From screen to ground: Pandawara Group's strategy in reserving Indonesia's environment

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Abstract This article focused on analysing the strategy and impact of the Pandawara Group in encouraging environmental conservation efforts in Indonesia. The study used a qualitative method to analyse and interpret phenomena within this research, incorporating data on engagement metrics such as likes, views, and followers for each organisation's social media accounts, which were collected using SocialBlade. The findings of this study show that Pandawara Group's activities have successfully increased public awareness of environmental issues. This is reflected in the high engagement and positive sentiment revolving around their environmental content on social media. Moreover, their campaigns have inspired collective action, as evidenced by the growing number of communities participating in their clean-up activities. Despite these achievements, several challenges persist. Ensuring the sustainability of community engagement in environmental protection remains a significant hurdle. Additionally, the government's role in addressing environmental pollution requires further attention. This article offers a new approach to the environmental movement in Indonesia, specifically on optimising digital media to build public awareness and encourage collective action for environmental conservation.

Keywords: digital activism; environmental preservation; social media

INTRODUCTION

The 21st century has witnessed a profound transformation in global dynamics, largely driven by rapid technological advancements. While these developments have brought numerous benefits, they have also presented challenges. One such development is the internet. This has led to the emergence of social media platforms that have blurred national boundaries and significantly influenced the actions of international actors. This has also had a profound impact on the activist movement (Wasserman, 2016). In which, activism that once primarily focused on direct actions like demonstrations and boycotts, has also become more flexible thanks to user-friendly technology and interactive social media. These tools have empowered activists to transcend the limitations of time, place, and conditions (Cooper, 2023). Online platforms now allow individuals to engage in activism by signing petitions, donating, and sharing content related to specific issues. This evolution has particularly influenced community awareness and environmental conservation efforts (Martin, 2007).

Building up on these details, social media has played a pivotal role in raising public awareness of environmental crises (Mahat et al., 2023). Through activist actions and sustainability education, these platforms have successfully influenced public opinion, increasing interest in environmentally friendly products (Amul Tamboli et al., 2023; Paço & Gouveia Rodrigues, 2016). Furthermore, heightened awareness has fostered greater community involvement in direct participation activities, such as local clean-ups and donations to environmental conservation efforts (Oliwia, 2024; Pratiwi & Heriyanti, 2024). It is clear that social media serves as a valuable tool for raising environmental conservation awareness within the activist movement.

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Numerous academics have contributed to understanding activism movements, particularly within socio-politics. Smith (2005) highlights the significance of these movements in the social sciences, as they empower organisations, groups, or individuals to influence policies, practices, or conditions deemed problematic. Various perspectives exist on the nature of activism movements. Tilly (2019) views them as social movements undertaken by society to address social issues through collective action. Meanwhile, McCarthy & Zald (1977) activism facilitates information exchange among individuals and groups, thereby transforming opinions and belief systems into collective action.

Norris (2004) and Tarrow (2011) has defined *activism* as participating in a specific cause. In representative democracies, activism often focuses on policy issues, employing collective action to express grievances, call for opposition, and challenge authority. Herawati et al. (2023) Introduced the concept of digital activism, which encompasses political and social campaigns utilising digital network infrastructure. Digital activists leverage social media to garner sympathy through narratives of struggles and issues they raise with individuals in cyberspace. By disseminating information on a particular problem, digital activists aim to attract collective action from netizens through social media and direct-action movements. The rapid development of technology has significantly influenced the contemporary activism movement, dividing it into two primary categories: traditional and digital activism (George & Leidner, 2019; Gladwell, 2010). Traditional activism movements require activists to engage in direct field activities, such as demonstrations, campaigns, and other forms of expression. In contrast, digital activism is grounded in digital technology (George & Leidner, 2019).

Van Laer and Van Aelst (2010) further classified digital activism as internet-supported and internet-based. Internet-supported activism is a traditional model that is more easily organised through internet technology. In contrast, internet-based activism is a virtual form of action emphasising digital protests, such as email bombing, hashtag activities, and advocacy for open sources. Some academics have coined 'slacktivism', a term to describe internet-based activism (Cabrera et al., 2017). The Urban Dictionary defines *Slacktivism* as 'deceiving oneself by liking, sharing, or retweeting something as a form of support'. This model of activism is perceived as lazy and uncommitted to the change movement being pursued (Chou et al., 2020). Others have suggested that slacktivism is a phenomenon in which people believe liking a post on Facebook or changing their profile to reflect a particular issue constitutes a form of activism (Goldsborough, 2011).

