



# The Readiness of PT Semen Indonesia (Persero) Tbk facing carbon tax policy implementation plans

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## ARTICLE INFO

### Article history:

Received Nov 22, 2023

Revised Nov 29, 2023

Accepted Nov 30, 2023

### Keywords:

Carbon tax;  
Implementation;  
Policy;  
Readiness.

## ABSTRACT

The research paper discusses the government's plan to implement a carbon tax in Indonesia to promote sustainable economic and business activities, with the goal of addressing environmental preservation and climate crisis impact reduction. The carbon tax is designed to tax economic activities that produce excessive carbon emissions and other negative environmental impacts. The paper also considers the role of the economic sector in supporting sustainable social and environmental development and discusses Indonesia's commitment to the 2015 Paris Agreement. The implementation of the carbon tax aims to reduce emissions, generate state revenue, and facilitate the development of new renewable energy. It also addresses the readiness of PT Semen Indonesia (Persero) Tbk regarding the implementation of the carbon tax, focusing on communication, resources, disposition, and bureaucratic structure. The paper recommends strategies for successfully overcoming challenges associated with carbon tax implementation. Overall, it provides insights into the potential impact and readiness of PT Semen Indonesia (Persero) Tbk in implementing the carbon tax policy in Indonesia.

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## 1. INTRODUCTION

The Government plans to implement a carbon tax to ensure that economic and business activities in Indonesia run sustainably, one of which is to preserve the environment and reduce the impact of the climate crisis. The carbon tax itself is a tax imposed on economic activities that produce carbon emissions that exceed a specific limit. This tax is also imposed on businesses that produce various other negative impacts on the environment. On the other hand, implementing this tax can also help the Government achieve the 2030 Sustainability Development Goals, a continuation of the Millennium Development Goals agreed in 2015 (Amedi, 2018; Panuluh & Fitri, 2016; Sari et al., 2023).

The field of taxation is the main discussion topic for building Sustainability to target economic growth (Doğan et al., 2022; Johansson et al., 2008; Nurfitriana, 2020). It is proven by the role of the economic sector in supporting the development of sustainable social and environmental problems (Nofianto, 2014). Good economic growth must be integrated with implementing the SDGs goals themselves (Ishatono & Raharjo, 2016; Ngoyo, 2015). The Government's primary target is achieving the SDGs goals to implement

better policies (Nusantara & Putri, 2021). Through the Directorate General of Taxes, the Indonesian Government has a role in making the SDGs targets as outlined in implementing the carbon tax a success (Kumala et al., 2021).

Based on data from the United Nations Conference on Trade and Development (Taylor & Smith, 2007), Indonesia is included in the 8th ranking global emitting country in the world in 2019, with an increase of 2843% since 1960. Assuming the contribution of each sector is still the same as the year's data 2018, the contribution per sector is Energy (36.12%), industrial processes and product use (3.6%), agriculture (7.98%), land use, land use change and forestry (44.6%) and waste (7.7%) (Yusgiantoro et al., 2021; Santoso et al., 2021)).

The carbon tax in Indonesia is a response to the rapid growth of the manufacturing industry and its high contribution to global emissions. Even though entrepreneurs have a strategic role in spreading carbon emissions (Mintrom & Luetjens, 2017), the development of this industry has negative economic and environmental impacts (Jannah & Muid, 2014). In this context, Indonesia is committed to the 2015 Paris Agreement and introduced a carbon tax through Law No. 7 of 2021. The main objective of this tax is to change economic behaviour towards low carbon activities, in line with the Nationally Determined Contribution (NDC) commitment in the Paris Agreement to achieve the target of reducing greenhouse gas emissions by 29% on its own and 41% with international support in 2030 (Memorandum, 2021).

On September 23 2022, Indonesia, through the Ministry of Environment and Forestry (KLHK), conveyed increased ambition to reduce greenhouse gas emissions through the Enhanced NDC (ENDC) document. The target for reducing greenhouse gas emissions with its capabilities, initially 29%, has increased to 31.89%. In contrast, the target for reducing greenhouse gas emissions with international support, initially 41%, has increased to 43.2%. It aligns with the long-term policy of the Long-term Strategy for Low Carbon and Climate Resilience (LTS-LCCR 2050) towards net zero emissions in 2060 or earlier. According to the source esdm.go.id, as of April 1 2020, total emissions from the energy sector 2020 reached 580 million tons of CO<sub>2</sub>e.

