

Military Participation in Water Security: A Case Study of the Manunggal Air Program in Ayunan Village, Bali (2022–2024)

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Abstrak

Abstract Water security is an increasingly important sustainable development concern, particularly in rural areas with limited and seasonally unreliable access to clean water. Ayunan Village in Badung Regency, Bali, experiences recurring water shortages during the dry season. In response, the Indonesian Army (TNI AD) implemented the Manunggal Air program to develop clean-water infrastructure and strengthen community water resilience. This study examines the forms of military participation in the program, its impacts on local water security, and the challenges affecting its implementation. Using a qualitative case study approach, data were collected through in-depth interviews with TNI AD personnel, village officials, and community beneficiaries, supplemented by field observations and document analysis. The findings demonstrate that military participation improved community access to clean water, reduced the time required to obtain water, and supported agricultural activities. The TNI AD contributed not only through infrastructure development, including water pumps, reservoirs, and distribution networks, but also through inter-institutional coordination, community mobilization, and local capacity building. However, the program continues to face limitations related to pump capacity, unequal water distribution, maintenance funding, and the absence of a clearly institutionalized long-term management mechanism. The study argues that the Manunggal Air program represents an expansion of civil–military relations into the field of non-traditional and human security. It also illustrates a collaborative governance arrangement in which military institutions, village governments, and local communities jointly address water insecurity. Theoretically, the study broadens civil–military relations scholarship by demonstrating how military participation in civilian development can support human security when accompanied by community involvement, institutional coordination, and sustainable local management.

Abstrak Ketahanan air merupakan isu pembangunan berkelanjutan yang semakin penting, khususnya di wilayah pedesaan dengan akses air bersih yang terbatas dan tidak menentu secara musiman. Desa Ayunan di Kabupaten Badung, Bali, mengalami kekurangan air yang berulang setiap musim kemarau. Sebagai respons terhadap kondisi tersebut, Tentara Nasional Indonesia Angkatan Darat (TNI AD) melaksanakan program Manunggal Air untuk mengembangkan infrastruktur air bersih dan memperkuat ketahanan air masyarakat. Penelitian ini mengkaji bentuk-bentuk partisipasi militer dalam program tersebut, dampaknya terhadap ketahanan air lokal, serta tantangan-tantangan yang memengaruhi pelaksanaannya. Dengan menggunakan pendekatan studi kasus kualitatif, data dikumpulkan melalui wawancara mendalam dengan personel TNI AD, aparat desa, dan masyarakat penerima manfaat, yang dilengkapi dengan observasi lapangan dan analisis dokumen. Temuan penelitian menunjukkan bahwa partisipasi militer meningkatkan akses masyarakat terhadap air bersih, mengurangi waktu yang dibutuhkan untuk memperoleh air, serta mendukung kegiatan pertanian. TNI AD berkontribusi tidak hanya melalui pembangunan infrastruktur, termasuk pompa air, penampungan air, dan jaringan distribusi, tetapi juga melalui koordinasi antarlembaga, mobilisasi masyarakat, dan penguatan kapasitas lokal. Namun demikian, program ini masih menghadapi keterbatasan terkait kapasitas pompa, distribusi air yang tidak merata, pendanaan pemeliharaan, serta belum adanya mekanisme pengelolaan jangka panjang yang terlembagakan secara jelas. Penelitian ini berargumen bahwa program Manunggal Air merepresentasikan perluasan hubungan sipil–militer ke ranah keamanan non-tradisional dan keamanan manusia (*human security*). Studi ini juga menggambarkan bentuk tata

kelola kolaboratif, di mana institusi militer, pemerintah desa, dan masyarakat lokal secara bersama-sama mengatasi persoalan ketidakamanan air. Secara teoretis, penelitian ini memperluas kajian hubungan sipil–militer dengan menunjukkan bagaimana partisipasi militer dalam pembangunan sipil dapat mendukung keamanan manusia apabila disertai dengan keterlibatan masyarakat, koordinasi kelembagaan, dan pengelolaan lokal yang berkelanjutan.

