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Electricity Situation in Indonesia

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EuroCham

Chemicals & Pharmaceuticals Working Group

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Today's Agenda

- Power Consumption**
- Fuel Mix**
- New Power Plants**
- Potential Energy Sources**



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Power Consumption



Electricity Overview

- ❑ Java-Madura-Bali has integrated grid, others still isolated
- ❑ 29,083 MW Capacity (2007):

| | | | | | |
|------------|-----------|-------|---------|-----------|-------|
| PLN | 24,417 MW | 88.5% | Jamali | 23,264 MW | 80.0% |
| IPP | 3,450 MW | 11.9% | Sumatra | 3,198 MW | 11.0% |
| Integrated | 746 MW | 2.6% | Other | 2,621 MW | 9.0% |

- ❑ Electricity demand growth rate forecast at 7.1% per year thru 2026
- ❑ Only 53% of total households have installed electricity



Electricity Consumption

| Region | | Unit | 2003 | 2004 | 2005 | 2006 | 2007 |
|-----------|-------------|------|------|------|------|------|------|
| Indonesia | Consumption | TWh | 90 | 99 | 107 | 113 | 122 |

| Region | | Unit | 2006 | 2010 | 2015 | 2020 | 2025 |
|---------------------------|-------------|------|------|------|------|------|------|
| Jawa-Madura-Bali (Jamali) | Consumption | TWh | 87 | 118 | 175 | 250 | 348 |
| | Peak Load | GW | 16 | 21 | 31 | 43 | 59 |
| Outside Jamali | Consumption | TWh | 24 | 34 | 50 | 72 | 102 |
| | Peak Load | GW | 5 | 7 | 11 | 15 | 21 |
| Indonesia | Consumption | TWh | 111 | 152 | 225 | 322 | 450 |
| | Peak Load | GW | 21 | 28 | 42 | 58 | 80 |



Energy Conservation SKB

- ❑ For 6-month trial period:
 - Non-24 hour manufacturing industry must move 1 day/week to Saturday or Sunday (eff. 14 July)
 - Hotels, malls and 24 hour industry must move 24 hours/month to backup gensets (eff. 25 August)
- ❑ These measures are not true conservation but cost-shifting
- ❑ Target to shift 350 MW of demand from weekday peak load to weekends
- ❑ Energy savings from Phase I claimed to have achieved 120 MW



Issues

- ❑ SKB is based on existing reserve margins of 1,000 MW/day on Saturday and 2,000 MW/day on Sunday
- ❑ Reserve margins have been too low for several years and are no longer being publicized
- ❑ How long will the SKB be kept in force?
- ❑ Scheduled outages are an interesting PLN tactic