While often viewed negatively, digital activism undoubtedly represents a breakthrough in the history of the activism movement. Several successful movements initiated through digital activism methods include the Indignados movement in Spain, the Arab Spring in the Middle East, the Occupy Wall Street movement in the United States, the Umbrella movement in Hong Kong, and the "Save the KPK" movement in Indonesia (Suwana, 2020). A commonality among these movements is their widespread following among young people, the age group that accesses the internet the most and is adept at using social media features. Effective digital activism does not solely rely on social media but also involves direct action to demonstrate that the group comprises real individuals. In the abovementioned cases, digital activism involves coordinating, mobilising, and organising social and political movements (Madison & Klang, 2020). Through these examples, digital activism ultimately leads to tangible collective action.

In Indonesia, the Pandawara Group is an example of an activist group that effectively combines offline and online actions. Initiated by five young individuals from Bandung, their movement focuses on environmental conservation campaigns, primarily through cleaning up litter on beaches and rivers (Wijonarko et al., 2024). Motivated by the frequent floods caused by littering and the government's indifference towards cleaning up polluted waterways, the Pandawara Group's unique movement went viral, inspiring the community to take action. Their efforts also successfully influenced local governments to implement policies related to waste problems in several regions of Indonesia (Shabrina et al., 2023).

Given Indonesia's environmental conditions, the movement initiated by the Pandawara Group is highly significant. According to the Atlas of Sustainable Development Goals 2023, Indonesia produces approximately 65.2 million tons of waste annually, ranking fifth as the world's largest waste producer in 2020 (Ahdiat, 2023). The Central Statistics Agency also reported that approximately 46% of Indonesian rivers are heavily polluted, with 32% moderately polluted, 14% slightly polluted, and 8% lightly polluted (Waluyo, 2023). The Environmental

Performance Index in 2022 further highlighted Indonesia's ranking of 164th globally in terms of environmental awareness, placing it below Laos and Cambodia (Prabandari, 2022). This position underscores Indonesian society's prevailing lack of ecological awareness, making today's Pandawara Group movement highly relevant.

Given the urgency of environmental issues in Indonesia, this article focused on analysing the Pandawara Group's strategy and its impact in driving environmental conservation efforts. Despite their significant role in the discourse of environmental issues in Indonesia over the past few years (Puspa, 2023), there has been limited comprehensive discussion of the Pandawara Group's impact on increasing public awareness of environmental conservation. Therefore, this research aims to address the research gap regarding the Pandawara Group's strategy and its impact on building public awareness of the environmental crisis in Indonesia. Moreover, the decision to focus on this issue is due to the effectiveness of their social media and direct-action campaigns at polluted locations in raising public awareness of Indonesia's environmental crisis. Their social media content, which targets young people that are mostly Generation Z, is familiar with technology and social media, is particularly effective. This aligns with various studies showing Generation Z is the most environmentally conscious generation (Hidayat & Hidayat, 2021; Ribeiro et al., 2023).

To assess the effectiveness of the Pandawara Group's social media campaign, the authors will compare their social media engagement with two other major environmental groups in Indonesia, such as Greenpeace Indonesia and Wahana Lingkungan Hidup Indonesia (WALHI). Moreover, this article also highlighted the challenges that Pandawara Group and other environmental organisations in Indonesia face in their environmental conservation efforts.

METHODOLOGY

This article used a qualitative method to understand and interpret the underlying reasons behind the observed phenomena (Busetto et al., 2020). The qualitative research method is particularly valuable in exploring and understanding the meanings individuals or groups attribute to social or human problems (Creswell, 2009). Moreover, this method has assisted the authors in uncovering facts, circumstances, and conditions about the relationship between the Pandawara Group's strategy, which combines digital and real action elements, and the positive community response to their campaigns.

The data collection method used by the author in this article is the document study method. Document study or document analysis refers to the researchers reviewing written materials. This can include personal and non-personal documents such as archives, annual reports, guidelines, policy documents, diaries, or letters (Busetto et al., 2020, p. 2). Document studies also refer to data collection techniques that involve researching books, literature, records, and reports related to the problem. This type of method helps enrich insights into the issues being examined, identifying gaps that appear in previous research, and providing new insights into problems that have been previously researched. In addition, this type of method was accessed at a time that suited the researchers and represented thoughtful data because the researchers paid attention to compiling it (Creswell, 2009).

