



# Communication Model in Managing Geothermal Power Plant Conflicts on Serang Regency, Indonesia

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## **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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## **ABSTRACT**

**Aims:** The construction of Geothermal Power Plants in several regions in Indonesia is currently always characterized by conflict and opposition from local communities, including in Serang Regency. One of the main issues is the company's inappropriate communication strategy, resulting in a lack of community acceptance and leading to conflicts. The research focuses on the different stages of conflict, behavior and communication of conflicting parties within managing conflict strategies. Researchers utilize Galtung's conflict model and the convergence-divergence communication theory.

**Methodology:** The research method used is qualitative research through the examination of case studies. This was done because the problems in this research remained unclear, holistic, complex, dynamic and full of meaning. Meanwhile, the data collection techniques used in this research were documentation obtained 73 news published by 35 online media covering statistics on yearly citizen

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actions and newspaper publications, news topics or discussions, and online news coverage on the construction of the Geothermal Power Plant in Serang regency, Indonesia. Also, with direct field observations and in-depth interviews with several informants at the study location.

**Results:** Based on research findings, the Geothermal Power Plant conflict went through 4 stages, including the initial conflict phase; conflict phase; the trust-building phase leading to conflict resolution; and the conflict resolution phase. Meanwhile, based on Galtung's theory, conflict occurs when there is a discrepancy between the socialization provided by the company and the community's direct experiences, leading to rejection through various actions. The divergent communication approach utilized by the company towards the affected communities resulted in different interpretations, ultimately causing the root of the conflict.

**Conclusion:** The conflict stages in the Geothermal Power Plant development project in Serang regency are divided into several phases that closely related with communication occurred between company, government and the local communities. Lack of communication formed negative opinions about the project developers, leading them to oppose the construction of the Geothermal project. The convergent communication model combined with other communication models such as open, participatory and supportive communication is considered to be highly effective in addressing conflicts.

*Keywords: Communication; conflict; geothermal.*

## 1. INTRODUCTION

Recently, the media in Banten has been focusing on the opposition from Padarincang District's community in Serang Regency against the Geothermal Power Plant project planned for Batukuwung Village in the Rawa Dano Caldera Geothermal Working Area. The primary reasons are the residents' skepticism about the company's ability to guarantee safety from the emerging impact during geothermal production, the raising suspicions from closed communication, and the emergence of negative perception among certain interested parties. Subsequently, refusal arose and caused a dispute that remains unresolved.

Fisher [1] defines conflict as a relationship that occurs between two or more parties, both individuals and groups, who have opposing or incompatible objectives and also divides the stages of conflict into five, namely pre-conflict, confrontation, crisis, consequences and post-conflict. Based on this, social conflict can be interpreted as a strain that occurs between two or more parties due to discrepancies in interests, values and norms, as well as different thoughts or perspectives, giving rise to disputes that result in one side overpowering the other. Then, based on the type, divides conflict into two types based on the level of the problem: vertical conflict (different levels) and horizontal conflict (same levels) (Anshori 2013).

Based on previous studies and online news, residents are worried about the potential threat to

important resources, such as water sources, from the companies operating in the area, as the residents in this area consider nature to be their own. On the other hand, the company in charge of the project has also failed to verify the safety of the drilling process that will take place, causing uncertainty among residents to grant their approval. There are several interesting aspects to investigate: (1) What are the stages of conflict in the construction of a Geothermal Power Plant in Batukuwung Village?; (2) How is the Galtung conflict model in the Geothermal Power Plant in Batukuwung Village?; and (3) How can the communication model be applied for conflict management in Geothermal Power Plant development in Batukuwung Village, based on relevant cases?.

