

Day 3 Association Presentation

Oil & Gas Industry as the catalyst for Energy Just Transition in Indonesia

M Burhannudinnur
Chairman of IAGI

Leveraging The Opportunities Of The Indonesian Oil And Gas Industry

Indonesia, with its abundant natural resources, possesses 128 oil and gas basins across the archipelago. More than half of these basins remain unexplored, and the country aims to intensify its exploration efforts. Presently, Indonesia's oil and gas production is derived from only 20 basins, while eight drilled basins have not yet yielded oil and gas. However, signs of hydrocarbon, a key component of crude oil and natural gas, have been observed in nineteen basins. Moreover, realization of oil and gas production or lifting from 2018 to 2022 is still below the target. Even though production has decreased, SKK Migas data shows that there is a gap of 144 MBOE (millions of barrels of oil equivalent) between the realization and the production target in 2021.

In 2019, Indonesia's primary energy supply mix comprised oil at 35%, coal at 37.3%, gas at 18.5%, and non-renewable energy sources (NRE) in the form of hydropower at 2.5%, geothermal at 1.7%, biofuel at 3%, and other renewables like biogas, solar, wind, and others, making up nearly 2% of the mix. However, despite significant energy resources, Indonesia has faced challenges with stranded discovered resources since 2015. Only 25% of the resources discovered between 2000 and 2015 have been successfully brought onstream. In contrast, Malaysia has shown promising performance, with consultancy Rystad Energy estimating that more hydrocarbon volumes were discovered in Malaysia between 2020 and 2022 than in the rest of Southeast Asia combined.

Next, IAGI highlights several challenges for Indonesia in achieving the Net Zero Emissions goal by 2060. The country's domestic energy needs are continuously rising, leading to an emission peak projected to occur around 2036, reaching nearly 750 million tons of CO₂-e. This is a significant concern as the goal for 2060 is to achieve zero emissions from power plants. However, presently, there are still 129 million tons of CO₂-e emissions from the demand side, which poses a major obstacle in reaching the target. Addressing these challenges will require comprehensive and strategic efforts to transition to a low-carbon economy and effectively reduce emissions to reach the Net Zero Emissions goal by 2060.

IAGI has been actively advocating for the sustainability of the Oil and Gas Industry by delivering messages to the Government, Commission 7 DPR, and DEN (Dewan Energi Nasional). In the regulatory domain, efforts have been made to adapt regulations to local governments, and fiscal terms have been designed to support investments in Reserves and Resources in the New Exploration sector.

In the subsurface area, significant developments have taken place, including the creation of a Reserves and Resources geoportal by ESDM (Ministry of Energy and Mineral Resources). Additionally, seismic data acquisition and processing have been undertaken, with 30,000 km of 2D Seismic Offshore KKPJM and 1000 km of 2D Seismic Onshore. Pertamina is leading the operation of Subvolcanic Jawa. In the economic sphere, several measures have been introduced, such as sliding fiscal terms and the promotion of Economic Minimum Value (EMV). The implementation of gross split flexible to cost recovery has also been initiated.

To expedite progress, several crucial measures need to be taken, including streamlining permit and licensing processes, addressing investment regulatory challenges, developing stranded discoveries, and enhancing the geoportal of ESDM with additional meta-data such as geochemistry and petrophysics. Overcoming investor hesitation and maintaining a balance between government objectives and investor interests are also vital aspects to be addressed.

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Lastly, IAGI recognizes the significant CO₂ storage potential in Indonesia, with up to 400 Gt of capacity available in onshore and offshore fields. This ample capacity presents a valuable opportunity to address regional emission challenges effectively. By incorporating Carbon Capture and Storage (CCS) into a comprehensive low-carbon ecosystem, Indonesia can attract more investments and bolster its position as a sustainable and environmentally responsible nation. Looking ahead, the CCS infrastructure can serve a dual purpose. Besides storing CO₂ emissions, it can also facilitate the distribution of alternative fuels, such as hydrogen, ammonia, and methanol-based fuels. This forward-thinking approach to infrastructure development can pave the way for a greener energy landscape and foster sustainable practices in Indonesia's energy sector.

Randy Condronogoro
President of HAGI
Increasing Certainty (Sustainability) in Indonesia

The Indonesian oil and gas industry currently faces a significant disparity between demand and production. Despite a target of 1 million BOPD (Barrels of Oil Per Day), there will still be a 74% deficit in oil demand by 2030. Similarly, the natural gas production target of 12 BCSFD (Billion Cubic Feet per Day) is projected to fall 66% short by 2040. As Industry 4.0 advances with the support of big data and cloud computing, future energy needs will only increase, necessitating massive investments in the oil and gas sector.

