The Participatory Resilience of Waste Pickers at the Bantargebang Waste Processing Site after Land Degradation

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ABSTRACT

This study discusses the participatory resilience of the waste pickers at the Bantargebang Waste Processing Site by analysing the link between the waste pickers' resilience and public participation after land degradation occurs. Similar studies use qualitative evidence to understand how public participation is driven by the issue of land degradation. However, this approach also begs the question as to the roles of the actors and publics involved. This study thus divides actors into two categories, i.e., implementing actors and capital-holding actors. More specifically, this study seeks to understand the realisation and practice of participatory resilience in Bantargebang. For data collection, three methods were used: library research, interviews, and observations.

Keywords: *Resilience; Participation; Waste Pickers; Public; Bantargebang Waste Processing Site*

Introduction

Land degradation refers to a process wherein productiveness declines due to changing geographic conditions and functionalities; once it has been degraded, land can no longer be used for everyday life

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(Brookfield, 2010). Barrow (1991) writes that the degradation varies due to particular environmental, economic, social and, legal conditions. The causes of degradation are likewise diverse but fall into three categories: physical, chemical, and biological. Waste accumulation is a common cause of degradation, one that is frequently exacerbated by population growth, land marginalisation, poverty, and natural disasters (Wahyunto & Dariah, 2014).

The Bantargebang Waste Processing Site has experienced degradation, in part because land with economic potential has been converted to new uses (Blaikie, 2015)—including residential (Portal UPST, 2022). Land degradation has been driven by three major factors: 1) the population density of the surrounding area, 2) rapid population growth despite limited land availability, and 3) increased amount of household waste, resulting in accelerated pollution (Lu et. al, 2021).

Presently, the Bantargebang Waste Processing site has exceeded its capacity for household waste, which requires careful consideration from the site's managers. The volume of household waste has increased due to the increased food consumption and waste output of households and businesses (particularly restaurants and hotels). Behaviours that contribute to this increased waste output include celebrations, meetings, and business activities, all of which tend to have excessive amounts of food and thus contribute greatly to food loss (Sudjono et al., 2020). Hassan (2001) explains that food represents 60% of all urban waste; as such, bringing it under control should be a priority.

Recently, the governments of the Jakarta Capital Region and Bekasi City agreed to extend their five-year contract and expand the waste processing site to include a landfill. This new contract has also included new terms regarding compensation and environmental impact. The collaboration between these governments has also been extended to areas such as waste conveyance, monitoring, and evaluation, as well as technological innovations to reduce waste and ameliorate the waste management process (Media Indonesia, 2021).

Despite the consequences of land degradation, it cannot be denied that waste management has significant economic impacts. The Bantargebang Waste Processing Site has the capacity to receive 6,000 tonnes of waste per day. Most of this waste comes from the Jakarta Capital Region, which has five waste processing sites that cover an area of 85 hectares; neighbouring Bekasi City, meanwhile, has only one waste processing site that covers an area of 27 hectares. People living near these waste zones often work as waste pickers, collectors, or sorters, identifying and collecting valuable waste such as glass and metal. Other waste is collected for recycling purposes—for example, organic waste may be used for compost (Yoga et al., 2014). In this manner, they participate indirectly in the waste processing and management processes—both of which are necessary to achieve the Sustainable Development Goals (SDGs) set by the United Nations.

According to data from the Ministry of the Environment and Forestry, in 2021 Indonesia's waste output increased by 33.26%, reaching 7.13 million tonnes per annum (KLHK, in Kata Data, 2022). This has had significant and detrimental effects on the environment and the Indonesian people, including in Bantargebang. Given this situation and the public's consumptive behaviour, participatory

action is necessary. At the Bantargebang Waste Processing Site, only 1–2% of its designated capacity remains (UPST Bantargebang, 2022). Participatory action requires the public to be actively involved in working towards a shared goal (Gaventha, 2002). Purwaningsih (2008) explains that such action is necessary for monitoring the government and its performance. Indeed, it is frequently undertaken using a bottom-up approach, beginning with social movements and community initiatives.

The social situation in Bantargebang has also been informed by the area's use in waste management, as residents have been forced to adapt to ensure their continued survival. Observations indicate that most people living near the Bantargebang Waste Processing Site are waste pickers who sift through garbage to ensure that their everyday needs are met. The threat of land degradation has likewise influenced their activities. In this manner, the people of Bantargebang have become resilient as they have taken participatory action as part of waste management. It is this participatory action and resilience that is investigated here.

