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Collaborative Governance on Energy Management Online Reporting According to Energy Conservation Policy

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ABSTRACT

Energy savings in Indonesia are still far from the expected target of only around 79,358 GWh/141,220 GWh. The achievement is based on online reporting of energy management by industry according to government regulation No. 70 of 2009 which is reported regularly every year. This is done by the government as support in reducing the impact of climate change that occurs today. The qualitative method used in this study was a collaborative governance process approach between the government and industry with a collaborative governance cycle that occurs, is then analyzed, and conclusions drawn. The research results obtained include difficulties in identifying industries because there are still differences in authority within different government agencies. There are still 30% of industries that meet the requirements but have not done online energy management reporting including the fulfillment of all energy management activities that must be carried out. Articles related to incentives and disincentives that have not been fully implemented by the government. Collaborative governance is very important to be applied in the division of tasks, functions, and roles of each party involved. So that all can run according to their rights and responsibilities so that the achievement of future energy saving targets can be achieved.

I. INTRODUCTION

The energy conservation policy is the government's effort to preserve energy resources through increasing efficiency in their utilization according to government policy PP 70/2009. In addition, energy conservation by saving energy is expected to be able to reduce CO2 emissions which have an impact on climate change and global warming. Global warming as a result of climate change that is occurring in Indonesia or throughout the world can have a negative impact on people's life activities (Diana Nurhayati, Yeny Dhokhikah, 2020). The results of a study by the Ministry of National Development Planning/Bappenas show that starting in 2022, the energy sector will

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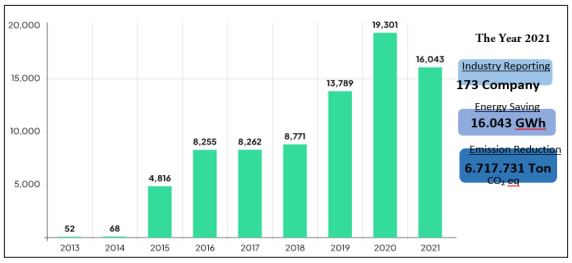
replace the forestry sector as the largest emitter in Indonesia. The energy and transportation sectors are the largest emitters of 50.6% (potential of 1 Giga Ton CO2eq) of total emissions in Indonesia in 2022. This potential will continue to increase until 2030, where the percentage of emissions from the energy sector is predicted to touch 1.4 Giga Tonnes CO2eq (59%). Derived from the energy conservation policy, namely PermenESDM 14/2012 concerning energy management. The two government policies apply to industries that meet the requirements as users of energy sources and energy of more than or equal to 6,000 tons of oil equivalent per year. According to the Minister of Energy and Mineral Resources, fulfillment of energy conservation activities through energy management includes appointing a certified energy manager, preparing an energy conservation program, conducting regular energy audits by certified auditors, implementing energy audit results, and reporting energy management implementation to the government every year. The implementation of energy conservation through energy management is followed up in accordance with the Nationally Determined Contributions to the Paris Agreement. Where Indonesia targets 29% in 2030 through the government's own efforts and can be increased up to 41% through the support of international cooperation. The stipulation of the Minister of Energy and Mineral Resources regarding energy management is expected to be able to contribute to reducing emissions of 314 – 398 million tons of CO2e. This is accordance withthe National Action Plan for Reducing Greenhouse Gas Emissions. In simple terms, energy management that is carried out by saving 1 GWH of electricity in industry is equivalent to reducing greenhouse gas emissions by 880 tons of CO2e.

The implementation of energy conservation carried out by the government in the field of Energy and Mineral Resources in collaboration with the International Energy Agency (IEA) in creating the Energy Conservation Information System (SINERGI). As the purpose of providing easy access to information for the public related to energy conservation and efficiency activities. SINERGI is a website-based application that provides diverse and quickly accessible information about energy conservation in Indonesia. The SINERGI platform is a complete platform that brings together several applications where one of the reporting is related to energy conservation, namely Energy Management Online Reporting (POME). The development of innovation that occurs in the public sector cannot be separated from the rapid advances in ICT technology, information and communication (Safeena et al., 2013). Initially, energy management reporting was done manually starting in 2012, then in 2014 it was improved with the Online Energy Management Reporting (POME) which was always revised and updated on POME with the addition of features. The fatures allows benchmarking and automatic calculation of the savings efforts to be made by industry stakeholders. In 2019 until now using integrated innovation in conducting energy management reporting online through the SINERGI application. From the results of a survey by Globascan and the Global Reporting Initiative, environmental, social and corporate governance performance disclosures are the new mainstream in corporate reporting. In addition, there is a significant positive relationship between environmental performance and company performance (Ladyve, G. M., Noor Shodiq Ask, 2020). Therefore, environmental reporting on energy management activities cannot be taken for granted.

The achievement of online reporting on energy management by the industry since the use of online reporting based on web applications has tended to increase but there is still no consistency from the industry regarding online reporting of energy management which must be carried out routinely every year. From the results of online reporting on energy management, the achievement of energy savings has increased every year, except when the C-19 pandemic occurred, which decreased to be precise in 2021 as a result of decreased industrial productivity.



