The Role of National Center of Excellence for CCS/CCUS for supporting the implementation of CCUS in Indonesia

Presented at the G20 Side Event Series:
Making CCS/CCUS Affordable – Enabling CCUS Deployment in G20 and beyond
April 13th, 2022

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CO_2 Sources from Main Energy Sector in Indonesia

Indonesia target for GHG emission reduction from energy sector from 2010 2030 (20 years): ~ 314 - 398 Mt of CO_2

Gundih Field	3 Mt of Cumulative Total CO_2 that could be injected in 10 years
Tangguh Field	25 Mt of Cumulative Total CO_2 that could be injected in 10 years
Eastern Java	35 Mt of Cumulative CO_2 that could be produced from main oil and gas fields in Eastern Java for 10 years
Banggai Ammonia Plant & East Kalimantan Ammonia Plant	30 Mt of Cumulative CO_2 that potentially to be injected for 10 years
DME Project Tanjung Enim	40 Mt of almost pure CO_2 that potentially produced from coal gasification for 10 years and another 25 Mt of CO_2 from boiler incl. impurities

Potential of GHG reduction from these planned projects (10 years): ~ 137 Mt of CO_2

This is equal to 34 - 44% of GHG emission reduction target from energy sector (2010 - 2030)

Potential CO_2 from the Coal-fired Power Plants

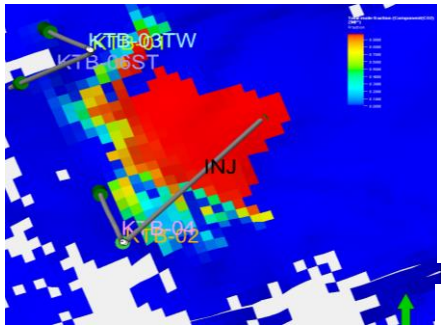
CO_2 released from all Coal-fired power plants in Indonesia (totally 35 GW, 80% capacity factor) ± 250 Mt of CO_2 p.a.

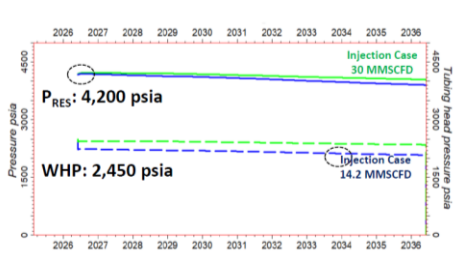
CCS/CCUS can play an important role in Indonesia, since there are a lot of CO_2 sources from energy sector and their locations are close enough to depleted oil reservoirs and coal mining

