Transforming energy & minerals into an engine for growth

Managing challenges into opportunities

January 2015
Energy Challenges in Numbers

- 246 trillion IDR spent on fuel and LPG subsidies; worst placed among oil importing countries
- 103 trillion IDR spent on electricity subsidies
- 50% Fuel and diesel from importation
- 10 trillion IDR losses annually from refineries activity
- 18 Days fuel storage capacity to supply domestic consumption
- 35% National power deficit
Challenges in Managing National Energy Policies

Current Condition

- Pronounced Energy Needs: 1.050,3 Million BOE (50% Fuel imported)
- Access to energy still limited: Electricity Ratio (84,12%)
- Crude oil dominated energy mix:
  - Oil (41%)
  - Coal (29%)
  - Gas (24%)
  - NRE (6%)
- Unavailable Buffer reserve:
  - operational reserve 21 days
  - Poor Refineries reliability
- Uneconomical Pricing system (significant energy subsidies)
- Declining fossil energy reserve:
  - Coal: 28,9 Billion Ton
  - Crude Oil: 7,4 Billion Barrel
  - Nat. Gas: 150,7 TSCF

National Energy Policy

NATIONAL ENERGY SOVEREIGNITY
Energy & Minerals will be Indonesia’s “Engine for Growth”

Fair, Reliable and Sustainable **Energy** as an Engine for Growth

Value creation from **Mineral Resources**

**Can Do**
Decisive and execution-oriented public services

**Clean**
Clean and transparent services for industry & people

**Country Building**
Growing Indonesia’s capability & technology

**Competitive**
Economically sound-based pricing

Create **1 to 2 million** additional jobs
Total investment of **IDR 2400 trillion** over next 5 years
ESTIMATED INVESTMENT FROM MEMR SECTOR: ~ IDR 2400 Trillion for next 5 years

Together with Power, Oil & Gas sector will becomes leading powerhouse for investment

- **Upstream Oil & Gas**: Exploration and Commercial Working Area Investment: Rp 825 Trillion

- **Oil & Gas Refining**: To 363 Trillion (Pertamina Refineries Rp 220 Trillion, PPP Refineries Rp 143 Trillion)

- **Midstream Gas Infrastructure**: Rp 99 trillion (Regas 2500 mmscf/d, 1500 km transmission, 4-5 mini-LNG, 25 LNG ships)

- **Marketing & Distribution**: Rp 38.5 Trillion (Rp 16.5 Trillion for 3 Million kL fuel storage, Rp 22 Trillion tanker)

- **Power**: Rp 935 Trillion (35 GW power generation, transmission and distribution)

- **Mineral & Coal**: Rp 110 Trillion

- **Geothermal**: Rp 22 Trillion (1 GW generation and development new exploration area)
Develop a **Performance Management Unit (PMU)** to Improve Fast and Innovative **Regulation**, **Public Services** and **Projects Delivery**

October 2014

November 2014

**Operasional** by 01 Des 2014
Oil & Gas
- Organizational Refreshment DG O&G and SKK Migas
- Formation of Oil & Gas Management Reform Team
- Sanction of near expire WA (Pase, Kampar, Gebang, ONWJ, and Mahakam) → 30 WA in 10 years
- “Oil and Gas Leaders Meeting” (19 – 20 Dec 2014)
- (Automatic) Termination on 41 uncommitted WA (As per contract)

Electricity
- “Power Leaders Meeting” (12 – 13 Jan 2015)
- Implementation of One Stop Permitting Service (PTSP) on Power sector
- Formation of Oversight Unit for Development of National Electricity Sector (UP3KN)

Mineral & Coal
- Simplifying permitting process on Mineral and Coal sector (from 56 permits to 18 permits)
- “Mineral and Coal Leaders Meeting” (10 Jan 2015)

New & Renewables Energy
- Development of NRE Infrastructure at borderline regions and outer islands
- Mandatory Biofuel implementation: Biodiesel (10%) by 2014 and Bioethanol (1%) by 2015

