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Why Indonesia Needs A New Energy Paradigm

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#IndonesiaEnergyMix

WHY INDONESIA NEEDS A NEW ENERGY PARADIGM

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ABSTRACT

The problem of Indonesia's dependence on petroleum as its main energy source can be overcome by instead using an energy mix. This study focuses on optimal utilization of other energy resources that can help to meet the demand for energy in Indonesia and help to reduce its dependence on oil, thereby preventing a future energy crisis.

INTRODUCTION

- Indonesia is too dependent on oil as an energy source;
- Oil production continues to decline, while consumption is increasing;
- No giant oil reserves have been discovered for years;
- Proven oil reserves are currently 2.44 billion barrels, which can only last for 9.5 years;
- Fossil fuels' negative impact on the environment is leading many people to worry;
- The Impact of continuing reliance on oil in the future will be a trade balance deficit and cause an increase in oil imports and a future energy crisis in Indonesia;
- The implementation of an Energy Mix in Indonesia can be a solution to prevent the downward spiral outlined above.

National Oil Production VS Consumption

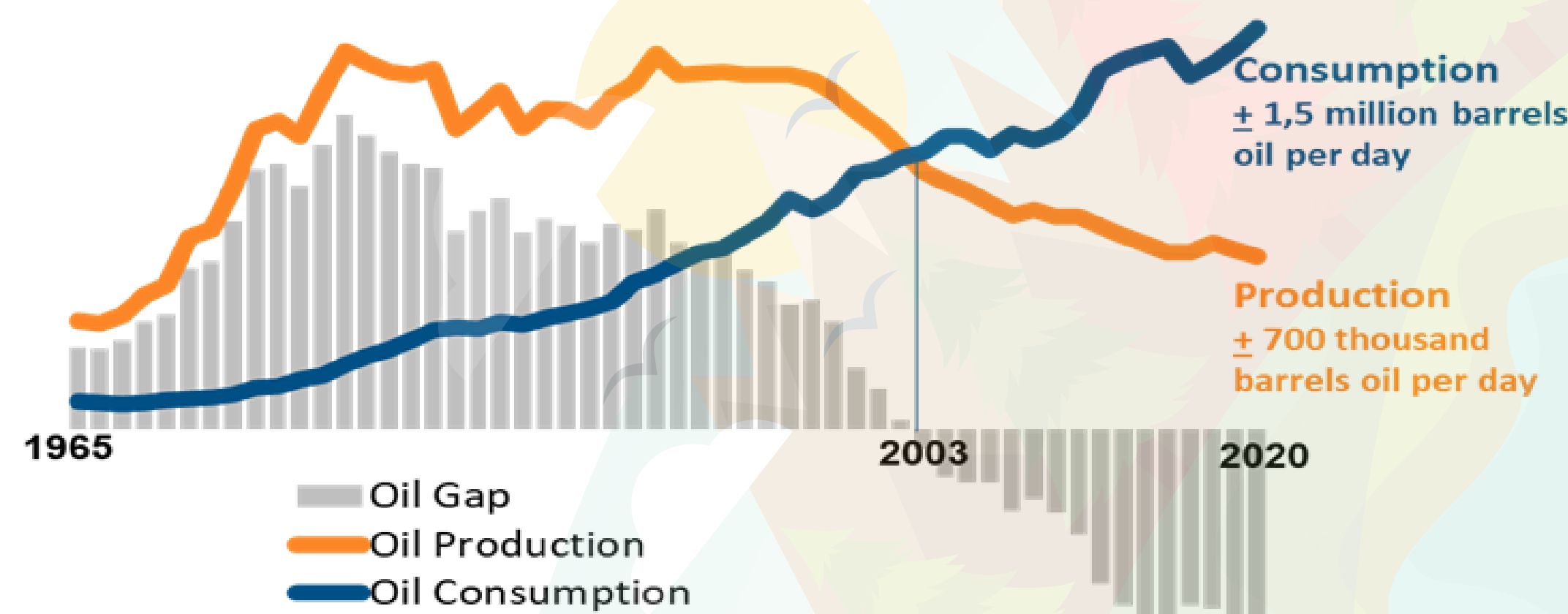


Figure 1 : Lubiantara, Benny (2020). *Oil and Gas Economy: Overview of Commercial Aspects of Oil and Gas Contracts*. Bandung. Bandung Institute of Science Technology Library. Retrieved from <https://opac.perpusnas.go.id/DetailOpac.aspx?id=863853>

GREENHOUSE GAS EMISSION

- Greenhouse Gas (GHG) Emissions have an increasing trendline along with the increasing use of fossil fuels;
- Final energy consumption in the form of new renewable energy (NRE) is considered as not producing GHG emissions because the CO2 gas released from the combustion will be recaptured.

