

Legal Protection Of The Environment In Military Operations: From An Anthropocentric Toward An Ecocentric Perspective Within The Framework Of Environmental Sovereignty

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ARTICLE INFORMATION	ABSTRACT
Keywords: legal protection of the environment; military operations; Martens Clause; ecocentrism; environmental sovereignty.	<i>Military operations, whether in armed conflict or in operations other than war, often leave environmental damage that persists for decades, while the existing legal framework still views the environment primarily as a means of fulfilling human interests. This study aims to analyze the regulation of the legal protection of the environment in military operations, to examine environmental sovereignty as a basis for restricting the operational freedom of states, and to formulate the direction of a shift from an anthropocentric to an ecocentric perspective through the reactualization of the Martens Clause. This study uses a normative juridical method with statutory, conceptual, and case approaches, covering Agent Orange in Vietnam, the burning of Kuwait's oil wells in 1991, the collapse of the Kakhovka Dam in 2023, the Urutsewu dispute, and the ammunition depot explosion in Ciangsana. The results show that international humanitarian law sets a high and cumulative damage threshold, so that environmental protection tends to depend on its impact on humans, while national law does not yet contain specific provisions on the environmental responsibility of defense institutions. Environmental sovereignty, understood as both a right and a responsibility of the state, provides a normative basis for restricting military operations, with respect to the environment of a state's own territory as well as that of other states. The Martens Clause, which protects matters not yet regulated through the principles of humanity and the dictates of public conscience, can be interpreted evolutively as an entry point for environmental protection that does not depend on human harm. This study proposes moderate ecocentrism, namely the recognition of the intrinsic value of the environment that is still weighed together with military necessity. This reconstruction encompasses the strengthening of norms, institutions, accountability, and doctrine within the Indonesian National Armed Forces (TNI).</i>

A. Introduction

Environmental damage is among the most enduring consequences of military activity. The spraying of herbicides by the United States military during the Vietnam War,¹ the burning of Kuwait's oil wells in 1991,² and the collapse of the Kakhovka Dam in Ukraine in June 2023 show that the effects of military operations on land, water, and ecosystems can persist long after the fighting ends and cross national borders. Similar effects on a smaller scale also arise from military activities in peacetime, such as combat training, weapons testing, and ammunition storage.

The problem is also real in Indonesia. The dispute over the Urutsewu coastal land in Kebumen Regency concerns the use of the land by the Indonesian Army (TNI AD) for training and weapons testing, the fencing of the land, and the approval of land use for iron sand mining. On March 30, 2024, the Kodam Jaya Regional Ammunition Depot in Ciangsana, Bogor Regency, caught fire and exploded. The explosion damaged at least 31 residents' houses and forced hundreds of people to evacuate. Both events show that the legal relationship between defense interests and environmental protection has not been clearly arranged.

The more fundamental problem is not merely a normative vacuum but a paradigm. In its 1996 Advisory Opinion on nuclear weapons, the International Court of Justice (ICJ) stated that the environment is not an abstraction but represents the living space, the quality of life, and the health of human beings, including generations unborn. This formulation affirms the importance of the environment but still grounds it in human interests. This view is what is called anthropocentric. The threshold of protection in the 1977 Additional Protocol I is also high, because the damage must be widespread, long-term, and severe at the same time. The Martens Clause offers a way out because it protects situations not yet regulated through the principles of humanity and the dictates of public conscience, but its original wording proceeds from human beings.

(IV) Respecting the Laws and Customs of War on Land, October 18, 1907, preamble; Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), June 8, 1977, 1125 UNTS 3, art. 1(2).

Previous studies have examined the gaps in environmental protection in armed conflict,³ including discussions of the damage threshold in Additional Protocol I,⁴ and the International Law Commission (ILC) formulated principles on the protection of the environment in relation to armed conflict in 2022.⁵ The Martens Clause itself has been widely studied as a source of law and an interpretive guide. In Indonesia, the idea of a green constitution⁶ and environmental ethics⁷ have developed. However, based on the literature review in this study, these ideas, together with the Martens Clause, have not been

¹ Arthur H. Westing, ed., *Herbicides in War: The Long-Term Ecological and Human Consequences* (London: Taylor & Francis for SIPRI, 1984).