Source: Energy Management Online Reporting Ministry of energy and mineral resources (processed)

Figure 1. Energy Saving Achievements

In Figure 2, the results of industry identification sourced from online energy management reporting data, PLN data, and Ministry of Industry data in 2018 show that there are still 50% of industries from several industrial sectors that have not conducted online energy management reporting, including the oil and gas industry, agro industry, iron and steel industry, chemical industry, food and beverage industry, pulp and paper industry, manufacturing industry, cement industry, textile industry and mineral and mining industry.

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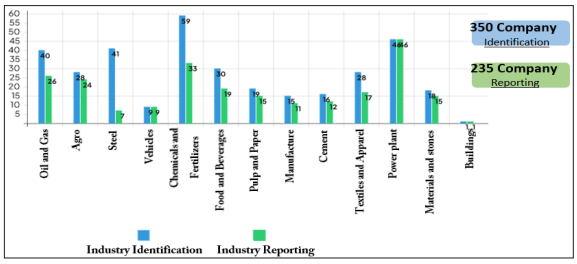


Source: Ministry of Energy and Mineral Resources (POME), PT. PLN Account Data 2018, and the Ministry of Industry (processed)

Figure 2. Number of Identified Companies Using Energy ≥ 6000 TOE

Environmental problems that have the greatest responsibility are industrial companies engaged in the management of steel, natural resources, paper and pulp, power generation, water and chemical (Burgwal, 2014). From the results of online reporting on energy management by industry, it can be seen that there are still 30% of industries that have not met the point requirements for conducting online reporting on industrial management. Apart from that, other issues have not been fully implemented Chapter V of the article related to incentives and disincentives in accordance with PermenESDM 14/2012, which causes relaxation in order to approach industries that have not carried routine online energy management reporting every year. The energy savings achieved up to 2014 amounted to 120 GWH or 105,600 tons of CO2e, while the target for energy savings in the industrial sector is 141,220 GWH or around 124,273,600 tons of CO2e by 2025. Until 2021, from the results of SINERGI's reporting, which reports online energy management from industry to the government, energy savings of 79,358 GWh were obtained, while emission reductions were 24,932,104 tons of CO2. So that from the results of online energy management reporting by the industry, the energy saving target is still far from being as expected.

This article discusses a collaborative governance approach in addressing online energy management reporting reported by industry periodically every year which is still far from the target expected by the government. The research conducted has never existed before, where there is involvement of various parties between the government in this case the Ministry of Energy and Mineral Resources and the industry in achieving energy savings made by the industry from the reporting. Through a collaborative governance regime approach that is viewed from a continuous cycle of collaborative governance so that problems in energy management reporting between the government and industry can provide the best solution so that the achievement of energy savings can meet the government's expected targets based on increased results of online energy management reporting by industry.

II. ANALYTICAL FRAMEWORK

Energy management is a program activity carried out in an effort to plan systematically regarding the use and utilization of energy sources or energy as needed in an effective and efficient manner that is sustainable continuously without affecting the main industrial production (Verein Deutscher Ingenieure, 2007). Energy management in industry has the following targets:

i) Maximizing the potential use of energy sources or energy in each of its activities.
ii) Increasing energy sources and energy efficiently.
iii) Utilizing the results of opportunities inincreasing the company's competitiveness.

Online energy management reporting involves the role of the government, in this case the Ministry of Energy and Mineral Resources, and industry. The achievements of energy savings made by the industry are monitored regularly every year by the government in terms of analyzing the making of a policy related to energy management.

Collaboration comes from English, namely 'co-labour' which means working together. Collaboration began to live and develop in the 19th century during the era of industrialization. Collaboration is very appropriate to use in starting the complexity of an organization (O'Flynn, J., & Wanna, 2008). The principle of collaboration that underlies it is equality, uniformity of goals, togetherness, the roles of each task, and responsibility in cooperation. The concept of implementing collaboration is not easy because it contains the roles and tasks of each that synergize with each other, there is an allocation of resources, a variety of information, for the benefit of common goals that have shared responsibility in making joint decisions to solve various problems.

There are three reasons for the need for an organization to collaborate (Fendt, 2010): a. An organization is not able to complete certain tasks alone without the help of other parties; b. Collaboration is able to provide great benefits that can be felt between the parties involved; and c. Large expenditure on production can be reduced by collaboration and being able to have market competitiveness. In principle and the concept of collaboration is collaboration that has links between government parties (government to government cooperation), between government and non-government related to making a policy decision or related to the implementation of national programs.

The definition of governance is that the government is one of the actors involved in solving problems and there is involvement of the role of other actors, such as the private sector, the community, etc. Governance characterizes four basic elements (Peters, B.G. and Pierre, 1998): 1. There is dominance in the network which includes a collection of various actors with their respective influences on the public goods and services produced; 2. The government does not exercise direct control over public policy, only has the power to influence; 3. Resources owned by a mix of public and private because public and private resources cannot be accessed independently; and 4. Various kinds of instruments used both traditional methods in implementing public policies.

