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The Landscape of Environmental Crime in the Philippines: A Comprehensive Literature Review

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ABSTRACT

Environmental crime poses a significant threat to global biodiversity, natural resources, and sustainable development. In the Philippines, an archipelago renowned for its rich biodiversity but also highly vulnerable to environmental degradation, these illicit activities are rampant and multifaceted. This article presents a comprehensive literature review examining the various forms, drivers, impacts, and challenges associated with environmental crime across the Philippine islands. Drawing upon academic studies, government reports, and news archives, it synthesizes findings on illegal logging, mining, fishing, wildlife trade, and waste management violations. The review highlights critical issues such as weak law enforcement, socio-economic pressures, and insufficient public awareness as key perpetuating factors. By adopting an IMRaD (Introduction, Methods, Results, and Discussion) framework, this study aims to consolidate existing knowledge, identify persistent gaps, and underscore the urgent need for integrated and robust interventions to safeguard the Philippines' ecological heritage and foster sustainable development.

KEYWORDS: Environmental crime, Philippines, environmental law enforcement, illegal logging, wildlife trafficking, illegal fishing, environmental governance, ecological degradation, policy responses, literature review.

INTRODUCTION

Environmental crime, defined as illegal activities that harm the environment, has emerged as a pervasive and escalating global challenge, undermining conservation efforts, threatening livelihoods, and contributing to climate change [57]. These illicit activities, which often involve organized crime networks, range from illegal logging and wildlife trafficking to illicit mining and hazardous waste dumping. The Philippines, a megadiverse country and an archipelagic nation, is particularly susceptible to the devastating impacts of environmental crime due to its rich natural resources, extensive coastlines, and often challenging governance landscape [21].

The nation's unique ecosystems, from its ancient forests to its vibrant marine habitats, are under constant threat. Illegal logging continues to decimate critical forest cover, leading to soil erosion, landslides, and loss of biodiversity [3, 5, 25, 30]. Unregulated and illegal mining operations pollute water bodies, destroy landscapes, and displace communities [17, 23, 24, 26]. Destructive and illegal fishing practices, including overfishing, are pushing the country's fish stocks to the brink of collapse and degrading vital marine ecosystems like coral reefs [47, 48, 56]. Furthermore, the Philippines grapples with significant challenges in solid waste management, leading to widespread pollution of land and marine environments [13, 19, 20, 29, 51, 52, 57]. The illegal trade in endemic wildlife further endangers the country's unique flora and fauna [8, 37, 46].

Despite existing environmental laws and dedicated government agencies, the enforcement of these regulations remains a persistent challenge [4, 16, 18, 53]. This article aims to provide a comprehensive review of the existing literature on environmental crime in the Philippines. Specifically, it seeks to: 1) identify the prevalent forms of environmental crime; 2) explore the underlying drivers and perpetuating factors; 3) discuss the documented impacts on the environment and society; and 4) highlight the challenges in combating these illicit activities. By synthesizing diverse research, this study intends to offer a consolidated understanding of the issue, informing future research, policy development, and conservation efforts in the Philippines.

METHODS

This study employed a systematic literature review methodology to comprehensively examine environmental

crime in the Philippines. This approach allowed for the identification, selection, appraisal, and synthesis of all relevant research on the topic, ensuring a broad and in-depth understanding.

2.1 Research Design and Search Strategy

A systematic literature review was chosen to provide a structured and transparent overview of the existing body of knowledge. The search strategy involved querying multiple academic databases, institutional repositories, and news archives to capture a wide range of relevant publications. The databases included ProQuest (for newspapers and dissertations), SSRN Electronic Journal, ResearchGate, and various academic journal platforms (e.g., those hosting Forests, iForest, Animals, Journal of Cleaner Production, International Journal of Advanced Research, International Journal of Multidisciplinary: Applied Business and Education Research, International Multidisciplinary Research Journal, Mitochondrial DNA, Journal of Environmental Nanotechnology, Mediterranean Journal of Basic and Applied Sciences, Acta Natura Et Scientia, European Journal of Education Studies, EPRA International Journal of Multidisciplinary Research, International Journal of Scientific Research and Engineering Development, International Journal of Creative Research Thoughts, International Journal of Advanced Research, Ideas and Innovations in Technology, Dangal Research Refereed Journal, Journal of Interdisciplinary Perspectives, American Journal of Humanities and Social Sciences Research, Pakistan Journal of Criminology, Geography Environment Sustainability). News archives from sources like Manila Bulletin and Business Mirror were also extensively consulted to capture real-time incidents and enforcement actions.