The type of data used in this article is secondary data. The data were derived from analyses conducted utilising social media analytics platforms like SocialBlade. The data collection stages for the SocialBlade platform are illustrated in Figure 1. The data collected in this article were also sourced from various materials, including books, journals, theses, conference proceedings, and reputable online news articles. Relevant books, journals, theses, and proceedings were identified and collected through the Scopus and Publish and Perish software.
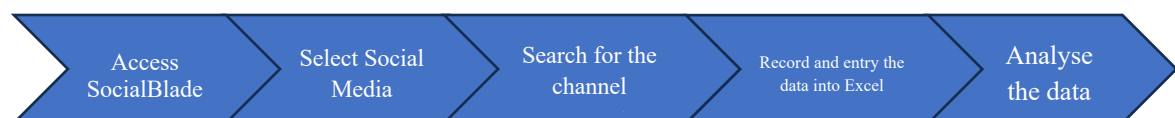

Figure 1. SocialBlade data collection process
Source: Figure made by authors (2024)

The data analysis technique used in this study is descriptive qualitative analysis, a valuable method for analysing, describing, and summarising diverse conditions and situations within the collected data, addressing the research questions identified during the data collection phase (Wirartha, 2006). The process involved in this analytical approach encompasses data collection, data presentation, and the subsequent derivation of conclusions based on the presented data. Based on the data gathered from social media analytics and document studies, The authors can explain the strategies and impact of the Pandawara Group's digital activism in raising awareness about environmental preservation in Indonesia.

RESULTS AND DISCUSSION
Pandawara Group's strategies in optimising social media campaigns for environmental awareness
Among the myriad organisations and non-governmental organisations (NGOs) dedicated to environmental issues in Indonesia, the Pandawara Group stands out as a relatively new entity. Founded by a group of young individuals from Bandung, this organisation is driven by a passionate commitment to safeguarding the environment. The Pandawara Group comprises five young people: Ikhsan Destian, Gilang Rahma, Muhammad Rifqi, Rafly Paya, and Agung Permana. Their activism centres on cleaning up polluted rivers, sewers, and beaches. This cleanup movement was inspired by their growing concern over the increasing frequency and severity of flooding, particularly in their local area (Defitri, 2023).

What sets the Pandawara Group apart from other prominent environmental organisations is its strategic use of social media as the primary medium for its campaign. While environmental organisations like Greenpeace (Fadli & Sazali, 2023) and WALHI (H & Yuliani, 2023) also employ social media to disseminate information and engage with their audiences, the Pandawara Group distinguishes itself through its creative and targeted approach. The Pandawara Group has effectively leveraged social media to raise awareness about Indonesia's pressing environmental challenges. By crafting engaging content that resonates with young people, the group has managed to capture the attention of a wider audience. The Pandawara Group focuses on simple yet critical issues, such as the pollution of rivers, beaches, and sewers.

Figure 2. Waste cleanup initiative by the Pandawara Group
Source: Instagram/pandawaragroup (2024)

In addition to it's creative social media campaigns, the Pandawara Group's strategy of directly addressing polluted sites and conducting cleanup efforts has garnered significant popularity among social media users, particularly young people. As illustrated in Figure 2, these clean-up actions demonstrate Indonesia's environmental challenges and inspire the community to take action. By visually documenting their clean-up efforts in gutters, rivers, and beaches, the Pandawara Group has effectively raised awareness about the alarming state of Indonesia's

environment. These powerful images have evoked sympathy and concern among Indonesians, fostering a greater sense of responsibility for environmental conservation.

One particular impactful social media content undertaken by the Pandawara Group involved cleaning up four of Indonesia's most polluted beaches: Labuan Bay Beach in Banten, Sukaraja Beach in Lampung, Kesenden Beach in Cirebon, and Talanca Beach in Loji village, Sukabumi (Puspitalova, 2023). The Pandawara Group's successful use of social media to highlight environmental issues and document their clean-up initiatives has significantly contributed to their movement's rapid expansion and widespread recognition. By highlighting the real-world impact of their actions in various locations across Indonesia, the Pandawara Group has also successfully captured public attention and garnered widespread sympathy.