The establishment of collaborative cooperation between various parties can achieve program or policy goals (Purwanti, 2016). Advantages in carrying out collaboration (Huxham, Chris, 2000): ease of access to resources from each actor involved in collaboration, as a consideration of risks in carrying out a policy program, implementation of collaboration is more efficient in carrying out policies, ease in coordinating related services, as means of shared learning, related to morals in overcoming existing problems or affecting society. Collaboration can occur if there is a delivery of visions, strategies, activities and goals between various parties who have management and their respective interests according to their roles but still comply with the mutual agreement (Dwiyanto, 2010).

Collaborative governance, namely the emphasis on government regulations in regulating one or more parties, both government and private related to formal decisions that are collectively oriented towards mutual agreement with the aim of making and implementing public policies (Ansell & Gash, 2007). There are 6 important criteria from the definition of collaborative governance: (1) associations initiated by public institutions as well as actors in these public institutions; (2) other than institutions, non-public institutions such as private actors; (3) various actors are involved in making and making decisions; (4) formal and official as well as organized and collective meetings; (5) as a consensus-oriented meeting in making joint decisions; and (6) collaboration has a focus on public policy or public management.

Collaborative governance includes "multipartner governance" covering the roles of the private sector, society and civil society that are mutually constructed from the synergy of stakeholder roles in the preparation of hybrid plans such as public-private and private-social cooperation (Emerson, K., Nabatchi, T., & Balogh, 2012). Collaborative government is a form of cooperative relationship in which the government is the policy maker and the non-governmental or private sector is the implementing actor (Donahue & J, 2011).

Collaboration is a dynamic concept which is incremental in nature and has various stages, namely (1) the existence of a collaborative vision developed to achieve common goals. (2) approaches in common understanding and collective experience. (3) as a good and effective tool that has 4D; (a) Discovery, related to good discoveries; (b) Dream, related to the desired vision produced; (c) Design, related to the form of activities that can be carried out together; (d) Deliver, efforts made so that these activities can be carried out. Collaborative activity is an illustration in developing a policy implementation by identifying a "continuum of partnerships", one of which is related to "networking" where the exchange of information is in an organized relationship (Matkin, David S. T, 2009). Then "cooperatve" from shared consensus into a more formal relationship in the exchange of information. Then "coordinating" the existence of interrelated commitments so that it is tighter and more formal. Finally, "collaborative" is a stronger relationship with a long period of time, formally bound and a commitment related to each other's resources. In collaboration, various parties with knowledge capacity have opinions or ideas from assumptions related to goals that can indicate a position for the acceptability of the organization as a goal in carrying out collaboration (Silvia, C., & McGuire, 2010). In creating a form of structure in collaboration that has various alternative choices for solving problems faced by joint activities related to the development of work rules where someone makes decisions, provides information and what benefits will be obtained and is useful for other parties who need it (Thomson, A. M., & Perry, 2006). In Collaborative of cooperative relationships where there is a principled relationship between various parties who have their own autonomy by acting according to themselves (Dwiyanto, 2010). Collaboration arises from the need for interdependence of various actors with background actors who have various types of technology and other resources related to task fulfillment (Annett Schöttle, Shervin Haghsheno, 2014) and (Robert Agranoff, 2003).

Collaborative relationships between public organizations and non-governmental organizations have characteristics that are voluntary, have equality in position, have autonomous freedom in making independent decisions that obey and obey the results of a common consensus with a transformative goal of increasing capacity through combining the resources of each each party (Dwiyanto, 2010). Four things related to collaborative governance (Donahue & J, 2011):

a) *Collaboration for Productivity*, sacrifice to get maximum productivity by the government which requires transparency in accordance with the process and authority requires mutually beneficial collaboration with the private sector through simple contracts.
b) *Collaboration for Information*, limited access to information sources in achieving the mission and targets for the public, the role of collaboration with the private sector is very important. The role of each party that collaborates with each other in providing information makes it easy to achieve targets in public matters. Online Energy management reporting is one form of information collaboration between industry and government. The government needs to monitor the achievement of energy savings from the results of online energy management reporting by the industry.
c) *Collaboration for Legitimacy*, collaboration as a motive for boosting legitimacy by the private sector in achieving public missions.
d) *Collaboration for Resources*, scarcity of resources as a driving factor for the government and the private sector to collaborate in order to increase the government's own resources.