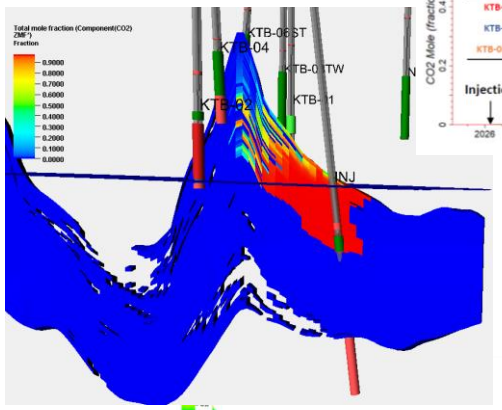
Activities and Products

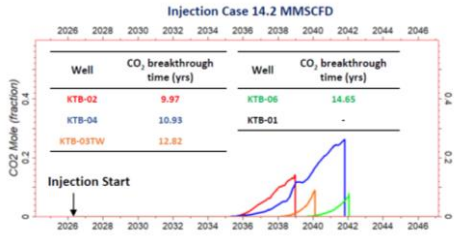
Participation in the Exhibitions

Capacity Building Program

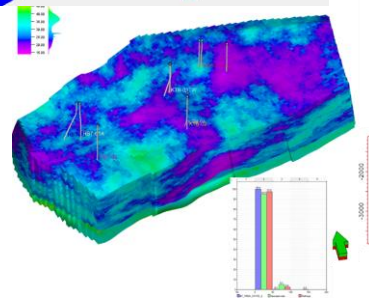


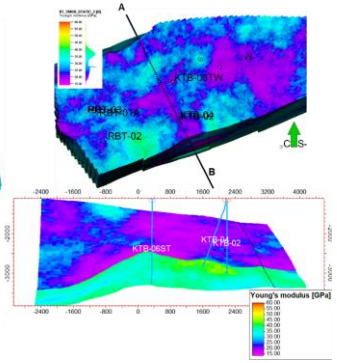






Conducting researches





Holding CCS/CCUS symposiums

Publish scientific papers

Cooperation Studies/Projects with Industries and International Partners

Potential CO_2 Source in East Kalimantan

CO_2 Source from Oil & Gas

No	Field Name	Operator
No Data		

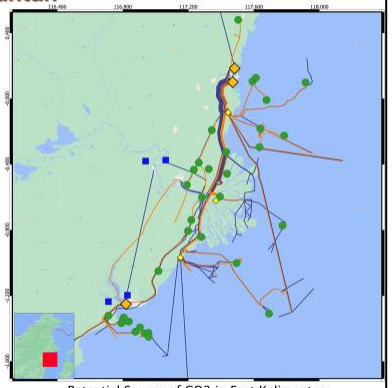
CO_2 Source from Industry

No	Industry Category	Company
A.1	Petrochemicals	PT Pupuk Kalimantan Timur, Ammonia Plants, etc
A.2	LNG Plant	PT. Badak NGL
A.3	Refinery	PT. Pertamina (RU V)

CO_2 Source from Power Plant

No	Coal Power Plant	Owner
C.1	PLTU Senoni	PT Kalimantan Powerindo
C.2	PLTU CFK	PT PT Cahaya Fajar Kaltim
C.3	PLTU Teluk Balikpapan	PT PLN (Persero) Pembangkitan dan Penyaluran Kalimantan
C.4a	PT Kariangau Power	PT Kariangau Power

New study cooperation between PT Kaltim Parna Industri (KPI) and ITB was established on 30 August 2021, study will be started from 1st Nov 2021



Potential Source of CO2 in East Kalimantan
Source Category: Gas Field, PLTU, Industry

1

New Study Cooperation

Signing of MoU regarding CCS Joint Study for Clean Fuel Ammonia Production in Central Sulawesi

PT Panca Amara Utama, JOGMEC, Mitsubishi Corp. & ITB: 19 March 2021

Study is started from 29 October 2021

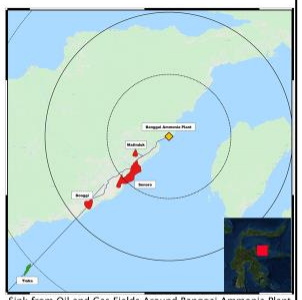
Signing ceremony

Japan Oil, Gas and Metals National Corporation (JOGMEC), Mitsubishi Corporation (MC), Bandung Institute of Technology (ITB), a national university in the Republic of Indonesia, and PT Panca Amara Utama (PAU) have agreed to conduct a joint study on carbon capture and storage (CCS) and carbon dioxide utilization for clean fuel ammonia production in Central Sulawesi, the Republic of Indonesia. The four parties have signed a Memorandum of Understanding (MOU).

Ammonia is being used worldwide as raw material for fertilizers/plastics/chemicals. Expectation for ammonia to become a next generation clean energy source is growing because ammonia does not emit carbon dioxide when burnt; transportation methods have been established with existing infrastructure; and due to its high hydrogen content.

Under the MOU, the four parties will jointly conduct a CCS feasibility study near PAU's ammonia plant in Luwuk, Central Sulawesi, and the Donggi-Senoro LNG plant in the same province which is being led by MC as the largest shareholder. Mitsubishi Gas Chemical Company, Inc., which also indirectly invests in PAU together with Mitsubishi Corporation, has expressed its interests to cooperate in this joint study. Going forward, the companies concerned will formulate the necessary work processes including project composition; data accumulation of candidate storage formations; simulations; analysis and evaluations.

Through this joint study, we will make effort to contribute towards realizing a decarbonized society and securing stable energy supply for Japan by pursuing the feasibility of clean fuel ammonia production from utilization of existing ammonia plant and CCS treatment of carbon dioxide generated during the production phase.



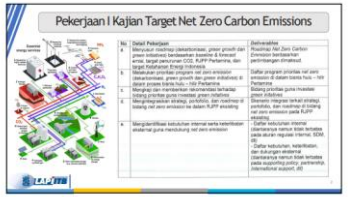
Sink from Oil and Gas Fields Around Banggai Ammonia Plant
Central Sulawesi

No ID	FIELD_NAME	OPR_CURR	PROD_STAT	GN_HC_TYPE	FLD_SQKM
1	Senoro	JOB Pertamina-Medco E&P Tomori Sulawesi (JOB PMTS)	Producing	Oil & Gas Fields	56.9
2	Tiaka	JOB Pertamina-Medco E&P Tomori Sulawesi (JOB PMTS)	Temporarily shut-in	Oil & Gas Fields	6.9
3	Donggi	PT Pertamina EP	Producing	Gas Fields	14.1
4	Matindok	PT Pertamina EP	Producing	Gas Fields	5.92