Figure 3. Pandawara Group at Sukaraja Beach Lampung, the second dirtiest beach in Indonesia
Source: Instagram/pandawaragroup (2024)

In addition to its clean-up programme, Pandawara Group also operates *Ajaraksa*, a programme designed to foster environmental awareness among young people (Nasas & Pradipta Dirgantara, 2024). This initiative occurs directly in schools, utilising interactive methods to address the waste and ecological crisis (Nasas & Pradipta Dirgantara, 2024, p. 68). The aim is to cultivate a sense of concern for the environment among children. Moreover, there are several other strategies, such as *Manah Rasa*, which involves providing cleaning equipment to areas that lack cleaning equipment; *River Adopts*, which requires cleaning and managing polluted rivers so they do not become polluted again; and *Jaganadara*, which focuses on education issues. These programmes, along with clean-up actions, are the Pandawara Group's leading social media content, demonstrating that the group leverages the potential of social media as a platform for education and campaigns and actively engages with the community.

Effectiveness of Pandawara Group's campaign strategy based on social media analysis using SocialBlade

Social media has played a pivotal role in shaping the landscape of environmental activism today (Scherman et al., 2022). Beyond facilitating rapid information exchange and communication, social media platforms provide a powerful avenue for individuals and groups to convey their messages (Boulianne et al., 2020). Integrating social media into activism has catalysed the emergence of innovative methods for mobilising and engaging a growing number of participants (Kavada, 2015). The success of social media in activism is evident in various historical events, including the Arab Spring (Ahmad, 2022) and the movement to save the KPK (Indonesian Corruption Eradication Commission) in Indonesia (Suwana, 2020). These examples demonstrate the effectiveness of social media as a tool for collective action.

Given the pivotal role of social media in disseminating information and influencing public opinion, the Pandawara Group's strategy of maximising its potential to raise awareness about environmental pollution in Indonesia is highly commendable. By crafting content that visually depicts the polluted state of Indonesia's rivers and beaches and showcases concrete cleanup efforts, the Pandawara Group has successfully garnered positive public sentiment. This positive reception is evident in the significant disparity between the Pandawara Group's social media engagement and established environmental organisations like Greenpeace and WALHI, whose campaigns primarily focus on policy advocacy and legal action.

To measure the success of Pandawara Group's creative content on social media, this article conducted a comparative analysis of the levels of engagement and interaction of social media users with the social media accounts of Pandawara Group, Greenpeace Indonesia, and WALHI using SocialBlade. The data presented in Tables 1 and 2 provide an overview of the comparison of engagement in social media accounts between the three environmental organisations.

Table 1. Total number of followers of the three environmental organisations

Social media	Pandawara Group	National Walhi	Greenpeace Indonesia
Instagram	2,556,964	78,165	745,172
Tiktok	8,400,000	710	80,400
Youtube	125,000	7,720	87,100

Source: Socialblade accessed on 4 June 2024, data processed by the authors

Table 2. Total number of likes and views of the three environmental organisations

Social media	Pandawara Group	National Walhi	Greenpeace Indonesia
Instagram	102,445	268.44	7,218.56
Tiktok	175,700,000	3,891	2,600,000
Youtube (Total Views)	17,356,378	492,840	15,905,261

Source: Socialblade accessed on 4 June 2024, data processed by the authors

The data reveals a significant disparity in the number of followers between the Pandawara Group and the two prominent environmental organisations in Indonesia. An analysis of Indonesia's three most popular social media platforms demonstrates that the Pandawara Group's accounts have surpassed the one hundred thousand follower mark. Notably, their TikTok account has garnered an impressive 175 million likes, highlighting their audience's high level of engagement. This positive and substantial social media feedback directly correlates with the Pandawara Group's ability to educate and engage its audience through its campaign movement.

The visual depictions of Indonesia's environmental crisis presented in the Pandawara Group's social media content have proven to be highly effective in capturing public attention. As evidenced by the data, these visualisations have played a significant role in the group's success in raising awareness about environmental issues. The impact of the Pandawara Group's campaign is not limited to social media engagement. Their clean-up action has also garnered positive responses from the community, government, and fellow environmental activists, as discussed in the following sections.

The impact of the Pandawara Group activities
The data presented above demonstrate the effectiveness of the Pandawara Group's campaign in gaining public attention for its activism movement. Moreover, its success extends beyond the virtual realm, directly influencing real-world actions. The group's environmental conservation campaign, focusing on cleaning up polluted rivers, beaches, and sewers, has successfully inspired surrounding communities to take collective action by working together to clear accumulated waste in various locations. Collective action is a concerted effort to improve the overall condition of a group and typically involves social change within the group (Zomeren,

2014). Through social media, aggrieved communities can connect and unite to form a powerful base that enables them to undertake collective action in pursuit of change (Leong et al., 2019).