Generally, resilience is understood as the ability to adapt and cope with difficult situations (Luther & Zigler, in Holaday, 1997). According to Holaday (1997), three factors shape individuals' resilience: social support, cognitive ability, and psychological resources. The conditions experienced by waste pickers at the Bantargebang Waste Processing Site have forced them to become resilient by transforming waste into something with economic value, which has been made possible through the social support of their fellows. Reivich and Shatte (2002) explain that seven abilities influence individuals' ability to act resiliently: *emotional regulation*, which is related to the ability to

control one's emotions in difficult situations; *impulse control*, which is related to individuals' ability to control their desires, urges, interests, and other internal factors; *optimism*, which is a belief in individuals' ability to overcome potential failures; *causal analysis*, which is the ability to accurately identify the causes of problems; *empathy*, which is the ability to read the emotional and psychological conditions of others; *self-efficacy*, which is the ability to resolve problems resiliently; and *reaching out*, which is the ability to overcome misfortune and oppression through an emphasis on the positive aspects of life (Mustamu, 2017).

The existence of waste pickers has frequently resulted in heated discourse in modern urban society. They experience extensive stigma due to their dishevelled appearances, and many are viewed suspiciously as potential criminals. However, their drive to survive through participatory means has great explorative values. Through their involvement, they create great economic value (Hariyani et al., 2013). At Bantargebang, hundreds of waste pickers have united to establish the Indonesian Association of Waste Pickers, signifying their active involvement and their reliance on their livelihoods. Land degradation, as well as its threat to their continued survival, was an important factor driving the creation of this association.

Literature Review

A study by Nur Rahmawati Sulistiyorini (2015) found that public participation in waste management in Margaluyu, Cicurug, began when young leaders called upon local communities to show greater concern for their environments. They established a community empowerment group named Hanjuang to plan and implement waste management

activities. Through this group, they developed programmes and informed the waste management policies of Cicurug Hamlet. This study, meanwhile, takes as its subject a group that has not organised itself into a similar organisation; it thus considers a different form of participation than that in the earlier study.

Another form of public participation was identified by Aditya Nugraha (2018) through a review of the Rawajati Waste Bank and its efforts to handle household waste in South Jakarta. He found that all members of the Rawajati Waste Bank agreed that household waste must be managed regularly and continuously, as this facilitates the process. Nugraha also identified two perspectives regarding household waste management. First, some view waste management positively, following best practices such as the three Rs (Reduce, Reuse, Recycle) because they promote involvement in household waste management. Second, others view it negatively, holding that such practices might reduce participation in household waste management. This study differs as the Bantargebang Waste Processing Site employs the three Rs in all activities, employing recycling policies in collaboration with other stakeholders to mitigate the threat of land degradation.

A study by Mustamu (2017) examined the influence of resilience on individuals, as well as the influence of external factors. Waste pickers in major cities such as Jakarta face significant external pressures, and these undermine their confidence and their self-efficacy. This study concludes that the specific situations and conditions experienced by waste pickers can potentially reduce their resilience. It is therefore necessary for them to cultivate a sense of resilience and overcome their depression.

A study by Hariyani et al. (2013) found that the waste pickers at the Supit Urang Landfill have various forms of participation, including economic, ecological, and sociological. The economic participation of waste pickers creates both individual and collective value. Individually, the participation of waste pickers reduces the amount of waste such as plastic, metal, and cardboard. Collectively, value is created through the division of profits amongst all waste pickers.

Based on the above review of the literature, environmental degradation results from human beings' interactions with nature as well as their efforts to manage natural resources. Activities, as well as the changes that they stimulate, only occur on a certain scale. Likewise, individuals' interactions can create an awareness of the need to actively participate in efforts to mitigate environmental degradation. This study focuses on analysing the extent to which public awareness influences individuals to contribute to the resolution of waste management problems. It likewise recognises the polarisation that occurs within society, due in part to the extensive economic benefits reaped by local communities. Bantargebang, which covers an area of 104.7 hectares, contains diverse forms of waste that could be used for material and economic benefits. Therein lies the research problem: public awareness of the reciprocity between nature and humanity is necessary to create participatory resilience and ensure the continued survival of local communities, especially as waste volumes have increased. Sayre (2005) explains that the relationship between nature and humanity can be harmonious, but it is first necessary to resolve the issues that plague it through carefully directed policy.

