









CSR Communication Strategy for Tackling the Plastic Waste Problem in Banten, Indonesia

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ABSTRACT

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Plastic waste is a serious environmental issue in Banten, a province in Indonesia. This province has a coastline of 499 kilometers, with many residents working as fishermen. Limited landfill capacity, demographic challenges, and a lack of knowledge in plastic waste management contribute to marine litter, leading to profound disease emergence. This research aims to analyze the Corporate social responsibility (CSR) communication strategy for tackling the plastic waste problem based on the circular economy principle employed by PT CAP. The research uses a descriptive qualitative approach, focusing on an in-depth single case study. This research uses interviews and documentation to collect the data. The findings indicate that PT CAP employs a stakeholder communication strategy with an interpersonal communication approach. These strategies have impacted stakeholders' trust, led to awareness about the importance of plastic waste management, and boosted engagement and participation. As a result, these strategies have developed effective plastic waste management, positively impacted the environment and marine life and improved the local economy and living health. These findings can serve as a guideline for other CSR programs, especially waste management issues. Additionally, researchers can develop different research methods for other types of waste, such as electronic and medical waste, to create a broader environmental impact.

1. INTRODUCTION

Marine debris has become a global issue that endangers the health and safety of living organisms and the environment. Improperly managed waste contributes to the emergence of various diseases [1]. Indonesia, the largest archipelagic country in the world, has more than sixty percent of its population engaged in fishing [2]. Banten, one of the provinces in Indonesia, has a coastline of 499 kilometers, with the majority of the population working as fishermen. With a long coastal area, Banten has a big challenge in dealing with the problem of marine debris. The Banten beaches are filled with garbage piles and are one of the dirtiest beaches in Indonesia. Labuan Beach in Pandeglang, Banten, piles up hundreds of tons of marine debris from residents' garbage and from the sea to the beach. In addition to making the environment smelly and interfering with residents' activities, waste also contributes to health issues. The same thing happened in the Serang Regency, Banten, where the river was filled with plastic waste, resulting in water no longer being able to flow. The accumulation of garbage in the river results from poor waste management, where the garbage cans are full, but transportation from the cleaning party is rarely carried out, so the garbage overflows, and residents have no other choice but to throw garbage into the river. The Cilegon City Environmental Agency, Banten,

acknowledged that the limited number of landfills in the Banten area contributes to the difficulty of solving the waste problem in the region. The demographic challenges of the province and the lack of vacant land cause the landfill's capacity to not be maximized [3] resulting in the accumulation of unorganized waste on land. Waste often goes to rivers and is carried into the sea, contributing to marine debris [4].

Debris accumulating in an unorganized area is often dumped into rivers and eventually carried into the sea, contributing to marine debris. Ironically, heavy rains that cause stronger seawater tides bring more marine debris back to shore, as happened in Teluk Beach, one of the regions in Banten province. Every rainy season, Teluk Beach becomes the dirtiest beach in Indonesia due to marine debris carried by the wind back to the beach. Land garbage that was originally thrown into the river flows into the sea, carried by the wind back to the coast. With the limited number of landfills and the poor waste management system in the region, the waste problem in Banten province is challenging to solve. This research is essential to analyze effective waste management strategies that can accommodate the limited number of landfills in the Banten region, as well as provide innovative solutions for waste management based on circular economy principles, especially types of plastic waste that are difficult to recycle, and ultimately help solve waste problems in Banten

province.

The government must take concrete and decisive action, collaborating with the private sector to increase public awareness about the dangers of plastic waste [5]. Although the government has enforced various regulations and bans related to garbage, limited landfill capacity has been an unavoidable obstacle. Additionally, many communities and landfills still use traditional waste management systems, complicating efforts to address this issue [6]. Conventional methods, often done by stockpiling and burning waste, are costly and burden government spending annually [7]. Therefore, innovative solutions that transform waste into valuable resources are urgently needed.

The Indonesian government has made various efforts to tackle plastic waste. The initiatives collaborate with the private sector, academic institutions, national organizations, and the international community. Effective management of plastic waste requires involvement in reducing plastic production, increasing recycling, and conducting clean-up efforts [8]. Academic institutions [9] and many corporations have launched recycling initiatives through Corporate social responsibility (CSR) programs; however, these initiatives tend to be short-term and occasional programs. Furthermore, inadequate planning and ineffective communication strategies hinder stakeholders' understanding of the program, leading to low interest, which decreases participation. A comprehensive plan is essential to achieve the purpose of CSR programs [10]. Well-prepared plans and effective communication strategies will help build stakeholders' trust and foster a positive image of the initiatives and the Company [11].