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Introduction

Water insecurity has become an important development and human security challenge, particularly in communities where access to clean water remains limited, unequal, or seasonally unreliable. More than two billion people worldwide still lack access to safely managed drinking water, while climate change increasingly disrupts water availability through prolonged droughts, floods, and unpredictable rainfall patterns (UN-Water, 2023; IPCC, 2023). These conditions demonstrate that water scarcity is not merely an environmental or technical problem. It is also closely related to governance capacity, social inequality, community resilience, and political stability (Gleick, 2014; Schillinger, 2020). Nevertheless, the governance of water insecurity becomes more institutionally complex when actors traditionally associated with national defence, such as the military, participate directly in providing civilian water infrastructure.

Indonesia faces considerable challenges in ensuring equitable and sustainable access to clean water. Its archipelagic geography, uneven population distribution, and disparities in infrastructure capacity have produced significant variations in water availability across regions. Java, for example, accommodates more than 60% of Indonesia's population while possessing less than 10% of the country's water resources (Kurniawan et al., 2022). Government initiatives such as the *Program Penyediaan Air Minum dan Sanitasi Berbasis Masyarakat* (PAMSIMAS) and the 100-0-100 Program have expanded water and sanitation services. However, rural and peripheral communities continue to experience problems related to infrastructure maintenance, limited financing, environmental degradation, and fragmented institutional responsibilities (Chotimah & Holland, 2025).

Bali Province illustrates these disparities particularly clearly. Although the island has experienced rapid economic development through tourism, the benefits and environmental costs of this growth have not been distributed equally. Tourism facilities require substantial volumes of water, while rural households, agricultural communities, and traditional Subak irrigation systems often experience water shortages during the dry season (Windia & Dewi, 2020). Studies have shown that households in several Balinese villages must adopt costly and time-consuming strategies to secure water, while farmers face difficulties maintaining agricultural productivity under increasingly uncertain water conditions (Sutama, 2021). Bali's water problem therefore reflects not only physical scarcity but also unequal access, competing demands, and limitations in local water governance.

These challenges are evident in Ayunan Village, Badung Regency, where seasonal water shortages affect household consumption and agricultural activities. During the dry season,

some residents rely on temporary water collection arrangements or purchase water at relatively high costs. Such conditions place greater burdens on households with limited economic resources and weaken the resilience of local agricultural livelihoods. In response, the Indonesian Army (*Tentara Nasional Indonesia Angkatan Darat, TNI AD*) implemented the *Manunggal Air* program by constructing reservoirs, installing pumps, developing distribution pipelines, and mobilizing community participation.

The involvement of the TNI AD makes the *Manunggal Air* program more than a conventional rural infrastructure intervention. It raises a central question within civil–military relations: how should military participation in the provision of essential civilian services be understood in a democratic political system? The program places the military within a policy domain normally associated with civilian government agencies, village administrations, public utility institutions, and community organizations. Military involvement in water provision must therefore be examined not only in terms of its technical outcomes but also in relation to institutional authority, civilian oversight, community participation, and the long-term capacity of local institutions.

Military engagement in civilian development is part of a broader expansion of security agendas beyond conventional defence. Contemporary militaries increasingly participate in disaster response, humanitarian assistance, environmental emergencies, infrastructure construction, and climate adaptation (Huizinga, 2020). Such activities are frequently justified through the concept of non-traditional security, which recognizes that threats to human well-being may arise from environmental degradation, resource scarcity, disease, disasters, and inadequate access to basic services. From a human security perspective, reliable access to clean water is essential because it directly affects health, livelihoods, food production, and social stability.

However, military participation in civilian development remains theoretically and politically contested. Classical civil–military relations scholarship primarily focuses on how civilian authorities can maintain control over professional armed forces and prevent military intervention in political affairs (Janowitz, 1960; Huntington, 1991). From this perspective, the expansion of military functions into civilian sectors can blur institutional boundaries and potentially weaken civilian supremacy. Military-led development programs may also create dependency, marginalize civilian institutions, or normalize the military’s presence in areas beyond its principal defence mandate. Cavallo and D’Angelo (2022), for example, caution that military development interventions may become unsustainable when communities and local institutions are not sufficiently empowered. Other scholars identify the risk of “mission creep,” in which temporary military assistance develops into a permanent expansion of military authority within civilian governance (Mietzner, 2021; Singh, 2022).