Research Method

This study employs a qualitative approach and thus uses a research method that is commonly used in the social sciences—including in education studies. It is often used to enrich quantitative studies by offering a deeper understanding of social phenomena and human issues. When investigating complex issues, it uses provides detailed explanations that better describe natural situations.

According to Bogdan and Taylor (in Moleong, 2012), qualitative research refers to a research procedure that produces descriptive data—i.e., written words that draw from observed human behaviours and social phenomena. In other words, qualitative research is an interpretative method that may involve various interpretative approaches. Qualitative research is empirical, drawing from the expressions of research subjects to understand the phenomena as experienced and understood by the research subjects (Mulyana, 2013). This study, too, draws its data from interviews with research subjects involved in the phenomenon being studied. Secondary data—i.e., data used to support and complement the aforementioned primary data—were collected from academic books, journals, and articles.

Theoretical Framework

Sayre (2005) writes that the politics of scale is actualised by shifting the discussion of resource management and political knowledge. Scale refers to a form of empirical knowledge that focuses on the geographical location wherein administration occurs. Ecological change is not the only change involved; geographic change also occurs. Sayre (2005) also focuses on the politics of

resource management, both as a scientific practice and as part of environmental policy. Scalar theory also recognises spatial relations at the global, national, regional, and local levels, as well as how these levels are intertwined (Swyngedouw, 2004). The scalar perspective is also informed by the vertically differentiated hierarchy between the nodes within the production chain. In other words, scale must be distinguished as a geographic concept and as a hierarchal concept (as it exists within the context of society, the economy, and the policies that guide them) (Jessop et al., 2008). Sayre (2005) also writes that, as per constructionism, scale as a political–ecological concept is also informed by the physical and biological condition of the environment, which has significant geographic, cultural, and policy implications.

Given this situation, scalar theory may be understood as using a certain scope and approach to understand the intersection between geographic and cultural elements, thereby producing appropriate environmental policy. It can potentially allow for bottom-up programmes and endeavours that produce change and advance particular goals. Scalar theory can also be used as an approach for evaluating the extent to which cultural aspects are involved in humanity's interactions and relationship with the natural world. Cultural factors influence the means through which communities and societies ensure their continued survival (i.e., their resilience) by adapting to particular conditions. In this, the authors recognise scalar theory as bridging understandings of society, human–nature relations, and the practice of resilience.

Resilience refers to the ability used or effort undertaken by individuals to ensure their continued perseverance in difficult times. It is commonly measured based on individuals' ability to recover and

overcome challenges. Van Breda (2018) understands resilience as a mental fortitude that allows for the creation of participatory change. The participatoriness of change can be ascertained based on the significance of individuals' and groups' contributions to realising particular goals. Scalar theory, thus, can help the authors analyse the participatory resilience practised by the waste pickers at the Bantargebang Waste Processing Site.

In Bantargebang, the rise of participatory resilience has been intertwined with the vulnerabilities—primarily social and economic—of local people. Generally, vulnerability refers to a situation wherein the available systems are ill-suited to changing contexts (Fussel, 2007). More specifically, vulnerability refers to the tendency of complex systems to be detrimentally affected as they open themselves to external and internal pressures (Turner et al., 2003). Whereas vulnerability is a manifestation of the extant social, economic, political, and environmental structures, participatory resilience shows that human beings not only face risks but also have the ability to adapt. Through their resilience, they can influence all spheres, be they environmental, social, or economic. In other words, resilience does more than ensure individual survival; it buttresses the existing systems and makes future change possible.

Results and Discussion

The importance of sustainably managing environmental resources has been emphasised by the United Nations since at least 1994, when the United Nations General Assembly issued a resolution emphasising the need to support global learning and observations to benefit the environment through programmes such as land mitigation.

Other international laws have also sought to mitigate humanity's contributions to land degradation (Lechat, 1990). For instance, the sixth of the United Nations' Sustainable Development Goals emphasises the need to ensure the availability and sustainable management of water and sanitation for all. Under this goal, all land development and management efforts must take a sustainable paradigm to ensure that it does not detrimentally affect society (Humpenoder et. al, 2022).