Collaborative governance is a problem solving with solutions embracing the private sector in overcoming insurmountable problems in order to achieve more effective public goals (Donahue & J, 2011). The key to collaboration is five dimensions (Thomson, A. M., & Perry, 2006), including: Governance (government), the existence of formal rules governing the actions of various actors in jointly reaching a mutual agreement; Administration (administration), to achieve a certain goal it is necessary to have a mutual agreement regarding effective communication relations, division of roles and responsibilities; Organizational Autonomy (organizational autonomy), each party involved in the collaboration has their own roles and authorities when carrying out it; Mutualism (togetherness), relationships that influence each other in the organization based on common interests; Norms (norms), each actor involved in accordance with their respective roles and responsibilities. The framework for the collaborative process includes (Thomson, A. M., & Perry, 2006): (1) negotiation of mutually beneficial interests for all parties; (2) produce mutually agreed decisions to be implemented in the future with various interrelated relationships; (3) implementation according to a joint decision; and (4) the collaboration process is assessed as a whole.The collaboration process consists of various elements and components (Emerson, K., Nabatchi, T., & Balogh, 2012) including: (1) Collaboration Dynamics, is a strategic component in a collaboration due to the interaction of the parties participating in the collaboration. The dynamics of collaboration is divided into several components: meetings in the context of dialogue between parties involved in collaboration in terms of conveying the vision and mission (Principle Engagement). After the face-to-face meeting in delivering the mission later, trust, understanding and understanding were built in carrying out a shared commitment to the collaboration process (Share Motivation). There is an increase in capacity and understanding between various parties in achieving common goals in the collaboration process, including procedural aspects and agreements on institutions, leadership, knowledge, and resources. (2) Collaborative Activities; the effectiveness of the collaboration process can be seen through strategic planning, policy setting, allocating resource requirements to monitoring and evaluation processes. All of these activities have been adjusted to the roles and responsibilities of each. (3) Collaboration results must have implications or impacts on social, community, economic conditions, the surrounding environment, even aspects of political legitimacy from the community towards the government. (4) Adaptation, within the collaboration management framework, input is important for future collaboration processes or adaptations as evaluation material for the collaboration process.

There are six things related to the collaboration process between organizations (Chris Huxham & Paul Hibbert, 2008), namely: a. Achievement of Results, there is an agreement or mutual agreement in achieving the success of a collaboration by prioritizing common interests without any of the parties feeling aggrieved; b. Working Process; each party is involved in the entire collaboration process, so that the final results obtained are based on the correct process; c. Achievement according to the deadline, good and mature planning makes it easier for all parties involved according to the agreed time limit; d. Recognition of other parties, success is not solely seen from internal parties, but external parties who evaluate it are also a matter of pride; e. The abilities and roles of the parties involved, in addition to recognition from other parties towards their organization, are also motivated to show the role of individuals in the success of a collaboration, this makes a positive outcome. Collaborative governance is a series of cycles of continuous stages of four components (Donahue & J, 2011), covering:

a) *Analyze*, analyze and understand the conditions faced today and the goals to be achieved by the government. In this case the government also conducts an analysis of the actors or stakeholders involved.
b) *Assign*, the government and the actors involved have their respective duties and roles (the right player in the right position) who have the freedom to make decisions according to their conditions.

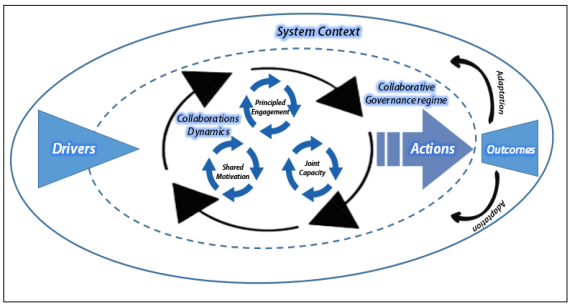
c) *Design*, in accordance with the roles and responsibilities of each stakeholder accompanied by a monitoring mechanism as well as a period of collaboration or according to negotiations when there are different interests of the stakeholders involved.

d) *Asses*, the importance of setting the implementation of Collaborative governance in accordance with the agreement that has been determined through supervision. Each stakeholder needs to identify what has or has not been achieved.

Source: Donahue & J (2011)

Figure 3. Collaborative Governance Cycle

The study of collaborative governance studies is described in a comprehensive manner (Emerson, K., & Nabatchi, 2015) in which the approach originates from various types of scientific disciplines that aim to build a sharper collaborative framework. The appropriate integrative framework developed in this study is collaborative governance regime which is described by a level of dimensions consisting of context systems, collaborative governance regime, and collaborative dynamics (Emerson, K., & Nabatchi, 2015).



Source: Emerson, K., & Nabatchi (2015)

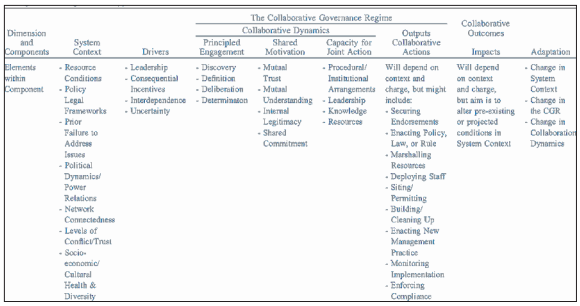
Figure 4. Process Framework of Collaborative Governance Model

The dimensions of the integrative framework for collaborative governance (Emerson, K., & Nabatchi, 2015), include:

a) The outermost dimension is called the context system which consists of legal, socio-economic, and political administration elements and other things that can influence or are influenced by the collaborative governance regime. In the context system, the driver elements emerge as the initiation and direction of the collaborative governance regime which has supporting components such as leadership or leadership, consequential incentives or consequences of incentives, interdependency or dependency, and uncertainty or uncertainty..

b) The next inner dimension which is described by the dotted line is the dynamics of collaboration in which there are collaborative actions that form the overall function and quality of collaborative governance regime so that it can run effectively.

c) The deepest main dimension consists of three components, namely, shared motivation, principled engagement, and capacity for joint action. These three components interact continuously in producing a collaboration with steps taken to implement common goals.