At the same time, treating every form of military involvement in civilian development as institutional encroachment may overlook the varied and negotiated character of civil–military interaction at the local level. In areas where civilian institutions face limitations in technical capacity, financing, logistics, or geographic reach, military organizations may possess resources that enable the rapid provision of essential services. The relevant analytical issue is therefore not simply whether the military should participate, but under what institutional arrangements such participation occurs, how responsibilities are distributed among military and civilian actors, and whether the intervention strengthens or undermines local governance capacity.

This issue is particularly important in Indonesia. Existing studies of Indonesian civil–military relations have largely concentrated on the military’s political role during the New Order, the institutional reforms following democratization, the persistence of territorial commands, and the continuing influence of military actors in political and administrative affairs (Mietzner, 2021; Singh, 2022). This literature has generated important explanations of military power, civilian control, and democratic consolidation. However, it gives considerably

less attention to the military's involvement in everyday development programs, particularly those concerned with essential services and environmental security. Examining such involvement is important because it reveals how civil-military relations are also shaped through practical interactions between military institutions, local governments, and communities in addressing basic human-security needs

The primary research gap addressed by this study therefore lies in Indonesian civil-military relations scholarship. Although the TNI regularly participates in disaster management, infrastructure projects, food security programs, health services, and humanitarian operations, limited research has examined how such participation reshapes civil-military interaction at the village level. Even less attention has been devoted to military participation in water security programs. As a result, it remains unclear whether programs such as *Manunggal Air* primarily represent an extension of military influence into civilian affairs, a pragmatic response to gaps in state capacity, or a collaborative arrangement through which military resources are placed under locally negotiated civilian objectives.

A secondary gap exists at the intersection of water security and collaborative governance studies. Water governance research generally emphasizes the roles of governments, communities, private actors, and civil society organizations. Military institutions are rarely incorporated into models of collaborative water governance, despite their increasing participation in infrastructure development and emergency response. Conversely, studies of military participation often evaluate institutional mandates and political risks without sufficiently examining how military actors interact with village governments and communities in managing essential resources. Examining the *Manunggal Air* program therefore creates an opportunity to connect civil-military relations with debates on human security and collaborative water governance.

This study examines military participation in the *Manunggal Air* program in Ayunan Village. It focuses on the forms of military participation demonstrated throughout the program and assesses its effects on household water access, agricultural activities, and community resilience. In addition, the study identifies the institutional, technical, and financial challenges that may influence the long-term sustainability of the program.

The study argues that the *Manunggal Air* program should be understood neither solely as a technical water infrastructure project nor automatically as evidence of military encroachment into civilian affairs. Instead, it represents a form of non-traditional military engagement whose developmental value and democratic legitimacy depend on the quality of coordination between the TNI AD, village government, and local community. Military resources may help address immediate infrastructure and logistical limitations, but sustainable water governance requires clearly defined institutional responsibilities, meaningful community participation, civilian decision-making authority, and locally managed maintenance mechanisms.

This study makes three contributions. *First*, it extends Indonesian civil-military relations scholarship beyond its conventional focus on political intervention and democratic reform by examining military participation in the provision of an essential civilian service. *Second*, it applies a human security perspective to demonstrate how military engagement may respond to threats affecting everyday welfare and community resilience. *Third*, it contributes to collaborative governance studies by examining the military as a distinctive institutional actor whose organizational capacity can support water provision but whose involvement must remain integrated with civilian authority and community-based management. Through the case of Ayunan Village, the study provides a more nuanced understanding of the opportunities, limitations, and governance implications of military participation in rural water security.

Methods

This study employed a qualitative case study design to examine the implementation of the *Manunggal Air* program in Ayunan Village, Badung Regency, Bali. A case study approach

was considered appropriate because it enabled an in-depth examination of military participation, interactions among program actors, the effects of the program on community water access, and the challenges affecting its sustainability within a specific local context. Therefore, this research design provided a comprehensive understanding of how the program was implemented and experienced by the actors involvement.