In Bantargebang, land degradation has likewise required centralised and prioritised mitigation efforts. Since the Bantargebang Waste Processing Site was created in 1995, endeavours have been made to reduce the ecological effects of waste. The Department of Sanitation of the Jakarta Capital Region restructured its waste management efforts after the site began to exceed its maximum capacity (landfill height of 49 meters). Under this restructuring, open dumping was allowed once the site was over capacity (landfill height of 50 metres). However, this approach was inefficient, as air pollution spread up to ten kilometres from the waste processing site. The Jakarta government thus sought to intensify its mitigation efforts through three alternatives: 1) creating landfill zones, wherein waste was divided into seven zones to reduce the height of the piled waste; 2) installing land covers, covering over-capacity waste with plastic to reduce its potential ecological effects and minimise the threat of waste seeping into the land water; 3) beginning land mining, a process for collecting the methane gas produced by decomposing waste. One last project was to use waste for a new energy source, Refuse-Derived

Fuel (RDF); this was implemented as a pilot project by the Jakarta Capital Region government's Centre for Technology Research and Adaptation, and had the capacity to use 50–100 tonnes of waste per day to generate electricity (Winanti & Purwanta, 2022).

Scalar Determinants of Waste Pickers' Participatory Resilience

The creation of the Bantargebang Waste Processing Site had social consequences for residents. Due to the air pollution caused by the collected waste, the area was stigmatised as "Kota Bau" (literally, 'Smell City'). One informant explicitly stated that the policy decision to install a landfill in Bantargebang had significant social implications for residents (Donor, 2022). The participatory resilience practised by the people of Bantargebang is one form of public participation, as practised by the waste pickers in the area. The stigma associated with waste drove community members to seek new, non-policy, ways to find and participatively resolve the issue of land degradation. In the scalar paradigm, the politicisation of issue management is understood as involving new policymaking values, whereby formal policymakers are distinguished from the general public (Heynen, 2000). It is held that the natural environment is essential for human well-being, and thus environmental management is a cornerstone of prosperity and welfare. These values also hold that particular social groups can contribute positively to the mitigation of land degradation. At the same time, the scalar paradigm also recognises that discourses promoting

environmental sustainability have emerged as a means of improving quality of life. Sustainability discourse has become an instrument for implementing policy and controlling environmental degradation (Sayre, 2005).

The ecological effects of waste have included reduced water absorption, air and water pollution, increased risk of fire, and social stigma. As previously mentioned, Bantargebang has been branded "Smell City", and this has driven local residents to take action (Steinberg, 2007; Duffy, 2014; Putri et al., 2020). Drawing on their civil responsibilities as citizens, they have voluntarily undertaken various endeavours to challenge the social ostracism and stigma associated with their community. They have drawn on new ecological ideas that hold that the public's rights, mechanisms, and opportunities for involvement in environmental management have significant implications for its technical processes; this can be seen in Bantargebang, where residents have directly experienced the ecological and social consequences of degradation (Alexander, 2001).

It may thereby be concluded that, from a constructivist viewpoint, public participation (as an instrument of implementation) must be based on community needs and perspectives—for example, reducing the environmental effects of waste, creating economic opportunities, or erasing Bantargebang's stigma as "Smell City". Public participation is derived from the public's political rights. One previous example of public participation can be seen in the activities of civil society in New Zealand, where the Māori people were able to maintain their customary

ties with the land (*Whenua*), which they deemed to be sacred and sacral (*Marae* and *Papanpanga*), and use this land for funerary rites (*Urupa*). They thus used their sovereignty as a traditional people to preserve the environment and protect their sacred lands.

As an instrument for implementation, public participation can be used to shape particular structures to meet certain goals and realise specific achievements. Taking the scalar paradigm, land degradation may be considered a spatial factor that shapes public behaviour and promotes desired results. The strength of this instrument is also evident in the extent to which the people of Bantargebang have been able to address the issue of land degradation. They have remained open to change, and this has made it possible for them to resiliently adapt to their changing environmental and social contexts (McCubbin et al, 1998; Echols, 2014; Bidayani, 2021). The concept of resilience was advanced by Klohnen (1996), who understood it as the ability of individuals and groups to adapt themselves in the face of internal challenges. As such, it addresses how individuals and communities deal with internal challenges by adopting certain behaviours to define, ascertain, and quantify their ability to resolve issues and recover from hardships. In this study, the land degradation that has occurred in Bantargebang has created tension and pressure within local communities, who have responded by improving their participation and overcoming the myriad challenges that they face.

