

## Stakeholder Analysis to Evaluate the Role of Local Actors in Decentralized Disaster Management in Indonesia

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### Abstract

Nearly two decades ago Indonesia was revolutionizing the administration by decentralized the public-sector policy with the primary goal was increasing the efficiency and bring government closer to the people. Decentralization brought significant changes in the model of governance. In disaster management, decentralization was essential to improve the role of local governments and communities to engage actively in disaster management. Decentralization of disaster management is believed to enhance the effectiveness of the governance of disaster management to reduce the impact of natural disasters. Some of the literature discussed on decentralization, and the impact of disaster found that decentralization can significantly decrease the number of deaths caused by natural disasters. The objective of this paper is to identify the roles of stakeholders in disaster management system at the local level and to identify the distribution's pattern of the actors representing the different sector. Empirical research in four cities in Indonesia was conducted to evaluate the role and importance of the actors in four stages of disasters (prevention and mitigation, preparedness, response, and recovery). The data was analyzed using two level stakeholder analysis (SA) method. Resulting from SA, their roles were identified, and their power and leadership were clarified.

Based on interviews and literature studies in four research areas, we can identified six sectors of actors related to disaster management at the local level: government, civil society, community organization, academia, donor agency, and the private sector. SA 1 showed that the allocation of the actor in disaster management system in Indonesia is reflected fragmentation in each phase of a disaster. Each phase has their pattern. SA 2 shows that the government sector still has strong power and leadership in all stages of disaster management. The role of the non-government sector is increase significant, especially in the response phase. The findings suggest that the strong power and leadership actor need to increase the collaboration with the actors with low power and low leadership to increase their role in disaster management at the local level. On the one hand, we find that the role of local government has increased and can act as coordinator for disaster management.

*Keywords:* stakeholder analysis, disaster management, decentralization

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## 1. Introduction

In decentralization, the state distributes roles and responsibilities between the central government and local government based on three aspects of decentralization: political, administrative, and fiscal (Rumbach, 2015) (Faguet, 2014). Disaster management is one of the affairs that is distributed. The role of local and sub-national governments in disaster management differs from one country to another based on constitution and legislation (Bae, Joo, & Won, 2016). In Indonesia, the role of local authorities in disaster management depends on two laws and regulations: Regional Autonomy Act and Disaster Management Act. As a disaster-prone country, Indonesia urgently needs to distribute roles and responsibilities of each level of government in three stages of disaster: pre-disaster, emergency response, and recovery. In the pre-disaster stage, government must prepare the community to reduce the impact of disasters through prevention, preparedness, and mitigation. Response phase, take quick action for evacuation, rescue, and basic needs fulfillment. Post-disaster phase, conducting rehabilitation and reconstruction activities for the recovery of infrastructure and rebuilding the community's economy. In Indonesia, the central and local governments are responsible for every phase of disaster management. The latest amendment of the Regional Autonomy Act provides specificity to disaster management affairs. Disaster management affair is grouped into local government affairs that are classified as essential and mandatory. The local government is obliged to provide adequate public services for the people.

Decentralization brought significant changes in the model of governance in Indonesia. In disaster management, decentralization was essential to improve the role of local governments and communities to engage actively in disaster management (Ainuddin, Aldrich, Routray, Ainuddin, & Achkazai, 2013). By the global paradigm change, disaster management is not only an exclusive affair of the government but became "everybody business" involving not only all levels of government but also the community and private sectors (Al-Nammari & Alzaghal, 2015). In Indonesia, the implementation of disaster management with the concept of decentralization is based on the motivation to create a disaster management with principles of transparency, coordination, partnership, efficiency, and empowerment. Post-decentralized disaster management also shifts the focus of disaster management from initially focusing on emergency response to risk management (prevention, mitigation. And preparedness phase). Predicting possible natural disasters and taking action to minimize or (if possible) eliminate the risks posed by natural disasters (BNPB, 2010).

The objective of this paper is to identify the roles of stakeholders in disaster management system at the local level and to identify the distribution's pattern of the actors representing different sector (government, civil society, academia, community, donor agency, and private sector). Questions are: who plays a role? Which sector is more dominant? Who has high power and leadership? Such questions have been addressed for stakeholder analysis (SA). Several kinds of literature highlighted how a study on stakeholders is essential for disaster management. In this paper, we try to demonstrate SA to analyze the power and leadership in disaster management at the local level. Specifically, we will conduct two levels SA to (1) identify the stakeholder and their roles in each stage of disaster and (2) assess the stakeholder's leadership and power to clarify the map of the stakeholders.

## 2. Literature review

Disasters occurring locally and effective disaster management systems are essential to mitigating the impact of disasters (Garschagen, 2016). The implementation of disaster management can be more effective if each actor understands their role and capacities in every stage of disaster (Erland Danny Darmawan Spv, Schulte Nordholt, Hospers, & Darmawan, 2008). The local government as the primary responsibility for disaster management must understand the characteristics of each actor. In the implementation of disaster management, local governments cannot act and make their decisions. But the position of the local government is in a unique and strategic position, as it becomes the liaison between higher-level (state and provincial) governments with communities to serve. Local governments should also be able to build systems that fit the characteristics of the region. The system should involve governments, NGOs, communities, and the private sector (Wilkinson, 2012).

Disaster is the result of the emergence of extraordinary events (hazards) in vulnerable communities so that people cannot overcome the implications of these extraordinary events (Lindell, 2013). Disaster management primarily seeks to prevent people from disasters by reducing the likelihood of hazards or overcoming vulnerabilities (Tarhan, Aydin, & Tecim, 2016). Disaster management cycle consists of two major activities. The first is the disaster (pre-event) and secondly is after the disaster (post event). In this study, we used a four-stage disaster approach: prevention-mitigation and preparedness for pre-event phase; response and recovery for post-event period (see **Table. 1**).

In building a good disaster management system requires strong commitment and leadership (Rivera, Tehler, & Wamsler, 2015) (Rautela, 2015) (UNISDR, 2009). In some cases, disaster management systems are robust to implement due to lack of strong leadership factors. Particularly in an emergency, leadership is crucial. In times of emergency, every decision should be taken quickly and appropriately to reduce casualties. In disaster management, the biggest challenge is to bring institutions from different backgrounds and different interests to work together in one system (CRED, 2015). The sectoral approach in the governance system was found to be barriers in bringing institutions together as one (Corlew, Keener, Finucane, Brewington, & Nunn-Crichton, 2015). Some research addresses the complexity of stakeholder leadership and power in disaster governance.

