POLICY GAP ANALYSIS: ENHANCING PUBLIC AGENCIES FOR RENEWABLE ENERGY TRANSITION
(STUDY CASE: BMKG'S GOVERNMENT PERFORMANCE ACCOUNTABILITY FOR METEOROLOGY INFORMATION)

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ABSTRACT

This study delves into the underexplored realm of Gap Analysis of Government Performance Accountability (GPA) within policy implementation, focusing on the Indonesian Meteorology, Climatology, and Geophysics Agency (BMKG). The aim is to bolster the transition towards renewable energy. Optimizing the performance of public agencies in delivering meteorological information proves pivotal for several reasons. It facilitates Data-Driven Decision-Making, streamlines Resource Allocation, mitigates Risks, fosters Stakeholder Engagement, and ultimately, fine-tunes Energy Production and reduces Environmental Impact. This article underscores the critical role of meteorological data in propelling Indonesia's renewable energy sector forward. While highlighting BMKG's pivotal role in this transition, it also addresses persisting challenges and gaps that necessitate attention. The research recommends addressing infrastructure limitations, enacting supportive regulations, promoting stakeholder involvement, and augmenting capacity for a more effective transition. Employing Creswell's spiral analysis approach and NVIVO12 software, the study advocates for an upgrade from conventional to thematic weather information, particularly vital for State-owned Enterprises (SOEs) like the State Electricity Company (PLN) venturing into water and solar energy resources.

Keywords: *Gap Analysis, Government performance accountability (GPA), Public Agency, Policy Implementation, Meteorology Information Services*

ABSTRAK

Penelitian tentang kesenjangan implementasi kebijakan dalam penyediaan informasi meteorologi untuk optimalisasi kinerja lembaga pemerintah memiliki signifikansi penting dalam mendukung transisi ke energi terbarukan. Ini penting karena berpengaruh pada pengambilan keputusan berbasis data, alokasi sumber daya yang efisien, pengelolaan risiko, keterlibatan pihak terkait, optimalisasi produksi energi, dan dampak lingkungan. Artikel ini menekankan peran Badan Meteorologi, Klimatologi, dan Geofisika Indonesia (BMKG) dalam menyediakan informasi yang relevan. Kendati demikian, terdapat tantangan dan kesenjangan yang perlu diatasi untuk mendukung operasionalisasi yang lebih efektif dari energi terbarukan. Hasil penelitian menunjukkan bahwa informasi cuaca konvensional perlu ditingkatkan menjadi informasi tematik untuk mendukung transisi ke energi terbarukan, khususnya bagi lembaga pemerintah seperti Perusahaan Listrik Negara (PLN) dan badan usaha milik negara lainnya yang bergantung pada sumber daya air dan energi matahari. Oleh karena itu, disarankan bagi kebijakan pemerintah mendatang untuk memperbaiki infrastruktur, mendorong regulasi yang mendukung, memfasilitasi keterlibatan aktif dari pihak-pihak terkait, dan meningkatkan kapasitas untuk mendukung transisi yang lebih efektif ke energi terbarukan.

Kata kunci: Analisis kesenjangan, Akuntabilitas Kinerja Pemerintah (GPA), Badan publik, implementasi kebijakan, layanan informasi meteorologi

INTRODUCTION

Public administration performance measures have been put forward by several experts, such as increasing public sector productivity (Holzher and Callahan, 1998), public sector transparency related to government openness in providing public information (Mardiasmo, 2002), and administrative responsibility (Alexander, 1997) as well as responsiveness theory. the government of Conscience (Nurani et al., 2015)

which focuses on meeting the needs and serving public complaints. Several theories above strengthen the performance measure of public administration, one of which is accountability in reinventing government (Osborne and Gaebler, 1993). (Supandi et al, 2020) stated that one of the results of his research that influences GPA optimization is Methods & Quality of public services affect GPA Optimization.

To improve the performance target of the meteorology sector BMKG's strategic target is to improve the quality of meteorological services led by the Teamwork (Pokja) SAKIP Deputy for Meteorology consisting of the Head of the Center for Public Meteorology, the Head of the Center for Aviation Meteorology and the Head of the Center for Maritime Meteorology and their respective staff. Where meteorology is a natural phenomenon related to weather. The Main Performance Indicator Target is in 2018 targeting an average percentage of weather information accuracy of 82%. The targeted meteorological information services consist of public meteorological information services including routine weather information services and early warning information services. The early warning information service consists of extreme weather information and dangerous ocean wave information.

