

INDONESIA'S ENERGY POLICY DYNAMICS: A SUBSTANCE OF COMMITMENT AND CHALLENGE

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ABSTRACT

Fossil energy, which is easy to use, has dominated energy sources in many countries for decades. However, environmental issues and their non-renewable reserves have become the concern of multiple groups as they start to transition to green and renewable energy. When it comes to formulating energy policy in Indonesia, the most important factors to take into consideration are internal ones like ensuring energy security or supporting growth in the economy. Concerns regarding the availability of clean energy have not been cited as a justification for modification to energy policies. However, two different energy policies relating to net zero carbon and electric vehicle subsidies indicate that external factors, particularly global commitment, play a significant role in the formulation of energy policy and should be taken into consideration. The role of Indonesia as a G20 leader was a catalyst to make global commitment as a consideration in policy changes. Pollitt and Bouckaert's analysis shows that some of the global economic and socio-demographic changes put pressure on the Government of Indonesia to reform its energy policies.

Keywords: energy policy, Pollitt and Bouckaert, electric vehicles, net zero carbon, energy mix, renewable energy.

1 INTRODUCTION

The global demand for energy continues to rise in conjunction with the world's growing population and economic activity. However, not all nations have sufficient energy resources, making energy security a significant issue particularly for developing countries. In light of sustainability and environmental issues, fossil energy, which has been the world's primary energy source for decades, is now having diminished role in many areas in the words.

Energy policy may evolve over time depending on the situation faced by each country. In Switzerland, energy policy might have been influenced by politics during 2007 to 2011 [1], on the other hand increasing dependence on fossil fuels, growing energy imports, and rising energy costs are of greater concern in some EU nations [2]. China [3] and India [4] focus more on increasing energy efficiency while the sharply lower fossil fuel prices play an important role in shaping Indonesian energy policies [5].

The above factors are only internal within a country and may force policy changes, regardless of the fact that global pressure or global consensus on environmental issues play a substantial part in alterations to policy. There are few studies that investigate these factors as a cause of energy policy. The authors believe that in today's networking environment, global pressure on specific issues may influence political actors to reconsider their policies in order to attain the consensus.

The Pollitt and Bouckaert models are used in this paper to describe the importance of non-internal factors, especially pressure from global consensus, in influencing changes in Indonesia's energy policy.

2 METHODOLOGY

The methodology used in this paper is as follows:



- (a) We catalogued and categorized all energy-related policies in Indonesia before and after 2006, when the government issued its energy grand strategy. As numerous regulations have been issued, we had no intention of discussing them in detail in this paper.
- (b) Using the public management reform model developed by Pollitt and Bouckaert, we selected three policies – energy mix policy (2006), net zero carbon (2022) and subsidies on electric vehicles (2023) – and analyzed the circumstances that led the Government of Indonesia (GoI) to initiate these policies.
- (c) We summarized the results to determine which internal and external factors may be more influential than others.

3 POLLITT–BOUCKAERT MODEL

Public management reform is defined by Pollitt and Bouckaert [6] as the deliberate modification of the structures and processes of public sector organizations with the intention of making them (in some sense) more efficient. They proposed four primary models for researching public management reforms: new public management, the neo-Weberian state, networks, and governance. The first two models are primarily driven by factors internal to the government, while the last two models are driven by institutions external to the government (international organizations and civil society organizations).

As external and internal variables play a role in shaping policy reform, a model is used to describe a reform process that, first and foremost, focuses on the government as a single country. This model is a simplification of a real condition since it does not presume those global coalitions and partnerships to be always instrumental in bringing about such fundamental changes. The central figure in decision-making is the elite whereby those who will decide on policies are influenced by perceptions of what is desired and what is most likely to be achieved. The decisions may be influenced by general factors, such as socio-economic (global economic forces, socio-demographic change and socio-economic policies), political system (new management ideas, pressure from citizens and party-political ideas), and change events. The process of policy reform can be affected by these factors independently and in combination. Indonesia in 1998, for instance, as political conditions shifted to becoming more democratic, state financial management shifted to be more decentralized. Besides affecting decision-making proses, some of factors have a potential to influence others factors, for instance, shifts in demographics, such as the rise of the social media-savvy millennial generation (gen Z), which is a major source of public pressure.