² UN Security Council, Resolution 687 (1991), April 3, 1991, para. 16.

³ Michael Bothe et al., "International Law Protecting the Environment during Armed Conflict: Gaps and Opportunities," *International Review of the Red Cross* 92, no. 879 (2010): 569–92.

⁴ Michael N. Schmitt, "Green War: An Assessment of the Environmental Law of International Armed Conflict," *Yale Journal of International Law* 22, no. 1 (1997): 1–109.

⁵ International Law Commission, *Draft Principles on Protection of the Environment in Relation to Armed Conflicts, with Commentaries*, in *Report of the International Law Commission on the Work of Its Seventy-Third Session*, UN Doc. A/77/10 (2022), ch. IV.

⁶ Jimly Asshiddiqie, *Green Constitution: The Green Nuance of the 1945 Constitution of the Republic of Indonesia* (Jakarta: Rajawali Pers, 2009).

⁷ A. Sonny Keraf, *Environmental Ethics* (Jakarta: Penerbit Buku Kompas, 2010).

specifically linked to the protection of the environment in military operations in Indonesia. Existing studies also tend to separate international humanitarian law from national environmental law, so that environmental protection in military operations in wartime and peacetime is rarely discussed within a single framework.

This study fills that gap by bringing three elements together in a single analytical framework, namely the regulation of environmental protection in military operations, environmental sovereignty as a basis for restricting military operations, and the shift from anthropocentrism to ecocentrism. The novelty of this article lies in its use of the Martens Clause as a bridge toward ecocentric protection, in its simultaneous use of international cases and Indonesian cases to test that framework, and in its proposal of moderate ecocentrism as a direction of reconstruction that still takes military necessity into account. This article answers three questions: (1) how the legal protection of the environment in military operations is regulated and to what extent that regulation remains anthropocentric; (2) how the concept of environmental sovereignty restricts the military operations of a state; and (3) how the Martens Clause can be reactualized to reconstruct protection toward an ecocentric perspective in the Indonesian context. The results are expected to serve as a basis for policies that integrate defense and environmental preservation.

B. Method

This study uses a normative juridical method with three approaches, namely the statutory, conceptual, and case approaches. Primary legal materials include the 1945 Constitution of the Republic of Indonesia (1945 Constitution), Law Number 32 of 2009 on Environmental Protection and Management (EPM Law), the Law on National Defense and the Law on the Indonesian National Armed Forces (TNI Law), as well as international instruments such as the Martens Clause (the preamble of the 1899 and 1907 Hague Conventions and Article 1(2) of Additional Protocol I), Additional Protocol I, the 1976 ENMOD Convention, the 1998 Rome Statute, and ICJ decisions. Secondary legal materials consist of books, journals, and documents of international institutions. Data on the Urutsewu and Ciangsana cases were obtained from media reports and analyzed critically as illustrations, not as empirical field findings. The analysis is qualitative-prescriptive. The discussion is organized from the existing regulation (section 1), through the foundation of environmental sovereignty (section 2), to the reactualization of the Martens Clause and the reconstruction of norms (section 3).

C. Results and Discussion

1. The Anthropocentric Paradigm in Environmental Protection during Military Operations

International humanitarian law provides environmental protection through several instruments, but the threshold is high. Article 35(3) of Additional Protocol I prohibits methods or means of warfare that are intended, or may be expected, to cause widespread, long-term, and severe damage to the natural environment. Article 55 requires care to protect the environment and affirms that the prohibition covers methods that, through such damage, prejudice the health or survival of the population. Two points should be noted. First, the three criteria are cumulative, so damage that is only widespread or only severe does not necessarily violate the prohibition. Second, Article 55 links environmental protection to the interests of the population, which reveals an anthropocentric character.

The 1976 ENMOD Convention uses alternative criteria, namely widespread, long-

term, or severe effects, but it only prohibits the deliberate use of environmental modification techniques as a means of destruction against another state. Its scope is narrow because it does not reach environmental damage incidental to ordinary weapons and methods of warfare. The 1998 Rome Statute makes an attack causing widespread, long-term, and severe environmental damage a war crime only if the damage is clearly excessive in relation to the concrete and direct military advantage, and this provision applies to international armed conflicts. Accordingly, environmental protection depends on a proportionality assessment that places the environment on one side of the scale and military advantage on the other.

