

## MILITARY IN WATERSHED RESTORATION: A MULTISTAKEHOLDER STUDY ON THE INVOLVEMENT THE INDONESIAN MILITARY IN CITARUM RIVER CONSERVATION

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### Abstract

*The Citarum watershed, Indonesia, was notorious for being the most polluted and destroyed in Indonesia. In 2018, the Indonesian Government created a new policy to restore this watershed, named Citarum Harum, by putting together multiple actors to combat watershed degradation, including one unique actor, namely the Indonesian military. This anomaly had created a new pattern and dynamics in watershed restoration. Historically, Indonesia had a peculiar civil-military relationship with the past military government. This creates a unique framework for how actors currently react to military involvement. This article examines these phenomena and elucidates the effectiveness of military involvement in watershed restoration. The study was conducted by the Citarum Harum watershed restoration programme in West Java, Indonesia. This study used in-depth interviews and multi-level stakeholder influence mapping on multiple informants involved in the restoration. The findings indicate a good shift in actor relations that creates improvements in watershed restoration. However, several other conditions also arise from the military's involvement, such as overlapping authorities, incompetency on some technicalities, desynchronization, and a shift in public perception. These problems require some adjustment in the roles of both civil and military personnel in the restoration programme to optimise the military's involvement further.*

**Keywords:** Civil-Military Relation; Citarum; Indonesia; Watershed Restoration

### Introduction

With increases in urban development and land cover changes, watershed degradation in Southeast Asia (SEA) has become a dreadful problem [1, 2]. There is an urgent need to tackle environmental degradation and restore watershed functions to maintain human activities [3–5]. This condition implies an increasing number of policy responses, such as integrated water resource management and watershed restoration, across many countries in the SEA, including Indonesia [6, 7]. Throughout history, the military and the environment have been closely related, but they were usually found in a more destructive manner [8–10]. In the past few decades, there has been a rise in environmental security studies and a widening of the role of the military, such as military involvement as a relief in times of disaster [10–12]. However, few have studied the military's involvement in environmental policy, such as mitigating environmental degradation, conservation, and restoration [13–15]. In this article, the study aims to look at how military involvement in environmental policy affects watershed restoration, both socially and environmentally. The study investigated the involvement of the Indonesian National Army (TNI) in restoring the Citarum Watershed in West Java, Indonesia. Using analysis from interviews,

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reports, documents, and previous research, we found that the military can be a useful part of river restoration. This assumption begs some questions regarding civil-military relations (CMR) in environmental problems, more particularly in water policy.

Watershed restoration and environmental restoration at large are complicated and wicked problems that require the involvement and participation of a lot of actors [16]. Failure to include active participation from the actors may result in the failure of restoration efforts' [17, 18]. Generally, restoration efforts involve actors that are similar to general political ecology actors: government, business, non-governmental organisations, intergovernmental organisations, and civil society [17–19]. However, there is no universal formula for this; with changes in environmental problems, these actors also change; some actors may emerge while others subside [18, 20, 21]. In Indonesia, there is a new emerging actor involved in watershed restoration, namely, the Indonesian National Army (TNI) [6].

The Citarum watershed, located in West Java, is an area of  $\pm 6905,7157\text{km}^2$  which spans  $\pm 293\text{km}$  at its longest. Though its length and size may fall short in comparison to other watersheds across the globe, the human population in the Citarum watershed alone could account for the same number as the national population of a country like Canada [22, 23]. Though some may argue differently, the Citarum is considered to be the most polluted and problematic river in the world [24, 25]. Over the past three decades, numerous attempts at maintaining and revitalising the watershed have been made. Despite the efforts made by the local governments to collaborate with international agencies, there is still a lack of clear improvement in the Citarum [6, 26]. In 2018, the Indonesian Government took an unusual approach to this problem by actively involving the military in the restoration of the Citarum through a programme called the Citarum Harum Programme (CHP). The military in the Citarum was tasked with being an active actor in the restoration through the regional command of West Java, or the Kodam III *Siliwangi*. Such a phenomenon is peculiar in the world of environmental policy, let alone in restoration efforts [17, 27]. Nevertheless, there are previous examples of military involvement in restoration and broader security issues, like the Indian Environmental Task Force (ETF), the United States Engineering Corps (USEC), and the Botswana Defence Forces (BDF) [15, 28].

In our written history, the military and the environment have been more frequently associated with harmful and destructive relationships. Wars were fought both with and over natural resources, inevitably destroying the environment [9, 29, 30]. However, with global relative peace and a shift in the international security agenda, countries are changing their approach to security and the use of their military, resulting in a non-traditional security agenda and security sector reforms [11, 31–33]. Environmental security is a part of the bigger human security studies that are widely discussed and implemented. However, the use of military forces in environmental security itself still rarely happens [34–36]. Meanwhile, security sector reform with an agenda such as co-development is also rising and is accompanied by dynamics in civil-military relations, especially in democratised countries with previous dominant military power [33, 37]. These changes in how the military works mean that today's military could get involved in several civil affairs without being considered unprofessional, similar to Alfred Stepan's new professionalism [33, 38]. This creates an opportunity for the military to also get involved in environmental affairs, including disaster relief, wildlife protection, restoration, and conservation [14, 15, 39]. The use of the military in environmental affairs could be positive, mainly because it acts as a catalyst and provides additional manpower that later increases public participation. On the other hand, it could also create new problems, from conflicting interests between actors to programme incoherence and incorrect methods [13, 15]. With global environmental problems on the rise, the use of the Indonesian military in Citarum becomes intriguing.

Compared to other CMR such as Huntington's professional military, Stepan's new professionalism, and Schiff concordance, the Indonesian military has a unique and special Civil Relations [38, 40, 41]. The cultural background of fighting together for independence and decades of military rule under Suharto puts TNI (*Tentara Nasional Indonesia*, or The Indonesian National

Army) in a cultural-based civil-military relationship [40, 41]. This condition creates a CMR similar to Stepan's new professionalism, a condition in which the military could be involved in some civil affairs. The CMR is also in line with the widening of the security paradigm and security sector reform in Indonesia [11, 38, 43]. Later, this condition creates possibilities for the TNI to be involved in civil affairs, including environmental restoration. Whether or not this involvement creates improvement in the restoration efforts or increases their complexity, the TNI involvement is unique and creates a one-of-a-kind phenomenon for a restoration programme.