This research is crucial because many Indonesian landfills and communities still use traditional plastic waste management. Public awareness of waste management is low, and two-thirds of plastic waste entering the sea is from Java and Sumatra [12]. In densely populated rural and urban areas, waste is often managed by burning or dumping it into rivers, contributing to marine pollution [12]. Initiatives focusing on capacity building of community knowledge, especially related to waste, are crucial to boost awareness [13]. Programs focused on waste management are urgently needed. The plastic waste management program utilizing pyrolysis machine technology, based on sustainable circular economy principles, offers a breakthrough and alternative solution to this problem [7]. A well-designed communication strategy is vital to help stakeholders easily understand the messages, positively impacting the program's success. Therefore, this research aims to analyze the CSR communication strategy done by PT CAP, focusing on a plastic waste management program using pyrolysis technology to address the plastic waste issue in Banten, Indonesia.

2. LITERATURE REVIEW

Previous research on CSR programs across various companies covers diverse topics using different approaches and methods. One similar study [14] focusing on waste problems emphasizes the importance of CSR implementation programs that adhere to environmental, economic, and social sustainability principles. Other research [15] highlights how stakeholder engagement with management relationships is a key factor in the program's success. Another study [16] focuses on the importance of corporate communication strategy in enhancing CSR program success. Additionally,

researchers have examined the stakeholders involved in the program to understand their participation [17] better. However, few discussed the communication process of sending the CSR message to stakeholders to encourage participation.

Given the complexity of the relationship between companies and stakeholders in CSR implementation, this research adopts stakeholder theory [17] and interpersonal communication theory [18]. This approach aims to explore and have a deeper understanding of stakeholders' interests, understand the effective communication processes, and analyze the impact of communication strategies on program success.

2.1 Stakeholder theory

Stakeholders are a crucial aspect of any CSR program [19]. Stakeholders can influence a company's actions and can also be affected by stakeholder's actions [17]. In conducting business, companies aim for profits and allocate benefits to stakeholders [20]. The Company needs to consider stakeholders' interests and objectives [21]. Successful management of stakeholder relationships often leads to more significant achievement of the Company's objectives.

Organizations utilize stakeholder theory to identify stakeholders and manage positive relationships. This theory aids in identifying stakeholder groups and understanding their messages, thoughts, interests, and expectations. It is also highlighting which components should be prioritized by the company [22]. With this understanding, companies can develop effective communication strategies. These strategies enhance stakeholder engagement, facilitate feedback, and help achieve program goals that benefit the Company and its stakeholders [23].

2.2 Interpersonal communication theory

A communicator must possess practical interpersonal communication skills. Key elements include active listening, managing emotions, and clearly understanding and responding to both verbal and nonverbal [24]. Essential aspects of interpersonal communication involve a model that includes communicators, messages, channels, and feedback.

This model emphasizes the importance of two-way communication to foster interaction, receive feedback, and enhance understanding. Nonverbal communication - such as facial expressions, body language, tone of voice, and other cues-significantly impacts comprehension. Additionally, understanding the context of communication, including cultural factors, environment, social conditions, and individual relationships, affects its effectiveness. Strong relationships foster trust, openness, and honesty in communication, reducing potential conflicts and misunderstandings [18].

2.3 CSR concept and strategy

CSR plays a significant role in the dialogue between companies and stakeholders [22]. It encompasses four responsibilities: economic, legal, ethical, and philanthropic [25]. The plastic waste management program exemplifies philanthropic responsibility, reflecting the Company's commitment to community service [10]. Effective CSR communication enhances the Company's reputation and builds stakeholder trust and commitment [26]. When designing a CSR communication strategy, it is vital to understand

stakeholders' needs, as well as the economic, social, and environmental conditions in the program area. This understanding ensures that information is conveyed and received effectively [14]. Strategic planning is a crucial factor for the program's success. Adopting Ronald D. Smith's Nine Steps of Strategic PR can aid in developing effective program planning [27].

According to researchers [28], companies use three CSR communication strategies to engage stakeholders: information strategy, response strategy, and involvement strategy. The stakeholder information strategy is primarily a one-way communication method. Top management makes program decisions and actions without stakeholder input in this approach. The Stakeholder response strategy involves two-way communication. Here, stakeholders can respond to corporate actions, but top management still makes decisions. In contrast, the stakeholder involvement strategy involves two-way communication that engages stakeholders. In this strategy, stakeholders participate and provide suggestions for corporate actions.