Recent developments point toward broader protection. The study of the International Committee of the Red Cross (ICRC) on customary international humanitarian law formulated general rules on the protection of the environment in military operations,⁸ the 2020 ICRC Guidelines restated those rules with commentary, and in 2022 the ILC formulated principles covering the general protection of the natural environment as well as giving weight to environmental considerations in assessing military necessity and proportionality. These instruments are not binding treaties (*soft law*), but they serve as interpretive guidance that has begun to treat the natural environment as an object of protection in its own right. Table 1 summarizes the thresholds and orientation of selected instruments.

Table 1

Thresholds and orientation of environmental protection in selected instruments

No.	Instrument	Threshold or criteria	Orientation
1	1977 Additional Protocol I (Article 35(3) and Article 55)	Widespread, long-term, and severe damage (cumulative); Article 55 links it to the health or survival of the population	Anthropocentric
2	1976 ENMOD Convention	Widespread, long-term, or severe effects (alternative); environmental modification techniques only	Limited to the manipulation of the environment as a weapon
3	1998 Rome Statute (Article 8(2)(b)(iv))	Widespread, long-term, and severe damage that is clearly excessive in relation to military advantage	Anthropocentric (proportionality)
4	Martens Clause (1899 and 1907 Hague Conventions; Additional Protocol I, Article 1(2))	Residual protection through the principles of humanity and the dictates of public conscience; no damage threshold	Anthropocentric in its original formulation; open to evolutive interpretation

⁸ Jean-Marie Henckaerts and Louise Doswald-Beck, eds., *Customary International Humanitarian Law*, vol. 1, *Rules* (Cambridge: Cambridge University Press, 2005), rules 43–45.

5	2022 ILC Principles and 2020 ICRC Guidelines	General protection of the natural environment; environmental considerations in military necessity and proportionality	Transitional (soft law)
6	1945 Constitution and EPM Law	Right to a good and healthy environment; precautionary principle and the principles of preservation and sustainability	Mixed; environmental rights inhere in human beings

Table 1 shows that most binding provisions still set a cumulative threshold or link protection to humans, while a move toward protecting the environment in its own right appears only in soft *law* instruments. At the national level, the framework for environmental protection does not distinguish between peacetime and wartime. Article 28H(1) of the 1945 Constitution guarantees the right to a good and healthy environment, and Article 33(4) contains the principle of sustainability and environmental awareness in the national economy.²² The EPM Law provides the precautionary principle, the principle of preservation and sustainability, and the polluter pays principle, and regulates strict liability (*strict liability*) for activities that use hazardous and toxic materials or pose a serious threat to the environment.²³ However, based on a review of their texts, the Law on National Defense and the TNI Law contain no specific provisions on environmental obligations in training, ammunition storage, or military operations other than war. The application of the EPM Law instruments to defense activities therefore depends on interpretation and on the practice of each unit. As far as can be traced, Indonesia is also not yet a party to Additional Protocol I, so protection under that instrument can apply only insofar as its rules are recognized as customary international law.

Within this framework, the Martens Clause functions as residual protection. The clause was first included in the preamble of the 1899 Hague Convention II, repeated in the 1907 Hague Convention IV, and set out in Article 1(2) of Additional Protocol I. It provides that, in cases not covered by treaties, persons remain under the protection of the principles of international law derived from custom, the principles of humanity, and the dictates of public conscience. The ICJ considered this clause to be an effective means of addressing the rapid evolution of military technology. This means that, when the threshold of Additional Protocol I is not met, a military operation is not automatically outside the law. Experts differ on the legal force of this clause: some regard it as a source and interpretive guide, while others consider its binding force to be limited. In addition, its original wording protects human beings, namely civilians and combatants, so its basis remains anthropocentric.