**Table. 1:** List of activities in every phase of disaster

Prevention and mitigation	Preparedness	Response	Recovery
Establish objectives	Emergency access and evacuation	Rescue and relief	Detailed damage assessment
Risk assessment	Emergency drill	Damage assessment	Treatments
Risk prevention and mitigation	Emergency response equipment	Protection of the heritage	Recovery and rehabilitation

Source: Mojtahedi & Oo (2017)

The empirical finding by Newnham et al.(2007) show that the government's role has shifted to disaster management. The government should provide a more portion to the people to be able to manage its environment. Decentralization also gives communities greater opportunities to express their opinions. The ideal role of local government is to increase the capacity and

knowledge of the community in disaster management. More educated communities will also parallel the government to be more open and transparent in every policy taken. In disaster management, the participation of various actors is proven to support disaster planning and implementation. With good collaboration expected will reduce the burden of government especially from the financial side. Also, by encouraging the function of other actors, especially the community will be able to build community resilience (Djalante et al., 2012).

### 3. Research methods

#### 3.1 Case study

Our study was conducted in four municipalities: Semarang City, Cilacap Regency, Banyumas Regency, and Purworejo Regency. All municipalities located in Central Java Province of Indonesia (see **Fig. 1**). Central Java Province is one of the most populous provinces in Indonesia. Located in the middle of Java Island – the most populated island in Indonesia and categorized as the third most at risk province in Indonesia. The selection of these sites is based on two important criteria: First, the study location has a high risk based on the disaster risk index issued by the National Disaster Management Agency (BNPB). Second, the location has the same main natural hazard characteristics (see **Table 2**). Both criteria are important to be able to conduct comparative studies between study sites.



**Fig. 1:** Location of study

**Table 2:** The characteristic of the municipalities

Characteristics	Semarang City	Cilacap Regency	Banyumas Regency	Purworejo Regency
Covers area (km <sup>2</sup> )	373.78	2,124	1,335	1,834
Population (people)	2.137.801	2.137.801	1,554,527	828,947
Potential natural hazards	Flood, landslide, earthquake, residential fire	earthquake, tsunami, flood	flood, landslide, volcanic eruption	landslide, flood
Disaster risk index	High	High	High	High

### 3.2 Data collection

A literature survey on the actor on disaster management was performed. To categorize the actor using Disaster Management National Plan issued by BNPB and Local Institution Government Plan published by Ministry of Home Affair (MOHA). The result, three groups for local government, were selected as respondents of this study: agency related to disaster management, an organization associated with government's administration, and other sectoral institution. Next, to identify the constituents of each group, a literature review on Disaster Management Act was conducted, and an initial list of 24 actors in each city was selected. Next, the snowballing methods were adopted to expanding the respondent from the non-government organization: academia, civil society, community, donor agency, and the private sector.

In the end, we interviewed 90 actors: 35 actors from Semarang City, 28 actors from Cilacap Regency, 15 actors from Purworejo Regency, and 12 actors from Banyumas Regency (see **Table.3**). We used semi-structured interview followed guidelines with the several important questions: 1). What is your institution's role in every stage of disaster? 2). Who is influential and affected by the policy? (Stakeholder analysis part 1). The next questions are 1). How do you assess the power and 2).How you value the leadership of related organizations in disaster management? (Stakeholder analysis part 2). Most of the questions used the Likert scale with three points of choice and often the respondent is asked why they chose that point.

### 3.3 Data analysis

Stakeholders in a system can be identified in various approaches. SA is an analysis that does not have a standard form, thus giving researchers the freedom to choose the analytical tool used to categorize stakeholders. One typology used is to analyze the characteristics and roles of stakeholders with five Likert-scale points (Dos Muchangos et al., 2017). In this analysis, the author tries to analyze stakeholders based on the information, knowledge, and satisfaction of each stakeholder in the implementation of the disaster management policy at the local level. Another study on SA focuses on four sectoral analyses in a water infrastructure process using a ten-point Likert scale (Lienert, Schnetzer, & Ingold, 2013).

A stakeholder can be identified as people, or groups, or institutions that are likely to be affected by a program or policy activity, whether positive or negative or vice versa that may have an impact on the outcome of the program/policy (Lin, Ho, & Shen, 2017). Stakeholder analysis (SA) is a systematic process to collect and analyze qualitative data to explain the role and importance of each actor in the implementation of a system or policy (Schmeer, 2000). Some

stages in the SA include explaining phenomena influenced by a policy/decision, identifying affected actors/institutions, then mapping stakeholders to see the level of importance and role in policy making (Dos Muchangos, Tokai, & Hanashima, 2017). Stakeholder analysis is an important instrument for understanding the social and institutional context of a program/policy activity. The things revealed from this tool can provide information about: (1) anyone who will be influenced by programs / policies either positive or negative (Mok, Shen, Yang, & Li, 2017); (2) anyone who may have a positive or negative impact on the program/project (Reed et al., 2009); (3) What individuals, groups, and institutions need to be involved in the program/policy and how; And who needs to build capacity to participate actively in it (Bryson, 2004).

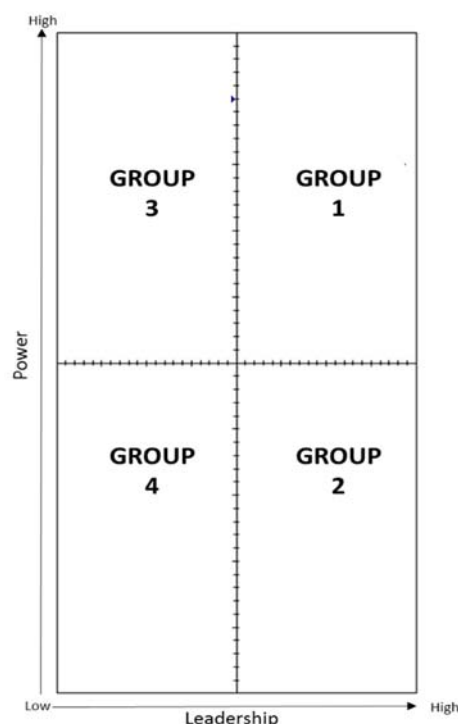
To analyze stakeholders, we asked respondents to: 1.) mention all actors relating to disaster management at the local level; 2.) explain the position of each actor in the disaster prevention activities using binary scale types 0 and 1 (0: "the actor has no role in the activity"; 1: "the actor has a role in the activity"). They are also asked about the level of stakeholder interest based on the ability of each stakeholder to impact on disaster management policies. Each respondent points to the "power" and "leadership" factor of each stakeholder based on a three-point Likert scale (1: "actor has power or leadership"; 2: "actor has moderate power or leadership"; and 3: "actor has high power or leadership. ").