Regulation & Governance
- Gratification Oversight and Whistleblowing System at MEMR
- Formation of “War Room” KESDM under Performance Management Unit
- Initiation of SOP for every category of permitting and standardization of Ministerial approval
Breaking Coordination issues among The Oil & Gas Sector

“1st OIL & GAS LEADERS FORUM”
and other sectors too …

Key Results of leader Forum:
• 16 strategic issues of oil and gas,
• 6 strategic issues of Minerals and coal
• 19 strategic issues of power
• Agreed on next action plan within 3 months ahead.
Oil & Gas Leaders Charter

1) Result oriented yg mengu
2) Open-minded JUZUR
3) BERETIKA SALING
4) EMPATI PERCAYA
5) KOMUNIKASI YANG
   POSITIF INTERAKTIF (ENGAGE)
Resolution for Permitting Process on Gas Allocation and Price

Gas Delivery Steps to End User

1. Buyer Apply to SKKM for gas allocation
2. SKKM proposed gas allocation to DJOG
3. Through DGOG, MEMR provide permit to allocate the gas to the buyer
4. Gas seller appointment by SKKM
5. B2B Negotiation between buyer and seller
6. MEMR provide permit on agreed gas price through DGOG
7. Signing Gas Sales Agreement (GSA)
8. Gas Infrastructure development, and gas transfer to buyer

Outcomes:
1. Stage 3 and 5 decided within the gas committee;
2. Standardized permitting process
Oil & Gas as MEMR’s sub-sector

Complicated in nature …
### National Midterm Plan (RPJMN) 2014 – 2019 on Energy

#### Indicators

<table>
<thead>
<tr>
<th>Indicators</th>
<th>2014 (Baseline)</th>
<th>2019 (RPJMN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increasing the Production of Energy Resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Crude Oil (thousand BOPD)</td>
<td>798</td>
<td>700</td>
</tr>
<tr>
<td>- Gas (thousand BOEPD)</td>
<td>1,213</td>
<td>1,295</td>
</tr>
<tr>
<td>- Coal (Million Ton)</td>
<td>435</td>
<td>442</td>
</tr>
<tr>
<td>Domestic Utilization (DMO):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Natural Gas</td>
<td>53%</td>
<td>64%</td>
</tr>
<tr>
<td>- Coal</td>
<td>17%</td>
<td>32%</td>
</tr>
<tr>
<td>Onshore Regasification (unit)</td>
<td>-</td>
<td>6*</td>
</tr>
<tr>
<td>FSRU Development (unit)</td>
<td>2</td>
<td>3*</td>
</tr>
<tr>
<td>Gas pipe network (km)</td>
<td>11,960</td>
<td>6,378*</td>
</tr>
<tr>
<td>Gas Station (SPBG) Development (unit)</td>
<td>62</td>
<td>118*</td>
</tr>
<tr>
<td>Household gas network (conections)</td>
<td>180 ribu</td>
<td>1 jt*</td>
</tr>
<tr>
<td>New Refinery Development (unit)</td>
<td>-</td>
<td>1*</td>
</tr>
<tr>
<td>Electrification Ratio</td>
<td>84.12%</td>
<td>100%</td>
</tr>
</tbody>
</table>

* Additional number 5 years cumulative
We need to bring Indonesia back on the Oil & Gas map

Indonesia’s Oil & Gas production has been declining

**Oil production**
- Thousand barrels/day
- 944 in 2004
- 827 in 2009
- 791 in 2014
- Declining at a rate of -2% p.a.

**Gas production**
- Mmscfd
- 9,336 in 2010
- 6,897 in 2014
- Declining at a rate of -7% p.a.

**Future Actions**

1. Clarify future of expiring PSCs and encourage investment (>50% production at risk)

2. Introduce new PSC regimes customized for hard hydrocarbons - Enhanced Oil Recovery, exploration of risky areas

3. Transform SKK MIGAS into a catalyst for growth: from administrative burden to visionary enabler

4. Build Oil & Gas services hub in Indonesia, including R&D centers and move from a “customer” to a “partner” of international companies