Meanwhile, special meteorological information services include weather information for flights, weather information for shipping, weather information for offshore drilling, and meteorological information for insurance claim purposes. The performance indicators for routine and special weather information are translated into 5 (five sub-performance indicators, namely public weather information: (1) daily weather forecasts; (2) extreme weather early warnings; (3) flight route weather forecasts; (take-off weather information); off and landing, and (5) maritime weather information.

There is a lack of information that supports the transition to renewable energy in Indonesia. But BMKG has made thematic information services for that. There is a factor that supports the problem the first aspect is the GPA of Implementation Policy for potential renewable energy in BMKG, the second aspect is Policies that support the operation of making thematic products for BMKG information related to renewable energy. The third aspect is Gap analysis for Info BMKG to support renewable energy operationalization. The last aspect is Hope for the future BMKG in the era of disruption as a supporting factor for the transition to renewable energy. From the problems mentioned above, this research is very interesting to study.

METHODS

Penelitian The study used a descriptive qualitative research method with a case study approach based on observations and reviews of literature and interviews, while data processing uses spiral Creswell analysis and uses NVIVO 12 software. The application of the "descriptive qualitative research method" with the "case study approach" in this research involves several important steps. Here are the steps in its application: Formulating Research Objectives and Case selection.

This research involved interviews with twenty individuals who are stakeholders related to meteorological information and renewable energy. These participants included members of the Meteorology, Climatology, and Geophysics Agency (BMKG), as well as other stakeholders such as renewable energy technology providers and relevant government agencies. "The collected data encompassed the views, opinions, and perspectives of the participants related to meteorological information, renewable energy, and the implementation of relevant policies and the analysis process used Creswell analysis.

The scope of this research is limited to BMKG's information services to give thematic product information to support operating renewable energy. The research addresses four main research questions: the first is, Investigating the potential use of BMKG's thematic information to support renewable energy, including identifying which agencies or

companies require support and detailing the associated processes. The second is, Analyzing the policy framework that facilitates the creation of thematic products within BMKG related to renewable energy. The third is, Identifying unaddressed gaps in the support of renewable energy operations. The last focus is Exploring the future prospects of BMKG in the era of disruption as a supportive factor for the transition to renewable energy.

Based on Figure 1. above, it is explained that to analyze qualitative data, the researcher moves in a circle of analysis rather than using a fixed linear approach. An analyst enters with text or image data (e.g., photos, video recordings) and exits with a report or narrative. During spiral analysis, the researcher intersects with several channels of analysis and continues to rotate.

The procedure of this step is the first to organize the data, the second to read and create memos, the third, to describe, classify and interpret into codes and themes, the fourth to present and visualize the data. This spiral analysis is very flexible because it can compress or expand.

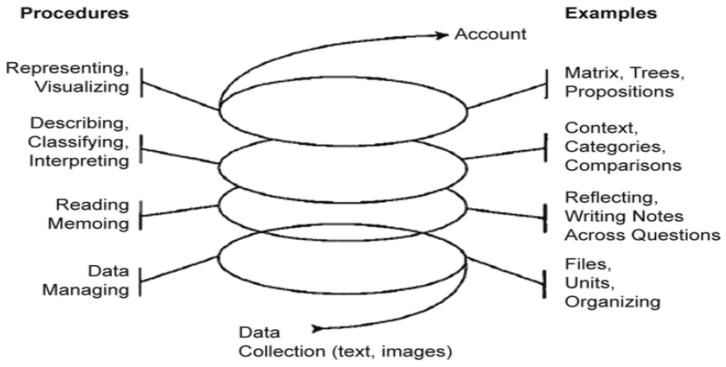

Figure 1. Spiral model data analysis (Source: Creswell (2018: 254))

RESULTS AND DISCUSSION

Knowledge of the weather is one of the basic needs to support various business and industrial sectors. One of them is the energy sector, both as the main source and supporting support for production and exploration activities. In Indonesia, meteorology naturally evolved from the air transportation sector, due to its mandatory need to support public safety and international regulations. In the last few decades, the need for weather information has continued to grow and solutions to address these needs have also evolved. energy and exploration sectors that have high valuations and significant shocks when faced with extreme cases that have the potential to cause a lot of losses.