Next, the diagram built to represent the distribution of power and leadership in four location of the study as the outputs of SA. This study analyzed the stakeholder importance based on power and leadership aspects in four phase of disaster (prevention and mitigation, preparedness, response, and recovery). Referring to Schmeer (2000), the level of importance of stakeholders is a description of the ability of each actor to influence the system or policy. To determine the level of interest that has a positive/negative impact on a policy, the characteristics of each actor are determined by the power and leadership factor. This study will divide actors into four categories: Group 1, actors with high leadership and high power; Group 2, actors with high leadership and medium/low power; Group 3, players with low/medium leadership but has high/medium power; Group 4, those actors with low/medium leadership and low/medium power. The diagram of the analysis shown in the following figure (**Fig.2**):

**Table 3:** Actors playing a role in disaster management.

Sector	Semarang City	Cilacap Regency	Banyumas Regency	Purworejo Regency
Government	<b>BPBD, Bappeda, Legal Bureau, Financial Bureau, Public works, Social affairs, Fire management, Satpol PP, Water management, Energy and mineral agency, Kesbanglinmas, Inspektorat, Kecamatan, Kelurahan, DKP, BLH, PSDA, Education agency, BMKG, BPMPKB, Transportation agency, Bina Marga, Cipta Karya, BPN, BPSDA, Agricultural agency, PDAM, RSUD, SEKDA, DPRD, Sekretariat DPRD, BASARNAS, KODIM, Police</b>	<b>BPBD, Bappeda, Legal Bureau, Financial Bureau, Public works, Social affairs, Fire management, Satpol PP, Water management, Energy and mineral agency, Kesbanglinmas, Inspektorat, Kecamatan, Kelurahan, DKP, BLH, PSDA, Education agency, BMKG, BPMPKB, Transportation agency, Bina Marga, Cipta Karya, BPN, BPSDA, Agricultural agency, PDAM, RSUD, SEKDA, DPRD, Sekretariat DPRD, BASARNAS, KODIM, Police</b>	<b>BPBD, Bappeda, Legal Bureau, Financial Bureau, Public works, Social affairs, Fire management, Satpol PP, Energy and mineral agency, Kesbanglinmas, Kecamatan, Desa, Health agency, Education agency, BMKG, Transportation agency, Bina Marga, Cipta Karya, Puskesmas, RSUD Ajibarang, RSUD Banyumas, Agricultural agency, DPRD, SEKDA, BASARNAS, KODIM, Police, Perhutani</b>	<b>BPBD, Bappeda, Legal Bureau, Financial Bureau, Public works, Social affairs, Fire management, Satpol PP, Energy and mineral agency, Kesbanglinmas, Kecamatan, Desa, Health agency, Education agency, BMKG, Transportation agency, Bina Marga, Cipta Karya, Puskesmas, RSUD, SEKDA, BASARNAS, KODIM, Police</b>
Civil society	Pramuka, PMI, <b>Bintari, Kalandara</b> , P5, Tagana	Pramuka, PMI, <b>Seroja, Tagana</b>	Pramuka, PMI, <b>ACT</b> , Ampel, Tagana	Pramuka, PMI, <b>Kompak</b> , Tagana
Academia	<b>Diponegoro University, USM, UNISULLA, UNNES, POLINES</b>	-	<b>ONSOED</b>	-
Community organization	<b>PKK, Karang taruna, Kelompok siaga bencana, Dasa wisma, Posyandu</b>	<b>Karang taruna, Kelompok siaga bencana, Dasa wisma, Mosque</b>	<b>Kampung siaga bencana</b>	<b>Karang taruna, Kelompok siaga bencana, Desa siaga bencana</b>
Donor agency	<b>Mercy corps, Rockerfeller</b>	UNDP	-	-
Private sector	Djarum, Phapros, Guna bina kimia, Viva generic, Sido muncul	Pertamina, Pelindo, BRI, Holcim	Semen Bima, Telkom, Holcim	BCA, Pertamina, Taspen, Sinar mas

Note: Written with a bold font indicates that the actor is being interviewed



**Fig. 2:** Mapping of the stakeholder based on power and leadership (Schmeer, 2000)

## 4. Results and discussion

### 4.1 Identification group of stakeholders and their role

Based on interviews and literature studies in four research areas, can be identified six sectors of actors related to disaster management at the local level: government, civil society, community organization, academia, donor agency, and private sector (see **Table 4**). The number of each institution varies from one municipality to the other. But in general, each group has a representative in each study location. The government is the main responsibility of disaster management. The government has a role to plan and implement disaster management activities. Also, the government is also obliged to allocate sufficient funds for activities in the four stages of the disaster. Regional Disaster Management Agency (BPBD), Regional Development Planning Agency (BAPPEDA), and Financial Bureau are the three leading institutions with responsibilities concerning disaster management planning and financing at the local level.

The other important actor is a civil society. Civil society is mainly composed of non-profit and non-government organizations and volunteer organizations in disaster management. Some organizations mentioned in the interviews are: Justice Enforcement Command (KOMPAK), Institute for Women and Children Empowerment Edge (SEROJA), Quick Response Action (ACT), Caring Community Alliance (AMPEL), Sustainable Works Development (BINTARI), Social and Humanity Foundation (KALANDARA), and Public Service Delivery Center (P5). Most civil society institutions work with the government to build community resilience. Some agencies also receive funding support from donor agencies as their primary source of funding.