### 1.1 Problem Solving Approach

To answer the first issue, refer to several opinions, including the opinion about the stages of conflict from Fisher et. al. [1]. Then Kincaid's opinion in Littlejohn and Foss [2] introduced a more comprehensive model that included possibility of both divergent and conflict, along with convergence and cooperation. In this theory, Kincaid divides convergence or divergence communication into six phases, including: (1) a scene-setting phase, which creates a closed communication system; (2) a buildup phase, which leads to a final position being taken that refers to mutual understanding; (3) a resolution phase, where the participants mutually agree on a mutual position, trust each other and implement the joint agreement; (4) a climax

phase, when emotions and reason do not lead to a change in position and mutual understanding; (5) a conflict phase, in which neither participant will change and must therefore adopt a threatened retreat position; and finally (6) a resolution phase, whether cooperation or conflict is carried out. If the participants agree on each party's position that they can trust each other and carry out the agreement, then the result will be cooperation, and vice versa.

Then, in order to determine the conflict model that occurred in this case, Johan Galtung's conflict model approach was used Galtung and Webel 2021. Galtung defines conflict as a clash between two or more individuals/groups, both verbally and physically which ultimately results in destructive consequences. Galtung believes that conflict can occur because of three elements, namely A=attitude or assumption, B=behavior and C=contradiction. Manifested conflicts can be empirical and can be observed from the humans' behavior as the actors. Meanwhile, latent conflict can be seen in the attitudes and contradictions that arise. These three elements form a conflict triangle [3] and [4,5] further calls this model the ABC triangle. Of the three components, the top component is contradiction, so the order is: Contradiction – Attitude – Behavior.

Next, to address the third problem, researchers will look at the communication model utilized by the majority of conflicted parties, taking into consideration the occurred conflict and drawing from several communication theories, especially those outlined by Kincaid regarding the convergence approach. Referring to the answer to the first problem and Kincaid's convergence approach, extended in 2002, according to the conflict studied, he defined communication as a process in which two or more participants share information and strive towards a higher level of mutual understanding and agreement that leads to either beneficial collaboration or disagreement, giving rise to conflict. To achieve agreement or cooperation requires a minimum level of mutual understanding and agreement between parties [2]. Therefore, according to findings in the field, it will be determined whether this communication model can function independently or needs to be integrated with other models suitable for the conflict that occurs, such as open communication, participatory communication, etc.

## 2. METHODOLOGY

The research method used is qualitative research through the examination of case studies

[6]. This was done because the problems in this research remained unclear, holistic, complex, dynamic and full of meaning. Meanwhile, the data collection techniques used in this research were documentation or literature studies obtained 73 news published by 35 online media covering statistics on yearly citizen actions and newspaper publications, news topics or discussions, and online news coverage on the construction of the Geothermal Power Plant in Serang regency, Indonesia. Also, with direct field observations and in-depth interviews with several informants at the study location. Also, direct field observations and in-depth interviews with several informants at the study location.

Data analysis used in this research refers to the opinion of Miles and Huberman. According to Miles and Huberman [7] and qualitative data analysis is carried out interactively [8]. Then the research location took place in Batukuwung Village, Padarincang District, Serang Regency, Banten Province, where the Geothermal Power Plant was established. This study itself took place from July 2023 to January 2024. The following is a map of the study locations.

## 3. RESULTS AND DISCUSSION

### 3.1 Conflict Stages of Geothermal Power Plant Construction in Batukuwung

#### 3.1.1 Initial phase of geothermal power plant construction

Rejection of the Geothermal Power Plant construction in Batukuwung Village, Serang Regency, Indonesia has actually been going on since 2016. Initially, the community accepted the socialization conducted by the company PT. SBG (PT. Sintesa Banten Geothermal) as the winning party for this tender as well as the holder of the construction permit and PT. IBP (PT. Inti Bumi Perkasa) in collaboration with PT. SBG in geothermal development and drilling. This outreach was carried out in several locations including Wangun Village, the primary area for the Geothermal Power Plant construction in Batukuwung Village. Unfortunately, during the outreach, the explanation was lacking and only focused on highlighting the positive impacts and development plans. Meanwhile, residents' questions regarding security assurances, the value of company contributions, corporate social responsibility and other matters remained unanswered. On the other hand, for the construction of factories and company facilities around  $\pm$  4 hectares of land cultivated by

residents was acquired by the company and has been leveled. Unfortunately, residents have informed that compensation for growing crops remains unresolved. In fact, there are numerous plants on this land which are essential for the residents' survival, including fruit plants and various others.

