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Governance, Risks, and Compliance in Fulfilling the New and Renewable Energy Mix at the State Electricity Company (PLN)

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Abstract

This study examines Governance, Risk, and Compliance in the Fulfillment of the New and Renewable Energy Mix in the State Electricity Company (PLN). The problem in this study is the increase in global carbon emissions where the Paris Agreement was subsequently held. As a signatory to the agreement, the Government of Indonesia is committed to reducing greenhouse gas emissions by 2030. GRC (Governance, Risk, Compliance) is a proven way to align technology process strategies and individuals in it, so that governance, risk and compliance in policies can be achieved, especially NRE policies in Indonesia. Furthermore, the research method used in this study is a qualitative research method. The results of the study show that in the aspect of governance, it can be concluded that it is still not good due to various obstacles such as limited private participation, the preparation of solar renewable energy is too rigid, transparency is not ideal, stakeholder participation is still limited, ineffective and efficient due to spending the budget to prepare solar PV auction documents which often fail, are not accountable and have not been able to formulate a strategic vision properly. In the aspect of Risk Management, Operational Risk of readiness for the construction of solar power plants by the auction winner has not been carried out, PLN is still bound by the covenant (World Bank, AFC, IDB, etc.) so that it cannot provide guarantees for the auction winner, and does not have transparency in the process of formulating the RUPTL. Finally, in the aspect of complienence PLN's compliance as the leading solar NRE sector with the government (regulation & fulfillment of obligations), to the international community related to the fulfillment of the net zero target (COP Agreement), the Government/foreign donor institutions for funding assistance to meet the net zero target.

Keywords: *New Renewable Energy; Governance, Risk, and Compliance (GRC); State Electricity Company (PLN).*

Introduction

Energy is an important element in supporting various human activities, both for household, industrial, business, and transportation sectors (Omer, 2008; Lu et al., 2016). Currently, the majority of the world's energy supply still relies on fossil fuels, such as oil and coal, which are classified as non-renewable resources. Energy demand is predicted to continue to increase, but fossil fuel reserves are dwindling and their availability is limited (Asif & Muneer, 2007; Shafiee & Topal, 2009). In addition, the use of fossil fuels plays a major role in carbon emissions which cause an increase in carbon dioxide levels in the atmosphere. This carbon accumulation is one of the (main triggers of global warming, which has a negative impact on the climate and environment (Jukic & Jerkovic, 2008; Moghadam et al., 2017). Therefore, dependence on fossil energy needs to be reduced by finding more sustainable alternative energy sources. As a solution, the development of New and Renewable Energy (EBT) has emerged as a more environmentally friendly alternative and has the potential to guarantee long-term energy availability (Oyedepo, 2012; Wolak, 2022). Renewable energy sources, such as solar, wind, water, and biomass, have low carbon emissions and do not damage the environment, making them a more sustainable choice than fossil fuels. By adopting renewable energy more widely, we not only reduce the negative impact on the environment but also increase global energy security. Sustainable energy supply through renewable energy can help reduce dependence on oil and coal, maintain ecosystem balance, and provide long-term benefits for the economy and public welfare (Dincer, 2000; Jaiswal et al., 2022).

New energy is a type of energy produced through the development of cutting-edge technology, both utilizing renewable and non-renewable resources (Aravindan et al., 2023). Although based on more innovative technology, new energy has not been fully implemented widely in everyday life and is generally

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still in the early stages of development and feasibility testing (Wolsink, 2007). Examples of new energy include hydrogen technology, nuclear energy with a safer design, and synthetic fuels that rely on chemical engineering processes. Because it requires further investment in technology and research, the implementation of new energy is generally still limited and awaits readiness for large-scale production (Connolly et al., 2010).

Renewable energy is a type of energy that comes from natural resources that can be renewed naturally and are almost unlimited, making it one of the most sustainable options to meet the world's energy needs (Twidell, 2021). Renewable energy sources such as sunlight, wind, water (hydro), biomass, and geothermal heat are continuously available because they are supported by natural processes that are constantly repeated. This energy will not run out as it is used, unlike fossil fuels which are limited in quantity (Rahman et al., 2022). In addition, technological developments have enabled renewable energy sources to become increasingly efficient and effective alternatives. For example, solar panels and wind turbines continue to be improved so that they are able to produce greater power with higher efficiency (Ellaban et al., 2014)..