Treiber explained that Pollitt and Bouckaert's model, as well as their neo-Weberian state, later became the standard for many works in public management movements even though there are some critics to that theory [7]. He also criticized the absence of Weber in their neo-Weberian state where Pollitt and Bouckaert failed to grasp Weber's understanding of the state as an 'institution' and the state as an 'idea of validity' and ascribed to the neo-Weberian state extremely varied functions without providing any (theoretical) basis for them. Another criticism came from Drechsler and Randma-Liiv [8], who explained that NPM tools (pay for performance or contracting-out) cannot be used in all places, despite Dan and Pollitt [9] claiming that NPM tools can work in Central and Eastern Europe.

4 ANALYSIS AND DISCUSSION

4.1 Indonesia's energy policy before 2006

Indonesia has both renewable and non-renewable energy sources. The production for petroleum had begun since the colonial era and reached a peak in 1976 and 1996 [10]. Due

to lower consumption than production, Indonesia is one of the prominent oil and gas exporter countries therefore oil and gas exports were a significant contributor to government revenue back then. In order to reduce the country's reliance on foreign oil and natural gas for primary energy, the Indonesian government issued a General Policy on the Energy Sector in 1981 and built the Kamojang Geothermal Power Plant (PLTP) the following year [11]; unfortunately, only about 8.9% of Indonesia's geothermal potential has been successfully exploited [12].

Energy demands continue to increase in the 2000s, when domestic oil and natural gas supplies were unable to meet, prompting the widespread use of coal as a new energy source to meet national energy demands particularly for secondary energy sources such as electricity. Despite the fact that fossil fuel (oil, gas and coal) has negative health consequences [13], many countries, including Indonesia, rely heavily on them as a primary source of energy

Prior to 2006, Indonesia's energy policy had a more sectoral prioritization and lacked a comprehensive plan to tackle the issue's root cause, energy security, which is essential for long-term national development. The sectoral regulations, such as laws on oil and gas (1971 and 2001), nuclear power (1997), electricity (2002), and geothermal energy (2003), regulate more management and business issues associated within that each sector itself, without regard for the interdependencies between sectors. In short, Indonesia was lacking an energy profile that described the country's anticipated future energy requirements and available energy resources.

4.2 Energy mix policy

4.2.1 Background

Indonesia started its journey to find new and renewable energy long before it was committed in the nationally determined contributions of Paris Agreement in 2016. In 2007, the government issued the Laws No. 30 Year 2007 of Energy, which highlighted the formulation of National Energy General Planning (RUEN) referred to National Energy Policy (KEN) and continued with releasing Law No. 21 Year 2009 of Electricity and Law No. 21 Year of 2014 of Geothermal.

The GoI produced specific procedures to strengthen and leverage the program development of New and Renewable Energy. They are Presidential Regulation No. 79 Year 2014 of National Energy Policy, Presidential Regulation Year 2017 of National Energy General Planning, and Regulations of Ministry of Energy and Mineral Resources No. 39 Year 2017 on the Implementation of Renewable Energy Utilization and Energy Conservation.

The Presidential Regulation No. 112 Year 2022 on The Acceleration for Renewable Energy Development of Electricity Power Supply, is the latest regulation stipulated by the government to pursue the green energy realization and energy security. This is also aimed to increase the investment climate and expedite the energy mix achievement as committed in the National Energy Policy, and to tackle global energy crisis as well.

4.2.2 Policy context

Presidential Regulation No. 79 Year 2014, as a specific development of the previous Presidential Regulation No. 5 in the year of 2006 regarding the National Energy Policy, stipulated that the target of energy mix in 2025 is at 23% and reducing the oil utilization at 25%. In 2021, the new and renewable energy reached 12.2% of total energy mix at which this portion is below the target defined in RUEN. In contrast, the coal production has been increased from 2012 to 2021, and Indonesia is acknowledged as one of the biggest coal producers [14] (Fig. 1).



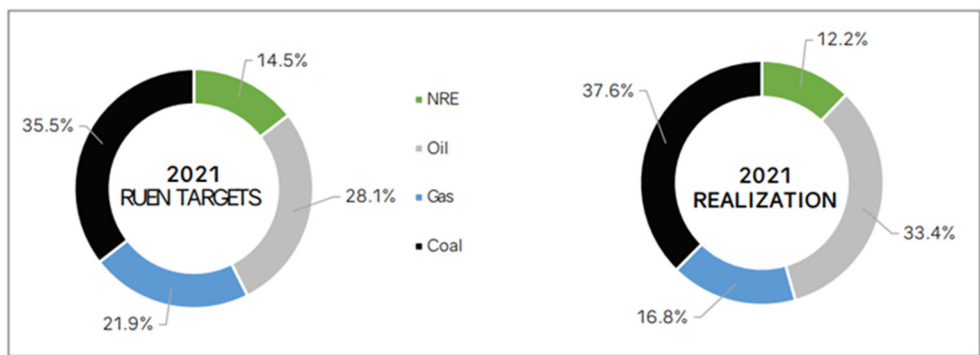


Figure 1: Primary energy mix 2021.