Then, public suspicion began to arise when the company was about to open an entrance to the geothermal drilling area. According to representatives of Wangun Village residents, the company had conducted outreach to the community regarding the road construction project. The original plan for the construction was to pass through residential areas, but when residents inquired about the compensation for their land, the company did not disclose any specific amounts. Because of this lack of clarity, without compensation for the road being built through their agricultural and residential land, they will oppose the project. Because of this

refusal, the road was finally built through the Indonesian State Forestry Company Permit area. The construction of this road was carried out around 2016 and cut across the Cikongeng river which flows from the Wangun Village area downstream, namely Nengger Suka Peace Village, Barengkok, Cikongeng and several surrounding areas.

Then, because of heavy rainfall at that time, waste material from land clearing for roads and company sites, including mud from road construction, was carried away into Cikongeng river. Consequently, the Cikongeng river channel became blocked by debris brought by rainwater, such as mud from road construction, leading to flooding especially near the flood gate in the residential areas of Nengger Suka Damai Village. This flood inundated certain residents' homes and their farmland downstream, resulting in crop failure and a decrease in agricultural output for several residents.

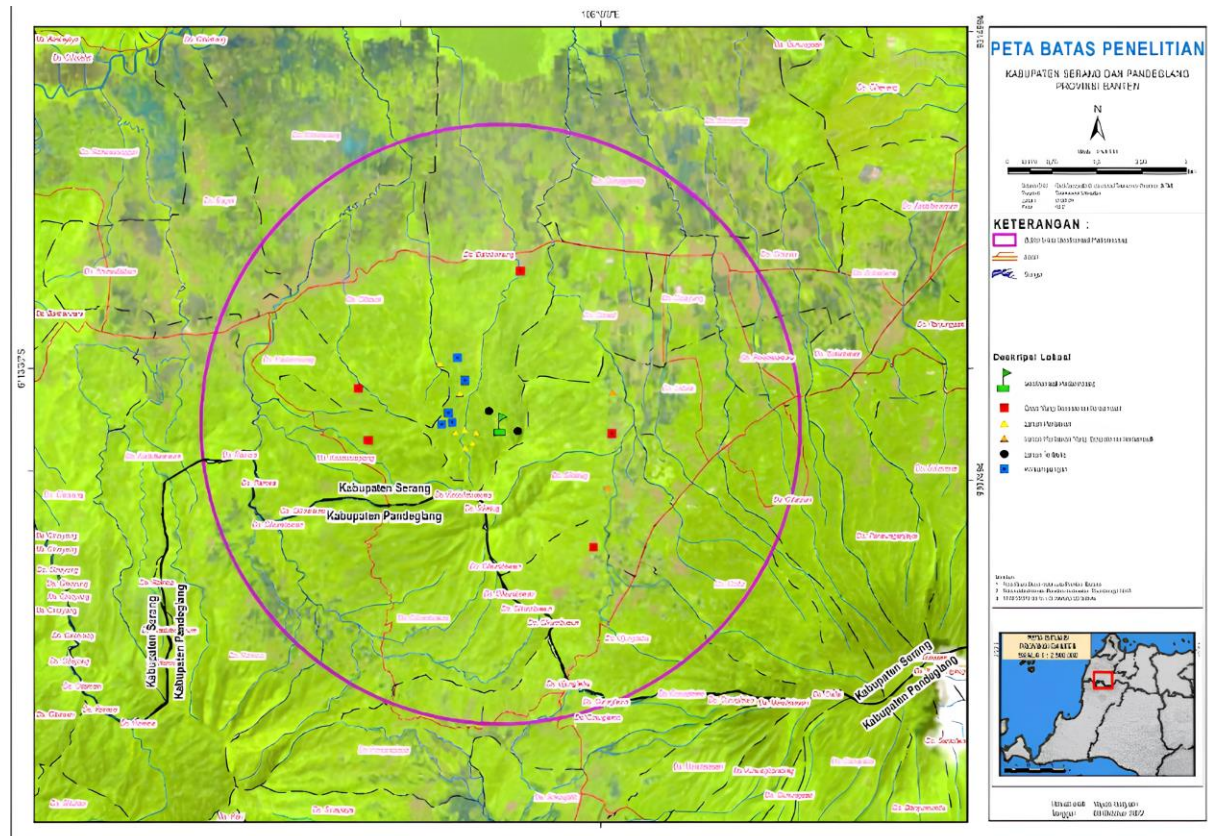


Fig. 1. Map of Research Location (Batukuwung Village, Serang Regency, Indonesia)

Local residents confirmed that this flood is a common occurrence every year. However, the flood conditions were felt to be severe when the company was operating, as the floods were also exacerbated by mud, twigs, and tree branches, leading to larger floods. This condition then causes residents increasingly distrustful of the company's claims about the safe project for the community and the environment. This contradiction felt by residents ultimately gave rise to increasing public distrust of companies. This then became the start of a community protest against the continuation of the Geothermal Power Plant construction in Wangun Village, Batukuwung Village, Serang regency. In this phase, the protests that occurred only reached the village level.

