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## ENERGY OUTLOOK 2021

Jakarta, 26 September 2021

THE F H

## MOSHE RIZAL Eng. Ind. M.Sc.

#### **PAST ACTIVITIES**



Joint Venture and Policy, Government & Public Affairs Division Head EPHINDO Coal Bed Methane Exploration and

Production



Chairman of Unconventional Oil and Gas Committee Indonesian Petroleum Association (IPA) Chairman of Communication, Marketing

and Advocacy Indonesian Petroleum Association 2015 -2016 Convention and Exhibition Southeast Asia's biggest event in Oil and Gas industry





Executive Director (Sekretaris Jendral) ASPERMIGAS (Asosiasi Perusahaan Migas Nasional) Association of Indonesian Oil and Gas Companies



**Co-Founder & Director of Operations** John S. Karamoy Petroleum Academy (PT RTG) Vocational Training and Consultancy Provider for O&G and Energy



**Co-Founder & President Director PT Putra Pratama Investama Energi** Global Venture Capital and Private Equity Advisory for Infrastructure Project & Business Financing, and Merger & Acquisition



#### Country's Representative Viner Burch Global

Technology Provider and Exclusive License holder of Titan's microbial enhancement oil recovery technology (EOR) distributorship in Indonesia.

AND FEW OTHERS...



#### 2020-2021 COVID-19 Pandemic, a Unique Crisis

What are the fundamental differences compared to other crisis:

- Uncertainty, nobody knows exactly when will the pandemic eases
- Global impact, across nations and industries
- The crisis hurt both demand and supply
- Related to personal and family safety
- Very fast spread and impact
- The situation is constantly change and evolving
- Never had in most of us in our life time
- Crisis that execeded all expectations and country's capacity









Source: Wellington Capital Advisory

### **Global Energy Demand Trend**

#### Global energy demand: actual versus predicted







-4.5% and -6.3%

consumption and carbon emissions,

Decline in global primary energy

#### Net-Zero Emissions (NZE) Commitment

NZE announcements globally





### Net-Zero Emissions (NZE) Commitment



## <u>-2.1 Gt</u>

fall in carbon emissions, taking CO<sub>2</sub> emissions to lowest level since 2011

450 Scenario describes an energy pathway consistent with the goal of limiting the average global temperature increase to 2°C. This is accomplished by seeking to limit the concentration of greenhouse gas in the atmosphere to around 450 parts per million of  $CO_2$  equivalent.





**Energy Transition for Oil Majors, from IOC to IEC** 

Proved Oil Reserves (in billion of barrels of oil) Source: "The renewable energy strategies of oil majors – From oil to energy?", ELSEVIER

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CAS NASION



#### **BP's Forecasts Peak Oil Demand**

The oil giant's latest energy outlook predicts an end to rising oil consumption.

Matthew DiLallo (TMFmd19)

Sep 14 2020 at 10:20AM

Author Bio

Oil giant **BP** (<u>NYSE:BP</u>) has released its latest energy outlook. The report outlines three different scenarios, which forecast energy demand through 2050: Rapid, net-zero, and business-as-usual.

Among the major takeaways is that "renewable energy will play an increasingly important role in meeting the

Oil companies have sought to diversify investments since the oil-price crash 5 years ago in 2015



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### **Global Energy Mix**



Shares of global primary energy



Source: bp Statistical Review of World Energy 2021

#### **Global Energy Mix**

#### Regional consumption pattern 2020

Percentage

SIPERU

CAS NASIO





## **China Energy Mix**



#### China against the odd

- Despite the shock of COVID-19, natural gas consumption grew by 6.9%, against a 2.3% decline in gas consumption globally.
- China nuclear power generation increased by 4.7% in 2020, in contrast to a 3.7% decline globally.
- Coal imports rose above 6.6 EJ in 2020, their highest level since 2014.