The implementation of a carbon tax, apart from having an impact on reducing emissions, can also increase state income. The government's carbon tax roadmap currently being prepared includes strategies for reducing carbon emissions in the NDC, priority sector targets, alignment with the development of new and renewable Energy (EBT) and alignment with other policies. The carbon tax will be implemented in stages according to the road map. In 2021, the Ministry of Energy and Mineral Resources (ESDM) will develop technical mechanisms for carbon taxes and exchanges and trial carbon trading in the power generation sector. The amount of tax is charged at an average price of IDR 30,000/tCO<sub>2</sub>e. A total of 32 PLTUs participated in this carbon tax trial (cnbc indonesia.com, October 22 2021).

The carbon tax will be implemented on a limited basis but has been postponed from April 1 2022 to July 1 2022. However, it has been delayed until December 2022. The imposition of this tax refers to cap and tax, with entities that exceed the emission limit being subject to tax. The carbon tax will also be applied to other sectors, such as transportation, buildings and land-based sectors in 2025.

The World Bank (2022) states that implementing a carbon tax is politically challenging, especially amidst rising inflation and energy prices. Countries must ensure that carbon tax policies are fair, effective and integrated with climate and social policies. Many countries have implemented carbon taxes, but rates vary, with Uruguay having the highest tariff, namely US\$137 per tCO<sub>2</sub>e.

Several industry representatives responded to the Government's plan to introduce a carbon tax. Chairman of the Indonesian Cement Association (ASI) Widodo Santoso stated that the implementation of the carbon tax has triggered various industry players to innovate in production processes so that greenhouse gas emissions are reduced per the standards set by the Government. The cement industry has taken various comprehensive steps to support the Government in reducing greenhouse gas emissions by 29% by 2030. Among these are the use of alternative fuels to replace coal, such as biomass, and the use

of exhaust gas in factories to produce electricity so that it can save on demand. The electricity use is around 10%–15%. To innovate by producing environmentally friendly cement. Research by Dresner, Dunne, Clinch, and Beuermann (2006) found that many objections to a carbon tax are about the design of its implementation. Additional research by Dechezleprêtre and Sato (2017) and Neuhoff et al. (2015) provides insight into how vested interests and other political economy aspects have influenced carbon pricing design. However, Baranzini et al. (2017) say that other instruments, such as subsidies for renewable Energy, can also have similar regressive effects and may not generate revenues to offset them. Mao (2018) said that the Finnish Government distributes carbon tax revenues in the Finnish state budget so that income taxes are reduced to compensate for tax increases with the country's economic, industrial and social welfare goals.

The carbon tax in Indonesia is a step to reduce emissions and support the development of new renewable Energy. Apart from that, the Government hopes that the carbon tax will become a source of state revenue, especially amid the Covid-19 pandemic. A carbon tax is also considered to increase the price of new and renewable energy to compete with fossil energy. The cement industry is one of the sectors directly affected, contributing around 5-8% of global CO<sub>2</sub> emissions. Despite commitments to manage emissions, global reporting on the cement industry still needs to be completed.

PT Semen Indonesia (Persero) Tbk, as the largest cement producer in Indonesia, is facing challenges related to carbon tax policies and rising coal prices. The problem of excess production capacity and scarcity of coal for export is the main obstacle. The cement industry faces increasing production costs due to plans to implement a carbon tax and rising coal prices. The industry believes the carbon tax and planned price increases will impose a significant economic burden.

PT Semen Indonesia (Persero) Tbk has carried out various initiatives to reduce carbon emissions, including reducing the clinker factor and increasing the use of biomass. The company is also involved in a carbon trading pilot project and constructing a solar power plant. This research focuses on the cement industry because of its immense contribution to global CO<sub>2</sub> emissions and significant production growth. PT Semen Indonesia (Persero) Tbk is considered a representative company of this sector in Indonesia.

Based on the background and foremost problem, the research questions asked by the author are: (a). What are the projections for implementing the carbon tax policy at PT Semen Indonesia Tbk?; (b). How prepared is PT Semen Indonesia (Persero) Tbk regarding implementing the carbon tax policy?.

According to Thomas Dye (1987), public policy is "whatever the government chooses to do or not to make, what differences it makes". This concept contains a broad meaning that public policy covers something that the Government does or does not do when facing a problem. Apart from that, Subarsono (2005) also emphasized the definition put forward by Dye that public policy is the embodiment of "action" and not merely the wishes of the Government or public officials.

