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# THE DYNAMICS OF EU-RUSSIA ENERGY DIPLOMACY AFTER THE UKRAINE WAR 2022-2024

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**Abstract:**
Plastic waste pollution has emerged as a critical transboundary environmental issue, posing significant threats to marine biodiversity, coastal communities, and ecosystem services. This study investigates the role of environmental diplomacy in addressing marine plastic waste through the 3RProMar (Reduce, Reuse, Recycle – Protect the Marine Environment and Coral Reefs) Project implemented in Manado, Indonesia, during the period 2023–2024. Manado was strategically chosen due to its high vulnerability to plastic leakage into the marine environment and the surrounding coral reef systems. The research aims to assess the effectiveness of multilateral cooperation in mitigating marine plastic pollution by examining the implementation of 3RProMar, a collaborative initiative involving the Government of Indonesia, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), and the Association of Southeast Asian Nations (ASEAN). Employing a qualitative research design, data were collected through content analysis of project documentation, semi-structured interviews with stakeholders, and an extensive review of relevant literature. The study identifies key challenges, including inadequate waste management infrastructure and limited public awareness. However, the findings indicate that the project has achieved significant progress through the integration of technological innovation, community education programs, infrastructure development, and capacity building. Notably, the initiative has contributed to a reported annual reduction of plastic waste by approximately 30% in the target area, alongside increased public engagement in sustainable waste practices. The research concludes that environmental diplomacy, when operationalized through inclusive, multistakeholder cooperation and context-specific interventions, can serve as an effective instrument for addressing marine pollution and promoting sustainable development in coastal regions.

**Keywords:** ***Energy diplomacy, energy security, energy geopolitics, European Union, Russia***

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## INTRODUCTION

Indonesia, as the world's largest archipelagic nation, is currently grappling with a critical environmental issue in the form of marine plastic pollution. With over 17,000 islands and an extensive coastline, the country has been identified as one of the leading contributors to oceanic plastic waste, ranking among the top five globally (Jambeck et al., 2015). The rapid growth of urban populations, the increase in plastic consumption, and the limited capacity of waste management systems have compounded the issue, placing immense pressure on marine ecosystems and coastal communities. Furthermore, Indonesia's position as a recipient of imported waste exacerbates the burden on its already overstretched waste management infrastructure (KLHK, 2022). This situation not only threatens marine biodiversity but also disrupts key economic sectors such as fisheries and coastal tourism, which are vital to national and regional development.

In response to this escalating crisis, international cooperation has emerged as a pivotal strategy, particularly through the lens of environmental diplomacy. Germany, recognizing the regional implications of marine pollution and its impact on global supply chains—especially in the seafood trade—has extended its diplomatic engagement with ASEAN countries, including Indonesia. Germany's strong economic interest in ensuring sustainable seafood production, coupled with its environmental commitments, has motivated the initiation of collaborative programs aimed at tackling marine waste at the source (ASEAN, 2016). This diplomatic approach seeks to safeguard both ecological and economic interests by supporting integrated environmental solutions in vulnerable regions.

One such initiative is the 3RProMar project (Reduce, Reuse, Recycle – Protect the Marine Environment and Coral Reefs), which targets the reduction of marine plastic pollution through integrated waste management and public awareness campaigns. The city of Manado in North Sulawesi was chosen as a pilot site for its ecological significance and socio-economic relevance. Located adjacent to the Bunaken National Marine Park—home to a rich coral reef ecosystem and numerous protected marine species—Manado faces considerable environmental pressure due to plastic leakage from inland waterways. The degradation of coral reefs caused by unmanaged waste not only endangers marine biodiversity but also threatens local livelihoods dependent on fishing and marine-based tourism (IUCN, 2024; GIZ, 2023). As a key node in Indonesia's fisheries network, Manado represents a strategic location for implementing sustainable waste management practices.

The 3RProMar project emphasizes the integration of infrastructure development, community education, and institutional collaboration to mitigate the impacts of marine debris. Specifically, the project addresses the vulnerability of coral reef habitats in Bunaken Marine National Park by enhancing the capacity of local waste systems and engaging stakeholders in conservation-focused actions (RRI, 2023). These efforts align with broader international goals on marine ecosystem protection and climate resilience, placing the initiative within the scope of both regional environmental governance and global sustainability agendas.