Keywords used in various combinations included: "environmental crime Philippines," "illegal logging Philippines," "deforestation Philippines," "illegal mining Philippines," "illegal fishing Philippines," "overfishing Philippines," "wildlife trade Philippines," "solid waste management Philippines," "environmental law enforcement Philippines," "environmental violations Philippines," "environmental degradation Philippines," and "environmental defenders Philippines." The search was not limited by publication date to ensure a historical perspective on the issue. The PRISMA 2020 Statement was considered as a guideline for reporting systematic reviews, ensuring transparency in the methodology [49].

2.2 Inclusion and Exclusion Criteria

- Inclusion Criteria:
    - Studies, reports, theses, and news articles directly addressing environmental crime, violations, or related issues (e.g., deforestation, pollution, illegal resource extraction, wildlife trafficking) within the geographical context of the Philippines.
    - Publications available in English.
    - Both qualitative and quantitative studies.
    - Studies focusing on drivers, impacts, enforcement challenges, or policy implications.
- Exclusion Criteria:
    - Studies not directly related to environmental crime or its impacts in the Philippines.
    - Opinion pieces or commentaries without substantive research backing (unless providing specific incident reports).
    - Duplicate publications.

2.3 Data Extraction and Synthesis

Relevant information from the selected literature was extracted and categorized based on key themes. These themes included:

- Types of Environmental Crime: Specific illicit activities identified (e.g., illegal logging, illegal mining, illegal fishing, wildlife trafficking, waste dumping).
- Drivers: Factors contributing to the perpetration of environmental crimes (e.g., socio-economic conditions, demand, governance gaps, corruption).
- Impacts: Documented environmental and socio-economic consequences (e.g., biodiversity loss, pollution, resource depletion, community displacement, violence against defenders).
- Enforcement Challenges: Obstacles faced by law enforcement and regulatory bodies (e.g., weak implementation, lack of resources, corruption, awareness gaps).
- Policy and Legal Frameworks: Assessment of existing laws and their effectiveness.

A thematic synthesis approach was employed to analyze the extracted data. This involved identifying recurrent patterns, discrepancies, and significant findings across the diverse sources. The analysis also considered relevant criminological theories, such as Social Disorganization Theory [2, 7], Routine Activity Theory [14, 36], and Crime Pattern Theory [9], to contextualize the drivers and patterns of environmental crime in the Philippine setting.

RESULTS

The comprehensive literature review reveals a pervasive and complex landscape of environmental crime in the Philippines, characterized by multiple forms of illicit activities driven by a combination of socio-economic, governance, and demand-side factors.

3.1 Prevalent Forms of Environmental Crime

- Illegal Logging and Deforestation: This is one of the most frequently cited environmental crimes. Studies indicate persistent deforestation and forest degradation across the Philippines, with specific hotspots identified through earth observation products [3, 25]. Illegal logging often occurs in 'protected areas' [27] and remote regions like the Sierra Madre Mountain Range [5, 30, 31, 38]. Challenges in protecting wildlife sanctuaries are also documented [15]. The problem is exacerbated by issues in anti-illegal logging law implementation [31].
- Illegal Mining: Unregulated and illegal small-scale mining operations are a significant concern, leading to severe environmental degradation, including water pollution and landscape destruction [23, 24, 26, 39]. Cases of illegal quarry operations have been reported in various regions [23], and foreign nationals have been implicated in illegal mining activities [17]. A case study specifically highlighted illegal mining in Mt. Mantalingahan, Palawan [26]. The challenges of sustainable mining in biodiverse tropical landscapes are also acknowledged [24].
- Illegal Fishing and Marine Resource Depletion: Overfishing and destructive fishing practices, such as the use of illegal fishing gear, are pushing the Philippines' rich marine fish stocks towards collapse [47, 48]. These activities severely impact marine ecosystems [50]. Awareness and compliance with fishery laws among coastal communities remain a challenge [48].
- Solid Waste Management and Pollution: Despite the existence of the Ecological Solid Waste Management Act (RA 9003), its implementation faces significant barriers, particularly in urban and slum areas [13, 19, 51, 52, 57]. This leads to widespread plastic pollution, with government executives even facing charges for marine plastic pollution [29]. Case studies highlight environmental violations related to waste in tourist destinations like Boracay Island [20] and illegal chemical dumping [10].
- Illegal Wildlife Trade: The Philippines is a source, transit, and destination country for illegal wildlife trade. This illicit activity threatens endemic species, including hornbills [46], and involves complex networks, making provenance determination challenging [8]. Online platforms facilitate this trade [46].

