

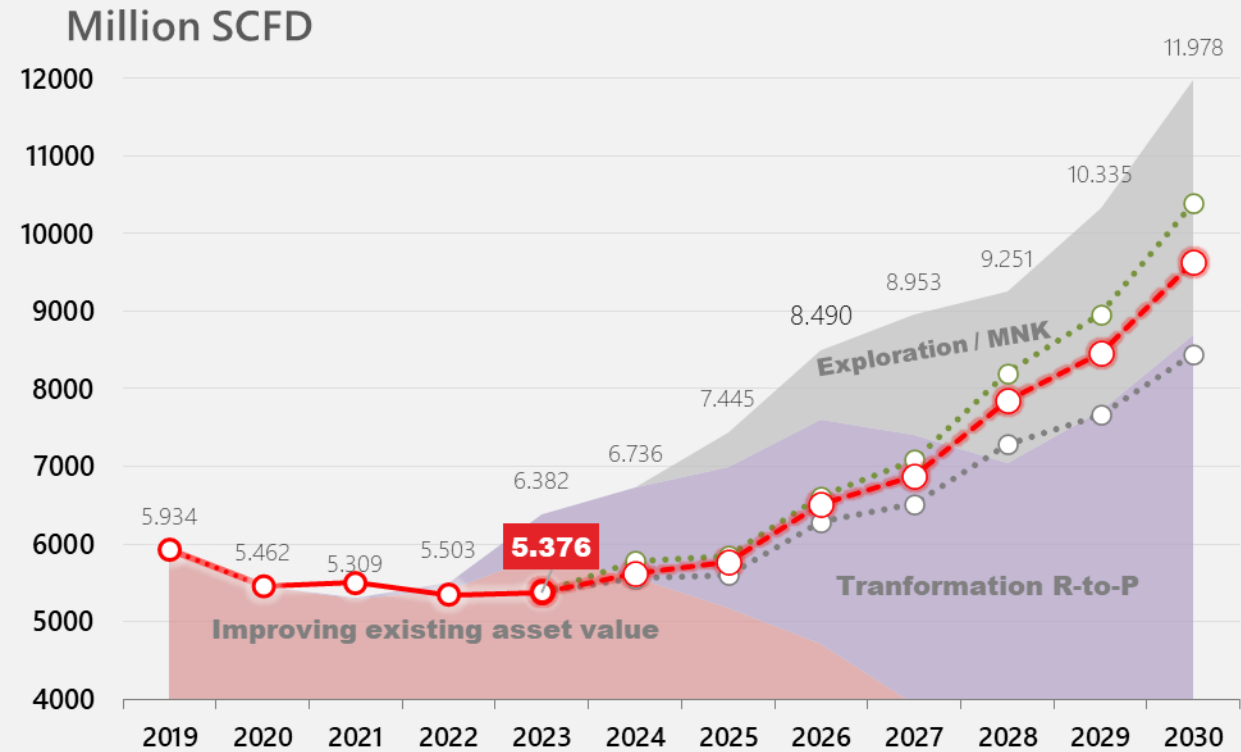
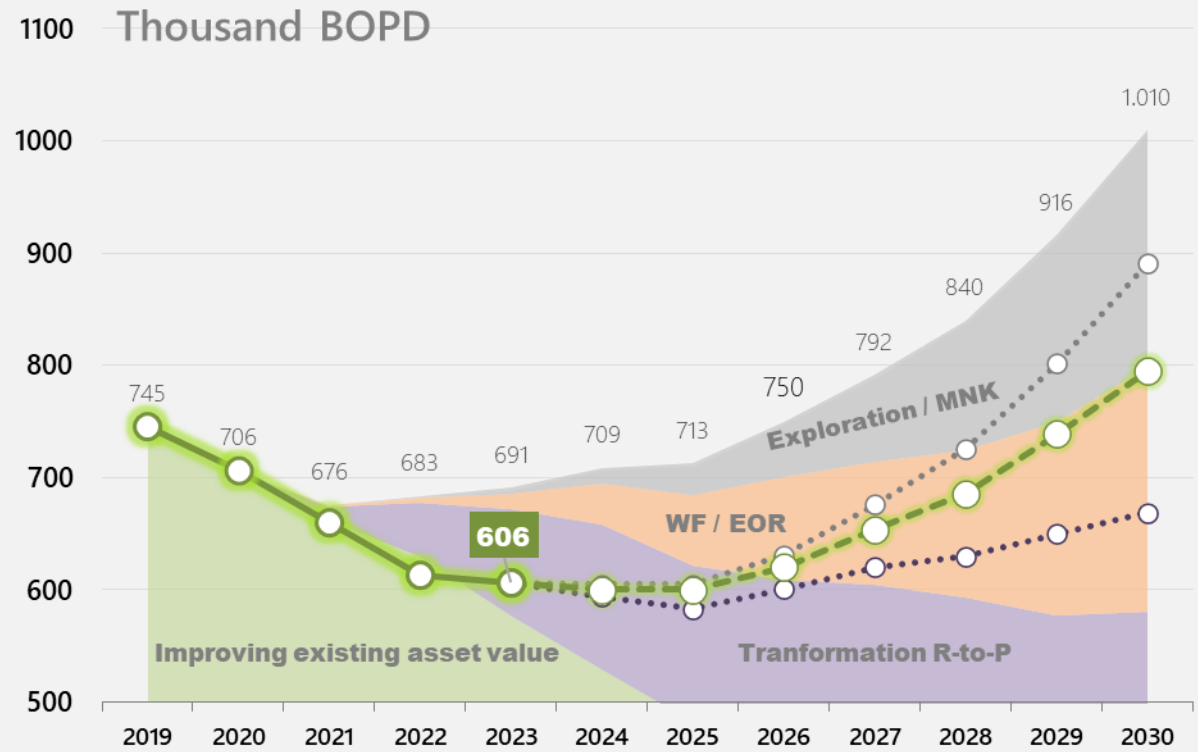