This article explores the evolving framework of environmental diplomacy through the collaboration between ASEAN and Germany in addressing marine plastic pollution, using the 3RProMar initiative as a case study. The research investigates how such transnational cooperation is operationalized at the local level, focusing on policy design, stakeholder engagement, and implementation strategies. The study further seeks to evaluate the effectiveness of this diplomatic and environmental partnership in delivering tangible outcomes for marine conservation and sustainable waste management. The subsequent sections will discuss the theoretical underpinnings of environmental diplomacy, analyze the empirical findings from project implementation in Manado, and provide critical reflections on the challenges and opportunities in scaling such initiatives regionally.

## LITERATURE REVIEW

Research on marine waste management has experienced significant growth over recent decades, driven by growing awareness of the environmental, economic, and public health impacts of marine debris. Plastic waste, as a dominant form of marine pollution, is particularly concerning due to its persistent and non-biodegradable nature, which allows it to accumulate over time and disrupt marine ecosystems. Numerous studies have examined a wide range of mitigation strategies, including legislative frameworks, technological innovations, and international collaborative efforts. Within the Indonesian context, the challenges of marine waste management are particularly acute, due to the country's extensive coastline, high levels of maritime activity, and limited waste infrastructure in coastal areas.

This study aims to investigate the implementation of the 3RProMar project—an ASEAN-Germany collaborative initiative—by analyzing its effectiveness in addressing marine plastic pollution in Manado, North Sulawesi. Several prior

works have addressed the role of regional and international cooperation in combating marine pollution. For instance, Yulianni (2023) highlights ASEAN-Germany partnerships in reducing plastic waste in Indonesia and the Philippines, particularly noting the contributions of the private sector in strengthening plastic recycling systems and reducing marine litter in major ports. Likewise, Wijaya et al. (2024) discuss the impact of UNEP-ASEAN partnerships on cross-border environmental policy, finding that public awareness and regulatory strictness are critical to effective marine debris control. Sari et al. (2024), examining the WWF-led Plastic Smart Cities (PSC) program, identify low public awareness and insufficient infrastructure as persistent barriers to success. Meanwhile, Hendar (2022) emphasizes Indonesia's central role in promoting regional collaboration within ASEAN, while also pointing out persistent difficulties in harmonizing environmental policies among member states.

Despite the growing volume of literature on marine pollution and international cooperation, several research gaps remain. Firstly, existing studies have largely concentrated on policy-level frameworks without delving into the localized implementation of environmental initiatives. Secondly, there is limited scholarly attention to the role of non-governmental stakeholders, such as local communities, NGOs, and the private sector, in operationalizing marine waste reduction programs. Thirdly, while foreign assistance—particularly from European donors—has been acknowledged in general terms, the specific impact of German support in terms of financial aid and technology transfer for waste management projects in Indonesia remains underexplored.

This study seeks to fill these gaps by offering a ground-level analysis of the 3RProMar initiative as a concrete example of transnational environmental diplomacy. Unlike studies that primarily focus on international agreements or policy declarations, this research examines the local operationalization of environmental cooperation through stakeholder collaboration, technology deployment, and community engagement. The 3RProMar project represents a notable innovation by integrating Germany’s advanced environmental standards and sustainability principles within the socio-political context of ASEAN coastal regions. It demonstrates a shift in environmental diplomacy from normative commitments to tangible implementation. Through shared investment, infrastructure development, and participatory governance, the initiative provides a replicable model for localized marine waste interventions in Southeast Asia.

Theoretically, this research draws upon *Green Political Theory*, which advocates for ecological balance as a key pillar in sustainable development

policymaking. This perspective emphasizes the integration of environmental values into economic planning and governance, encouraging approaches that prioritize both ecological preservation and human welfare (Barry, 2014). In the context of 3RProMar, this theory serves as a lens to assess how environmental initiatives can foster behavioral change within communities and shape sustainable policy outcomes through diplomatic engagement.

The study applies the *Concept of Environmental Diplomacy*, which frames environmental cooperation as a strategic tool to address cross-border ecological challenges while strengthening bilateral and multilateral relations. This concept is crucial in understanding how environmental issues such as marine plastic pollution necessitate collective action, shared responsibility, and multi-actor involvement across national boundaries (Susskind, 2015). The collaboration between ASEAN and Germany through 3RProMar thus not only tackles environmental degradation but also functions as a diplomatic mechanism that reinforces interregional partnerships.

