2023 PAQS Sustainability Committee

Report from Indonesia

Implementation after the issuance of Indonesian Government regulation regarding Green Building Regulation No. 16/2021:

1. **Public Work and Housing update from Ministry of Public Works and Housing (Kementrian PUPR)**
   In order to complete previous regulation issued in 2015 from Ministry of Public Work stated that green building construction had been implemented for :
   a. Traditional markets, stadiums, and flats. Moreover, new renewable energy has been utilised in the operation and the maintenance buildings, and in the development of waste processing infrastructure. The adoption of the green building construction principle is stated in Government Regulation No. 16 of 2021 on Implementing Regulation of Law Number 28 Year 2002 Regarding Building Constructions.
   b. Continuously improving green building certifications by assigning trainers and assessors as well as by developing the capability of technical instructors for building performance evaluations.
   c. In the waste sector, Indonesia is continuously developing waste processing infrastructure to expand the urban area served from 60% in 2016 to 100% in 2024. Continuing community-based sanitation projects through the construction of TPS3Rs (sites for reducing, reusing, and recycling waste) that use the reuse, reduce, and recycle concept all over Indonesia.
   d. To minimising pollution from domestic waste disposal, such as at Citarum River. This is carried out to modernise waste disposal by implementing the landfill gas processing system that use the flaring technology, such as utilisation of waste as refuse-derived fuel (RDF) in Cilacap and plastic waste in road construction that has reached 22.7 km from 2019 to 2020.
   e. Regarding climate change adaptation, the PUPR Ministry is continuously carrying out infrastructure constructions to support water security through the constructions of 61 dams and walls, including the wall in Java North Coast that protects cities such as Jakarta, Semarang, Pekalongan, and other cities from land subsidence and sea level rise.
   f. The PUPR Ministry has also constructed Nanjung Water Tunnel at the upstream of Citarum DAS (River Basin Area) to prevent flood in Bandung Metropolitan area by increasing water capacity from 570 to 650 cubic metres per second.

   With those steps, Indonesia optimistic about lowering carbon emission by up to 58% in the construction sector and by 5% in the waste sector. Based on Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report on Climate Change (2017), building operation contributes up to 72% of carbon dioxide in urban areas. Besides that, building construction also uses more than a third of global resources, namely 40% of the total global energy and 12% of the total clean water supply.

   Resources: Ministry of Public Works and Housing interview

2. **Study By IFC and Green Building Council Indonesia Shows Nine Green Buildings Yield 30 to 80 percent Lower Utility Costs Compared to Standard Buildings.**

IFC, a member of the World Bank Group, and the Green Building Council Indonesia, today announced results that emerged from a joint study on the benefits of green buildings. The study revealed that the nine green certified buildings, located in Jakarta and around, yielded 30 to 80 percent lower annual utility costs compared to standard buildings.

The buildings sector is Indonesia's third-largest final energy consumer. It accounts for 30 percent of the country's total energy consumption and is expected to rise to 40 percent by 2030. In order to reduce emissions by 29 percent by 2030, the government is pushing for higher energy efficiency in buildings.

Currently, more than 100 buildings in Indonesia have received voluntary green building certifications, and more than 3,000 buildings have complied with mandatory green building codes, covering an area of more than 20 million square meters.

As to the study, though the nine green buildings were 0-17 percent costlier than standard buildings due to incremental design costs and building materials, the outcome shows they are profitable in the long run.

The electricity and water savings from the nine green buildings in the past one to two years of operation are very encouraging. The results—achieved through IFC's Green Building Market Transformation Program—validate that Indonesia is on track in terms of its commitment to reduce greenhouse gas emissions through green buildings. Further, they provide environmental and financial benefits to developers, tenants, and other key stakeholders.

Promoting green buildings needs evidence, not just conceptual theory. We are glad to share these excellent examples that show significant savings for operators and investors, while providing a healthier indoor and outdoor environment for occupants."

Since 2012, the Jakarta Provincial Government has enacted the green building code, which governs building designs for the city, contributing to lower electricity and water consumption, and optimizing the use of building materials. IFC partnered with the Jakarta Provincial Government to establish the code, with the government of Switzerland's support through its State Secretariat for Economic Affairs (SECO).

Resources: International Finance Corporation Report February 2019

3. **Green Construction within Indonesia Oil and Gas Company (PT Pertamina Persero)**

Pertamina has reported information in accordance with the 2021 GRI Standards. The period of this Sustainability Report is from 1 January to 31 December 2022 according to the period of the Consolidated Financial Statements. The Company publish a Sustainability Report annually. The publication date of this Sustainability Report is May 31, 2023.

In the environmental area. Being a national energy company, Pertamina realize that the portion of emissions in the oil and gas sector is still large. Therefore, emission control is our focus and priority. As of 2022, total emissions produced by Pertamina are 27.38 million tons of CO2eq.