# Gas sebagai Pendukung Transisi Energi Bersih

5 Juni 2024

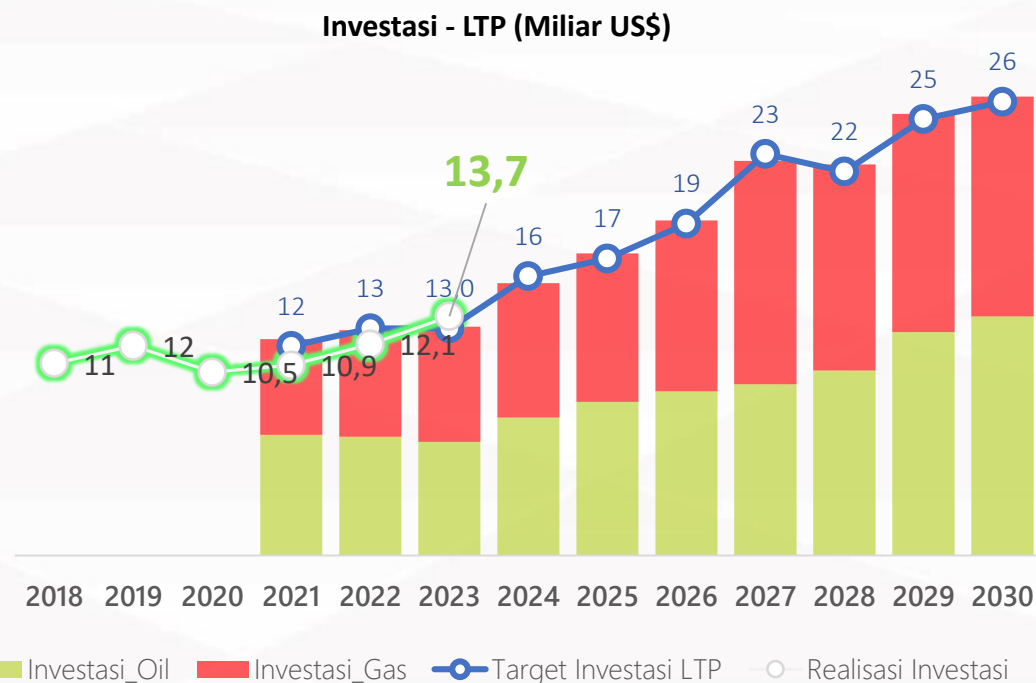
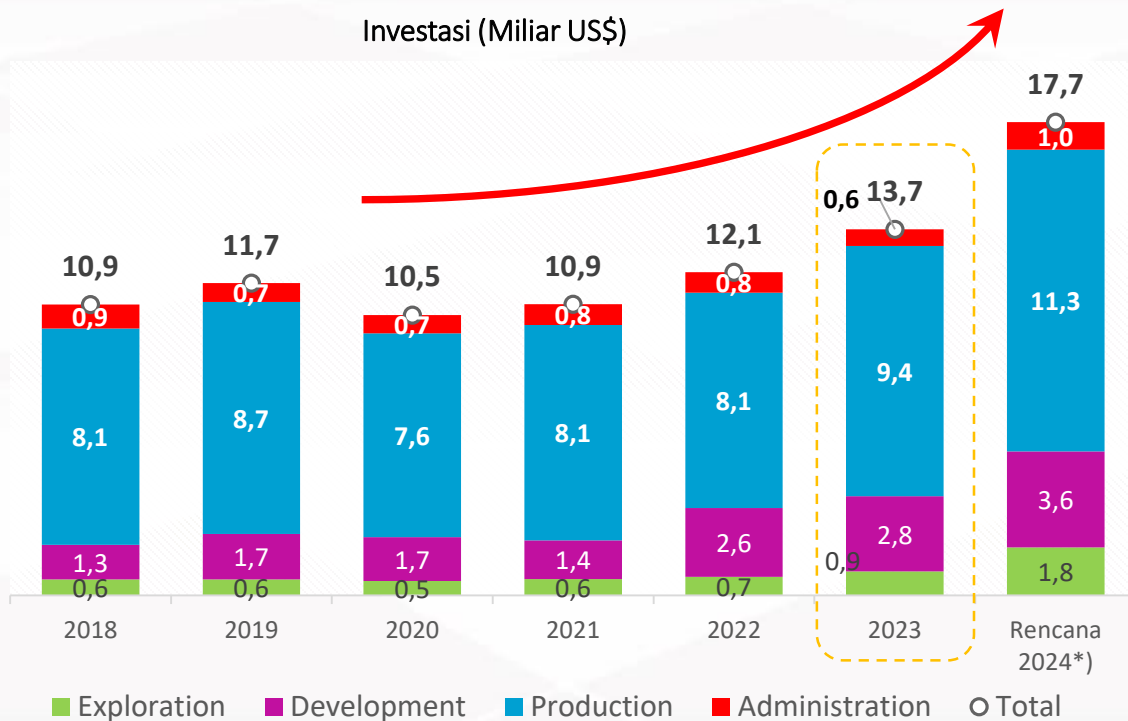