Dimension and Components	System Context	Drivers	The Collaborative Governance Regime: Collaborative Dynamics: Principled Engagement	Collaborative Dynamics: Shared Motivation	Collaborative Dynamics: Capacity for Joint Action	Outputs Collaborative Actions	Collaborative Outcomes: Impacts	Collaborative Outcomes: Adaptation
Elements within Component	- Resource Conditions - Policy Legal Frameworks - Prior Failure to Address Issues - Political Dynamics/ Power Relations - Network Connectedness - Levels of Conflict/Trust - Socio-economic/ Cultural Health & Diversity	- Leadership - Consequential Incentives - Interdependence - Uncertainty	- Discovery - Definition - Deliberation - Determination	- Mutual Trust - Mutual Understanding - Internal Legitimacy - Shared Commitment	- Procedural/ Institutional Arrangements - Leadership - Knowledge - Resources	Will depend on context and charge, but might include: - Securing Endorsements - Enacting Policy, Law, or Rule - Marshalling Resources - Deploying Staff - Siting/ Permitting - Building/ Cleaning Up - Enacting New Management Practice - Monitoring Implementation - Enforcing Compliance	Will depend on context and charge, but aim is to alter pre-existing or projected conditions in System Context	- Change in System Context - Change in the CGR - Change in Collaboration Dynamics

Source: Emerson, K., & Nabatchi (2015)

Figure 5. Logical Approach Model of The Collaborative Governance Regime

Online energy management reporting is a form of supervision carried out by the government against industries related to energy management activities carried out by industries and must be reported regularly every year.

III. METHODOLOGY

In this study, a qualitative approach was used, in which a qualitative approach according to research procedures produced descriptive data in the form of written words that came from the mouth and the behavior of certain people being observed (Moleong, 2011). Case studies are a strategy in research in which researchers carry out careful and precise investigations of an event, program, activity, or process in a group of individuals (Creswell, J. W., & Creswell, 2018). In case study research with a qualitative approach the researcher explores originating from real events or life, cases to various cases by collecting clear and detailed and in-depth data with the involvement of various sources of information then reporting in the form of a description of the problems that occur.

Through the method of selecting subjects in the form of purposive informants where the selection of informant subjects is based on certain considerations and objectives. Determination of several specific criteria from informants includes: The government regarding reporting targets of energy management by industry, as well as industries that have carried out obligations in reporting energy management activities. Primary data which includes interview data from related sources whose research is being carried out includes the government and industry. The instrument in this study was the researcher himself because it focused on research, selection of informants to be studied, data collection, data quality assessment, data processing, data interpretation to making conclusions on research findings. Human instrument in qualitative research is a tool that can explain the facts that exist in the research location. Systematic observations were carried out in this study by means or methods of gathering information or data by observing the research object by means of communication and observing people who carry out collaborative governance on online reporting of energy management by industry, then systematically recording the observed phenomena and developments that occur and are reported.

The validity test in qualitative research is based on the extent to which the results of qualitative research are accurate from the point of view of researchers, participants and readers in general. In other words, validation has reached trustworthiness, authenticity, and credibility (Creswell, J. W., & Creswell, 2018). In increasing the validity of the data, inspection techniques are carried out through checking or comparison of data obtained from other sources or criteria outside the data (Moleong, 2014). Research with triangulation of sources, which makes comparisons between what the subject and informants say so that data is obtained from various reliable sources.

IV. RESULTS

A. Process of Collaborative Governance (Emerson, K., & Nabatchi, 2015)

In this section, we will identify and explain the existing collaboration governance processes starting from drivers, context systems, and collaborative dynamics.

1) Context System

The application of energy management begins with a pilot project between the government in the field of energy and mineral resources and development partners, which is expected to result in a pilot project that will prove to be profitable for the industry. Each actor involved has their respective roles and responsibilities, the

allocation of resources in this collaboration within the framework of the actors (government and industry) involved has limitations in achieving public goals. Collaboration for Information type causes limited access to information sources in achieving missions and targets for the public, so the role of collaboration with the private sector or industry is very important. The role of each party that collaborates with each other in providing information can provide convenience in achieving targets and solving public problems (Donahue & J, 2011). Online energy management reporting is in accordance with government policy on energy conservation PP 70/2009 and PermenESDM 14/2012 related to energy management. Energy management is increasingly emerging as a global demand as an effort to support the reduction of CO2 emissions that have an impact on climate change and global warming. Energy management activities are one of the CO2 reduction mitigations carried out by the government of a country including Indonesia in accordance with Law no. 16 concerning ratification of the Paris Agreement. The authority related to industries involved in energy management is under the ministry of industry, which the determines which industries are required to carry out online energy management reporting in accordance with Law 28/2021 concerning the organization of the industrial sector. Involvement between government agencies in accordance with their authority needs to be carried out and coordinated intensively in terms of the environmental, industrial, and energy and mineral resources sectors so that collaboration governance process can run effectively and efficiently and have an impact on society. The authoritiy between different government agencies needs to planning strategy in good communication so that all information related to energy management can be conveyed properly and clearly between the actors or parties involved. Industry compliance with all policies issued by the government must also be carried out and fulfilled in order to achieve the targets and goals to be achieved.