This article studies the emergence and impact of the Indonesian National Army's involvement in watershed restoration efforts, both environmentally and within policy coordination. The study was conducted within the CHP using an in-depth interview with multiple informants. The findings presented are intended to provide a broader discussion of watershed restoration and to further discuss the potential use of security forces to solve Indonesia's and other developing countries' environmental problems during peaceful times. We assume that the military's involvement in CHP restores the watershed more effectively, similar to previous research [15, 28, 43]. However, such a military occurrence may create a new stakeholder pattern within river restoration policies and change actor influence, similar to the general environmental actor dynamics [43, 44].

### ***Military in Environmental Policies***

The nexus between the military forces and the environment is unique, complicated, and paradoxical. There are two sides to this relationship: negative, which is much more commonly related to wars, and positive, which is related to environmental security. Recently, with the changing paradigm of the military, studies of security have shifted towards broader human security, which can be considered a threat to humans and become a security issue [11]. Based on the decline of environmental quality, this condition would later create concepts such as environmental security, which contributes to further destruction that may threaten the continuation of human life [11]. These two different relationships between the military and the environment are paradoxical. On the one hand, it tries to deal with environmental security; on the other hand, the military itself is a threat to the environment [9]. Nevertheless, in recent years, there has been a real positive involvement of the military in environmental problems [13, 15, 43].

Before we discuss military involvement in environmental policy, we must first talk about the nature of civil-military relations. Broadly speaking, there are three forms of CMR: non-professional or politically active, old professionals, and new professionals [25, 44, 45]. In a country that is undergoing a democratic transition from active military involvement to a more professional relationship, like Indonesia, the military still sometimes gets involved in several civil affairs [33, 45]. There is an endless debate on defining a professional military because every country practice different CMR [40, 45]. Such practice then raises the possibility of several arguments related to the military's involvement in environmental affairs.

The United Nations (UN) argues that the military can handle environmental issues well. The military has trained personnel with good management and command skills; personnel systems in the military can also conduct system studies and policy analysis necessary for strategic decision-making in environmental affairs [39]. Technically, military expertise can be usefully applied for environmental risk evaluation, infrastructure building, and other applications [39]. The presence of weapon systems with superior capabilities, such as satellites, can further analyse and monitor environmental problems. Further, in dealing with environmental damage, the military can handle the damage by assigning special forces according to its duties [39].

Empirically, there are several practices of positive military environmental policy involvement. For example, in the United States, the first record of military involvement in restoration is USEC's Kissimmee restoration in 1986 [28, 43]. USEC helped create flood infrastructure on the Kissimmee River and collaborated with other agencies [17]. In another case, the US military is also trying to get involved in the renewable energy industry by transforming energy use in military equipment [47]. The Military Environmental Complex (MEC) takes a

similar model from the Military-Industrial Complex, which analogizes a similar trickle-down effect that can arise from military environmental initiatives in the renewable energy industry and society [47]. The MEC argues that the military can be a push factor towards renewable and sustainable technology [47]. Other cases of military involvement in environmental policy in the United States include indirect conservation of military bases [14]. Land management for military activities indirectly requires buffer zones from the community; this buffer zone's existence becomes an indirect nature conservation area [14]. They then create cooperation between the community, the local government, and the military to further protect the wildlife [14].

Aside from the US, in developing countries, there are also several examples of positive military involvement. Another example of the military's positive relationship with the environment is with the Botswana Defence Force (BDF), which conducts conservation efforts on savannas in Botswana [13]. Active military involvement in conservation efforts helps maintain Botswanan biodiversity; the BDF can also trigger the public to give more attention to wildlife protection [13]. Another example is found in river restoration efforts, where the Indian military ETF would have active military involvement [15]. The ETF was created in the 1980s, during the Indira Gandhi period. ETFs' creation is based on seeing the environment, socio-economic community, and justice as in need of development while simultaneously maintaining environmental sustainability [15]. The military is then considered capable of addressing existing environmental problems; hence, the ETFs are formed [15]. The Indian military positions itself as an active stakeholder in an environmental issue and participates in critical land conservation, forest restoration, restoration of water catchment areas, restoration of mines, and restoration of watersheds [15]. The government considers the military's use as part of the restoration and as an efficient policy because it can support and lead one's own or be self-sufficient [15].

In addition to the previous example, in the context of the impact of military involvement in environmental-related affairs, Bugday (2016) elucidates a conceptual outcome. Military involvement in environmental issues under environmental security is considered a low internal threat with an expansive nature for related countries [13]. The context of environmental issues that are internal threats with low-intensity impacts on the openness of military-led operations [13]. This further allows the public and civil Government to be actively involved. This argument is consistent with military operations other than war that classify different types of civilian involvement, ranging from high threats like insurgency and drug wars to low threats like disaster relief [12]. On high-threat level affairs, only high-level civilian government can be involved, while on low-threat internal affairs, such as environmental problems, the military becomes open to cooperation by the public [13]. This condition implies that environmental affairs can be conducted optimally with the military [13].

While there are some positive cases of military involvement, there are also some possible negative outcomes of this activity, mainly in terms of policy dynamics. In general, CMR's increased military involvement could lead to a dominant role for the military in civil affairs [33]. At the same time, military development cooperation may lead to better CMR but weaken civil institutions. On the environmental aspect, military involvement could create potential setbacks like overlapping authorities and over-reliance on the military [13, 15]. For a country with a military intervention background, this could be a setback for democracy [68]. Another aspect that might be produced is a different outcome for transboundary environmental problems. So far, the discussion has focused only on one country's environmental problems; however, there are environmental problems that transcend human-made borders [49, 50]. There will be a possible dilemma regarding national sovereignty and environmental security if the military gets involved with environmental problems [3, 15]. Such negative possibilities then require further studies.

#### ***Civil-Military Relation in Indonesia***

The TNI has its peculiarities in terms of military professionalism. There are at least two different views on how military and civil relations are happening in Indonesia today. Basuki and Ma'arif consider that there have been reforms in Indonesia's military body, and the TNI leads to

a new form of professionalism [51, 52]. *M. Mietzner* [38], *M. Kosandi*, and *S. Whono* [40], on the other hand, consider a specific type of intervention that runs indirectly from the military into civil affairs in Indonesia today.

Historically, the TNI has had an active CMR and was involved in many political affairs during Suharto's military regime [51]. After the democratic transition in 1998, there have been several military changes. The first is the dissolution of *dwifungsi* (dual function)—political involvement of the military in provincial government and parliament—and the formal professionalisation of TNI. The TNI continues to reform within its body and try to be more professional. However, because of its previous historical condition, it creates a unique new professionalism, similar to Stepan's argument [52]. From 2004 to 2014, the TNI attempted to distance itself from political practice [38, 40]. However, the temporary context of CMR in Indonesia has changed again. While claiming itself as professional, the military's existence as part of politics in Indonesia cannot be taken for granted. After reforms of the TNI in 2004, today there are numerous military re-involvements in various civil affairs, both by active and retired generals, in the government of President Joko "Jokowi" Widodo [41]. Such conditions occurred based on a need for the consolidation of power because the military is still a force to be reckoned with [38]. This then led to President Jokowi's actions to include the TNI in various affairs and strengthen the legitimacy of the government [38].