2

CCS Joint Study for Clean Fuel Ammonia in East Kalimantan and Central Sulawesi

1



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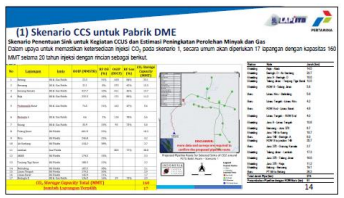

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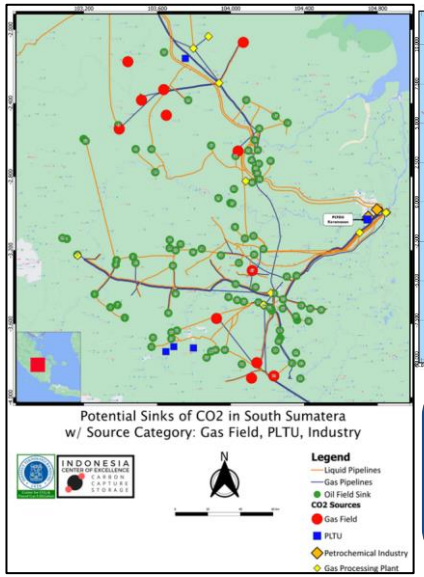
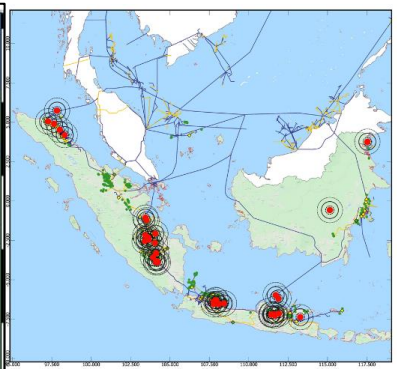
Decarbonization Study For Green House Gases Emission Reduction Program

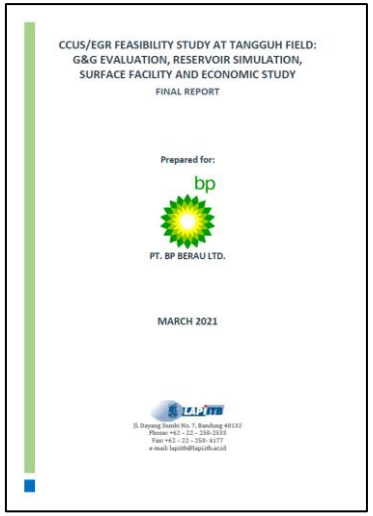


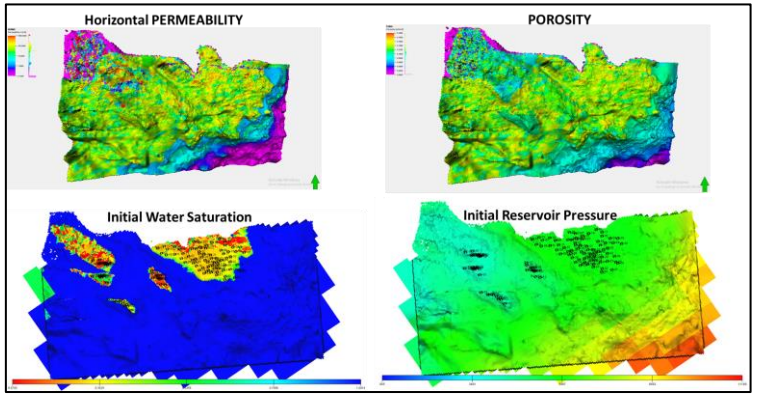
Potential Sinks of CO2 in South Sumatera
w/ Source Category: Gas Field, PLTU, Industry



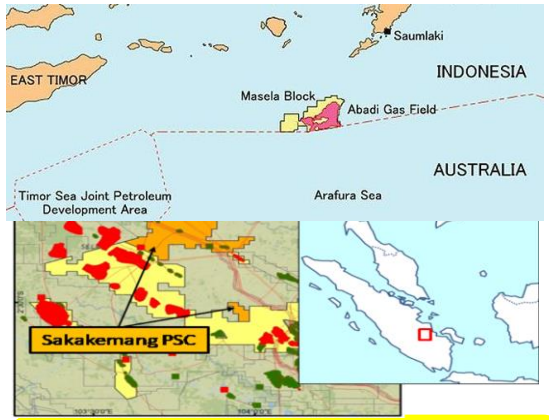
Map of Potential CO2 Source in Sumatera, Java, and Kalimantan Region