The research was conducted from March to July 2025. Ayunan Village was selected purposively because the village has experienced recurring water shortages, particularly during the dry season, and was one of the locations where the Indonesian Army (*Tentara Nasional Indonesia Angkatan Darat, TNI AD*) implemented the *Manunggal Air* program. The case was also selected because it involved interaction among military personnel, village government officials, and beneficiary communities, making it relevant for examining civil–military relations in the provision of an essential civilian service.

Research informants were selected using purposive sampling based on their direct involvement in, institutional knowledge of, or experience with the *Manunggal Air* program. A total of eight informants participated in the study. They consisted of three TNI AD personnel, three village government representatives, and two community beneficiaries. The military informants included personnel who were involved in planning, coordinating, constructing, or monitoring the water infrastructure, such as representatives from KODIM 1611/Badung, personnel responsible for territorial development or civil affairs, and field officers involved in program implementation. They were selected because they possessed direct knowledge of the objectives, institutional roles, technical processes, and operational challenges of the program.

The village government informants included the village head, village secretary, local water-management representative. They were selected because they were involved in coordinating the program, identifying community needs, facilitating communication between the TNI AD and local residents, and supporting the management of the water facilities after construction. Community informants consisted of households and farmers who directly used or were expected to benefit from the reservoirs, pumps, and distribution pipelines developed through the program. Beneficiaries were selected based on several criteria: residence within the service area of the water infrastructure, direct experience of seasonal water shortages, use of the facilities for household or agricultural purposes, and willingness to describe the benefits and limitations of the program. Including different categories of beneficiaries enabled the study to identify variations in access, use, and perceived program outcomes.

Data were collected through in-depth interviews, field observations, and document analysis. Semi-structured interviews were conducted to allow informants to explain their experiences while ensuring that the discussion covered comparable themes. The interview questions addressed the division of responsibilities among actors, the forms of military participation, the process of infrastructure development, changes in household and agricultural water access, community involvement, maintenance arrangements, and technical, institutional, and financial challenges. Interviews lasted approximately 30–60 minutes and were conducted in Bahasa Indonesia and Balinese language.

Field observations were carried out at the locations of the water infrastructure, including reservoirs, pumps, water sources, and distribution pipelines. The observations focused on the physical condition and operational capacity of the facilities, their accessibility, patterns of community use, the geographic coverage of water distribution, and visible maintenance problems. The researcher also observed interactions among military personnel, village officials, and community members when program-related activities were taking place. Observation notes were used to compare reported experiences with conditions found in the field. The data were analyzed using thematic analysis. Interview transcripts, field notes, and documents were read repeatedly to develop familiarity with the data. Relevant statements were then coded and grouped into broader categories. The coding process focused on themes derived from the research questions, including forms of military participation, civil–military

coordination, community involvement, changes in water access, agricultural and household impacts, infrastructure performance, maintenance arrangements, and implementation challenges. The categories were subsequently compared across informant groups to identify similarities, differences, and recurring patterns.

Data credibility was strengthened through source and method triangulation. Information provided by TNI AD personnel was compared with accounts from village officials and community beneficiaries. Interview findings were also cross-checked against field observations and documentary evidence. Where inconsistencies emerged, the researcher conducted follow-up clarification with relevant informants. Selected interpretations were confirmed with participants to reduce the risk of misrepresentation and ensure that the findings accurately reflected their experiences.

Ethical principles were observed throughout the research process. All participants were informed about the purpose of the study, the voluntary nature of their participation, and their right to withdraw from the interview. Informed consent was obtained before data collection. The identities of informants were anonymized, and quotations were attributed using general categories, such as military informant, village official, farmer, or household beneficiary, unless participants explicitly permitted identification.

Results and Discussion

Analytical Categories of Military Participation and Water Security

The findings demonstrate that the participation of the Indonesian Army (*Tentara Nasional Indonesia Angkatan Darat, TNI AD*) in the *Manunggal Air* program extended beyond the physical construction of water facilities. Military participation can be classified into four interrelated categories: technical-infrastructure participation, coordinative participation, social mobilization, and symbolic-legitimizing participation. These categories help explain not only what the military did but also the broader implications of its involvement for civilian institutional capacity, community participation, and the governance of essential public services.

