

Meeting the energy challenge in the world's largest archipelago

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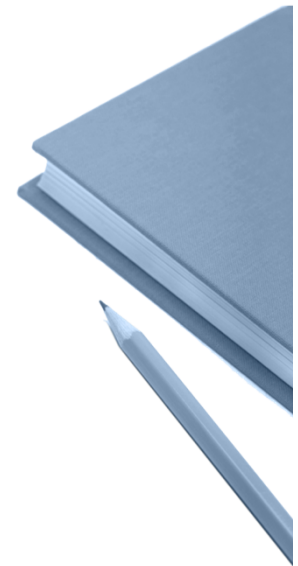
JCCP International Symposium presentation
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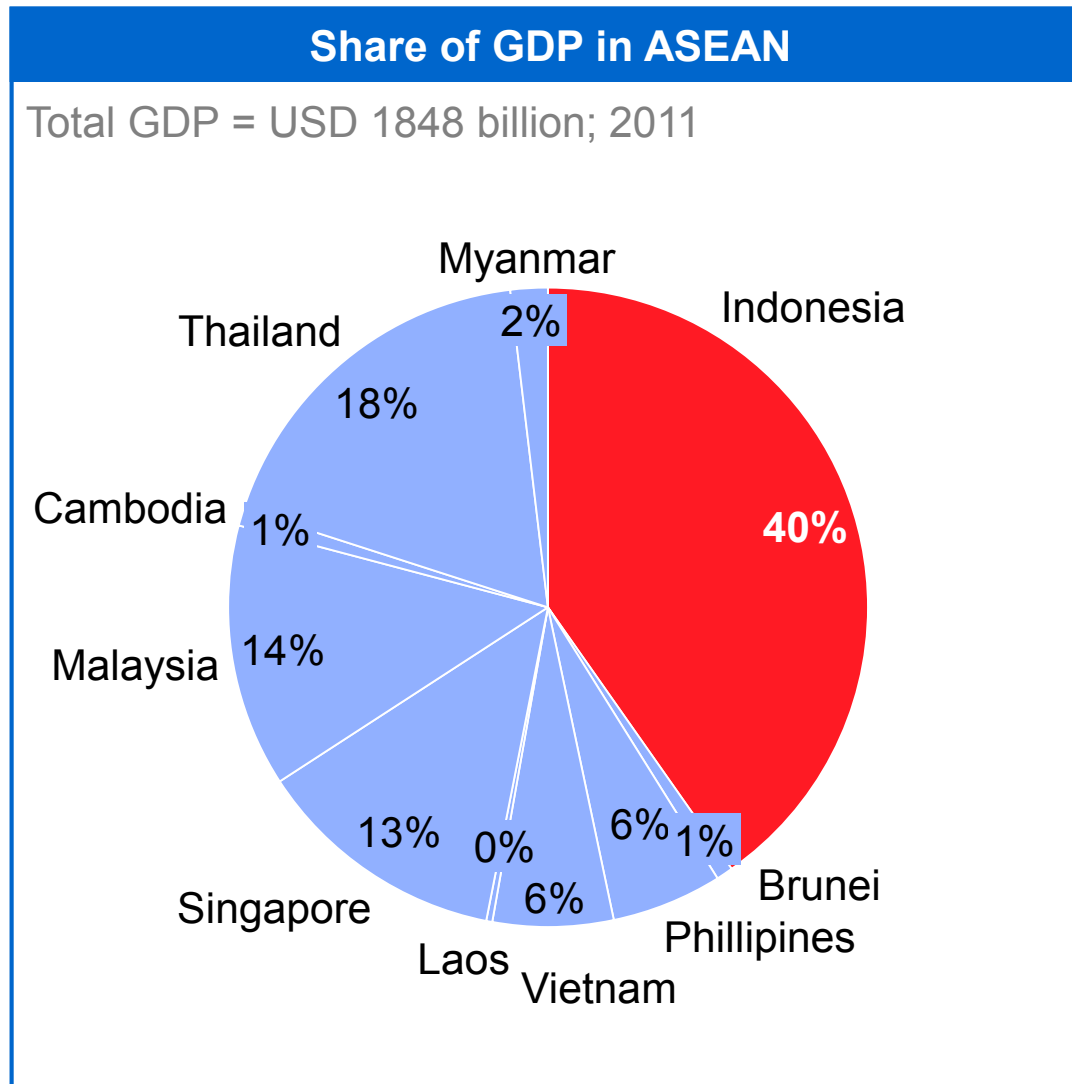
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Outline

- **Potential of Indonesia**
- **Pertamina corporate vision 2025**
- **Pertamina refining vision 2025**
- **Challenges faced by Pertamina**
- **Pertamina refining strategy**
 - Upgrading of current refinery
 - Building grass root refinery

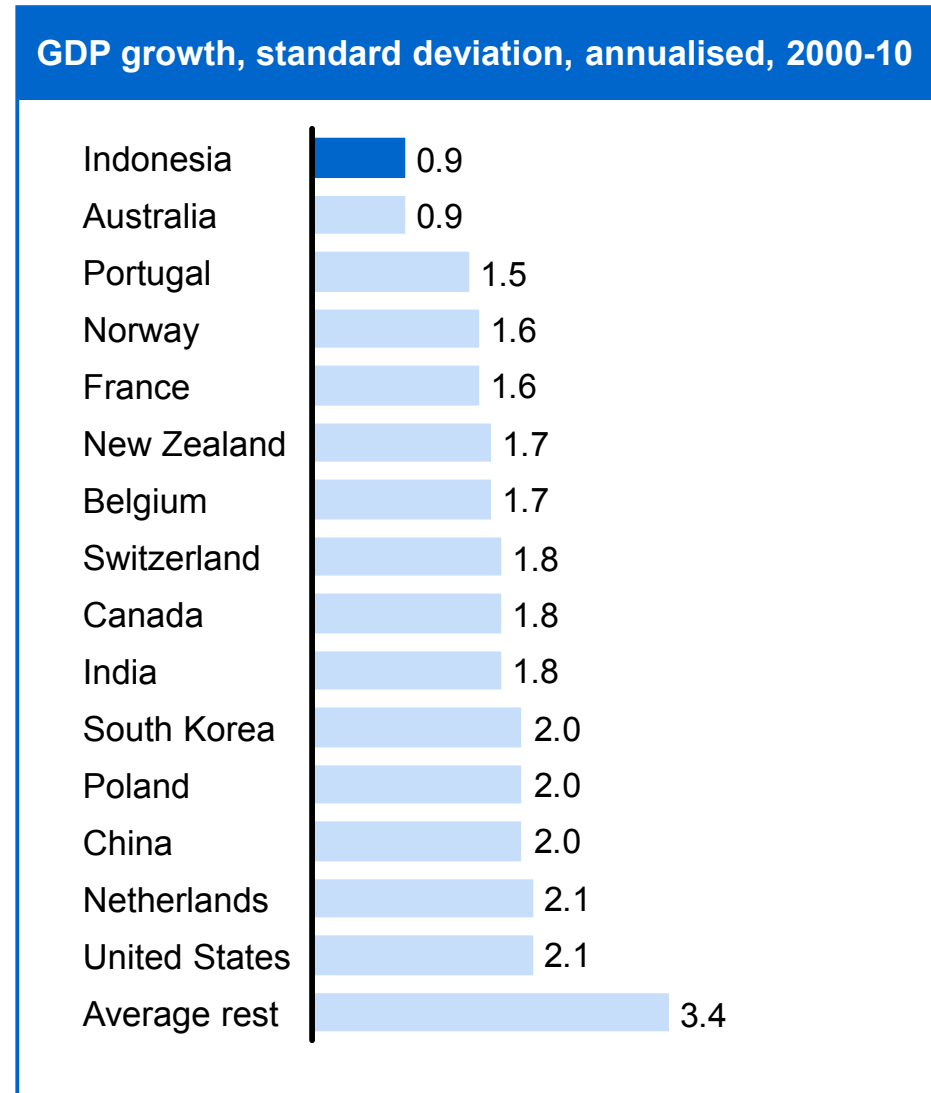
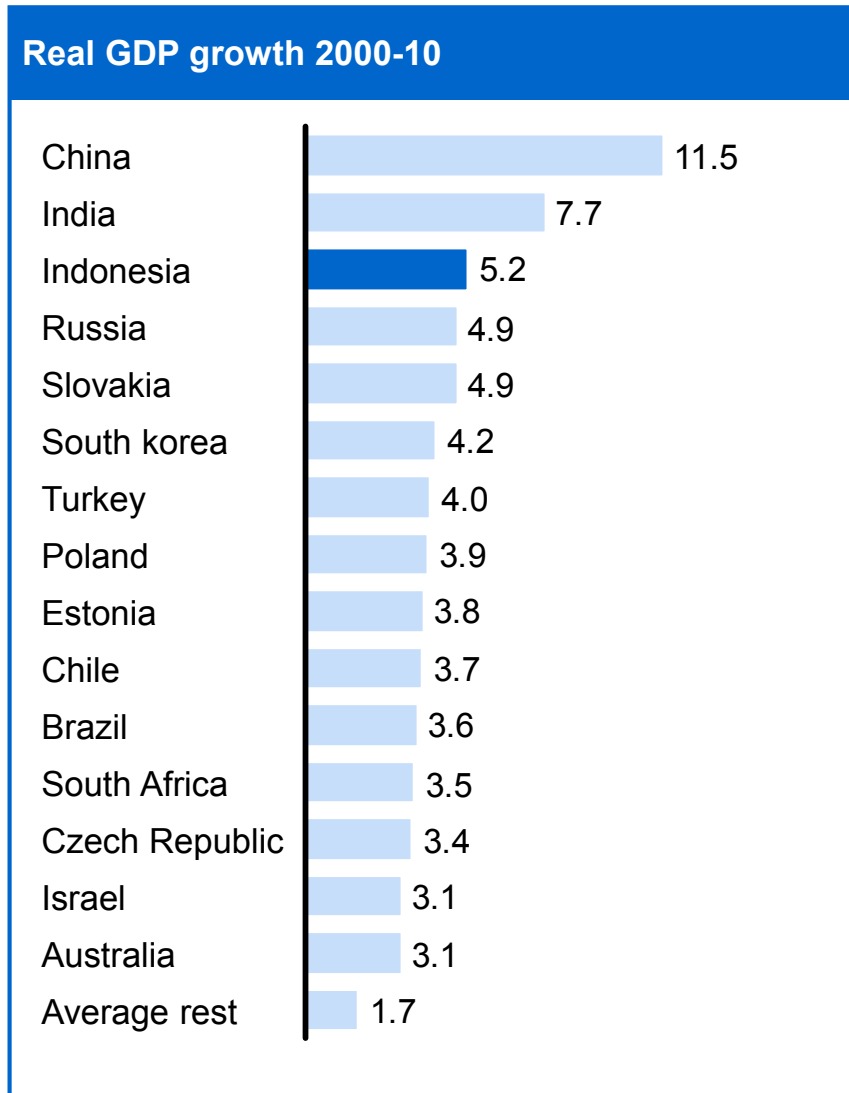