Indonesia CO_2 Source – Sinks Mapping and Spatial Database



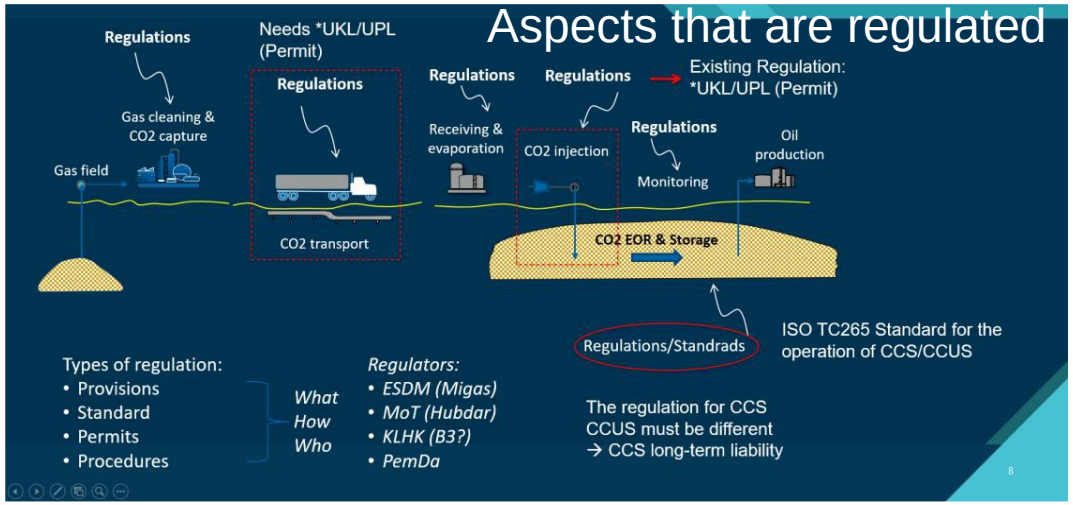


CCUS/EGR Feasibility Study At Tangguh Field:
G&G Evaluation, Reservoir Simulation, Surface Facility and Economic Studies

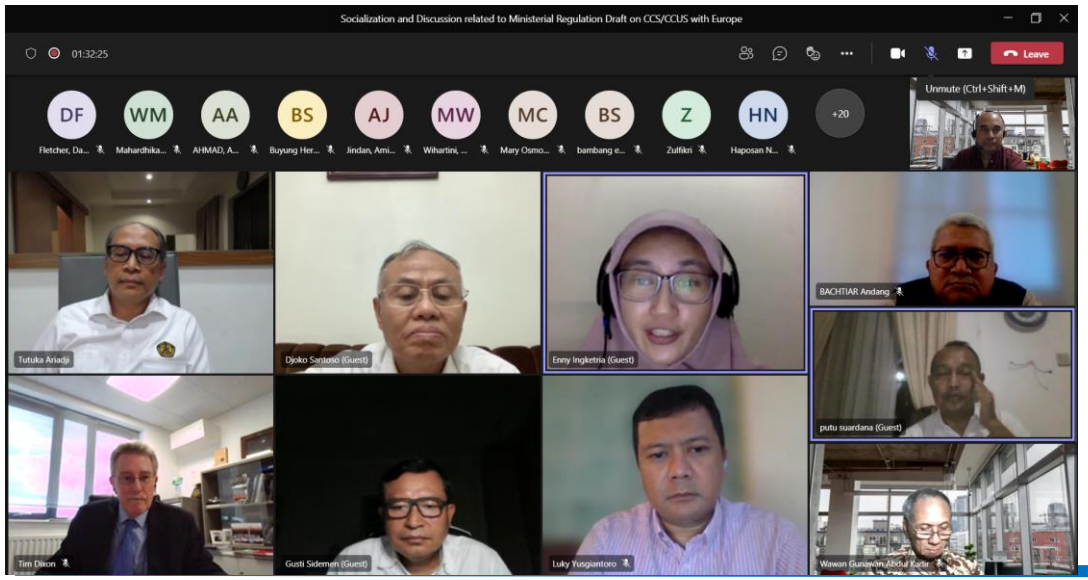


NEXT: Abadi & Sakakemang CCS Feasibility Study

Development of CCS/CCUS Regulation in Indonesia



Socialization to international CCS/CCUS communities



Rancangan Permen ESDM 2 Febuari 2022

MINISTRY OF ENERGY AND MINERAL RESOURCES REGULATIONS

NUMBER .....OF 2022

ON

CARBON CAPTURE, UTILIZATION AND STORAGE ACTIVITY

BY THE BLESSING OF ALMIGHTY GOD,

INDONESIA'S MINISTRY OF ENERGY AND MINERAL RESOURCES,

Considering :
a. Interception, utilization, and carbon capture is a technology to reinforce the National Action Plan Commitment to foster Green House Gas Reduction and climate resilience by 2050;
b. Indonesia has the geological formation to conserve carbon emission permanently in order to reduce the Green House Gas emission and encourage advancement in oil and natural gas production.
c. Interception, utilization, and carbon capture have not been regulated; and
d. In accordance with the appeal mentioned in point a, point b, and point c, it is necessary to issue a Ministry of Energy and Mineral Resources regulation concerning the intercepting, beneficiating, and carbon conservating implementation;