The world is experiencing a global energy revolution marked by the increasing competitiveness of new renewable energy sources (EBT). This revolution includes commercial and technological developments in the energy generation sector as well as the dominance of EBT in adding new electricity networks in the world (Yergin, 2020). In 2015, there was a turning point in the dominance of EBT in the portion of global energy generation, with an addition of 147 GW and investment reaching USD 285.9 billion. This is the highest annual growth in history, where solar power plants (PLTS) contributed the largest amount of around 34% (REN21, 2016). In the same year, for the first time, the addition of renewable energy generation sources exceeded fossil fuel power plants, even when oil prices were below USD 50/barrel, breaking the myth that EBT is only feasible when oil prices are high.

However, this global energy revolution is not reflected in the development of NRE in Indonesia. The portion of NRE in the national energy mix has tended to be stagnant in the past decade. Energy, as part of the development needs and livelihoods of the people of Indonesia, is a crucial government affair. Indonesia is still heavily dependent on conventional energy sources, such as petroleum, natural gas, and coal, which are limited and non-renewable. Based on data from 1960-2017 compiled by (Prawoto & Basuki, 2023), carbon dioxide emissions in Indonesia reached 487 million tons (MtCO2) in 2017, an increase of 4.7% from the previous year, and accounted for 1.34% of the world's total CO2 emissions of 36,153 million tons (MtCO2).

Global efforts to address climate change are reflected in various international agreements, including the Paris Agreement adopted at the 21st UNFCCC meeting in Paris in 2015. This Agreement reflects the principles of equality and shared responsibility differentiated according to the capabilities of the States Parties. Indonesia as one of the signatories to the Paris Agreement is committed to reducing greenhouse gas (GHG) emissions by 29% by 2030, as stipulated in Law Number 16 of 2016.

The leading NRE policy sector in Indonesia is the Ministry of Energy and Mineral Resources (EMR), however, the policies made by related ministries, especially the Ministry of Finance, regarding fiscal ease for NRE power plant investment, have a great influence on the policies made by the Ministry of Energy and Mineral Resources regarding increasing investment in the NRE sector. This can be a strong influence on the fulfillment of the NRE mix as a primary energy source for power plants sourced from solar power, realized through Solar Power Plants (PLTS). Currently, the policy guidelines are prepared by the Ministry of Energy and Mineral Resources through the 2021-2030 Electricity Supply Business Plan (RUPTL) stipulated through the Ministry of Energy and Mineral Resources No.188.K/HK/.02/MEM. L/2021.

As of 2020, the number of active solar power plants has reached 79 MW. But on the other hand, the development of solar power plants still faces various obstacles. Solar PV developers, for example, are burdened by the Regulation of the Minister of Energy and Mineral Resources (Permen) Number 49 of 2018 concerning the Use of Rooftop Solar Power Generation Systems by PLN Consumers related to the imposition of capacity *charges* and emergency electrical energy purchase costs for the installation of rooftop solar power plants for consumers from the industrial tariff group.

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Meanwhile, if viewed theoretically, this phenomenon can be explained according to (Papazafeiropoulou & Spanaki, 2016) that governance, risk, and compliance as a concept that can be a solution to problems in the business or policy realm by looking at the readiness of governance, risk management, and compliance in an organization. With this concept, all components in it have a close relationship, so that integration and harmony are created to a certain extent, so that problems such as conflict, excessive overlap, and gaps can be avoided (Sugiyanto, 2021).

Governance, risk, and compliance (GRC) is an integrated framework designed to help organizations manage risk, comply with regulations, and ensure alignment between information technology (IT) and strategic business objectives (Racz et al., 2010). Through a structured approach, GRC provides tools and processes that help companies achieve efficiency, increase effectiveness, and better deal with uncertainty. With GRC, companies can monitor compliance consistently, identify risks more accurately, and ensure that operations are running according to established standards (Vicente & da Silva, 2011).. Without a coordinated GRC approach, organizations can face challenges such as increased operating costs, slow decision-making processes, and reduced capacity to address threats to revenue or reputation. A poorly organized approach can also result in companies failing to comply with important regulations, increasing the likelihood of sanctions, and increasing the risk of losing customer and investor trust (Hardy & Leonard, 2011).