# LONG TERM PLAN 1 Million BOPD & 12.000 MMSCFD



# Investasi Hulu Migas

- Capaian Investasi Migas 2023 sebesar **US\$ 13,7 Miliar meningkat 13%** dari realisasi 2022 dan **lebih tinggi 5% dari LTP serta di atas tren investasi E&P Global.**
- Target Investasi 2024 sebesar **US\$17,7 Miliar meningkat 29%** dari realisasi 2023



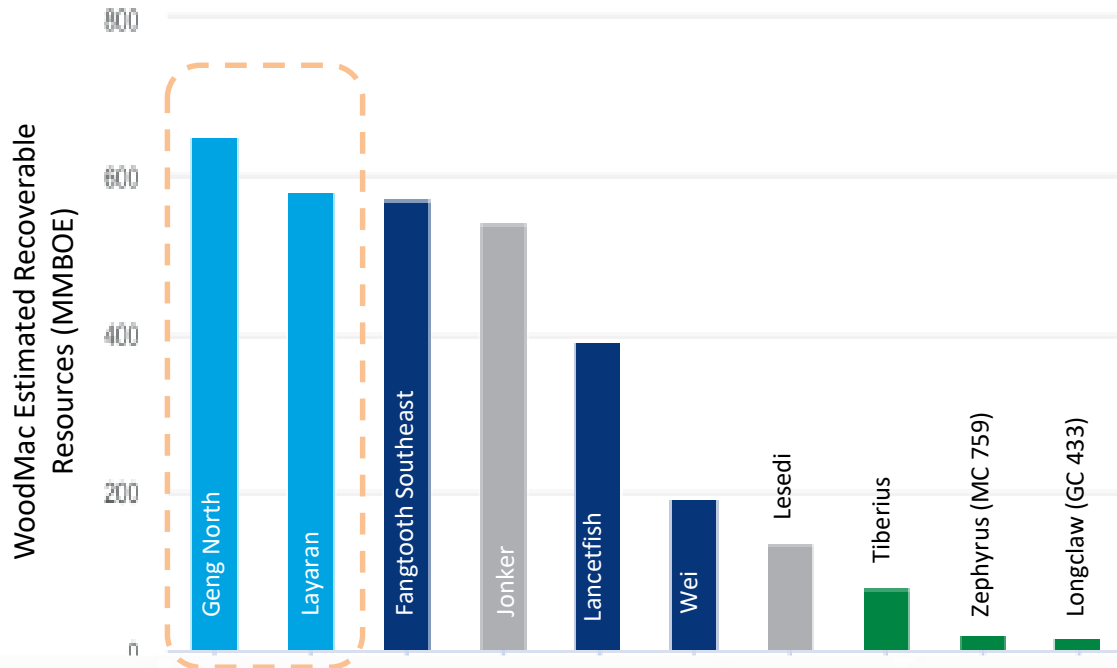
\*) Rencana investasi 2024 berdasarkan execution plan 2024