2) Drivers

The government in the energy and mineral resources sector carries out implementation and monitoring of industries related to energy management conservation activities carried out in accordance with government policies. Online energy management reporting is used by the government in the framework of formulate policies/regulations from up to date and reliable information from energy management information provided by industry. In the ongoingcollaborative governance process, the results of online energy management reporting have not been able to benchmarked the energy efficiency performance of similar industries because not many similar industries have done the reporting. The results of online reporting of energy management in the form of e-certificates that can be used as added value in the Assessment of Company Performance Ratings in Environmental Management which are reported by the industry to the government in the field of environment and forestry.

3) Collaborative Dynamics

The government approaches the industry through formal and informal communication through face-to-face socialization, focus group discussions and dialogues in order to foster principle involvement between the actors involved. Routine and intensive communication is carried out to make the collaboration governance process run effectively and efficiently. On the other hand, the lack of good communication can become an obstacle in the implementation of collaborative governance. The implementation of collaborative governance that occurs according to the roles and tasks of each actor involved, which requires mutual trust and respect between actors so as to foster shared motivation in carrying it out. The continuous running of energy management online reporting creates internal legitimacy between the government and industry which makes habits or even a positive culture in the collaborative governance to create shared commitments. Collaborative governance that runs as joint action in uniting various interests that have their respective potentials in planning strategies and improving the performance of each actor. Ease of access to energy management reporting information without space and time limitations due to the development of information systems and technology. It is expected that with the flow of procedures that have been made, on the submission of

energy management information by the industry is well conveyed to the government. This is in order to monitor energy management activities in the industry and used as a government analysis related to the preparation of regulations or policies. The government in the energy and mineral resources sector as an actor who compiles and sets regulations makes various approaches so that the industry routinely reports and seeks incentives related to energy management in the industry. The importance of communication and coordination between various actors in the running of an effective collaboration governance process. In addition, the sharing of knowledge provided during the collaborative governance process is expected to be able to increase knowledge insights related to energy conservation and energy management. Each actor brings positive values during the collaboration. The potential utilization of resources from the actors involved can provide benefits for all parties in order to achieve targets and goals.

B. Cycle of Collaborative Governance (Donahue & J, 2011)

1) Analyze

Through PermenESDM 14/2012 and PermenESDM 15/2021 related to energy conservation activities are under the Directorate of Energy Conservation where energy management activities carried out by industry must be reported through Energy Management Online Reporting on the Energy Conservation Information System web application. Online reporting on energy management is a form of public innovation by the government in order to provide easy access for the industry in reporting on energy management, because from year to year it continues to experience feature updates compared to 2012 when reporting was done manually. Identification of industries that meet the requirements according to energy conservation policy PP 70/2009 and energy management policy PermenESDM 14/2012 through coordination with the Ministry of Industry which has authority related to industry, the Ministry of Environment and Forestry related to the environment related to reducing CO2 emissions through energy management activities, as well as companies state electricity that provides the energy used by industry. The readiness of the industry to carry out energy conservation activities through energy management because energy use is one of the largest fractions in the production process which when savings are carried out will provide benefits for the company. Industries involved in energy management activities are required to appoint energy managers, prepare energy conservation programs, carry out regular energy audits, carry out energy audit results, and report on energy management regularly every year. Through energy management, energy savings can be made by the industry which directly impacts the reduction of CO2 emissions and has an effect on climate change and global warming. This is very important for a country's commitment to play an active role in reducing CO2 emissions throughout the world.

2) Assign

Industries that are required to report on energy management according to energy conservation and energy management policies are industries that use energy sources and energy equal to or more than 6000 tons of oil equivalent per year. In the process of collaborative governance that occurs, there are other government policies related to determining which industries are required to report on energy management, namely according to PP 28/2021 concerning the implementation of the industrial sector so that prior industry identification is difficult to do. It is difficult for both the industry and the government concerned to obtain clear information, due to the roots of the collaborative governance approach as a multi-actor model (Hanberger, 2004). In the implementation of collaborative governance, there are still no disincentives for industries that have not submitted an energy management reports in accordance with energy conservation and energy management policies. Government efforts in an effort to provide funding through appropriate financing schemes for industry in carrying out energy conservation activities continue to be carried out both in terms of fiscal incentives which have not been carried out because they are under the authority of the government regarding finance. The government's encouragement to industry in reporting energy management

continues to be carried out through communication with outreach, focus group discussions, as well as award programs in terms of energy efficiency. The lack of intensive communication has become an obstacle in achieving the results of the industry's energy saving targets. Regarding energy management online reporting, the industry provides reporting on energy savings carried out, emissions, intensity, investment in the energy conservation sector so that the government gets updated and reliable information regarding energy management activities that have been carried out in the industry and as government analysis in preparing related policies or regulations. The industry's drive to conduct energy management activities is not only due to compliance with government policies related to energy conservation. In addition, to maintain market competitiveness where some industrial buyers themselves request to report energy management activities. The small number of human resources in handling a large number of industries is also an obstacle in the collaborative governance in online energy management reporting.