The Pandawara Group's clean-up content, particularly those targeting the four dirtiest beaches in Indonesia, demonstrates the campaign's effectiveness in mobilising public participation. The presence of surrounding communities actively assisting in these clean-up efforts underscores the success of the Pandawara Group's environmental conservation (see Figure 4) campaign in fostering collective action (*gotong royong*) among residents. The use of social media by the Pandawara Group in its activism movement has played a crucial role in enabling community members to connect and engage in collective action (Leong et al., 2019, p. 4).

Figure 4. A community cleanup initiative at Sukaraja Beach led by the Pandawara Group
Source: Kompas News accessed 23 June 2024

Figure 5. A comparison of Labuan Beach before and after cleanup by the Pandawara Group
Source: Liputan6.com accessed 23 June 2024

The community's active participation in environmental clean-up efforts demonstrates the effectiveness of the Pandawara Group's campaign methods in achieving its objectives of modifying detrimental behaviours and fostering collective action to protect the environment. This highlights that the Pandawara Group's movement is not merely a digitally-driven activist movement which is often characterised as 'slacktivism' or 'lazy activism' (Madison & Klang, 2020). Instead, it serves as a model of internet-supported activism, where social media is a tool for organising and mobilising individuals to join the movement.

The Pandawara Group has effectively leveraged on its social media platform, a valuable tool for public environmental education that remains relatively uncommon in Indonesian society (Nasas & Pradipta Dirgantara, 2024, p. 59). The impact of the Pandawara Group's campaign is

evident in its ability to pressure local governments to address the pressing issues of waste and pollution affecting rivers, beaches, and sewers in their region. Through successful collaboration with local governments, NGOs, and communities, the Pandawara Group has disseminated its campaigns, educational initiatives, and environmental clean-up efforts (Rahman, 2024; Wahyuni et al., 2023).

The Pandawara Group's campaigns have also played a pivotal role in raising public awareness of the increasingly pressing domestic environmental issues, particularly among young people. Their easily digestible campaigns, which visually depict environmental crises relevant to everyday life, have garnered sympathy from diverse segments of society. As a result, the Pandawara Group has received numerous awards within Indonesia (Fathurrozak, 2023) and was invited by Denmark to study waste-to-energy management (Ramadani, 2023) in recognition of their environmental dedication. The Pandawara Group's movement can catalyse environmental activist groups across Indonesia, inspiring them to explore innovative approaches to campaigning and educating in their shared pursuit of ecological preservation (See Figure 5).

Challenges of environmental conservation efforts in Indonesia

The Pandawara Group's activism, combining digital media and real-world actions, has undoubtedly introduced a new paradigm for organising social activism movements in Indonesia. However, the group has not been without its challenges. In certain instances, local governments have denied permits for clean-up activities, as exemplified by the incident at Cibutun Loji beach in Sukabumi (Alamsyah, 2023). This highlights a concerning trend where well-intentioned environmental initiatives shared on social media by local stakeholders are perceived as detrimental to their reputation due to perceived shortcomings in addressing waste management issues within their respective areas. Such cases, however, have often been resolved through public outcry on social media.

A more significant challenge lies in the sustainability of the environmental conditions achieved through clean-up efforts. A Twitter user, @namdoyan, reported that approximately one year after a clean-up activity, precisely on 20 April 2024, piles of garbage had once again accumulated on Labuan beach in Banten (See Figure 6), previously designated as Indonesia's dirtiest beach by the Pandawara Group (Nazmudin, 2024). This observation highlights the ongoing challenge of maintaining environmental sustainability. It suggests that the effectiveness of social media in raising awareness and fostering collective action may be limited in the long term (Leong et al., 2019, pp. 1–2).

Figure 6. Re-accumulation of waste at Teluk Labuan Beach, Banten just one year after being cleaned up.
Source: Kompas, accessed 12 October 2024

The reappearance of waste in various locations cleaned up by the Pandawara Group also underscores the complex nature of Indonesia's waste management challenges. These challenges stem from a lack of public discipline, environmental awareness, and systemic issues. Data from 285 districts/cities reveal that Indonesia generates 34.3 million tons of waste annually, of which only 63.96 per cent (21.94 million tons) is managed effectively. The remaining 36.04

per cent (12.36 million tons) remains unmanaged, exacerbating waste problems in regions with excess production (Lutfhi, 2023). For instance, Yogyakarta city produces 781,045 tons of waste per year but can only handle 590,089 tons, leading to a crisis when the Piyungan landfill closed from July to September 2023 (Lutfhi, 2023). The landfill's capacity constraints and lack of discipline have resulted in waste scattered throughout the city, including sidewalks, open fields, and public squares. Some individuals have resorted to burning waste, inadvertently contributing to air pollution and threatening public health (Lutfhi, 2023).