### 3.1.2 Conflict phase of geothermal power plant

This phase is a continuation of the previous phase where protests were carried out by affected residents both at village and national levels which was marked by an action carried out by the Sapar organization, activists and students heading to the Ministry of Energy and Mineral Resources office in Jakarta on 9 September 2019. Based on the results of discussions with community representatives, the first protest against this company was actually carried out by residents of Wangun Village in 2016 where the action was only carried out at the village level because of concerns that the construction of the Geothermal Power Plant would have an impact on the environment, especially the residents' water sources. However, as it was not covered in the media, the news did not circulate.

After 2016, the establishment of the Sapar organization led to better organization of resistance efforts, with actions taking place at the Padarincang sub-district level in 2017. Then in 2018, actions were carried out to the provincial level and in this year there were 5 recorded actions taking place, carried out by Sapar and institutions. Road blocking actions also occurred in 2018. The number of actions remained unchanged until 2019. In fact, in addition to the five actions conducted, actions were also carried out at the national level by holding actions in front of the Ministry of Energy and Mineral Resources office in Jakarta. It could be said that 2018/2019 was the peak of the conflict. Even after 2019, residents continued to notice a decline in activities every year. This decrease was evident with the arrival of Abuya Muhtadi

Dimiyati from Cidahu, Pandeglang, a renowned ulama who participated in the istighosah for everyone's safety. The presence of this great Banten ulama is considered by several parties, including Sapar figures, to be able to mitigate the ongoing conflict. This was also confirmed by members of the Sapar, where the Padarincang residents were faithful and respected the ulama, and it was a tradition or custom of Padarincang residents, which helped alleviate the temporary conflicts in the area.

Furthermore, in 2020 the situation worsened because the company forced its way into the company area by bringing marines personnel and allegedly destroying the fence blocking access to the Geothermal Power Plant entrance. In 2020, there were 4 recorded actions. In the meantime, following that, there were 3 actions documented in 2021, 2 actions documented in 2022, and currently in 2023, there have been no actions taken and the company's operations at work sites have ceased. Decreasing the level of this dispute does not lead to its resolution. Nevertheless, the subsequent step involves establishing trust between the conflicting parties.