Smith & Larimer in Birkland (2018) state that implementation is the most crucial stage in the policy process. Policy implementation replicates many of the challenges of the policy process, starting from identifying the problem to designing tools or approaches so that policy implementers are actively involved in implementing changes according to the desired behaviour.

According to Smith & Larimer in Birkland (2018), the policy implementation approach is divided into three generations. In the late 1960s to early 1970s, the first generation failed to achieve its goals because it focused too much on individual case studies without creating a general theory that could be applied. The second generation, starting in the mid-1970s, attempted to develop a systematic policy process theory that can be generalized to many cases, adopting both "top-down" and "bottom-up" approaches. In the 1990s, the third generation attempted to unite top-down and bottom-up approaches in a hybrid model to overcome the conceptual weaknesses of both approaches.

As stated by Dunn (2018), public policy analysis has several forms: prospective, retrospective, and integrated analysis. According to Dunn (2018), prospective public policy analysis consists of three stages: problem formulation, policy forecasting, and policy

recommendations. (a). Problem formulation : Problem formulation is discovering hidden assumptions, diagnosing causes, and designing new policy opportunities. The policy formulation process involves problem finding, problem definition, problem specification, and problem recognition; (b). Policy forecasting : Policy forecasting is part of the prospective analysis of a policy and has a crucial role in improving the quality of policymaking. Through forecasting, insight into the future is obtained, broadening understanding, control and guidance for society. Forecasting aims to obtain information about future changes that may affect policy implementation and its consequences; (c). Policy recommendations : Policy recommendations are information that allows an analyst to understand future possibilities and their impact on individuals, groups, or society. Recommendation procedures involve the transformation of policy actions to produce valuable results. Information is needed to recommend a particular policy action regarding the future consequences after implementing various alternative actions.

*Taxes* are defined as contributions or levies taken from the people by applicable laws and can be imposed without providing direct compensation. The tax function involves budgetary aspects for government funding and regulations to regulate the socio-economic sector. Rosdiana & Tarigan (2005) define tax policy as a government policy that is within the legal regulations in the field of taxation used to achieve goals outside the financial field.

Regional Regulations establish regional taxation policies to support regional revenues. Law Number 28 of 2009 emphasizes that every type of regional tax must be regulated through regional regulations, which must not conflict with public interests or higher laws and cannot apply retroactively. Taxation Regional Regulations must, at a minimum, include tax subjects and objects, tax rates, tax bases, tax calculation methods, tax periods, place of collection, tax determination, tax billing and payment procedures, tax collection expiry, tax start date, and sanctions. It is necessary to expand and increase taxpayers and tax objects and improve tax rates and administration To increase tax revenues (Marsuni et al., 2020).

*Policy implementation* is a dynamic process which includes the interaction of many factors. The approach used in analyzing the performance-based budgeting implementation is the theory put forward by George C. Edward III. According to Edward (1980), there are four variables in implementing public policy: Communication, Resources, Attitudes and Bureaucratic Structure. These four factors must be implemented simultaneously because they have a close relationship with each other.

Carbon Tax is a levy on fuel use based on its carbon content, including petroleum, natural gas and coal, which produce CO<sub>2</sub> emissions when burned. The aim is to reduce CO<sub>2</sub> and greenhouse gas emissions, especially in the coal steam power plant (PLTU) sector. This tax aims to encourage changes in economic behaviour towards green, low-carbon economic activities, in line with the Government's efforts to achieve the target of reducing greenhouse gas emissions. With the principle "the polluter pays," the Carbon Tax is a climate control instrument to support sustainable economic growth. Despite its potential economic impact, reducing CO<sub>2</sub> emissions is considered necessary in the context of global warming, and a Carbon Tax is expected to provide a more effective incentive than a "command and control" approach to reduce emissions at a lower cost.

## 2. RESEARCH METHOD

### Types of Research

In general, the types of research are divided into 3 (three), namely, based on the objectives, benefits of the research and the researcher's time dimension

1. Based on the research objectives, use a descriptive approach to analyze the impact and readiness of the Carbon Tax implementation plan at PT Semen Indonesia (Persero) Tbk.
2. Based on the Benefits of Research, it is pure research (basic research) because it is carried out to meet the researchers' own needs to analyze the impact and readiness of the Carbon Tax implementation plan at PT Semen Indonesia (Persero) Tbk and the research results are only used in the context of developing knowledge.

