

Understanding the Energy Transition Debates in a Local Context: The Case of Dieng Geothermal Energy Development, Indonesia

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Abstract—The Energy transition policy in Indonesia has sparked a discursive debate among various actors at different levels. Drawing on Maarten Hajer's discourse coalition concept, this article analyzes the debate surrounding geothermal energy development in the Dieng Plateau, Central Java. Data were gathered from 40 news articles in local and national online media addressing geothermal energy issues in Dieng (from 2018 to 2024). Our analysis reveals two competing discourse coalitions: supporting and opposing geothermal development. Each coalition uses storylines to build its networks while attempting to weaken the opposing coalition. Although the debate was intense, the supporting coalition remained dominant in many issues and had strong networks to influence policies at both local and national levels. The opposing coalition, consisting of fewer actors, was limited to civil society networks. However, the opposing coalition achieved a moment of success when resistance to the expansion of the Dieng power plant led to protest actions, forcing the supporting coalition to relocate the development site away from residential areas. These findings offer valuable insights into how local discourse debates can shape national energy transition policies.

Keywords—geothermal energy policy, energy transition, discourse coalition, Dieng Plateau

I. INTRODUCTION

The utilization of geothermal energy in Indonesia has a long history. However, its development faces many challenges, both technical and non-technical [1]. One of the most common non-technical challenges in geothermal development areas is local community opposition [2]. In some cases, this opposition has manifested in street protests, delaying the implementation of geothermal energy projects [3]. In this context, the local setting plays a significant role in the success of the national energy transition plan outlined in Indonesia's National Energy General Plan (RUEN). In light of this phenomenon, energy transition policies are always linked to matters of agreement-disagreement; support-opposition; legitimizing-(de)legitimizing, among multi-level actors, driven by differing perspectives and core beliefs [4, 5]. Therefore, this article focuses on the analysis of discourse debates, where discourse provides valuable insights into how actors perceive certain public issues, and how these perspectives can influence—and be influenced by—the interactions of actors, each with their own distinct knowledge (and experience) [6].

We examine the geothermal energy development policy in the Dieng Plateau, an area where tourism, agriculture, settlements, and geothermal extraction coexist. Three

questions guide this analysis: (1) Who are the actors involved in the discourse network of the geothermal energy development debate in Dieng?; (2) What issues are being debated and how are they framed?; and (3) How are discourse coalitions formed within this network, and to what extent do they influence geothermal energy policy in Dieng?

II. LITERATURE REVIEW

Previous studies have explained how academics use discursive approaches to analyze energy transition policy issues in various countries. In understanding energy transition, the frameworks used by academics can be categorized into several types, including Critical Discourse Analysis (CDA), Argumentative Discourse Analysis (ADA), Framing Analysis, and Narrative Analysis [5]. Although based on different theoretical frameworks, these approaches share a common understanding of discourse. Isoaho & Karhunmaa identify discourse as the way humans comprehend reality through the power of language and ideas [5]. Discourse legitimizes a perspective on something, while simultaneously (de-)legitimizing other perspectives. Discourse also encourages the production of certain knowledge and actions, while restricting the production of other knowledge and actions [7].

The discourse approach has addressed various topics in energy transition studies, such as changes in energy transition policies driven by shifts in core beliefs [4], local debates influencing national energy transition policies [6], the role of political elite coalitions in promoting renewable energy in fossil-rich countries [8], and the legitimacy of the bioenergy regime in India and South Africa through pro-poor narratives [9]. These topics illustrate the application of a discourse approach to understanding energy transition issues. Based on these studies, this research aims to investigate the discourse coalitions of multi-level actors and their efforts to influence geothermal energy transition policies in the Dieng Plateau.

III. MATERIALS AND METHODS

A. Discourse Coalition

We use the discourse coalition theory developed by Maarten Hajer as an analytical tool. Hajer draws on the Foucauldian tradition in understanding discourse, where discourse is defined as “ensemble of ideas, concepts and categories through which meaning is given to social and physical phenomena, and which is produced and reproduced

through an identifiable set of practices” [10]. Hajer’s discourse analysis emphasizes two main aspects: the coalitions of actors [7] and storyline [11]. A storyline is a brief statement that summarizes a complex narrative about an issue, also referred to as a ‘shorthand’ [11]. Meanwhile, a coalition of actors can be understood as the positioning of a group of actors within a particular discourse, as well as their efforts to shape that discourse [7]. Both concepts serve as the foundation for understanding discourse coalitions, where a discourse coalition is a collection of a series of storylines, the actors who voice those storylines, and the practices that form the basis of these discursive activities [11]. A discourse coalition, at a certain point, can influence policy, especially when it is formed strongly (with many actors voicing the same storyline over an extended period) [11]. Therefore, Hajer’s discourse analysis becomes an important theoretical framework for understanding the interaction between discourse and policymaking, which in this article is the case of geothermal energy development in the Dieng Plateau.