5. Transform Pertamina and position it to be Indonesia’s Oil & Gas leader
Indonesia needs to act on an integrated gas blueprint

There are regional pockets of surpluses and deficits in gas across Indonesia…

Rollout CNG network

Create a unified gas infrastructure including re-gas capacity and transmission & distribution pipelines

Monetize flare gas

…creating increase in imported LNG in regions such as West Java

Need 2500 mmscfd import capacity

100% LNG

Piped Gas

2015 2025

West Indonesia

East Indonesia

Gas Balance

2015 2025

43 60

57 40

2015 2025

43 60
Gas Infrastructure

The view of Gas Infrastructure in the next 15 years

- Existing Gas Infrastructure
- Floating system for East
- Pipe grid system for West
## State Budget Plan for 2015

### Description

<table>
<thead>
<tr>
<th>Oil and Gas Supply and Conversion Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Kerosene to LPG Conversion (2,050,000 packages)</td>
</tr>
<tr>
<td>• <em>Pilot Project</em> Liquid Fuel to Gas Konversi for fisherman (50,000 packages)</td>
</tr>
<tr>
<td>• Development of Gas Transport Infrastructure (6 SPBG Online; 6 SPBG Mother Station; 5 SPBG Daughter Station; 2 Mobile Refueling Unit; 8 Gas Transport Module; 2 SPBG Eco Station and 4 distribution pipeline)</td>
</tr>
<tr>
<td>• Development of LNG Plant - LCNG Station (1 Package)</td>
</tr>
</tbody>
</table>

### Power Management Program

<table>
<thead>
<tr>
<th>Power Management Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Development of 718,40 kms Distribution Network, 14,75 MVA Sub-stations, 28,066 Connections for Fisherman and the poor</td>
</tr>
<tr>
<td>• Development of 47 locations Hybrid Diesel Power Plant for remote and outer island with total capacity of 59,35 MW</td>
</tr>
</tbody>
</table>
Indonesia’s power sector needs dramatic growth in the next 5 years …

1. Transform PLN to reduce costs, improve customer service and build leadership

2. Reform tariffs through tiering and fuel cost pass through

3. Debottleneck investment in power generation and transmission by streamlining permitting, clarifying government roles & providing support on land

4. Invest in geothermal

- ~35 Giga Watt New capacity
- 40,000 Km of new cables
- 13 million New customers
- 430 New power plants

35% deficit in generation
35.000 MW Power Generation Plan

13 GW comes from gas power plant …

Sumber: RUPTL 2015-2024 PT PLN, dapat diunduh di www.pln.co.id

Catatan:
- Jenis dan kapasitas pembangkit listrik di atas merupakan indikasi awal. Lingkup untuk keperluan pengadaan akan dituangkan dalam dokumen pelelangan yang akan disiapkan oleh PT PLN (Persero). Data dalam peta ini tidak dapat digunakan untuk menentukan PT PLN (Persero) untuk menjalankan pengadaan sesuai daftar di atas.
- Selain daftar pembangkit ini PT PLN (Persero) juga menyediakan penyediaan pembangkit listrik untuk pulau-pulau kecil, pulau-pulau terdepan, wilayah terpencil dan wilayah perbatasan.
Indonesia needs to invest in refining to meet domestic demand

Indonesia makes losses on refining due to structural reasons

<table>
<thead>
<tr>
<th>Nelson’s Complexity Index</th>
<th>Chevron</th>
<th>BP</th>
<th>Exxon</th>
<th>Shell</th>
<th>Pertamina</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9.5</td>
<td>8.4</td>
<td>8.3</td>
<td>7.5</td>
<td>8.5</td>
</tr>
</tbody>
</table>

Upgrade existing refineries through Refinery Development Master Plan to double capacity to 1.7 million barrels/day with an investment of IDR 240 trillion