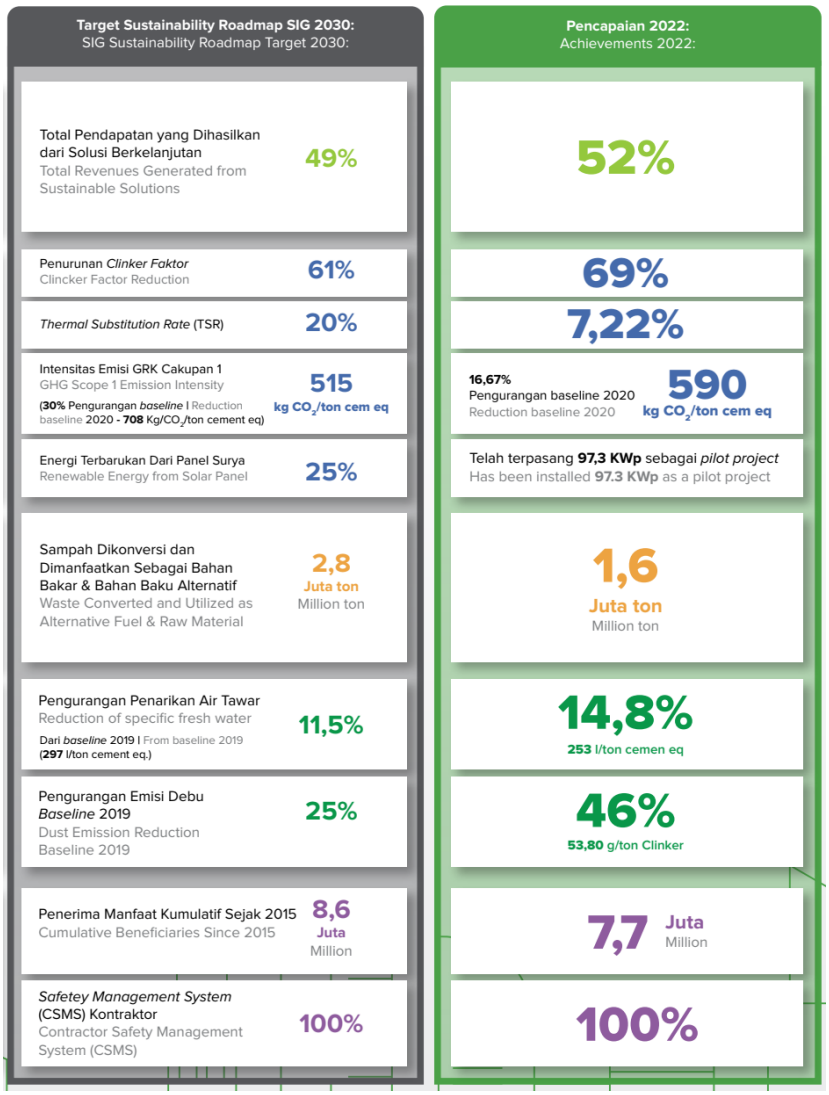
In the environmental area, Pertamina have succeeded in realizing a reduction in greenhouse gas (GHG) emissions from 2010 – 2022 reaching -7.9 MMtCO2e or equivalent to 31.06% of

the 2010 emission baseline. This can be achieved through reduced flaring, energy efficiency, the use of low-carbon energy, and fuel substitution. In addition, in carrying out some ESG initiatives at Sub Holding, we have conducted decarbonization efforts which have been aligned with the NZE Roadmap and new renewable energy acceleration.

Resources: Pertamina Sustainability Report 2022

4. **Green Construction within Indonesia Building Material Company (PT Semen Indonesia Persero Tbk)**

Continuing the last year theme that focused on sustainability values, SIG's steps in 2022 were directed toward the Company's efforts to build a solid business ecosystem in the middle of the fiercer competition that is a challenge of its own. By building a planned ecosystem, SIG is also giving contributions to the sustainable development in the Country. In line with it, SIG is also committed to participate in reducing the impact of global warming and climate change that become a concern for the global citizens. SIG included decarbonization as one of the four strategic initiatives in 2022.



Resources: Semen Indonesia Sustainability Report 2022

5. QS services within Green Construction in Indonesia Consultancy Company

The commitment of Industry sector to invested in green buildings to comply the global sustainability requirement. The construction consultant have to implement the component requirements in order to passing the assessment stage of Green Building in their design and work method of construction.

As to the company experiences, though the Green Building projects handled by the company has been increased every year from 2019. The construction cost is 20 – 30 percent higher for Silver up to Gold of Green Building Award standard buildings due to incremental design costs, construction work method and building materials.

What QS services can provide in Green Building construction area:

1. Provide a study of construction cost for Green Building,
2. Identify and justify every aspect of Green Building Construction to provide the minimum accuracy of construction cost,
3. Fully coordination with the Engineers and Construction Management how to achieve the Project as approved budget of Green Building,
4. Cost Control and capable to advise during the Conceptual, Design Stage up to Final Account.

Resources: Interview with the EPCM Consultant Company PT TeamworX Indonesia