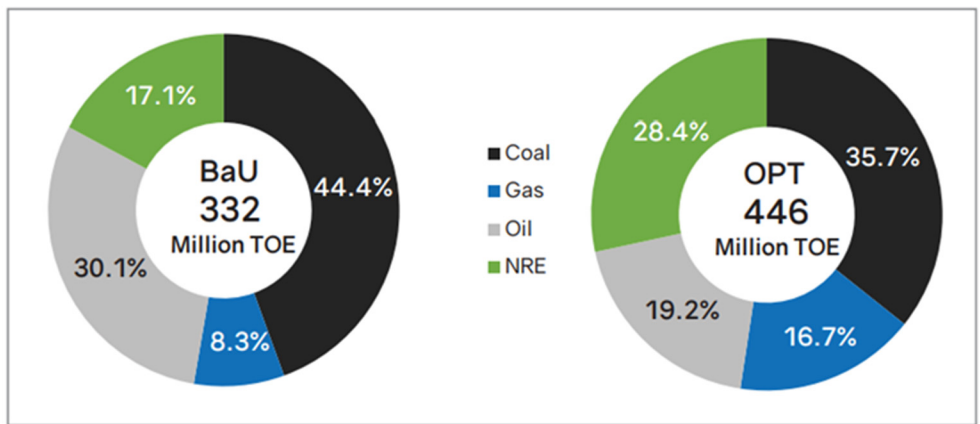


Figure 2: Primary energy mix both business as usual and optimistic scenario in 2032.

The forecast energy mix in 2032 indicates that Indonesia will be far behind the target if in business-as-usual scenario [15]. Fig. 2 may reflect the use of coal remains high (44.4%).

Considering the journey to 23% in 2025, it is estimated that the achievement of non-renewables energy utilization should be around 0.9% per year, despite the realization being 0.55% per year. All efforts are made, and even the government through Minister of Energy and Mineral Resources enacted various related regulations in 2021 that support the green energy ecosystem and attract the investors, such as the concerning tariff of electric power provided by state electricity enterprise, the use of renewable energy for the provision of electricity, and the concerning on rooftop solar power plant connected to the electricity network of holder(s) of electric power supply business license for public interest.

In all the government’s efforts to achieve the energy mix target, there are challenges or potential risks that may occur. The Ministry of National Development Planning reported that the potency of renewable energy is around 417.8 GW [11] that can be derived from solar (207.8 GW), hydro (75 GW), wind (60.6 GW), bioenergy (32.6 W), geothermal (23.9 GW) and ocean (17.9 W). Nevertheless, the above-mentioned potential resources cannot be utilized optimally. There are constraints that Indonesia is currently facing. In the first place,

the renewable energy resources are scattered or unintegrated. This might be caused by the geographical conditions of Indonesia as an archipelago. This can be managed by producing a specific strategy to integrate all resources. Second, there is limitation to develop storage to absorb the energy, whereas the nature of renewable energy requires these infrastructures. Third, the lack of domestic market is causing low renewable energy utilization. In addition, the global market remains uncertain as well. Fourth, it is the excessive cost of the non-renewable energy-based power plant which consequently requires high investment. Another challenge is the issue of low interest in funding. The non-renewable energy needs high technology, and Indonesia has not developed it yet.

The shares in primary energy mix are remain dominated by fossil fuels [15]. To accelerate the transition to renewable energy utilization is to attract investors by developing a green energy ecosystem. In addition, it is to strengthen the policy related to non-renewable energy and leverage provincial government regulation to manage local level development milestone [16]. The Pollitt and Bouckaert model shown in Fig. 3 provides a concise summary of the energy mix policy that have been explained before.