Adding to *M. Mietzner's* point of view, the TNI's involvement in civil affairs is also motivated by cultural and historical relations between the military and civil society in Indonesia [40]. This is because there is a historical military background in Indonesia that has been close to the community, both during the struggle for independence and during Suharto's regime [40, 51]. This setting provides a special relationship between the military and civil society, leading to the reception of the military's involvement in civil affairs [40]. These circumstances imply the current active involvement of the TNI in multiple civil affairs.

Apart from the general CMR, there is no specific legal basis for involving the TNI in environmental restoration in the context of military involvement in the environment, even more so in river restoration. However, Indonesian Law No. 34 of 2004 on the TNI and Law No. 23 of 2019 on the Management of National Resources for State Defense, state that there is an opportunity for military involvement in the environment. Law No. 34 of 2004 stated that the military could get involved in government affairs assistance. In addition, Law No. 23 of 2019 says that the destruction of the environment is considered a threat to national security. Further, the doctrine of the universal people's security defence system (*Sishankamrata*) plays a role in how the military could get involved in environmental problems, particularly with today's challenge of symmetrical and asymmetrical threats as well as non-traditional security issues [53]. The extent of these can be used by the government to get the TNI involved in environmental restoration.

In line with that, this research is aimed at recognising military involvement as well as the military's role in the environment. Moreover, by knowing the military's position in restoration and conservation, this research could attract a conceptual framework that might be adequate in the Citarum watershed area. Unlike previous studies that focused only on the military's benefit to nature, this research will focus on the relationship between military involvement and other stakeholders and recognise the military's way of influencing other conservation actors.

## Experimental part

### *Materials and Methods*

This study was carried out in the Citarum watershed, West Java, Indonesia, on the CHP (see Fig. 1). We used a multi-method qualitative approach with key informant in-depth interviews, document analysis, and multi-level stakeholder influence mapping as the instruments.

A total of 20 interviews were conducted with the key informant in Melbourne (1), Jakarta (3), and Greater Bandung (16) using both online and direct interviews (see Table 1 for details).

**Table 1.** Breakdown of Key Informant

Categories	Informants	Number of Informants
The Citarum Harum Taskforce	Multiple officials and ministries under CHP task force (Satgas PPK DAS Citarum)	3
Provincial Government, related bodies	West Java Environmental Agency, Local representative	2
Civil Community	Grassroot Local Figures	3
Academics	University of Indonesia, Padjadjaran University, Citarum Academics Forum (FACT), Monash University	4
Business and Industry	Bandung Coffee Farmers Association	1
<i>Non-Governmental Organisation</i>	Friends of the earth international West Java (Walhi), Citarum Watershed Communication forum, Greeneration	3
Military	Military district command, <i>Kodam III Siliwangi, field operatives</i>	3

The CHP itself is a seven-year restoration programme that is ongoing from 2018 to 2025. During our research for 2020–2021, the task force focused mainly on the upper Citarum Basin and the South Bandung Area, the capital of West Java, and field research was conducted in the same area as the task force's focus.

To understand the impact of military involvement in watershed restoration, we need to look at both environmental and social aspects. However, due to the nature of our research, which is focused more on the social aspect, environmental data were only collected from secondary sources and informants' perspectives. The interviews mainly focused on how the military influenced the restoration effort and on the collective efforts of the military with other actors. We also ask about the dynamic between actors in the restoration and how the presence of the military may or may not benefit the restoration. The interview was then transcribed and codified for analysis [54].

Additionally, to better understand the nexus between actors, we used *Multi-level Stakeholder Influence Mapping (MSIM)*, a recently developed method that tries to visualise the relationship between stakeholders using map visualisation [55]. MSIM uses a set of map instruments that are given to the informant [55]. The use of composite maps in MSIM can provide an overview of the realistic conditions that occur in policy implementation from the perspective of those who get involved, not only based on legal document analysis [5, 44].

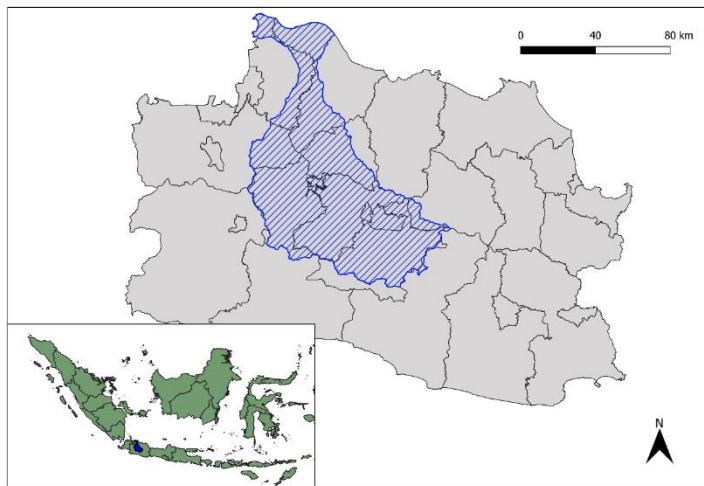
## Results and discussion

### *Military Involvement and Actor Dynamics in Restoration*

Watershed restoration is still a recent policy development issue in Indonesia. This policy is mainly derived from recurring floods in urban areas that push the agenda to restore the river's condition, such as the Ciliwung River in Jakarta, the Citarum River in West Java, and the Begawan Solo River in East Java [22, 56, 57]. The Citarum Watershed is heavily polluted, highly eroded, and low in forest cover [1, 31]. It flows through the most highly populated area in the country, with around 40 million people, while powering the biggest hydroelectric powerplant and supplying 80% of the capital's drinking water [26, 59]. This river is also home to multiple industries that depend on its flow while ironically polluting at the same time [26, 60]. With a high level of importance, the Indonesian Government creates a restoration programme under Presidential Order No. 15 of 2018, dubbed Citarum Harum. This policy initiative combines multiple stakeholders in one programme, including local governments, industries, communities, non-governmental organisations (NGOs), academics, the media, law enforcement, and the

military, under one command [57]. Under the executive order, this restoration effort has a clear goal of eradicating water pollution in the river by 2025 [57, 61].