Indonesia is the largest economy in Southeast Asia...



...with one of the fastest stable growth in the world

Overview of OECD and BRIC plus South Africa
Percent



In 2050 Indonesia's GDP is projected to be higher than Germany and France

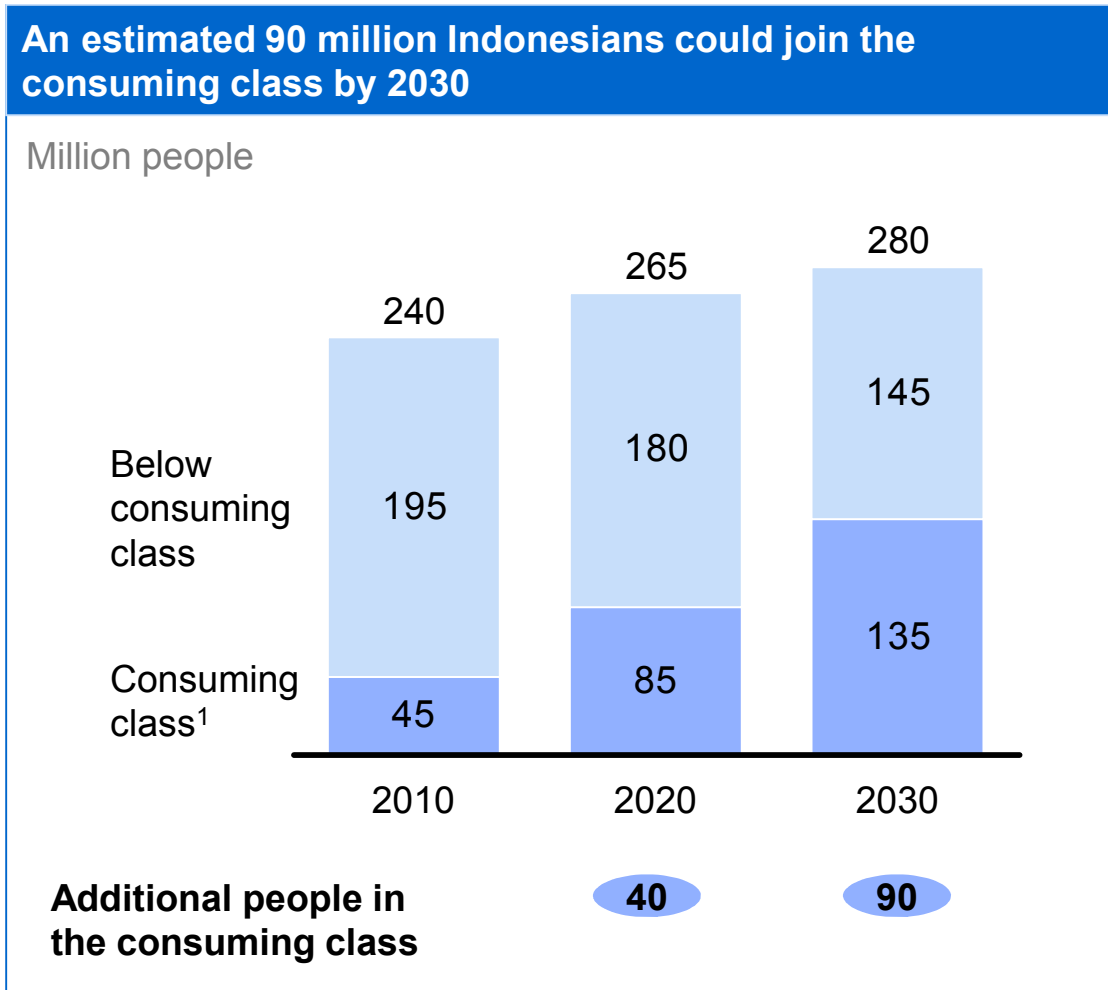
2011			2030		2050	
PPP rank	Country	GDP at PPP, 2011, \$ billion	Country	Projected GDP at PPP, 2011, \$ billion	Country	Projected GDP at PPP, 2011, \$ billion
1	U.S.	15,094			China	53,856
2	China	11,347	U.S.	23,376	U.S.	37,998
3	India	4,531	India	13,716	India	34,704
4	Japan	4,381	Japan	5,842	Brazil	8,825
5	Germany	3,221	Russia	5,308	Japan	8,065
6	Russia	3,031	Brazil	4,685	Russia	8,013
7	Brazil	2,305	Germany	4,118	Mexico	7,409
8	France	2,303	Mexico	3,662	Indonesia	6,345
9	U.K.	2,287	U.K.	3,499	Germany	5,822
10	Italy	1,979	France	3,427	France	5,714
11	Mexico	1,761	Indonesia	2,912	U.K.	5,598
12	Spain	1,512	Turkey	2,760	Turkey	5,032
13	South Korea	1,504	Italy	2,629	Nigeria	3,964
14	Canada	1,398	Korea	2,454	Italy	3,867
15	Turkey	1,243	Spain	2,327	Spain	3,612
16	Indonesia	1,131	Canada	2,148	Canada	3,549
17	Australia	893	Saudi Arabia	1,582	South Korea	3,545
18	Poland	813	Australia	1,535	Saudi Arabia	3,090
19	Argentina	720	Poland	1,415	Vietnam	2,715
20	Saudi Arabia	686	Argentina	1,407	Argentina	2,620

SOURCE: World bank estimates for 2011, PWC estimates for 2030 and 2050



PERTAMINA

Indonesia's strong economic growth is expected to continue, driven by the domestic consumer demand