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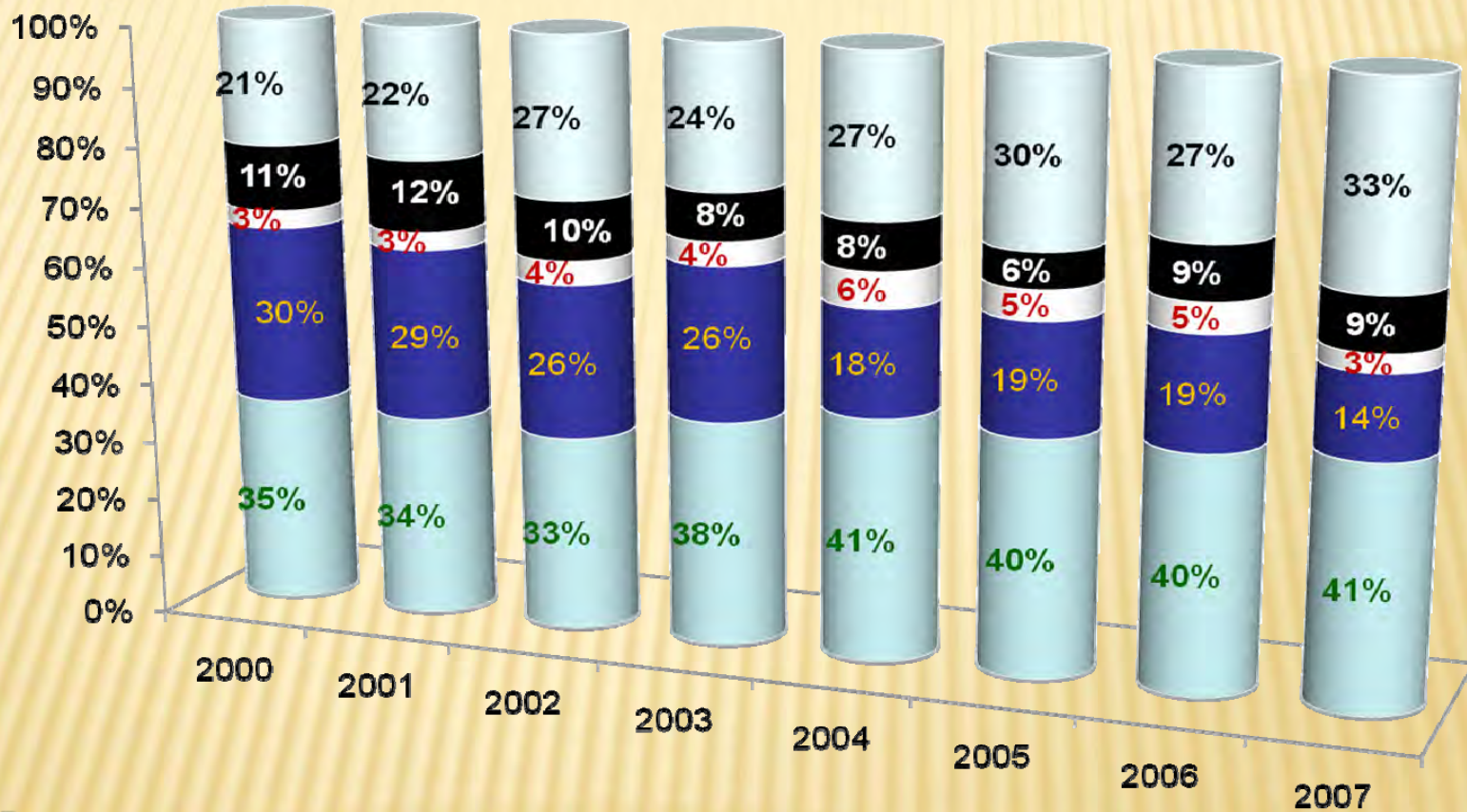
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Fuel Mix