Educational institutions are also actively involved in disaster management activities. Some local universities are partners for the local government in conducting research and academic manuscripts of disaster management technical regulations. Some universities are also active in



the process of community empowerment and mitigation through the Community Development Program (KKN). Post-decentralization, the Disaster Management Act provides opportunities for a community organization to be directly involved in disaster management. The Disaster Risk Reduction Forum (Forum-PRB), for example, is a regional-based community organization that serves as a disaster management forum for coordination through consultative and participatory processes. This forum presents an opportunity for the citizen to be actively involved in disaster management's activities.

**Table 4:** Group of actors and their role

No	Sector	Role
1.	Government	- Responsible for planning and implementing the policy on disaster management - Allocating enough budget, personnel, and other resources
2.	Civil society	- Bridging the gaps between government and the people - Empowering the community
3.	Academia	- Supporting the government in research and developing tools for disaster management
4.	Community organization	- Participate in preparing a disaster risk analysis - Work with the government in developing mitigation plans
5.	Donor agency	- Supporting funding and human resources in developing regulations and other technical rules.
6.	Private sector	- Supporting the government's role in disaster management in its area of expertise

In the last decade, the role of donor agencies is critical in building disaster management system at national and local level. United Nation Development Planning (UNDP), for example, with the Safer Community through Disaster Risk Reduction (SCDRR) program simultaneously implemented programs to develop regulatory frameworks, databases, and community empowerment at the national and local level. Several other donor agencies are also involved in climate change adaptation and mitigation at the local level. Since 2009, Mercy Corps and Rockefeller Foundation developed Semarang City becoming one of the 100 resilient city networks. The private sector also becomes an active agency involved post-decentralization. Disasters are no longer seen as business as usual; community resilience is key to economic resilience (UNISDR, 2015). With an active role in disaster management, the private sector can build ties with the community as part of achieving the target of national resilience.

#### 4.2 Stakeholder analysis part 1: mapping of stakeholder's role

Based analysis on stakeholder's role in disaster management, the characteristics of stakeholder mapping in the location of study can be divided into three groups. Group 1, is the municipality with stakeholder features that focus on preparedness and response activities. The municipalities that belong to this group is Semarang City and Purworejo Regency. Group 2, is the municipality with stakeholder characteristics that focus on response and recovery. The municipality that belongs to this group is Banyumas Regency. Group 3, is the municipality with stakeholder characteristics that focus on prevention and mitigation, preparedness, and recovery phase. The city that goes into this criterion is Cilacap Regency.

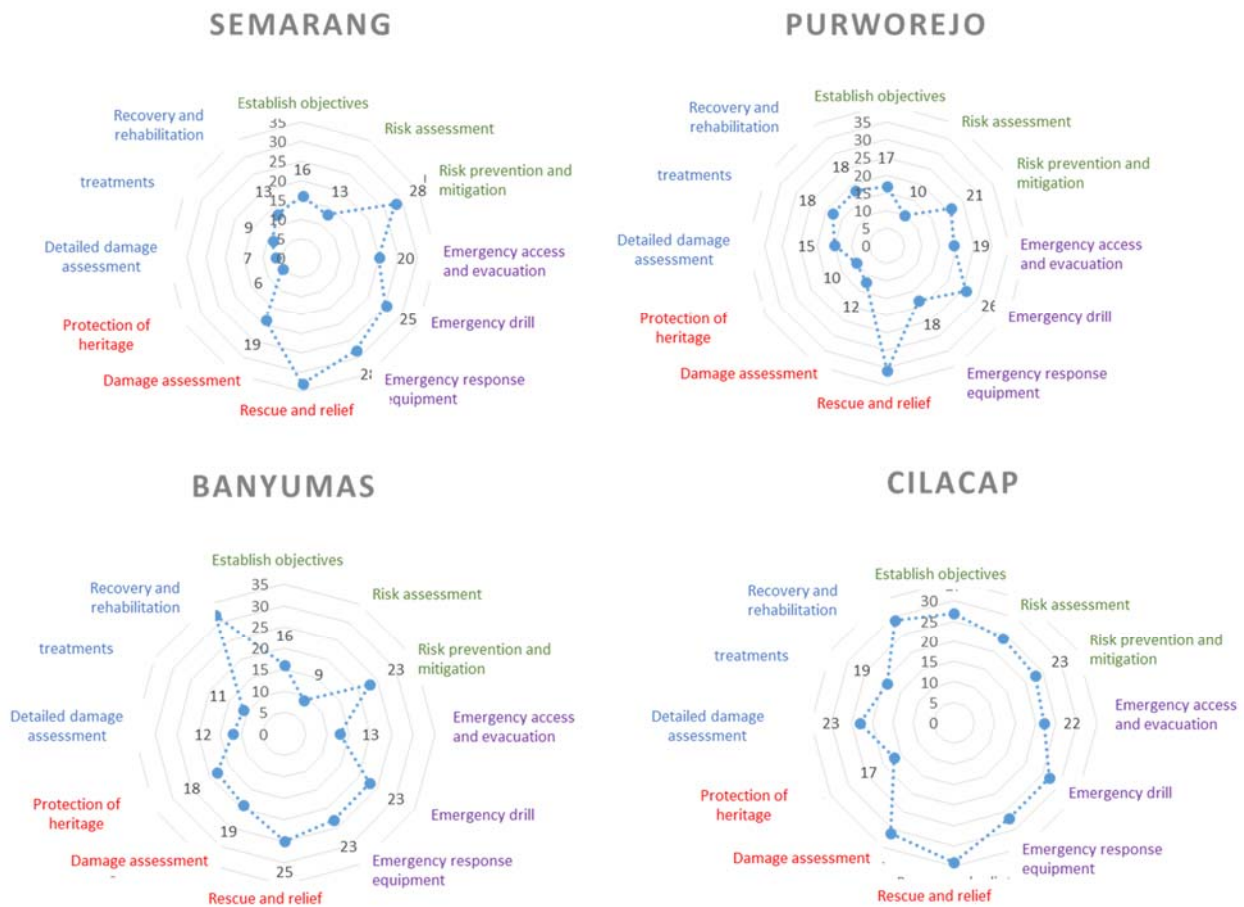
In this study, we map stakeholders based on their role in any disaster management activities. The purpose of this analysis is to identify the distribution of stakeholders in each disaster management activity (see **Table 1**). Each of the disaster stages has three activities, so there is a

total of 12 activities to be mapped in this analysis (see **Fig.3**).