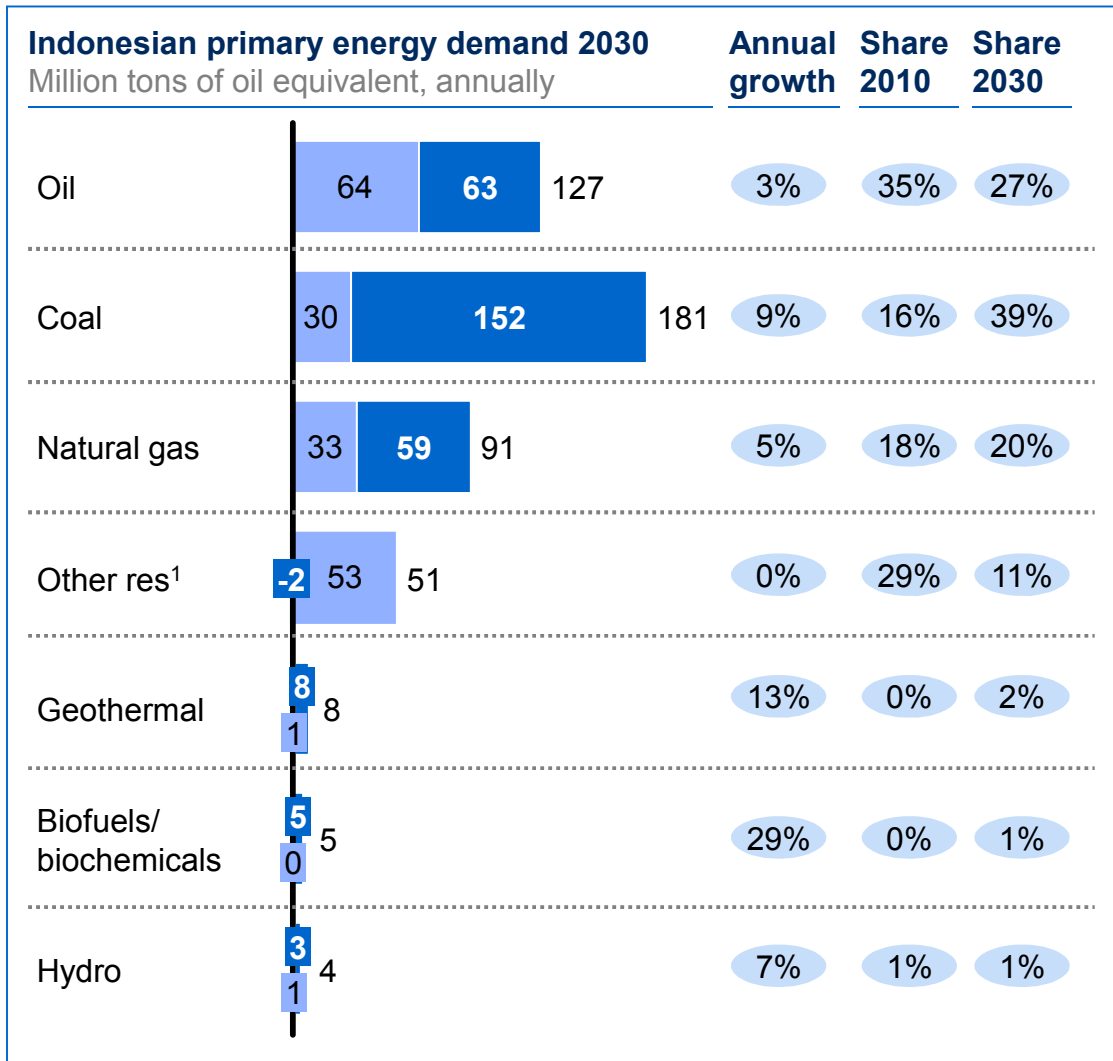


1 Consuming class defined as individuals with an annual net income of above 3,000 at 2005 purchasing power parity

2 Based on 5-6% GDP growth scenario

Energy demand is expected to grow in line with the economic growth

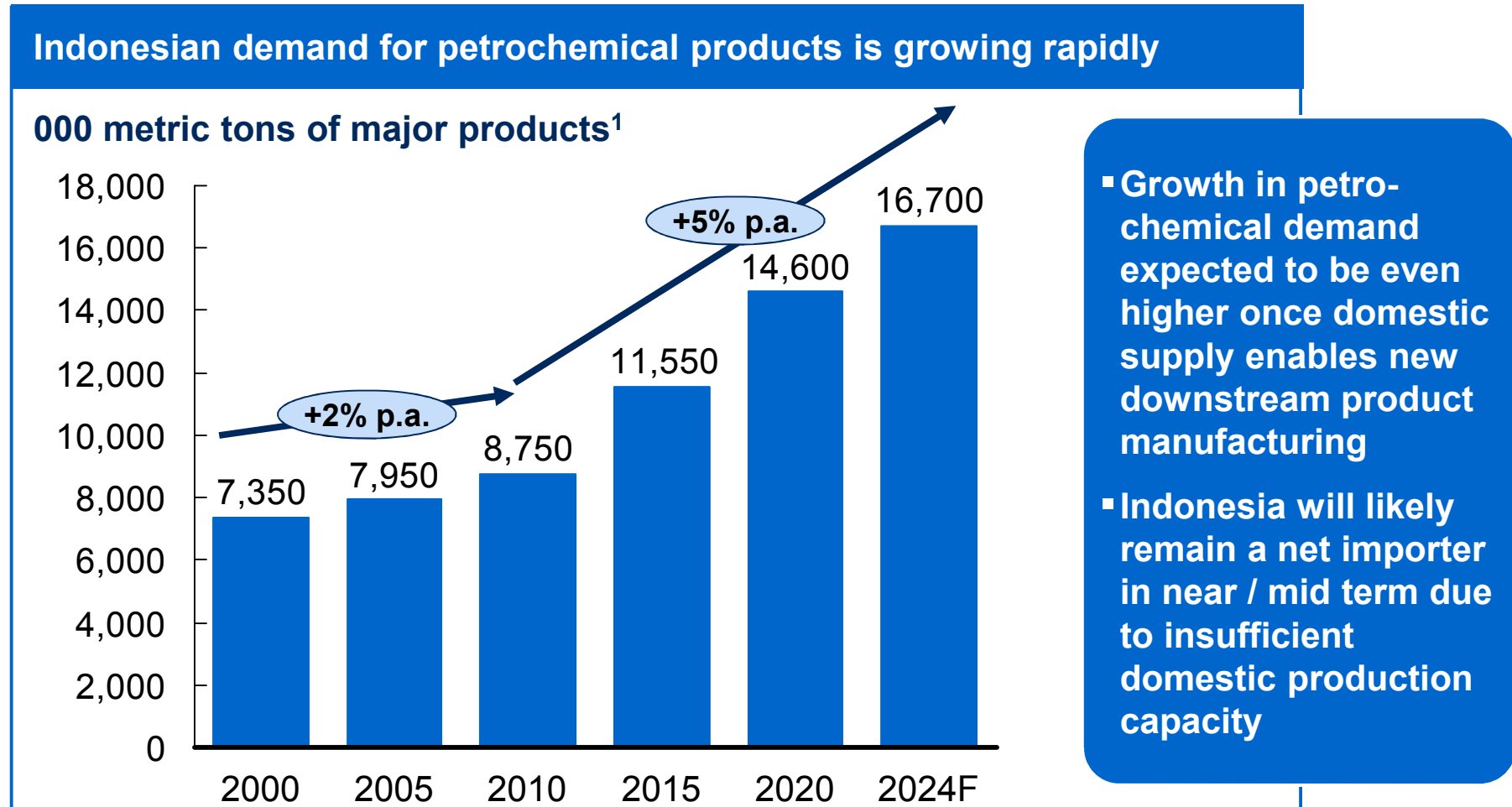
■ 2010
■ Growth 2010-30



- Oil will continue to be important energy source in Indonesia in 2030
- The value of Indonesia's energy market could increase from about \$80 billion today to around \$210 billion in 2030

1 Solar, wind, nuclear, fire wood, dung, biomass for power (rice residues, sugar, rubber, palm oil, agribusiness cogeneration).

Indonesia petrochemicals is also very attractive market with accelerating demand growth

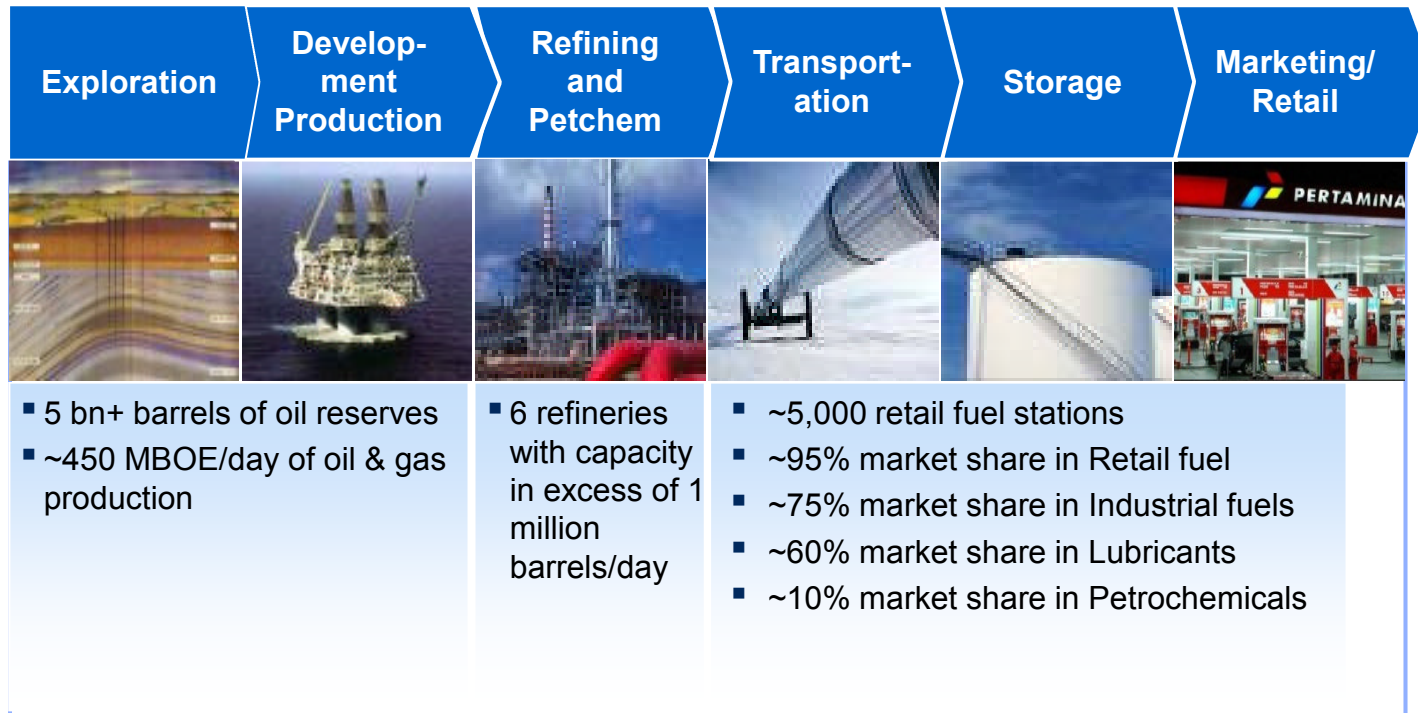


¹ Products include olefins, polyolefin derivatives, aromatics and butadiene derivatives