The Implementing Instrument: Its Role

The participatory resilience of the people of Bantargebang is also evidenced by their activities and classification. The people of Bantargebang are quite diverse in their distribution, yet have worked

reciprocally to use their power (knowledge, lifestyles, and culture) to address the issue of degradation. Due to Bantargebang's proximity to Jakarta, Indonesia's national capital, it can be safely assumed that urban culture has been assimilated in the region. Likewise, due to ready access to education, it may be understood that the people of Bantargebang have received some education. These considerations have informed the participatory resilience of the people of Bantargebang, informing their proactiveness, initiative, and reactiveness (Badanjak & Pandzic, 2021).

According to Wadu (2016), the particular characteristics of public participation can be indicative of its qualitative success in advancing transformation and realising particular goals. Particular participation patterns inform the likelihood of improving public welfare and realising sustainable change. They also create particular classifications within society; in the case of Bantargebang, waste pickers are one such class. The other class will be discussed below.

Initiating Implementers

To create resilience amongst the people of Bantargebang, certain roles are necessary to maintain a balance between survival and the negative effects of land degradation. In this, the initiating implementers are members of Bantargebang society who have a civil right to protection as well as a legal responsibility for the lands they inhabit (Tu et al., 2020). The concept of initiating implementers has functional value, as it involves the creation of opportunities for community members to improve their individual and collective resilience. Initiating implementers are those with the knowledge necessary to evaluate and quantify the effects of land degradation as well as their efforts

to mitigate it; in other words, they are individuals with the resources necessary to provide others with assistance and mitigate the effects of excessive waste. This departs from the awareness that environmental issues are shared amongst all and thus must be addressed collectively. Various forms of waste exist in Bantargebang, including recyclables that could be reworked into economically viable materials; as such, some residents of Bantargebang have taken to collecting waste for sale to re-users. In this case, the initiating implementers have ***proactively*** created resilience by identifying opportunities and working with external stakeholders (i.e., capital holders) to improve their own situation while simultaneously minimising the detrimental ecological and social effects of waste.

This reciprocal function has created the second class of community members in Bantargebang, i.e., initiators (actors) with capital. These people are local residents who have managed waste outside the auspices of the Bantargebang Waste Processing Site. These actors are the waste coordinators (the "bosses" of waste pickers and other stakeholders) and have taken the ***initiative*** to manage waste as a means of addressing the challenges posed by land degradation. These initiatives have concentrated on waste management and included (among other things) the collection of waste outside of formal policies. They hope that, through such initiatives, they can innovatively transform formal waste management processes that have been plagued by a lack of capacity and inadequate resources. However, the initiatives undertaken by these actors have the potential to create conflict between the general populace, capital holders, and the government actors tasked with waste management. Due to conflicts of interest between these stakeholders, acute and

chronic conflict may occur. Chronic conflict could potentially result in the public refusing to contribute to formal waste management systems and responding with apathy. Acute conflict, meanwhile, could result in the people of Bantargebang losing confidence in the municipal government's waste management abilities due to delays and capacity issues.

At the same time, public participation has created a degree of sovereignty, wherein waste management is used to ensure the continued survival and improve the welfare of the people of Bantargebang. This evidences ***reactive*** responses to waste management. As processing sites run over capacity and Bantargebang is stigmatised as "Smell City", those who possess capital in the region have prioritised efforts to improve the efficiency of waste management even as they have lost faith in policymakers' ability to address the waste crisis. Such reactiveness is also evident in efforts to improve the public's abilities and resilience by instilling them with knowledge regarding the importance of transparency and accountability in managing waste, reducing its ecological footprint, and eradicating stigma.