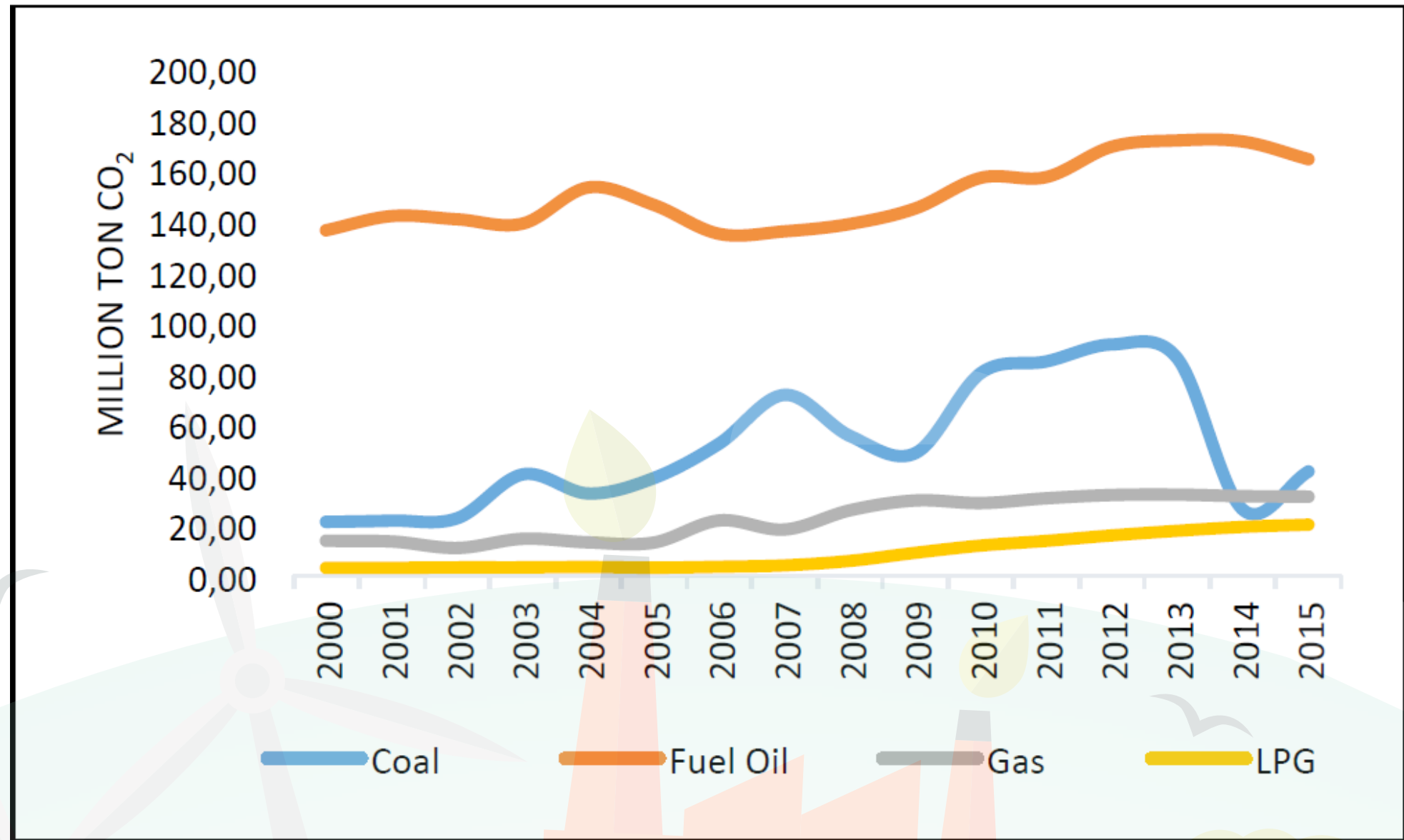


Figure 2 : Oil and Gas Research and Development Center (2017). *Fossil Fuel Emission Factor Calculation Study*. Bandung. Ministry of Energy and Mineral Resources of Indonesia. Retrieved from <https://www.esdm.go.id/assets/media/content/content-kajian-emisi-gas-rumah-kaca-2017.pdf>

THE POTENTIAL OF AN ENERGY MIX AND FUTURE CHALLENGES

- Only 2.5% of the total potential of new renewable energy (NRE) in Indonesia has been utilized so far;
- The application of new renewable energy only reached 11.2% of the Indonesian Energy Mix (2020 Report);
- Future challenges of NRE development are not only developing infrastructure but also simultaneously creating demand.