The CHP is a multi-stakeholder restoration effort, what the government calls the Penta Helix: Government, academics, business, media, and community; similar to the typical actors in political ecology [19, 62, 63]. The main difference in this effort is the active involvement of the military. In 2018, the regional military command (Kodam) of West Java proposed a programme to the government to restore the upper Citarum watershed (Fig. 1). Later, the Jokowi government created a presidential order, making it a national program. According to the presidential order, TNI was assigned to restore the ecosystem of the Citarum, with the head of the Kodam as the vice commander of the restoration effort. Kodam later created 23 sectors of restoration, in which every sector was responsible for rehabilitating and controlling the environment. The tasks include hauling the trash from the river, creating a local garbage processing plant, sedimentation dredging, creating a nursery, reforestation, socialisation, community development, relocation, patrolling, and industrial inspection.



**Fig. 1.** The Citarum Watershed

The involvement of the TNI in these civil activities creates a new pattern in the actor's dynamics. The presence of the military influences the dynamic relationship between actors in restoration, in which the background of Indonesian civil-military relations plays a role and later influences the results. We divide this influence among every actor: government, business, academics, communities, and NGOs, as well as the general influence of the restoration efforts themselves.

First, the central government's relationship with the TNI. The relationship is indirect and instructional, with the central government's dominance of power over the TNI. There is a clear distinction of command from the central civilian government to the TNI. The power practice is carried out indirectly through the West Java provincial government. At the provincial and local levels, the Government and the Military relationship is much more fluid and reciprocal. The government mainly tasked the TNI, but the TNI also gave some feedback at the same time when creating their initiatives.

In general, the activities carried out by each sector are carried out based on the action plan that is created together each year by the multi-stakeholder board (also known as the secretariat). Each sector's command 1-23 coordinates, reports, and inputs on the development of conditions in each sector to the Territorial Assistant (Aster) of the Siliwangi Kodam (interview with members of the Secretariat of the DAS PPK Task Force, October 2021). These reports later

became evaluation materials for the CHP, which were later discussed with the provincial government. Figure 2 below shows the nexus between the military and all the actors, ranging from highly influential to relative mutual coordination between actors.

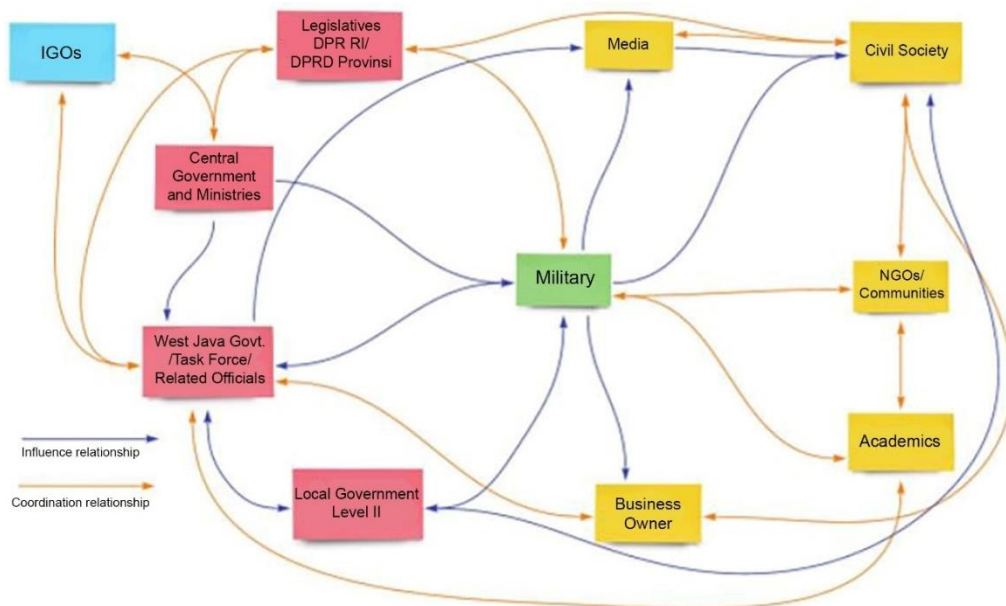


Fig. 2. Nexus between the military and other actors in Citarum Harum

On the local level, municipal governments are dependent on the TNI in the CHP. This condition is related to the position of the TNI as the spearhead of its main programme and the number of flexible and efficiently allocated human resources from Kodam. The TNI became the municipal government's vanguard in environmental governance. They conduct initiatives such as creating local garbage processing systems and building communal water treatment facilities through the said sectors.

However, such a relationship did not come without hurdles. Before the revision of the 2021 action plan, there were overlapping programmes, divisions, and inconsistencies between the civil government and the TNI in the CHP. For example, many sub-programmes run independently in each sector without the knowledge of the Government. Other worrying problems include activities carried out by the TNI in each sector that are not following the standards and rules set by the government. These problems originated from the roots in the establishment of the CHP, which were based on military initiatives and then slowly handed over. Such a phenomenon that happened in CHP became counterproductive for the restoration efforts. Restoration policies, which should have been a solution to environmental problems, can potentially cause future problems, especially with standard misconceptions that can create the illusion of progress. Similarly, these patterns were also shown in previous cases in Botswana and India, in which the military was desynchronized with the civil government [13, 15].

Even though there is a synchronisation issue between the government and the TNI. The initiatives outside of programme planning do not indicate that the TNI wants to take over the civilian program. There are several complaints from the TNI themselves, who feel burdened and confused about who is responsible for the related problems in several sectors. Especially with limited budgetary capabilities and the difference in expertise possessed by the military with various scientists, services, and Working Groups in the Government. Simultaneously, the form



of policies that emerged from the military initiative also initially indicated problems with the civilian government in carrying out the governance of the Citarum watershed.

Second are the businesses, in which the TNI strongly influences this actor group in the CHP. Various companies and factories that stand close to the river are a source of industrial pollution in the Citarum. However, big businesses, particularly the garment industry, are not cited among the most frequently reported polluters. In the CHP, industrial problems of various scales, from small to large, are generally related to wastewater management. Until now, the problem of industrial wastewater management has not been fully addressed. This problem is rooted in two things: because industries and the commune do not own enough wastewater facilities and because of the lack of discipline of the companies that already have the facilities.

In general, the TNI patrols and inspects these companies. They look at the wastewater treatment plants and observe the company's wastewater discharge. If they find that the company is disposing of non-standard waste into the river, the TNI often forces the closure of the company's sewers, rendering them unable to operate. Actions like this have a powerful impact on waste-polluting businesses. Pressure from the task force and the TNI has made many companies afraid to pollute and obey the rules, although it is undeniable that many companies still violate the rule by disposing of waste at night or when not supervised.

