Sahaja Project:

Improving waste pickers' well-being by creating sustainable waste segregation system and developing plastic credits model in Ambon City, Indonesia

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Abstract

Despite Indonesia's globally acknowledged economic growth for the past two decades, with its first-ever single-digit poverty rate in history recorded at 9.66% in September 2018, Indonesia's poorest 25 million benefit only trivially from the growth (Raharjo, 2019). Indonesia is now the sixth country with the greatest wealth inequality in the world (Oxfam, 2017). Ten million of the 25 million of Indonesia's poorest live in conditions that are extremely poor and suffer from enormous financial and mental pressure on a daily basis due to the absence of a steady income from their menial & informal job (Aninditya, 2021). On average, waste pickers in Indonesia earn USD 91 monthly (Kristanto et al., 2021). However, these generalized findings are unable to depict the poorer circles within the waste picker community itself who work on a daily basis with severe inefficiency and unorganized flow of work. These poorer circles severely suffer from having a monthly income between USD 22-30 to support 3 to 5 family members (Aninditya, 2021). This extremely low income is due to; 1) uncertain availability of sellable waste; 2) waste pickers' inability to strategize routes or/and posts for waste picking. Sahaja sees the normally inefficient and unorganized process of waste picking by Indonesian waste pickers as a space for policy intervention. The team at Sahaja decided that a ***modest*** intervention of ***preventing random picking*** & organizing their day-to-day flow of work and is the very key solution to increase and stabilize their income, hence eventually improving their overall wellbeing. We started the ideation of the project by imagining how their time & energy to randomly search for waste can be restored for other dollar-earning activities. In addition, we also explore the idea of plastic credit to increase the income of waste pickers.

Keywords: Effective waste picking and segregating; random picking; waste pickers empowerment; plastic credits; recyclable waste.

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Introduction

A. Background

Oxfam reported in 2017, “The four richest men in Indonesia have more wealth than the combined total of the poorest 100 million people. In the past two decades, the gap between the richest and the rest in Indonesia has grown the ***fastest in South-East Asia***. It is now the sixth country with the greatest wealth inequality in the world. ***What does this mean for ordinary people?***” Despite the country’s globally acknowledged economic growth, with its first-ever single-digit poverty rate in history recorded at 9.66% in September 2018, Indonesia’s poorest 25 million benefit only trivially from the growth (Raharjo, 2019). Ten million of the 25 million of Indonesia's poorest live in conditions that are extremely poor, with their monthly household income can be as low as USD 22 to support five family members (Aninditya, 2021). Aninditya (2021) stated that they suffer from enormous financial and mental pressure on a daily basis due to the absence of a steady income from their often menial & informal work.

On average, waste pickers in Indonesia can earn a wage that's “half-decent by Indonesia's standards,” according to ABC (Harvey, 2015), the equivalent of $4 on a bad day, and $10 on an effective day. In 2021, Kristanto et al. corroborate ABC’s claim by stating that the average of their monthly income is USD 91. However, these generalized findings are unable to depict the poorer circles within the waste picker community itself that work on a daily basis with severe inefficiency and unorganized flow of work. Researcher on demography, Aninditya (2021), states that these poorer circles suffer from having a monthly income between USD 22-30 to support between 3 to 5 family members. This extremely low income is due to; 1) uncertain availability of sellable waste; 2) waste pickers’ inability to strategize routes or posts for waste picking. With the limited cognitive capacity to access social protection especially health insurance, financial pressure from debt collectors & loan sharks, to the everyday encounter to many technical obstacles in doing their supposedly main job, mental illnesses such as depression and post-traumatic stress disorder within this community is found common. Many waste-picker couples are also found trapped in cyclical, abusive, and violent behaviour as a result of negative coping mechanisms (Aninditya, 2021).

Sahaja sees the typically inefficient and unorganized process of waste picking by waste pickers as a space for policy intervention. The team at Sahaja decided that a modest intervention of ***organizing*** their day-to-day flow of work and ***preventing random picking*** is the very solution to increase and stabilize their income, hence improving their overall wellbeing. We started the ideation of the project by imagining that their time & energy to randomly search for waste will be restored for another dollar-earning activities such as skill-building for instance, "What if the waste comes to the pickers and not the other way around?" Each people in Indonesia produce 0.7 kg per day (Indonesia's Ministry of Forestry and Environment, 2022), assuming a family with four members: 0.7 x 4 = 2.8 kg/day/household. This also translates to 19.6 kg/week/household. Assuming that the 40% of the weekly household waste has economic value, then 8 kg/week could be a source of steady income for the waste pickers. One waste picker could handle 16 sorting in a day, so one waste picker can sort 128kg/day (16 x 8 = 128 kg). The average price for waste currently in Indonesia is Rp. 2.000/kg, then one waste picker can acquire Rp. 256.000/day, which is around 4-5 times higher than their current average income.

Ambon City, the capital city of Maluku is one of the most packed cities in Indonesia, with 1069 people/km2 (Statistics Ambon City, 2019). With its increasing population, so does its waste production. To date, Ambon produces 220 tons of waste per day (Statistics Ambon City, 2020). With an inefficient waste management system, Ambon is facing the challenge of overflowing landfills. With a large waste production rate that is much larger than the waste pick-up and management system, Ambon is currently experiencing an uncontrollable accumulation of waste in many parts of the city (Ivakdalam & Far, 2021). If not immediately addressed, it will cause numerous environmental, social, and health problems. However, most Indonesians have yet to understand the urgency of the issue. Based on the IKPLH report from the Ministry of Environment, 72% of Indonesians do not care about responsible waste management.

Based on the Regional Regulation on Waste Management, City Council of Representatives Ambon (2015), Ambon's goal in waste management is to: Create a clean Ambon city that supports the ecosystem, Reduces the negative impact that stems from unmanaged waste, Changes citizen's behavior in waste management, Improve the quality of the environment, Improve the health of citizens, and Utilize waste as a source of energy. In Ambon, the municipal government also has jurisdiction and authority for several matters, including facilitating activities to help raise citizens' awareness regarding good waste management, coordinating with the

regional work unit, citizens, and the world so that there is cohesiveness in waste management systems and determine standards for waste management in Ambon. Thus, the municipal government plays a huge part in the waste management systems in Ambon.

Like many parts of Indonesia, waste-pickers are one of the most essential players in Indonesia's waste management system. Usually, these waste pickers will go from home to home and collect waste before dumping it into their destined landfill. Although, usually waste pickers will not segregate waste as they collect it. As it is an unstable job, waste-picking is not a secure job. Just recently, for example, 200 waste pickers lost their job because of the closing of one landfill location due to overflowing waste.