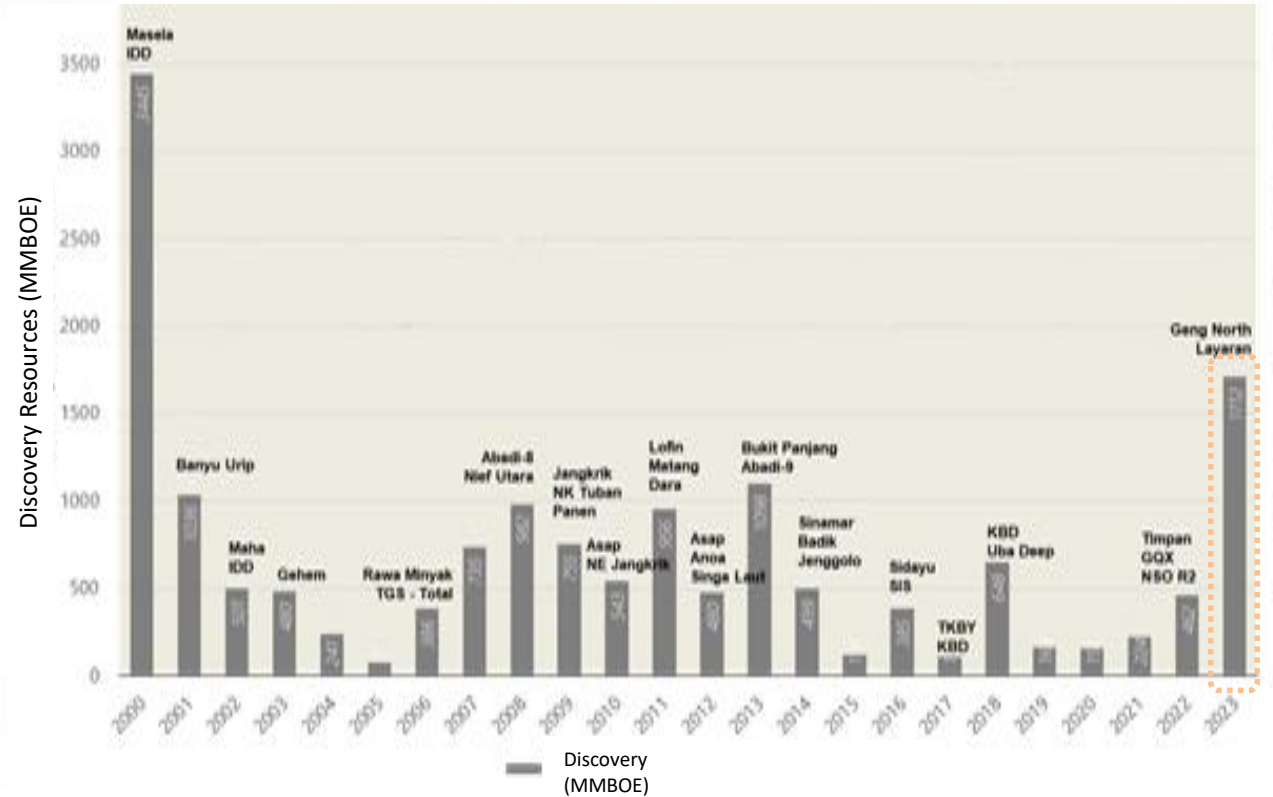
# Exploration is Gaining Momentum With Significant Discoveries

## Global Deepwater Discoveries in 2023