B. Research Case

We use the Dieng geothermal energy policy as a case study and discourse network as the unit of analysis. The Dieng Plateau was chosen due to its unique conditions, where the vast potential of geothermal energy has driven extraction efforts for decades [12], while its location lies in the heart of the local community’s living space (agriculture, settlements, and tourism). The ongoing development of geothermal energy and its impacts on the local population has, at some point, sparked debates on how the geothermal project should align with the social and economic activities of the local people. This debate has evolved into efforts by the involved actors to influence the geothermal energy development policy according to their respective interests. The debate involves many actors (both local and national) who are interconnected through the evolving issues related to geothermal energy.

C. Data sources

This study is based on an analysis of news articles from electronic media, sourced from various national and local online newspapers. Unlike data from interviews, Focus Group Discussions, or hearings, electronic media were chosen for their ability to cover a wide range of issues and actors involved in the debate over geothermal energy development in the Dieng Plateau, both directly and indirectly. Electronic media also present a more diverse array of arguments compared to policy documents [13]. We used Google News to collect 40 news articles from 2018 to 2024, using keywords related to the issue of geothermal development in the Dieng Plateau.

D. Discourse Network Analyzer

The coding and data analysis process used the Discourse Network Analyzer (DNA) application. This method, developed by Philip Leifeld, systematically tracks discourse debates over a specific period, visualizes actor coalitions and their narratives, as well as the structure of the discourse [14]. This method also facilitates us in applying Hajer’s discourse analysis, as it connects the concept of storylines with the discursive interactions of actor coalitions [11]. Technically, the DNA coding process is as follows Fig. 1:

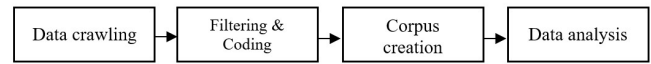


Fig. 1. DNA coding process.

IV. RESULTS AND DISCUSSION

We analyzed the discourse network in several parts. First, we identified the actors based on their organizations and common storylines. Next, we mapped the contested storylines in the development of geothermal energy in Dieng. Finally, we analyzed the discourse coalitions that formed and their influence on the geothermal development policy in Dieng.

A. The Actors Involved

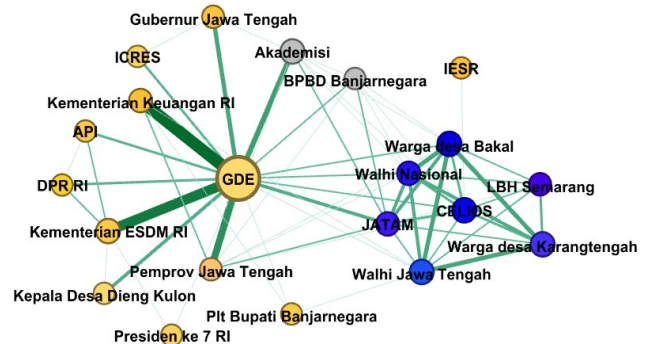


Fig. 2. The actors of energy transition debates in Dieng.

Fig. 2 illustrates the distribution of actors involved in the discourse network of geothermal energy development in the Dieng Plateau. This discourse network is formed by 21 institutions/organizations with diverse backgrounds. The actors consist of Non-Governmental Organizations (NGOs), central government, local government, academics, local residents, the legislature (DPR), corporations, and think tank groups. Each actor is interconnected with others, with these connections being formed by the storylines they use. The image shows that the actors are polarized into two groups: the supporting group (yellow nodes, left side of the image) and the opposing group (blue nodes, right side of the image). Meanwhile, two actors (gray nodes) are identified as participating in conversations across several storylines, but without high levels of contestation, and are not directly related to the issues debated by both sides.

The supporting group has a broader distribution of actors with a larger number (12 multilevel institutions). They exhibit greater congruence, with the central actor being PT Geo Dipa Energi (GDE). In contrast, the opposing group has fewer actors, and no single actor is particularly dominant within their network. They have smaller congruence but are more evenly spread. The congruence within this actor-network is strongly influenced by how consistently they support an issue with the same storyline. An explanation of the storylines within this network will be further discussed in the next sub-chapter.

B. Contested Storylines

In the corpus creation process, we identified ten storylines debated within the discourse network of geothermal energy development in the Dieng Plateau. Of these, five storylines have high centrality. High centrality indicates a high level of debate and involves many actors from both sides in contestation. Fig. 3 shows that the energy transition debate in

Dieng mainly concerns the status of geothermal energy as a “low-carbon and renewable energy” (debated by 20 actors). The opposing side uses the narrative “low carbon, high victims” to (de-)legitimize the geothermal energy development project in Dieng. “High victims” refers to the impacts of geothermal extraction activities on the local community’s livelihood, such as contaminated springs, noise pollution, and the threat of toxic gas leaks.