3. Based on the Time Dimension, it will be carried out at a particular time, namely April 2023 to May 2023, and no other research will be carried out for comparison.

#### Data Collection Techniques

The data collection techniques implemented in this research are as follows:

1. Researchers will use in-depth interview techniques in data collection by taking direct responses from respondents in detail.
2. Library Study (Library Research) is a data collection method used to obtain secondary data from books, journals, scientific papers, documents and the internet. The literature study results were formulated into a theoretical framework used to analyze the impact and readiness of the Carbon Tax implementation plan at PT Semen Indonesia (Persero) Tbk.

#### Data Analysis Techniques

This research uses data analysis techniques with the Miles and Huberman model. The activities in data analysis are:

1. data reduction, namely data received from the field in large quantities, will be recorded carefully and in detail. The data was reduced by analyzing its relevance and validity to the research topic and the theoretical basis used.
2. Second is data presentation. The method commonly used to present data in qualitative research is with narrative text. This thesis research uses narrative text to explain the main problem being analyzed.
3. The third stage is drawing conclusions and verification.

#### Research Location

This research was conducted at PT Semen Indonesia (Persero) Tbk. The choice of PT Semen Indonesia Tbk as the research site was because taxes in Indonesia are self-assessment in nature, and the Carbon Tax is a tax that has not been implemented in Indonesia, especially as the Cement Industry is included as a Carbon Tax pilot project. Hence, the author wants to research the readiness and impact that will result.

General description of PT Semen Indonesia (Persero) Tbk is an Indonesian State-Owned Enterprise (BUMN) in building materials production. Founded in 1951 as NV Semen Gresik Factory, then officially became PT Semen Indonesia (Persero) Tbk in 1969. To support its business activities until the end of 2022, PT Semen Indonesia (Persero) Tbk has several factories in Indonesia and Vietnam with a total installed capacity of 56.5 million tons of cement annually. In 1991, PT Semen Indonesia (Persero) Tbk officially took the floor on the Jakarta Stock Exchange and the Surabaya Stock Exchange. In 1995, PT Semen Indonesia (Persero) Tbk acquired Semen Padang and Semen Tonasa, so the installed capacity of PT Semen Indonesia (Persero) Tbk reached 8.5 million tons of cement annually. In January 2019, through Semen Indonesia Industri Bangunan, PT Semen Indonesia (Persero) Tbk acquired 80.64% of Holcim Indonesia's shares and then changed the company name to Solusi Bangun Indonesia. The Holcim brand was also changed to Dynamix. In 2020, PT Semen Indonesia (Persero) Tbk changed its trade name from Semen Indonesia to SIG.

### 3. RESULTS AND DISCUSSIONS

#### Projections of Carbon Tax Implementation at PT Semen Indonesia (Persero) Tbk

In this research, the author carried out a projection analysis of whether a carbon tax was applied to the research object companies. This analysis was carried out based on a prospective analysis of public policy, according to Dunn (2013), consisting of three stages: problem formulation, policy forecasting, and policy recommendations.

#### Problem formulation

Interview conducted with Policy Analysis Center for State Education Policy Fiscal Policy Ministry of Finance, Febri Pangestu. He explained the Indonesian Government's

efforts to address the impacts of climate change and related funding needs. Awareness of Indonesia's vulnerability as an archipelagic country to climate change, such as rising sea levels, water scarcity and ecosystem damage, is a focus. The Ministry of Environment and Forestry estimates that the cost of mitigating the impacts of climate change will reach IDR 4,000 trillion by 2030, with IDR 300 trillion per year. In response, the Government designed the Climate Science Fiscal Framework (CSFF) as a fiscal framework with a funding strategy involving the APBN non-APBN sectors and infrastructure—financial elements such as sukuk, bonds, and the economic value of carbon. Carbon economics aims to internalize the costs of externalities from carbon emissions in the prices of goods and services. These steps are realized through Presidential Decree No. 98 of 2021 and Law No. 7 of 2021 concerning tax harmonization, which introduces carbon tax instruments. Carbon taxes are considered a source of funding and a tool to change the behaviour of business people towards more environmentally friendly business practices and investment in more sustainable sectors.

