

Impact Assessment for External Stakeholders:

Material Issue: Energy efficiency, availability, and reliability

Cause of impact: Business value chain: operations, products, and services,

Coverage: >50% of business activity

Impact areas evaluated: Environment and Society

Topic relevance on external stakeholders:

Energy efficiency, availability, and reliability play a pivotal role in reducing GHG emissions and subsequently have positive impacts on both human health and the environment. Improved energy efficiency directly reduces natural gas consumption, a source of GHG emissions. Optimizing energy use in power generation processes can significantly lower our carbon footprint. Reduced GHG emissions contribute to mitigating the adverse effects of climate change e.g. lessen extreme weather events, heatwaves, and air pollution, reducing health risks. This directly benefits human health by decreasing the incidence of heat-related illnesses, respiratory issues, and other climate-related health risks. It also mitigates the stress on ecosystems and biodiversity caused by climate change, reducing habitat loss and promoting ecosystem resilience.

In conclusion, boosting energy efficiency and reliability in power generation slashes GHG emissions, benefiting human health and the environment. This mitigates climate-related health hazards, sustains air and water quality, and bolsters ecosystem health for a sustainable future.

Input/Activities	Output	Outcome /Impact
Economic input		
OPEX		
CAPEX		
Natural input	Environmental output	Social & Environmental Externality
Gas consumption	Avoided GHG emissions (tCO2e) from technology upgrade	Social Cost of Carbon
Electricity consumption		
Water withdrawn		

Output Metric Avoided CO2 emissions (200,000 tCO2e per annum tCO2e) from our energy efficiency initiatives and technology upgrade namely Introduction of the latest technology at our 5 replacement power plants in 2022 as well as upgrading gas turbines to cut natural gas consumption¹

Impact Valuation We perform impact assessment for external stakeholder, using Social cost caused/avoided valuation concept. The output metric is the "Avoided CO2 emissions" resulting from our energy efficiency initiatives, including technology upgrades. In assessing the impact, we utilized the "Social Cost of Carbon" (SCC) as the quantitative impact metric. The impact valuation process involved calculating the social cost of carbon associated with the avoided CO2 emissions achieved through our energy efficiency initiatives. The SCC represents the economic damages caused by each additional metric ton of CO2 emissions, considering factors such as health impacts, agricultural productivity losses, and other environmental damages.

By converting the avoided CO2 emissions of 200,000 tCO2e into the SCC, assuming 53 USD per metric ton of CO2 with 3% discount rate², we quantified the positive external impact in monetary terms of 366,177,000 THB³ per annum, reflecting the societal and environmental benefits of our energy efficiency efforts.

Impact Metric Social Cost of Carbon (366,177,000 THB per annum)

Reference:

¹For more details on energy efficiency projects, see "Performance 2022", <https://www.bgrimpower.com/en/sustainability/economy/Operational-Excellence-and-Customer-Relationship-Management>

²Technical Support Document: Social Cost of Carbon, Methane, ([whitehouse.gov](https://www.whitehouse.gov)), Social Cost of Carbon metric at 53 USD per metric ton of CO2 in 2022 with 3% discount rate

³Home. Bank of Thailand. (2022, December 30). <https://www.bot.or.th/en/statistics/exchange-rate.html>, Weighted-average Interbank Exchange Rate = 34.545 THB per USD

Impact Assessment for External Stakeholders

Material Issue: Occupational Health & Safety

Cause of impact: Business value chain: Supply chain

Coverage: >50% of business activity

Impact areas evaluated: External employees (contractors)

Topic relevance on external stakeholders:

"Occupational health & safety" (OHS) is vital for external stakeholders, especially contractors (external employees). Robust OHS practices directly enhance the well-being of external employees, ensuring their safety and job satisfaction.

Our approach to OHS creates a positive impact by safeguarding physical health, reducing accident risks, providing a secure work environment, avoiding income loss due to injuries or absences, preventing potential fatalities, while also contributing to the broader well-being of their families and communities. The impact of OHS on external employees is both direct and substantial, encompassing their physical well-being, accident prevention, secure work conditions, income stability through injury avoidance, prevention of potential fatalities, and overall morale enhancement.

Reference:

¹Calculated based on the average age of our contractors (32.5 years), and retirement age (60 years).

²Minimum wage (2022) Ministry of Labour. Available at: <https://www.mol.go.th/en/minimum-wage>

Input/Activities	Output	Outcome /Impact
Social input	Social output	Social Externality
Total employees	Avoided fatality case in contactors	Avoided income loss for contractor's household
Total contactors		
Total training hours		
Total work hours		
Employee training expenses		

Output Metric	Number of fatalities in contactors (assume avoided one fatality case) from ensuring robust OHS practices among contactors
Impact Valuation	<p>We conducted an impact valuation for the material issue "Occupational health & safety" (OHS) concerning contactors, assuming the avoided occurrence of one fatality case due to the implementation of robust OHS practices among contactors. In assessing the impact, we utilized the quantitative impact metric "Avoided income loss for contractors' household".</p> <p>The impact valuation process involved calculating the avoided income loss for contractors' households resulting from the avoided fatality case. We estimated the financial impact on the household's income due to the potential loss of the contractor's earnings from work-related fatality, considering factors such as the working period until retired (27.5 years)¹, minimum wage (345.5 THB/day)², workdays per month (26) to calculate the total income per year (107,796 THB/person), and the total income until retired of 2,964,390 THB/fatality case.</p> <p>By converting the potential income loss into a quantitative metric, we were able to measure the positive external impact in monetary terms of the avoided income loss derived from the total income until retired of 2,964,390 THB/fatality case. This impact valuation highlights the societal and environmental benefits of ensuring strong OHS practices, as it avoids negative financial consequences for contractors' households and contributes to their well-being.</p>
Impact Metric	Avoided income loss for contractors' household (2,964,390 THB/fatality case)