The storylines “Mitigating the accidents” and “Boost the local economy” also became intense points of debate, with 10 actors involved in each. The supporting side argues that geothermal extraction activities are carried out according to strict Standard Operating Procedures (SOPs), and every accident is evaluated to prevent recurrence. This narrative is met with public concern over repeated accident incidents, as well as feelings of insecurity and disruptions to agricultural activities due to the threat of gas leaks. On the other hand, the supporting side claims that the geothermal project brings economic benefits to the local community through job opportunities, training, scholarships, and food aid. However, the opposing side argues that the project actually hinders agricultural productivity and does not provide significant multiplier effects due to its capital-intensive nature.

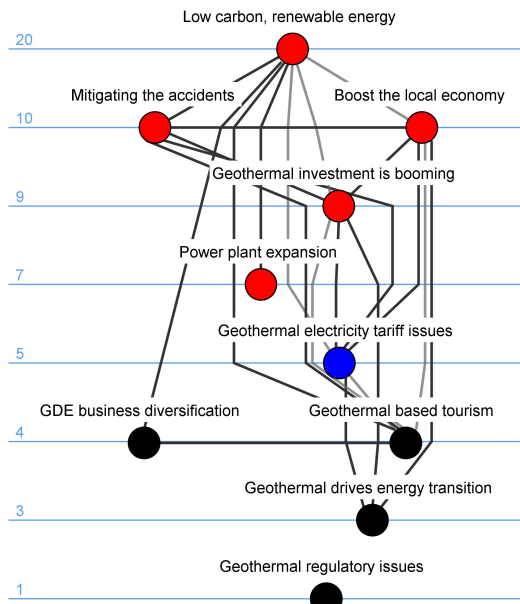


Fig. 3. Contested storylines.

The issue of the second unit power plant construction in Dieng became a significant point of debate within the discourse network. The supporting side presented green economy reasons and the global push to achieve Indonesia’s net-zero emission target. Meanwhile, the opposing side viewed the narrative of “power plant expansion” as a threat to the living space and livelihoods of the local community. The main issue is the location of the second unit, which is too close to residential areas and agricultural land. This expansion is also linked to investments in the geothermal sector, which the supporting side uses to legitimize the project. They argue that significant investments have already been made, and therefore, the construction of the power plant to increase green electricity capacity is necessary. The opposing side counters by stating that the investment is costly and risks burdening the state, particularly in terms of electricity subsidies.

In addition to the five storylines already discussed, there are five other storylines—Geothermal electricity tariff issues, GDE business diversification, Geothermal-based tourism, Geothermal drives energy transition, and Geothermal regulatory issues—that are more frequently discussed by the supporting side to strengthen the geothermal development in Dieng. Meanwhile, the opposing side does not engage in these issues.

C. Discourse Coalition Network

The discourse coalition of the geothermal energy development policy in the Dieng Plateau can be understood as a group of actors and the storylines they advocate. Fig. 4 provides an overview of how actors from the two opposing sides (supporting and opposing) contest to define several issues related to geothermal energy in Dieng. As explained in the previous sub-chapter, the policy debate occurs around five main issues (red box nodes), accompanied by five peripheral issues (black box nodes) that are not as heavily debated. This sub-chapter will then analyze the extent to which the discourse coalitions successfully influenced the geothermal energy development policy in Dieng. We refer to Hajer’s argument that there are two conditions under which a discourse coalition can be considered successful and dominant: (1) the more key and strategic actors using the storyline; and (2) the new discourse should be reflected in the institutional practices of the political domain [15].

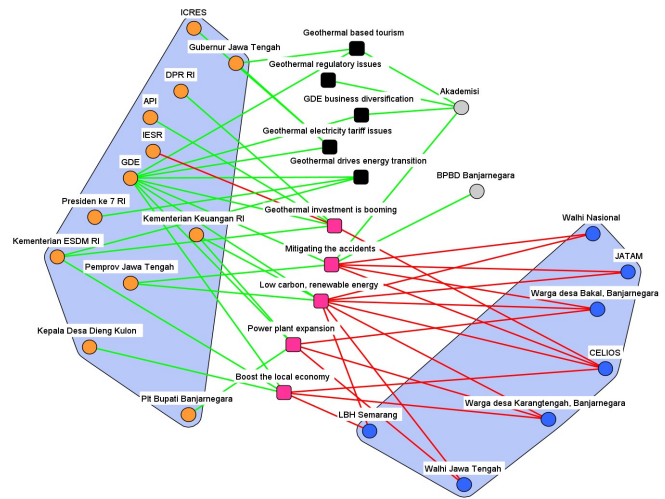


Fig. 4. Discourse coalition of geothermal energy development in Dieng.