It is anticipated that implementing a carbon tax will increase costs for industry and raise concerns about its impact on industrial consumers and industry competitiveness. Implementation of carbon pricing will cause an increase in production costs, reflecting the environmental impact of carbon emissions during production activities. This increase in production costs has the potential to decrease industrial competitiveness through an impact on the price of the products or services produced. It is stated by Solehudin Murpi, the Group Head of the Sustainability Office PT Semen Indonesia (Persero) Tbk.

Febri's interviewee confirmed that the price increase due to the carbon tax is anticipated as a necessary consequence of increased awareness of environmental impacts. Although companies may want to avoid raising prices economically, this is an important step to raise awareness among consumers and businesses about the environmental consequences of economic activities. By including additional costs related to environmental impacts, it is hoped that the community will be more aware and jointly bear the costs of mitigating them. The transfer of responsibility to producers and consumers can encourage changes in behaviour in Indonesia. Haites (2018) and Wu and Tal (2018) emphasize that implementing a carbon tax provides a price signal and motivates emission reductions, depending on the response of emission sources to the tax.

#### Policy forecasting

PT Semen Indonesia (Persero) Tbk includes decarbonization as one of four strategic initiatives in 2022 because of its future impacts. A carbon tax is included in Transition Risk: Policy & Regulatory Risk because implementing a carbon tax risks increasing the tax burden in the future (sig. id, 2023). As stated by Solehudin, the concept is to integrate externality aspects into business processes, impact industrial costs, and ultimately influence corporate competitiveness and risk, including costs and market share. Apart from that, Solehudin divided the change or policy process into two aspects, namely "onset" (beginning of change) and "offset" (impact or compensation). He highlighted adverse risks associated with "onset", such as potential inflation, which could affect COGS or COGS, questioning whether companies would raise prices and the impact on competitiveness and market share.

Febri confirmed the risks of a carbon tax, recognizing price increases as an expected impact of internalizing the costs of the industry's environmental impact. The Government included articles related to a carbon tax in the HPP Law to incentivize industries, including carbon-intensive ones, to participate in emissions trading or offsetting mechanisms. The industry may consider purchasing carbon credits as an alternative way to meet carbon tax obligations, providing flexibility and the opportunity to adapt to policy changes.

In its 2022 sustainability report, PT Semen Indonesia (Persero) Tbk emphasizes concern for Energy and emissions as a material topic. The main focus regarding Sustainability is the decarbonization of scopes 1 and 2, with a CO<sub>2</sub> emission intensity target below the IEA figure for scope 1. The approach involves increasing the Thermal Substitution Rate, reducing the clinker factor, and improving production efficiency. Indirect electricity use (scope 2) is targeted to be reduced by 23.9% by 2030 through solar

panels with a total capacity of 580 MegaWatt. To support the sustainability commitment, PT Semen Indonesia (Persero) Tbk and PT Solusi Bangun Indonesia Tbk signed a Sustainability Linked Loan (SLL) Syndicated Credit Agreement with 12 banks. Apart from being a commitment to decarbonization, SLL provides the benefit of reducing interest margins. The company also increased its decarbonization performance value and committed to declaring decarbonization targets through SBTi. Public policy mechanisms, such as carbon taxes, are recognized as effective methods for achieving emissions reductions.

#### Policy recommendations

Resource person Febri stated that the Government is studying new instruments, such as a carbon tax while realizing the need to reduce environmental impacts. Although there are efforts to end several coal-fired power plants in the energy transition mechanism, Febri stressed the importance of a fair and affordable approach in the transition to avoid unaffordable and unfair impacts on various parties, including society.

Resource person Solehudin, an industry representative, confirmed that the transition to carbon tax and carbon trading policies significantly impacted the industry and changed the paradigm in the industry. The decline of the clinker factor and the implementation of carbon trading are considered significant changes in the industry, providing opportunities for those ready to face them. In contrast, those not ready may struggle or even fail to compete. Reducing the clinker factor reduces emissions and production costs due to the efficient use of resources and Energy.

PT Semen Indonesia (Persero) Tbk showed its seriousness towards sustainability issues through FGDs involving commissioners, directors and employees from May to July 2020. The results included 13 sustainability topics divided into economic, environmental and social pillars. The first pillar focuses on sustainable solutions and innovation in economic aspects. The second pillar, "Protection of the environment," highlights environmental management related to climate, Energy, circular economy, air emissions and water. The final pillar, "Creating value for employees and communities," covers occupational health and safety, employment, ethics, and community development.