B. Theory of Change

Table 1. *Theory of change*

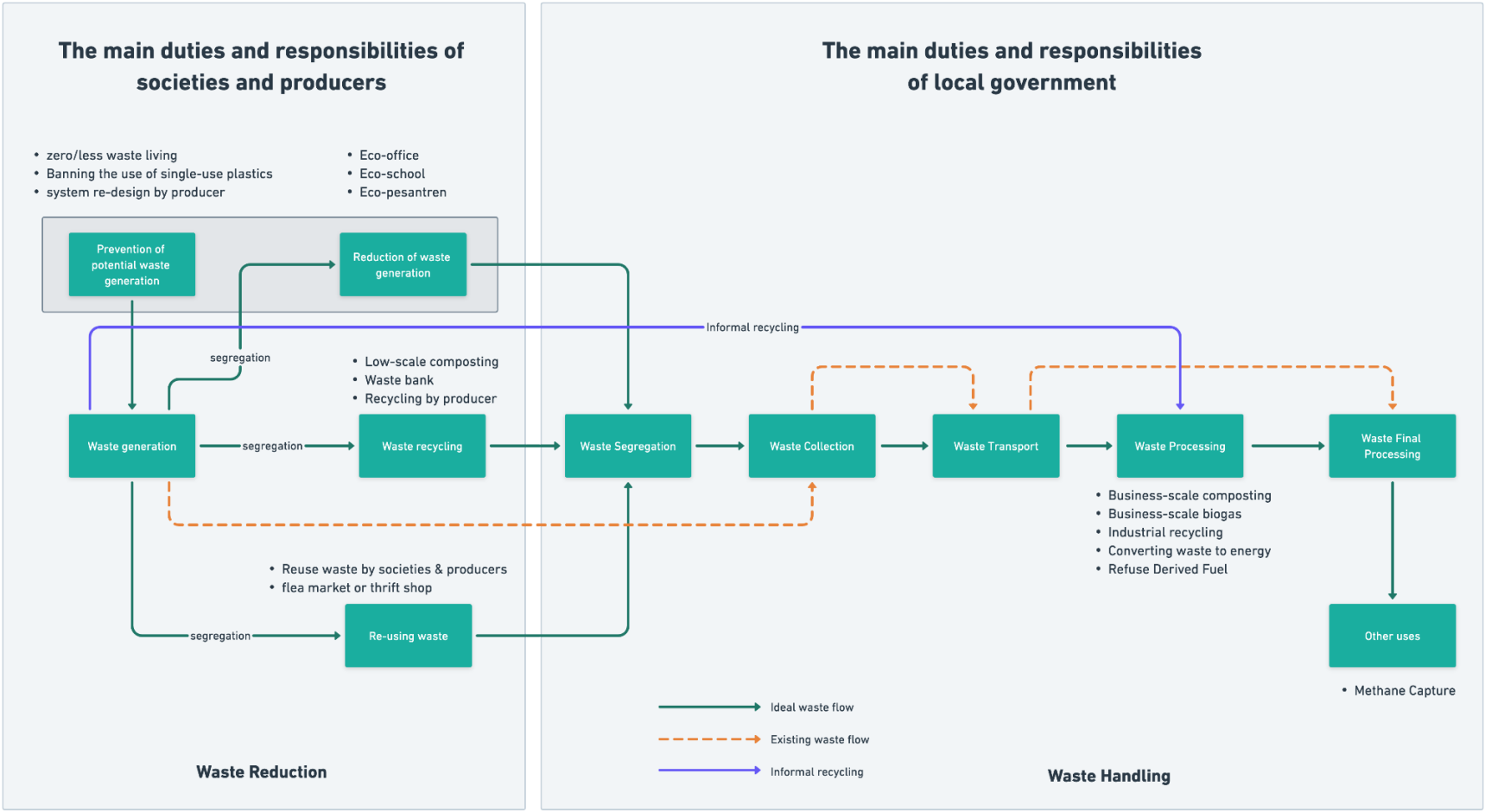
Problems	Activities	Output	Outcomes	Impacts/Desired State
Many of waste pickers in Ambon City still live in poverty	• Gain profit from selling valuable solid waste and plastic credits • Giving access to social protection services • Ensuring training and safety when segregating the waste	• Waste pickers receive at least USD 200 every month • Establishing Sahaja — a firm that focuses on waste segregation and selling it to recycling center • Every waste pickers know how to access health care	• Increasing the income of waste pickers • Reducing the vulnerabilities of waste pickers • Gain sustainable profit from waste management system	• Achieving well being for the waste pickers
Waste pickers experience mental illness	• Connecting waste pickers to with other waste pickers • Providing access to mental health services	• Creating activities to educate the waste pickers about mental health • Establishing a peer group support • Every waste pickers understand the importance of mental health • Every waste pickers know how to access mental health services	• Waste pickers are able to cope and manage their psychological stress healthily • Waste pickers are able to build meaningful relationships with their new colleagues	• An overall improvement of waste-picker mental well-being
Waste management system in Ambon City is poorly managed	• Creating an intervention in waste segregation • Partnering with local government in waste collection • Empowering informal waste pickers • Education residential and commercial waste producer to segregate their waste • Establishing plastic credits scheme	• Reduction in waste going to the landfill • Residential and commercial waste producers are segregating their waste • Increasing number of plastic credits sold	• Waste segregation become a habit in Ambon City • Informal waste pickers gain sufficient profit from selling the valuable solid waste and plastic credits	• Achieving a sustainable waste management system • Waste pickers achieve sustainable profit • Minimizing the impact of health effect due to improper waste management system

Sahaja Model

Sahaja is a program that focuses on empowering waste pickers ("*pemulung*" in the Indonesian language) and local communities so that they could gain economic and social benefits from the proposed waste management system. Sahaja emphasizes three key aspects: (1) **long-term business sustainability of waste collection and segregation**, (2) **well-being improvement**, and (3) a **circular waste management system**. First, Sahaja builds a long-term sustainable business of waste collection and segregation by empowering the waste pickers and local communities to provide three services, which are **selling valuable solid waste** (plastic, paper, metal, glass, e-waste, and other inorganic wastes), **receiving collection fee**, and **selling plastic credits** to companies or institutions that are seeking in compensating their carbon, achieving green credibility, or spending on their corporate social responsibility (CSR). Second, many informal waste pickers are experiencing difficulties fulfilling their well-being, especially in economics and health. Therefore, Sahaja tries to improve their well-being by **empowering them to gain access to social protection services** and **providing them with fair wages due to Sahaja's profit sharing**. Third, we also help Ambon city to achieve a circular waste management city by **empowering their citizens to segregate their own waste** and **providing waste segregation services** that could reduce the number of waste going to landfills and becoming residual waste — invaluable waste that could not be recycled.

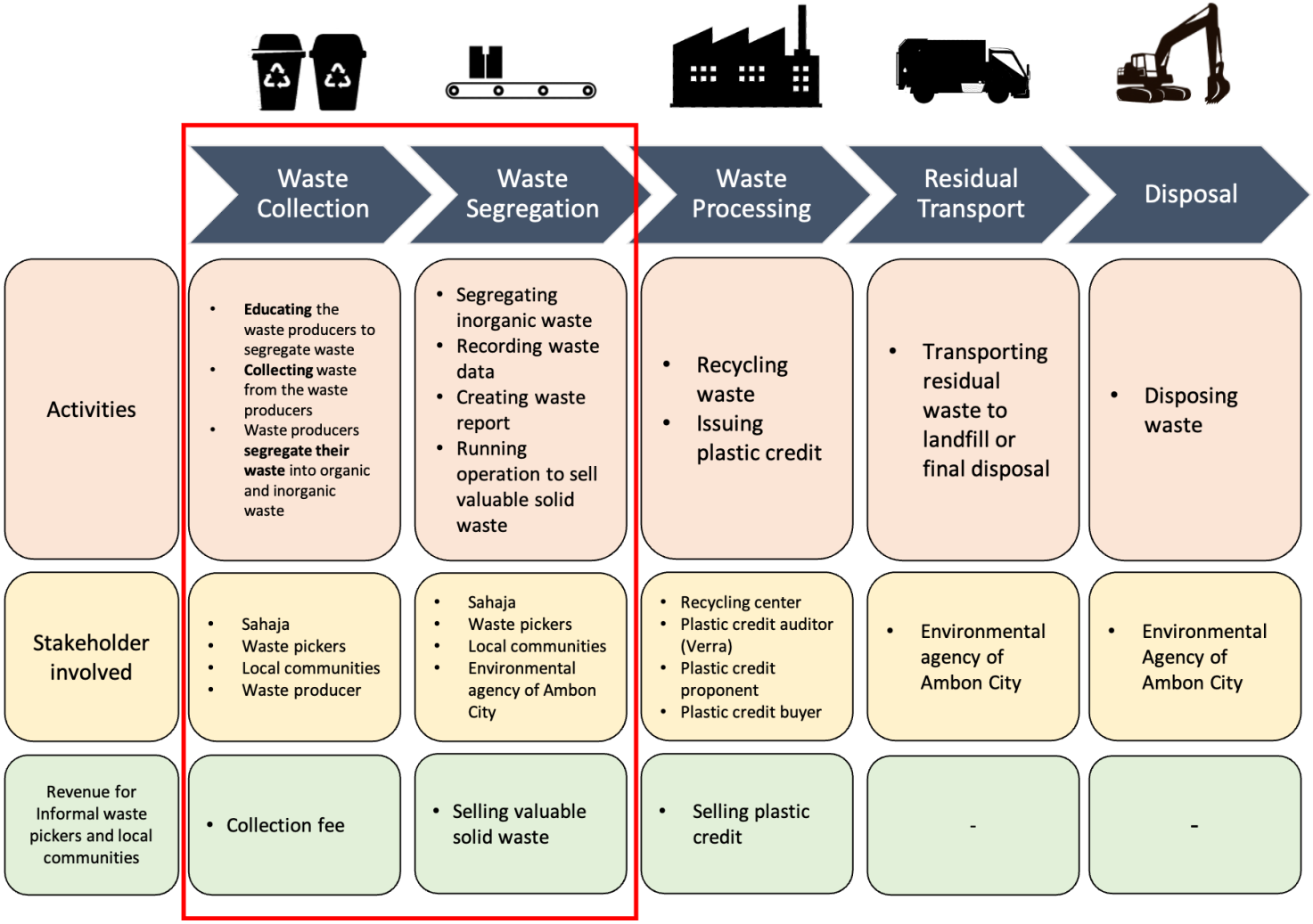
A. Sahaja Intervention in Existing Waste Management System

Figure 1. *The ideal versus the existing way of waste management in Indonesia*



Note. Adapted from a presentation by Sinta Saptarina Sumiorna — The director of waste reduction from The Ministry of Environment and Forestry of The Republic of Indonesia — on February 24th, 2022 in the event of the National Plastic Credits Presentation (link: https://bit.ly/webinarplastikkredit).