International cases illustrate the consequences of this threshold. The spraying of herbicides in Vietnam occurred before Additional Protocol I came into being, but its effects, in the form of forest destruction and contamination, endured for a long time. The burning of Kuwait's oil wells prompted the UN Security Council to declare Iraq liable for environmental damage and the depletion of natural resources, which was subsequently followed up through an international compensation mechanism. This

mechanism rests on Iraq's status as the party that violated the prohibition on the use of force, so it cannot simply be applied to all military operations. The collapse of the Kakhovka Dam on June 6, 2023, according to the assessment of the United Nations Environment Programme (UNEP), caused damage that is largely irreversible, and its effects will be felt for decades and extend beyond Ukraine's borders. Legal responsibility for the incident is still debated, including the possible application of the Rome Statute and the discourse on ecocide. The answer to the first question, therefore, is that the legal protection of the environment in military operations remains normatively anthropocentric: the threshold is high and often cumulative, protection is frequently tied to human interests, and national law has not specifically regulated the environmental responsibility of defense institutions. The Martens Clause opens residual protection, but its original wording also proceeds from human beings.

2. Environmental Sovereignty as a Basis for Restricting Military Operations

Environmental sovereignty can be understood from two sides. The first is the state's right to manage natural resources within its territory, which is rooted in permanent sovereignty over natural resources.⁹ The second is responsibility. The 1972 Stockholm Declaration and the 1992 Rio Declaration both state that states have the right to exploit their resources pursuant to their own environmental and developmental policies, but are responsible for ensuring that activities within their jurisdiction do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction.¹⁰ This principle is rooted in the *Trail Smelter* arbitral award, and the ICJ stated in its 1996 Advisory Opinion that this obligation is part of the international law of the environment, and that environmental considerations are relevant in assessing necessity and proportionality in armed conflict.

Two subsequent ICJ decisions clarify the content of this responsibility. In the *Pulp Mills* case, the Court affirmed the duty of *due diligence* to prevent transboundary environmental harm, including the obligation to conduct an environmental impact assessment of activities that may have a transboundary impact. In its compensation judgment in *Costa Rica v. Nicaragua* in 2018, the Court recognized that damage to the environment in itself is compensable, including the loss of environmental goods and services prior to recovery. This latter judgment is important for this study because it recognizes ecological harm without requiring any particular human loss, thereby providing a foothold for a shift toward an ecocentric approach.

Environmental sovereignty also has an internal dimension. The Preamble of the 1945 Constitution assigns the state to protect the whole Indonesian nation and the entire homeland of Indonesia, Article 28H(1) guarantees a good and healthy environment, and Article 33(4) establishes the principle of sustainability and environmental awareness. The idea of a green constitution interprets these provisions as the constitutional basis for environmental protection,³⁹ and the EPM Law places state responsibility as the first principle of environmental management. Accordingly, defense sovereignty and environmental sovereignty derive from the same constitutional duty, namely to protect the nation and its territory, so that one cannot be used as a reason to

⁹ UN General Assembly, Resolution 1803 (XVII), "Permanent Sovereignty over Natural Resources," December 14, 1962.

¹⁰ Declaration of the United Nations Conference on the Human Environment, June 16, 1972, UN Doc. A/CONF.48/14/Rev.1, principle 21; Rio Declaration on Environment and Development, August 12, 1992, UN Doc. A/CONF.151/26 (vol. I), principle 2.

disregard the other.

The Urutsewu dispute illustrates the first problem, namely land control for defense purposes without clear environmental obligations. According to media reports, the Indonesian Army has used the Urutsewu coast for training and heavy weapons testing since 1982. The permission to use the land, which was initially a borrowing arrangement with the village head, turned into unilateral notification and then ended in a claim of land ownership. The Indonesian Army claims a coastal strip approximately 22.5 kilometers long and hundreds of meters wide from the shoreline, and has fenced it off gradually. The fencing was rejected by residents and was marked several times by clashes. In 2008, Kodam IV/Diponegoro also approved the use of Army land in Mirit District by a private company for iron sand mining, and the village officials who attended the environmental impact assessment (AMDAL) hearing rejected the plan. It must be emphasized that this case is fundamentally an agrarian dispute, and the sources reviewed contain no legally proven evidence of ecological damage caused by military training. The value of this case lies in illustrating the relationship between claims of land control for defense and the lack of clarity about environmental obligations over such land use.