### 3.1.3 Trust-building phase towards conflict resolution

This phase, primarily conducted by the company, has actually occurred since the onset of the conflict, especially from 2018 to 2022. After November 2022, neither the company nor the residents remained engaged in the action. When the protest happened, efforts to rebuild public trust were also started by the company, such as through more intensive outreach, involving citizen representatives in comparative study activities in 2018, inviting university experts to confirm the safety of their activities and other initiatives to foster trust and promote mutual understanding between parties. This was confirmed by representatives of Wangun residents; the company conducted another round of socialization after the conflict began. Resident representatives through the focus group discussion that was conducted in Wangun revealed that, *"After the chaos, there was socialization of environmental impact assessment and so on (after 2016/after it was worked on). This socialization was carried out at Wangun Tarikolot. There were even rough drafts of agreements (such as "compensation" payments) and questions asked by the public..."*

Additional attempts were also made to build this trust, for example, as stated by one of the

research sources, that the company had brought in experts multiple times who were invited from several universities. The objective is to build public trust. Unfortunately, none of these experts could respond to all inquiries from the participants and no one from the company could guarantee the safety of the company's operations. Recently, the company brought in a professor from the University with high reputation in Indonesia to reassure residents through a symposium. However, neither Sapar nor the residents who opposed the development attended the event. This shows that the persuasion efforts made by the company to build trust were unsuccessful. The anticipated resolution of the conflict has not been reached.

### 3.1.4 Resolution conflict phase

The resolution of the conflict has not been achieved to date because both parties are still holding onto their objectives and each is still looking for opportunities to win over the resources. The company was unable to achieve the goal of conflict resolution because it was perceived to have deficiencies in addressing all queries and requests from Sapar members. Therefore, mutual understanding and trust between parties have not been established yet, which results in unachieved collective agreement. Actually, this conflict resolution phase has occurred when the company brought in a third party as a mediator from scientist in reaching a consensus. However, this resolution was not achieved because one of the parties, the one who refused, did not attend the event, or when the company brought in experts from Bandung Institute of Technology who apparently cannot convince residents regarding the company's operational security. Therefore, at that moment, resolution of the conflict was unsuccessful.

Referring to Kincaid's Convergence Model, extended in 2002, it allows for divergence and

conflict as well as convergence and cooperation. Communication is defined as a process where two or more participants share information to reach a greater state of mutual understanding and agreement, leading to inappropriate cooperation or disagreement, giving rise to conflict [2]. Therefore, based on this understanding, the dispute over the construction of the Geothermal Power Plant in Batukuwung Village had reached the conflict resolution stage. Based on the provided explanation, these four phases can be described as follows that developed from Fisher et al. (2021).

### 3.2 Conflict Analysis of Geothermal Power Plant Construction Based on Johan Galtung's Conflict Triangle Model

When examining the conflict events from the building of the Geothermal Power Plant in Serang regency, Indonesia using Johan Galtung's conflict triangle model (Galtung and Weber 2021), it becomes apparent that the conflict stemmed from the company's construction being opposed by the community. This refusal happened because the neighborhood believed that this project would bring more harm than good. In fact, residents have begun to experience these negative impacts, such as flooding, reduction of agricultural land, and more.

Galtung believes that conflict can occur because of three elements, namely A=attitude or assumption, B=behavior and C=contradiction. Manifested conflicts can be empirical and can be observed from the humans' behavior as the actors. Meanwhile, latent conflict can be seen in the attitudes and contradictions that arise. These three elements form a conflict triangle [3,4,5] further calls this model the ABC triangle. Of the three components, the top component is contradiction, so the order is: Contradiction – Attitude – Behavior.

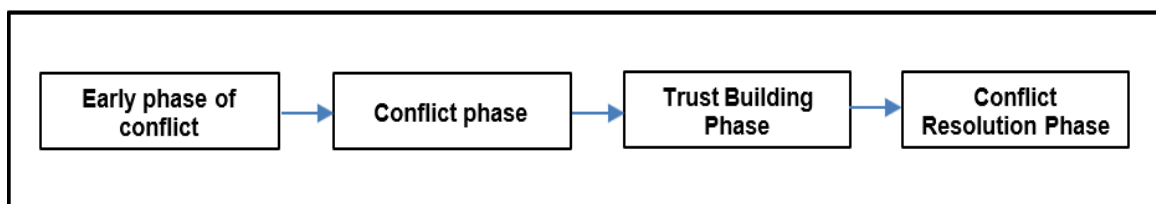


Fig. 2. Phases of Conflict Model Developed in the Construction of Geothermal Power Plant in Serang Regency, Indonesia