Technical-infrastructure participation refers to the TNI AD's direct involvement in constructing reservoirs, installing pumps, and developing distribution pipelines. Coordinative participation concerns the military's role in connecting village authorities, communities, military units, and other relevant institutions. Social mobilization refers to efforts to organize communal labour, encourage gotong royong, and involve residents in basic infrastructure maintenance. Symbolic-legitimizing participation refers to the institutional authority, discipline, and public reputation of the military, which increased community confidence in the completion and continuity of the program.

The impacts of the program were examined through six dimensions of water security: availability, accessibility, affordability, reliability, equity, and sustainability. Availability refers to the physical presence of sufficient water for household and agricultural needs. Accessibility concerns the time, distance, and effort required to obtain water. Affordability refers to the financial burden associated with purchasing water or financing the operation of the facilities. Reliability concerns the continuity of supply, particularly during the dry season. Equity refers to the distribution of water among different households and geographical areas. Sustainability concerns the technical, institutional, financial, and social capacity to maintain the system in the long term.

Water quality was not independently tested through laboratory analysis. Therefore, this study does not claim that the program improved the chemical or microbiological quality of the water. Instead, the findings focus on access, availability, distribution, and continuity of supply. Such an assessment would require systematic water sampling and laboratory testing based on established health and environmental standards. Instead, the analysis focuses on changes in water access, availability, distribution, and continuity of supply as experienced by local residents. These dimensions were examined through interviews, field observations, and

information provided by relevant program actors. The findings therefore reflect improvements in the accessibility and reliability of water services rather than verified changes in water quality. This methodological limitation should be considered when interpreting the program's overall contribution to community water security. Future research may complement these findings by conducting laboratory – based water -quality assessments to provide a more comprehensive evaluation of the program's impacts.

The analysis was based on interviews with eight informants, consisting of three TNI AD personnel, three village government officials, one household beneficiaries, one farmer. Interview findings were triangulated with observations at two water infrastructure sites and documents.

Technical-Infrastructural Participation: Filling Civilian Capacity Gaps

The most visible form of TNI AD participation was the construction and installation of water infrastructure. Soldiers worked alongside community members to install pumps, construct reservoirs, and build pipelines connecting water sources to residential and agricultural areas. According to military and village informants, the TNI AD contributed personnel, logistical coordination, equipment, and organizational capacity that were not readily available within the village government.

A military informant explained:

“We are always ready for society, especially on water infrastructure. Our personnel already stand by and built the infrastructure in Ayunan Village.

(Mr Putu J – Territorial Assistant KODIM Badung – 24 June 2025)

The military's involvement accelerated infrastructure development because of its hierarchical command structure, capacity to mobilize personnel, and access to logistical resources. In this respect, the TNI AD acted as a capacity-filling actor, compensating for technical and financial limitations within civilian institutions. However, filling a civilian capacity gap does not automatically mean strengthening civilian capacity. The distinction depends on whether knowledge, authority, and responsibility are transferred to civilian institutions after construction. In Ayunan Village, village officials and community members participated in infrastructure development and basic maintenance, but their capacity to address complex pump failures, pipeline damage, or distribution problems remained limited.

The military's technical role therefore produced a dual effect. In the short term, it allowed the village to overcome infrastructure constraints. In the long term, however, limited technical transfer created a risk that village institutions would remain dependent on military personnel or external technicians. This illustrates an important dilemma in non-traditional military participation: the institution that is most capable of resolving an immediate problem may unintentionally weaken incentives to develop permanent civilian capacity. The finding is relevant to Huntington's (1991) discussion of the boundaries between military and civilian roles. Although Huntington primarily emphasized military professionalism and civilian control, the Ayunan case shows that contemporary civil–military boundaries are increasingly negotiated in developmental sectors. The central issue is not simply whether the military participates, but whether its participation remains limited, accountable, and oriented toward transferring responsibility to civilian authorities.

Coordinative Participation: Institutional Brokerage and Power Asymmetry

The TNI AD also performed an important coordinative function in implementing the Manunggal Air program, particularly through the Territorial Assistance section of Kodim 1611/Badung. Military personnel helped communicate the water-related needs of Ayunan Village to higher military authorities and other relevant stakeholders. They also coordinated

the mobilization of personnel, equipment, and other resources required for the construction and operation of the water infrastructure. In addition, the military facilitated communication and cooperation among soldiers, village officials, technical actors, and local communities throughout the implementation process. This coordinative role helped connect actors operating at different institutional levels and supported a more integrated response to the village's water-access problems.