The Ciangsana incident illustrates the second problem, namely the risk of storing hazardous materials near residential areas. On March 30, 2024, at around 18:30 WIB, the Kodam Jaya regional ammunition depot caught fire and exploded. One of the burning warehouses stored approximately 160,000 rounds of expired ammunition and explosives awaiting destruction, and no fatalities were reported.¹¹ Projectiles were thrown into residential areas about 200 meters from the depot, the explosion was heard up to a radius of about 7 kilometers, at least 31 houses were damaged, and hundreds of residents were evacuated. The Army Chief of Staff apologized and stated that the types of ammunition would be sorted because they had previously been stored together, while the destruction planned for after Eid al-Fitr required a lengthy reporting process. The Bogor Regency Government distributed cash assistance to the owners of damaged houses, with a maximum of five million rupiah per house from the unforeseen expenditure budget.

Three points can be noted from this incident. First, the storage of expired, undestroyed ammunition near residential areas tests the application of the precautionary principle. Second, based on the sources reviewed, the remedy for residents consisted of an apology and regional social assistance, not accountability grounded in strict liability or an environmental restoration obligation as regulated by the EPM Law. Third, the open sources traced contain more about material and social losses than about ecological impacts such as soil and air quality, so the environmental dimension of this incident has not been well documented.

Both cases support an understanding of environmental sovereignty as responsible sovereignty. Defense operational freedom is legitimate as long as it is accompanied by preventive obligations, such as impact assessment and safe storage, a duty of restoration, and a duty not to harm others. The answer to the second question, therefore, is that environmental sovereignty restricts military operations at the international level through the obligation not to harm the environment of other states, and at the national level through the state's constitutional duty to its citizens and its environment.

¹¹ Bogor Acting Regent Assesses Houses Damaged by Ammunition Depot Explosion,” *Antara*, March 31, 2024, <https://megapolitan.antaranews.com/berita/284079/pj-bupati-bogor-asesmen-rumah-yang-rusak-terdampak-ledakan-gudang-amunisi>.

3. Reactualization of the Martens Clause and Reconstruction toward Ecocentric Protection in Military Operations

The two preceding discussions show that environmental protection in military operations still rests on the instrumental value of the environment for humans. Anthropocentrism views nature as valuable because of its benefits to humans; humans and nature are not on an equal footing, so nature is an object of exploitation. Ecocentrism, by contrast, recognizes the intrinsic value of nature and views humans as part of the ecological community, in which nature and humans are equal so that neither is subordinate to the other. The Indonesian literature on environmental ethics discusses this difference and positions ecocentrism as a corrective to exploitative anthropocentrism. In law, the idea emerged in proposals that natural objects should have legal standing, and has been realized, for example, in the recognition of the rights of nature in the 2008 Constitution of Ecuador and the granting of legal personality to the Whanganui River in New Zealand in 2017.

In the law of armed conflict, a similar direction can be seen in three developments. First, the 2022 ILC Principles and the 2020 ICRC Guidelines treat the natural environment as a protected object and require environmental considerations in assessing military necessity and proportionality, as discussed in section 1. Second, the 2018 ICJ judgment recognized compensation for damage to the environment in itself.¹² Third, the definition of ecocide proposed by an independent expert panel in 2021 covers unlawful or wanton acts committed with knowledge that there is a substantial likelihood of severe and either widespread or long-term damage, so its threshold is lower than that of Additional Protocol I because the criteria are no longer cumulative.

The Martens Clause can serve as a bridge between these developments and binding norms. The clause functions in at least three ways: as residual protection when treaties are silent, as an interpretive guide for existing rules, and as a channel for evolving values to enter the law. Its two key elements, namely the principles of humanity and the dictates of public conscience, are not static. In the twenty-first century, public conscience can be read to include concern for environmental damage, as seen, among other things, in the Stockholm and Rio Declarations, the recognition of the rights of nature in several countries, and the formulation of the 2022 ILC Principles.

The strongest indication comes from the ILC. Principle 12 of the 2022 ILC Principles formulates the Martens Clause specifically for the environment: in cases not covered by international agreements, the environment remains under the protection of the principles of international law derived from established custom, from the principles of humanity, and from the dictates of public conscience. In this formulation, the subject protected is no longer civilians and combatants, but the environment itself. This shift of subject is the core of the reactuation proposed in this article. The principle has the status of *soft law* so its force depends on acceptance by states.