Based on the study findings, this contradiction occurs when closed communication is implemented by companies using a divergent or linear model. This means that only favorable information about the company's operations is shared with the public in order to gain acceptance. However, as the company's activities progress, the community experiences adverse effects like flooding and transparency issues with compensation for land or crops, leading to communication breakdowns and ultimately conflict or disagreement. As a result, the community developed negative beliefs, leading to the majority feeling deceived, particularly those directly affected by issues such as flooding or lack of compensation for planting. This prompted them to oppose the construction of the Geothermal Power Plant on their land. Then this is demonstrated by the behavior of residents through the action of rejection, the formation of the Sapar organization to organize the rejection and accommodate other communities who also feel disadvantaged by the company or have an emotional connection in protecting the environment (considering another impact felt by rejecting communities is the threat to environmental balance).

Initially, during the pre-conflict or initial phase, the conflict occurred at a latent level, with the community becoming increasingly dissatisfied with the company for not delivering on the promised impacts as discussed during the socialization process. Then when this rejection movement was realized in the form of action and formed the Sapar organization, the conflict that occurred was already manifested, it could be seen clearly in the behavior shown by each actor or community who had been disappointed. Meanwhile, this conflict will actually lead to forms of violence.

### **3.3 Communication Model in Managing Geothermal Power Plant Conflict in Serang Regency**

Communication within a group can be more confrontational when there is a division between those who accept the structure and those who do not, leading to a latent and horizontal conflict model. Meanwhile, the communication model between the party who agrees and the project-holding company is centered on the most influential government officials and social actors, and takes the form of coordination. At the same time, the communication between opponents of the construction and developers is

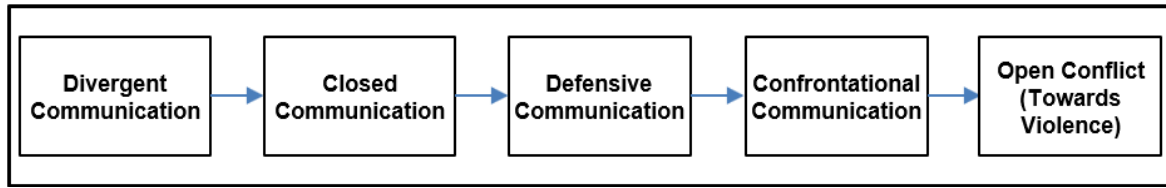
confrontational, resulting in an open conflict model being established. Additionally, the communication model between parties who oppose development is more convergent. Meanwhile, the communication that is built between the receiving parties is more divergent.

This explanation suggests that different communication models were used in this case, with some being preferred by residents and others proving less effective in gaining residents' interest in supporting the construction of the Geothermal Power Plant in Padarincang. The company's divergent communication approach puts citizens, as constituents, in a position of unequal importance and obliges them to accept information given by the company, causing discomfort among citizens.

Lack communication between local stakeholders with the company make local stakeholders' perception about the negative impact and contra geothermal development plant [9] more dominant ruined divergent communication and caused conflict toward violence. The main issue was gap about the accessing natural resource and environmental. Especially when local stakeholders not involved in decision making for geothermal project. In line with Genova et al. [10] that should be local stakeholders' get involved in the management of a protected area to provide relevant information and views from local stakeholders.

Local communities in the location at the geothermal power plant conducted with demonstration for their interest to company and government in every level area that facilitated with the open social and political condition in reform era of Indonesia. The communities after reform era of Indonesia demonstrated in public openly such as fishermen [11], coastal communities and their typology of demonstration with peace until radically [12]. Furthermore, Muldi et al. [13] explained that emotional condition in large number of participant demonstration or protest would be trigger of open conflict that toward violence. In other cased Muldi et al. [13] described the conflict between coastal communities with government and companies getting worse when the local tend to have solidarity. The findings confirmed that violence roots of the problems of livelihood and basic needs.