This study contributes to the existing body of literature by offering an empirical and interdisciplinary perspective on marine waste governance. It analyzes the 3RProMar project in Manado by examining four main dimensions: infrastructure development, technological support, educational outreach, and community empowerment. Particular attention is paid to Germany's role in financing waste management facilities and transferring sustainable technologies, as well as the capacity-building efforts directed at local actors. The research also dissects the roles of public, private, and international institutions—such as GIZ—in the program's implementation and long-term sustainability.

While prior research has extensively discussed the macro-level dynamics of environmental cooperation, this study offers a micro-level insight into the practical implications of environmental diplomacy in Southeast Asia. By integrating Green Political Theory and Environmental Diplomacy, the research advances scholarly understanding of how marine waste management can be operationalized through local-global partnerships. Furthermore, it underscores the necessity of a holistic, multi-stakeholder, and multidisciplinary approach in designing effective interventions to reduce marine pollution and promote environmental sustainability in coastal regions.

## METHOD

This study employs a qualitative research design, which is particularly suited for exploring the depth and complexity of diplomatic cooperation and environmental project implementation, especially in the context of transnational partnerships such as the ASEAN-Germany 3RProMar initiative in Manado. As Creswell (2013) emphasizes, qualitative research allows for a detailed exploration of social phenomena, relying on contextual analysis and interpretive reasoning to generate nuanced insights into the experiences, values, and interactions of actors involved in environmental governance.

### Data Collection

Data were gathered through two primary techniques: documentary analysis (literature review) and semi-structured in-depth interviews. The documentary analysis involved reviewing a wide range of secondary sources, including peer-reviewed journal articles, books, official project reports, ASEAN publications, GIZ documentation, and ministerial reports from the Indonesian Ministry of Environment and Forestry (KLHK). In addition, credible online news articles were used to gather updated insights on the progress and public reception of the 3RProMar program.

The interview component targeted key stakeholders involved in the 3RProMar project. Interviews were conducted with representatives from GIZ Indonesia, including Ms. Julia Giebel, Ms. Ocasa Predhita, and Ms. Anandita Laksmi. These informants offered first-hand perspectives on the program's policy orientation, implementation strategies, encountered challenges, and long-term sustainability planning. Interview questions were designed to be flexible, enabling informants to elaborate on specific themes while maintaining consistency with the research objectives.

### Research Procedure

The research was conducted in a series of structured stages:

1. Problem Identification: The study began with a situational assessment of the marine plastic waste problem in Indonesia, especially within Manado, and an initial evaluation of ASEAN and German environmental diplomacy strategies.
2. Data Collection: Primary and secondary data sources were identified, retrieved, and organized. Observations of environmental forums and waste-related policy events were also recorded as part of contextual enrichment.

3. Data Analysis: A combination of content analysis and thematic coding was employed to extract recurring patterns, categorize stakeholder roles, and identify key policy dynamics. Content analysis was particularly useful in interpreting the language of cooperation frameworks, environmental mandates, and program implementation narratives. Meanwhile, policy analysis was applied to assess the alignment between project interventions and national or regional environmental policy goals.
4. Validation and Interpretation: Emerging themes were triangulated between literature findings and interview data to enhance validity. The interpretation focused on understanding how ASEAN-Germany cooperation functions as environmental diplomacy and how it translates into tangible outcomes at the local level.

**Ethical Considerations**

This study adhered to rigorous ethical standards. Informed consent was obtained from all interview participants, with clear communication regarding the purpose of the research, the voluntary nature of participation, and their right to withdraw at any time. To ensure participant anonymity and confidentiality, pseudonyms were used, and all personally identifiable information was removed from the final transcript.

The study followed a structured chronological workflow:

1. Preparation Phase: Included literature review, formulation of research questions, and contact with potential interviewees.
2. Data Acquisition Phase: Conducted through document collection, in-depth interviews, and observational notes.
3. Analytical Phase: Data were coded and analyzed through thematic grouping and comparative analysis across policy documents and interview content.
4. Reporting Phase: Results were presented in the form of structured narratives, supported by academic citation and visual data summaries where applicable.