Several factors cause different characteristics of maps of stakeholder between one municipality with others. First, local government development priorities factor. Based on interviews with respondents, it is known that disaster management affairs are not always becoming a priority in regional development. In a municipality with major disaster experiences such as Cilacap Regency with experienced in earthquake and tsunami (2006), disaster risk reduction (DRR) continues to be pushed into development priorities with sufficient budget allocation commitments in local funds. Second, the existence of actor who plays a role in the formulation of objective and plans in disaster management. This role should be the task of BPBD. But the problem is that not all BPBDs have the capacity to become leaders in other institutions, both government, and non-government organizations. In a case study in Semarang City and Purworejo Regency, this role was taken by BAPPEDA. However, it is not optimal because the primary function of BAPPEDA was focused on development planning, rather than explicitly planning the objectives of disaster management. Third, the role of government to encourage non-governmental organizations is involved in every stage of the disaster. It should be admitted that local government resources are insufficient in handling all disaster management activities. Therefore, the local government needs a strategy to engage non-governmental organizations to support the government to achieve its objectives.

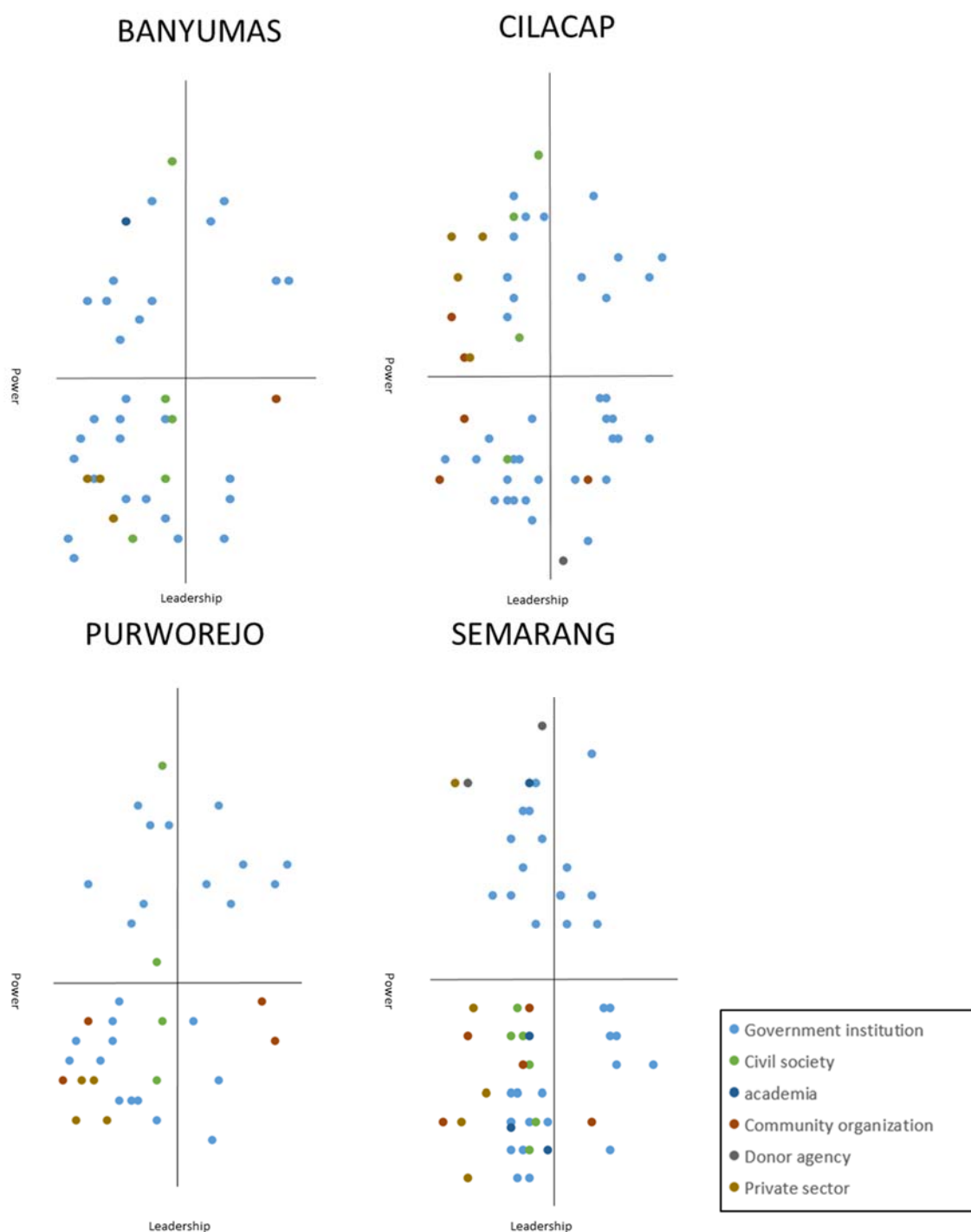
#### 4.3 Stakeholder analysis part 2: power versus leadership

One commonly used method of stakeholder analysis is to identify the internal and external the organization that have the influence of power and leadership on the system. The more unpredictable (behavior, interests, habits, strengths, and weaknesses), and the stronger the power of the stakeholders, the stronger the bargaining position and the bargaining power. Facing such conditions, organizations are the greatest threat, or possibly opportunity, depending on the strengths and weaknesses of the organization. Conversely, the more likely and weak the power of stakeholders, the organization faces relatively few problems. For this analysis total of 179 stakeholders from four municipalities were mentioned as playing a role in local disaster management (see **Table.3**). The calculation of scores uses the average rating given by respondents who have alliances with the institution.