Successfully pursuing these unmet targets demands substantial oil and gas investment activities. Furthermore, CCS/CCUS, a complex technology, requires a comprehensive understanding and integrated approach. Therefore the availability of complete Geological and Geophysical (G&G) data is crucial not only for supporting Oil and Gas Exploration activities but also for exploring potential areas for CCS/CCUS in the future. Opening part of this data to the public would foster discussions and research on key developmental areas such as CCS/CCUS and disaster mitigation.

The slowdown in the oil and gas industry since 2014 has also impacted career interest among Geophysics students. HAGI's internal survey indicates that only 16% of Geophysics graduates choose to work in the industry. Additionally, surveys by the Earns and Young agency show that only 6% of Gen-Z and 18% of Millennials are interested in pursuing a career in oil and gas.

To increase oil and gas investment in Indonesia, HAGI has undertaken several initiatives. Improving facilities for potential investors is essential, as investors now seek value for money in every activity. Enhancing the speed and accuracy of data in comparison to similar services is also crucial. Furthermore, HAGI encourages publications on CCS/CCUS, coupled with Big Data technology and Machine Learning, at various scientific meetings. Moreover, conducting discussions on Carbon Capture technology in major exhibitions further supports investment climate at various major exhibitions such as the IPA Convex 2023 and the 2023 IAGI-IAFMI-HAGI-IATMI-PERHAPI Joint Convention.

Ultimately, all stakeholders in the Oil and Gas Industry bear the responsibility of promoting an increase in the investment climate, developing science and technology, and nurturing skilled oil and gas practitioners in Indonesia. These collective efforts will ensure the sustainability of the Indonesian Oil and Gas Industry as a national vital sector and strengthen Indonesia's energy resilience.

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Inge Sondaryani

Secretary General of IATMI

Reduction of Greenhouse Gas Emissions Related to CCS/CCUS Roadmap Implementation

Indonesia's decisions carry significant weight, given its position as the fourth-most populous country and future fourth-largest economy. Its actions directly impact global energy markets and climate objectives. Notably, despite economic growth, the contribution of oil and gas to GDP has decreased. As Indonesia transitions towards a net-zero economy, the need for 'just transition' policies becomes imperative to ensure a smooth economic shift while addressing climate goals. Since managing economic and workforce transitions during this development phase poses challenges, IATMI has been advocating leveraging technological advancements, such as CCUS, to facilitate a sustainable and equitable energy system. Moreover, IATMI believes that collaboration and partnerships play a pivotal role in achieving the ambitious goal of reaching net-zero emissions by 2060 or even sooner.

IATMI's aspirations are based on two starting points. Indonesia's energy transition objectives requires harmonization with the principles of a just transition. IATMI aims to foster a shift towards a low-carbon economy that is equitable, inclusive, and considers social and economic aspects. IATMI believes that ensuring fairness and inclusivity is crucial as the nation transitions to sustainable energy sources. IATMI also recognizes the crucial role of CCUS/CCS technologies in curbing greenhouse gas emissions from the oil and gas industry and other sectors in Indonesia. These advanced technologies capture and store carbon dioxide underground, contributing to environmental sustainability and supporting the achievement of emission reduction targets.

To achieve its energy transition goals, IATMI identifies three key drivers; Technology, people and financing. Innovation in energy transition is driven by adopting and advancing cutting-edge technologies that promote sustainable practices and clean energy solutions. Then, a skilled and knowledgeable workforce is essential to facilitate the adoption and implementation of energy transition strategies. Collaboration among industry stakeholders, policymakers, and the public is vital in driving collective efforts towards a sustainable future. Lastly, adequate funding plays a crucial role in accelerating the energy transition. Investing in sustainable projects and initiatives ensures that the transition to cleaner energy sources is efficiently and effectively executed.

IATMI has taken proactive steps in promoting energy transition by facilitating discussions and collaborative research programs with esteemed universities. This approach serves to raise awareness about the importance of energy transition and its implications. Public and professional engagement, for example IATMI TALK on Energy Transition and IATMI TALK on CCUS in Indonesia, is a critical aspect of IATMI's efforts. IATMI also engages in leveraging the expertise and networks of Indonesian diaspora professionals offers valuable knowledge transfer, potential investments, and opportunities for global collaboration. This can accelerate technological progress and innovation in the country. Furthermore, IATMI believes that by collaborating with academic institutions, IATMI fosters a skilled workforce and supports the dissemination of knowledge. Universities play a vital role in producing graduates who can actively contribute to Indonesia's energy transition, making it more effective and sustainable.

To conclude, IATMI strongly calls for a collective effort from all stakeholders to successfully implement an energy just transition in Indonesia. This crucial undertaking requires the collaboration and cooperation of the government, academia, industry, and professional associations. By joining forces, these stakeholders can unleash the full potential of Indonesia's Oil and Gas Industry and work towards a sustainable energy transition in a just manner.

