



THE MINISTRY OF ENERGY AND MINERAL RESOURCES  
THE REPUBLIC OF INDONESIA

# PROGRESS OF CCS/CCUS IMPLEMENTATION IN INDONESIA

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# Concept of Draft Ministerial Regulation on CCS/CCUS

Support the Development  
of CCS or CCUS  
(CO<sub>2</sub> EOR/EGR/ECBM)

Focus on CCS/CCUS in Oil and  
Gas Working Area

- *Conducted by O&G Contractor, based on Upstream O&G Business Mechanism,*
- *Open for CO<sub>2</sub> sources from outside upstream O&G (for CCUS)*

## CONCEPTS

Technical Aspects  
Based on Applicable Regulation,  
Referenced Standard, Good  
Engineering Practices And Site  
Characteristic

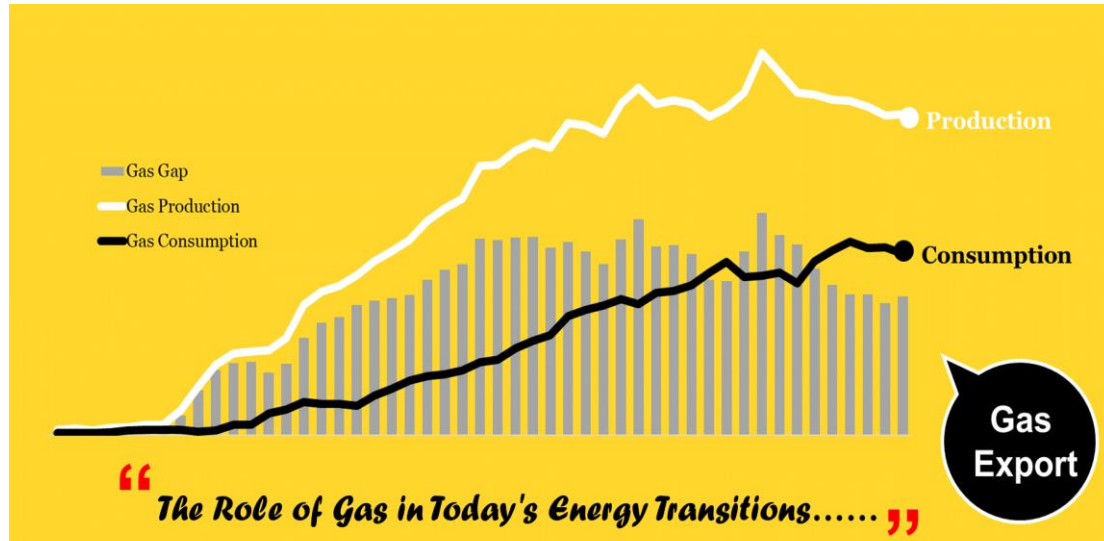
Opportunities for  
CCS/CCUS Monetization

The draft has been shared to the  
stakeholders for input & improvement

- ✓ Coordinating Ministry for Maritime & Investment Affairs
- ✓ Ministry of Environment & Forestry
- ✓ International Institutions (Government, Public/Private Institutions, Research Centers & Companies) from:
  - UK
  - Australia
  - South Korea
  - Japan
  - EU
  - US
  - Canada
  - Norway
  - Singapore