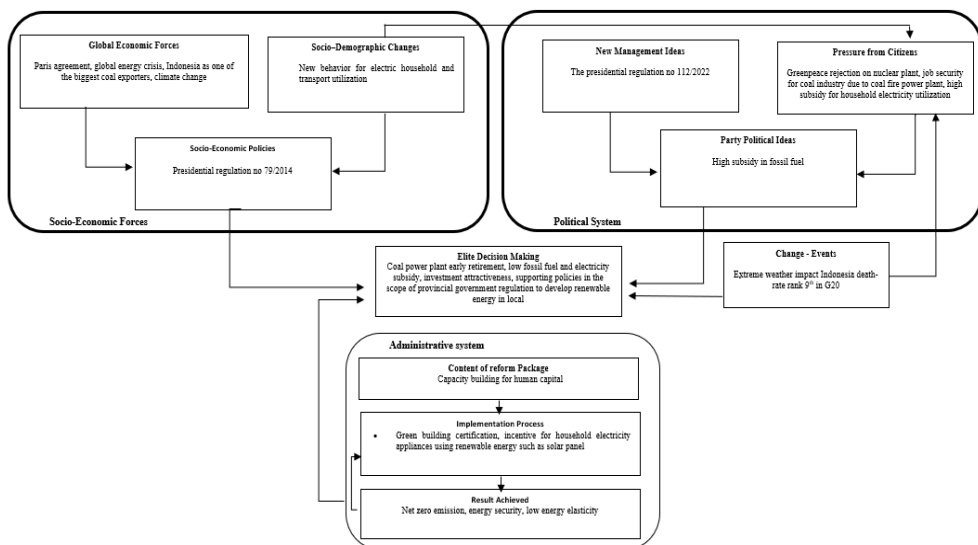


Figure 3: Pollitt and Bouckaert analysis for energy mix policy.

4.3 Zero carbon policy

4.3.1 Background

Indonesia's zero carbon policy is based on external factors such as the Paris International Agreement 2015 and internal factors such as the high death rate due to air pollution [17] and the potential for economic growth from the development of renewable energy infrastructure. The GoI has issued several policies and regulations related to reducing carbon emissions, for instance, Presidential Regulation No. 71/2011 concerning the implementation of the National Greenhouse Gas (GHG) Inventory, and Government Regulation No. 79/2014 on National Energy Policy. By 2030, Indonesia has set a target for greenhouse gas emissions of 29% with its own efforts and 40% with international assistance in the energy sector in order to reduce

emissions by up to 314–390 million tons of CO₂. At COP 26 on 2 November 2021, Indonesia reaffirmed its commitment to reduce GHG emissions and will contribute more quickly to achieving the world's NZE target, through an energy transition from fossil energy to renewable energy.

Political factors such as initiation from the government and pressure from society also affect the zero-carbon policy. Government-released Law No. 7 of 2021 Harmonization of Tax Regulations, which includes a carbon tax rate of Rp. 30/kg CO₂e or equivalent to USD 2/Ton CO₂e, is a form of new management ideas. Pressure from Greenpeace Indonesia and the Indonesian Climate Alliance initiated a petition to declare a climate emergency and set a target of net-zero emissions by 2050 is a form of pressure from citizens. Those factors put pressure on political parties and resulted in The House of Representatives' Inter-Parliamentary Cooperation Agency (BKSAP-DPR) publishing the White Paper: Agenda for Green Economy in Indonesia: Policy Initiative, Citizen Assembly and International Cooperation in 2022.

4.3.2 Policy context

Continuing with previous policies and responding to pressure from society, Indonesian government then release Presidential Regulation No. 98 of 2021 concerning Implementation of Carbon Economic Value to Achieve Nationally Determined Contribution Targets and Control of Greenhouse Gas Emissions in National Development. This regulation marks the existence of incentives for the development of carbon markets in Indonesia, while at the same time increasing the role of the community and the private sector in reducing emissions which can be included in the internal cost of production, as well as competitiveness in carbon trading in Indonesia. Now, in general, carbon trading can be carried out by means of mandatory and voluntary carbon market mechanisms.

Furthermore, the 2022 Presidential Regulation No. 112 of 2022 was also issued to support the energy mix and zero carbon policy. The Presidential Regulation regulates the preparation of a business plan for the supply of electricity (RUPTL), the preparation of a road map for accelerating the termination of the operational period of a steam power plant (PLTU), the implementation of the purchase of electricity, as well as government support in efforts to accelerate the development of renewable energy.