3) Design

Energy conservation activities must be reported by the industry to the government routinely every year so that energy saving achievements can be monitored by the government in conducting an analysis of the preparation of regulations or policies. Reporting is carried out in the following year every March, but in practice there is no firmness against the time limit set by the government. This happens because Article V of the energy conservation and energy management policy has not been implemented regarding disincentives for industries that do not report energy management online. The results of online energy management reporting are in the form of e-certificates that can be used as added value of the company's performance rating assessment in Environmental Management efforts reported by the industry to the government in the field of environment and forestry. Differences in the assessment of absolute parameters of energy cannot be made uniform, because of differences in energy calculations from various industrial sectors that carry out online reporting of energy management. The results of online energy management reporting cannot be benchmarked with similar industrial sectors, because there are not many comparable industrial populations. It is hoped that when there are more and more equal industrial populations that carry out online reporting on energy management in the future, it will be carried out based on labels in technology, such as optimizing boiler systems. The important role of information technology applications in energy management online reporting makes it dynamic in nature that can adapt to technological developments, as well as standard and regulatory conditions. In the course of the collaborative governance process on energy management online reporting, there was a decline in several industrial sectors in 2020 when the Covid-19 pandemic occurred due to limited access and so on that occurred in the industry.

4) Assess

The results of industry identification are difficult because of different authority in the government agencies themselves related to industry, making it difficult for some industries to obtain information related to reporting energy management activities to the government in the energy and mineral resources sector. The role of less intensive communication to the industries involved affect the delivery of less effective to the industry so that there are still industries that have not carried out routine energy management reporting online every year. In addition, the implementation of energy conservation and energy management policy articles that have not been implemented by the government in the energy and mineral resources sector opens opportunities for industries that do not carry out such reporting. Fulfillment of all online energy management reporting requirementsis only carried out by a few industries, the rest are still industries that have not completed these requirements due to the lack of information obtained by the industry. The target for achieving energy savings by 2021 is still far from what was expected in terms of the government's target of 141,220 GWh in 2025 with or potential reduction of CO2 emissions of 124,273,600 tons of CO2e but until 2021 only energy savings of 79,358 GWh have been obtained or equivalent to reduced emissions of 24,932,104 tons of CO2e. There is

no human resource related to energy conservation supervisors who are expected to verify reporting and guidance related to online reporting of energy management for industry in the future.

V. DISCUSSION

In the collaborative governance process in this research, there are different authorities between industries under the ministry of industry, but energy management reporting to the ministry of energy and mineral resources. Making it difficult to identify industries, an increase in online reporting on energy management will occur every year according to the addition of industries reporting as a result of identification that was not carried out from the start. This limited authority means that information related to online energy management reporting by industry is not conveyed optimally by the ministry of energy and mineral resources. Many industries are only starting to report on energy management online in 2023, so there are still some industries that do not meet all the requirements that must be met regarding the implementation of energy management. The industry has carried out regular and continuous reporting as a form of compliance with government policy regulations. Submitting energy management reports online within the specified time limit must always be monitored properly by the government continuously. Decisive and disciplined action in accordance with government regulations has not been fully taken by the government, regarding efforts to approach the government so that industry always regularly reports online on energy management every year. Apart from that, the Government continues to strive for an energy conservation financing scheme for industry to encourage industry to carry out online energy management reporting. Effective forms of communication by the government continue to be carried out in conveying information on energy conservation activities and online energy management reporting to industry so that the achievement of energy management targets can be achieved, from the results of online energy management reporting.

VI. CONCLUSION

In the collaborative governance process (Emerson, K., & Nabatchi, 2015) the collaborative dynamics stage plays a very important role in producing the desired target outcome, while in the collaborative governance cycle process (Donahue & J, 2011) in the design and assess cycle plays an important role in the running of an effective collaboration governance process. The two of them can be explained as follows: The government plays a very important role in terms of making a public policy, in this case related to policies with different authorities in terms of energy conservation activities through energy management but has a relationship in terms of industry identification so it needs joint discussion between authorities to produce policies that are more synergistic in achieving energy saving targets that have an impact on reducing CO2 emissions so that they can be achieved as desired by the government. The government must implement all relevant articles contained in the energy conservation and management policy, including strict actions for industries that have not conducted online on energy management reporting or industries that have not met the energy management requirements. Increased meetings in the context of communication and knowledge sharing between the government and industry must also continue to be carried out in order to convey clear information from the government to related industries. Meetings both formal and non-formal after the pandemic can be held online without any space and time limitations without reducing the quality or quantity of face-to-face meetings. Reguler coordination between the government and industry as a form of joint commitment in achieving common goals in collaborative governance. The need for HR supervising energy conservation activities in order to monitor achievements and verify energy management online reporting. There needs to be a study related to industries that are required to conduct online energy management reporting with the condition that energy sources and energy users are more than or equal to 6000 tons of oil equivalent per year. Neighboring countries require energy consuming industries between 1000 to more than or equal to 2000 tons of oil equivalent per year. The potential

for energy management by saving energy sources and energy for countries with abundant energy sources is more effective to do. The results of industry input should be used as material for consideration for improving the energy management online reporting application in the future.