Contrary to the big businesses, the influence of the TNI on the small and medium enterprises (SMEs) that pollute is still minimal due to the lack of communal water treatment plants for SMEs. The TNI can only conduct socialisation and hearings with the SMEs to treat their waste correctly. On occasions like this, the influence is minimal and lacks clarity on the follow-up actions. On the flip side, some companies also have a good relationship with the TNI. Multiple CSR programmes emerged, which helped the TNI's efforts in carrying out the Citarum restoration. For example, one company had assisted in the construction of a nursery for planting on the Citarum riparian that the TNI operated. In general, the relationship between the TNI and companies related to Citarum has a dominant power relationship between the TNI and companies, especially the polluting companies. A similar form also appears in a different case that occurred in India, where ETFs closed company-owned mines and turned them back into forests and conservation areas.

The third group influenced by the military is the academic sector. The TNI carries out most of the socialisation and education activities related to the environment through sector commands. This task overlaps with academics, who have an organic role as educators. Therefore, the relationship between the two appears in the activities of the CHP. The TNI and academics cooperate to create research, socialisation, and workshops, mainly at universities. The presence of the TNI in the programme provides additional human resources. Another positive thing about the presence of the TNI is its deterrent effect on the community. Some educators argue that the TNI makes people listen to what they say. The attitude of the TNI itself is very open to research efforts related to Citarum.

The relationship between the TNI and academia is not without problems. In terms of expertise, the TNI and academics have different knowledge, mainly related to restoration, technical, and regulatory issues. Although many TNI members learned and understood environmental principles in the process, additional problems arose when there was a rotation of sector commanders. Previous progress may backfire and change with the rotation of a new commander. The problems regarding the relationship between the TNI and academics are not the influence of power, but the sustainability of the knowledge developed jointly between the TNI and academics. With the principle of commanding sector members to follow the orders of their superiors, it is a good thing when their superiors have good initiative and enthusiasm, which is in contrast to when the sector command is less proactive and in the context of less academic knowledge related to the environment. In the latter context, this becomes a problem for the academic group. Reflecting on this, the relationship between the TNI and academics is non-

dominant. The influence between the two exists, but it is not based on authority or power pressure but instead on expertise.

Next are the NGOs; contrary to the general depiction of the apparatus and NGOs, which often clash and conflict, the relationship between the TNI and these actors in the Citarum tends to be harmonious. In the CHP, the two have something in common, namely improving the Citarum ecosystem. This same set of values then creates an opportunity for both to work together and collaborate in facing the challenges of environmental problems. Environmental NGOs and communities were accommodated in the programme and are included in the secretariat. Multiple NGOs work together with the TNI under the umbrella of Citarum Harum, mainly as educators and agents of socialization. However, just because several NGOs work directly with CHP does not mean that there is no contradiction. There is a distinct dynamic between community NGOs that support military involvement in environmental issues and those that oppose this idea.

Not all environmental NGO-community groups chose to intervene in the CHP; some chose to be independent and outside the system. At the same time, the attention of NGO groups, in general, is emphasised on the presence of the TNI, who provides normative public socialisation with public awareness based on pressure and deterrence from the military, who then questioned the possibility of what would happen after the TNI was no longer present. On the other hand, the presence of the TNI has also created a new phenomenon for NGOs and communities that are confused, likely because they feel that their work has been taken over. There are NGOs and communities that have less influence on the Citarum after the involvement of the TNI. In the end, the Military and NGOs tend to have an open and non-dominating relationship. This pattern is similar to the case in Botswana, where an open programme allows various civic groups to enter [13].

The last element is the communities, particularly the West Javanese, or Pasundan. CMR plays a huge role in this regard. The Pasundan and the TNI have a unique closeness historically and culturally, making communities' attitudes towards the military a bit different [27]. Coupled with the low-threat and open nature of the activity, it makes it easier for the TNI to come to the community to carry out socialization. Communities that are in contact with the programme and the TNI generally accept the presence of the military, which is trying to change environmental conditions. The arrival of the TNI, which previously was not common in environmental issues, creates a new perspective on the environment itself.

There is a unique phenomenon related to political motives and community participation in the CHP regarding public participation and practical politics. Some groups argue that differences in political regimes hinder programmemes related to the environment, while the presence of the TNI, which tends to be professional and neutral, allows pluralistic groups to participate in the program. The differences in neutrality and partisan politics between the governments of various regions become a barrier. The presence of the TNI as a group that tends to be neutral has made it a non-partisan intergovernmental intermediary for the implementation of environmental programs. The phenomenon of partisan regional environmental politics and its relationship with the military is a new thing that has not previously been seen in previous studies.

In general, the efforts carried out by the TNI with socialisation and assistance have had a good impact on the upstream community, which in turn has an impact on the environment. Even though the relationship is open, although dominant in one direction from the TNI to the community, most of the community actively participates. This condition allows for visible improvements in upstream conditions that align with findings from previous research that showed that the military's presence in low-threat issues such as the environment allows for good public participation. In the case of the U.S., for example, an initiative by the U.S. military to conserve the buffer area is followed by the surrounding community [14]. This is also similar to the case of Botswana, where the community participated in notifying the community of the presence of wild animal hunters [12]. In practice, despite the feeling of reluctance or fear of the TNI as a military

apparatus, the power relations between the TNI and the community do not entirely change people's attitudes, even though they may tend to dominate.

### ***Multi-level Stakeholders Influences Mapping***

Based on interviews conducted with twenty informants, eight were willing to fill out the MSIM map. Based on the principle of representativeness, in this qualitative study, these eight informants were able to provide some insight into the actors involved in the Citarum restoration. After the informants filled out the maps, we carried out the process of adjusting the rankings on each map by calculating the frequency of actors assigned by the informants compared to other informants (this article did not focus on methods, therefore we did not show the complete process; we suggest checking the work of *C.A. Sova et al.* [44, 55] for the step-by-step). The actor with the highest position on the map has the most significant ranking number, in this case, 17, while the actor with the lowest influence has a minor rank of 1. We then calculate the frequency with which the actor appears on the MSIM map from this filling. Based on the calculations using the MSIM process, the results of the calculations are obtained and sorted based on the level of influence, as shown in Table 2 below.