	POTENTIAL 417,8 GW	APPLICATION 10,4 GW (2,5%)
TIDAL WAVE	17,9 GW	0 MW (0%)
GEOTHERMAL	23,9 GW	2.130,7 MW (8,9%)
BIO ENERGY	32,6 GW	1.905,3 MW (5,8%)
WIND	60,6 GW	154,3 MW (0,25%)
HYDRO	75 GW	6.121 MW (8,16%)
SOLAR	207,8 GW	153,5 MWp (0,07%)

Figure 3 : Data Center and Information Technology (2020). *Handbook of Energy and Economic Statistics of Indonesia*. Jakarta. Ministry of Energy and Mineral Resources of Indonesia. Retrieved from <https://www.esdm.go.id/en/publication/handbook-of-energy-economic-statistics-of-indonesia-heesi>

THE NEED TO ACCELERATE THE DEVELOPMENT OF NEW RENEWABLE ENERGY (NRE)

- A paradigm shift from the use of fossil energy to new renewable energy;
- Government alignment with regulation and policy making that supports the NRE sector, e.g., NRE price adjustment;
- Primary Energy Conversion from fossil generators (Diesel and Coal Steam Fired Power Plant) into NRE, biogas, and biomass;
- Utilizing Biofuel as a step to reduce emissions.

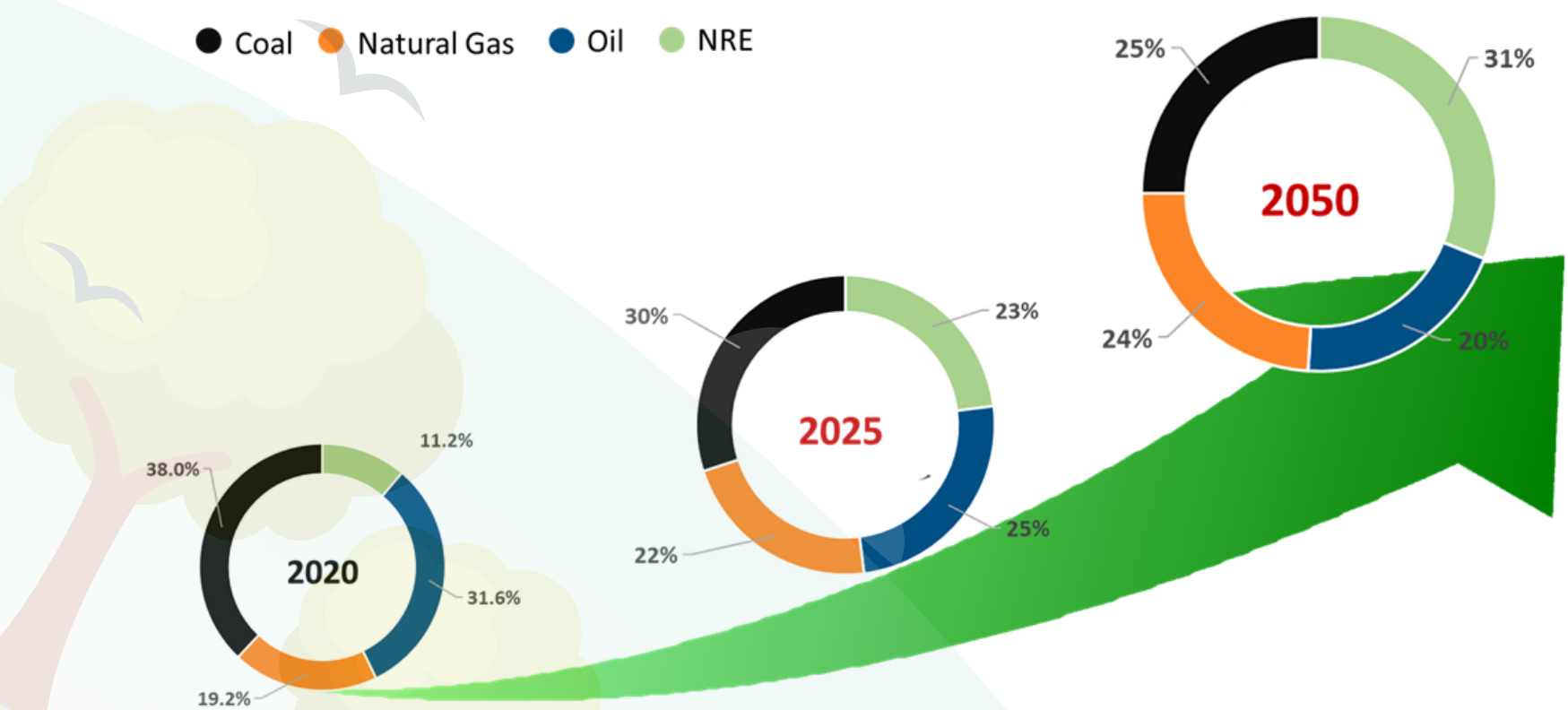


Figure 4 : National Energy Council (2020). *Energy and Mineral Resources Policy*. Jakarta. Ministry of Energy and Mineral Resources of Indonesia. Retrieved from <https://www.esdm.go.id/assets/media/content/content-outlook-energi-indonesia-2019-bahasa-indonesia.pdf>

CONCLUSION

By shifting to the Energy Mix detailed above, Indonesia can expect the following benefits :

- Meet the demand for energy in Indonesia;
- Prevent a future energy crisis;
- Stabilize the trade balance;
- Reduce Greenhouse Gas Emissions.

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