Figure 2. *The end-to-end proposed system of waste management with Sahaja.*

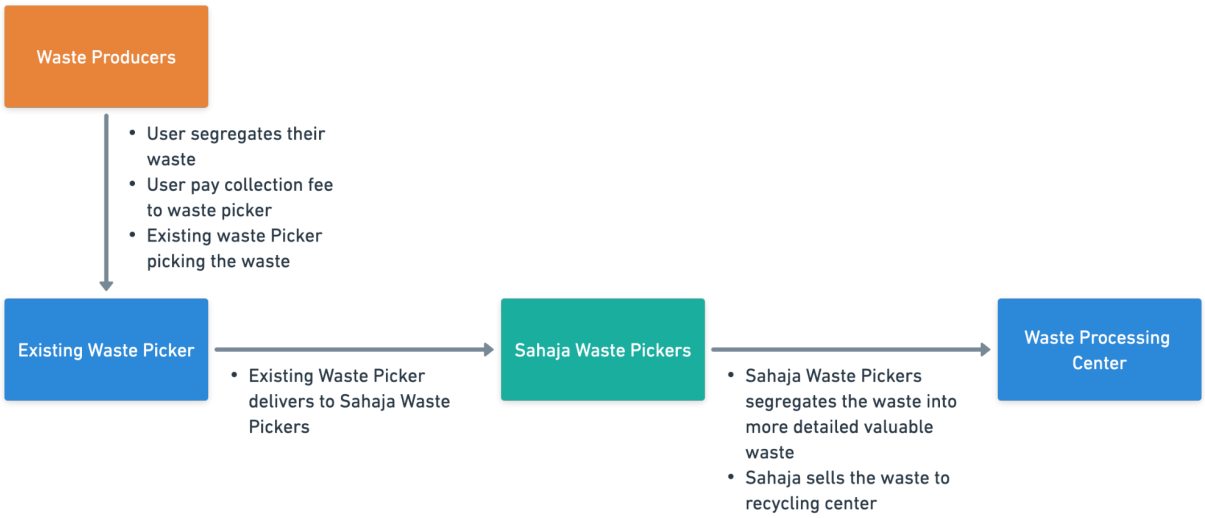


Note. The authors create this figure. Waste producers include households, markets, industries, commercials, public facilities, offices, and other producers.

Looking at figure 1, in general, the waste management system in Indonesia is lack of segregation process that reduces the economic value of recyclable waste and increases residual waste. It is also supported by Maryati et al. (2017) who argue that the waste management system in Ambon City — particularly in the collection, segregation, and transport — needs to be improved. Therefore, intervention in waste segregation is needed (figure 2), especially in educating the citizen to segregate their waste, empowering the waste pickers to be able to segregate waste into more specific categories (such as PET, PP, HDPE, paper, metal, glass, and others — details on attachment 1), and partnering with other actors to implement plastic credits in order to boost financing in the waste management system.

B. Selling valuable solid waste

Figure 3. *The scheme of selling valuable solid waste*



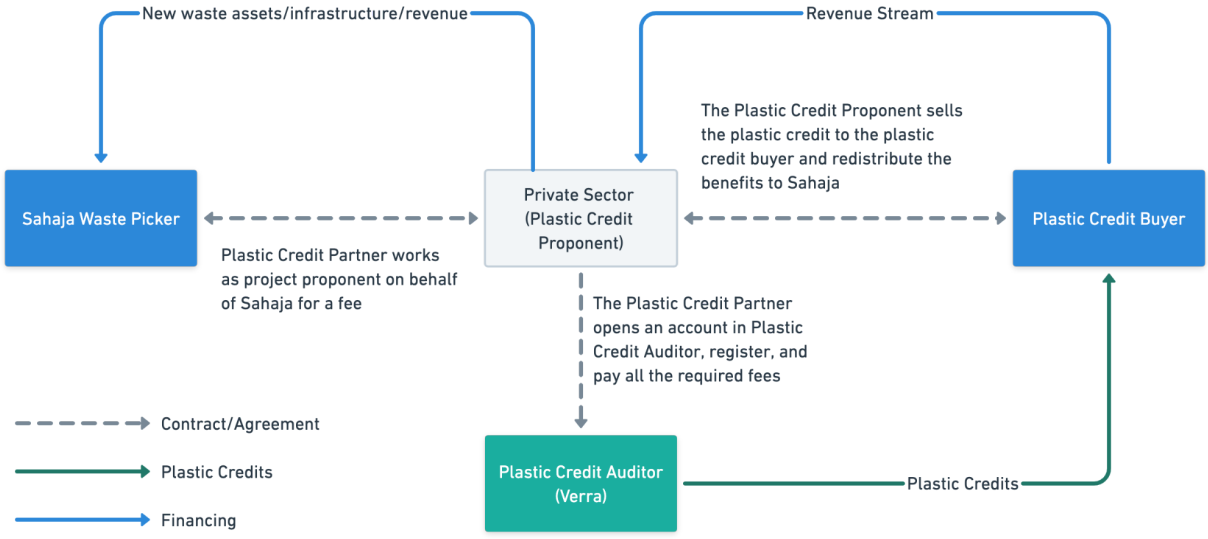
Note. The authors create the figure.

According to Maryati et al. (2017), waste in a residential area is mostly collected by the collective effort of the neighborhood — paying a fee to informal waste pickers to collect the waste in the neighborhood. The informal waste pickers will transport the waste to a *transport station* or temporary waste storage that will be transferred by The Environmental Agency of Ambon City to the final disposal facilities. Looking at this condition, we are planning to gain a partnership with the existing waste pickers and The Environmental Agency of Ambon City. For the existing waste pickers, we will collaborate with them so that they can send their collected

waste to the Sahaja waste picker spot. For the spot, we are planning to gain permission from The Environmental Agency of Ambon City to use the existing *transport station* that is adequate to be segregation facilities. Moreover, we need a further partnership with The Environmental Agency of Ambon City to transfer the organic waste and non-valuable solid waste (such as residual or hazardous waste) to the final disposal facilities. Sahaja waste picker will collect the valuable solid waste which will be sold to recycling centers, waste banks, waste collectors, or factories. Currently, there are several possible destinations for Sahaja waste picker to sell their valuable solid waste: (1) a plastic chopping system that could process plastic waste with a capacity of 3 tons per day (Maryati et al., 2017), (2) Waste Banks such as Green Mollucas and Beta Bank Sampah, and (3) Recycling centers such as Kertabumi and Million Limbah Ambon.

C. Plastic credits

Figure 4. *Plastic credit scheme for Sahaja*



Note. The author creates the figure. Developed from Verra (2022) and SYSTEMIQ (2022).

Plastic credit is a tradeable unit that is issued to the developer of a plastic waste collection and/or recycling project — in this case, the collection and recycling are done by Sahaja Waste Picker. Plastic credits could be purchased by a company or organization, and the revenue can be used to support the implementation, operation, and scaling up of Sahaja Waste Picker. There are two types of Plastic Credits: (1) Plastic collected from the environment that could be issued

Waste Collection Credits (WCCs), and (2) Plastic recycled that could be issued Waste Recycling Credits (WRCs). WCC and WRCs are both known as Plastic Credits and each Plastic Credit represents one tonne of plastic waste that otherwise would not have been collected or recycled (Verra, 2022).