2.4 Plastic waste management concept in circular economy

Plastic waste poses a significant problem due to its difficulty in natural decomposition, lasting hundreds to thousands of years in the environment [29]. Effective plastic waste management requires strategic planning that includes reducing, reusing, recycling, processing, and ensuring safe final disposal. Challenges in plastic waste management include limited public awareness, insufficient facilities, uneven socialization efforts, and the low economic value of plastic waste [30]. A circular-based waste management program aims to save the environment and nature [31].

The general concept of circular economy principles combines waste clean-up, pollution reduction, and enhancing products and material benefits while regenerating nature. Implementing this concept seeks to transform the linear economic model into a circular one. The linear approach contributes to environmental issues and depletes raw materials. In contrast, the circular economy approach aims to maintain the value of waste by processing, recycling, and transforming it into new materials with added value, benefits, and uses. This approach also focuses on regenerating nature [32]. Ultimately, plastic waste management programs with circular economy principles positively impact the economy, the environment, and public health [33].

3. METHODOLOGY

This research employs a constructivist paradigm [34] with a qualitative approach, focusing on a deep understanding of phenomena, social contexts, and interpersonal relationship [35]. The authors investigate and explore information related to the plastic waste management CSR program. Using a single case study, the author delves into the phenomenon, explores its complexity, and provides valuable insights [36]. This approach helps narrow the research scope, facilitating the collection of relevant and essential data [37]. Data collection techniques for this research include interviews as the primary data source and document analysis as the secondary data source. For the document analysis, the author examines company documents, articles, and reputable websites to complement and validate the findings.

The authors conduct semi-structured interviews to gather in-depth insights while allowing flexibility in the research process. A total of eight participants were involved in this study. The authors employed a purposive sampling technique to select participants who possessed relevant experience and knowledge about the topic, representing various roles. This included employees and managers at PT CAP, as well as external stakeholders such as key opinion leaders, including the Headman of Anyar Village, the Chairman of the Fishermen's Association of Anyar Village, the Chairman of the KSM of Anyar Village, the Chairman of the KSM of Kotabumi Village, local social and environmental activists from Kotabumi Village, and representatives from the Cilegon City Environmental Agency in Banten. By including participants with diverse demographic and organizational backgrounds, the authors can capture a wide range of perspectives on the topic.

The authors [38] use a list of key questions to maintain focus on the topic while enabling to ask relevant follow-up questions based on the informant's responses. The three main questions are:

- 1). What CSR communication strategy does PT CAP employ to effectively convey the message of its sustainable plastic waste management program to stakeholders, especially the community, residents, and partners?
- 2). What steps does PT CAP implement in the CSR communication process to encourage the involvement of the community, residents, and partners in the sustainable plastic waste management program?
- 3). What is the impact of the CSR communication strategy implemented by PT CAP on the execution and outcomes of the program, as well as its effects on public awareness and participation in sustainable plastic waste management and environmental issues?

The primary data source consists of two employees from the Department of External Affairs and Circular Economy at PT CAP. They were selected due to their active involvement in the CSR program from its initiation through implementation and evaluation. To validate the data, the authors conducted semi-structured interviews with six stakeholders involved in the program.

The six stakeholders include representatives from the Cilegon City Environmental Agency in Banten, who can confirm the challenges related to waste issues in Banten and the implementation and impact of the CSR program on the community and waste management. The Headman of Anyar Village, who can provide insights into the waste issues, the challenges of educating the community about waste management, and the processes related to PT CAP's SAGARA program aimed at addressing the waste problem in Anyar Village, along with its impact on the local society and environment. The Chairman of the Fishermen's Association, who can discuss the challenges of community education regarding waste issues and the CSR program's impact on villagers' understanding of waste management. As a representative of fishermen, the Chairman is actively involved in initiating and implementing the CSR program. The Chairman of KSM Gupi Mandiri in Anyar Village, who can confirm their collaboration and engagement with the waste management program. Similarly, the Chairman of KSM Sehati Maju Bersama in Kotabumi, who can validate their involvement in the IPST ASARI program in collaboration with the SAGARA program. Lastly, social and environmental activists in Kotabumi, as representatives of local citizens, who

can share their observations of the situation before the program's initiation and their active involvement during its implementation.