Waste Pickers' Concrete Steps Towards Participatory Resilience

The rise of waste pickers and waste coordinators (those who possess capital) in Bantargebang shows that land degradation has compelled people to take action and create resilience to avoid lasting harm. These efforts have been influenced by diverse factors, including external support, personal strength, and social abilities. One primary factor has been waste coordinators' (capital holders') lack of confidence in the operational performance of the Bantargebang

Waste Processing Site. The increasing modernity, strictness, and security of waste management systems underscore the number of parties interested in the process. In almost waste management. In the almost thirty years that the Bantargebang Waste Processing Site has operated, the amount of waste has grown, creating an ever-present stench. The stigma of "Smell City" has been tangibly felt by local society. Stakeholders in the Jakarta Capital Region have striven to identify solutions to the malodours of waste collection and its detrimental effects (The Jakarta Post, 2018). According to interviews with Bang Donor, the Jakarta government has provided compensation to residents amounting to Rp 300,000 per family. However, this money has not helped them escape the stigma of their position (Donor, 2022).

1. Establishment of Waste Banks

It may thus be said that waste pickers and waste coordinators have been the main actors in taking concrete action to ameliorate the situation in Bantargebang. The stigma of "Smell City" has only reinforced the belief that, to live alongside waste, they must become resilient. As such, they have sought to promote public participation by establishing waste banks. One informant, Bang Rohmat, explained that three waste banks had begun operations in the area around the Bantargebang Waste Processing Site: in RT 01 RW 03, Ciketing Udik Hamlet; in RT 02 RW 02, Ciketing Udik Hamlet; and in RT 02 RW 01, Cikiwul Hamlet. These waste banks are managed by the families of waste pickers, who hope to reduce the amount of waste that enters Bantargebang while simultaneously increasing household incomes. These waste banks collect waste with economic value, such as plastics and metals, to be sold; meanwhile, food waste that appears to still be edible is reworked for consumption (Rohmat, 2022).

2. Establishment of the Indonesian Association of Waste Pickers

The number of migrants living near Bantargebang has also influenced public participation. Most of these migrants work as waste pickers, hoping to profit from their waste collection activities. Many live within the boundaries of the Bantargebang Waste Processing Site; this has been allowed by the site's administrators, who hold that their involvement can reduce the amount of waste and provide them with some income. There is a paradox; although waste management systems have become more modern, waste pickers have continued to live on-site and experience stigmatisation. The Indonesian Ministry of Social Affairs defines waste pickers as individuals who collect waste and second-hand goods from diverse places, including residential areas, commercial districts, and markets, which are subsequently reworked and sold (Kompas, 2020). These waste pickers have promoted public mobilisation, such as through the establishment of the Indonesian Association of Waste Pickers (in Indonesian, Ikatan Pemulung Indonesia, or IPI) in Bantargebang. According to Marshall (2005), the growing number of waste pickers indicates the existence of a cultural gap due to distinct and different materialities. However, in this case, Bantargebang offers a geographic environment that could potentially offer new insight into the importance of unionisation in maintaining public participation and resilience in the face of land degradation and economic stagnation. Waste pickers in Bantargebang established IPI. This organisation, which remains active today, has protected its members and provided them with free access to government labour security and health programmes.

Its establishment was driven by necessity; due to the prevalence of accidents, members of the waste-picking community realised the need for public participation in safeguarding collective welfare (Donor, 2023).

This unionisation was driven by the solidarity that exists amongst the waste pickers of Bantargebang, whose awareness of their shared vulnerability drove them to mobilise in broader contexts. Collective action was intended not only to help pickers increase their returns but also to mitigate the detrimental effects of excessive waste and land degradation. More than 6,000 waste pickers in Bantargebang are members of IPI, which strives to ensure that all waste pickers receive fair and equitable treatment at the waste processing site, coordinates with site management when regulations change, and provides waste pickers with the direction and guidance necessary to ensure their continued safety (Portal IPI, 2022).

3. IPI Initiatives for Workplace Safety

Environmental management policies are important elements of the processes that create public participation in efforts to address land degradation. In Indonesia, such public participation in conservation activities is permitted and regulated under Law No. 23 of 1997, as amended by Law No. 32 of 2009 regarding Environmental Management Regulations. As per this law, the public may participate in environmental management activities so long as they receive permits and follow specific procedures (Paragraph 5) (KLHK, 2022). At the same time, increased awareness of the importance of environmental

management has driven public participation, in accordance with all applicable legislation. The governments of Bekasi Regency and the Jakarta Capital Region have worked closely with local stakeholders to manage the waste in Bantargebang.