PLN Energy Mix



Oil Hydro Geothermal Gas Coal

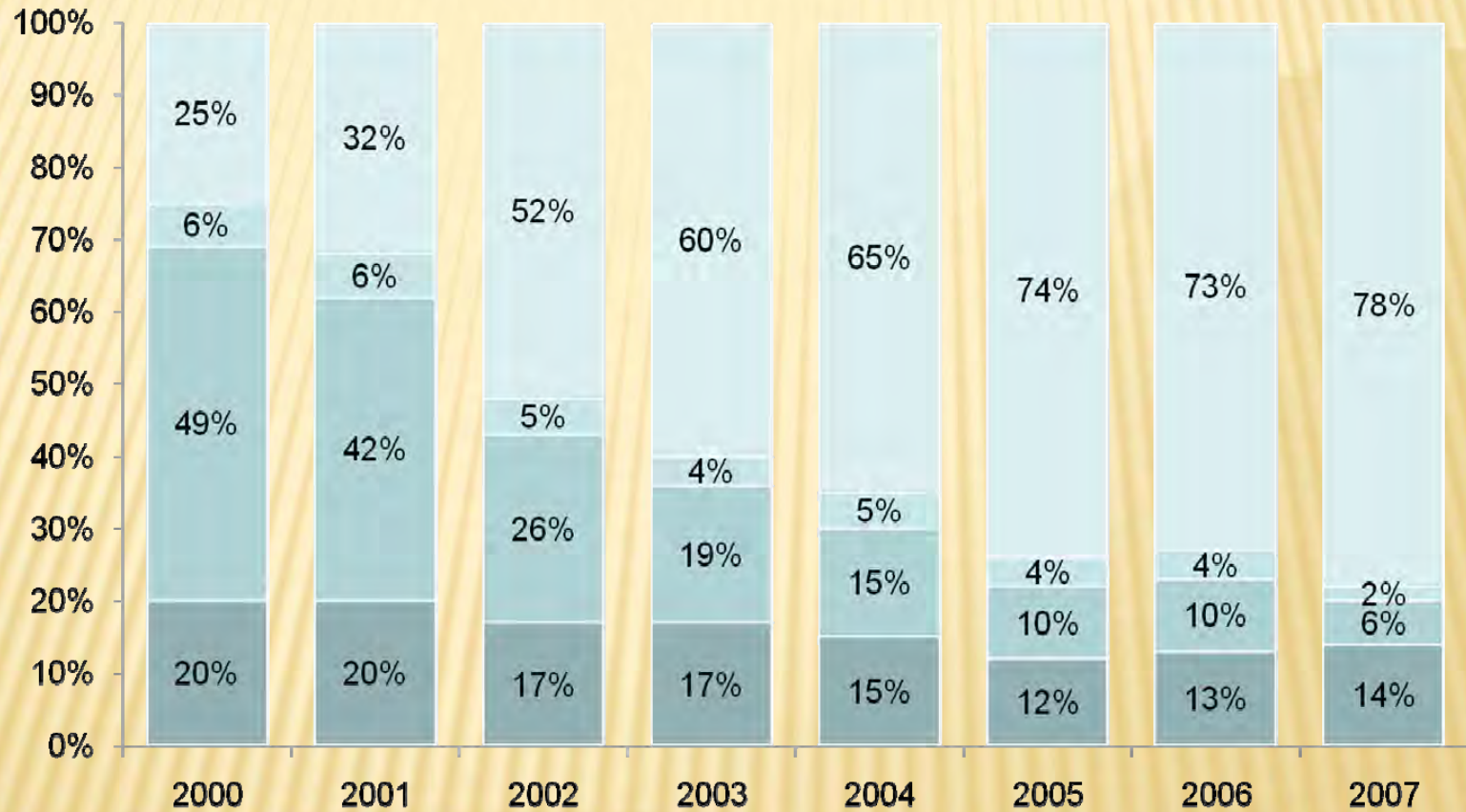


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Source : PLN

PLN Fuel Cost Mix



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■ Coal ■ Natural Gas ■ Geothermal ■ Oil

Source : PLN

PLN Fuel Consumption Forecast

| Fuel | Unit | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|-------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Oil | (MM kl) | 7,558 | 6,052 | 2,082 | 1,141 | 1,148 | 1,316 | 1,229 | 1,283 | 2,108 |
| Coal | (MM ton) | 24,079 | 28,394 | 37,113 | 35,124 | 37,000 | 38,796 | 41,709 | 43,391 | 48,958 |
| Geo-thermal | (GWh) | 3,258 | 3,119 | 3,396 | 3,395 | 3,982 | 4,441 | 4,782 | 4,709 | 4,677 |
| Gas | (MM BTU) | 213 | 252 | 306 | 318 | 322 | 302 | 269 | 263 | 244 |
| Hydro | (GWh) | 8,760 | 8,761 | 8,762 | 8,763 | 8,764 | 8,765 | 8,766 | 8,767 | 8,768 |



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Issues

- ❑ PLN diesel/fuel oil costs alone now exceed total revenue
- ❑ HSD-fueled power costs 30¢/kWh for fuel alone
- ❑ Outlying PLN offices are refusing to turn on generators
- ❑ Diesel @ US\$1/liter = US\$27/MMBTU
- ❑ Electricity subsidy is the declared policy of RI
- ❑ Subsidy forecast at Rp.91 trillion for 2009
- ❑ President has decided no tariff hikes until 2010



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New Power Plants

PLN 10,000 MW Crash Program

- ❑ PLN reports US\$3 billion funding shortfall is now being addressed
- ❑ Spokesman claims 3 power plants totalling 1,000 MW will be on line by mid-2009
- ❑ All non-Java power plants are being de-prioritized

April 2008 Status:

- ❑ Operational: None
- ❑ Under Construction: 8 Power Plants
- ❑ Contract Finalization: 1 Power Plant
- ❑ Tender Process: 1 Power Plant
- ❑ Feasibility Study: 25 Power Plants