The authors employ thematic analysis to analyze the data [39] specifically using an inductive approach. This method allows the authors to identify themes that emerge from the interview data and documentation studies. The authors then analyze these themes through coding, connect them to the research questions, and report the findings. Thematic analysis provides a deeper understanding of the data [40]. The authors utilize the findings to identify themes that align with the communication strategy, facilitating coordination within the CSR program.

Thematic analysis was conducted by transcribing the interview results. The authors then identify initial ideas, patterns, or segments of text relevant to the research question, focusing on communication strategies, communication processes, and communication impacts. Next, the authors systematically label these identified patterns and segments through coding. Following this, similar and related codes are grouped into initial themes. The authors revisit and re-read these themes to ensure they are interconnected without overlapping. Similar themes are combined, distinct themes are separated, and less relevant themes are discarded. Additionally, the authors clearly and concisely name each theme. In the final stage of the thematic analysis, a report of the findings is prepared, presenting each theme in detail. This includes connecting the themes to the research question, interpreting the findings, and providing practical implications and recommendations. To ensure the validity of the data, the authors employ triangulation techniques, specifically source triangulation [36].

The data supporting this study are openly available at this link:

<https://drive.google.com/drive/folders/1Fzcicbdt8F0HSTzePmCUXmWLulXCVNIp?usp=sharing>.

4. RESULTS AND DISCUSSIONS

4.1 Company and program background

PT Chandra Asri Pacific Tbk (CAP) is Indonesia's largest integrated petrochemical company, producing raw materials for plastic pellets. Its factory is in Banten Province, Indonesia. The CSR Program is a key agenda for the Company, aiming at delivering tangible benefits for the economic and social growth of the community.

The initiative began in response to the issue of marine debris in Anyar Village, Banten. PT CAP launched a CSR program focused on plastic waste management to address this challenge. Named "End-to-End Plastic Waste Management," this program is part of the Company's social and environmental pillars. It includes two integrated CSR initiatives: SAGARA and IPST ASARI. The program emphasizes integrating plastic waste management with circular economy principles, with both initiatives implemented in Banten Province.

4.2 SAGARA program

The SAGARA program was initiated in 2021 to address plastic waste in the Anyar Village, particularly in the fisherman community adjacent to the PT CAP factory. Limited landfill space and demographic challenges have made waste

disposal difficult for residents. Additionally, a lack of understanding regarding waste management has led to waste accumulation, polluting the surrounding area, entering rivers, and ultimately reaching the sea. One staff member from PT CAP's Circular Economy and Partnership Department stated in an interview that the Company initiated the SAGARA program in collaboration with the fishermen of Anyar Village. Through face-to-face engagement, the Company provides education on marine debris and reducing waste entering the sea.

PT CAP engages in two-way discussions with the community during the planning stage. They collaboratively develop program plans, accommodate community input, address potential obstacles, and prepare necessary mitigations. The outcomes of these discussions serve as a standard operational procedure (SOP) for program execution. At the implementation stage, PT CAP provided essential tools for the program. The Company donated boats and garbage catchers. When fishermen go out to fish and encounter plastic waste, they collect and sort it.

To effectively manage the collected plastic waste, PT CAP has established a waste bank savings system in collaboration with environmental activists. Plastic waste that holds a market value is recorded as savings in the waste bank, allowing community members to cash out. The waste bank savings activists then send low-value waste to IPST ASARI for processing and return the resulting products to the community for daily use. This approach incentivizes community members to voluntarily collect plastic waste, enabling them to earn cash from the waste bank savings and receive products from IPST ASARI.

During the program, PT CAP routinely monitors the fishermen. If any issues arise, residents or administrators can contact them directly. For problems requiring in-depth discussion, the CSR team visits the site to engage with residents and collaboratively find solutions.

To build strong relationships with the community, PT CAP holds annual meetings to gather inputs, suggestions, and feedback on obstacles and future program plans. The program aims to positively impact the community and empower residents to manage it independently.

In addition to establishing a digital waste bank, PT CAP partners with the non-governmental group (KSM) Gupi Mandiri in Anyar Village to manage non-fisherman waste. KSM Gupi sorts of organic waste and converts it into solid compost. KSM then sorts inorganic waste by type to enhance its market value. Recycling vendors buy high-value waste, while IPST ASARI processes the low-value plastic waste they received from KSM Gupi.

This partnership employs interpersonal communication [41], featuring two-way discussions and direct mentoring. The Company uses a dialogue strategy, allowing active stakeholder participation [42]. PT CAP also provides education from waste management experts, along with ongoing monitoring and evaluation. As a result, KSM Gupi Mandiri has managed the program independently, effectively handling waste collected from most residents of Anyar village.