# Roles of CCS/CCUS - Indonesia

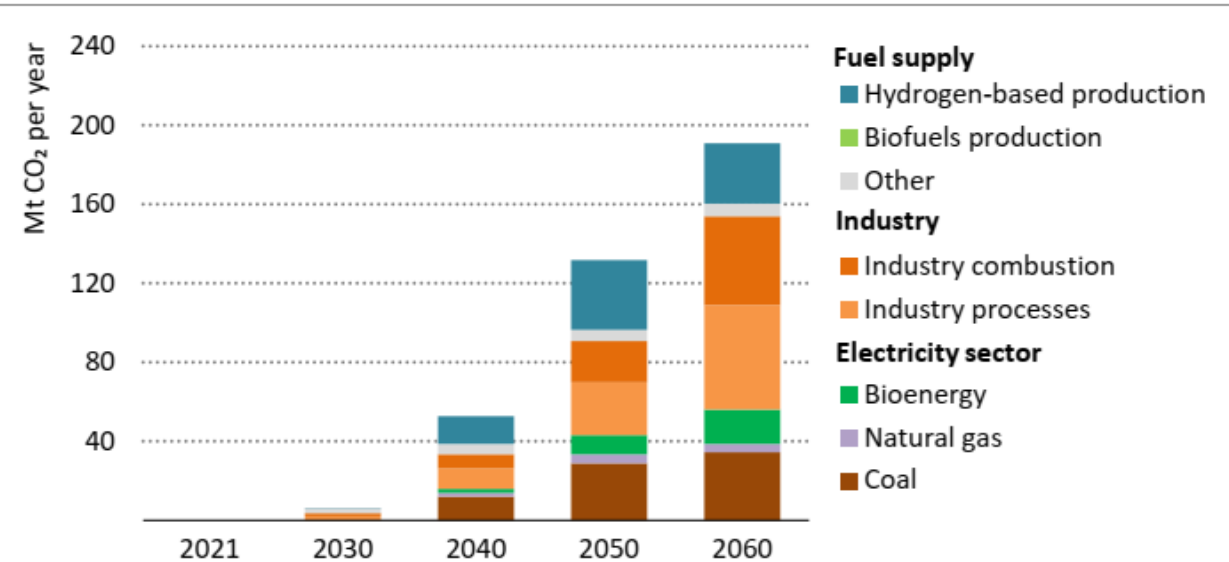


International Energy Agency (IEA)

- Natural gas has an important roles in the energy transition before reaching 100% power generation from renewable energy sources.
- CCUS plays a major role in reducing emissions from the natural gas value chain. CO2 separation from methane to meet natural gas or LNG standards. This process results in a highly concentrated (>98%) CO2 stream, which makes **natural gas processing one of the least-cost applications of CCUS.**

## Indonesia's Energy Sector

**Figure 5.29** ▶ CCUS deployment in Indonesia in the Announced Pledges Scenario, 2020 – 2060



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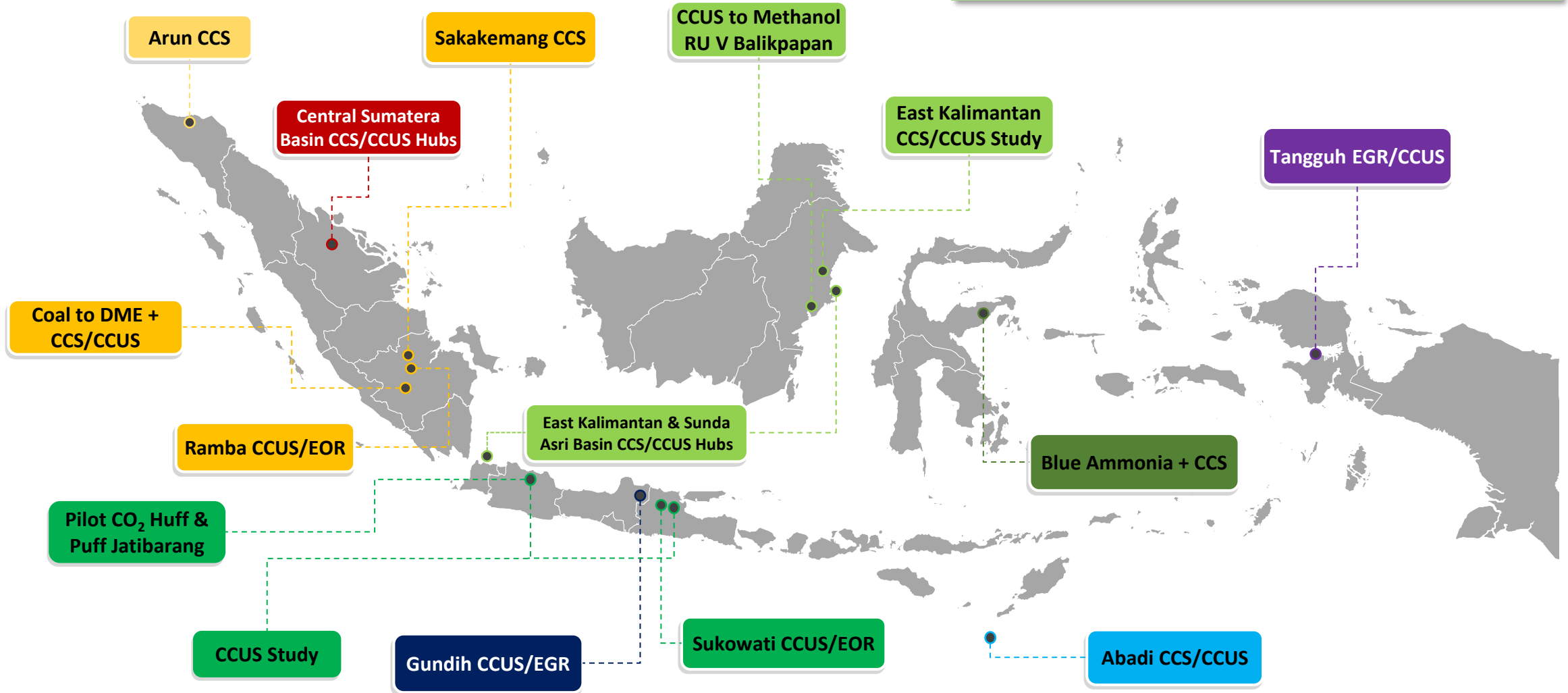
Source: IEA Special Report, 2022, An Energy Sector Roadmap to NZE in Indonesia