Our proposed scheme is illustrated in figure 4 which will require one new partner to assist Sahaja Waste Picker in running the plastic credits scheme. The new partner — a private entity or we call *Plastic Credit Proponent* — is responsible to comply with Plastic Credits' standards and operations that are known as *Plastic Waste Reduction Standards*. In detail, the Plastic Credit Proponent will (1) **Provide the documentation** of plastic collection and recycling activities to facilitate validation and verification for Verra, (2) **Pay all fees** associated with the project registration and issuance of Plastic Credits, (3) **Facilitate** the sale of Plastic Credits, and (4) **Distribute** Plastic Credits benefits to relevant stakeholders. We choose to gain a partnership with Plastic Credit Proponent because it will **reduce the financial risk** since the upfront financing of the registration and credit issuance process is handled by the Plastic Credit Partner. Moreover, it will **reduce the complexity of operation** for Sahaja Waste Picker since the complex registration and issuance process is covered by Plastic Credit Partner, thus eliminating the need for Sahaja Waste Picker to be directly involved.

D. Stakeholder Analysis

Table 2. *Stakeholders involved in the program.*

Activities	Potential Partners	Potential Partnership Roles
Waste Collection and Segregation	Existing waste picker	The Existing waste picker will send the inorganic waste to the transfer station where the Sahaja Waste Picker resides.
	The Environment Agency of Ambon City	The Environment Agency of Ambon City will transport the organic waste to organic waste processing facilities and non-valuable inorganic waste to the final disposal. Moreover, permission is needed to operate the waste segregation and use the transfer station as a place to do the segregation process.

Waste Processing	The valuable inorganic waste will be transported to several waste processing centers: **Kertabumi**, **Green Mollucas**, **Beta Bank Sampah**, **Million Limbah Ambon**, **plastic chopping system**, and others.	Sahaja Waste Picker will sell their segregated valuable inorganic waste to the waste processing centers.
Plastic Credit Operation	Plastic Credit Auditor **— Verra** — is an organization that works on a voluntary carbon market by running a carbon credit program.	Plastic Credit Auditor will: 1. Review and validate the plastic collection and recycling process 2. Issue plastic credits
	The Private Project Proponent — **SYSTEMIQ** — is a private entity that focused on sustainable business transformation.	The Private Project Proponent will: 1. Provide documentation to facilitate validation and verification 2. Pay all required fees that are associated with the project registration and issuance of plastic credits 3. Facilitate the sale of plastic credits 4. Distribute the benefit of plastic credits to relevant stakeholders
	Plastic Credit Buyers — such as Danone, Shell, Unilever, and others — are an entity that wants to buy plastic credit.	Buying the plastic credit

Sahaja's Work Plan

A. Education and Empowerment

In realizing the successful implementation of The Sahaja program, a comprehensive approach is needed in the policy implementation stage, from the policy maker level to the executor level. The policy context is, however, now understood to be much more complex than had been previously recognized. The earlier literature on the "policy-implementation gap" (Gunn, 1978) has been supplemented in recent years by complex systems thinking informed by notions of unpredictability, nonlinearity, and adaptability (Braithwaite et al., 2018). In recent studies by Volker (2014), there is a growing notion of *policy failure* (though it is found that research has found that most policy plans to some extent have a degree of success).

According to Hudson (2019) the variables that contribute to the failure of policy enactment consist of: Overly Optimistic Expectations; Implementation in Dispersed Governance, inadequate collaborative policy-making, and the vagaries of the political cycle. From the variables mentioned by Hudson (2019) we would like to put special attention to the second and third, that is "Implementation in Dispersed Governance" and "Inadequate Collaborative Policy-Making".

Acknowledging the importance of the government's role in making sure that the Sahaja program is successful, the municipal government should work hand-in-hand with Sahaja. Below are how the Sahaja approaches our partnership with the government and education of our waste-pickers.

1. The Role of Government in the Education of Waste Pickers

As a country with a very centralized approach to designing and implementing policy, what Hudson (2019) described to be one of the challenges of policy implementation is also found in Indonesia. Hudson (2019) has mentioned that although there are comprehensive and thorough approaches in policy making at the national level, ensuring the same depth of understanding at the subnational level is very important yet challenging.

No matter how concentrated rather than dispersed governance is, the involvement of the government plays a vital role in the success of the Sahaja program. This means that there should

be an effort made so that the level of understanding between the central government and the municipal government is more or less the same. Therefore, to ensure the success of the program the local government shall be included in the process of the organization. In order for such a level of understanding to be achieved, Sahaja will invite municipal governments to have a discussion and pitch our program to establish a partnership to tackle the issue of waste management in Ambon City together.

2. Education of Informal Waste Pickers

Waste-pickers are the core of the Sahaja program. Our program strives to empower waste pickers as well as entities that play an important part in it. For our waste-pickers, there will be two programs that waste-pickers will go through, that is education that is related to waste-picking skills and education for their understanding of social protection.

Sahaja's curriculum design aims to make informal waste-pickers that are empowered and mental-health literate. The curriculum will consist of knowledge, skills, and other related skills which will help ease their job on the go. Waste-pickers will be taught about various topics related to environmentalism and the type of waste. Before working, new incoming waste pickers will be given a 3-month on-the-job training which will include practical skills and theoretical knowledge under the guidance of senior waste pickers. After passing Sahaja's assessment, trainees will then embark on their jobs as professional waste-pickers.

Since Sahaja will be heavily using technology in the waste management system, it is crucial that Sahaja's waste pickers be equipped with skills to be able to operate them effectively and efficiently. However, not only limited to skills and knowledge related to waste segregation, Sahaja aims to design a curriculum that will help waste-pickers understand their role in the whole process of waste management, understand the importance of their role in the process as well as equip them with knowledge related to their social security.

Waste pickers will not only receive knowledge and skills related to waste management, but they will also receive knowledge on social security, including information regarding physical & mental health as well as financial literacy. This is a means to ensure that they are fully equipped to become individuals with more healthy mental health and well-being as well as

Below is a brief summary of the structure of the on-the-job training for waste pickers:

Table 3. *The structure of the on-the-job training for waste pickers*

	Knowledge	Hard Skills
New Inexperienced Waste Pickers	*Related to Waste Segregation* - On where to collect waste - On how to segregate waste - On how to segregate waste based on waste categories that Sahaja segregates *Related to Social Protection* - On what is mental well-being - On where and how to use their health insurance optimally - On financial literacy and security	- Using tools and machines related to waste-segregating
New Experienced Waste Pickers	*Related to Waste Segregation* - On how to segregate waste based on waste categories that Sahaja segregates *Related to Social Protection* - On what is mental well-being - On where and how to use their health insurance optimally - On financial literacy and security	- Using tools and machines related to waste segregating

3. Empowerment for the waste pickers: Maximizing access to health insurance

Ideally, the state should use the concept of Universal Health Coverage (UHC) in accommodating the rights of citizens to live healthily. UHC means that the state must aim for the widest possible health insurance coverage. UHC has two main agendas. The first focus is to ensure that all medical services for various medical complaints are accessible to *all segments of society*. Accessible means that there are no requirements (except cash) that must be met by a citizen to access the service. The second focus is to ensure that there are no economic consequences after citizens access healthcare, by implementing *compulsory prepayment* (World Health Organization, 2021).

Every year, on a global scale, there are 150 million people whose economic stability is disrupted due to access to healthcare as they still implement direct or out of pocket payment. Meanwhile, there are 100 million people globally who fall below the poverty line every year because of this direct payment. In Brazil, health insurance has been established since more than three decades ago and its coverage has reached 140 million today, roughly three-quarters of the population. By enhancing access to primary and emergency care, SUS, the Brazil's health insurance, has been associated with significant improvements across a wide range of health indicators, such as reduced health inequalities with the life expectancy gap between the poorer north and the wealthier south of the country falling from 8 years to 5 years from 1990 to 2007 (World Health Organization, 2021). The positive impact of UHC was a pattern found in many countries like Thailand, Burundi, Niger, and other 149 countries who have aimed for sustainable & UHC.