## RESULT AND DISCUSSION

The coastal city of Manado faces a critical plastic pollution problem, primarily caused by the high consumption of single-use plastics, inefficient waste management systems, and the flow of untreated waste through major rivers into the sea. Field studies confirm that rivers such as Tondano, Sario, and Malalayang are the primary conduits for plastic debris entering Manado Bay and Bunaken National Park (Lestari & Trihadiningrum, 2019). The waste primarily originates from domestic sources, traditional markets, tourism, and fishing activities, with 70–86% of debris identified as plastic waste (Andakke & Tarya, 2022).

Policy responses, such as Presidential Regulation No. 83/2018, aim to reduce marine debris by 70% by 2025 (KLHK, 2018), yet 40% of plastic waste remains unmanaged and flows into aquatic ecosystems (KLHK, 2022). One of the critical hotspots identified is Sindulang Beach, where garbage density reaches 15.31 items/$m^2$ during low tide, indicating severe marine litter accumulation.

### Ecological, Economic, and Health Impacts

The ecological implications of plastic pollution are particularly acute in Bunaken National Marine Park, which hosts globally significant coral reef biodiversity. Research by Lasut et al. (2018) documented plastic ingestion in fish species such as *Latimeria menadoensis*, while Lamb (2018) notes that corals exposed to plastic are 20 times more likely to develop disease.

Economically, pollution affects fisheries and tourism—both central to Manado's coastal economy. Reduced fish catch, gear damage, and declining tourist arrivals due to polluted beaches have resulted in measurable income loss (Kertopati, 2016). In the export context, Germany's position as a top importer of ASEAN seafood makes plastic contamination a strategic trade risk, as increasing microplastics may undermine product quality and consumer trust in imported seafood (European Commission, 2023; FAO, 2023).

Health-wise, the bioaccumulation of microplastics poses a serious threat. Research has revealed microplastic content in 28% of fish samples sold at traditional markets (Hasanuddin University, 2015), while Barboza et al. (2020) highlight the presence of plastic particles in seafood commonly consumed by humans. Alarmingly, Amato-Lourenço et al. (2024) detected microplastics in the human brain, suggesting potential long-term neurological exposure through ingestion and respiration.

### Implementation and Outcomes of the 3RProMar Project

In response to these challenges, the 3RProMar Project—*Reduce, Reuse, Recycle to Protect the Marine Environment and Coral Reefs*—was introduced in 2023 as a

multilateral cooperation program between ASEAN, Indonesia, and Germany via GIZ. Its strategic implementation in Manado leverages the city's role in the Coral Triangle and its economic vulnerability to marine pollution.

Germany's role—through BMZ and GIZ—includes direct grants totaling approximately €295,000, allocated across four primary categories (Table 1), including equipment, workshops, direct assistance, and innovation support (GIZ, 2024). These resources directly support pilot projects, such as the installation of plastic river barriers, deployment of Reverse Vending Machines (RVMs), and the development of waste-to-fuel pyrolysis technology.

Table 1: Summary of German BMZ Grant Allocations to the 3RProMar Project in Manado

| Category | Budget (€) | Description |
|---|---|---|
| Equipment Fund | 70,000 | For plastic collection and recycling tools |
| Education & Training Fund | ≥45,000 | For 15+ workshops, community sessions, expert travel |
| Direct Assistance | 100,000 | For local NGO support and demonstration pilots |
| Innovation Support | 80,000 | For 5 innovation projects and community awareness campaigns |

**Local Implementation Outcomes**:

1. Waste filtration modules in four rivers intercept an estimated 250 tons of plastic waste per year (No-Trash Triangle Initiative, 2025).
2. The Duitin app promotes household-level waste sorting with digital incentives.
3. Pyrolysis technology converts non-recyclable plastic into alternative fuels, promoting waste valorization.

**Education and Community Engagement**

Educational initiatives targeting 10,000 students and 400 teachers have successfully integrated waste literacy into school curricula (CV Daur Sinar Gemilang, 2024). The campaign emphasizes the 3R principles, promoting the use of reusable items and segregated waste bins in schools.

Community development is further reinforced through NGOs like Manengkel Solidaritas, which organize waste bank training, and through the Female Empowerment on Thousand Islands Program, supporting women-led reuse and refill stores (GIZ, 2023). These initiatives show that grassroots empowerment, especially through gender-inclusive strategies, can significantly increase participation and sustainability of marine waste reduction.