A village government informant stated:

"Yes, the Indonesian Army has assisted us in strengthening water security in Ayunan Village, Badung Regency. The facilities constructed include a water reservoir, pumps, and pipelines that channel water from a spring located near the river to a storage tank that is more easily accessible to the community." (Secretary of Village Government of Ayunan – Interview on 30 June 2025)

This coordinative role can be interpreted as a form of institutional brokerage. The TNI AD connected actors operating at different administrative levels and reduced delays caused by fragmented responsibilities. The military did not merely construct infrastructure but also enabled the village government to access technical and logistical resources that it could not mobilize independently. Nevertheless, this arrangement was characterized by an unequal distribution of institutional power. The military possessed greater organizational capacity, authority, and access to resources than the village government or community groups. Although this authority facilitated rapid implementation, it also influenced how decisions were made and whose preferences received greater attention.

The findings suggest that coordination was strongest during the construction phase. Once direct military involvement decreased, responsibility for maintenance, financing, water allocation, and complaint resolution became less clear. This indicates that the program successfully established project coordination, but did not fully develop a permanent governance arrangement. Project coordination is generally temporary and focused on producing physical outputs. Governance, by contrast, requires clear authority, stable financing, accountability procedures, technical capacity, and long-term monitoring. The Ayunan case demonstrates that military coordination can accelerate infrastructure delivery but cannot substitute for a permanent civilian institution responsible for managing the water system.

This finding also complements Janowitz's (1960) argument that modern military institutions increasingly perform constabulary and socially oriented functions beyond their conventional defence responsibilities. In the context of the Manunggal Air program, the military's involvement demonstrates how territorial institutions can contribute to addressing community-based human security challenges, particularly limited access to water. Nevertheless, the expansion of military roles into development activities must be accompanied by clear institutional safeguards, defined responsibilities, and effective civilian oversight. Without such safeguards, temporary military coordination may gradually develop into routine dependence on military institutions for the provision of essential public services. Therefore, military participation should remain complementary and temporary, while long-term management and accountability must ultimately be placed under civilian authority.

Social Mobilization: Community Empowerment or Organized Compliance?

Military participation also took the form of social mobilization. Soldiers encouraged village leaders and residents to participate in gotong royong during construction and basic maintenance. This approach combined the organizational capacity of the military with an established cultural tradition of communal cooperation. Community members contributed labour, provided local knowledge, identified areas affected by water scarcity, and supported the installation of pipelines. A community informant explained:

“So far, our Subak irrigation system has received an adequate water supply. This has improved further with assistance from the Indonesian Army through the Manunggal Air program, as the pump installed in the river is able to lift water to our rice fields, which are located at a higher elevation.”

(Mr Made Kondra, farmer on Ayunan Village, interview on 25 June 2025)

These activities made the program more socially embedded and helped residents view the infrastructure as a collective resource. Participation also increased interaction among the military, village officials, and community beneficiaries. However, participation in implementation did not always mean participation in decision-making. Some residents reported that they contributed labour but were not fully involved in determining the location of facilities, distribution priorities, maintenance arrangements, or user contributions. One informant described some villagers as “passive beneficiaries” rather than active partners.

“Some residents felt that they were only beneficiaries of the program. They received the water, but they had little influence over the planning and management of the facilities.”

(Mrs Ketut A, Villagers of Ayunan, interview on June 2025)

Community involvement may occur at several levels. At a limited level, residents provide labour or attend meetings organized by more powerful actors. At a stronger level, residents participate in setting priorities, designing allocation rules, monitoring finances, and evaluating program performance. The Ayunan case combined these forms unevenly. Military mobilization enabled rapid collective action, but its hierarchical character also risked producing organized compliance rather than deliberative participation. The discipline and authority associated with the military encouraged residents to join program activities, yet they did not automatically create equal decision-making relations.

From the perspective of civil–military relations, community empowerment depends on whether mobilization is followed by the creation of representative civilian institutions. Without this transition, residents may remain beneficiaries of a military-facilitated project rather than owners of a community-managed water system.