Implementing governance, risk, and compliance (GRC) is critical because it provides a holistic view of risk, making it easier to make decisions on often unrelated issues (Makas, 2023). In the face of regulatory dynamics and increasing stakeholder demands, boards of directors are faced with the enormous responsibility of managing complex and interrelated priorities. GRC offers an effective solution to integrate various functions within an organization, so that each operation can remain aligned with the company's strategic objectives and comply with applicable legal and regulatory requirements (Wiesche et al., 2011). With a GRC approach, boards of directors have a tool that allows for more structured and proactive oversight of risk and compliance, which not only reduces potential legal hurdles but also increases the company's efficiency and credibility in the eyes of the public and stakeholders. GRC helps create a more organized organizational structure, where each work unit plays a synergistic role in achieving the company's vision, while ensuring that business steps are carried out with full responsibility and integrity (Arjoon, 2006).

In this context, the National Energy Policy (KEN) and the National Energy General Plan (RUEN) are strategic documents that set national energy mix targets, including NRE targets of 23% in 2025 and 31% in 2050. However, the achievement of this target is still difficult to realize. In 2020, the NRE mix only reached 11.20%, far from the set target. Indonesia also faces the challenge of an energy emergency, with full importer status of crude oil since 2003, natural gas in 2025, and coal in 2049.

Serious efforts are needed to encourage the use of NRE through collaboration between the government, the private sector, academics, the community, and the mass media, in accordance with the Helix Model approach. This study will look at the dynamics of the implementation of the national NRE mix in Indonesia, especially from solar power sources, in the context of Governance, Risk, and Compliance. The main focus of this research is the role of PLN as a key actor in sustainable electricity supply in Indonesia, as well as the contribution of the private sector and government policies in supporting this energy transition.

Research Methods

The research method used in this study is a qualitative research method, namely research that intends to understand the phenomenon of what is experienced by the research subject (Lexy, 2005). The subject is meant by such things as behavior, perception, motivation, action, and others holistically by being explained in a descriptive manner using words.

The selection of a qualitative research method in the study entitled "Governance, Risk, and Compliance in the Fulfillment of the New and Renewable Energy Mix in State Electricity Companies (PLN)" is considered quite appropriate because in the research process and data collection on informants that have been predetermined. So that by using qualitative research, we can comprehensively and in-depth analyze the

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fulfillment of the new and renewable energy mix at the State Electricity Company (PLN). To obtain data that suits the needs of the research, authors must go through a process called data collection. In this study, the data collection technique carried out by the author is through interviews with techniques to determine informants using *purposive* techniques. In this study, the author also conducts a documentation study by reading, studying, and analyzing various regulations and documents related to the research conducted.

Results and Discussion

Governance

The governance implemented by the State Electricity Company (PLN) is not only the foundation for the development of NRE, but also serves as a mechanism to ensure that the energy transition process runs smoothly, accountably, and sustainably. One of the important findings of this study is that stakeholder participation plays a central role in PLN's governance. Through the active involvement of various parties, including the government, the community, the private sector, and non-governmental institutions, PLN is able to make strategic decisions that consider various perspectives and interests. This participation not only increases the legitimacy of the decisions taken but also ensures that the decisions are supported by all parties involved, thereby reducing the potential for conflict and increasing the success of the implementation of NRE policies.

PLN needs to be more proactive in involving all *stakeholders* in the planning and decision-making process, as well as ensuring that the policies implemented are truly in the interests of the community as a whole. Being proactive is more than just taking the initiative. Being proactive means taking responsibility for our own behavior, whether in the past, present, or future. Being proactive also means being able to make choices based on applicable principles and values.