- CCUS is set to play important roles in supporting Indonesia's energy transition, in particular in industry, electricity generation and fuel transformation.
- CCUS applications pick up after 2025, with the amount of CO2 captured rising to over **6 Mt annually in 2030, and reaching around 190 Mt annually in 2060**



# CCS/CCUS Projects in Indonesia *August 2022*

15 CCS/CCUS activities in Indonesia are still in the study/ preparation stage, but most are targeted for on-stream before 2030



# Status of CCS/CCUS Projects in Indonesia *August 2022*

No	Projects	Conducted by	Status	Onstream Target Schedule	CO2 Stored Potential
1	<b>Tanggung EGR/CCUS</b>	bp Berau Ltd., study was conducted by CoE-ITB	FEED Preparation POD Ubadari dan Vorwata EGR/CCUS has been approved	2026/2027	25 to 33 million tCO2 for 10 to 15 yrs
2	<b>Gundih CCUS/CO2-EGR</b>	Pertamina, CoE ITB, JGC, J-Power, JANUS & Supported by METI Japan	Phase-2 Study to mitigate uncertainties & risks	2026	3 million tCO2 for 10 yrs
3	<b>Sukawati CO2-EOR</b>	Pertamina, LEMIGAS, JAPEX & Supported by METI Japan	<ul style="list-style-type: none"> <li>Subsurface Study by Pertamina</li> <li>Study CO2-EOR as CCUS by Pertamina, LEMIGAS, JAPEX</li> </ul>	<ul style="list-style-type: none"> <li>Pilot Test 2026-2027</li> <li>Full Scale: 2031</li> </ul>	7 to 14 million tCO2 for 15 yrs (base case 10 milliontCO2)
4	<b>CCS Sakakemang</b>	Repsol Sakakemang B.V.	<ul style="list-style-type: none"> <li>Site selection &amp; characterization</li> <li>Preparing Lab test for Feasibility</li> </ul>	2027	30 million tons of CO2 emissions for 15 years
5	<b>Abadi CCS/CCUS</b>	Inpex Masela Ltd.	FS with ITB (Completed on July 2022)	-	70 million ton of Native CO2 by 2055
6	<b>Joint Study Blue Ammonia &amp; CCS in Central Sulawesi</b>	Pertamina & PT. Panca Amara Utama, JOGMEC, Mitsubishi, ITB	<ul style="list-style-type: none"> <li>JSA Finalization</li> <li>Preparing required data by Pertamina</li> </ul>	FS (July 2023)	19 million tCO2 for 20 yrs
7	<b>East Kalimantan CCS/CCUS Study</b>	PT. Kaltim Parna Industri & ITB	Pre – Feasibility Study (surface facilities)	2028	10 million tCO2 for 10 years
8	<b>Study of CCUS for Coal to DME</b>	Pertamina & Chiyoda Corporation	Joint Study Agreement (JSA) has been signed, Preparing access data & CA	FS (Dec 2023)	26 or 131 million tCO2 for 20 years, depends on scenarios
9	<b>Arun CCS</b>	Carbon Aceh & PEMA	<ul style="list-style-type: none"> <li>MoU Carbon Aceh-PEMA has been signed</li> <li>Preparing for Joint Feasibility Study (Expected to be started in 2022)</li> </ul>	2028	-
10	<b>Ramba CCUS (CO2-EOR)</b>	Pertamina	Internal study	2030	-
11	<b>Central Sumatera Basin CCS/CCUS Regional Hubs</b>	Pertamina & Mitsui	Preparing required data & CA	2028	-
12	<b>East Kalimantan &amp; Sunda Asri Basin - CCS/CCUS Regional Hubs</b>	Pertamina & ExxonMobil	Subsurface Evaluation	2028	-
13	<b>CO2 Capture &amp; Utilization to Methanol - RU V Balikpapan</b>	Pertamina & Air Liquide	JSA has been signed, Joint Study until 2023	2028	-
14	<b>CCUS Study</b>	Pertamina & Chevron	Discussion on field candidate, preparing JSA	-	-
15	<b>Pilot Test CO2 Huff and Puff Jatibarang</b>	Pertamina & Region 2 – Zona 7	Validating the simulation result & preparing injection well, JSA with JOGMEC has been signed	Pilot Test W4 Oct 2022	-

- ❑ **Regulatory frameworks for CCS/CCUS are crucial enablers, MEMR has finalized draft ministerial regulation on CCS/CCUS for Oil and Gas Working Area and is ready for harmonization among related Ministries**
- ❑ **International cooperation and collaboration in technical, safety, economic and regulatory framework are much needed to increase the implementation of CCS/CCUS, including:**
  - **Mapping of potential CO<sub>2</sub> storage capacity in Saline Aquifer**
  - **CO<sub>2</sub> utilization from oil and gas field to produce Methanol**
  - **Feasibility Study on Blue Hydrogen Development**
  - **Study on the development of Business Model & MRV for CCS Hub**
  - **Capacity building (seminar, training, course, etc)**