WoodMackenzie, December 2023



## Indonesia Discoveries Thn. 2000-2023

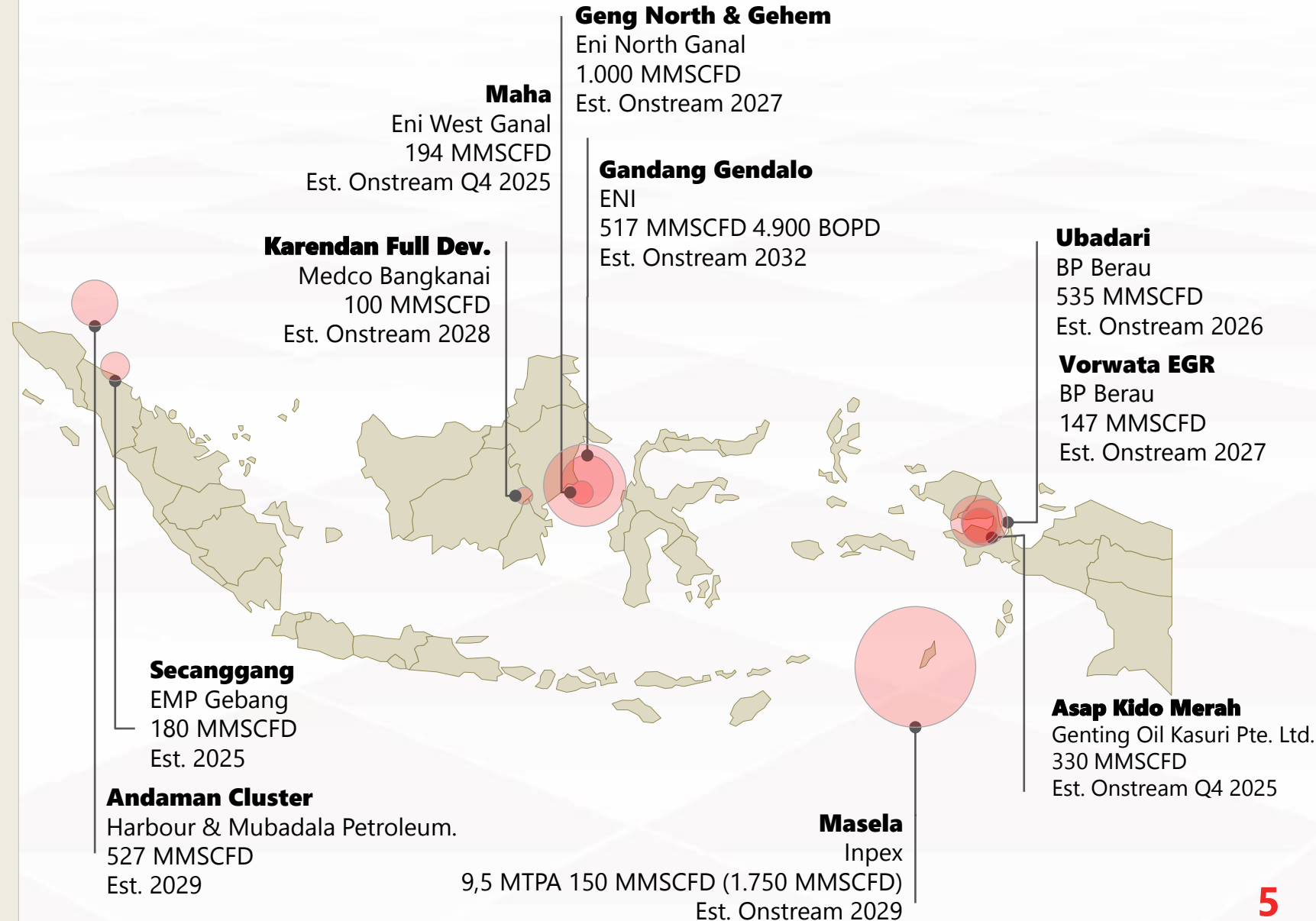
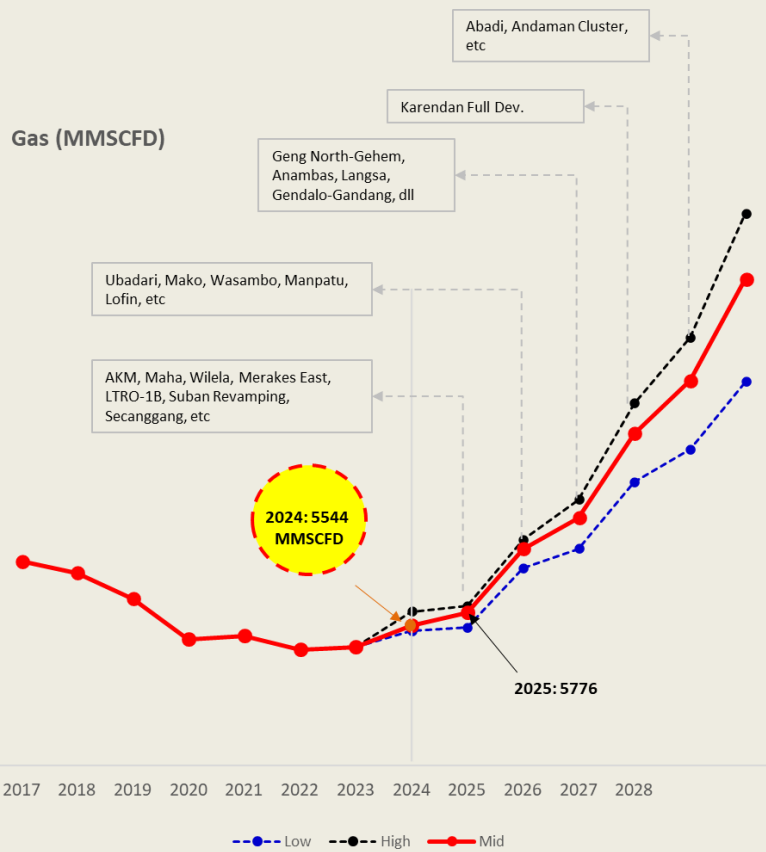