Symbolic-Legitimizing Participation: Trust and the Visibility of the State

The military’s participation also generated symbolic and legitimizing effects. Several community informants perceived the presence of TNI AD personnel as evidence that the program would be completed and not abandoned. The military’s reputation for discipline, organization, and territorial presence increased public confidence in the implementation process. A community informant stated:

“When the military became involved, we felt more confident that the project would be completed. Their presence made us believe that the water facilities would not be abandoned halfway” (Mr Wayan Januarta, farmers, 25 June 2025)

The symbolic authority of the military helped mobilize participation, reduce uncertainty, and strengthen the visibility of the state in a village where previous civilian responses to water scarcity had been limited. In this sense, the TNI AD acted not only as an infrastructure provider but also as a representation of state capacity. However, this legitimizing function creates a further dilemma. Trust in the military does not necessarily strengthen trust in civilian institutions. When the success of public service delivery is associated primarily with the military, village governments and civilian agencies may appear incapable of addressing essential community needs.

The program may therefore strengthen state legitimacy while simultaneously personalizing that legitimacy in the military institution. If the community continues to expect the TNI AD to resolve technical, financial, or managerial problems, military involvement may

become normalized as a substitute for civilian governance. The long-term significance of symbolic legitimacy consequently depends on whether the military uses its authority to strengthen civilian institutions or whether its institutional presence becomes indispensable to the continuity of the program.

Impacts on Community Water Security

The TNI AD supported the initial construction, while recurring operational expenses were largely transferred to the village government and community. These costs included electricity, servicing, spare parts, and repairs. Village officials faced difficulties allocating sufficient funds because the village budget also covered other development priorities. Community willingness to contribute was also uneven. Without a predictable financing arrangement, maintenance could be postponed until minor problems developed into major failures.

This uncertainty has broader implications for civil–military relations. When the military constructs infrastructure without a sustainable civilian financing mechanism, communities may receive a functioning facility but remain dependent on future military support. Responsibility became unclear after direct military involvement declined. During construction, the TNI AD played a leading technical and coordinative role. Afterward, responsibility was dispersed among the village government, community groups, beneficiaries, and other civilian agencies.

Informants expressed different views about who should operate the pump, collect contributions, repair pipelines, allocate water, and handle complaints. The absence of a formal agreement weakened accountability. There was still no clear agreement on who would operate the pump, collect user contributions, repair damaged pipelines, distribute water, or respond to complaints. This uncertainty made it difficult to hold any individual or institution accountable when problems occurred. A clearer agreement on roles and responsibilities is therefore needed to support the daily operation and long-term maintenance of the system.

The military played an important role in supporting the implementation of the program, especially during the construction and coordination process. However, the involvement of civilian institutions in managing the water system was still limited. Local actors did not yet have sufficient authority, technical capacity, or financial support to manage the system independently. For the program to remain sustainable, responsibility for its management should gradually be transferred to a civilian institution that has clear authority and is accountable to the community.

Does Military Participation Strengthen Civilian Capacity or Create Dependence?

The findings do not support a simple interpretation of military involvement as either entirely beneficial or entirely problematic. The TNI AD simultaneously filled civilian capacity gaps, produced limited capacity-strengthening effects, and generated risks of institutional dependence. First, the military filled an immediate capacity gap by supplying personnel, logistics, organizational authority, coordination, and technical support. Without this involvement, the village would likely have faced greater difficulty constructing the required infrastructure. Second, the program produced some civilian capacity-strengthening effects. Village officials gained experience in inter-institutional coordination, while community members developed basic knowledge of infrastructure operation and maintenance. Third, the transfer of technical knowledge, authority, financing, and long-term management responsibility remained incomplete. This created the possibility that civilian actors would continue to rely on the military when technical or institutional problems emerged.

The TNI AD can therefore be understood as a catalytic but potentially substitutive actor. It acted as a catalyst by mobilizing resources and accelerating infrastructure development. It became potentially substitutive where military capacity replaced rather than strengthened permanent civilian institutions. This finding broadens the civil–military relations debate.