**Table 2.** Influential actors in the Citarum restoration program based on the results of the MSIM calculation

<i>Actor</i>	<i>(<math>\bar{x}Ra</math>) Rank Adjusted</i> <i>(The Bigger the higher on the map)</i>	<i>(I)Level of Influence</i>
Citarum Harum Secretariat (SCH)	14,25	14,25
Government of West Java (PEMPROV)	14,00	14
Central Government (PP)	13,88	13,875
TNI Kodam III Siliwangi (TNI)	13,50	13,5
Local Government (PEMDA)	12,50	12,5
Public (MSYK)	11,88	11,875
Environmental NGOs (NGOK)	10,88	10,875
Academics (AKSI)	9,25	9,25
Media (MED)	7,75	7,75
SMEs and Farmers (UMKM)	7,00	7
Big Businesses (WRS)	7,57	6,625
Government Enterprise (BUMN)	8,00	5
Global NGOs (NGOI)	4,25	4,25
Intergovernmental Organization (IGO)	4,00	4
Legislative bodies (DPR)	3,86	3,375
Political Parties and organizations (LSM)	2,71	2,375
Police (POL)	1,50	1,125

The findings using MSIM analysis show that the actors with the highest level of influence on this restoration programme are the CHP Task Force, with an influence score of 14.25, followed by the West Java Provincial Government and its services; the central Government, and ministries; TNI; and level II local government in the top five. Meanwhile, Police actors, mass organisations, political parties, and the DPR RI and Provincial DPRD are the three actors with the lowest influence. This description aligns with findings from in-depth interviews and the programme's hierarchical structure, except for the police actors, who should have more influence on the program. Based on the results in Table 2 above, further mapping is made by visualising composite map images; bracketed abbreviations at the end of each actor are used to clarify the actors on the composite map below in figure 3.

There are multiple aspects of the watershed restoration that are taken care of by the military. We divide this into five aspects: waste, water, land coverage, public attitude towards the

environment, and disasters. We did not look at the biodiversity aspect of the restoration, mainly because the restoration itself did not intend to focus on biodiversity.

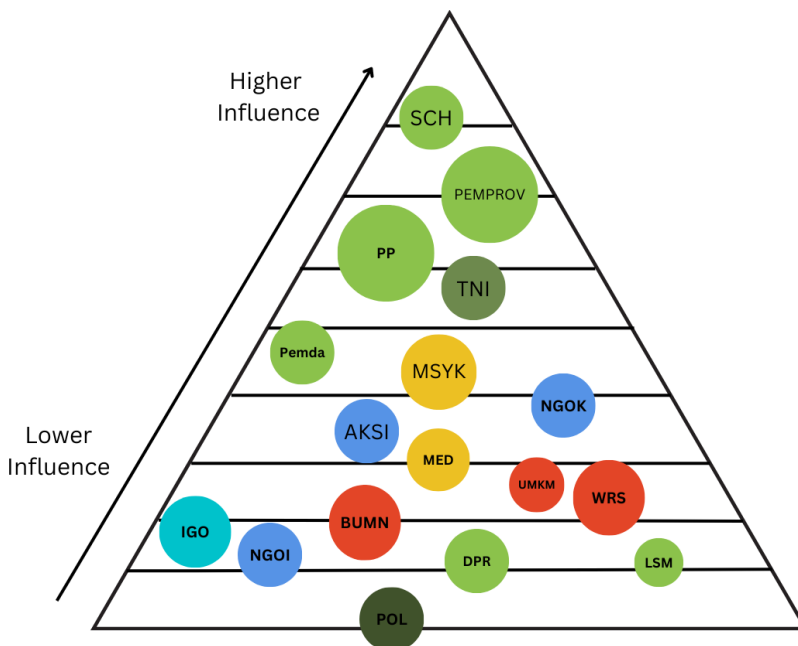


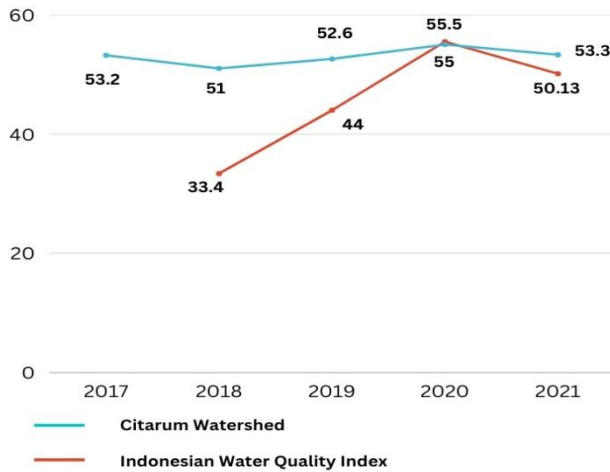
Fig. 3. Multi-level Stakeholders Influences Mapping Composite Map of the CHP

The first aspect is the removal of domestic waste from the river and the riverbank. Citarum is highly polluted, with little to no waste removal programmes in the periurban area. This makes the river a dumping ground for the locals. The TNI, with its flexible resources and command principles, allowed its personnel to be deployed into the river to pick up the trash manually. The TNI usually also involves the community in working together to clean up garbage on a small scale or in sub-watersheds. While in the main river flow, the TNI uses heavy equipment in collaboration with the local service. Up until October 2021, the Task Force and the TNI managed to remove 2659 tonnes of waste per day from the river [65].

After two years of garbage removal in Citarum, the effect can be seen quite well. The conservation programme of the multiple aspects finally finds Citarum change better. Nevertheless, garbage removal carried out by the TNI and other actors is only counted as a limited curative measure. Therefore, the TNI in each sector also carries out preventive efforts by educating, monitoring, and inspecting waste disposal. In practice, the education done by the TNI in the community affects public behaviour, and people tend to be more reluctant to throw trash into the river. Some argue that this change is only based on public fear over the apparatus and not on conscience over the importance of environmental function (interview with MP, April 2021). In practice, just transporting and socialising waste disposal is not enough when the community does not have a garbage disposal site. However, building and managing waste processing plants is beyond the capabilities of the TNI.

At the same time, significant changes also came from industrial waste discharge. As discussed before, the TNI also inspects multiple industries along the Citarum River. This later changed the behaviour of the polluting businesses, particularly the big companies, who fear the forced closure of their businesses (interview with TS, April 2021; interview with AK, October 2021). With frequent patrols and tests of company wastewater treatment, the number of heavy

pollutants in the Citarum decreases. Cumulatively, the implications of TNI involvement in the water and waste aspects of the Citarum watershed are starting to be felt. Overall, Citarum water conditions have increased from heavily polluted conditions in 2018 (Fig. 4), with a water quality index number of 33.43 points, to light pollution in 2020, with a quality index of 55 points [64].



**Fig. 4.** Comparison of Citarum water quality and national index (IKA) (Ditjen PKKL, 2019, 2021, SATGAS PPK DAS, 2019)

Reflecting on these findings, TNI involvement in water issues has a relatively positive impact on the environment. With the nature of the problem, which has a low threat level and is not related to external threats, this also allows cooperation between civilians and the military [12, 13], which allows many parties to be involved in managing and conserving the Citarum, consequently creating a positive ecological impact (Fig. 5).