- Temuan Cadangan **Geng North & Layaran** di 2023, Giant discovery **setelah Abadi** ditemukan di 2000.
- The **World's 5 greatest discoveries** of 2023 (Source: WoodMackenzie, Rystad Energy and S&P Global).
- Baru saja menemukan "**big fish**" South Andaman, Tangkulo-1 well, est.1,9 TCF gas.

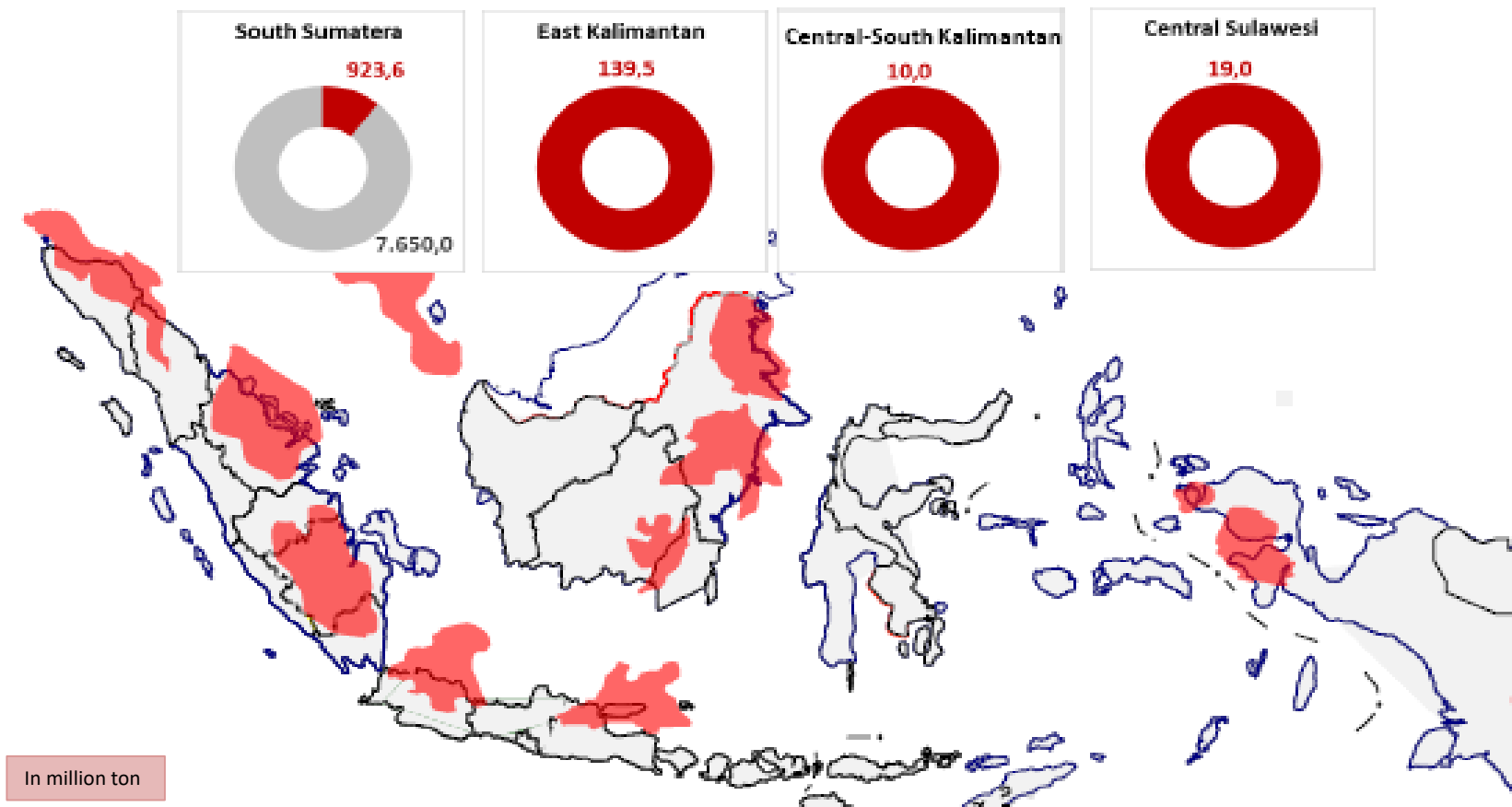


# Gas Supply Main Project

## Gas LTP



# Identifying Carbon Storage Potential Capacity

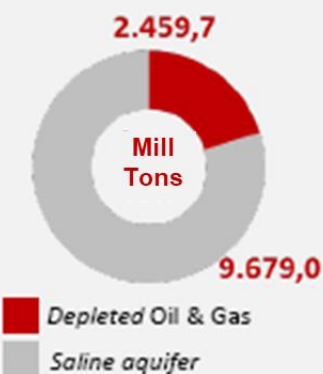


In million ton

## Total Potential CO<sub>2</sub> Storage:

**12.2 Billion tons CO<sub>2</sub>**

- *Depleted Oil & Gas:*  
2.5 Billion tons CO<sub>2</sub>
- *Saline Aquifers:*  
9.7 Billion tons CO<sub>2</sub>