Huntington (1991) and Janowitz (1960) emphasized the relationship between military professionalism, civilian authority, and the changing social functions of armed forces. The Ayunan case demonstrates that civil–military boundaries are also negotiated through routine development programs and public service provision. Military influence in civilian affairs does not always take the form of direct political intervention. It may emerge through the normalization of the military as a preferred provider of services when civilian institutions are perceived as incapable of responding effectively. The democratic legitimacy of military participation therefore depends on the institutional conditions under which it occurs. Military assistance is more likely to strengthen civilian governance when civilian actors determine priorities, control long-term financing, manage distribution rules, monitor implementation, and possess a clear strategy for assuming full responsibility.

Toward a Provisional Civil–Military Governance Framework

The Ayunan case provides useful principles for civil–military collaboration, but the evidence is not sufficient to present the arrangement as a universally applicable or fully tested model. It is more appropriate to propose a provisional civil–military governance framework. The framework draws on the collaborative governance principles developed by Ansell and Gash (2008), particularly shared responsibility, inclusive participation, trust-building, institutional design, and face-to-face dialogue. However, collaboration involving the military requires additional safeguards because of the unequal authority and resources possessed by military institutions. Under this framework, the village government should remain the principal civilian authority. It should determine priorities through village deliberation, integrate water management into official development plans, allocate public funds, establish water-distribution rules, and oversee the responsible management institution.

The TNI AD should have a supporting role that is limited in duration. Its involvement may include building infrastructure, providing logistical support, offering emergency technical assistance, and giving initial training to local managers. To avoid unclear responsibilities, this role should be set out in a written agreement that explains the purpose of the involvement, its time frame, the resources provided, and the process for transferring responsibilities to civilian institutions. Decisions on user eligibility, tariffs, water distribution, and long-term management should not be made solely by the military. These matters should remain under civilian authority and involve the village government and the community. Relevant agencies at the regency level should also provide technical guidance, engineering support water-quality monitoring, regulatory supervision, and coordination with broader water-service plans. Their involvement is important because village governments may not have the technical expertise needed to manage these responsibilities on their own.

Conclusion

The *Manunggal Air* program in Ayunan Village demonstrates that military participation in water security extends beyond the provision of physical infrastructure. The TNI AD performed technical-infrastructure, coordinative, social-mobilizing, and symbolic-legitimizing roles. These forms of participation enabled the construction of pumps, reservoirs, and pipelines, facilitated coordination between village authorities and local communities, and strengthened public confidence in the implementation of the program.

The program contributed to improving water availability and accessibility, particularly during periods of seasonal scarcity. It reduced the time and effort required by some households to obtain water and supported agricultural activities by providing a more reliable source of irrigation. These outcomes indicate that military resources and organizational capacity can assist rural communities where civilian institutions face technical, logistical, and financial constraints. However, the benefits were not distributed evenly, as households located farther

from the main infrastructure continued to experience weaker water pressure and less reliable access.

Findings also reveal that military participation produced an institutional dilemma. In the short term, the TNI AD filled gaps in civilian implementation capacity and accelerated the delivery of water infrastructure. In the longer term, however, the limited transfer of technical knowledge, financial responsibility, and managerial authority created the possibility of continued dependence on military assistance. Restricted pump capacity, maintenance costs, unclear institutional responsibilities, and uneven community participation further limited the sustainability of the program.

Accordingly, military involvement in civilian water provision should be temporary, clearly regulated, and directed toward strengthening civilian institutions. The village government should retain authority over planning, budgeting, water allocation, and long-term management, while the TNI AD should provide limited technical, logistical, and emergency support. Sustainable management also requires the involvement of relevant local government agencies and a representative community-based institution responsible for daily operations, maintenance, financial administration, and complaint resolution.

The Ayunan case contributes to Indonesian civil–military relations scholarship by showing that civil–military boundaries are negotiated not only through political intervention but also through development programs and public-service delivery. Military participation can support human security when it operates under civilian authority, involves meaningful community participation, and includes clear mechanisms for accountability and responsibility transfer. Nevertheless, the limited number of informants and the absence of quantitative data on water quality, household expenditure, and agricultural production constrain the broader generalization of the findings. Further comparative research is therefore needed to assess whether similar patterns of capacity building and institutional dependence occur in *Manunggal Air* programs implemented in other regions.

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