Build new Grass Root Refinery of 300 thousand barrels/day capacity at a cost of IDR 160 trillion

Pursue refinery-petchem integration to create jobs and value-added products

Develop storage and distribution infrastructure (~3 million kL of storage to meet growing domestic demand)

- 10 trillion IDR refining losses incurred per annum in the last 4 years
- 50% of gasoline and diesel demand imported
- 30% of Petchem demand imported
- 600 trillion IDR spent on imports every year
We will create an energy ecosystem in Indonesia

- Build world class oil & gas hub to benefit from strategic location
- Attract world-class companies to set up R&D hubs and operating bases, moving from a customer to a partner
- Develop capability in new technologies such as Enhanced Oil Recovery, Coal Bed Methane and Geothermal
- Grow local talent through technology transfer, world class education and international expertise
Ideas for ensuring fair, reliable & sustainable energy for growth (1/2)

ESDM will lead initiatives in the areas of regulation & permits, pricing, investments and contracting

**Oil & Gas production**
- Clarify the future of **expiring PSCs** (>50% production at risk, declining at 10x non-PSC rate)
- Customize PSC regime to incentivize “hard” hydrocarbons
- **Transform SKK Migas** into a catalyst for growth
- Build oil & gas services hub
- **Transform Pertamina** into Indonesia’s oil & gas leader

**Refining**
- **Upgrade existing refineries** (IDR 240 trillion for 780 thousand barrels/day)
- **Invest in Grass Root Refinery** (IDR 160 trillion for 300 thousand barrels/day)
- Pursue **refinery – petchem integration** to create jobs & value-added products

**Fuel distribution**
- Adopt **economic pricing** for fuels
- Expand shipping fleet by investing IDR 25 trillion
- Add **storage capacity** of 3 million kilo liters to support growth
- Build **strategic storage hub** for supply security and price flexibility
### Ideas for ensuring fair, reliable & sustainable energy for growth (2/2)

MEMR will lead initiatives in the areas of regulation & permits, pricing, investments and contracting

<table>
<thead>
<tr>
<th>Gas infrastructure</th>
<th>Power</th>
<th>Renewables</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Rollout CNG network</td>
<td>▪ Transform PLN</td>
<td>▪ Provide tariff support to accelerate geothermal</td>
</tr>
<tr>
<td>▪ Build re-gas, transmission and distribution infrastructure 2,500 mmscfd re-gas, 1,500 km pipelines</td>
<td>▪ Reform tariffs through tiering and fuel cost pass through</td>
<td>▪ Exploit solar potential through technology improvements</td>
</tr>
<tr>
<td>▪ Monetize flare gas (spreaded with &gt;200 mmscfd)</td>
<td>▪ Debottleneck investment in power generation and transmission capacity (430 new power plants for 35 GW additional capacity at IDR 630 trillion)</td>
<td>▪ Increase biofuel penetration &amp; use of biomass for power</td>
</tr>
<tr>
<td>▪ Accelerate mini-LNG</td>
<td></td>
<td>▪ Tap into mini-hydro</td>
</tr>
</tbody>
</table>
1. Oil & Gas Issues: Focus on Gas
   - **35 GW Power generation**: 13 GW is Gas base Power plant (estimate ~ 1200 MMSCFD)
   - **Oil Refining Revamp**: Refinery Development Master Plan (5 Refineries ~ 400 MMSCFD)
   - **Energy system efficiencies**: ~50 MMSCFD for Gas Network, ~30 MMSCFD Conversion Program on transport, ~80 mini LNG for power plant efficiency, etc.

2. Conclusion
   - **Demand in going to be more pronounced**: expected ~1800 MMSCFD from the MEMR national priorities within the next 5 years
   - **Other gas demand** from Fertilizer, Private Industries, Smelter need to be consider as well
   - **New and aggressive gas infrastructure development** is required:
     - Pipe lines networks, mobile as well as floating system especially in Eastern Indonesia
   - **Other types of energy sources will start to enter the market** and fulfill the gap
THANK YOU