Observing :
1. Article 17 paragraph (3) 1945 Constitution of the Republic of Indonesia;
2. Law Number 22 of 2001 on Oil and Natural Gas (State Gazette of the Republic of Indonesia of 2001 Number 136, Supplement to the State Gazette of the Republic of Indonesia Number 4152);
3. Law Number 11 of 2006 on Aceh's Governance (State Gazette of the Republic of Indonesia of 2006 Number 62, Supplement to the State Gazette of the Republic of Indonesia Number 4633);
4. Law Number 30 of 2007 on Energy (State Gazette of the Republic of Indonesia of 2007 Number 96, Supplement to the State Gazette of the Republic of Indonesia Number 4746);
5. Law Number 39 of 2008 on National Ministry (State Gazette of the Republic of Indonesia of 2008

Rancangan Permen ESDM 2 Febuari 2022

CHAPTER XI
OTHER PROVISIONS
Article 52

The implementation of CCS outside Working Area, shall be governed in a separate Ministerial Regulation.

CHAPTER XII
CLOSING PROVISIONS
Article 53

In the event that this Ministerial Regulation provides options, does not regulate, is incomplete, or unclear, and/or there is stagnation, the Minister in accordance with his authority may exercise discretion to address the problems in the implementation of Carbon Emissions reduction.

Article 54

This Regulation comes into force on the date of its promulgation.

Article 55

For public cognizance, it is ordered that this Ministerial Regulation be promulgated by placing it in the State Bulletin of the Republic of Indonesia.

Issued in Jakarta
on__ month___ 2022
Minister of Energy and Mineral Resources
Signed.

ARIFIN TASRIF

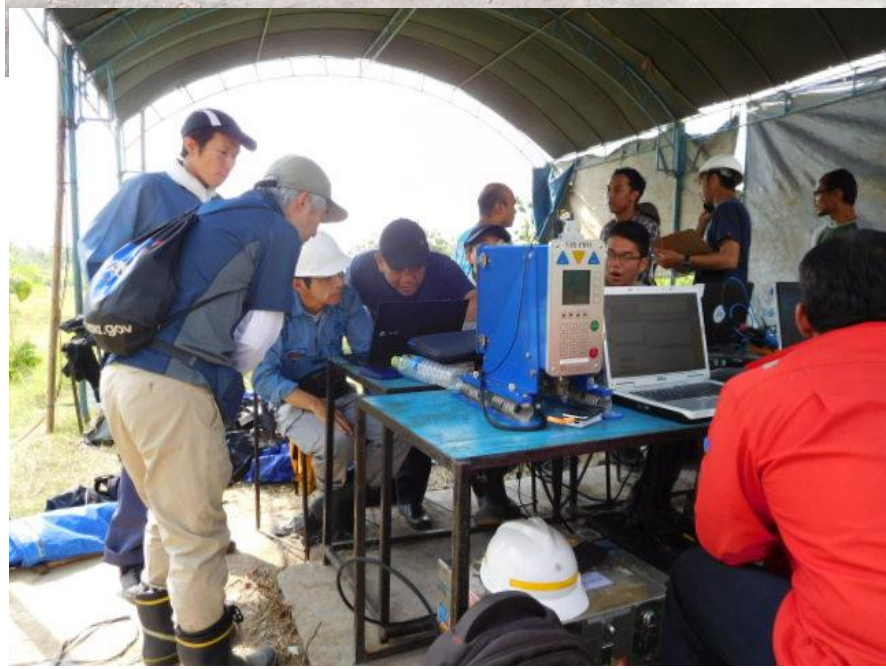
Promulgated in Jakarta on ___ December 2021

GENERAL DIRECTOR OF LEGISLATION OF THE MINISTRY OF LAW AND HUMAN RIGHTS OF THE REPUBLIC OF INFONESIA,
signed.

BENNY RIYANTO

STATE BULLETIN OF THE REPUBLIC OF INDONESIA OF 2022 NUMBER ....

Thank You



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