Meteorology, Climatology and Geophysics Agency (BMKG) as a state agency that provides weather information as stated in Law No. 31 on Meteorology, Climatology, and Geophysics continue to strengthen and update technology. So, since 2015 BMKG has been able to provide meteorological services with a digital platform with the support of numerical weather computing resources. So, when the service progress is compared to the countries of South Asia and the Pacific Region, Indonesia is among the most superior. This condition is also expected to be utilized by various industrial and business sectors in the country so that they can use weather information to increase their production in their respective places. This research comes with a problem question. The first is what thematic information from BMKG can be processed to support renewable energy (mention which agencies/companies need support) and what is the process. The second is, is there a policy that supports the operation of making thematic products for BMKG related to renewable energy? What gaps have not been reached to support the operation of Renewable Energy? The last question is what are the hopes for the future of BMKG in the era of disruption as a supporting factor for the transition of renewable energy?

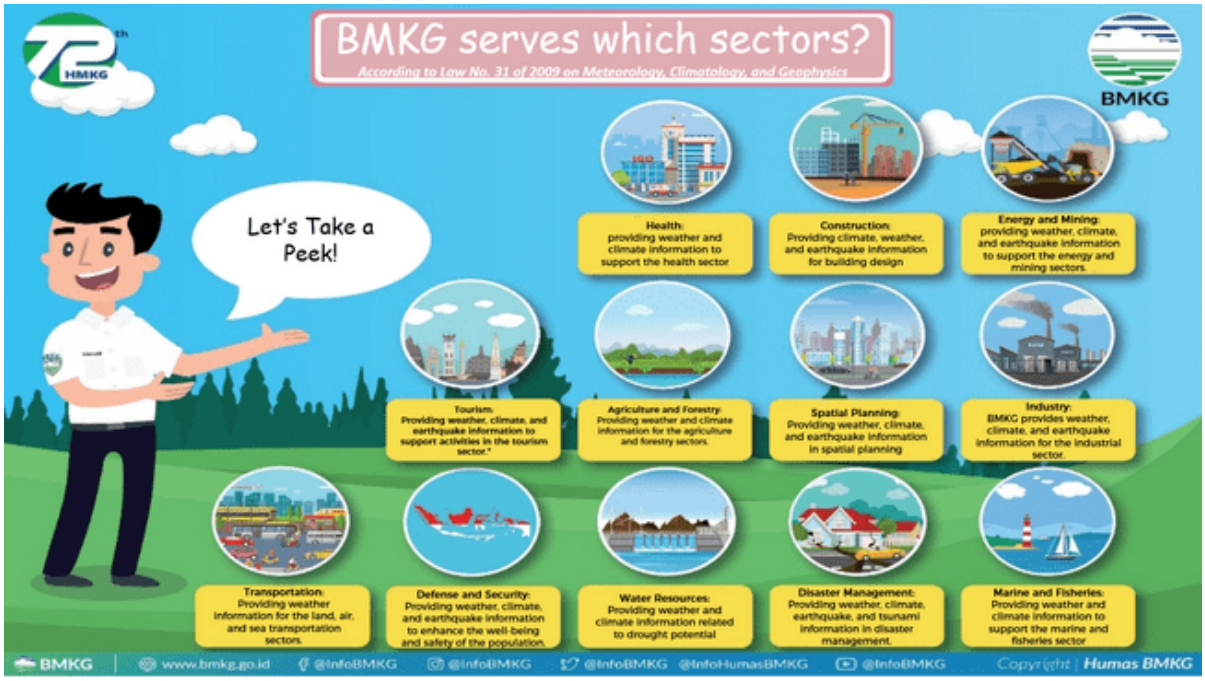

Figure 2. BMKG multi-sector services (source: BMKG public relations 2019)

1. GPA of Implementation Policy for Potential Renewable Energy in BMKG

BMKG has provided information on areas that have great potential as sources of renewable energy. Based on an interview with Dr. Ardhasena Sopaheluwakan the head of the Applied Climate Information Service Center BMKG on August 15, 2021, explains that BMKG thematic information can be processed to support renewable energy including wind energy potential maps, solar energy potential maps, and solar energy prediction information. This information can be intended for users of renewable energy technology providers.

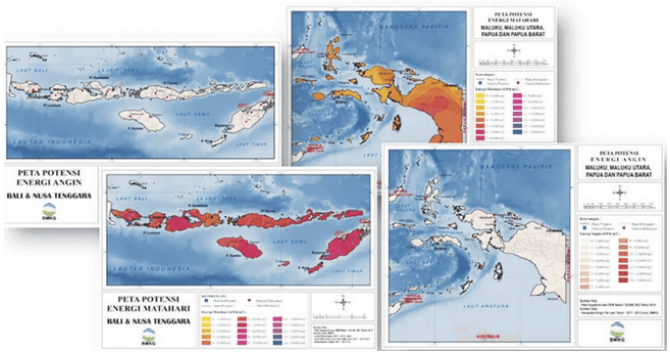

Figure 3. Information service products (information map of solar and wind energy potential) (Source: LAKIP BMKG-2019)

This is in line with the results of observations based on the LAKIP BMKG-2019, in 2018 to realize the management of applied climate information services that support resilience in the energy sector through the activity of making a map of the potential for solar and wind energy in 7 provinces including 2 provinces on the island of Papua, as many as 2 provinces on the island of Maluku and as many as 3 provinces of the islands of Bali-Nusa Tenggara.