Through several Regulations and Policies, the Government of Indonesia (Ministry of Energy and Mineral Resources and Ministry of Environment and Forestry) believes that the realization of Greenhouse Gases emissions reductions until 2022 is in accordance with the planned targets 2060 [18]. However, it cannot be denied that there are also several conditions and government policies that have not been in line in supporting carbon emission reduction. In the transportation sector, there is high dependency on fossil fuels such as gasoline and diesel which results in heavy dependence on fuel imports [19]. On the other hand, the carbon intensity of the energy sector also has risen, due to the increase in the share of coal consumption in recent years [18]. These will be a challenge for Indonesia to achieve the zero-carbon emission target in 2060.

The Pollitt and Bouckaert model shown in Fig. 4 provides a concise summary of the zero-carbon policy that have been explained before.

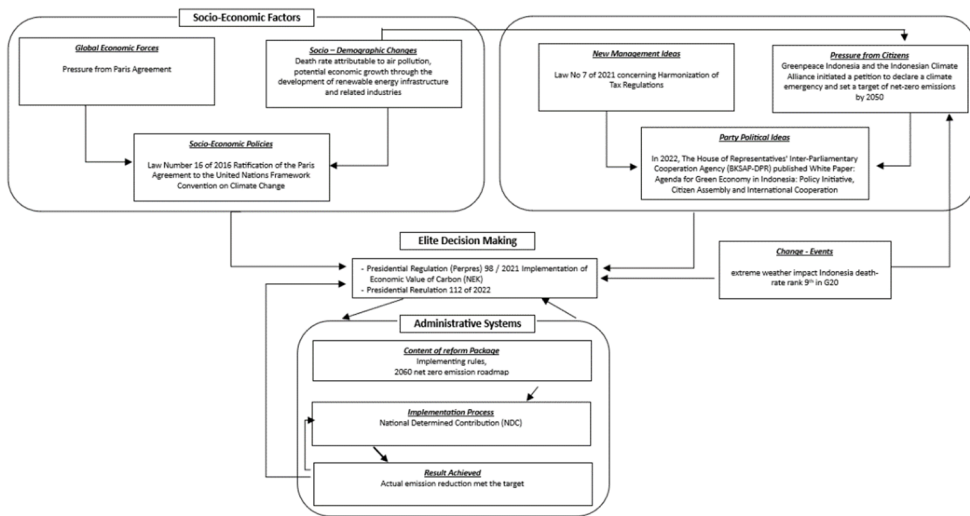


Figure 4: Pollitt and Bouckaert analysis for zero-carbon policy.

4.4 Electric vehicles subsidies policy

4.4.1 Background

Indonesia is not only the second largest producer but also the biggest consumer of motor vehicles in Southeast Asia. In addition, Indonesia is also the third largest motorcycle market in the world. These situations caused the transportation industry to contribute to 27% of total greenhouse gas emissions in Indonesia in 2019. The emission is also predicted to grow by 53% in 2030 and then increase by 100% in 2050 [20]. Hence, one of the keys to achieving the net zero emissions commitment in 2060 is by decarbonizing the transportation sectors with a transformation from fossil fuels energy vehicles to electric vehicles (EV). To enhance the energy transition in the transportation industry, Indonesia needs to build an ecosystem of the EV industry where the supplies and demands of EVs meet in a sustainable, strong, and efficient market. There are several aspects that needed to build the ecosystem; they are battery and electric vehicle components supply chain; incentives and supporting policies from the government; charging infrastructure; models and supply of electric vehicles; and public awareness and acceptance [21]. As a start, the government is focusing on the first two aspects.

The EV industry is heavily dependent on the batteries industry as the main component of its energy resources. Currently, most EV batteries are using nickel as their main element as it has the capability of storing greater energy at a lower cost which enables EVs to run long distances. Fortunately, Indonesia is known as the largest nickel ore owner and nickel producer in the world [22]. The fact that Indonesia has big potential benefits from the growing batteries industry catalyses the government to fully support the EV industry. On the other hand, despite the significant growth EV industry in the world, the initial cost of EVs is still considerably higher than the conventional internal combustion engine (ICE) vehicles. Mahalan and Posada [23] think that this is one of the significant factors that deter the consumer to shift to EVs. The doubts about EV performance and its supporting infrastructures also have become the reason for the slow-growing EV market in Indonesia.

Most of the current EV users in Indonesia are using their EVs as secondary vehicles, making the main objective of the transition yet to be achieved [24].