+2.1% Growth in primary energy consumption

+6.9% Growth in China's gas consumption

+15% Growth in China's renewables consumption

+0.6% Growth in China's CO<sub>2</sub> emission

#### Indonesia Energy Mix – Towards Greener Future

								Satuan: MTOE		
ENERGI PRIMER	2020	2021	2022	2023	2024	2025	2030	2040	2050	
EBT	38,6	44,7	51,3	62,8	73,2	92,3	130,6	212,8	316,0	
Minyak Bumi	82 <b>,</b> 9	86,5	89,2	93,9	97,7	98 <b>,</b> 8	113,0	151,1	197,9	
Gas Bumi	61,1	67,3	73,7	79,5	85 <i>,</i> 8	89,6	109,2	171,7	243,1	
Batubara	104,9	109,0	112,9	115,2	118,6	119 <i>,</i> 9	147,6	198,6	256,2	
Total	287,4	307,4	327,1	351,4	375,3	400,6	500,4	734,2	1013,2	

Target Pasokan Energi Primer Tahun 2020 - 2050

Sumber: RUEN, 2017



Target Bauran Energi Primer Tahun 2020 – 2050



#### Indonesia Energy Mix – Towards Greener Future

## Porsi Pembangkit EBT 51,6%, PLN Klaim RUPTL 2021-2030 Paling Hijau

PLN menggenjot porsi pembangkit EBT dalam draft RUPTL 2021-2030 menjadi 51,6%. Sebelumnya porsi pembangkit EBT diusulkan 48% atau masih lebih tinggi dari 2019-2028 yakni 30%.

Oleh Verda Nano Setiawan 20 Agustus 2021, 19:50 Dkatadata.co.id





ANTARA FOTO/APRILLIO AKBAR/H

RENCANA USAHA PENYEDIAAN TENAGA LISTRIK (RUPTL) PT PLN (PERSERO) TAHUN 2021 - 2030



MINISTRY OF ENERGY AND MINERAL RESOURCES REPUBLIC OF INDONESIA



Indonesia to Add 41 GW from "Green" RUPTL



#### Indonesia is Dominated by Gas Discovery Proyek Strategis Nasional 2021

Status 31 Maret 2021



#### LNG Is the Energy Transition for the World Towards Renewable



#### **European Gas Shortages Accelerate Clean Energy Transition**

subscribers in July, showbiz union says

MARKET INSIDER

KEY

POINTS

#### Europe's gas shortage could make the whole world pay more to get warm this winter



Price Pain

Natural gas in Europe costs the equivalent of more than \$100/barrel

STR | AFP | Geny Images



-100

-80

·60

40

-20

+0

\$/bbl

### LNG Is the Promising Energy Transition for Indonesia





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## LNG Is the Promising Energy Transition for Indonesia

KEPUTUSAN MENTERI ENERGI DAN SUMBER DAYA MINERAL

REPUBLIK INDONESIA

NOMOR: 13 K/13/MEM/2020

#### TENTANG

PENUGASAN PELAKSANAAN PENYEDIAAN PASOKAN DAN PEMBANGUNAN INFRASTRUKTUR *LIQUEFIED NATURAL GAS* (LNG), SERTA KONVERSI PENGGUNAAN BAHAN BAKAR MINYAK DENGAN *LIQUEFIED NATURAL GAS* (LNG) DALAM PENYEDIAAN TENAGA LISTRIK



#### **Nuclear Energy is Rising**

Korea to run Arab world's 1st nuclear plant in UAE



Source: Korea.net

55 nuclear power reactors under construction in 17 countries



Advanced Reactors Newbuild Projects in Embarking Countries – sample:

- UNITED ARAB EMIRATES: nearly completion of 4 units APR1400 for Barakah NPP with South Korea
- BELARUS : 2 units of VVER1200 for Ostrovets site with Russian Federation
- BANGLADESH: 2 units VVER1200 for Rooppur NPP with Russian Federation
- TURKEY: 2 units of VVER1200 for Akkuyu NPP with Russian Federation

Next potential embarking countries to build NPP:

- SAUDI ARABIA: to invite Bids to vendor countries for the first 2 units, 3 GW(e), targeting 16 GW(e) by 2040
- EGYPT: signed agreement with Russian Federation for potential 4 units VVER1200 for El Dabaa NPP

Source: IAEA Power Reactor Information System (PRIS), 24 April 2019



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#### **Nuclear Energy vs Other Renewables**



Operating Costs / Kilowatt Hour (in cents)