While the funding & legal details of UHC are two crucial aspects in public health, the delivery of UHC remains equally important. The service delivery requires fair procedures that are integrated and focused on the needs of people and communities (Mangan, 2014). Fair procedures include ensuring that care is provided in the most appropriate setting and inclusive towards all segments of society regardless of socioeconomic status.

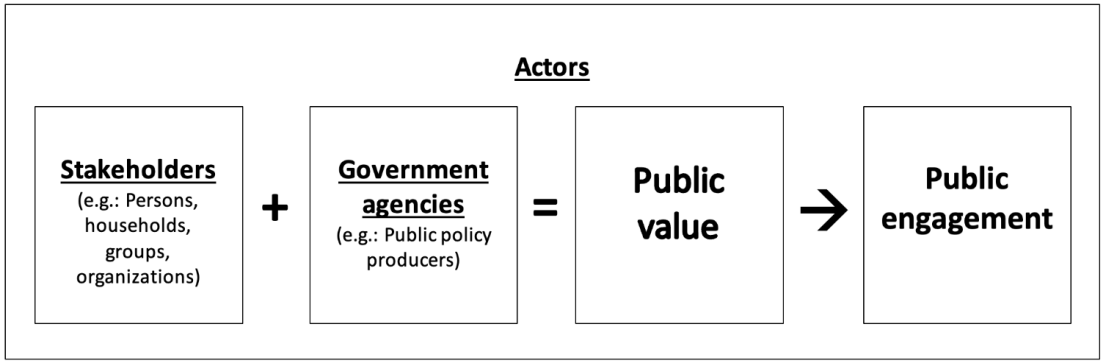
Indonesia's UHC, BPJS Kesehatan (BPJS-K), was established in 2013 and to this day has ensured that the compulsory prepayment does not further exclude the extremely poor from healthcare. They are recorded as *Penerima Bantuan Iuran* (PBI) in the system, meaning they receive full subsidy for the prepayment (Aninditya, 2020). PBI are participants in Health Insurance for the poor and underprivileged as mandated by Indonesia's SJSN Law. However, it is also proven from Lembaga Demografi's research in 2019 that this 10 million poorest remain massively unaware and lacking overall cognitive capacity to utilize their health insurance (Aninditya, 2020). From the institute's research it is also evident that this segment of society often rely on their neighbors' assistance in seeking medical help, which mostly does not include using their rights to healthcare properly as the helpers tend to have similar socioeconomic status and cognitive capacities. This finding is also corroborated by the emergence of many social entrepreneurships on healthcare in Indonesia, one of which is the Garbage Clinical Insurance (GGI). GGI's scheme encourages low-income households to recycle their waste and uses the revenues to finance a health micro-insurance system (Balch, 2016).

Figure 5. *Social protection for waste pickers*

Sahaja finds this phenomenon ironic yet interesting to address and is subsequently focused on providing educational programs on citizen rights to social security for our extremely poor waste pickers. As seen above, the programs will be managed under our department of human capital management. The curriculum design will be adjusted to our waste pickers' conversational style—which can only be achieved by taking ***contextual education*** into account and involving skilled ***curriculum designers, sociolinguists,*** *and* ***anthropologists.***

B. Marketing for public participation: Theory of public participation in governance

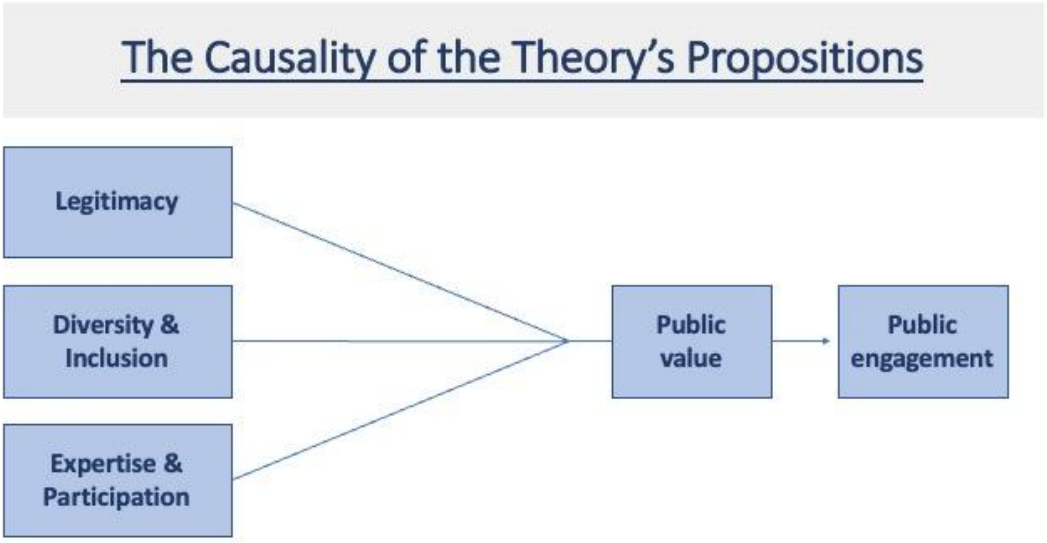
Figure 6. *Actors of marketing for public participation*



The theory of public participation in governance (Quick & Bryson, 2016) discusses the direct or/and indirect involvement of concerned stakeholders in decision-making about policies,

plans, or programs in which they have an interest. Stakeholders can be persons, groups, communities, or organizations that can influence or be affected by public policy. Public participation is an enabler where stakeholders can interact with political leaders, government agencies, nonprofit organizations, and businesses that produce, implement, and enforce public policies and programs. The realization of this theory has indispensable consequences for constituting the public as different processes in establishing public participation create different kinds of democratic engagements.

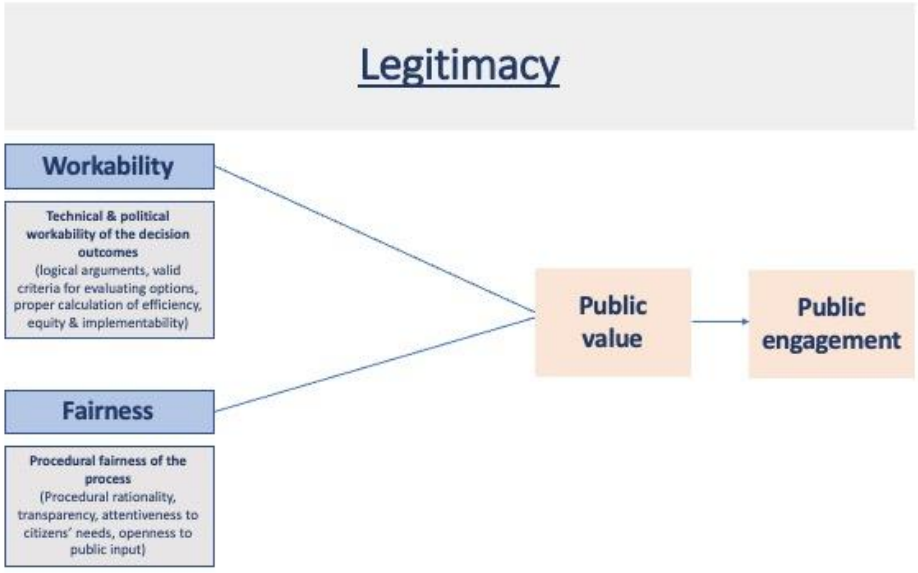
Figure 7. *The causality of the theory's propositions*



According to Quick & Bryson (2016), processes designed to engage small groups of crucial stakeholders can result in strengthened social bonds between and within communities, but can also aggravate power differences and elitism especially when the processes neglect key steps. The successful establishment of public participation can be made through the proper handling of ***legitimacy, diversity & inclusion, and expertise & participation.*** Participation provides an opportunity for communities to access democratic citizenships and subsequently produces sustained achievements of public value. The creation of public value explains that the new shared value between stakeholders and governments is articulating what the "public" interest is.