Pertamina is active in all segments of the value chain

Overview of PERTAMINA

- Largest company in Indonesia
- 2012 revenues of USD 80 bn
- 15,000 employees

- Pertamina is the sole refiner and major retailer of petroleum products in Indonesia
- One of Pertamina's mission is to meet Indonesia's petroleum and demand
- Opportunity to expand into petchem market

Pertamina's aspiration is to be a Fortune 100 "Asian Energy Champion" by 2025

**2025
aspiration**
Become an
"Asian Energy
Champion" by
2025

- Be a Fortune 100 company
- Revenue of approx. USD 200 billion
- EBITDA of ~USD 40 billion
- Integrated energy company (incl. CBM, geothermal, renewable)
- Leading domestic player as well as international footprint

Pertamina 2025 Asian Energy Championship aspiration

“Asian Energy Champion”
 ‘Fortune 100’ position (Revenue ~\$200b USD, EBITDA ~\$40b USD)

Leadership in existing core



E&P

Leading Asian NOC: 2.2 mmbopd production with domestic leadership (50%) and int'l foot-print (~30% of own prodn.)



Midstream gas

Integrated gas champion with trans-Sumatera and trans-Jawa gas infra-structure



Refining

Economically competitive refining capacity; Top quartile operating performance



Industrial fuels & lubes

Maintain position of strength with over 50% market share, while sustaining profitability



Trading

Optimize supply chain and improve profitability

Growth in new businesses



PetChem

Largest petchem player in Indonesia with 35% market share, high margins through integration



Coal

Leader in alternate technology (e.g. CBM, UCG) while maximizing coal production



Biofuels

Serving mandate of 20% blend; upstream presence to reduce losses and supply risk



Power

One of the largest Indonesian IPP player with ~ 3-5 GW capacity

Increase efficiency in PSO



Oil products

Maintain position of strength with 60% market share; new service model through “New pasti pas” and NFR



LPG

Optimize supply chain and infrastructure



Shipping

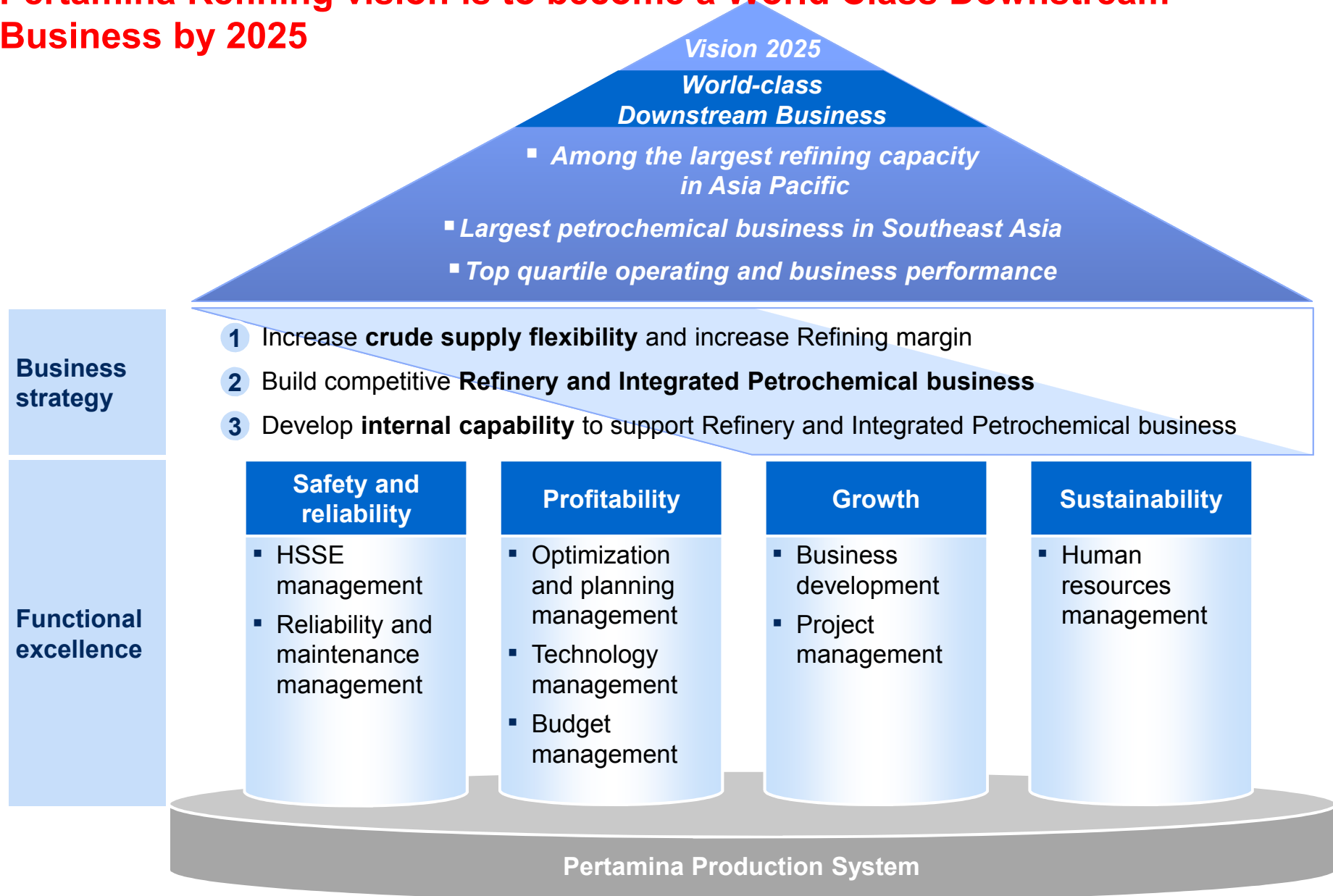
Support own supply chain and also build third party service model



Project & Technology Center: Technology leader on CBM, Geothermal, EOR and deepwater; Strong project executor with delivery on time and within budget

Organization & Capability: Accountability and delivery; Employer of choice to attract and retain best talent

Pertamina Refining vision is to become a World Class Downstream Business by 2025



Pertamina is focusing on 2 elements in its strategic agenda

Vision 2025

- Among the largest refining capacity in Asia Pacific
- Largest petrochemical business in Southeast Asia
- Top quartile operating and business performance

Current challenges

- A** Rising energy demand
- B** More challenging crude slate

Pertamina Refining strategic agenda

1

Existing refineries

- Upgrade **existing refineries** to allow higher sulfur and imported crude slate
- Upgrade from low-value to **high-value products**¹
- Increase net profit margin through **operational excellence**
- Meet **product quality** requirements

2

Grass Root Refineries

- Build **Grass Root Refineries**
- Build Integrated **Petrochemical** plants
- Develop manufacturing and marketing **partnerships**

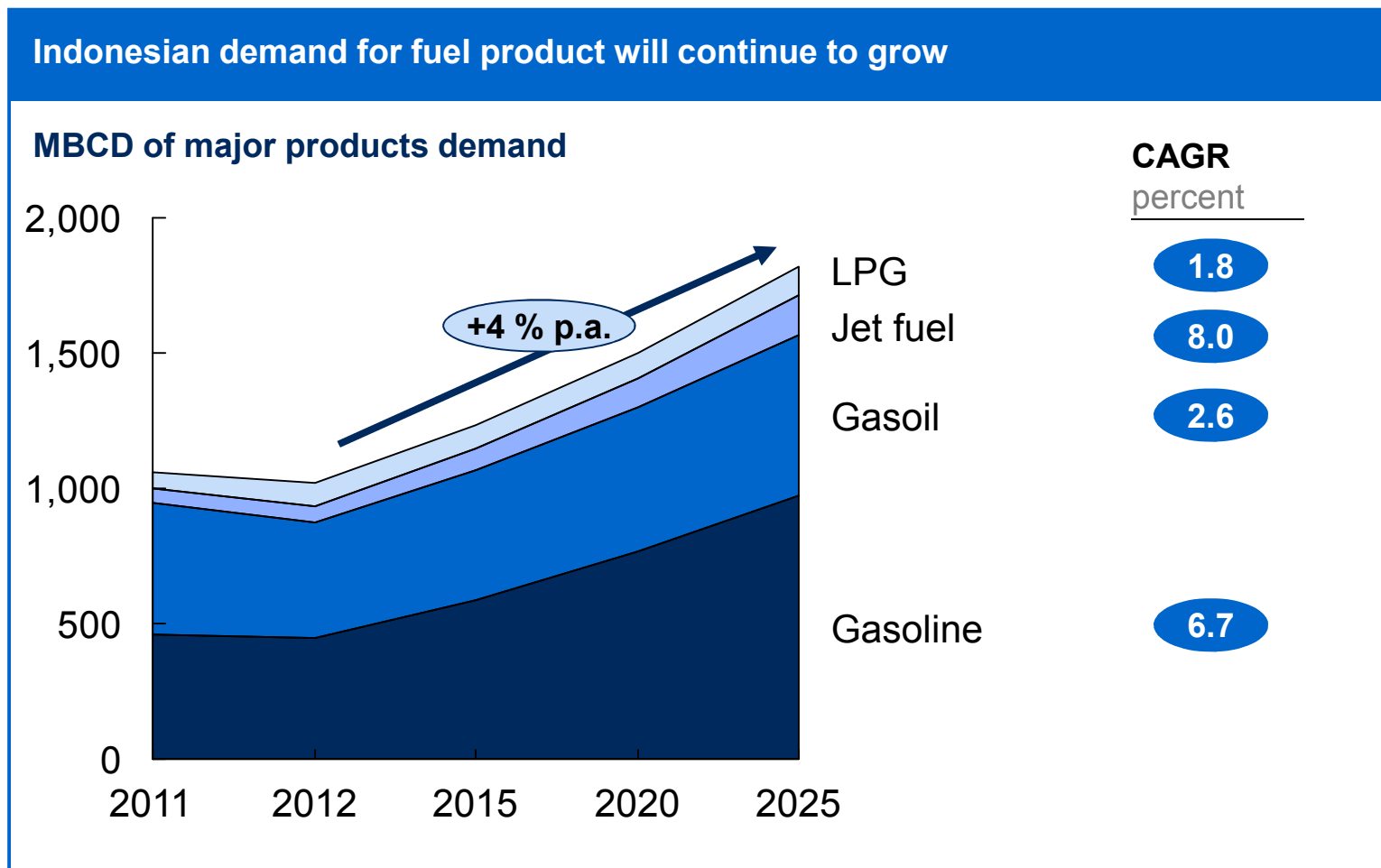
¹ Including increasing product quality to capture economic and environmental benefits, bottom conversion units,