PT Semen Indonesia (Persero) Tbk has four foundations that support the sustainability pillar: Board commitment and supervision, corporate governance, sustainability policy, and risk management. Apart from focusing on implementing sustainability pillars, these companies must build a strong foundation. Board commitment, corporate governance, and policy and risk management are critical to successfully integrating Sustainability into the company's business strategy and culture.

PT Semen Indonesia (Persero) Tbk sustainability roadmap provides precise details on implementing sustainability initiatives. The company is committed to embedding Sustainability in its business practice culture. To achieve this, PT Semen Indonesia (Persero) Tbk must build a robust sustainability function with committed leadership, clear direction and strategic influence. The sustainability function is currently integrated within the Department of Occupational Safety, Health and Environment but needs to be expanded to include environmental and social aspects.

PT Semen Indonesia (Persero) Tbk, as a large cement industry, recognizes its contribution to greenhouse gas (GHG) emissions. By realizing the negative impact of GHGs on climate change, this company is committed to solving sustainability problems in the cement industry. Concrete steps, such as forming a Sustainability committee and Sustainability core team, as well as developing a gradual governance structure, are needed to ensure the integration of Sustainability in daily business operations and the reduction of environmental impacts.

#### Carbon Tax Implementation Readiness PT Semen Indonesia (Persero) Tbk Communication

In an interview with resource person Solehudin, information was obtained that PT Semen Indonesia (Persero) Tbk had received information regarding carbon tax and cap and trade policies. Companies still await implementation and related regulations, while the

power generation industry already has similar regulations. The cement industry is determining its emissions limits, and the speaker, who is part of the team involved in this process, stated that the determination of these limits is still ongoing. Resource person Febri confirmed Solehudin's explanation that the Government had carried out outreach regarding the carbon tax to related industries and associations. Despite the Government's efforts to provide information, most associations reject the carbon tax concept, considering it an additional cost, while supporting carbon trading as a business opportunity.

PT Semen Indonesia (Persero) Tbk uses the Sustainability roadmap as a communication tool to explain the company's sustainability strategy and goals. The roadmap is detailed across several topics, including short and long-term goals, action plans, timelines, prioritization of initiatives, risks, mitigation, performance indicators, and stakeholders involved. Significant sustainability aspects are determined through materiality assessments, considering geographical, legal, resource and other factors. Classifying material topics into sustainability pillars helps stakeholders understand the company's overall strategy. Cement industry companies use sustainability pillars to classify essential topics in their business, making it easier for stakeholders to understand the company's sustainability strategy. It can be concluded that internal communication at PT Semen Indonesia (Persero) Tbk regarding the carbon tax implementation plan is comprehensive from top to bottom to create good cooperation between team members to achieve common goals (Banker&Bhal, 2020).

Through open two-way communication, PT Semen Indonesia (Persero) Tbk seeks to align its programs with stakeholder needs, while providing stakeholders with an understanding of the company's programs. This approach also helps avoid misunderstandings and miscommunication, reducing negative impacts. The company holds regular meetings with employee representatives to listen to aspirations and promote harmonious industrial relations.

#### Resources

Resources, especially human resources, are crucial in implementing policies to ensure their effectiveness. Without adequate resources, policies become mere documents without real action. According to Edward III (2003), resources involve the number of staff, implementing expertise, and the fulfillment of related resources in implementing policies, including supporting facilities. Adequate human resources are needed to implement policies optimally, and increasing the capacity of implementers becomes important if staff numbers are limited. Good HR management is needed to improve performance. Apart from human resources, facilities such as offices and equipment must also be considered. Procurement of funds and authority to manage finances is also an integral part of resources.

Meanwhile, PT Semen Indonesia (Persero) Tbk responded to sustainability issues by forming a Sustainability Committee in 2021. The formation of this committee reflects the company's commitment to sustainability issues. In its meetings, the Sustainability Committee discusses various aspects, including decarbonization performance, Domestic Component Level (TKDN), development of young and female talents, occupational safety and health, the impact of carbon tax, and Corporate Social Responsibility (CSR) performance. Discussion of carbon tax is on the meeting agenda because government policies regarding carbon tax can impact company operations. Carbon tax is part of PT Semen Indonesia (Persero) Tbk's risk management strategy, considering its significant impact on the company.