4.3 IPST ASARI program

The IPST ASARI program is a CAP-facilitated waste management facility that manages plastic waste from the community by implementing the Circular Economy concept. The IPST ASARI is an integration facility to support the

SAGARA project for low-value plastic waste processing. It is in Kotabumi Village, Cilegon City, in Banten province. The primary focus of this program is to manage low-value plastic waste utilizing pyrolysis technology. This technology processes materials such as crackle plastic, sachets, used plastic product labels, and food packaging plastics, transforming them into new products named pyrolysis oil as an alternative to diesel and kerosene. The IPST ASARI then distributes these products to fishermen and villagers for everyday use.

In addition to handling plastic waste from Anyar Village, IPST ASARI oversees the management of all types of waste generated by residents in the surrounding areas. PT CAP employs the same communication and waste management techniques in the SAGARA Program. However, IPST ASARI incorporates a specialized pyrolysis machine designed especially for low-value plastic waste. This advanced technology requires specialized training for the operators responsible for its use.

In implementing the program, PT CAP collaborates with the non-governmental group (KSM) *Sehati Maju Bersama* to foster community development. Integrating a technology-based pyrolysis machine necessitates more intensive training, monitoring, and evaluation to minimize potential obstacles and technical errors. Through a consistent communication strategy, PT CAP has received positive stakeholder feedback. This strategy has built trust, facilitated a clear understanding of the program, and encouraged enthusiasm and active participation.

One of the challenges facing the IPST ASARI program is that KSM *Sehati* has yet to achieve independent operation. Currently, the Company continues to provide financial support for program activities. High operational costs associated with pyrolysis machines and the ambiguity in obtaining a clear definition of pyrolysis oil in Indonesia create difficulties in processing distribution permits and hinder commercializing these products. This situation affects KSM's ability to generate a balanced income. In an interview, a staff member of PT CAP's Circular Economy and Partnership division stated that the Company's next objective is to enable KSM *Sehati* to operate the IPST ASARI program independently, without reliance on the Company. PT CAP is optimistic that the Company will identify the best solution through collaboration with the government and the private sector. Enabling KSM *Sehati* to operate independently remains a key focus of PT CAP's ongoing efforts.

Employing the same communication strategies implemented in the SAGARA initiatives, which include the stakeholder communication strategy using an involvement approach [43] combined with verbal and non-verbal interpersonal communication methods [44], fostering active participation and collaboration.

4.4 CSR communication strategy

The Company conducts a communication strategy planning process for the End-to-End Plastic Waste Management CSR program in several stages:

- 1). **Situation Analysis.** PT CAP comprehensively maps various aspects, including community dynamics, location, distance, socio-economic conditions, and demographics. Anyar Village, where the SAGARA program is, faces significant environmental challenges. It is far from the landfill and next to the coast, resulting in waste accumulating

unorganized, dumped into the rivers and ending in the sea. In contrast, Kotabumi Village, the site of the IPST ASARI program, is densely populated. Many residents remain unaware of the importance of environmental cleanliness. However, a non-governmental group (KSM) is committed to addressing local environmental issues. Analyzing the situation, the Company involves community leaders in gathering information and input.

- 2). **Organizational Analysis.** PT CAP is implementing CSR programs grounded in circular economy principles. This initiative aims to benefit both the economy and society. Management is committed to supporting long-term sustainable programs.

- 3). **Publics Analysis.** The audience of the SAGARA program consists of the residents of Anyar Village. Key opinion leaders include the Headman of Anyar Village, the Fishermen's Association Chairman, and the KSM Chairman. In contrast, the IPST ASARI program's audience is the Kotabumi Village community, where influential opinion leaders include the Chairman of KSM and local social and environmental activists.

- 4). **Goals Setting and Objectives.** The SAGARA and IPST ASARI programs aim to address the issue of plastic waste through effective waste management strategies.

- 5). **Action and Strategies Determination.** PT CAP adopts a proactive strategy. Programs are initiated by the Company rather than in response to community demands or pressure. The Company collaborates with city government, environmental activists, KSM, and waste management experts.

- 6). **Effective Communication.** Before reaching the community, the Company communicates with opinion leaders through two-way discussions to gather input and suggestions. The Company then conducts direct outreach to the community by appointing communicators based on the relevant topics.

- 7). **Communication Tactics.** PT CAP employs a stakeholder communication strategy that emphasizes face-to-face interpersonal communication. This approach aims to enhance participation and gather valuable input and feedback.