1. **Legitimacy**

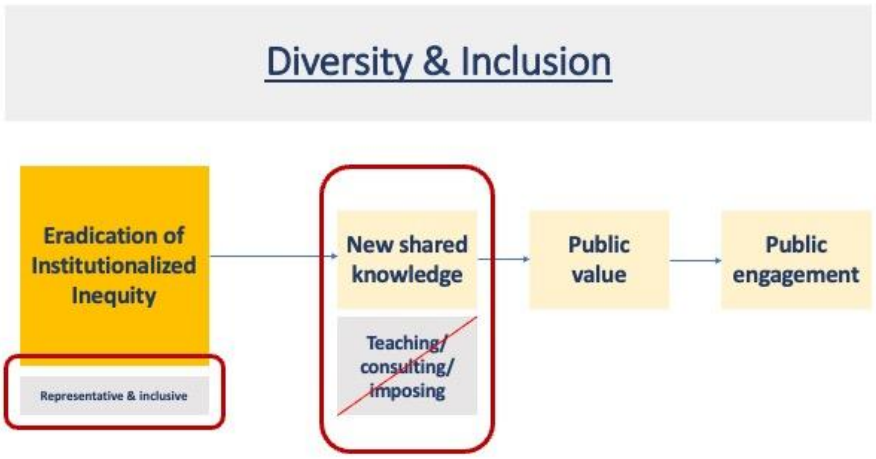
Figure 8. *Legitimacy.*



Legitimacy is crucial in establishing public compliance (Quick & Bryson, 2016). Failure in establishing legitimacy can alienate the public from government and disrupt the implementation of policy decisions. A popularly discussed discourse about deliberative democracy is ***the quality of the exchange*** (participation demands that the policymakers explain themselves clearly, use logical arguments, and utilize valid indicators to evaluate options & impact). Another discourse focuses on ***the legitimacy of the policy outcomes*** which emphasizes equity, efficiency, or technical implementability to categorize whether a policy is a "good policy." The last discourse to define legitimacy is ***the quality of the process***, which emphasized on the importance of procedurally just and procedurally rational processes. A procedurally just process is estimated to gain the highest possibility of acceptability of the decisions made. Procedural rationality is also equally vital as it involves collecting, analyzing, and using information that can corroborate the decision. Procedural rationality functions as an assurance-giver that the final decisions are evidence-based, substantively rational, and feasible on many grounds (e.g. technical, administrative, legal, ethical implementability).

2. **Diversity & Inclusion**

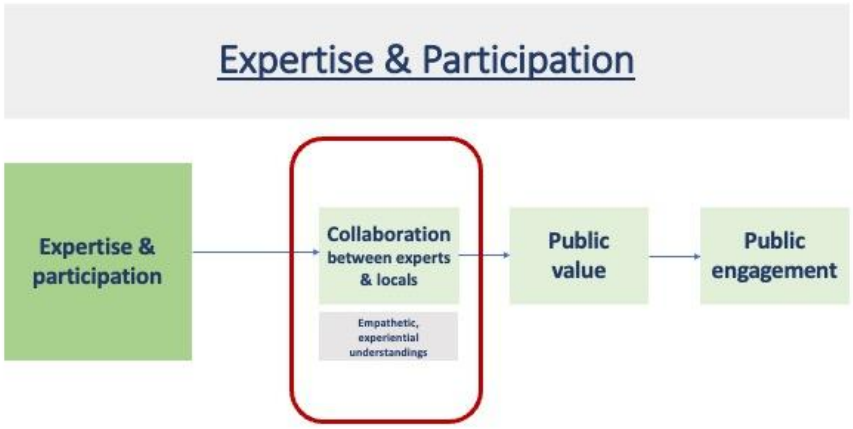
Figure 9. *Diversity & Inclusion*



Exclusion and inclusion from governance is a key subject that determines public compliance towards governance. Leaving the public out of decision-making can create very vulnerable public engagement, public sentiments towards governments, social tensions and horizontal conflicts. A common and significant obstacle in participation is ensuring an appropriate representation of interests is involved in the process, including those normally marginalized from decision-making by ***institutionalized inequities*** (Quick & Bryson, 2016). Many public participation undermines the importance of deliberation and creating new understandings together, rather than consulting or teaching the public.

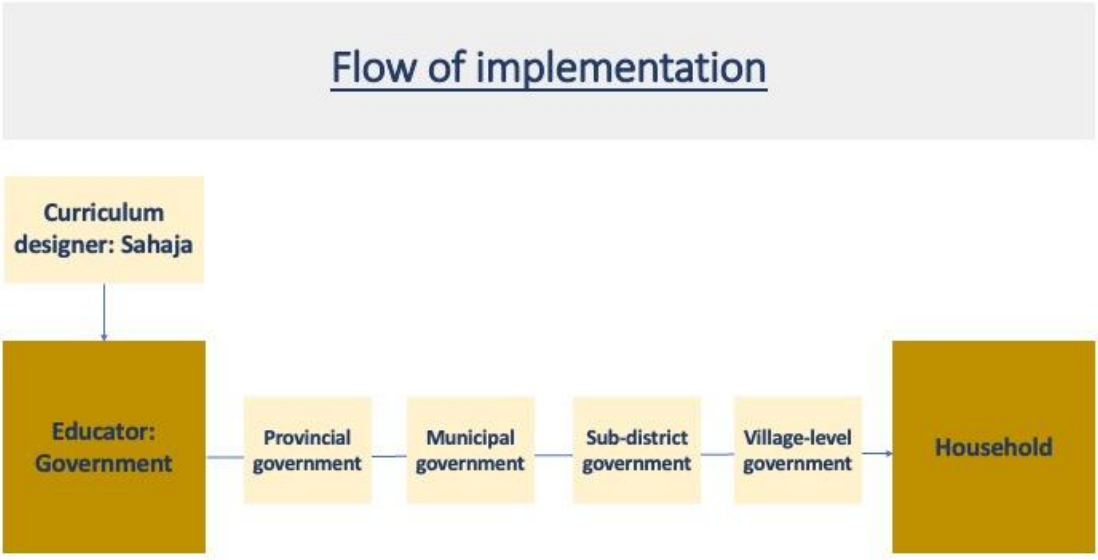
3. **Expertise and Participation**

Figure 10. *Expertise and Participation*



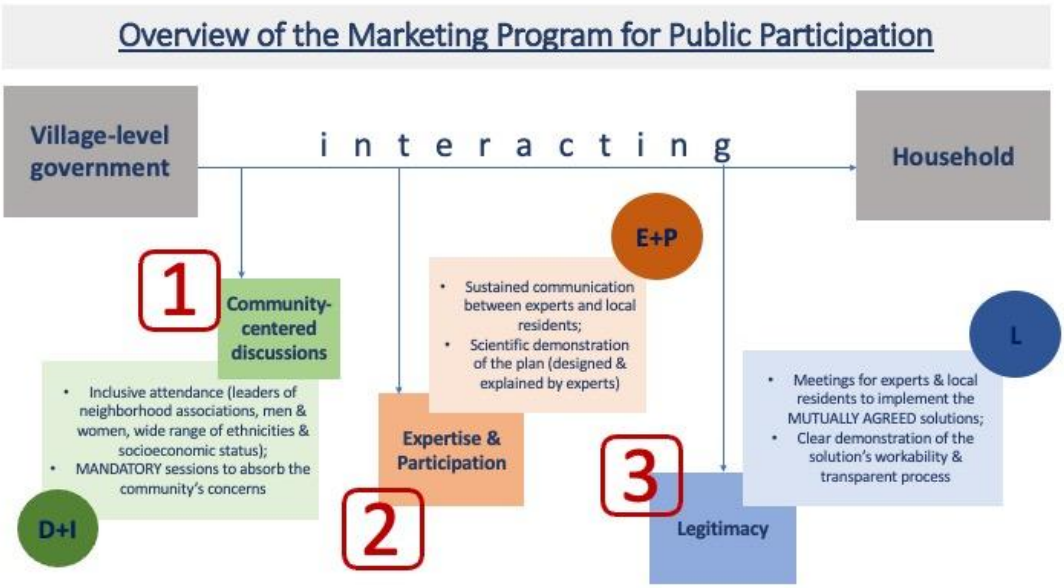
Collaboration between local residents and experts is a key factor in establishing successful public engagement (Quick & Bryson, 2016). However, it is also common that in many settings with deliberative democracy as the fundamental value, a variety of perspectives in decision-making often invites concerns about whether scientifically rational decisions can be achieved and legitimated in such setting. Policy-making normally prioritizes expert (e.g., certified, decontextualized, codified, specialized) knowledge over horizontal (e.g., locally contextualized, experiential, specific) knowledge. While it is also evident in many cases that giving the public full influence over choices in policy-making often leads to poor outcomes, it is still crucial to acknowledge that the experiential & empathetic understandings that are conveyed through public participation bring valuable knowledge into decision-making processes and can be a catalyst for ***civic learning.***

Figure 11. *The flow of implementation*



As seen above, Sahaja aims to implement its marketing program for public participation through the existing chain of command in Indonesia's governmental hierarchy. Sahaja will only act as the curriculum designer and the village-level governments will play a role in building direct and maintained communications & educating the households in Ambon regarding waste segregation.