#### Disposition

Edward III stated that the tendency or disposition of implementers is a key factor in policy implementation. A positive attitude and support of implementers tends to increase implementation success, while a negative attitude or resistance can hinder it. PT Semen Indonesia (Persero) Tbk, as an implementation of the company's commitment and strategy,

carries out energy conservation and efficiency programs, by Government Regulation no. 70 of 2009 concerning Energy Conservation. The company also implements the ISO 50001:2018 Energy Management System to increase energy efficiency. This initiative is part of the Sustainability roadmap until 2030, which includes a program to reduce electricity and heat energy consumption.

Preparing the Sustainability roadmap shows the ethical behavior and readiness of PT Semen Indonesia (Persero) Tbk to face challenges by integrating sustainability into the company's strategy. PT Semen Indonesia (Persero) Tbk's sustainability roadmap consists of 11 topics selected to convey the SIG sustainability strategy, as shown in the table below.

Table 1. Pillars of Sustainability

Sustainability pillars	Strategy
Driving Sustainable Solutions and Innovation	- Supporting sustainable products and solutions
	- Sustainable procurement
	- Climate and Energy
	- Circular Economy
Environmental Protection	- Air Emissions
	- Water management
	- Biodiversity
	- Occupational Health and Safety (K3)
Creating Value for Employees and Communities	- Employment
	- Ethics and compliance
	- Community Development

Source: sig.id (2023)

The company carries out initiatives to use technological innovation and other efforts, as follows:

1. WHRPG (Waste Heat Recovery Power Generation) is electricity generating equipment that utilizes hot exhaust gas from the combustion process in cement factories. The hot gas comes from the Preheater and Clinker Cooler, which heat the boiler and produce steam. Two WHRPG units installed at the Indarung SP and Tuban Plants of PT Semen Indonesia (Persero) Tbk with capacities of 8 and 30 MW respectively, reduce CO2 emissions by 800 kg per MWH produced.
2. The company uses solar panels as an alternative renewable energy to reduce CO2 emissions and electricity costs. Solar panels are implemented in three SIG plants: Indarung, Tuban, and Tonasa. After installation is completed in 2021, the solar panels will be operated in 2022 with an installed capacity of 10 kW at each site. This renewable energy meets electrical energy needs in the Tonasa Packer, Indarung Pouch Factory and Tuban Crusher areas.

PT Semen Indonesia (Persero) Tbk has signed an MoU with PT Bukit Asam Tbk to build a Solar Power Plant (PLTS) at the SIG operational location, expected to operate in 2023-2024. Electricity from PLTS will be used for production operations, lighting and offices, contributing to reducing carbon emissions. Solehudin from PT Semen Indonesia (Persero) Tbk emphasized the company's serious commitment to the carbon tax plan, reflected in the 2021 Sustainability Roadmap and the formation of the Sustainability Committee. This seriousness is by Edward III's theory, where the disposition and commitment of policy implementers influence the effectiveness of policy implementation. Leadership support, conformity of views, and adequate funding allocation are key factors in supporting policy implementation.

Bureaucratic structure

Ripley and Franklin in Winarno (2005) identified six characteristics of bureaucracy as a result of observations of bureaucracy in the United States, namely:

- 1) Bureaucracy was created to handle public needs (public affairs).
- 2) Bureaucracy is the dominant institution in implementing public policy with different interests in each hierarchy.

- 3) Bureaucracy has several different goals.
- 4) The bureaucracy functions in a complex and extensive environment.
- 5) Bureaucracies have a high survival instinct and it is rare to find dead bureaucracies.
- 6) Bureaucracy is not a neutral force and is not under complete control from outside parties.

Even though policy implementers have the knowledge and desire to implement policies, Widodo (2010) highlights the inefficiency of bureaucratic structures as a potential obstacle to effective implementation. According to the results of the interview, the company resource person, Solehudin, revealed the risks of regulatory transition related to reducing carbon emissions, and PT Semen Indonesia (Persero) Tbk is committed to decarbonization through environmental KPIs and the formation of a Sustainability committee.

The board of directors' KPI is related to reducing carbon emissions, which became the background for forming the Sustainability committee. So the two main characteristics of bureaucracy are Standard Operational Procedures (SOP) and fragmentation or spreading responsibility for a policy to several different bodies so that it requires coordination according to Edwards III's (1980) theory, under the direct supervision of the Sustainability Committee.