Source : BKPM



IPP Program Progress



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Issues

- ❑ PLN staffing is thin and IPP progress is bottlenecked
- ❑ Supply and demand forecasts tend to be overoptimistic
- ❑ Best case scenario, waiting list for new customers but scheduled outages in Java kept to a minimum
- ❑ Electricity is going up in price worldwide
- ❑ Construction costs are also skyrocketing – automatic escalation for PPA's and turnkey EPC contracts is under consideration
- ❑ Captive power will be reliable but unsubsidized





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Potential Energy Sources



Potential Energy Sources

| Fossil Energy | Total Reserve | Proven Reserve | Production | Supply |
|------------------|------------------|------------------|-----------------|----------|
| Crude Oil | 56.6 billion bbl | 8.4 billion bbl | 384 million bbl | 24 years |
| Gas | 334.5 TSCF | 165 TSCF | 2.79 TSCF | 59 years |
| Coal | 90.5 billion ton | 18.7 billion ton | 201 million ton | 93 years |
| Coal Bed Methane | 453 TSCF | – | – | – |

| Renewable Energy | Generating Potential | Installed Capacity |
|------------------|----------------------|--------------------|
| Hydro | 75,670 MW | 4,200 MW |
| Biomass | 49,810 MW | 300 MW |
| Geothermal | 27,000 MW | 1,052 MW |
| Wind | 9,290 MW | 0.5 MW |
| Mini/Micro Hydro | 450 MW | 84 MW |