This model also allows companies to control the dissemination of only the information they deem significant. Therefore, the public is not provided



**Fig. 3. Communication Model in a Conflict of Geothermal Power Plant in Serang Regency, Indonesia**

Source: Developed from Muldi et al. [9]



**Fig. 4. Recommendations of Communication Models in Managing Geothermal Power Plant Conflict in Serang Regency, Indonesia.**

Source: Developed from Muldi et al. [9]

with complete information, meaning the company also practices closed communication. This has urged individuals to look for information from other sources or media, like the internet and other media platforms. Residents ultimately protested and rejected the company because the information they received from sources outside the company was more thorough and there was a discrepancy between the company's statements and the impacts experienced by residents [14,15].

The company supports its stance on the information given by using experts to validate it, which may include defensive communications. After their attempts to persuade the residents with the given information failed, a confrontational communication approach was taken, which involved bringing in officers to forcefully enter the Geothermal Power Plant permit area and attempting to damage the guardrails constructed by the residents. Residents no longer trust the company and therefore reject it, refer to Fig. 4.

The communication model used by Sapar Padarincang is different compared to others. It follows a convergence approach where all participants are treated equally and have equal rights to express opinions and access information in a participatory manner. Communication is more open, with every participant being treated equally and providing support to one another. Communication processes also function in a collaborative way.

The main aim of this communication process is to equally disseminate information to all members, foster mutual understanding, and reach a collective agreement or consensus voluntarily (not under pressure or force).

This kind of communication model is what citizens actually expect. After examining the incidents and communication styles, then the appropriate communication model to address the conflict over the Geothermal Power Plant development in Serang regency is to employ an open, convergent, more participative communication pattern and eliminate coercive, intimidating and similar approaches to achieve goals. If this model is illustrated, it will be as shown [16].

#### 4. CONCLUSION

The conflict stages in the Geothermal Power Plant development project in Padarincang are divided into several phases. The first stage is the initial phase of the Geothermal Power Plant development conflict, which includes socialization and initial development stages conducted by PT. SBG. At this stage, there was a contradiction between the socialized information and the actual impact felt by residents, which gave rise to protests from the community. In the conflict phase of Geothermal Power Plant development, conflicting parties fight for resources until tensions escalate, leading to confrontations and violence. Then the third stage is the phase of building trust towards conflict



resolution. During this stage, the focus shifts to adopting a persuasive approach to build trust among the conflicting parties. However, because one party still shows weakness and the other party remains firm in its stance, conflict resolution, which is the final phase, has not been achieved. Furthermore, the fourth stage, the conflict resolution phase, is still not completed and the case of rejection of the Geothermal Power Plant construction in Padarincang district, Serang regency is still heading towards the conflict resolution stage.

According to Johan Galtung's conflict model, conflict occurs when residents perceive a discrepancy between the company's socialization and the impact they experience. Because of this contradiction, residents believed they were deceived and formed negative opinions about the project developers, leading them to oppose the construction of the Geothermal Power Plant in Batukuwung Village. The rejection attitude is shown through actions of rejecting from the village level to the Ministry of Energy and Mineral Resources, including blocking the entrance to the Geothermal Power Plant in Wangun Village. Based on this, Johan Galtung's conflict triangle model is found in the conflict that occurred during the construction of Geothermal Power Plant in Serang regency, Indonesia. Due to the complexity of the conflict and the involvement of numerous institutions and stakeholders, conflict resolution needs to be tailored to the specific conflict and consider the socio-cultural context in which it arises. Meanwhile, the convergent communication model combined with other communication models such as open, participatory and supportive communication is considered to be highly effective in addressing conflicts that occur during the construction of the Geothermal Power Plant in Serang regency, Indonesia. Moreover, residents seem to prefer this model and has been proven to be effectively implemented by the Sapar organization.

#### **DISCLAIMER (ARTIFICIAL INTELLIGENCE)**

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

#### **COMPETING INTERESTS**

Authors have declared that no competing interests exist.

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