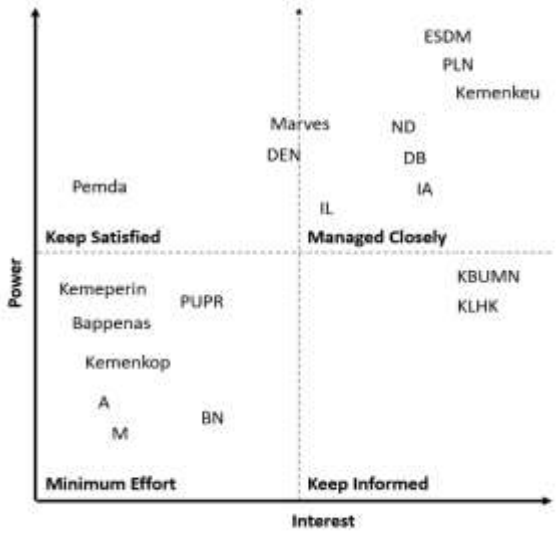

Figure 1.1 Partisipasi Stakeholder

Source: Researcher Processing, 2024

The participation data on the stakeholders above if supported by an analysis of the impact of policies on access to electricity in the 3T region, as well as an evaluation of the implementation of USO by PLN will be very valuable because it can provide a strong foundation for the formulation of more effective and

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inclusive policies in supporting the achievement of sustainable development targets, especially in terms of clean, affordable, and sustainable energy for all Indonesia citizens.

Transparency also emerges as a key element in good governance. In this study, it was found that PLN consistently publishes information related to its performance and strategic decisions, including financial statements and sustainability reports. This transparency allows the public and other stakeholders to monitor and evaluate the company's performance, which in turn strengthens PLN's accountability. The discussion in this study shows that high transparency contributes to increased public trust in PLN, which is very important in the context of the energy transition involving major changes in infrastructure and technology.

The results of the study also show that compliance with the law is an important pillar in PLN governance. By complying with national and international regulations, PLN not only maintains its operational stability but also ensures that all steps taken in the development of NRE have a strong legal basis. This reduces any legal risks that may arise and provides certainty for investors and other stakeholders. The discussion in this study highlights that strict compliance with regulations also increases PLN's credibility in the eyes of the world, opening up opportunities for partnerships and foreign investment in renewable energy projects.

PLN's responsiveness to changes in the external environment is also one of the important findings in this study. PLN shows a high ability to adapt to regulatory changes, energy price fluctuations, and technological developments. This research finds that high responsiveness allows PLN to remain competitive and innovative in facing dynamic challenges in the energy sector. The discussion also emphasized that PLN's ability to adapt quickly to these changes is very important to maintain the continuity of NRE projects and ensure the achievement of clean energy targets as planned.

PLN has not only succeeded in the implementation of renewable energy projects, but also built a solid foundation for sustainable long-term growth. The discussion in this study emphasizes that the success of the energy transition in Indonesia is not only determined by investment and technology, but also by how governance is implemented effectively at all levels of PLN's operations. This conclusion shows that good governance is not only important to achieve short-term goals, but also to ensure the sustainability and stability of the company in the long term.

Management Risk

Risk management in the context of the New Renewable Energy (NRE) mix target by the State Electricity Company (PLN) plays a crucial role in ensuring the success of projects related to renewable energy. In this case, there was a discussion on how risk management outlines how PLN identifies, evaluates, and mitigates various risks that can hinder the achievement of NRE targets. The results of the study show that operational risk is one of the biggest challenges faced by PLN. Lack of infrastructure readiness, bottlenecks in permitting, and resistance from local communities are some examples of operational risks that can lead to project delays and increased costs.

The study also revealed that inadequate operational readiness not only affects the project schedule but can also interfere with PLN's financial projections, which ultimately affects investor confidence and the company's financial stability. In addition, PLN's inability to provide funding guarantees can also lead to a decrease in interest from private investors to participate in NRE projects in Indonesia. Investors tend to seek certainty and stability, especially when it comes to the return on their investments. When PLN is unable to provide adequate guarantees, the financial risk of the project increases significantly, which can reduce investor interest and create uncertainty in the national energy market.