- 8). **Implementation of the Strategic Plan.** PT CAP establishes the budget, program schedule, and person in charge (PIC) for each program.

- 9). **Evaluation of the Strategic Plan.** The Company conducts periodic monitoring and evaluation and prepares program reports.

In conducting the CSR programs, PT CAP's communication strategy prioritizes stakeholders' interests. The Company actively engages stakeholders throughout its programs via two-way discussions, feedback mechanisms, and collaborative initiatives, ensuring they feel heard and valued. The strategy for CSR communication programs includes:

- 1). **Identify Stakeholders.** PT CAP conducts stakeholder mapping to identify all relevant groups, including employees, community members, government entities, NGOs, and Academic institutions. Identification helps to understand their interests and influence.

- 2). **Two-way communication.** The Company employs two-way communication by actively listening to stakeholders' suggestions and concerns. Involving stakeholders in the program allows for feedback and direct discussions, fostering trust and demonstrating that their opinions matter.

- 3). **Collaborative Partnerships.** PT CAP collaborates with government bodies, community organizations, NGOs, KSM, and academic institutions to strengthen partnerships and share responsibility.

4). Transparency. The Company regularly communicates and reports on the outcomes of its CSR initiatives through social media, newsletters, and its website. These approaches build engagement, trust, and credibility.

5). Education programs. PT CAP offers training for employees on CSR-related topics, enhancing understanding and encouraging active participation.

Initiating the program plan using Smith's nine-step framework [27] provides clear guidelines for PT CAP. It establishes structured frameworks for identifying specific goals, developing effective messages, selecting appropriate communication channels, ensuring efficient implementation, and measuring evaluation and impact. Additionally, this approach fosters strong relationships with stakeholders and allows feedback-based strategic adjustments. As a result, it serves as a comprehensive guide to achieving communication goals more effectively and efficiently.

Prioritizing stakeholder interest as part of the Company's strategy and applying Grunig's theory [45] in conducting CSR programs fosters strong stakeholder relationships. This approach allows for identifying audience needs, enabling the tailoring of programs to meet those needs. It enhances public trust, encourages collaborative participation, and expands the reach and impact of the programs. Additionally, it increases awareness and participation while facilitating feedback for program evaluation and improvement. Consequently, this approach empowers the Company to design effective, sustainable CSR programs that benefit the organization and society.

4.5 CSR communication process

PT CAP has established key elements to effectively convey the communication message of its End-to-End Plastic Waste Management CSR program:

1). Sender. PT CAP initiates communication with stakeholders and delivers the message.

2). Message. The core message focuses on environmental management, especially plastic waste management, and aligns with circular economy principles.

3). Channels. PT CAP utilizes social media platforms and the Company's website to disseminate information.

4). Recipient. The target audience includes residents of Anyar Village in Serang Regency and Kotabumi Village in Cilegon, who receive and interpret the message from the Company.

5). Feedback. Stakeholder feedback consists of criticism, input, and suggestions regarding the CSR program implemented by the Company.

6). Annoyance. Initial lack of trust and unfamiliarity with waste management practices hindered understanding of the message.

7). Context. The vibrant community culture in Anyar Village and Kotabumi Village facilitates effective communication. Face-to-face and two-way discussions enable easier message delivery and direct feedback.

8). Interpretation. Residents of Anyar Village and Kotabumi Village enthusiastically received the program explanation, understood the message, and actively participated in its implementation.

PT CAP actively implements the CSR communication process. The Company focuses on the key factors that foster positive relationships and encourage stakeholder support for its program. These factors include:

1). CSR Information. The Company explains the program's objectives, benefits, and impacts, helping stakeholders understand and appreciate its business.

2). Personal Relevance. CSR messages connect with stakeholders' interests and lives, fostering empathy and encouraging participation.

3). Consistency. The messages align with the Company's actions and values, enhancing credibility.

4). Transparency. The Company shares important information with stakeholders from the program's initiation, including planning, processes, outcomes, and challenges. This transparency builds trust.

5). Factual Message Tone. The Company maintains a factual and objective tone in its communications, ensuring that stakeholders receive accurate information and minimizing the perception of CSR as mere promotion.

An effective CSR communication strategy should prioritize three critical elements: a factual message tone, transparency, and the provision of detailed information about CSR programs [46]. An effective CSR communication process involves key components for achieving clarity and efficiency. PT CAP employs these elements, resulting in clear and understandable messages. Although stakeholders initially lacked trust and confidence regarding the programs, implementing the appropriate communication process facilitated their understanding and acceptance of the key messages. This understanding and acceptance fostered stakeholder engagement in the programs.