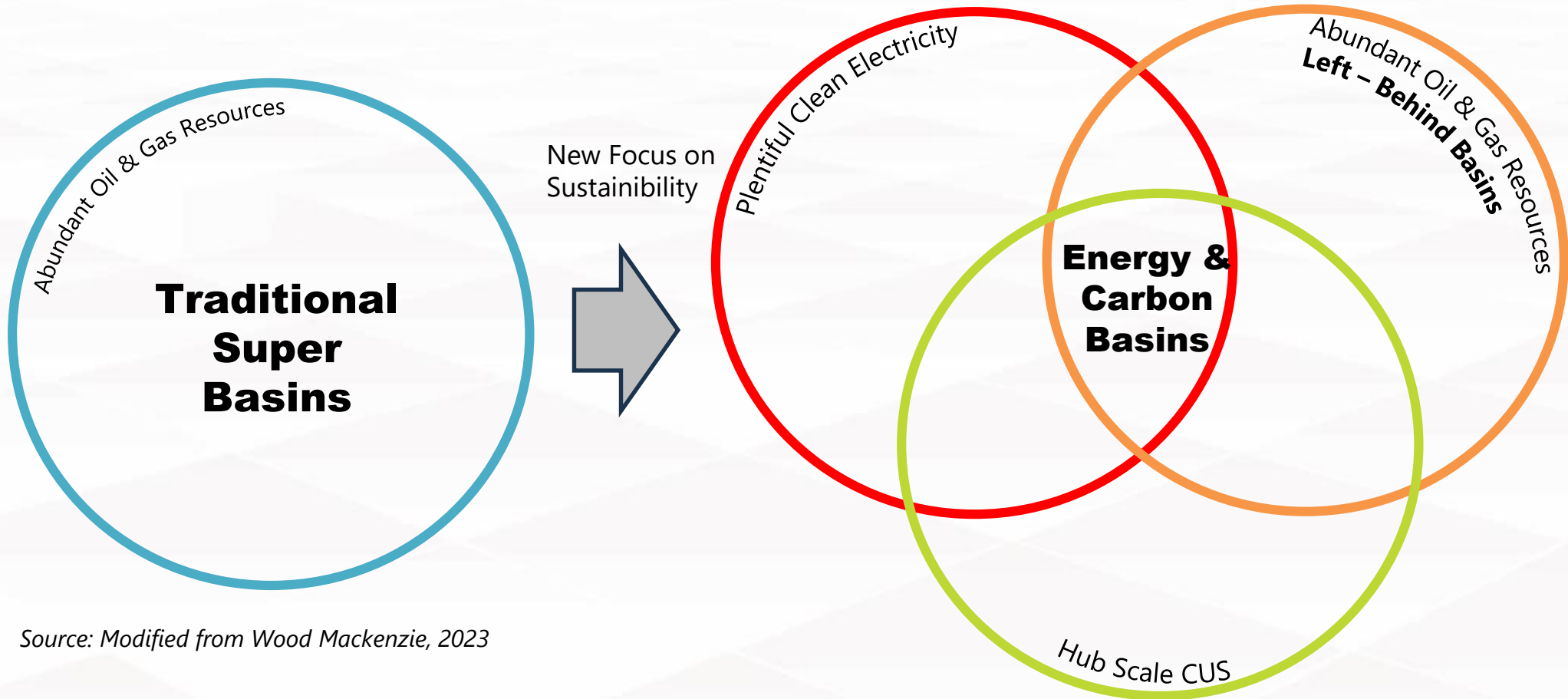


Source:  
LEMIGAS 2009 Study; LEMIGAS-ADB 2012 Study; LEMIGAS-World Bank 2015 Study; Ditjen Migas, 15 ongoing-project

## Study from International Institution:

- **ExxonMobile:**  
~80 Giga Ton CO<sub>2</sub> in saline aquifers
- **Rystad Energy:**  
>400 Giga Ton CO<sub>2</sub> Oil & Gas Reservoir and Saline Aquifers

# Indonesia Energy & Carbon Basins



Source: Modified from Wood Mackenzie, 2023

**“Changing Paradigm of Basin Management  
From Just Oil and Gas Basin into Energy & Carbon Basins”**



# CCS Project in Indonesia

	<b>Tanggung</b>	<b>Masela</b>	<b>Sakakemang</b>
Project	Vorwata EGR	Abadi CCS	Kaliberau Deep CCS
Storage Capacity (Gton)			
Depleted Reservoir	1,8 Gt	1,2 Gt	0,02 Gt
Saline Water	N/A	2,3 Gt	
Injection Rate	450 MMSCFD	160 MMSCFD	30 MMSCFD
Injection Well	3 wells	1 well	1 well
CO2 Injected	0,03 Gt	0,07 Gt	0,007 Gt
Start Injection	2028	2029	2028
Investment	US\$0,9 B	US\$1 B	US\$0,13 B



# Low Carbon Initiatives

CO <sub>2</sub> SEQUESTRATION (CCS-CCUS)	ENERGY MANAGEMENT (ENERGY CONSERVATION, FUEL SUBSTITUTIONS)	FUGITIVE EMISSIONS	ZERO ROUTINE FLARING (FLARE/ EMISSION REDUCTION)	REFORESTATION (OFFSET CARBON, NATURE BASED SOLUTIONS)
<ul style="list-style-type: none"> <li><input type="checkbox"/> <b>INTERNAL ASSESSMENT</b> </li> <li>Zelda (OSES), Mudi (TEJ), Kawangan, Raja, Tambun, Tanjung Tiga Barat, Wasian, X-Ray (PEP)</li> <li><input type="checkbox"/> <b>STUDY</b> </li> <li>Air Serdang, Guruh, Sukowati, Ramba, Bajubang (PEP), Bekapai (PHM)</li> <li><input type="checkbox"/> <b>HUFF &amp; PUFF</b> </li> <li>Jatibarang (PEP), Gemah (Petrochina)</li> <li><input type="checkbox"/> <b>CCS-CCUS</b> </li> <li>UCC (Ubadari, BPBL) CCS (Abadi, IML)</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> <b>NEW &amp; REN. ENERGY</b></li> <li>Photovoltaic (PHR). Reduce CO<sub>2</sub>, 23 thousand Ton Per Annum</li> <li><input type="checkbox"/> <b>GAS TO WIRE CONVERSION</b></li> <li>5 Projects mainly in Badak. Saving: 39 MMSCFD gas.</li> <li><input type="checkbox"/> <b>ENERGY CONSERVATION</b></li> <li>9 Fuel Gas Efficiency Project. Saving: 7.5 MMSCFD gas.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> <b>METHANE INVENTORY</b></li> <li>Calculations based</li> <li><input type="checkbox"/> <b>FUGITIVE EMISSIONS</b></li> <li>Calculations based</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> <b>FLARE UTILIZATION</b></li> <li>• 10 Ongoing Project with potential reduction 14 MMSCFD.</li> <li>• EMCL develops associated gas treatment projects with potential reduction: 10 MMSCFD.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Planting 2 Million Tree Each Year</b></li> </ul>

## POLICY AND REGULATIONS

- SKK MIGAS - PSC**  
Develop Guideline (PTK) on CCS-CCUS as part of POD and Carbon Management
- GOVERNMENT REGULATIONS**  
Ministerial ESDM Decree No 2/2023 on CCS/CCUS  
Presidential Decree on CCS/CCUS No 14/2024 on CCS