Challenges in implementing carbon tax policies involve

- 1) structural aspects of bureaucracy,
- 2) the attitude of politicians who wait for the public's response, and
- 3) the involvement of business people in politics.

DPR support and consultation, effective management, and high public trust are the keys to success. Other challenges arise from corruption and the government's lack of seriousness in dealing with the issue, which can reduce public trust, hinder the implementation of the carbon tax, and trigger resistance from members of parliament who have conflicts of interest.

The public's high trust in the political system and government, as mentioned by Criqui et al. (2019), can increase public acceptance of implementing carbon tax policies. On the other hand, low trust can make it difficult for the government to implement these policies. According to Dyarto and Setyawan (2021), the government's less serious attitude in dealing with the problem of corruption in Indonesia can reduce public trust in the government, so that it can become a challenge when introducing a carbon tax in Indonesia.

It can be seen from the research of Dyarto and Setyawan (2021) and Criqui et al. (2019), shows that economic, political aspects and low public support can provide challenges to the government in the process of implementing carbon tax policies. Research by Haites (2018), Steenkamp (2021), and Criqui et al. (2019) accompanied by the experience of countries that have implemented carbon taxes shows that gradual implementation strategies, forming political coalitions, careful management of carbon tax revenues, and integrating carbon policies with other policies can be effective solutions for governments in overcoming the challenges of implementing tax policies. carbon.

#### 4. CONCLUSION

The conclusions from the research results regarding the projections and readiness of PT Semen Indonesia (Persero) Tbk in the carbon tax implementation plan in Indonesia can be summarized as follows: (1). Carbon Tax Implementation Projections: (a). The implementation of a carbon tax by PT Semen Indonesia (Persero) Tbk has the potential to increase production costs, raise concerns for industrial consumers, and can reduce industrial competitiveness, through increasing product or service prices; (b). PT Semen Indonesia (Persero) Tbk includes decarbonization as a strategic initiative for 2022, including in the transition risk category. They signed a Sustainability Linked Loan (SLL) Syndicated Credit Agreement as a commitment to decarbonization, benefit from reduced interest margins, and disclose decarbonization performance through CDP and SBTi; (c). PT Semen Indonesia (Persero) Tbk's policy recommendations for sustainability issues involve policy transformation focusing on the economy, environment and social. Serious steps were seen through the Forum Group Discussion (FGD) which resulted in three main pillars:

sustainable solutions and innovation, environmental protection, and creating value for employees and communities. The formation of a Sustainability committee and Sustainability core team in the first half of 2021 also reflects the company's seriousness towards sustainability issues. (2). Carbon Tax Implementation Readiness: (a). PT Semen Indonesia (Persero) Tbk has demonstrated readiness to face the implementation of the Carbon Tax. Internal communication includes outreach from the Government, including to employees, and a sustainability strategy using the Sustainability roadmap to communicate sustainability topics; (b). Resources for policy implementation at PT Semen Indonesia (Persero) Tbk are recognized as an important factor, and the company responded by establishing a Sustainability Committee in 2021. The formation of this committee signals the company's determination to face sustainability issues, with adequate and structured resources; (c). The Sustainability roadmap preparation and the Sustainability Committee's formation by PT Semen Indonesia (Persero) Tbk reflects the company's seriousness in facing sustainability challenges. Integrating sustainability into a company's strategy indicates preparation to face the potential impact of global change; (d). The bureaucratic structure at PT Semen Indonesia (Persero) Tbk, especially KPIs related to reducing the impact of emissions, is reflected in the individual KPIs of the Directors and Board of Commissioners at SIG. Challenges in implementing carbon tax policy are also acknowledged, especially regarding the attitudes of Indonesian politicians and public perception, which can slow down the implementation process. **Suggestions for future research development to explore the analysis of the concrete impact of carbon tax implementation on production costs, industry competitiveness, and sustainability of PT Semen Indonesia (Persero) Tbk. Research can focus more on the sustainability aspect by evaluating the effectiveness of decarbonization initiatives taken by the company and its impact on financial performance and corporate reputation. It can expand the scope by considering a broader stakeholder perspective, including the views of consumers, communities, and other stakeholders on the sustainability measures taken by the company. Can explore risk mitigation strategies that can be applied by PT Semen Indonesia (Persero) Tbk in facing political challenges and public perceptions related to carbon tax policies.**

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