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REFERENCES

Annett Schöttle, Shervin Haghsheno, F. G. (2014). DEFINING COOPERATION AND COLLABORATION IN THE CONTEXT OF LEAN CONSTRUCTION. *Proceedings IGLC*, *22*.

Ansell, C., & Gash, A. (2007). Collaborative Governance in Theory and Practice. *Journal of Public Administration Research and Theory*, *18(4)*, 543–571. https://doi.org/10.1093/jopart/mum032

Burgwal, D. Van De. (2014). *Environmental Disclosure Determinants in Dutch Listed Companies*. 60–78.

Chris Huxham & Paul Hibbert. (2008). Manifested Attitudes: Intricacies of Inter-Partner Learning in Collaboration. *Journal of Management Studies*, *45(3)*, 502–529.

Creswell, J. W., & Creswell, J. D. (2018). *Research and Design Qualitative, Quantitative and Mixed Methods Approaches*. SAGE Publications, Inc.

Diana Nurhayati, Yeny Dhokhikah, M. M. (2020). Persepsi dan Strategi Adaptasi Masyarakat Terhadap Perubahan Iklim di Kawasan Asia Tenggara. *JURNAL PROTEKSI: JURNAL LINGKUNGAN BERKELANJUTAN*, *1*, 39–44.

Donahue, J. D., & J, R. Z. (2011). *Collaborative Governance: Private Roles For Public In Turbulent Times*. Princeton University Press.

Dwiyanto, A. (2010). *Manajemen Pelayanan Publik: Peduli Inklusif Dan Kolaborasi*. Universitas Gajah Mada Press.

Emerson, K., & Nabatchi, T. (2015). *Collaborative governance regimes*. Georgetown University Press.

Emerson, K., Nabatchi, T., & Balogh, S. (2012). Emerson, K., Nabatchi, T., & Balogh, S. (2012). An integrative framework for collaborative governance. *Journal of Public Administration Research and Theory*, *22(1)*, 1–29.

Fendt, T. C. (2010). *Introducting Electronic Suplly Chain Collaboration in China: Evidence from Manufacturing Industries*. Universitatsverlag der Technischen Universitat Berlin.

Huxham, Chris, and S. V. (2000). Leadership in the Shaping and Implementation of Collaboration Agendas: How Things Happen in a (Not Quite) Joined -Up World. *Academy of Management Journal*.

Ladyve, G. M., Noor Shodiq Ask, & M. C. M. (2020). Pengaruh Kinerja Lingkungan, Biaya Lingkungan, Dan Ukuran Perusahaan Terhadap Kinerja Keuangan Perusahaan Yang Terdaftar Di Bura Efek Indonesia Tahun 2015 - 2018. *E-Jra*, *09(06),* 1–12.

Matkin, David S. T, R. S. M. (2009). *Collaborative Public Management for the Acquisition and Maintenance of Capital Assets*. *850*.

Moleong, L. J. (2011). *Metodologi Penelitian Kualitatif Edisi Revisi*. Remaja Rosda Karya.

Moleong, L. J. (2014). *Metodologi Penelitian Kualitatif*. Remaja Rosda Karya.

O'Flynn, J., & Wanna, J. (2008). *Collaborative Governance: A new era of public policy in Australia*. ANU E Press the Australian National University.

Peters, B.G. and Pierre, J. (1998). Governance without Government? Rethinking Public Administration. *Journal of Public Administration Research and Theory*, *8*, 223–243.

Purwanti, N. D. (2016). Collaborative Governance (Kebijakan Publik dan Pemerintahan Kolaboratif, Isu-Isu Kontemporer). *Center for Policy & Management Studies FISIPOL Universitas Gadjah Mada*.

Robert Agranoff, M. M. (2003). *Collaborative Public Management: New Strategies for Local Governments*. Georgetown University Press.

Safeena, R., Kammani, A., Technology, I., & Arabia, S. (2013). *Rahmath Safeena and Abdullah Kammani College of Computers and Information Technology Taif University, Saudi Arabia*. *5*(1).

Silvia, C., & McGuire, M. (2010). Leading public sector networks: An empirical examination of integrative leadership behaviors. *The Leadership Quarterly*, *21(2)*, 264–277.

Thomson, A. M., & Perry, J. L. (2006). Collaboration processes: Inside the black box. *Public Administration Review*, *66*, 20–32.

Verein Deutscher Ingenieure. (2007). *VDI 4602 Blatt 1 Energy Management*. Beuth Verlag.