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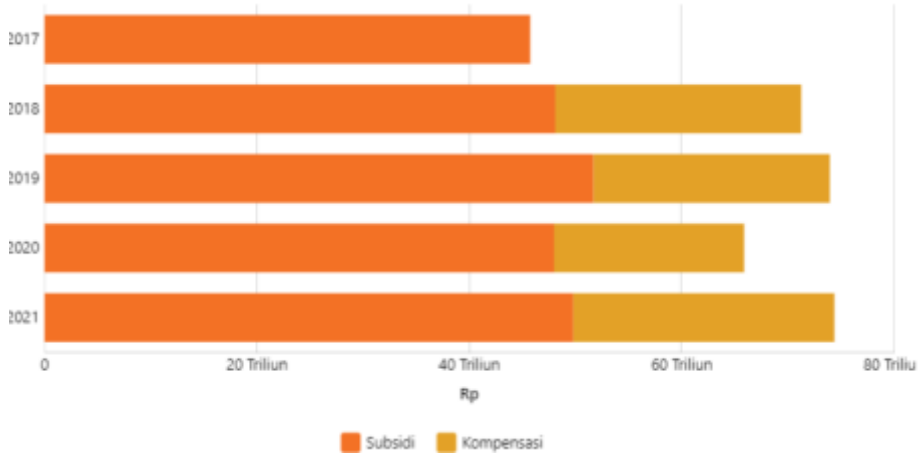

Figure 1.2 Value of PLN Subsidies and Compensation in 2017-2021

Source: Databoks, 2023

In recent years, the government has continued to provide electricity subsidies and compensation through PLN to help the poor and vulnerable poor and cover the difference in electricity supply costs. In 2021, the total subsidy and compensation reached Rp74.39 trillion, with details of subsidies of Rp49.8 trillion and compensation of Rp24.59 trillion, the highest figure in the last five years. Previously, the highest value was recorded in 2019 at Rp73.96 trillion. It is estimated that these subsidies and compensation will increase in 2022 due to the increase in energy commodity prices which affect the cost of electricity supply. In terms of financial risk management, PLN needs to ensure that every investment decision in NRE projects is based on a comprehensive risk analysis. Uncertainty in energy prices, fluctuations in exchange rates, and regulatory changes can pose significant financial risks. Therefore, PLN must have a clear and measurable risk mitigation strategy to protect the company's cash flow and profitability in the long term. This study highlights the importance of PLN to integrate financial risk analysis in every stage of decision-making, in order to minimize the negative impact that may occur.

In addition, reputation risk is also an important concern in PLN's risk management. Poor publication or failure to meet environmental commitments can damage PLN's reputation and reduce support from the community and stakeholders. In this study, it was found that transparent communication and active engagement with the community and other stakeholders are key to managing reputational risk. Thus, PLN needs to develop an effective communication strategy to maintain and strengthen the company's reputation.

PLN has taken significant steps to reduce environmental, social, and governance (ESG) risks through several key initiatives, including climate change risk governance, greenhouse gas (GHG) emissions reporting, water management programs, talent development, and ISO 27001-certified cybersecurity. In addition, transparency of tax information is also part of efforts to improve governance. In its decarbonization efforts, PLN has succeeded in reducing GHG emissions by 9.7 million tons of CO2e in 2023 compared to the Business As Usual scenario, demonstrating its commitment to lower emission targets. Through the Muara Karang Block 3 Gas and Steam Power Plant (PLTGU), PLN has started selling Emission Reduction Certificates (SPE) since October 2023, with a trading capacity of 900 thousand tons of CO2e. This step makes PLN a major player in the carbon exchange, demonstrating its important role in carbon trading and its contribution to reducing the national carbon footprint.

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Regarding strategic risks, PLN must be able to adapt quickly to changes in the external environment, including regulatory changes, technological developments, and dynamics of the global energy market. The study found that the inability to adapt quickly can create strategic risks that can hinder the growth and sustainability of EBT projects. Therefore, PLN needs to improve its adaptive capabilities and ensure that the risk management strategies implemented are always relevant to current conditions. Thus, PLN can ensure that the risks faced are not only well managed but also integrated into every strategic decision taken by the company.