**Fig. 3:** Mapping of the stakeholder on disaster management activities

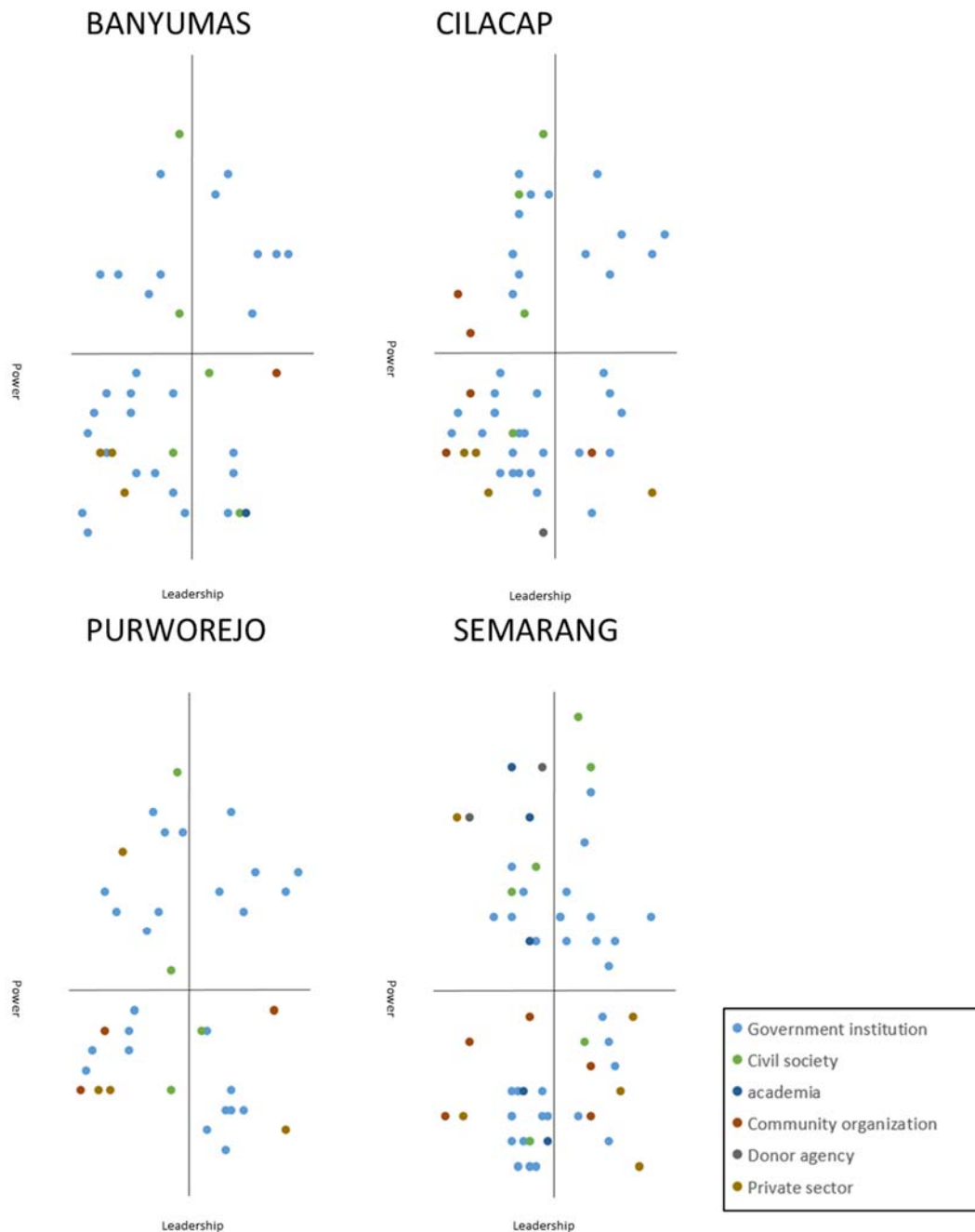
Stakeholder mapping based on an assessment of the significance of stakeholder importance to the disaster management system in the prevention phase can be categorized into four groups as shown in the **Fig.4**. From the figure, all stakeholder in the first group is occupied by actors from government group. No actors were identified from civil society, academia, community, donor agency, and the private sector. In Indonesia's disaster management system, the government has a responsibility in determining the policy from the planning to the implementation. In the second group, the role of non-government actors began to emerge, especially from the community sector. The Disaster Management Act opens opportunities for communities to participate in the prevention and mitigation stage through disaster forums. This forum opens a dialogue between non-government governments in formulating disaster management plans annually. All regions have built this forum, but its effectiveness is different from one municipality to another. In Cilacap Regency, the role of private sector is prominent in this phase. Although most do not have high leadership, the local government opens opportunities for the private sector to "invest" in disaster risk reduction. The advantage of the location Cilacap Regency as a port city that has many big companies becomes a strength for local government to be able to involve the private sector in DRR activity.