1) Supporting coalition

The supporting coalition has a broader distribution of actors and consists of key actors in government and corporations. Government actors have the authority to regulate the development of geothermal energy in Dieng, such as the Ministry of Finance, Ministry of Energy and Mineral Resources (ESDM), the DPR (Indonesian Parliament), and the President. At the regional and local levels, supporting actors include the Central Java Provincial Government, the Governor of Central Java, the Acting Regent of Banjarnegara, BPBD Banjarnegara, and the Head of Dieng Kulon Village. These actors at the regional and local levels are responsible for implementing regulations from the central government, so the discourse they promote aligns with the central government’s stance. For instance, in the storylines of “Boost the local economy”, “Low carbon, renewable energy”, and “Mitigating the accidents”, they

present narratives confirming that geothermal extraction activities in Dieng have a positive impact on the local community and support the national energy transition program.

In addition to the government, Geo Dipa Energi (GDE) plays a central role in the debate on many geothermal issues in Dieng. GDE is connected and supports almost all storylines (except for regulatory issues). As a key player, GDE also internalizes its discourse into the institutional practices of its company. This includes discourses on the economic impact on local residents, accident mitigation, power plant expansion, investment in the geothermal sector, and renewable energy issues. It is only on the issue of geothermal electricity tariffs that GDE has not been able to influence government policy to raise the rates. The tariff issue is also viewed as an obstacle to investment in the geothermal sector.

2) Opposing coalition

Unlike the supporting side, the opposing coalition consists of local actors and several NGOs. The local actors are residents of the villages of Bakal and Karangtengah in Banjarnegara Regency. The NGO actors include WALHI (Wahana Lingkungan Hidup) Central Java and National, Semarang Legal Aid Institute (LBH), Center of Economic and Law Studies (CELIOS), and Mining Advocacy Network (JATAM). The opposing coalition focuses on efforts to (de-)legitimize the main storylines, most of which directly impact the local communities in Dieng. These storylines include: “Low carbon, renewable energy”, “Boost the local economy”, “Power plant expansion”, “Mitigating the accidents”, and “Geothermal investment is booming”. They propose a discourse challenging the definition of geothermal energy as renewable and low-carbon, with the narrative “Low carbon, high casualties”. This narrative is based on the empirical experiences of local residents who are directly impacted by geothermal extraction activities, such as contaminated springs in the villages of Pawuhan and Ngandam, pipeline explosions, toxic gas leaks, noise pollution, and rusty zinc roofs. These negative impacts are also related to the storyline “Mitigating the accidents”, which is frequently promoted by the supporting coalition in the event of work accidents or pipeline leaks. The opposing coalition spreads the discourse of “Local citizens’ fear” as a warning that the trauma of security threats to their lives continues to exist within the community.

The opposition was also directed at the discourse “Boost the local economy”, which was used by the supporting coalition to legitimize geothermal extraction by claiming economic benefits for the local community. The opposing coalition challenged this discourse with the narrative “Capital intensive industry”, emphasizing that geothermal is capital-intensive, not labor-intensive. They also highlighted that although geothermal investment is in demand, its high cost poses a risk of burdening the country through electricity subsidies. The opposing coalition stressed that green energy investments must involve the community, both as managers and beneficiaries. Although the opposing coalition generally had less alignment in many storylines compared to the supporting coalition, they succeeded in influencing GDE’s policy regarding the expansion of power plant unit 2. By

using the discourse “The expansion is too close to settlements,” they challenged the “Power plant expansion” narrative through media debates and collective action. NGO actors, together with local residents, staged street protests against GDE and demanded the relocation of the development site. Ultimately, the power plant site was moved from Karangtengah village (near settlements) to the Sikidang crater area (far from settlements).

V. CONCLUSION

Understanding energy transition policies is inseparable from the discursive debates that accompany them. In the Dieng Plateau, the geothermal energy development policy has generated two discourse coalitions—supporting and opposing—that influence policy through discourses that legitimize their interests. The supporting coalition is more dominant; however, the opposing coalition successfully influenced the policy to relocate the power plant’s construction site.

We acknowledge that this research is limited to data from electronic news articles, while public discourse is spread across many other arenas. Future research could expand the data sources to encompass public discourse more comprehensively.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Abdan Syakura: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Writing—original draft, Writing—review & editing; Muhammad Ishak: Conceptualization, Writing—review & editing; Said Khaidir: Conceptualization, Writing—review & editing; all authors had approved the final version.

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