The systemic challenges highlighted by the author are evident in the limited waste management budgets allocated by Indonesian districts/cities (See Table 3) within their regional budgets (APBDs). According to data from the Ministry of Home Affairs in 2022, waste management budgets in Indonesia account for only 0.51 per cent or 5.3 trillion of the combined provincial, city, and district budgets (Wisanggeni et al., 2022). A more detailed analysis reveals that a few districts/cities allocate over 2% of their budgets to waste management, while most fall within the one per cent range or even below zero.

Table 3. Proportion of spending on waste management programmes in some regions

City	Waste Management Budget (Rp. Million)	Regional Budget (APBD) (Rp. Billion)	Waste Management Budget (Percent)
Surabaya	368	8.111	4,5%
Jakarta	109	3.648	3,0%
Tangerang	1.400	57.136	2,5%
Semarang	117	5.093	2,3%
Cirebon	66	3.579	1,9%
Bandung	121	7.117	1,7%
Deli Serdang	42	3.335	1,3%
Palembang	52	4.164	1,2%
Pandeglang	12	1.677	0,8%

Source: Kompas News accessed 22 June 2024

The limited budget allocation for waste management by Indonesian local governments highlights a lack of prioritisation for this critical issue. Approximately 60% of waste management funds are allocated to landfills or integrated waste management sites (TPSTs), indicating a lack of investment in alternative solutions (Wisanggeni et al., 2022). Furthermore, educational efforts on waste management and equitable waste storage remain insufficient. Proper waste processing and sorting can transform waste into valuable commodities, underscoring the need for a more comprehensive and sustainable approach to waste management (Lutfhi, 2023).

Consequently, community discipline in waste disposal and government commitment to developing comprehensive waste management strategies through adequate budgetary allocations are crucial for addressing environmental pollution challenges. Non-governmental organisations like the Pandawara Group in advocating for environmental conservation will be ineffective if underlying systemic issues remain unaddressed. Achieving consistent results from the Pandawara Group's waste clean-up movement will be challenging without a concerted effort to address these systemic problems.

CONCLUSION

This article demonstrates the pivotal role of social media in activism movements, as exemplified by the Pandawara Group's efforts to raise public awareness of environmental conservation. By employing creative campaign strategies on social media and actively participating in river, beach, and sewer clean-ups, the Pandawara Group has garnered widespread community support. Compared to larger environmental organisations like Greenpeace Indonesia and WALHI, the Pandawara Group has proven more effective in advocating for environmental issues on social media, as evidenced by a comparative social media analysis. The group's success in leveraging social media has inspired collective action in numerous regions grappling with waste and environmental conservation challenges. This article is an essential input for activism and social movements in Indonesia to enhance their effectiveness and efficiency in developing activism strategies, particularly in garnering public sympathy for their action.

Nevertheless, activist organisations like the Pandawara Group alone cannot provide sustainable solutions. This is evident in the unsustainable outcomes of their clean-up programs, where garbage accumulates once more in previously cleaned locations. Environmental issues

like waste management necessitate collaboration among all societal levels, government, and environmental activist groups. The failure of any one actor to fulfil their role will hinder consistent efforts to address waste and ecological problems. Consequently, the government's role, particularly in designing educational initiatives, programs, and policies related to environmental conservation, is indispensable. Furthermore, governments at all levels must support activist groups like the Pandawara Group, which dedicate their energy to ecological conservation work. This ensures that environmental conservation efforts are implemented comprehensively, encompassing all levels of society.

This article is limited to examining the Pandawara Group's digital activism strategy and its impact on raising awareness of environmental conservation. While the article also highlights the challenges associated with the movement, particularly regarding the consistency of its outcomes, these are not explored in-depth. Further research could delve into consistency in digital activism outputs, especially within the context of environmental issues in Indonesia, to develop a more comprehensive and in-depth strategy for sustainability in ecological conservation.

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