The determination of the islands of Papua, Maluku, and the islands of Bali Nusa Tenggara as the object of activities for compiling a map of the potential for solar and wind energy in 2018, due to adjusting the changes to the 2018 action plan one map policy which has been jointly decided by the BMKG with the coordinating ministry for the economy and the staff office presidency. the presidential staff office accelerated achievement targets to pursue plans for launching map products incorporated in the one map policy.

The expected benefit of the map of the potential for solar and wind energy is to provide information on the potential of renewable energy that is accurate and accountable and can

be utilized by various ministries or related agencies, both within the government and private sector to the public.

This achievement is one of the targets strategic availabilities of climatological information services on the strategic plan of BMKG 2015-2019. The indicator is the percentage of accuracy of climate information services at the sub-district level with a target of 76% and realization of as many as 77,66%. However, there is a gap in the target of the strategic plan for thematic climatology information as much as 24%, just because of the lack of facilities and infrastructure for observation.

In addition, based on an interview with staff of Deputy Climatology BMKG Ms. Kwarti Ardasartika explain that the results of discussions on the need for the provision of renewable energy technology with relevant stakeholders, it is certain about the need for solar radiation forecasting information which will later be useful for estimating the range of electrical energy to be generated. And for now, this Solar Energy Potential Forecast product has been launched with the launch of a website informing climate and air quality that has just been carried out. Soon, The Center of Applied Climatological services Information plan will also hold an outreach to stakeholders in energy regarding this matter.

According to Dr. Agie W. Putra. The staff of Deputy Meteorology BMKG interview on August 16, 2021, said that impact-based weather information for renewable energy purposes (can be adjusted to needs), if there is an institution that responds. the process is shifting paradigms, forming an impact and response matrix, then implementation. In addition, BMKG's basic products such as weather forecasts at all scales are also very useful.

2. Policies that Support the Operation of Making Thematic Products for BMKG Information Related to Renewable Energy

The government of Indonesia has issued a policy on national energy in government regulation No. 79. The year 2014. BMKG has issued a policy in the form of standard operating procedures for meteorological, climatological, and geophysical information services issued in SOP/002/KB/II/2019 to improve special information services. The field of Climatology at BMKG has already been operational, for example, solar energy prediction information for the next 6 months and the map of the potential for solar and wind energy. While the field of meteorology is currently included in the special weather service group, which has been served, among others, the themes of coal, palm oil, infrastructure, for renewable energy have not been worked on specifically.

Especially climate applied information is tailor-made for sectoral information such as renewable energy information for solar energy prediction. All this information has included in the web address *http://iklim.bmkg.go.id*. Every time as frequently as update continuously. In The field of climatology Based on an interview on August 15, 2021, with the staff of Deputy Climatology, Ms. Kwarti Ardasartika said that PLN is one of the companies that need this information, they need this information to see which areas have the potential to build PLTS (Solar Power Plants).

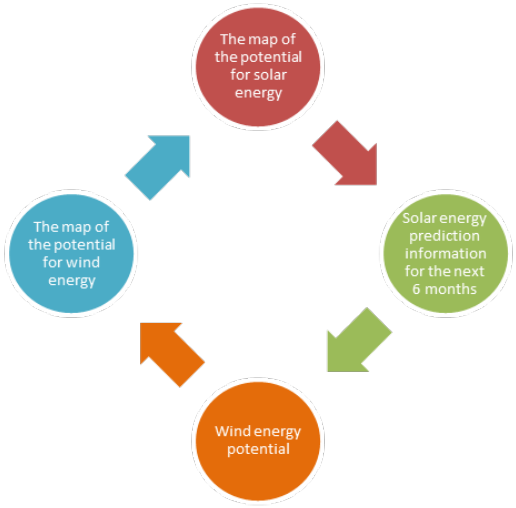

Figure 4. BMKG information services for renewable energy

In addition to this PLN information, solar cell supply companies are also needed. Different opinions from the field of Meteorology, according to Dr. Agie W. Putra. The staff of Deputy Meteorology BMKG interview on August 16, 2021, said that thematic weather information is currently included in the special weather service group, which has been served, including the themes of coal, palm oil, and infrastructure, while renewable energy has not been specifically worked on.