The involvement of capital holders in realising public participation and resilience was highlighted by informants. Workplace safety has drawn the attention of IPI, which has attempted to socialise its importance among the waste pickers of the Bantargebang Waste Processing Site. Nevertheless, workplace safety remains poorly implemented in Bantargebang. The researchers found that many waste pickers still climb stacks of refuse without adequate protective equipment, leaving them vulnerable to dengue fever, malaria, and acute respiratory distress syndrome, as well as the dangers of wild animals and garbage landfills (Wiraputra et al., 2019). From a policy perspective, the government has provided waste pickers with Rp 200,000 to purchase safety equipment and medication (Donor, 2022). However, waste pickers' lack of knowledge continues to leave them vulnerable to workplace accidents and other health risks. Rosenstock et al. (1994) write that individuals' beliefs are influenced by their age, education, and work experience. This study found that, in terms of education, most waste pickers have only completed elementary or junior high school. They have also been influenced by the workplace experiences of their peers, which have been shared in their daily communications (Donor, 2022).

Turning to policy, the Department of Health and the Department of Labour and Transmigration have sought to improve the workplace health and safety of waste pickers through Law No. 23 of 1992 regarding Health; particularly important have been Article 22, Paragraph (2),

regarding the Creation of Healthy Workplace Environments; Article 23, Paragraphs (1), (2), and (3), regarding the Obligation for Health and Safety in the Workplace (including service provision, accident prevention, and requirements of occupational health and safety); and Article 84 regarding the Criminal Sanctions for Workplaces that Fail to Implement Occupational Health and Safety. These policies apply to all professions, including entrepreneurs, farmers, anglers, street vendors, and other workers without any organised access to health services. Government policy has also created health infrastructure, including community health clinics and workplace accident prevention offices, that seek to create healthy workplaces for Indonesian labourers. However, despite the existence of standard government policies, implementation has varied. Stakeholders have not synergised in their efforts to protect the rights of waste pickers in Bantargebang. Likewise, IPI has been less than effective in its role, as there are still waste pickers who contract diseases or die in workplace accidents (Herlinda, 2010).

The governments of Bekasi and the Jakarta Capital Region have signed a series of contracts and memoranda regarding the administration of the Bantargebang Waste Processing Site. Consequently, the legal basis for the site and its management changes with every contract. Currently, the administration of the site falls under the auspices of the Agreement of the Government of Bekasi Regency and the Government of the Jakarta Capital Region No. 19 of 2021 and No. 160 of 2021. Such agreements are signed with the explicit purpose of providing high-quality waste management services (DLH, 2022). However, as explained by informants, there remain shortcomings that have driven the public—i.e., waste pickers—

to continue their participation. As stated previously, waste pickers have created IPI to protect them and ensure their continued access to government health and employment security programmes (Donor, 2022). The workplace safety programmes facilitated by IPI have likewise contributed significantly to waste pickers' resilience, even as they have stimulated participation.

The Significance of the Indicators of Participatory Resilience

Looking at the above phenomenon, the problem of land degradation has transformed the attitudes and behaviours of the people of Bantargebang. It has also stimulated the rise of participatory resilience, which has brought with it particular indicators of success as well as means of resilience. From the scalar perspective, cultural factors—particularly a shared history and belief system—provide the context for community-building (Sayre, 2005). The opening of Indonesia's democracy, as well as the freedoms and opportunities that have come with it, has enabled groups with shared interests to establish their own communities and achieve collective goals—for example, addressing the issue of land degradation. It may be concluded that these cultural activities are symmetrical to natural phenomena (such as land degradation) as well as environmental policy and natural geography. This was also mentioned by Koku (2001), who showed that the socio-cultural activities of communities have contributed to the development and implementation of conservation programmes in Ghana. In the South Tongu District, social and cultural factors drove residents to employ the principles of sustainability to protect

their resources and safeguard their natural environment. By creating and deploying new values, they were thus able to contribute to the development of deforestation policies and address the problem of land degradation.