**Fig. 5.** Some Activities of the TNI in the CHP, from top left to bottom right: 1. Educating children that live near the riparian; 2. accompanying a local inspector and checking an industrial water treatment facility; 3. planting vetiver with the locals; 4. helping local landslide victims (CHP Taskforce, 2020-2021)

Apart from water, reforestation efforts, as one of the main conservations programmes, are also carried out by the TNI in every possible sector, especially in upstream areas that have high erosion rates. Planting in each sector is carried out by the sector command based on the task force planting programme with seeds sourced from the nursery sector as well as donations from companies, individuals, and certain institutions (interview with SS, October 2021). The difference between the efforts to rehabilitate critical lands carried out by the TNI, when compared to the previous programmes of various actors, is in the supervision and assistance that are higher than before. The presence of the TNI and the representation of the sector on patrol independently or together with the community can have a different influence on the community, which then has a positive impact on the management of forest planting and rehabilitation. Simultaneously, to manage critical land and riparian forest, the principle of military command allows personnel to be deployed or rotated. Nevertheless, such activity can only be done for a certain time; to better manage this effort, an economically sustainable solution is needed.

There is a link between economic needs and planting activities. Most communities in the upstream rural area are vegetable farmers, who tend to clear land and encroach on the upstream forest. The TNI and the task force initially used forest and timber plants with habitats suitable for the upstream Citarum area. In the process, there were obstacles to planting forest plants with the emergence of community rejection of non-productive plants, possibly due to economic reasons (interview with AN, October 2021; interview with WJ, October 2021). Prohibiting the community from opening new land and then providing tree seeds cannot solve the problem. Therefore, the sector and the Task Force in the upstream area try to use the productive plants' approach as an effort to run the economy in the upstream area while still progressing in restoration efforts. They changed the approach to planting fruit and productive crops such as avocado, *petai*, *jengkol*, and various other fruit plants [66]. The pattern of overlapping plantings and productive plants being planted between vegetable plantations is being followed in the transition period. With the hope that the community can still have an economic income while continuing to reforest the upstream. However, the effectiveness of this is still questionable as to whether the community will care in the future due to the economic benefits or because of the temporary benefits of the programme.

Before the CHP, the level of water-related disasters was high in the greater Bandung area. With a high level of erosion, silting occurs in Citarum, even in the upstream area. When combined with high domestic waste, this becomes the perfect condition for flooding and landslides. With a continual garbage removal programme, reforestation, and changes in community behaviour, flooding appears to be less frequent in the region [64].

In general, there is a positive trend in the involvement of the TNI in the Citarum environment. Various conservation activities, as well as secondary data obtained from various reports discussed previously, are per the statements of several informants interviewed in this research.

"So far, the changes in the environment have been quite noticeable, but the changes in society have not been significant. We carry out social communications to have an impact on the environment and trash, but I'm not going to sugarcoat it; there are still problems. If it's good, then there'll be no more trash in the river. (AN informant)

"So, in general, we see a good change, although there is definitely some backlash in the social aspect, but yes, the river conditions are better." (GP informant)

"Yes, if there are changes, Kang, with the inclusion of the TNI, it will be a little better, especially in terms of supervision compared to the previous program." It's just that I don't think it's worth the cost, so yeah, isn't that significant?" (AK informant)

"...I think it's good that the existence of the TNI looks better for managing the environment, although it is my hope that it is temporary. Yes, at this time we still don't have an institution that manages the river on a daily basis, so I think the presence of the TNI can have a good influence on the environment and also on the government." (WN informant)

"... we in the expert team can't say that there has been significant progress; yes, the changes have not yet reached there. Yes, there is a change in society that does occur; the river is visually cleaner, yes, but is this change true? We must measure it again... Indeed, there are calculations that show pollution is decreasing. However, there are indeed (dumping heavy metal pollution) activities carried out by the polluters, and it is even more so during the COVID period as well..." (informant NA)

When compared with previous research related to the military's involvement in taking care of environmental improvements, there is a match between the findings that occurred in Citarum and the cases in other countries. In the case of India, the eco-battalion ETF was able to reclaim ex-mining forest areas by planting and managing watersheds systemically through institutionalisation [15]. In the case of the BDF, the military was able to help protect the environment and conserve the Savannah ecosystem in Botswana by collaborating with the community and building infrastructure for the population [32]. In another case, on the Kissimmee River in the United States, the US Army built the environmental function requirements of this river by using military resources, tools, and technology [43].

Meanwhile, at Citarum, the TNI can become a catalyst for Citarum's change to slowly become better through the human resources of TNI personnel. The large and flexible number of personnel is used by Kodam III Siliwangi to do many conservation programs. These activities can have an environmental impact with a positive trend when compared to the efforts made in previous environmental programs. This is in line with previous research findings regarding the environmental implications of military involvement. However, the involvement of the TNI in CHP was not without problems. Several problems still exist, such as errors in standards and methods used by the TNI in dealing with environmental problems, which likely occurred due to the TNI's lack of restoration expertise or environmental management disciplines. This condition can cause environmental problems in the future, one of which is related to biodiversity. In addition to the environmental aspect, the potential negative implications that arise from the involvement of the TNI in CHP are in the social, economic, political, and institutional aspects, which will be discussed in the next two sub-chapters.

If we look at the paradigm of power separation, military involvement in environmental affairs can change and disrupt the relationship between civilians and the military that prevails in Indonesia, which could disrupt sustainable development. The military's involvement in Citarum was an intervention in civilian affairs carried out by the military. Referring to the form of professionalism held by the TNI, which has been said to have carried out internal reforms [38, 41, 50], this should have been outside the TNI's domain, despite the cultural relations that occurred [40]. The sudden presence of the military in dealing with environmental restoration issues can become a problem for the civilian government, which takes care of the environment, as well as the ministry of the environment, which seems to have had its duties taken over.

From a different point of view, namely the security paradigm, the presence of the TNI in the restoration programme can be considered a security effort. Environmental problems are a condition that can be a threat because environmental damage can cause conflict, both between groups and between countries [29]. Based on this point of view, the presence of the TNI can be justified as a mitigation effort against the broader problem of human threats. If it is related to securities and environmental sustainability, this context can be positive. TNI as the conservation

agent might have a more positive impact on environmental restoration, although it does not rule out the social problems caused.