Pertamina is focusing on 2 elements in its strategic agenda

Vision 2025	Pertamina Refining strategic agenda
<ul style="list-style-type: none">▪ Among the largest refining capacity in Asia Pacific▪ Largest petrochemical business in Southeast Asia▪ Top quartile operating and business performance	<p>1 Existing refineries</p> <ul style="list-style-type: none">▪ Upgrade existing refineries to allow higher sulfur and imported crude slate▪ Upgrade from low-value to high-value products¹▪ Increase net profit margin through operational excellence▪ Meet product quality requirements <hr/>
Current challenges	
<ul style="list-style-type: none">A Rising energy demandB More challenging crude slate	<p>2 Grass Root Refineries</p> <ul style="list-style-type: none">▪ Build Grass Root Refineries▪ Build Integrated Petrochemical plants▪ Develop manufacturing and marketing partnerships

1 Including increasing product quality to capture economic and environmental benefits, bottom conversion units,

A Fuel demand in Indonesia is estimated to grow at a rate of ~4% per annum



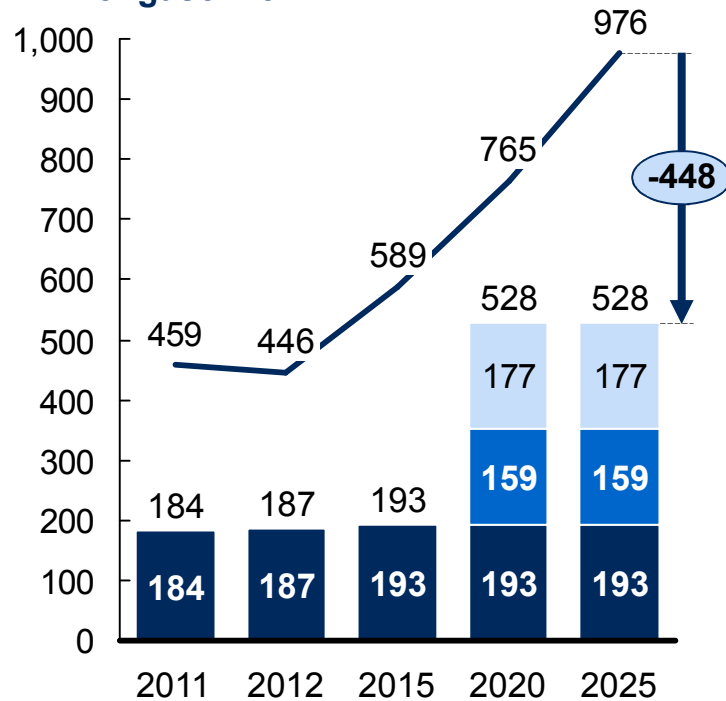
A Indonesia will remain a net importer of gasoline and LPG in near / mid term due to insufficient domestic production capacity

PRELIMINARY

— Demand ■ GRRs ■ Masterplan ■ Non refinery suppliers ■ Current refineries

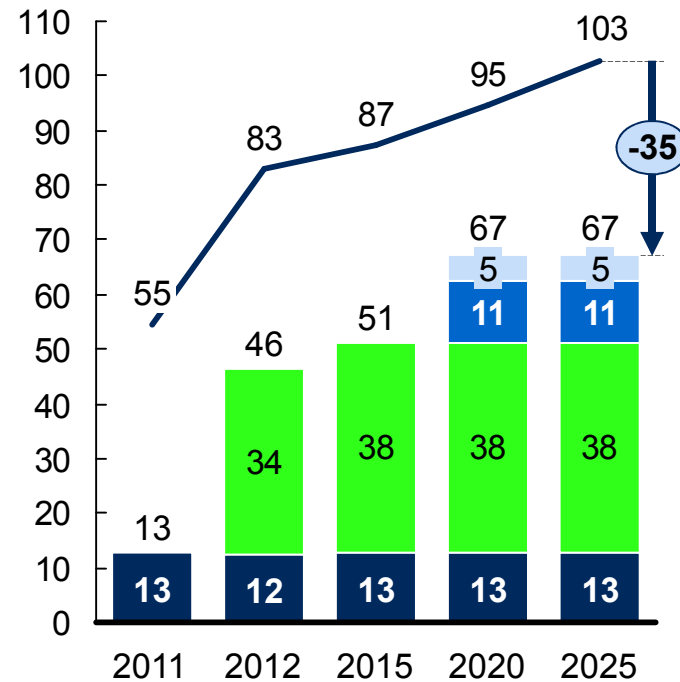
Indonesia remain short of ~450 MBCD of gasoline by 2025

MBCD of gasoline



Indonesia remain short of ~35 MBCD of LPG by 2025

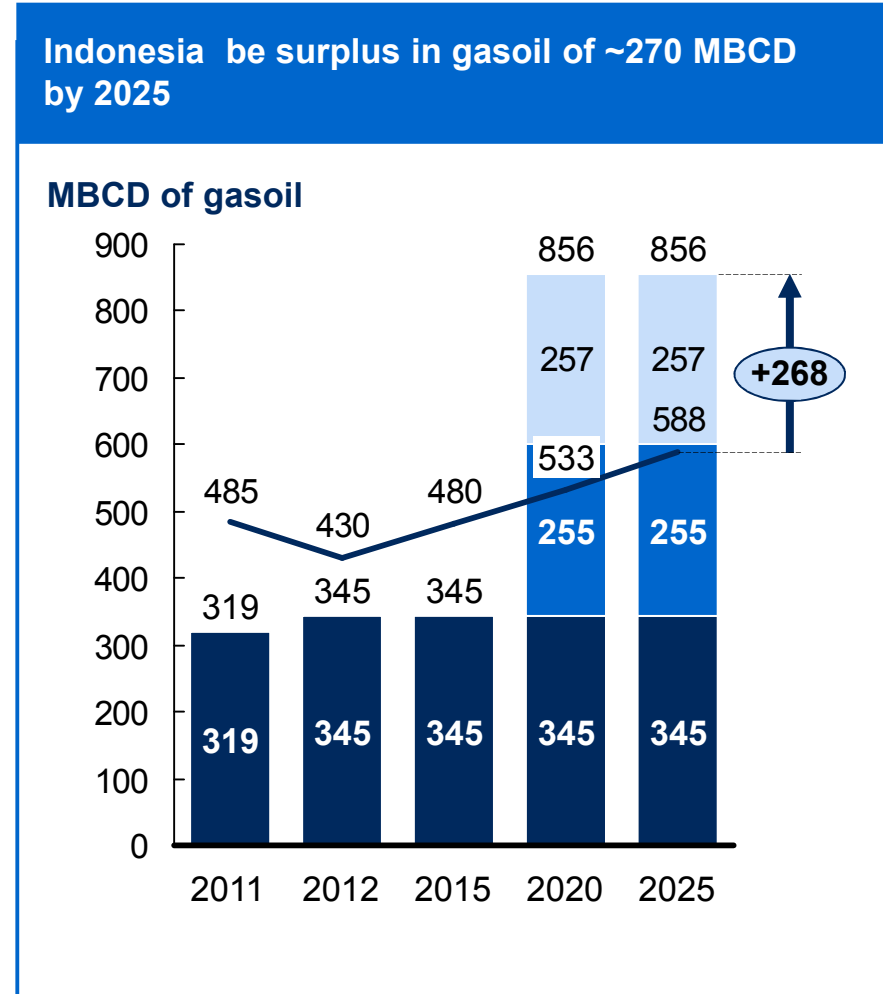
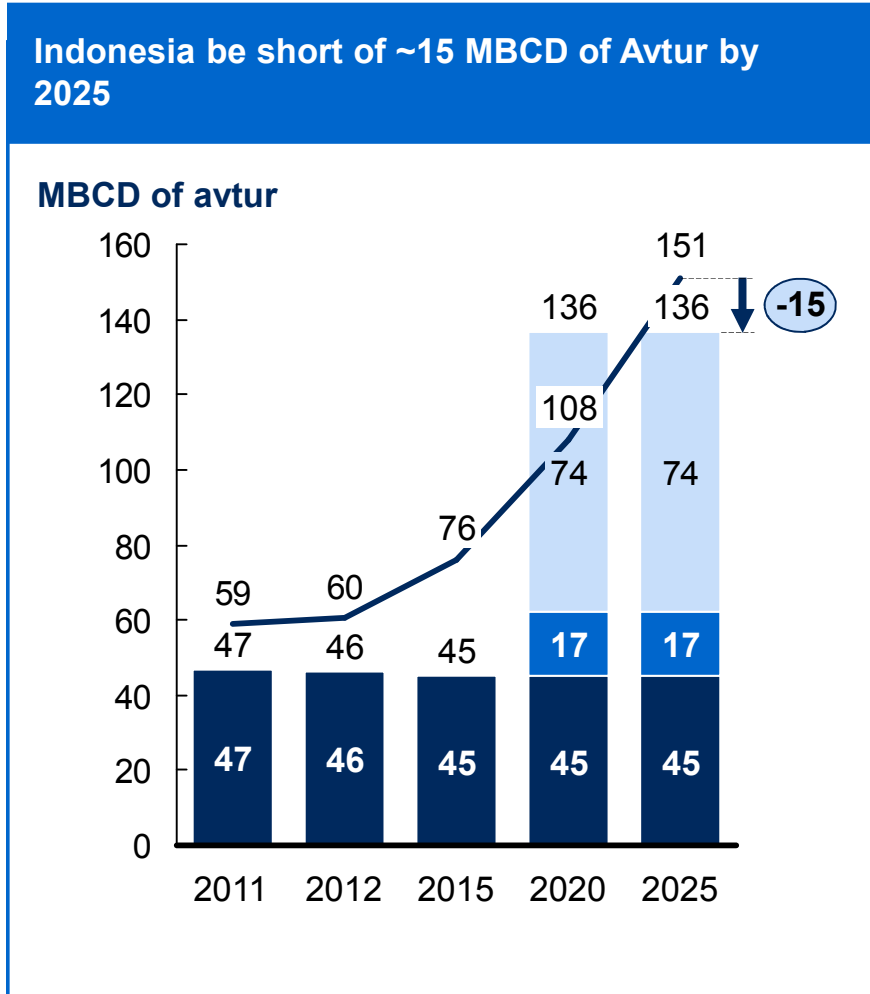
MBCD of LPG