#### Nuclear Could be the Solution to Close Energy Gap for Indonesia

batan

#### Indonesia's uranium resources reach 82.6

#### thousand tons: Data

20 November 2020







- Development of the experimental power reactor of I-EPR is an innovative way and one of the entry points in the utilization of nuclear energy in Indonesia
- In line with the regulation in which BATAN has an authority to build and operate non-commercial NPP
- Development of I-EPR is also a strategic effort for mastering nuclear energy project management, engineering capacity building and human resource development to strengthen the role of Technical Supporting Organization (TSO).
  - -EPR will be a FOAK (First of a Kind) for future Indonesia's commercial NPPs





#### Nuclear Could be the Solution to Close Energy Gap for Indonesia





### 4<sup>th</sup> Generation Nuclear Technology

China marks key milestone in fourthgeneration nuclear energy system

By Zheng Xin | chinadaily.com.cn | Updated: 2021-08-23 14:32









The world's first industrial-scale demonstration plant of high temperature gas-cooled reactor with pebble-bed module starts fuel loading on Aug 21. [Photo/WeChat account of CNNC]

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#### **Indonesia Pumped Storage Hydropower Potential**

WHO WE ARE WHAT WE DO

WHERE WE WORK UNDERSTANDING POVERT

WORK WITH US COVID-19

#### Who We Are / News

This page in: English Bahasa Indones

PRESS RELEASE SEPTEMBER 10, 2021

## Indonesia's First Pumped Storage Hydropower Plant to Support Energy Transition

Okinawa Yanbaru Seawater Pumped Storage Project (Japan)

JAKARTA, September 10, 2021 – The World Bank's Board of Executive Directors today approved a US\$380 million loan to develop Indonesia's first pumped storage hydropower plant, aiming to improve power generation capacity during peak demand, while supporting the country's energy transition and decarbonization goals.

"The Indonesian government is committed to reduce greenhouse gas emissions through, among others, development of renewable energy, energy conservation, and use of clean energy technology. Emission reduction in the energy sector will be driven by new and renewable energy generation and application of energy efficiency," said Arifin Tasrif, Minister of Energy and Mineral Resources of the Republic of Indonesia.

#### **Pumped Storage Project Design Scheme**





## Last to say...



- We are still in the crisis and not yet in a recovery phase, but we are starting to see the light at the end of the tunnel
- Indonesia renewable potential is high, with Geothermal and Solar PV among Indonesia largest renewable potentials for a long-distance future
- Indonesia still requires a strong GDP growth to build its infrastructure and bring the country into the 4th largest economy in the world by year 2030, thus it requires a cost effective and yet cleaner source of energy for its transition
- Gas and Nuclear are the most promising potential in terms of resources and cost effectiveness for Indonesia's transition towards a cleaner future

INPEX issues \$90m green bond for geothermal, wind investments



init 1 of Sarulla Geothermal Power Plant, North Sumatra/ Indonesia (source: Ormat Technologies)



Japanese INPEX is issuing bonds valued at 10bn yen (USD 91 million) for planned investments in geothermal and wind development in Japan and abroad.





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# THANK YOU

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### **Energy Transition for Oil Majors, from IOC to IEC**

Assessment Criteria	Weigh	Shell	ExxonMobil	Chevron	Total	BP	Eni	Petrobras	Equinor
Hydro	5%	0	0	0	1	0	0	1	0
Solar	5%	1	0	1	1	1	1	1	1
Wind	5%	1	0	1	1	1	1	1	1
Biofuels	5%	1	1	0	1	1	1	0	0
Carbon Capture	5%	1	1	1	1	1	1	0	1
Geothermal	5%	0	0	0	0	0	0	0	0
Energy Storage/ EV Charging	5%	1	0	0	1	1	0	0	1
Explicit Renewable Strategy/ Renewable Capital Allocation	5%	1	0	0	1	1	1	0	1
Capital Investment into Renewables (billion \$ per year)	50%	1	0	0	0.5	0.5	0.3	0	0.5
Dedicated Renewable Team	5%	1	0	0	1	1	1	0	1
Renewable Venture Capital Arm	5%	1	0	1	1	1	1	0	1
Total Score		9	2	4	9.5	8.5	7.3	3	7.5
Total Weighed Score	100%	90%	10%	20%	70%	65%	50%	15%	60%