Figure 12. *Overview of the marketing program for public participation*



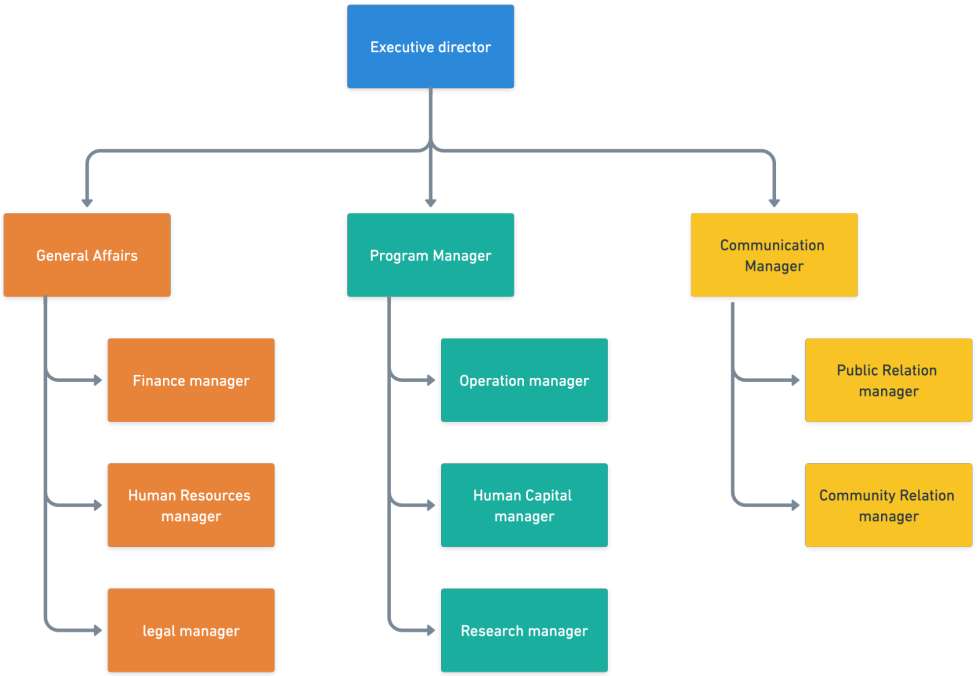
The marketing plan Sahaja designed will include all three propositions in the theory of public participation in governance: Diversity & inclusion, expertise & participation, legitimacy. Considering the effectiveness of the program, Sahaja decided that empathetic & experiential sessions should be held significantly earlier than the agendas to internalize senses of legitimacy. Without proper steps to build rapport between the government and the local residents, legitimacy is difficult to achieve.

C. Organization Structure of Sahaja Projects

The Sahaja project requires two organizations: (1) **Sahaja** as an entity that enables the system, and (2) **Sahaja waste picker** as an entity that runs the business. Sahaja is responsible to advise, guide, empower, and consult so that the sustainable waste management system in Ambon could work properly. Sahaja will be established as a Non-Government Organization (NGO) that will closely work with local governments, plastic credit partners, and local communities (such as waste pickers, youth, and local entrepreneurs). The structure of Sahaja is illustrated in figure 13. Generally, it will consist of program operation, communication, and organizational management. Program operation will be led by a program manager with the help of the operation manager, human capital manager, and research manager. The work will be related to project execution, research and evaluation, waste pickers empowerment and education, and business monitoring, management, and development (waste sale and plastic credits). The communication manager will

handle communication with a focus on gaining partnerships with related stakeholders such as local governments, plastic credit partners, and local communities. Regarding General Affairs, it will mainly work on the administrative and organizational side of the organization.

Figure 13. *Organization structure of Sahaja*

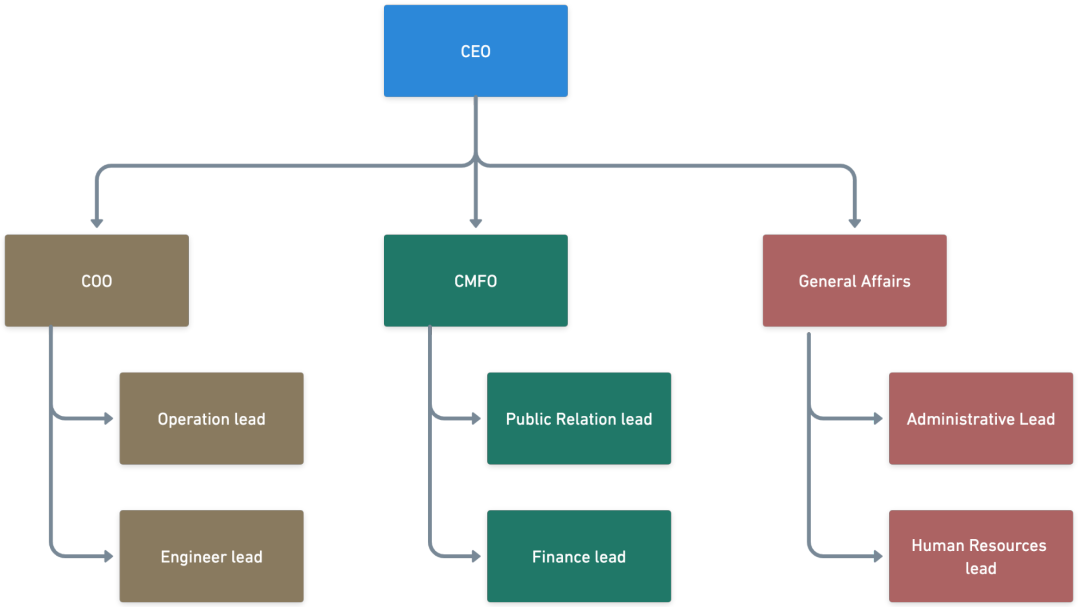


Note. The authors create the figure.

On the other hand, Sahaja Waste Pickers is an entity that is created for waste pickers and local communities to run the business model of waste segregation and plastic credits. The entity will be established with the help of Sahaja until it can run independently. Our proposed structure consists of the CEO, COO, CMFO, and General Affairs with possible modifications according to our findings and learnings in the field. CEO will lead the business process of Sahaja Waste Pickers. COO will be responsible for the operation of the waste segregation business including waste picker organization, coordination with local government and existing waste pickers in technical detail, waste transport to a recycling center, and improvement in waste segregation system efficiency. CMFO will work on coordination with the local government, a plastic credit proponent, and other related stakeholders. Moreover, its work is also related to the financial

management of the entity. Lastly, the general affairs will work on human resources, administrative tasks, and the organization of the entity.

