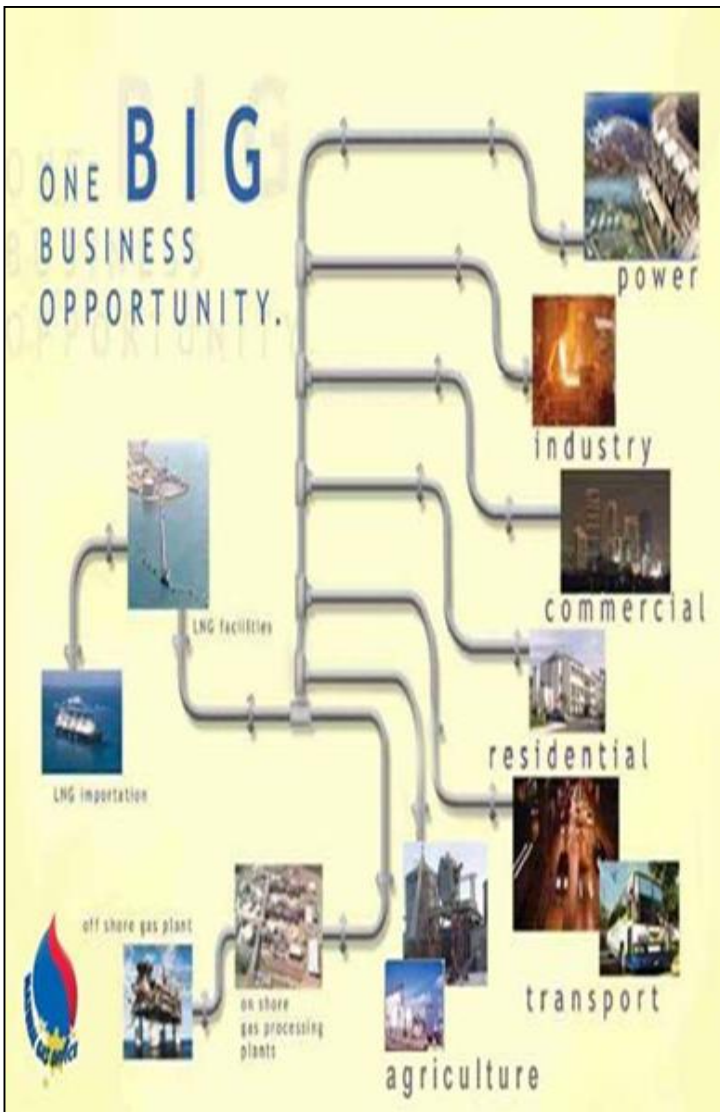
- ▶ In the short term, there are not sufficient resources from Malampaya or other potential developments to justify new infrastructure development
- ▶ New gas might come from domestic resources, but the volumes and timing are unpredictable
- ▶ The only sure source of new gas in the medium term (through 2020) would be imported liquefied natural gas (LNG) to ensure supply security and sustainability of natural gas
- ▶ The Philippines today cannot access the LNG market: there are no existing or operational import facilities
- ▶ Much cheaper than oil, competitive with coal in the mid-cycle, and once import facilities are built, industrial, commercial, and transportation users can also gain access to gas

The commercialization challenge : develop a market for LNG that can justify the investment in the LNG importation facilities