Indonesia ambitiously set a target of 2,200 EVs and 712,000 conventional hybrids; as well as 2.1 million electric two-wheelers by 2025. This target exponentially increased to 4.2 million, 8.05 million, and 13.3 million respectively by 2050 [20]. To support the plan, the GoI issued Presidential Regulation No. 55/2019 which provides directives and regulatory certainty for industry players to accelerate the transition of fossil fuel vehicles to the EV industry including the provision of fiscal and non-fiscal incentives to encourage purchases of electric and hybrid vehicles. This capital costs subsidy on EVs policy was also confirmed to be applied by G20 countries as stated in G20 Bali Leaders' Declaration, 15–16 November 2022 [25].

4.4.2 Policy context

To reduce the price disparity, in the first quarter of 2023, the GoI issued two regulations: (1) Regulation of the Minister of Industry No. 6 of 2023 that gives an IDR7 million (+/- 30% of selling price) subsidy for two-wheelers EV purchase [26]; and (2) Regulation of the Minister of Finance No. 38 of 2023 that gives 10% VAT discount on the purchase of four-wheelers and bus EVs [27]. The two regulations are not only focused on the price subsidies but also regulate the minimum local components of the EV to be eligible for getting the subsidy. This particular regulation aims to boost the local production of EV components. The price subsidy for two-wheelers EVs is only eligible for lower-income users and apply for first-time purchase only. This regulation targets low-income users so that they are willing to substitute their conventional vehicles for electric vehicles. Overall, with these two monetary incentives regulations the government believes that the demand for EVs will increase and encourages the EV industry to grow and expand their production, establishing a growing and sustainable EV ecosystem and industry.

The Pollitt and Bouckaert model shown in Fig. 5 provides a concise summary of the EV subsidies policies that have been described above.

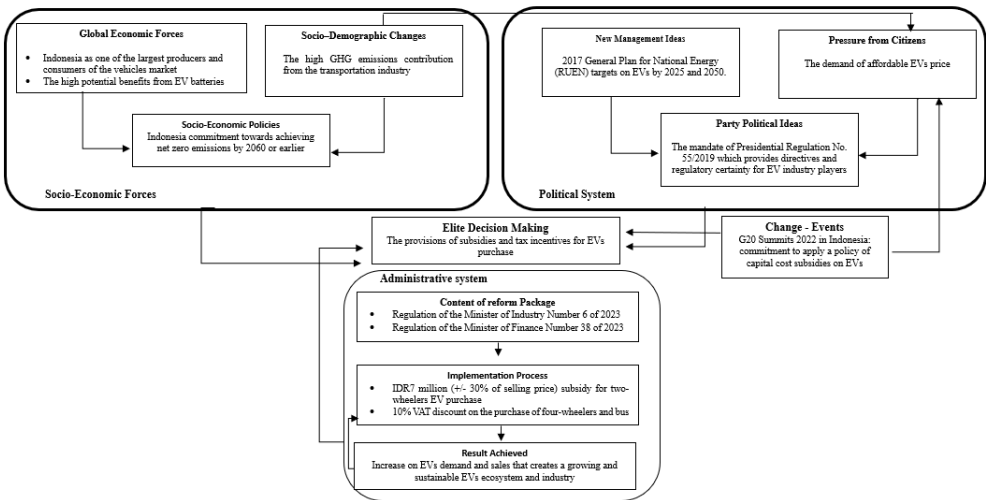


Figure 5: Pollitt and Bouckaert analysis for EV subsidies policy.

5 CONCLUSION

This research focuses on the most significant factors that are contributing to the shifts in energy policy that are occurring in Indonesia. In this context the GoI considers alternative abundant energy reserves and inexpensive, such as coal energy, to replace other fossil fuels (oil and gas). When making the decision to switch from one fossil fuel to another, the primary concern taken into account was economic growth. Concerns about clean energy have not been used as justification for changes to the energy policies.

The circumstances have undergone a dramatic transformation as a result of the commitments made by a number of countries to cut back on their use of fossil fuels in response to climate change. The GoI has enacted new policies with the view that external factors, particularly global commitment, are the most important factor to consider when formulating energy policy. Despite the possibility that rising energy prices will have a negative effect on the national economy, the GoI has enacted new policies by considering external factors, particularly global commitment, as the most decisive variable in energy policy. The role of Indonesia as G20 leader back then creates more opportunities for global commitment to be considered as a vital component in policy changes.

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