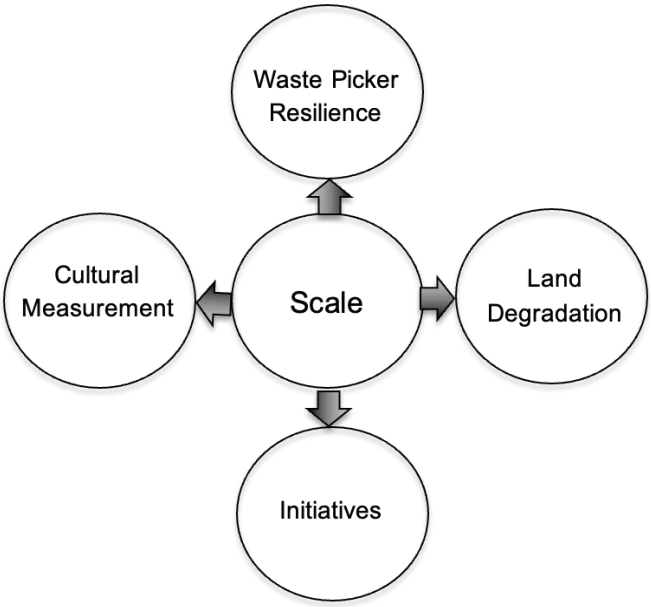

Figure 1: Connection between Land Degradation and Public Participation (Sayre, 2005)

As seen in the above figure, land degradation significantly informs the relationship between human beings and nature. Geographic dynamics have ecological consequences; cultural factors influence public awareness and initiatives; and policies contribute to public dissatisfaction with efforts to resolve environmental issues such as

land degradation. Presently, all parties have recognised the progress made through public participation. Diverse types and patterns of public participation have emerged in direct response to the negative effects of land degradation. Progress has likewise been made by IPI, which has mobilised members to improve the welfare of long-term and new residents of Bantargebang. Collectively, waste pickers have thus made significant steps toward mitigating the effects of land degradation.

Such activities began with a shared belief in the need to improve public welfare and promote the inclusion and participation of waste pickers. These actors, both waste pickers and waste coordinators, have become instruments in the implementation of efforts to mitigate land degradation. Public participation is inexorably intertwined with mindsets that are prevalent in society, as these are fundamental for the creation of spaces wherein the public can participate. Land degradation has wrought significant changes in the mindsets of the people of Bantargebang, pushing them to improve their lives and welfare. Waste pickers feel threatened, for if the Bantargebang Waste Processing Site were closed due to land degradation, they would lose their livelihoods. They have thus united, collectively embracing a new mindset and implementing programmes such as waste banks to reduce the amount of waste in circulation. Interpersonal competition to earn money through waste picking has been seemingly pushed aside as the threat of closure has hung over their heads. However, this mindset has only been particularly significant amongst waste pickers.

As the researchers have found, IPI has failed to properly socialise the importance of workplace health and safety amongst its members, and many waste pickers continue their activities without adequate protection.

Conclusion

Most of the people living near the Bantargebang Waste Processing Site are waste pickers who have had to adapt to living side-by-side with and earning a living through waste. This adaptation or resilience has been evidenced by waste pickers' participation in mitigating the land degradation caused by excessive waste accumulation. Through this participation, two categories have emerged: implementing initiators (waste pickers) and capital-holding initiators (waste coordinators), each with their own specific roles. Waste pickers only collect waste for resale, while waste coordinators employ waste pickers to collect and resell waste in return for a share of the profits. In response to land degradation, waste banks have been created in several neighbourhoods near the waste processing site. At the same time, waste pickers have established their own union—the Indonesian Association of Waste Pickers (Ikatan Pemulung Indonesia, IPI)—and used it to implement particular operating standards.

Recommendations

The researchers view Bantargebang as a "different city". In response to land degradation, public participation and mobilisation have emerged from a segment unlike any other. As such, the ecological politics of waste management is an interesting topic for further research. The researchers have also identified a cultural gap,

wherein clear contrasts exist between the environmental conditions experienced by communities. Due to this gap, implementing initiators and capital-holding initiators—the actors involved in public resilience—have distinct interests. Further in-depth research is necessary to understand public participation in the Jakarta Capital Region's distribution of compensation money to residents, as well as the accountability and transparency of its implementation. It is also necessary to further analyse societal behaviours to understand the cultural gap that has resulted in the stigma of "Smell City"—as seemingly legitimised by government compensation.

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