1 2020 and 2025 data includes upgrading of existing refinery and 2 GRR

A Indonesia will be slightly deficit in avtur and surplus in gasoil with the upgrading of existing refineries and 2 GRR PRELIMINARY

— Demand ■ GRRs ■ Masterplan ■ Current refineries



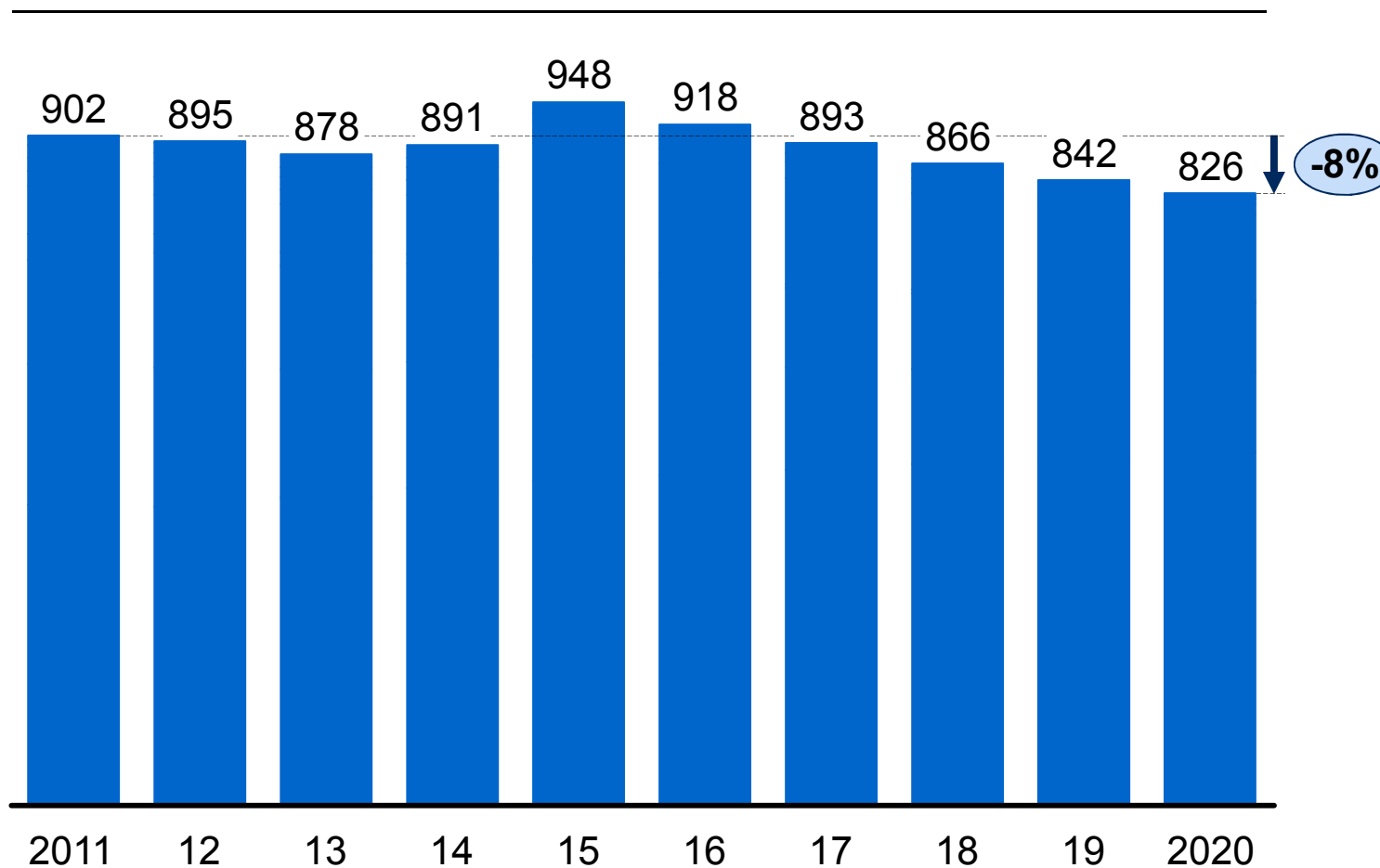
1 2020 and 2025 data includes upgrading of existing refinery and 2 GRR