As a form of commitment to transparency in environmental, social, and governance (ESG) risk management, PLN has taken several important steps to improve reporting and public awareness of its performance. One of the efforts made is the publication of a report guided by the Task Force on Climate-related Financial Disclosure (TCFD) to communicate risks related to climate change in a financial context. In addition, PLN also publishes a comprehensive ESG performance report and fills out a questionnaire from the Climate Disclosure Project (CDP) which covers aspects of climate change and water security. To ensure operational risk management, PLN has implemented a Risk Rating system on its power plants and substations, which facilitates the evaluation of risk factors on key infrastructure. In addition, PLN has also issued various policies that support important issues, including climate change policies, biodiversity conservation, environmentally friendly procurement, and social rules that apply to suppliers and contractors to ensure the sustainability of the supply chain. In the internal work environment, policies that promote mutual respect and inclusivity are also implemented to create a positive work culture.

Compliance

The compliance aspect is an important foundation in governance, risk management, and regulatory compliance in the new and renewable energy sector in Indonesia. Compliance in organizations, especially in the public sector, is a key element that ensures that all operational processes and activities are carried out in accordance with applicable policies, regulations, and laws. In this context, compliance not only aims to ensure smooth operations, but also to maintain ethics, integrity, and accountability in the implementation of public policies. The main emphasis of this chapter is that good compliance can reduce the burden of labor and the costs that governments have to bear in implementing policies.

Compliance is in two main dimensions, namely substantial procedural matters. Procedural compliance refers to the administrative processes and steps required to ensure that an organization complies with applicable regulations. This includes data collection, reporting, documentation, and regular evaluations necessary to comply with legal and policy standards. Meanwhile, substantial compliance focuses more on evaluating the end result or impact of policy implementation, which assesses whether the policy objectives have been achieved effectively and in accordance with the core values that exist. These two aspects complement each other and are important to ensure that compliance not only happens on paper, but also has a positive impact in practice.

Furthermore, this chapter highlights some of the key challenges faced by PLN, as an entity that has a central role in the new and renewable energy sector in Indonesia, related to compliance. Despite efforts to comply with various existing regulations, PLN still faces a number of obstacles, including limited private sector participation, lack of transparency in policy implementation, and various challenges in operational risk management. This condition shows that although there is a fairly clear regulatory framework, its implementation is still not optimal, which has an impact on the effectiveness of new and renewable energy policies in Indonesia. This aspect emphasizes the need for PLN and the government to continue to adapt to existing dynamics, including increasing stakeholder involvement in the decision-making process. Increased participation and transparency are expected to help overcome existing obstacles, as well as encourage better compliance in the future. With improvements in procedural and substantial compliance aspects, it is hoped that better governance can be created, which not only complies with regulations, but also really benefits society and the environment as a whole.

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Conclusion

Good governance in the State Electricity Company (PLN) is crucial in ensuring a smooth energy transition to New Renewable Energy (NRE). The active participation of various stakeholders, including the government, the community, the private sector, and non-governmental institutions, has proven to strengthen the legitimacy of the decisions taken by PLN. This not only increases the support of all parties involved, but also reduces the potential for conflict and increases the chances of successful implementation of NRE policies. Thus, good governance is not only important to achieve short-term goals, but also to maintain the stability and sustainability of the company in the long term.

In addition, risk management at PLN plays an important role in ensuring the success of NRE-related projects. The biggest challenge faced by PLN is operational risk, which includes infrastructure readiness, licensing barriers, and resistance from local communities. Unpreparedness in operational management not only has an impact on project delays, but also affects PLN's financial projections, which in turn can reduce investor confidence. Financial risks such as energy price uncertainty and exchange rate fluctuations are also a major concern, which requires a comprehensive risk mitigation strategy to maintain the stability and sustainability of NRE projects.

In conclusion, to achieve the energy mix target set in the National Energy General Plan (RUEN), deep policy reforms and simplification of the licensing process are needed. In addition, transparency in reporting and investment decision-making must be improved. Closer collaboration between the government, the private sector, and the community is also essential to overcome existing barriers. With a comprehensive risk mitigation strategy and supportive policies, Indonesia can accelerate the transition to clean and sustainable energy and meet its commitment to reducing greenhouse gas emissions.

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