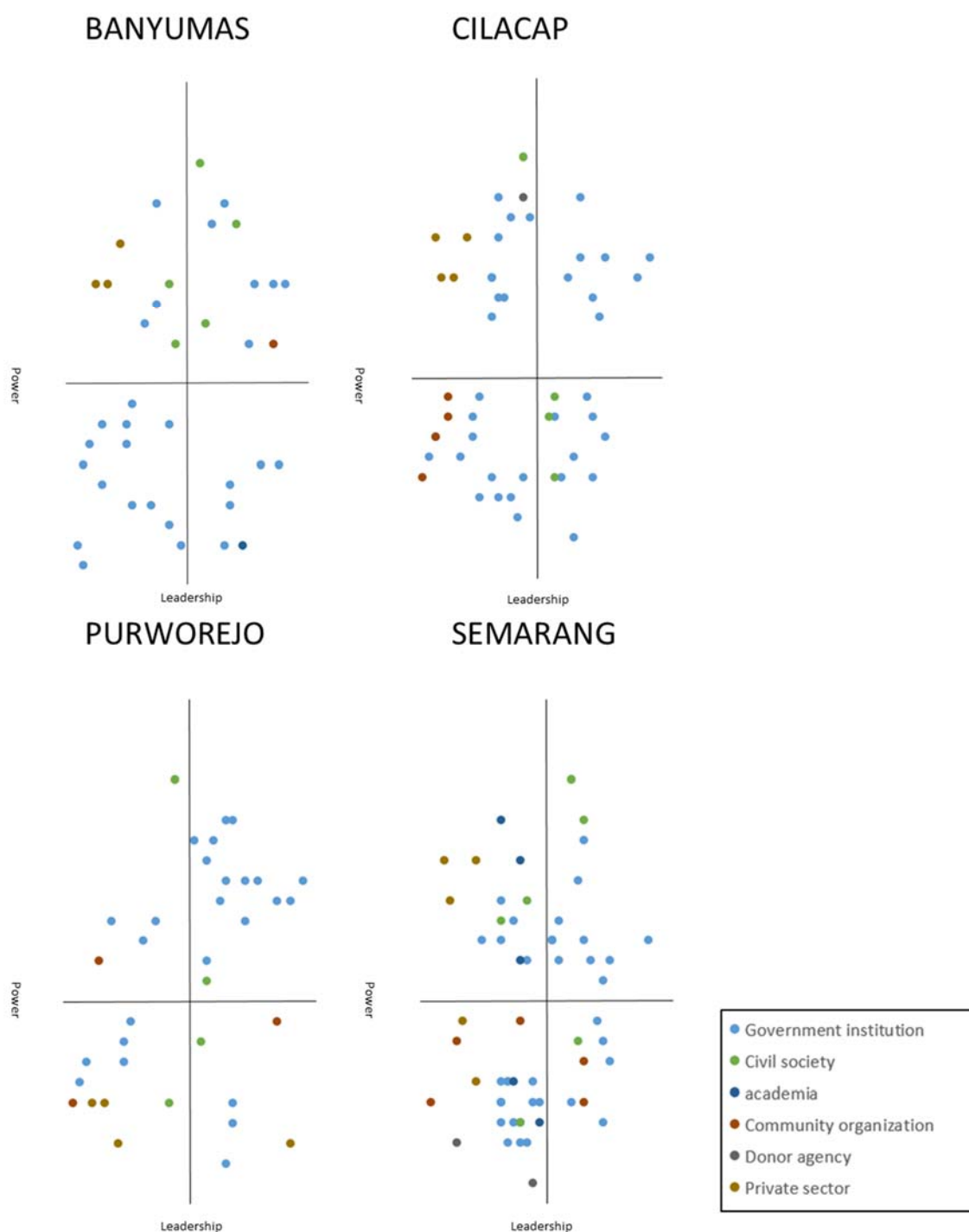
**Fig. 4:** Mapping of the stakeholder on prevention and mitigation phase

In the preparedness phase, groups with high leadership and power are still dominated by actors from the government sector (see **Fig.5**). Interestingly in Semarang City, Group 1 also involves actors from civil society who have tremendous leadership and power. Actors who are directly involved so have power and leadership as equal as internal stakeholders become part of the *crowd* (dos Muchangos, Tokai, & Hanashima, 2017). In this phase stakeholders of civil society in Semarang City, for example, had long experience in disaster preparedness. Their role is crucial

in the policy-making process. In this phase, the spread of the actor on each group becomes more heterogeneous. One of the underlying aspects is in this phase the government opens wider opportunities for other actors to be involved in the decision-making process. In contrast to the prevention and mitigation phases that can be planned gradually, this phase requires a relatively large resource in a short time. So, the contribution of external resources from other stakeholders is needed.



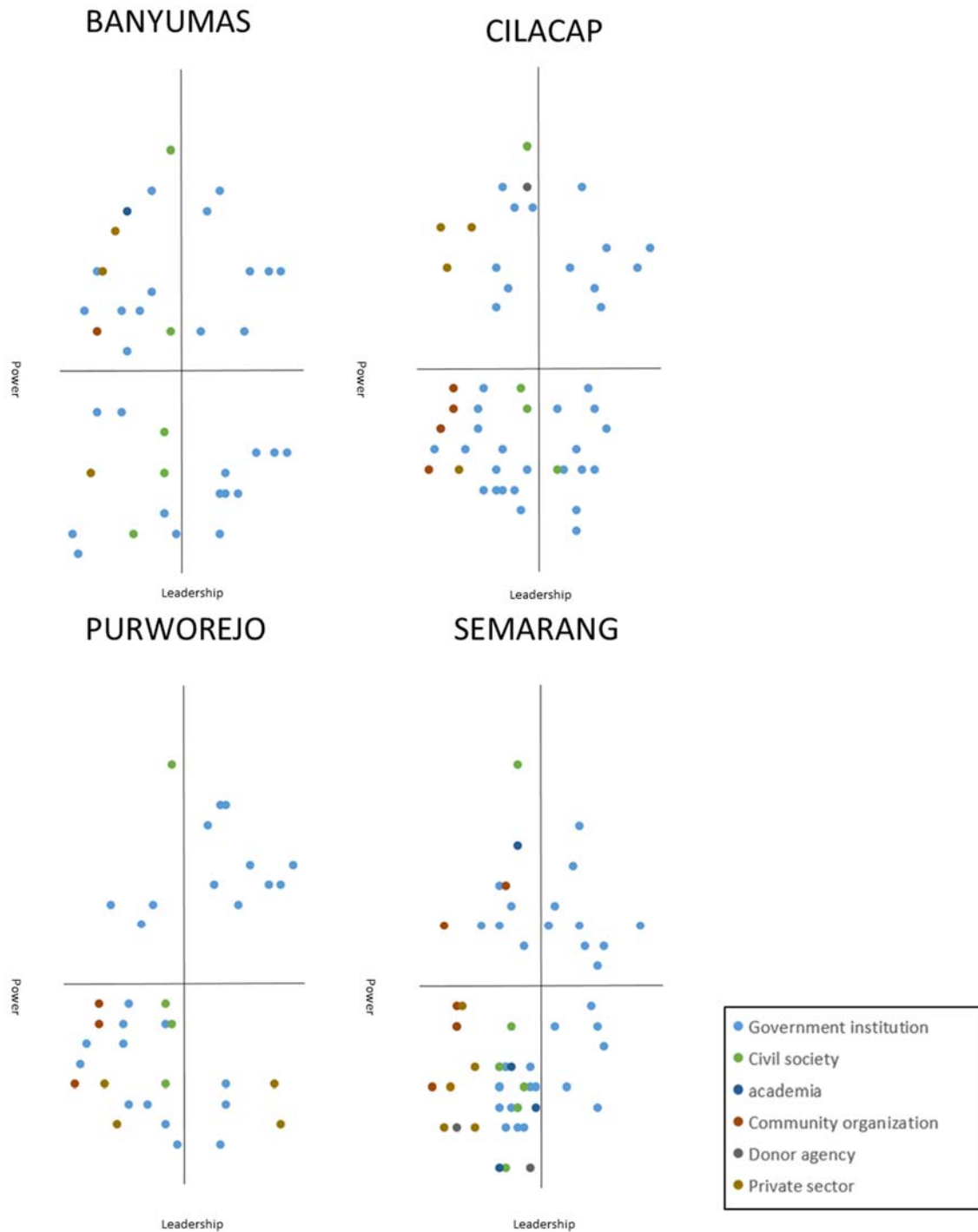
**Fig. 5:** Mapping of the stakeholder on preparedness phase