B Domestic crude production is declining by ~8% between 2011 and 2020

TEAM VIEW

Domestic crude production forecast, MBD

MBD

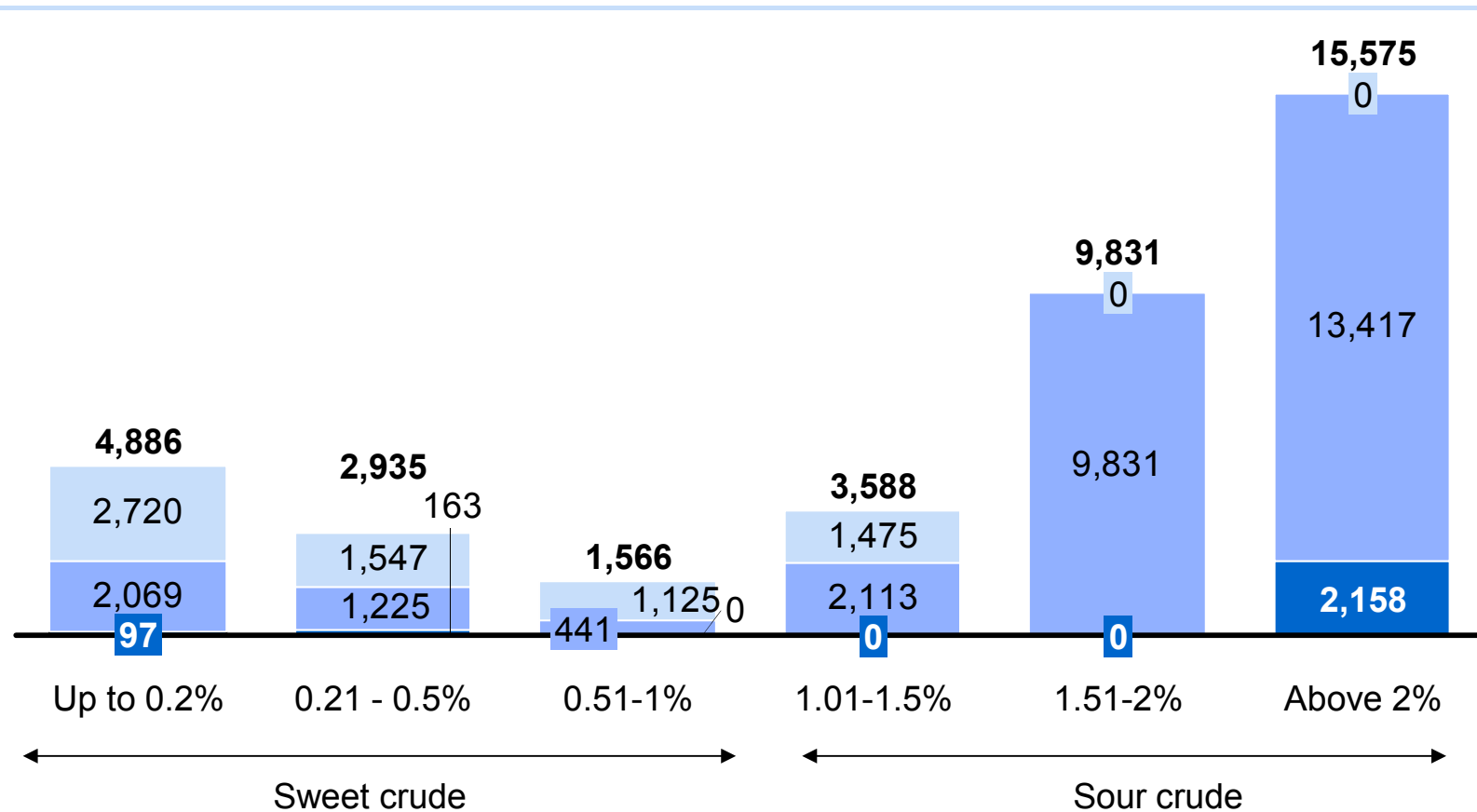


MORE CHALLENGING CRUDE SLATE

B In 2020, sour crudes will have greater availability than sweet crudes, necessitating shift towards more sour crude as base feedstock

Crude availability in 2020¹; categorized by sulfur
MBD

- Light (API>37)
- Medium (27<API<37)
- Heavy (API<27)



¹ Selected crudes potentially available to Pertamina

Pertamina is focusing on 2 elements in its strategic agenda

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Pertamina Refining strategic agenda

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- Meet **product quality** requirements

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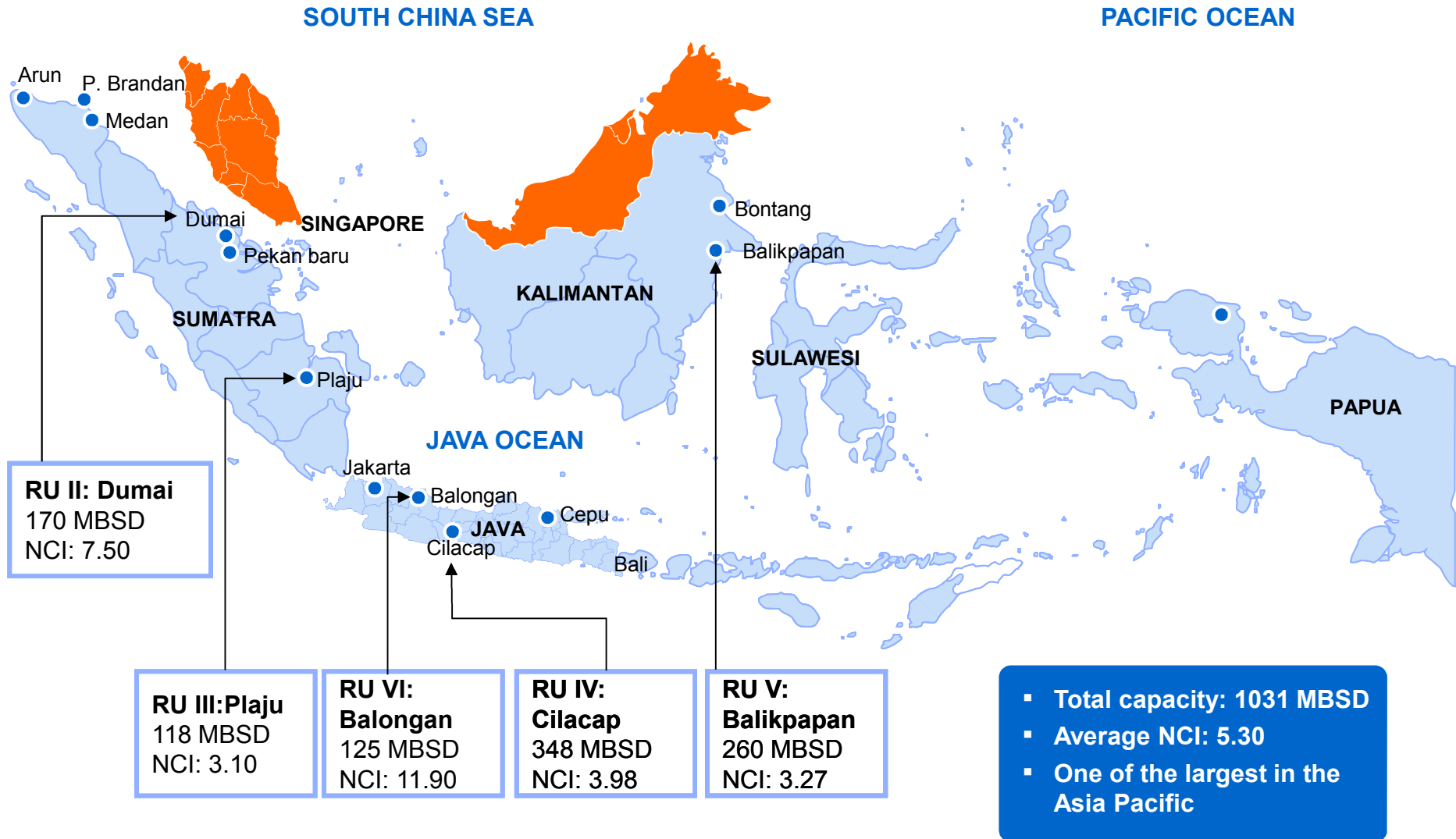
Grass Root Refineries

- Build **Grass Root Refineries**
- Build Integrated **Petrochemical** plants
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1 Including increasing product quality to capture economic and environmental benefits, bottom conversion units,

UPGRADE EXISTING REFINERIES

1 Pertamina currently has 5 major refineries in Indonesia with total capacity in excess of 1000 MBSD



UPGRADE EXISTING REFINERIES

1 Pertamina have multiple projects in the masterplan and will need financial support for masterplan execution

NOT EXHAUSTIVE

Sample potential projects



- Dumai**
- Build logistic infrastructure
 - Upgrade material to handle ~1% wt S in crude
 - Build 103 MBSD DHDT
 - Revamp CDU by 44 MBSD
 - Revamp coker by 7 MBSD
 - Revamp PL-1 by 3 MBSD
 - Build natural gas infrastructure

- Plaju**
- Upgrade material to handle ~1% wt S in crude
 - Build 93 MBSD HDS
 - Build 180 MBSD CDU
 - Build 40 MBSD RFCC
 - Build 22 MBSD CCR

- Balongan**
- Upgrade material to handle ~1% wt S in crude
 - Revamp and build HDS
 - Revamp CDU by 35 MBSD

- Cilacap**
- Upgrade material to handle ~1 % wt S in crude
 - Revamp PL-2 by 4 MBSD
 - Build 51 MBSD HCU
 - Build 47 MBSD VRHDS
 - Build 90 MBSD HDS
 - Build natural gas infrastructure

- Balikpapan**
- Upgrade material to handle ~1.5% wt S in crude
 - Build 150 MBSD HDS
 - Build H2 plant
 - Revamp CDU IV by 40 MBSD
 - Revamp HCU A/B by 10 MBSD
 - Build 40 MBSD RFCC+ 45 MBSD VRHDS