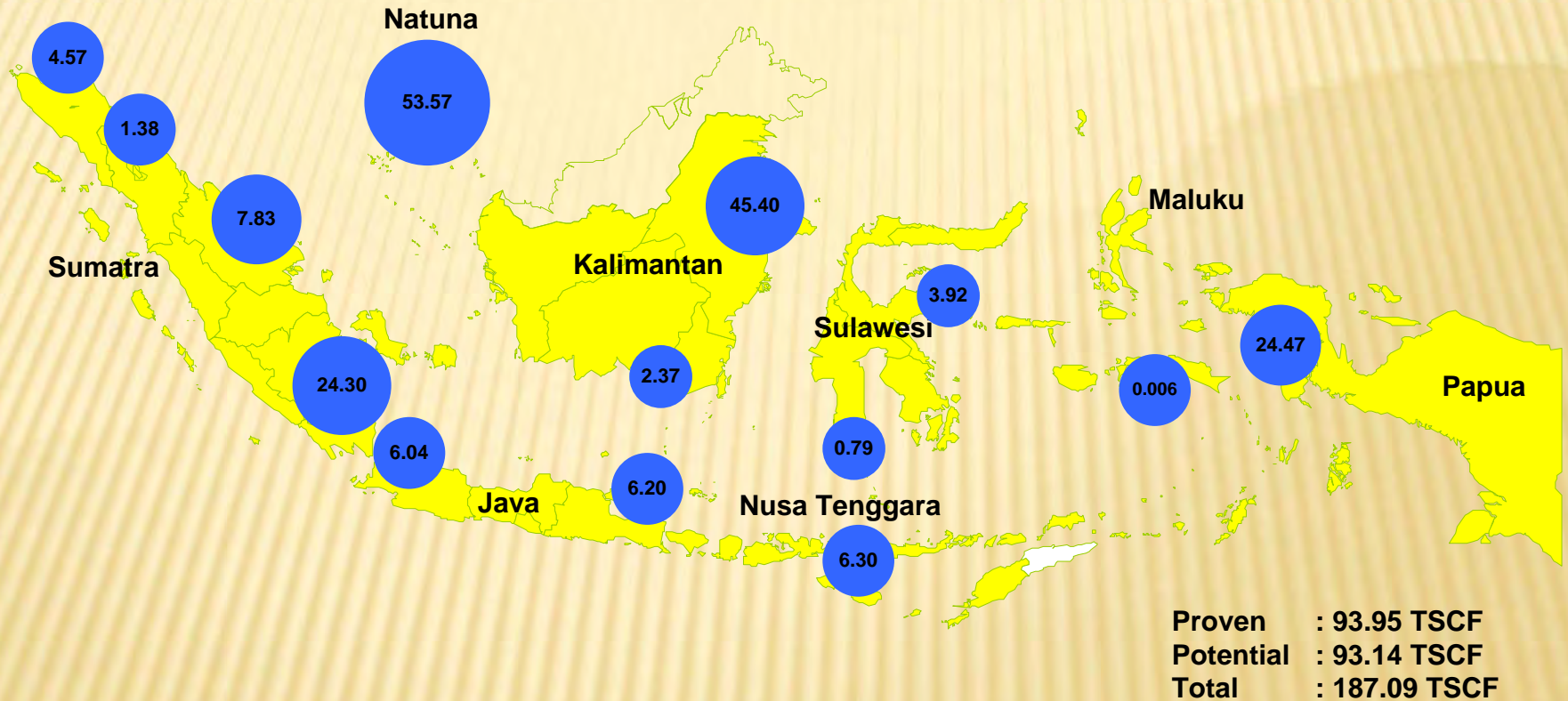


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Source : Department ESDM (2007)

Oil Reserves

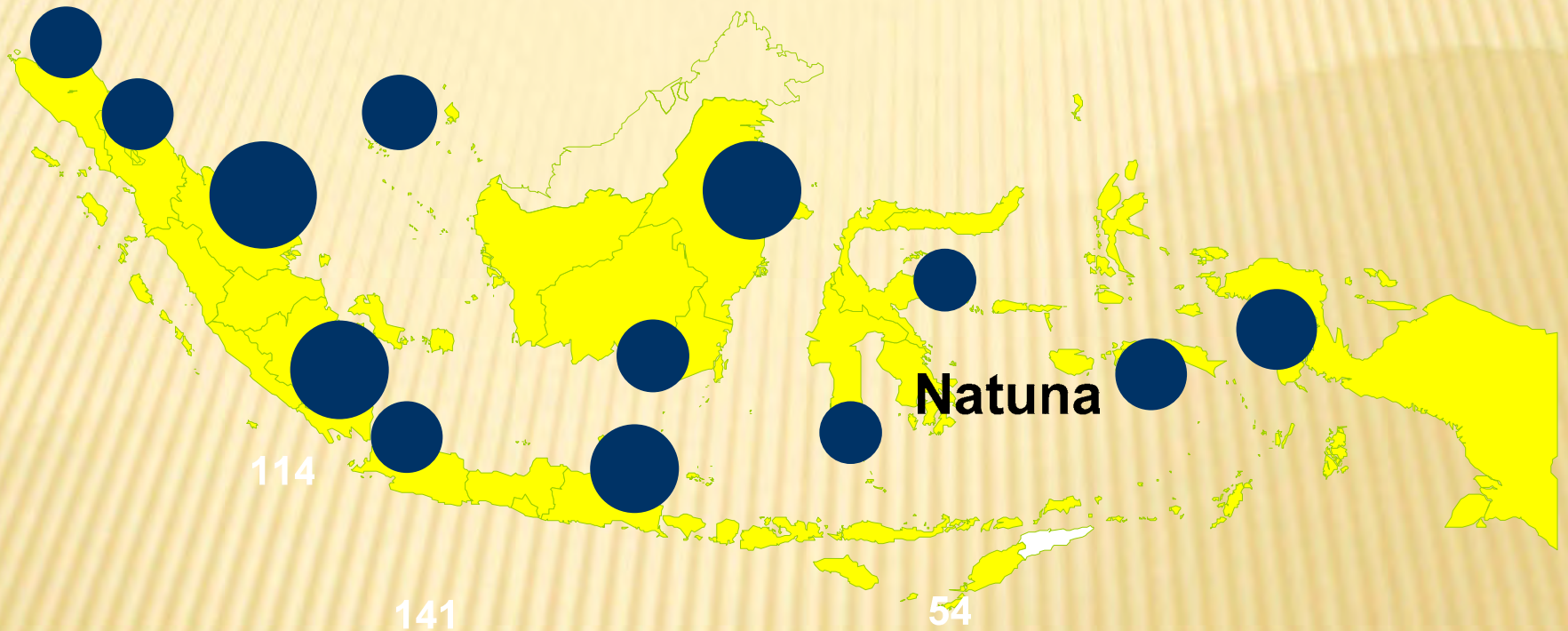


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Source : Department ESDM

Natural Gas Reserves



Coal and Coal Bed Methane



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Source : Department ESDM

Geothermal Sites



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Source : Department ESDM



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- Project Identification
- Financial Expertise
- Operational Expertise
- Policy Expertise
- Infrastructure
- Natural Resources
- Corporate M&A
- Project Management

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