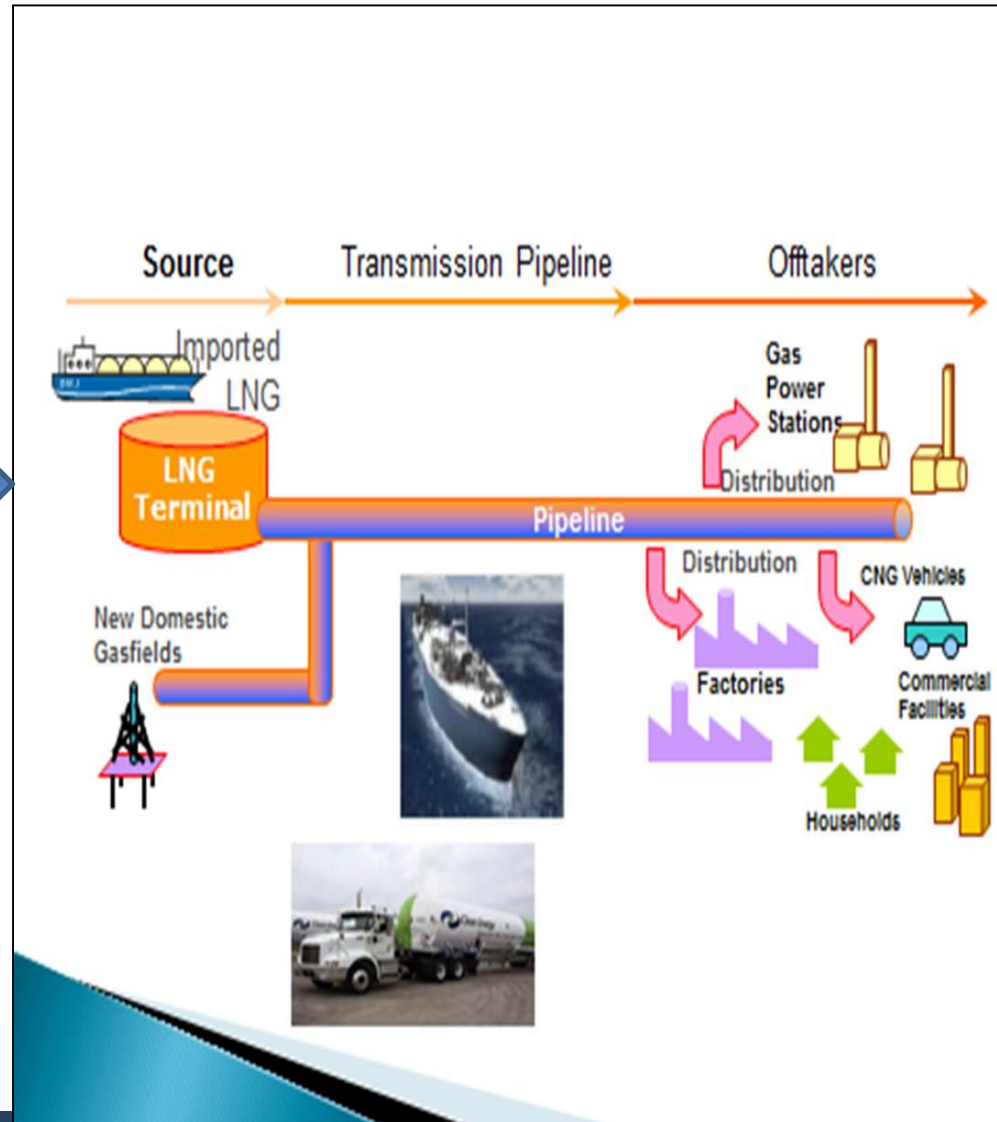


Development Plans and Programs

Potential Market for Natural Gas



Strategic Infrastructure in Luzon



Development Plans and Programs

Integrated LNG Terminal



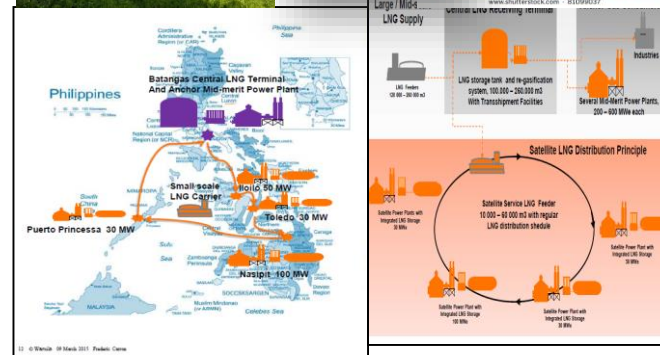
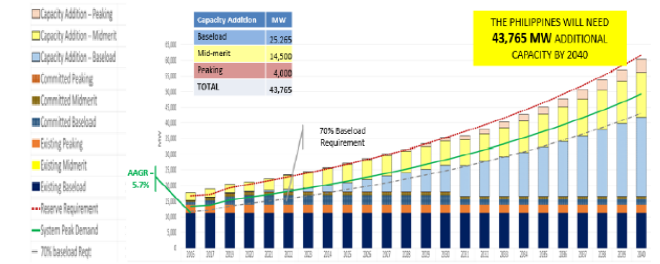
Project Cost: **PHP 100 billion**
Targeted Completion: **2020**

- Safeguard against the anticipated depletion of the Malampaya gas facility in 2024.
- Initial 200-MW power plant, storage facilities, liquefaction and regasification units.
- Output will serve PEZA areas.



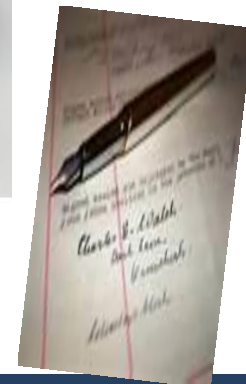
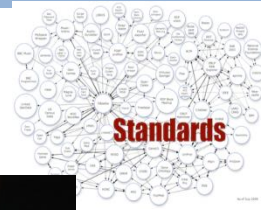
Opportunities for Investment

- Provides the natural gas requirement of the existing 3,427 MW gas fired plants when Malampaya runs down
- The Philippines will need 43,765 MW by 2040, 14,500 MW will be for mid-merit and 4,000 MW for peaking
- RE capacity is poised to increase from its 2010 level of 5,000 MW to 2030 level of 15,000 MW, due its intermittent nature, natural gas fired power plants can complement when these plants will not be running
- Additional potential demand of LNG will come from the off-grid or missionary islands by replacing the existing diesel-fired power plants with natural gas.
- LNG will primarily be consumed in the power sector, but will soon cover non-power applications such as in the industrial processes, transportation, commercial and residential sectors



Development Initiatives

- Natural Gas Quality Standard
- Creation of Inter-Agency Health, Safety, Security Environment (HSSE) Inspection Team
- Organized the Natural Gas Coalition Group
- DOE Circular No. DC2017-11-0012 otherwise known as Rules and Regulations Governing the Philippine Downstream Natural Gas Industry was signed on November 28, 2017



Challenges in the Development Plans

- Limited supply of Natural Gas
- Power generation sector remains to be the main driver to natural gas industry development
- Lack of Available Natural Gas Infrastructure Network
- Absence of Natural Gas Law
- Lack of Gas Related Policy and Legislative framework
- Shortcomings of current Regulatory framework
- Lack of Local Industry Standards
- Capacity build-up for the DOE and the natural gas industry



Thank You !



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