4.6 The impact of CSR communication strategy to the program

The authors employ summative evaluation to assess the program's success by comparing the initial goals with the results after implementation. This approach measures the impact produced and evaluates whether the program's objectives are being effectively achieved. Data is collected through interviews with selected individuals involved in the program, as well as through secondary data analysis of annual company reports, government websites, and reputable private sources.

In an interview with the head of Anyar Village, he stated that before the implementation of the CSR program, residents often disposed of garbage carelessly, particularly when the garbage cans were full. Cleaners had not been able to pick up the garbage promptly, which resulted in residents throwing waste into the sewers, causing it to flow into the river and creating significant environmental problems.

When KSM Gupi Mandiri began operations, Anyar Village received a land grant from the private sector, allowing it to establish a waste management site (TPS) for handling residents' waste at no cost. KSM Gupi also successfully empowered 15 to 20 residents as employees, helping to reduce unemployment and create job opportunities. With a sufficient workforce, cleaners now collect garbage from residents' homes daily, preventing overflowing garbage cans and the disposal of waste into the sewers. Additionally, through a program that allows residents to exchange plastic waste for savings and pyrolysis oil, community awareness of waste management has significantly increased. Residents are now enthusiastic about sorting their waste for exchange, leading to a notable reduction in plastic waste. Additionally, due to the successful management of the program by KSM Gupi, the

monthly waste fee for residents was reduced from IDR 50,000 to just IDR 25,000.

In an interview with the Chairman of KSM Gupi Mandiri, he stated that since the implementation of the CSR program, KSM Gupi has been transporting waste from the residents of Anyar Village every day. With enough employees, the waste collected at the polling station is sorted on the same day, preventing any accumulation that could cause odors.

According to an interview with the Chairman of KSM Sehati Maju Bersama, until the end of 2022, IPST ASARI managed to process 21,024kg of waste and produced 8,205 liters of pyrolysis oil. In 2023, IPST ASARI continued its efforts, managing 15,927kg of waste and producing 5,945 liters of pyrolysis oil. The amount of plastic waste collected has decreased due to the increasing public awareness of waste management and sorting practices, allowing residents to sell recycled plastic to waste collectors or recyclers. KSM Sehati also successfully empowered 10 to 12 residents as employees, helping to reduce unemployment and create job opportunities. Additionally, since the IPST ASARI program began operating in Kotabumi, the monthly waste fee for residents has been reduced from IDR 25,000 to zero.

An interview with one of the environmental activists in the IPST ASARI area revealed that the management and residents regularly engage in socialization and education about waste sorting and collection. These educational activities are conducted during recitations, social gatherings, community associations, and competitions, and are delivered directly and continuously to enhance residents' awareness of the benefits of sorting waste. Residents can bring sorted plastic waste to these events for collection and record-keeping. This initiative has successfully contributed to keeping the environment of Serdag village in Cilegon city clean and free from garbage.

This finding aligns with statistical data from the Banten Provincial Environment Agency, which indicates that in 2022, waste received from Serang Regency decreased by 0.04%, while waste from Cilegon City decreased by 3.38%. Independent waste management activities by KSM Gupi Mandiri at its temporary waste storage (TPS) and the operation of pyrolysis machines at IPST ASARI are integral to waste reduction efforts at the source and significantly help reduce waste accumulation in landfills.

Effective CSR communication has been shown to foster trust and enhance stakeholder understanding of the program's messages. By leveraging stakeholder communication strategies with an interpersonal approach, awareness of effective plastic waste management is increased. This heightened awareness encourages active participation from stakeholders, enabling them to tackle the issue of plastic waste and sustainably improve environmental hygiene and health.

Furthermore, CSR programs positively impact the local economy by generating revenue from the sale of recycled waste, oil produced from plastic waste processing, and reduced waste management costs. The program has also contributed to job creation in the surrounding area. Importantly, this CSR initiative helps decrease the amount of waste sent to landfills, supporting the government's goal of achieving a waste-free Indonesia by 2045.

5. CONCLUSIONS, LIMITATIONS, AND FUTURE RESEARCH

This research leads to several conclusions:

1). PT CAP employs a proactive strategy in initiating CSR programs. It utilizes a stakeholder communication strategy that fosters two-way discussions involving stakeholders. An Interpersonal communication approach enhances participation.