# Proyek UCC Tangguh

TANGGUH LNG

## Proyek Tangguh UCC

**30 juta** ton CO<sub>2</sub> diinjeksikan ke reservoir melalui CCUS

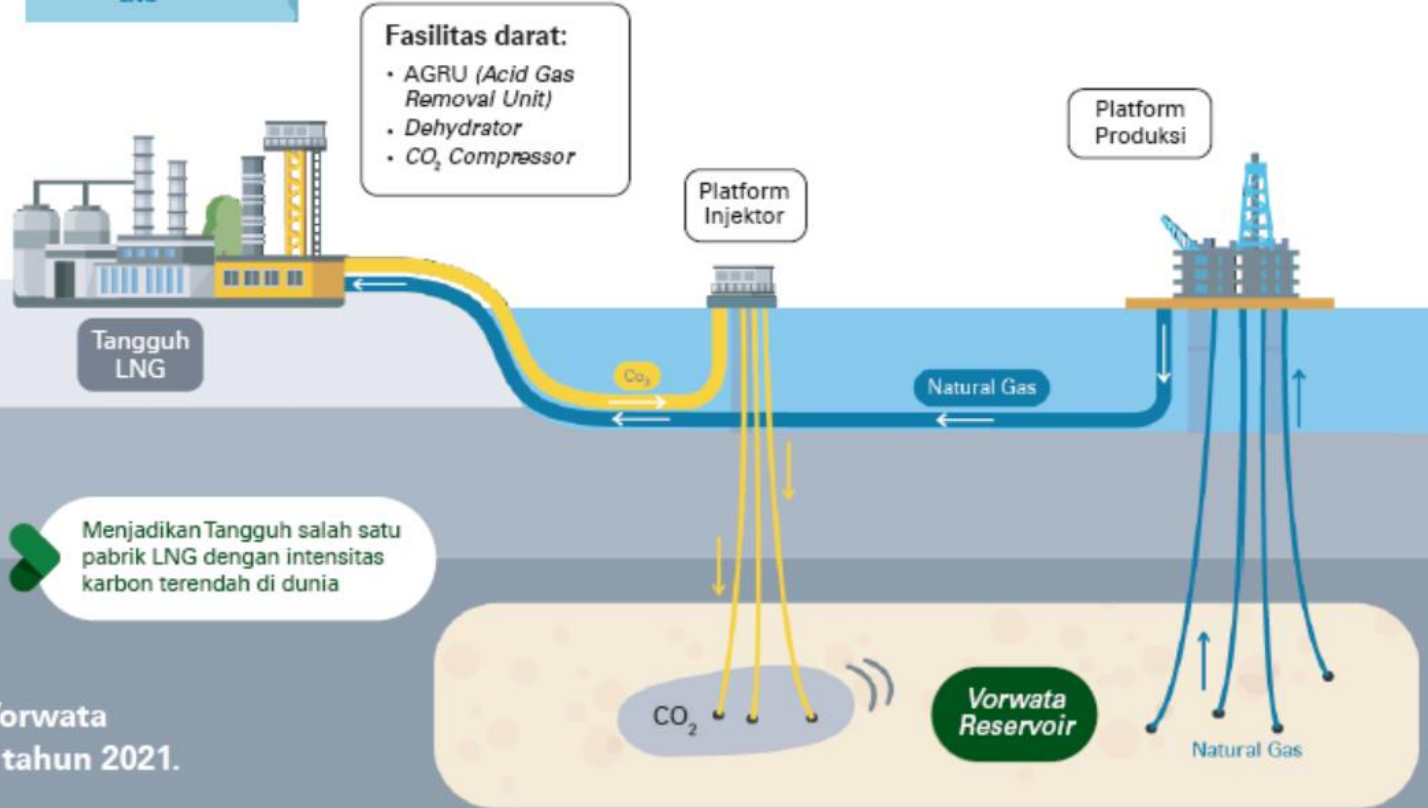
Estimasi injeksi CO<sub>2</sub> dimulai pada tahun 2028

Potensi penyimpanan CO<sub>2</sub> sebesar **1,8GT\***

Perkiraan investasi **\$3 miliar**

Target tingkat komponen dalam negeri **45%**

\*3% berasal dari Tangguh dan 97% potensi penyimpanan dari pihak ketiga



➤ Membantu transisi energi Indonesia

➤ Menciptakan dampak sosial dan ekonomi

➤ Menjadikan Tangguh salah satu pabrik LNG dengan intensitas karbon terendah di dunia

POD untuk lapangan gas Ubadari dan EGR/CCUS Vorwata menerima persetujuan Pemerintah Indonesia pada tahun 2021.

# Implementing CCS/CCUS Project in Oil & Gas



## Challenge

- Cost is still high. Impacting project economic.
- Creating monetary value from CCS/CCUS Project.



## Opportunity

- Huge storage of depleted reservoir and saline water.
- Economy/Industry still growing. Demand for oil, gas and carbon storage is growing.
- New Business Opportunity.
- Regulation has been established.
- On going CCS/ CCUS Project.

**TERIMA KASIH**