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Taufik Adityawarman
President of IAFMI
Net Zero Emission (NZE) in Oil & Gas Industry

GHG emissions are categorized into three scopes, with Net Zero Emission focusing on reducing emissions in Scope 1 and 2. Scope 1: These are emissions from sources that the company generates, owns, or controls within its plants. Examples include fuel combustion, process emissions, and fugitive emissions. These emissions have a direct impact and are regularly monitored and controlled by the company.

Scope 2: These emissions are from the generation of electricity, heat, or steam that the company purchases. Examples include emissions from electricity purchased from PLN (state-owned electricity company). These emissions are relatively easier to quantify and monitor.

Scope 3: These emissions are from sources not directly owned or controlled by the company but are related to its activities, spanning from upstream to downstream. Examples include emissions from the purchase of raw materials, goods, and services, as well as emissions related to the products sold and their transportation. Monitoring these emissions is difficult and poses a significant challenge for the Oil & Gas Industry. Currently, achieving carbon neutrality for organizations or companies only requires addressing Scope 1 and 2 emissions, with Scope 3 emissions encouraged but not mandatory.

Three main approaches are used to decarbonize the Oil & Gas Industry: technology implementation, nature-based solutions, and carbon offset trading. First, technology implementation. This method, being under company control, is easier to monitor. It delivers an immediate impact on Scope 1 or 2 emissions but requires significant research, development, and investment.

Secondly, via nature-based solutions. This approach offers various benefits beyond emission reduction, including environmental and climate preservation. However, it requires a robust methodology to measure its effectiveness, and concerns exist over its reliability and cost-effectiveness compared to engineered alternatives.

Thirdly, Carbon Offset Trading. This method allows companies to claim immediate environmental benefits by participating in offset projects. Motivating companies to reduce carbon emissions is crucial, as some may continue to produce significant emissions. However, future carbon offset prices may become expensive due to stricter regulations.

In order to achieve net-zero emissions in the Oil & Gas Industry, two strategic initiatives are proposed. First is by increasing energy efficiency. This initiative focuses on near-zero flaring while recovering valuable waste gas for reuse as fuel or feedstock. It involves utilizing external utility sources and advanced process control to optimize variables for product yield and quality while maintaining low carbon footprints. Oil & Gas Industry should also implement Green Business Initiatives. This approach involves producing eco-friendly products with lower sulfur levels, such as EURO V Gasoline & Gasoil. It also includes the production of carbon-neutral fuels like Hydrogen, Methanol, and Ammonia, as substitutes for fossil fuels and renewable feedstock. Additionally, capturing carbon dioxide emissions for building materials utilization or permanent storage is part of this initiative.

By implementing these strategic approaches, the Oil & Gas Industry can make significant progress toward achieving net-zero emissions, while contributing to environmental preservation and sustainability.

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Q & A

1. Is the oil and gas production target set by the government still relevant to the current situation?

Measuring the relevance of the targets should be an ongoing process, and if it is found that the initial targets are no longer achievable or suitable due to various factors, including economic, technological, or market changes, the government should have the courage to revise them accordingly (**M. Burhannudinnur**)

It is true that fulfilling production targets in the oil and gas industry requires not only efforts to increase production but also proper management and investment. Simply increasing production without adequate management could lead to inefficiencies, waste of resources, and missed opportunities for sustainable growth (**Randy Condronogoro**)

Exploration of new fields is indeed a critical aspect of increasing production. Identifying and developing untapped oil and gas reserves can lead to a boost in production levels. Encouraging exploration activities through attractive incentives and favorable regulatory frameworks can attract more investments in this area (**Taufik Aditiyawarman**)

2. How to realize a solid collaboration to produce something useful for the development of a standard platform in the oil and gas industry?

The four panelists agree that collaboration can be realized through shared aspirations and needs to develop the oil and gas industry in Indonesia. Therefore, investors need certainty over the plans that have been made to carry out oil and gas production. The four associations involved in this Convention are determined to continue to communicate and work together to convey the latest information regarding the developments and needs of the oil and gas industry to the government. Indeed, fossil energy, particularly oil and gas, continues to be a significant priority in many countries, including Indonesia.

To conclude, while there is a growing focus on transitioning to cleaner and renewable energy sources, it is essential to acknowledge that fossil fuels still play a crucial role in meeting current energy demands and supporting economic growth. The revision of regulations and policies related to the oil and gas industry is crucial to adapt to changing market dynamics, technological advancements, and global energy trends. A well-crafted and up-to-date oil and gas law will provide the necessary framework to navigate the energy transition while ensuring fair and equitable outcomes for all stakeholders.