2). PT CAP implements an effective CSR Communication process by focusing on key factors such as providing detailed explanations of the CSR programs, ensuring the message connects with stakeholders' interests, maintaining message consistency, promoting transparency, and using a factual tone. This approach ensures that stakeholders receive accurate information.

3). The impact of the CSR communication strategy for the programs includes increased awareness and understanding of plastic waste management, which leads to effective plastic waste management, heightened stakeholder participation, economic improvement in the surrounding area, a cleaner and healthier environment, and reduced landfill waste. These efforts contribute to the government's goal of achieving a waste-free Indonesia by 2045.

Overall, this study shows that effective communication strategies significantly increase public awareness about plastic waste management. The findings show that the use of proactive communication strategies with stakeholder communication strategy approaches and interpersonal communication approaches has succeeded in increasing stakeholder involvement and participation in CSR programs, which has an impact on the achievement of program objectives, namely increasing stakeholder awareness and understanding related to waste management. Additionally, open interactions between companies and local communities have strengthened trust and collaboration, which has been a key factor in the program's success. Thus, this study emphasizes the importance of designing effective and inclusive communication strategies to achieve sustainability goals.

Based on the findings, the authors identify several practical implications for CSR practitioners to maximize program effectiveness and achieve their objectives.

1). CSR practitioners should design a clear and targeted communication strategy to convey messages using simple language and proactive two-way communication, which will enhance public understanding.

2). Engaging stakeholders is crucial for achieving program objectives. Practitioners need to establish communication and dialogue forums that facilitate stakeholder feedback, enabling them to accommodate input and assist in decision-making.

3). Responsive and adaptive actions in response to stakeholder feedback can build trust and enhance the effectiveness of CSR programs.

4). In addition to engaging local communities and partners, CSR practitioners should seek broader partnerships with NGOs, other private sectors, recycling entrepreneurs, schools, and local organizations to create synergies and disseminate program-related education more widely.

5). Furthermore, CSR practitioners must utilize various communication channels, including local media, social media, websites, and other digital platforms, to reach a broader audience.

6). CSR practitioners should implement an effective monitoring and evaluation system to obtain clear indicators of the success of communication strategies and program impacts.

This study offers insights into effective CSR communication strategies for plastic waste management that align with circular economy principles. These findings can serve as a reference for implementing similar CSR programs

targeting different types of waste, such as e-waste or hospital waste, utilizing diverse research methods for varied results.

This study has several limitations, as data were collected through semi-structured interviews with only eight participants. Although this sample size reached a saturation point, it restricts the generalization of findings to a broader population, since the respondents may not fully represent the community's views on end-to-end plastic waste management CSR programs. Additionally, secondary data from corporate archives, government websites, and reputable private sources may introduce bias, depending on how the information is presented and selected.

These limitations suggest that the study's results may only apply to the context of end-to-end plastic waste management (CSR) programs in Banten Province. Results could vary in different contexts, such as areas with distinct social, cultural, or economic conditions, where public perception and participation in waste management may differ significantly. Furthermore, government regulations and policies related to waste management can vary by location, impacting the program success.

Despite the End-to-End plastic waste management program achievements, challenges remain. Future solutions should focus on establishing the legality of processed products, commercializing these products for economic sustainability, and collaborating with the government and private sectors for distribution and sales. Additionally, providing non-grant land for use as a TPS will allow KSM Gupi Mandiri to operate comfortably without the concern of losing access to the land due to its reclamation by the grantor. Furthermore, enhancing pyrolysis machine innovations will improve product quality while reducing production costs, making the selling price more affordable.

Based on the issues identified in this study, further research is needed to conduct a comprehensive evaluation of the end-to-end plastic waste management CSR program, since this study primarily focuses on communication strategies, processes, and their impact on the program, without providing an in-depth evaluation of the program's results. It is hoped that by researching and evaluating these results, solutions to the existing challenges and obstacles can be identified. The recommendation for subsequent research is to also explore the long-term impact of these communication strategies in various social and economic contexts.

While the findings of this study offer valuable insights, it is crucial to conduct further research using broader methodologies, broader populations, such as multi-case studies, quantitative methods, or mixed methods approaches, to obtain comprehensive and representative results and understanding.

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AUTHOR CONTRIBUTIONS

All authors of this manuscript contributed according to their respective roles. HSH: conceptualization, methodology, data collection, writing-original draft preparation, data analysis,

visualization, validation, writing-reviewing and editing, and manuscript finalization. MNAS: supervision and validation. LM: writing-reviewing and editing, and supervision. MA: supervision. DZ: project administration. AWP: project administration.

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