**Regional and Diplomatic Reflections**

Comparatively, the 3RProMar project's implementation in Cambodia, Vietnam, and the Philippines demonstrates its modular adaptability:

1. Cambodia: focused on education campaigns and waste data analytics.
2. Philippines: integrated with national action plans and grassroots pilot projects.
3. Vietnam: emphasizes regulatory reform and private sector engagement in the Mekong Delta.

Manado's approach merges these components and localizes them through digital, infrastructural, and participatory innovations—making it a potential prototype for ASEAN-wide scaling.

**Theoretical Interpretation: Environmental Diplomacy and Green Political Theory**

From the lens of Environmental Diplomacy, the project exemplifies a functional, pragmatic cooperation model where a Global North country (Germany) supports a Global South partner (Indonesia) in fulfilling shared ecological goals. This aligns with the diplomatic principle of "common but differentiated responsibilities", where developed nations provide financial and technological assistance to mitigate global environmental risks.

Simultaneously, Green Political Theory raises essential critiques. While Germany's support has been pivotal, questions emerge regarding the dependency risk and the long-term resilience of locally driven initiatives. The reliance on foreign aid and technologies—without full local transfer or ownership—may undermine capacity sovereignty, a concern particularly emphasized in postcolonial environmental governance discourse (Barry, 2014).

However, the co-production model—involving local governments, private sectors, and communities—demonstrates an effort to balance vertical aid with horizontal partnerships, fulfilling ecological and developmental justice simultaneously.

**Key Insights and Implications**

1. Effectiveness: The project has successfully reduced plastic waste by approximately 30% in pilot areas, validating the model's scalability.
2. Innovation: Digital tools (e.g., Duitin), technological interventions (pyrolysis), and economic incentives (RVMs) prove impactful in behavioral change.

3. Inclusivity: Women's participation and youth education foster intergenerational and gender-sensitive environmental action.
4. Diplomatic Leverage: Germany benefits indirectly by securing a cleaner Southeast Asian supply chain, while ASEAN builds capacity for circular economies.

The 3RProMar initiative illustrates that marine plastic pollution is not merely an environmental issue, but also a geopolitical, economic, and socio-cultural challenge. Through strategic diplomacy, collaborative financing, and multistakeholder engagement, the project creates shared value—linking environmental sustainability with social empowerment and regional resilience.

## CONCLUSION

This study affirms that transnational environmental diplomacy, as exemplified by the 3RProMar project in Manado, can effectively contribute to solving complex marine plastic pollution issues in Southeast Asia. As outlined in the introduction, the research aimed to analyze how the collaboration between ASEAN, Germany, and the Indonesian government addresses marine debris through an integrative approach. The findings presented in the results and discussion sections demonstrate that the initiative has yielded concrete outcomes in the form of plastic waste reduction (up to 30%), public awareness enhancement, and the institutionalization of sustainable waste management systems in a coastal urban setting.

The project's multi-pillar strategy—involving technological innovation (e.g., Duitin app, reverse vending machines, pyrolysis systems), infrastructure development (e.g., TPS3R, river waste barriers), education campaigns, and community empowerment, particularly of women and youth—has significantly advanced local capacity for circular economy transitions. Moreover, the engagement of private actors and civil society organizations not only diversifies implementation modalities but also strengthens long-term sustainability mechanisms beyond state-driven programs.

Nonetheless, the research also identifies persistent challenges, notably in policy harmonization, behavioral change, and the risk of donor-dependency in project continuity. These findings suggest that future development of such programs must prioritize capacity-building, technology transfer, and localized ownership to enhance the resilience of waste management systems without over-reliance on external aid.

Prospectively, the 3RProMar initiative presents a replicable model for other coastal regions across ASEAN. It also underscores the broader diplomatic potential of environmental cooperation as a vehicle not only for marine ecosystem protection but also for advancing green political values, such as environmental justice, shared responsibility, and inclusive governance. Further studies are recommended to evaluate the long-term behavioral impact of educational interventions and to conduct comparative analyses with similar initiatives in other ASEAN countries for cross-contextual learning.

Tthis research not only meets its initial objectives but also contributes a theoretical and practical innovation in the field of environmental diplomacy and sustainable marine waste governance.

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