The use of the military by the central and regional governments to deal with environmental problems can also be interpreted as an adaptive form of viewing today's security, environmental damage that has the potential to cause disasters, and socio-economic problems that can be a threat to the community and government. Activities carried out by the government with the deployment of the TNI, both consciously and unconsciously, are a form of mitigating a broader threat. This condition is in line with various previous studies where conflict and war are closely related to natural resources and environmental damage [37, 67, 68].

Regarding military involvement in the environment, there is a relatively positive trend. The presence of the TNI can become a driving element in a restoration and conservation effort with flexible personnel who work with command principles to act accordingly. Technically, the TNI has the capability of cruising range, independence, and resilience in dealing with the problems encountered. Hence, it can be adaptive in dealing with various environmental problems in the watershed. This context is in line with UNOfDA's [39] findings, which indicate the military's ability to use its military nature to be ready to face any environment, including, in this case, environmental problems.

The military's involvement with many and flexible human resources can be allocated to increase the number of resources that take care of the environment without having to increase the number of employees employed by the government. In addition, this can also be a positive activity for the TNI to increase the activities of TNI members during peacetime. Economically, this can benefit the state in two aspects: the effectiveness of the security and environmental budget and the improvement of environmental conditions, which has many benefits. This context is in line with the concept of security sector reform, where there is a shift in threat assessment that allows a shift in the military's position in the social order, where the military can be given specific civilian affairs in the practice of civilian supremacy [24, 68]. With the shift of the global agenda towards sustainable development, it is imperative to see the proper position of the military in dealing with different forms of threats. With a low level of threat and not an external state problem, it is easier for various parties to work together in dealing with environmental problems. These findings are in line with previous research regarding the nature of activities and the possibility of cooperation between civilians and the military [13, 14].

The emergence of the TNI, which has penetrated civil affairs, reflects how CMR exists in Indonesia. This context aligns with the CMR described by *M. Kosandi and S. Wahono* [40] and *M. Mietzner* [38], where many civilian affairs have begun to re-involve the military and there is no significant rejection from the community due to cultural backgrounds and political needs. Apart from this, the professionalism of the TNI in disengaging from the practical politics of the New Order era has also influenced the restoration process. The context of the military's political neutrality has become a positive thing that bridges interests with the tendency of the TNI to have political neutrality. The non-partisan attitude was able to eliminate the ego tendency among regional leaders who were previously present. The same thing also happened to NGO and community interest groups, which previously had partisan tendencies to work together optimally. In Citarum, cross-actors can take care of the environment better without the tendency for differences in interests between groups. This is also a finding that was not discussed in various previous studies related to the military, the environment, and environmental politics in Indonesia.

The form of CMR in Indonesia tends to be professional but still extends to civil affairs. This allows the involvement of the TNI in restoration, which can have a positive impact on the Citarum watershed environment. This is in line with the second author's assumption that the form



of CMR in Indonesia will affect the restoration process. Citarum's environmental problems will not be considered a military matter if the TNI is too rigid with its professionalism, limited to a classic security paradigm defence issue, and inflexible in its duties. On the other hand, if the TNI has too much contact with civilian issues, especially in political matters, the public will also distrust the military's presence in environmental matters. This point is then also related to the doctrine of the Indonesian National Army, which also underlines the priority of the sustainability of Indonesia, which in this case can be considered further as an effort to maintain the sustainability of the security of the territorial environment. This new finding has not been discussed in previous research related to the military in the environment.

Furthermore, related to the pattern of relations, the presence of the military in CHP changes the relations between actors both positively and negatively. In CHP, the military in environmental politics has become the new dominant conservation actor. Based on MSIM's analysis, although the government still currently dominates, the military has become a new actor that is quite influential in the environment. Simultaneously, in the Citarum case, with the legitimacy of the TNI based on presidential regulation, the military's dominant role can shift the influence of business groups that previously dominated it under the general pattern of the political ecology of developing countries. [19, 60, 62]. This finding is in line with the argument of Pichler and Brad [62] that in the political ecology of developing countries, there is the possibility of the emergence of new influential actors, but it is slightly different from the argument that the new actors that emerged in the Citarum case were not NGOs but the military.

In the practice of government relations, the presence of the TNI has a significant influence. The presence of the TNI as a new actor in environmental affairs raises problems. Especially in terms of coordination between institutions and the non-compliance with standards used between the TNI and the government. At first, there was a disconnection between the programmes carried out by the TNI and those carried out by the government; hence, the targets and practices implemented did not match. However, later in the process, the two began to synchronise programs. Furthermore, the practice of misperceptions between the government and the military has emerged, such as in the context of assessing the problem of water pollution. The existence of these problems can also disrupt the practice of good governance in government. This is in line with the findings of similar cases that also have coordination problems, policy overlaps, and misperceptions when the TNI is involved in restoration, conservation, and other environmental efforts [13, 15].

Meanwhile, in terms of relations with the community, the presence of the military in enforcing the rules and conducting socialisation and supervision of the community does not solve the problems that occur in Citarum. Other systemic solutions, such as the construction of waste systems, wastewater treatment systems, and economical substitution solutions, are also needed. With the form of CMR that leads to a professional form, these points are beyond the capabilities of the TNI, both technically, budgetarily, and in decision-making. Furthermore, this is a civil matter. This is a new finding that was not discussed in previous similar studies.

## **Conclusion**

This article aims to look at how military involvement in environmental policy affects watershed restoration, both socially and environmentally. The emergence and involvement of the military in the CHP is a phenomenon that has potential learning aspects for watershed restoration and conservation. Under the Indonesian CMR, military involvement in the restoration process creates new actor dynamics that put the military on the centre stage of influence, as shown from

MSIM analysis. On the plus side, the TNI becomes an active agent of restoration that is respected by the public and disrupts the dominance of big business over the environment. In this case, TNI takes part as the main actor to teach and influence the young generation to be aware of environmental issues and also as inspectors of industrial water management in the Citarum watershed. Moreover, TNI also tried to plant vegetation to reduce erosion in this area. On the flip side, the involvement creates desynchronization of programmes, miscoordination between actors, misinformation about the restoration, and mis-execution. In the environmental aspect, the involvement of the military seemingly creates a positive trend in ecological impact. With the changing behaviour of its populations, from households to big businesses, the Citarum appears to be cleaner. Additionally, the reforestation of the upper watershed also appears to be better, with the military patrolling the forest and encouraging agroforestry. Overall, in the ecological aspect of the restoration, the involvement of the TNI becomes a catalyst for watershed restoration. This study shows some potential uses and problems of military involvement in watershed restoration and conservation. With rising global environmental problems, it is not impossible that a similar approach may happen in the future. However, given the rarity of the case, we suggest further research on military involvement in environmental affairs in the future for a better understanding of this approach.

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