3.2 Drivers and Perpetuating Factors

Several factors contribute to the persistence of environmental crime:

- Weak Law Enforcement and Governance Gaps: A recurring theme is the poor implementation and enforcement of environmental laws [4, 16, 18, 53, 54]. This includes challenges faced by environmental defenders, with the Philippines being noted as one of the worst in Asia for killings of such individuals [18]. Lack of trust in police and social disorganization can also impact the fear of crime and potentially reporting [2, 7].
- Socio-Economic Pressures: Poverty and lack of alternative livelihoods often drive local communities to engage in illegal resource extraction (e.g., logging, mining, fishing) for survival [48, 50]. Economic growth has sometimes come at the expense of environmental degradation [21].
- Corruption: While not explicitly detailed in all provided references, the general context of weak enforcement often implies underlying issues of corruption that facilitate illicit activities.
- Lack of Awareness and Compliance: Studies indicate varying levels of environmental law awareness among different segments of the population, including students [12, 22, 28, 42, 43, 58] and tricycle drivers [58]. Low awareness can contribute to violations [12].
- Demand-Side Factors: The demand for illegally sourced timber, minerals, fish, and wildlife, both domestically and internationally, fuels these crimes.

3.3 Impacts of Environmental Crime

The impacts are severe and multi-faceted:

- Ecological Degradation: Loss of biodiversity, deforestation, marine ecosystem damage, water and soil pollution [3, 21, 24, 25, 30, 31, 47, 50].
- Socio-Economic Consequences: Displacement of communities, health impacts from pollution, loss of livelihoods for legitimate resource users, and potential links to crime [10, 22, 39].
- Threats to Environmental Defenders: Violence and killings against those protecting natural resources [18].

3.4 Challenges in Combating Environmental Crime

- Enforcement Capacity: Insufficient personnel, resources, and training for enforcement agencies like DENR [23, 24].
- Jurisdictional Issues: Complexities in managing environmental laws across various levels of governance [4].
- Technological Limitations: While satellite monitoring is used [3], effective real-time detection and response remain challenging.
- Legal and Judicial Processes: Delays in prosecution, challenges in evidence collection, and potential for corruption [1, 17]. Initiatives like "Green Justice Zones" aim to streamline legal processes [11].
- Community Engagement: Difficulties in gaining full community cooperation, especially where illegal activities are linked to livelihoods.

DISCUSSION

The findings of this literature review unequivocally demonstrate that environmental crime in the Philippines is a deeply entrenched and systemic issue, threatening the nation's ecological integrity and sustainable development goals [57]. The various forms of crime—illegal logging, mining, fishing, wildlife trade, and waste violations—are not isolated incidents but rather interconnected manifestations of broader socio-economic pressures, governance deficits, and demand-driven illicit markets.