3. Gap Analysis for Info BMKG to Support Renewable Energy Operationalization

BMKG in presenting weather and climate information has issued information and policies to support the operation of renewable energy, but there is still a gap that has not been reached to support the operation of Renewable Energy. The first is that currently, the understanding of the needs of users is still large and the willingness of BMKG to provide services is still limited. The second is for the operationalization of renewable energy, the issues are related to regulation, price competition, and the availability of technology, the majority of which are not issues at BMKG in providing Meteorological and Climatological information. Third, from the climatological information point of view, data availability is the most important thing for developing renewable energy. For now, the products being developed are those related to solar energy. (Development and updating of methods for Solar Energy Potential information and solar energy potential forecast information). As for wind energy, BMKG will start doing it next year, related to data updates and working methods to produce more updated information regarding the potential of wind energy in Indonesia. It should be noted that the wind data in the BMKG ranges at an altitude of 10 m, while for the development of wind energy, data is usually used at an altitude of about 50 m. However, this can be overcome by using methods such as conversion and various other methods that BMKG is still studying and can also use data analysis.

In addition, regulations that support and involve actors from all parties are needed. Both from the government, parties who develop technology, providers, and society. Mazmanian and Sabatier (1981) state that stakeholder involvement or participation is considered very important to overcome obstacles or constraints on resources.

4. Hope for The Future BMKG in The Era of Disruption as A Supporting Factor for The Transition of Renewable Energy

In the context of national strategic issues, one of the main priorities is Energy and Electricity Sovereignty. To support this in line with national strategic issues, one of the strategic issues at the BMKG deputy for climatology is information services on the potential of renewable energy. To make this happen, it is necessary to have the support of all parties involved here. Both in terms of regulations from the government, from a technical side (relevant development of renewable energy), as well as from the side of renewable energy providers and users. BMKG itself as a provider of information related to EBT, especially solar and wind energy, will continue to try to develop the products that have been produced, which are expected to support government programs in creating Energy and Electricity Sovereignty.

Recently, BMKG through the Education and Training Center (Pusdiklat), has provided various training packages for both internal BMKG and various stakeholders and requires additional capacity to support the renewable energy industry or Institutions such as PLN, PT LEN, and others. The Training material is from basic knowledge to related levels in the fields of meteorology, climatology, and geophysics. This is done as an acceleration step for the government from the fields of meteorology,

climatology, and geophysics in preparing for the transition of renewable energy.

CONCLUSION

The main finding in this research, the first is, that BMKG has provided information on areas that have great potential as sources of renewable energy, such as maps of solar energy and wind energy potential. The second is The BMKG policy to support renewable energy involves processing BMKG thematic information, including wind energy potential maps, solar energy potential maps, and solar energy prediction data. This information is intended for users, including renewable energy technology providers. The third finding in this study involves three perspectives related to the Gap analysis for BMKG Information to support renewable energy operationalization. From these three perspectives, The first perspective is related to the limited understanding of user needs and the limited availability of BMKG information. The second perspective is that, from the standpoint of meteorological and climatological information providers, supporting renewable energy is not a primary or essential issue; rather, it is considered a paid thematic information source generating non-tax state revenue (PNBP). The third perspective is the primary importance of data availability to support these issues.

Currently, understanding the needs of users is still large and the willingness of BMKG in providing services is still limited. BMKG can be an actor in this field because most foreign providers dominate this market. even though there is Law 31 of 2019 concerning MKG which prioritizes the use of information from authorized institutions. Now, that a system strengthening program has been prepared, it is only a matter of continuing downstream strengthening through user interest and increasing their attention. BMKG as an enabler for increasing the renewable energy mix through information services on the potential of renewable energy which is a great opportunity in the era of disruption is information for small and medium-scale renewable energy providers/developers, not regulators or SOEs. This research can be replicated in another developing country where not many SOEs can produce renewable energy as a transition from the existing energy to renewable energy. The research in the future can focus on barriers and challenges to the transition of renewable energy, and The future research can use qualitative and quantitative approaches as well as soft system methodology.

This research implies that it can help BMKG or relevant parties to address the limitations in providing information for renewable energy and expedite the process of supplying renewable energy to conserve conventional energy sources that have been traditionally used. This research provides concrete recommendations based on its findings regarding the steps that can be taken by BMKG or other parties to enhance the provision of renewable energy information services that can be implemented by public entities such as BMKG and state-owned enterprises (BUMN) both in Indonesia and in other countries. lebih.

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