Total capex requirement of USD 10 – 12 billion to

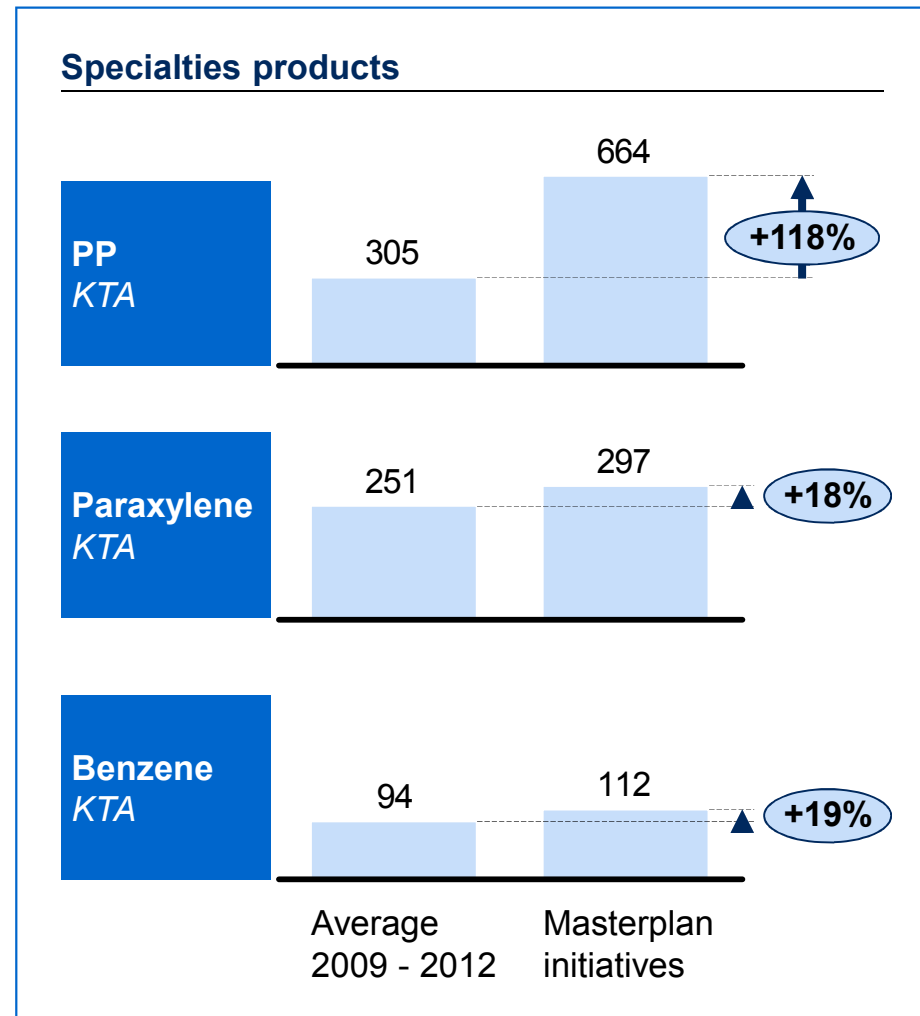
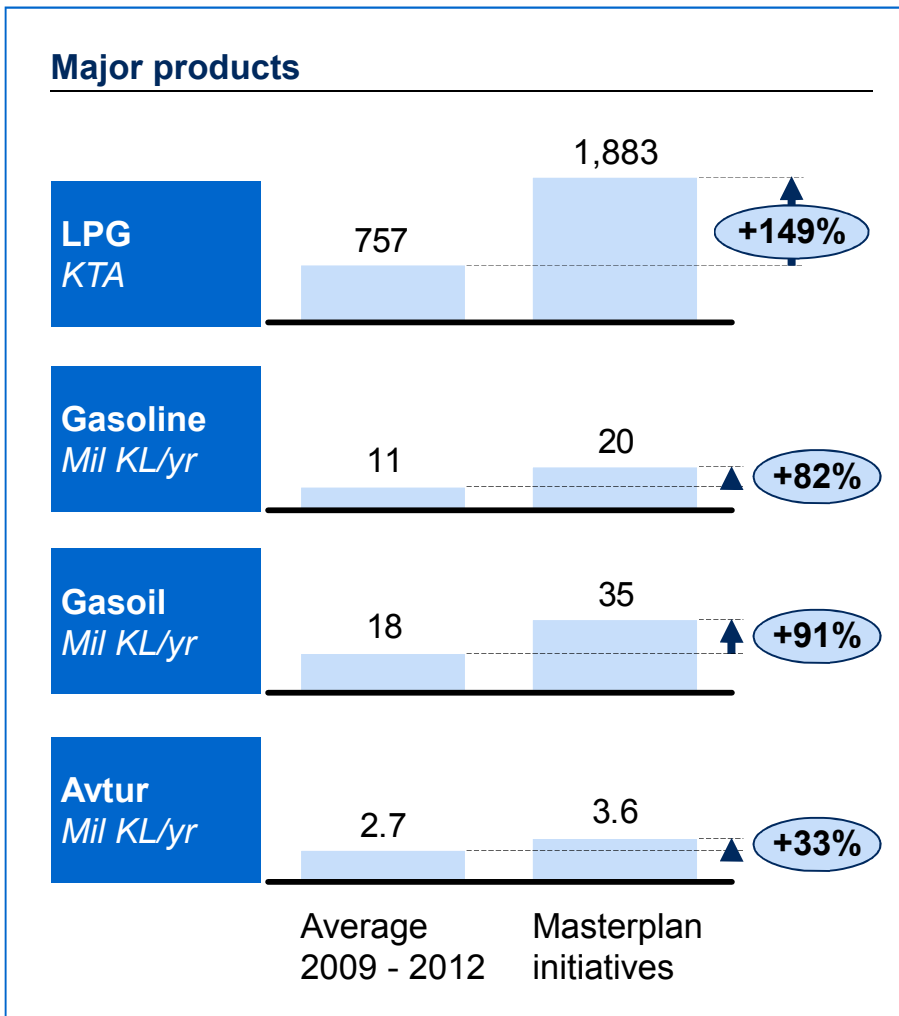
- Increase flexibility
- Increase profitability
- Meet Euro IV product quality



1 Refining Masterplan upgrading projects will help reducing fuel demand deficit by increasing production of major and key specialties products

PRELIMINARY

Pertamina production



Pertamina is focusing on 2 elements in its strategic agenda

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Grass Root Refineries

- Build **Grass Root Refineries**
- Build Integrated **Petrochemical** plants
- Develop manufacturing and marketing **partnerships**

1 Including increasing product quality to capture economic and environmental benefits, bottom conversion units,

2 Pertamina currently studying several options to build Grass Root Refineries



3 Plaju (APBN)

- Planned capacity: 300 kbd
- Status: BD
- Potential: Pertamina funded by State Budget

1 Balongan II

- Planned capacity: 300 kbd
- Status: BD
- Potential: Pertamina jointly with KPI & SK Energy

2 Jatim (Tuban)

- Planned capacity: 300 kbd
- Status: BD
- Potential: Pertamina jointly with Saudi Aramco

- Pertamina has 2 options to bridge demand and supply gap
 - Build refinery either with crude partners or with operating partner
 - Get stake from other refineries in return for guaranteed long term product offtake

2 Grass Root Refineries projects consist of partnerships and government-funded projects

Equity & Partner	Capacity	Location	Start up date
<ol style="list-style-type: none"> Pertamina & Kuwait Petroleum International (KPI) Pertamina & Aramco Asia Pertamina (Pemerintah) 	<ul style="list-style-type: none"> 300 MBSD 300 MBSD 300 MBSD 	<ul style="list-style-type: none"> Balongan/Bontang/Banten Tuban, Jawa Timur Plaju, Sumsel 	<ul style="list-style-type: none"> November 2019 April 2020 December 2020

Context and Objectives	Lokasi Proyek Kilang Baru
<p>Context</p> <p>Rapid increase of domestic Gasoline and Diesel demands driving deficits larger and Corporate plan to develop Petrochemical business in order to increase profitability</p> <p>Objectives</p> <ol style="list-style-type: none"> Reduce domestic deficits of Gasoline and Diesel Meet domestic Petrochemicals demand Achieve net positive margin at each RU 	

Feedstock plan	Rencana Produk						
<p>Target: Deg. API 29-35; Sulfur Cont: 1.0-2.7% wt</p> <p>Crude (MBSD)</p> <ol style="list-style-type: none"> KPI : 200 KEC + 100 UEA Aramco Asia : 300 Arabian crude Pertamina (Pemerintah) : 300 mixed crude oil 	<table border="1"> <thead> <tr> <th>BBM</th> <th>Petrokimia</th> <th>Lain-Lain</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> Euro IV Gasoline Jet/Kerosene Euro IV Diesel </td> <td> <ul style="list-style-type: none"> MEG Polypropylene LDPE/HDPE </td> <td> <ul style="list-style-type: none"> LPG Lube oil </td> </tr> </tbody> </table>	BBM	Petrokimia	Lain-Lain	<ul style="list-style-type: none"> Euro IV Gasoline Jet/Kerosene Euro IV Diesel 	<ul style="list-style-type: none"> MEG Polypropylene LDPE/HDPE 	<ul style="list-style-type: none"> LPG Lube oil
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Type
Refinery complex – integrated with Petrochemicals

Executive summary

- Indonesia is a country with **great potential**
 - It is the **largest economy in SEA** with 40% of total SEA GDP
 - Has one of the **fastest** of the **most stable** growth in the world
 - Growth will continue with increase in domestic demand and expected to exceed **Germany and France** by **2050**
- This high economic growth also translates to the energy and petrochemical sector
 - **Oil** demand will **double**, **coal** will increase by **6 times**, with **natural gas** demand **tripling**
 - 5% per-annum growth in petrochemical product demand
- This provides opportunity but also need for Pertamina who is present in all oil and gas value chain to grow especially in the petrochemical business
- However, there are two key challenges faced by Pertamina
 - **Rising energy demand** – deficit in gasoline and LPG will continue to increase
 - **More challenging feedstock** – Decrease in domestic crude production coupled with higher availability of import sour crudes
- To overcome challenges and achieve Pertamina's vision, Pertamina refining is focusing on 2 elements in its strategic agenda
 - **Improve existing refineries** through
 - Increase **flexibility** to process **higher sulfur and imported crude slate**
 - Upgrading from low-value to **high-value products** through revamp and building new conversion units
 - Increasing net profit margin through **operational excellence**
 - Meeting **product quality** requirements
 - **Building grass root refinery** with potential for **integrated petrochemical** plants and also developing manufacturing and marketing **partnerships** – Currently 3 GRR (Jatim, Balongan & Sumatra) are in plan
- This will require **conducive business climate**, **access to funds** with 10-12 USD billion required for refinery upgrades and 20-25 USD billion for 3 GRRs and **support from all stakeholders**





Thank You