The pervasive nature of illegal logging and deforestation, highlighted by studies on hotspots and challenges in protected areas [3, 5, 15, 25, 27, 30, 31, 38, 41], underscores the urgent need for enhanced forest protection policies and their rigorous implementation [25]. Similarly, the documented cases of illegal mining [17, 23, 24, 26, 39] reveal a critical gap in regulating resource extraction, leading to severe environmental and social costs. The dire state of marine resources due to overfishing and destructive practices [47, 48, 50, 56] necessitates a stronger focus on sustainable fisheries management and stricter enforcement of maritime laws. The ongoing struggles with solid waste management [13, 19, 20, 29, 51, 52, 57] and the burgeoning illegal wildlife trade [8, 37, 46] further compound the environmental crisis.

A critical cross-cutting theme is the weakness in law enforcement and the implementation of environmental regulations [4, 16, 18, 53, 54]. This is not merely a matter of insufficient laws but rather a failure in their consistent and effective application. The alarming rate of killings of environmental defenders [18] serves as a stark indicator of the high stakes involved and the impunity often enjoyed by perpetrators. This points to a deeper issue of governance and potentially corruption, which undermines efforts to combat environmental crime. The theoretical frameworks of social disorganization and routine activity theory [2, 7, 9, 14, 36] can help explain why certain areas or activities become targets for environmental crime, linking it to breakdowns in social control and opportunities for illicit gains.

Socio-economic factors play a significant role, as poverty often compels individuals to engage in illegal activities for survival [48, 50]. This suggests that purely punitive measures may not be sufficient; sustainable solutions must include the provision of alternative livelihoods and community development programs that reduce reliance on illicit resource extraction. Furthermore, the varying levels of environmental law awareness among different groups [12, 22, 28, 42, 43, 58] highlight the need for targeted education and awareness campaigns to foster a culture of environmental responsibility and compliance.

Limitations: This review is based on publicly available literature and news reports, which may not capture the full extent of covert environmental crimes or the intricacies of their operations. The reliance on secondary data means that the depth of analysis is limited by the scope and methodology of the original studies. Furthermore, the dynamic nature of environmental crime means that some findings might evolve rapidly.

Recommendations:

1. Strengthen Law Enforcement Capacity and Integrity: Invest in training, resources, and technology for environmental law enforcement agencies (e.g., DENR, PNP, Coast Guard). Implement robust anti-corruption measures within these bodies and ensure the protection of environmental defenders.
2. Enhance Inter-Agency Collaboration: Foster seamless cooperation among various government agencies (DENR, DOJ, DILG, local government units, military, and police) to conduct coordinated operations against environmental criminals. Initiatives like "Green Justice Zones" should be expanded [11].
3. Community Engagement and Empowerment: Engage local communities as active partners in environmental protection. This includes providing education on environmental laws, supporting community-based monitoring, and developing sustainable alternative livelihoods to reduce reliance on illegal activities.
4. Promote Environmental Education and Awareness: Launch comprehensive national campaigns to raise public awareness about environmental laws, the impacts of environmental crime, and the importance of responsible environmental stewardship across all sectors of society.
5. Utilize Technology for Monitoring and Enforcement: Employ advanced technologies such as satellite imagery, drones, and data analytics for real-time monitoring of deforestation, illegal mining, and fishing activities, and to aid in intelligence gathering for enforcement operations [3].
6. Review and Update Legal Frameworks: Periodically assess the adequacy of existing environmental laws and penalties to ensure they are robust enough to deter environmental crimes, considering the evolving nature of these offenses.
7. Address Root Socio-Economic Causes: Implement poverty alleviation programs and promote sustainable economic development strategies that offer legitimate and attractive livelihood options for communities dependent on natural resources.

CONCLUSION

Environmental crime represents a profound and persistent challenge to the Philippines' natural heritage and its journey towards sustainable development. The comprehensive review of literature reveals that illegal logging, mining, fishing, waste management violations, and wildlife trade are rampant, driven by a complex interplay of weak governance, socio-economic vulnerabilities, and insufficient awareness.

The severe ecological degradation and social impacts underscore the urgency of the situation. Combating this multifaceted problem requires a holistic and integrated approach that goes beyond mere law enforcement to encompass strengthened institutional capacity, robust inter-agency collaboration, active community engagement, and targeted educational initiatives. By addressing these critical areas, the Philippines can move towards a future where its invaluable natural resources are protected, and its people can thrive in a healthy and secure environment.

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