**Fig. 6:** Mapping of the stakeholder on response phase

In the response phase, almost all stakeholders will give all their resources to reduce the impact of disasters. Group 3, those who have low leadership but high or medium power become very heterogeneous groups (see **Fig.6**). This group consists of many government agencies, the private sector, and civil society. In a heterogeneous group like this often some actors work independently without waiting for command or coordination from key stakeholders. Because some actors, especially from the private sector and civil society who get support from donor

agency have strong resources to be able to perform their role. Non-governmental organizations tend to move quickly in the emergency response phase. The condition happens because aid from the government is considered slow while people need help as soon as possible. The impact often occurs overlap in the implementation of the role between stakeholders. Therefore, building an effective communication network is one way to strengthen the system, and each actor can perform its function without any overlap.



**Fig. 7:** Mapping of the stakeholder on recovery phase

Effective resource allocation is needed to accelerate the post-disaster recovery process. Each of the actors - government and non-governmental institutions have their respective portions. The government has the authority to coordinate the post-disaster recovery process. In a large-scale disaster, the Government will issue regulations to oversee multi-year recovery activities. The regulation also serves as a legal umbrella to open opportunities for non-governmental organizations and donor agencies to support in coordination with the government.

In the first group, most the actor is re-filled by the actor from the government. Non-government institutions do not have many roles in the recovery phase because this phase has become the obligation and authority of the government (see **Fig.7**). But it does not rule out if the non-government agencies to assist the government in the implementation of the recovery phase, of course with the mechanism and fund channeling that has been agreed. The third group is the most heterogeneous group compared to the other groups. In this group, the role of government is also supported by other non-government actors: private sector, civil society, community, and academia.

### Conclusion

The disaster management system requires integrated and sustainable cooperation between actors. Each actor must have an active role from the planning stage to implementation. Disaster management in Indonesia post-decentralization creates opportunities for government and non-government actors to be involved in the decision-making process. Decentralized disaster management has an approach for all actors to take on the role and benefit from the process. In this study, we used SA to get a figure of stakeholder distribution at disaster management system in Indonesia. In SA (part 1), we analyze stakeholder distribution based on their role in every activity in four phases of a disaster. The result of this analysis we can understand how the policy priority of disaster management in each research location. Then in SA (part 2), we analyze based on "power" and "leadership" to understand the distribution of stakeholders based on their importance level.

In this study, we can conclude some findings of stakeholder analysis to know the role of stakeholders in the disaster management system at the local level:

- (1) There are actors amounted to 179 actors in the four cities (57 actors, Semarang City; 36 actors, Purworejo Regency; 48 actors, Cilacap Regency; and 39 actors, Banyumas Regency). Actors are grouped into six sectors: government, civil society, academia, community, donor agency, and the private sector.
- (2) SA 1 showed that the allocation of the actor in disaster management system in Indonesia is reflected fragmentation in each phase of a disaster. Each phase has their pattern. Based on the analysis, the study area can be divided into three different patterns: municipality focusing on preparedness and response activity; municipality focusing on response and recovery; and municipality focusing on prevention and mitigation, preparedness and response activity. This characteristic is not a general description of the disaster management system at the local level because every municipality must have different priorities and features in disaster management. From this pattern, it is also found that local governments still prioritize post-disaster activities (response and recovery) rather than prevention-mitigation and preparedness activities. Though the disaster governance has shifted from disaster response to disaster risk management, most of the local government still prioritize the post-disaster activities as the primary disaster governance.



- (3) Furthermore, SA 2 shows that the government sector still has strong power and leadership in all stages of disaster management. The role of the non-government sector is also significant, especially in the response phase. The role of non-governmental actors in response phase's activities is crucial to fill the gaps left by the government, especially in the event of a major disaster. However, SA also demonstrated a significant impact in the role of non-government actors, especially from civil society and private sector, to take a strategic role in the system. This role is supported by the adequate resources of each actor so that with high power impact has an impact in the decision-making process.

From SA analysis allowed to give a general description of disaster management system at local level. On the one hand, we find that the role of local government has increased and can act as coordinator for disaster management. From the SA analysis above, we can see that the community still has the low power and leadership in the implementation of disaster management. The role of the community still cannot be fully accommodated in the system. The findings suggest that cooperation is required and continuous empowerment of actors who have strong power and high leadership to achieve common goals. Local governments also need to open more opportunities to non-governmental organizations to participate in any disaster management activities.

In the context of public services, disaster management for municipal with Regency characteristic should also be different from the city. The wider covered area become the factors that distinguish the two types of the municipality. Due to the larger area, Regency requires different concepts of disaster management to enable all communities to be well served. One solution is to delegate some of the authority of disaster management to the lower level of the government, such as "kecamatan" (district) and "desa" (village). By delegating some of these powers can have two significant impacts: 1.) increasing the range of services to the community and 2.) strengthening the role of kecamatan / desa in the DM system.

Although the SA proved useful to analyze the distribution of the actors in the disaster management system, especially in Indonesia. But there are still some points that become limitations in the study. First, although this research is considered to have enough respondents from each study site, the difficulty of conducting interviews with the principal respondents is becoming a challenge. For a broader analysis, the survey method needs to be done by combining several methods such as semi-structured interview, questionnaire survey, focus group discussion, and public hearing, expected to understand the role of each actor in the system. Second, the location selected for this study are only municipalities which include high risk based on Disaster Risk Index (BNPB, 2013). Furthermore, for the future research SA should be analyzed for a municipality that has medium and low disaster risk to know the differences characteristic and pattern of the stakeholder.

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