This reactuation has implications in three respects. First, when the threshold of Additional Protocol I or other provisions is not met, serious environmental damage is still assessed on the basis of the principles of humanity and the dictates of public conscience, rather than being regarded as permitted because there is no written prohibition. Second, the clause becomes a basis for the evolutive interpretation of the principle of proportionality and military necessity so that environmental value is taken into account in its own right. Third, for Indonesia, the clause can be incorporated into

¹² *Certain Activities Carried Out by Nicaragua in the Border Area*, Compensation, 2018 ICJ Reports 15.

TNI doctrine and operational guidelines as a standard of conduct. It must be acknowledged that the Martens Clause does not set any particular threshold or sanction, and experts differ on whether it creates a stand-alone obligation or is merely an interpretive guide. Therefore, this clause needs to be supported by more concrete norms.

Nevertheless, absolute ecocentrism is difficult to apply to military operations, because the law of armed conflict is built on a balance between military necessity and humanity. This study therefore proposes moderate ecocentrism, namely the recognition that the environment has a protected value without having to prove its impact on humans, restricted only by genuine military necessity and strict proportionality. Moderate ecocentrism requires three changes: the environment is included as a value in its own right in the proportionality assessment, the damage threshold is no longer cumulative, and environmental restoration is recognized as an obligation. For the Indonesian context, this reconstruction can be realized through the following four steps.

Strengthening Norms Environmental protection obligations need to be expressly incorporated into implementing regulations in the defense sector, particularly concerning the management of training and weapons-testing areas, and the storage and destruction of ammunition. Such regulations also need to affirm the applicability of the EPM Law instruments, such as environmental impact assessment, environmental permits, and sanctions, to defense activities, with special arrangements for classified information. The Government may also consider incorporating the 2022 ILC Principles and the 2020 ICRC Guidelines, including the formulation of the Martens Clause for the environment, into TNI operational guidelines and humanitarian law manuals, and assess the possibility of accession to Additional Protocol I.

a. Institutions and Oversight

The environmental function needs to be institutionalized within the TNI, accompanied by cooperation with the ministry responsible for the environment in periodic environmental audits of training areas and ammunition depots. The participatory principle in the EPM Law requires that communities around military facilities receive adequate information about the risks and plans for ammunition destruction, while maintaining the confidentiality that is genuinely needed for defense.

b. Accountability and Restoration

The polluter pays principle and strict liability need to be applied to environmental damage resulting from defense activities, including the obligation of environmental restoration. The Ciangsana experience shows that remedies resting on apologies and regional social assistance are inadequate. A compensation and restoration mechanism with a clear legal basis, including its funding, is needed so that residents do not depend on ad hoc policies.

c. Doctrine and Education

Environmental considerations need to be included in operational planning, rules of engagement guidelines, and humanitarian law education for soldiers, and the Martens Clause can be taught as a standard of conduct for situations not expressly regulated. Sishankamrata (the Total People's Defense and Security System) needs to be interpreted as encompassing ecological obligations, because a total defense that relies on territory and natural resources cannot be separated from the preservation of that territory itself. The answer to the third question, therefore, is the reactualization of the Martens Clause toward moderate ecocentrism, realized through the strengthening of norms, institutions, accountability, and doctrine.

D. Conclusion

The legal protection of the environment in military operations remains anthropocentric. International humanitarian law sets a high and often cumulative damage threshold, while national law has not specifically regulated the environmental responsibility of defense institutions. The Martens Clause opens residual protection, but its original wording proceeds from human beings. Instruments of *soft law* and the 2018 ICJ judgment indicate a direction toward protecting the environment in its own right, but that direction has not yet become a binding norm.

Environmental sovereignty, understood as both a right and a responsibility of the state, provides the basis for restricting military operations, with respect to the environment of other states as well as the environment of a state's own territory. The Urutsewu and Ciangsana cases show that defense operational freedom in Indonesia has not been matched by clear obligations of prevention and environmental restoration.

This study recommends the reactualization of the Martens Clause, as formulated for the environment in Principle 12 of the 2022 ILC Principles, as an entry point toward moderate ecocentrism, to be realized through strengthening norms in defense-sector regulations, institutionalizing the environmental function within the TNI, applying strict liability and restoration obligations, and integrating environmental considerations into doctrine and education. This study is normative and uses case data from media reports, so further research in the form of empirical studies, for example environmental audits of training areas and ammunition depots and interviews with stakeholders, is needed to test these findings and recommendations.

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