Figure 14. *Possible structure of Sahaja Waste Pickers organization*



Note. The figure is created by the authors

D. Project Work Plan

Table 4. *Project work plan table*

	ACTIVITY		YEAR 1				YEAR 2				YEAR 3				RESPONSIBLE
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Improving well-being of waste pickers in Ambon City															
1	**Initiating the Sahaja Project**														
	1.1	Creating a core team for Sahaja Project (General Affairs Manager, Program Manager, Communication Manager)													Executive Director
	1.2	Completing legal requirement for the project (setting up legal entity, work permit, and regulation compliances)													Executive Director
	1.3	Coordinating with the government of Ambon City about the project													Communication Manager
	1.4	Finding a grant or funding for the project													Finance Manager
2	**Conducting a preliminary and feasibility research to prepare for the project execution**														
	2.1	Assigning a team for preliminary and feasibility research													Research Manager
	2.2	Conducting field research to understand the actual context of waste management system especially on waste collection and segregation													Research Manager
	2.3	Developing a final plan to execute the project													Operation Manager
	2.4	Coordinating with necessary stakeholders (local government, existing waste pickers, household, non-households)													Public Relation Manager
3	**Establishing Sahaja Waste Pickers**														
	3.1	Hiring waste pickers to work in Sahaja Project as waste segregator													Community Relation Manager
	3.2	Hiring potential local entrepreneur to help in managing the Sahaja Waste Pickers													Community Relation Manager
	3.3	Establishing the Sahaja Waste Pickers as a business entity													Operation Manager

	3.4	Educating and empowering waste pickers and local entrepreneur about waste segregation business															Human Capital Manager
	3.5	Educating and empowering waste pickers and local entrepreneur about plastic credits business															Human Capital Manager
4	**Operating the responsible waste segregation business**																
	4.1	Creating a partnership with existing stakeholder to deliver the inorganic waste to Sahaja Waste Pickers															Operation Manager
	4.2	Coordinting with The Environment Agency of Ambon City to pick up organic and residual waste															Public Relation Manager
	4.3	Asking permission from The Environment Agency of Ambon City to use some transport stations as the segregation facilities for Sahaja Waste Pickers															Public Relation Manager
	4.4	Educating and empowering the waste producers (household and non-household) to segregate their waste properly															Community Relation Manager
	4.5	Operating the waste segregation business (selling valuable inorganic waste, running the inorganic waste delivering system, and recording waste report)															Operation Manager
	4.6	Scaling up the responsible waste segregation business															Operation Manager
	4.7	Conduct evaluation through survey and field research to analyze the performance of waste segregation business															Research Manager
5	**Operating the plastic credits business**																
	5.1	Completing plan and documents to gain partnership with Plastic Credit Proponent and Plastic Credit Auditor															Operation Manager
	5.2	Achieving agreement with Plastic Credit Proponent to work on a behalf of Sahaja Waste Picker															Operation Manager
	5.3	Monitoring the partnership between the Plastic Credit Proponent and Plastic Credit Auditor															Operation Manager

	5.4	Running the plastic credit verification with Plastic Credit Proponent and Plastic Credit Auditor															Operation Manager
	5.5	Issuance of Plastic Credit															Operation Manager
	5.6	Monitoring the sale of Plastic Credits between Plastic Credit Proponent and Plastic Credit Buyer															Operation Manager
	5.7	Scaling up Plastic Credits business scheme															Operation Manager
	5.8	Conduct evaluation through survey and field research to analyze the performance of waste segregation business															Research Manager

E. Monitoring and Evaluation Plan

Table 5. *Monitoring and evaluation plan*

				Indicator	Means of Verification	Frequency	Responsible	Intended Use
Improving well-being of waste pickers in Ambon City								
1	**Waste Pickers in Ambon City could have a decent job, stable financial capacity, and better health, education, and living standards**							
	1.1	Reducing poverty deprivation of the waste picker						
		1.1.1	The minimum income of Waste Picker becomes USD 200/month	The number of waste pickers who receive income equal or above USD 200/month	Human resources data, Bank Statement, and Financial Statement	Every month	Sahaja Waste Picker	To ensure that every waste picker get fair salary
		1.1.2	All of waste pickers employed are not undernourished	The number of waste pickers whom categorized as undernourished according to the standard of WHO	Human resources data, annual survey	Every year	Sahaja Waste Picker	To ensure that every waste picker are not undernourished — able to fulfill number of calories needed for healthy life
		1.1.3	No child under 18 has died in the household of the waste picker in the five-year period preceding the survey	The number of child under 18 died in the household of the waste picker in the five-year period preceding the survey	Human resources data, annual survey	Every year	Sahaja Waste Picker	To ensure that the children of waste picker get sufficient nutrition and good living standards
		1.1.4	All of the waste pickers' children completed Indonesia's standard of basic education (12 years) or in the process of completing it	The number of children who are not able to complete their Indonesia's basic education standard	Human resources data, annual survey	Every year	Sahaja Waste Picker	To ensure that the children of waste picker get adequate education
		1.1.5	None of the waste pickers cook using solid fuel	The number of waste pickers who cook using solid fuel	Human resources data, annual survey	Every year	Sahaja Waste Picker	To ensure that the waste pickers are able to access energy for cooking
		1.1.6	The waste pickers have improved or access to sanitation facility	The number of waste pickers have improved or access to sanitation facility	Human resources data, annual survey	Every year	Sahaja Waste Picker	To ensure that the waste pickers are able to access improved and proper sanitation facility
		1.1.7	The waste pickers have access to safe drinking water	The number of waste pickers who are able to access to safe drinking water or at least the drinking water is reachable within 30 minute	Human resources data, annual survey	Every year	Sahaja Waste Picker	To ensure that the waste pickers have access to safe drinking water

				walk				
		1.1.8	The waste pickers are able to access electiricity	The number of waste pickers who are able to access electricity	Human resources data, annual survey	Every year	Sahaja Waste Picker	To ensure that the waste pickers are able to access electricity
		1.1.9	The waste pickers' households have adequate housing materials in its floor, roof, and walls	The number of waste pickers who have adequate housing materials in its floor, roof, and walls	Human resources data, annual survey	Every year	Sahaja Waste Picker	To ensure that the waste pickers have access to adequate housing materials so that they could settle properly
		1.1.10	The waste pickers' households have more than one of these assets: radio, TV, telephone, computer, animal cart, bicycle, motorbike, car, truck, or refrigerator	The number of waste pickers who have more than one of these assets: radio, TV, telephone, computer, animal cart, bicycle, motorcycle, car, truck, or refrigerator	Human resources data, annual survey	Every year	Sahaja Waste Picker	To ensure that the waste pickers have access to necessary assets
	1.2	Waste Pickers are able to access social protection services						
		1.2.1	All of waste pickers employed understand how to access social protection services	Waste pickers show a good understanding in questionnaire about social protection service	Survey using questionnaire	After training	Sahaja Waste Picker	To ensure that the waste pickers understand how to access social protection services
		1.2.2	All of waste pickers employed attend the training about social protection services	The percentage of attendance of waste pickers in social protection services training	Attendance data	After training	Sahaja Waste Picker	To ensure that the waste pickers get the information about social protection services and finding other methods for whom did not attend the training
		1.2.3	All of waste pickers uses social protection services based on their needs	The number of waste pickers who uses social protection services and the reason for whom did not apply for the services	Survey	Every year	Sahaja Waste Picker	To ensure that the waste pickers get social protection services and help the waste pickers who are having difficulties in applying social protection services
2	**Sustainable waste collection and segregation are able to provide long-term business sustainability**							
	2.1	Sahaja Waste Pickers get proper revenue from waste collection and segregation activities						
		2.1.1	The number of valuable solid waste sold match the target	The number of valuable solid waste sold	Sales data	Every day	Sahaja Waste Picker	To ensure that the revenue cover all the cost of Sahaja Waste Pickers
		2.1.2	The number of waste producers who are involved in Sahaja Waste Pickers' services match the target	The number of waste producers involved in waste collection services	Sales data	Every day	Sahaja Waste Picker	To ensure that the user acquisition match the target

		2.1.3	All of waste pickers are able to work according to its roles	The quantified evaluation of work performance	Human resources data	Every quarter	Sahaja Waste Picker	To ensure that the quality of work performance is maintained
		2.1.4	All of waste pickers are comfortable with their jobs	The satisfaction report of waste pickers	Human resources data	Every quarter	Sahaja Waste Picker	To ensure that the waste pickers are comfortable with their jobs
		2.1.5	All of waste pickers understand how their jobs works	Work evaluation report	Human resources data	Every quarter	Sahaja Waste Picker	To ensure that the waste pickers understand their works
	2.2	Ambon City achieves sustainable waste collection and segregation						
		2.2.1	An increase in households who are segregating their waste match the target	The number of household involved in waste collection services	Waste collection data	Every day	Sahaja Waste Picker and Existing Waste Picker	To ensure that the sustainable waste collection operates properly
		2.2.2	An increase in non-households (markets, industries, commercials, public facilities, and offices) who are segregating their waste match the target	The number of non-household involved in waste collection services	Waste collection data	Every day	Sahaja Waste Picker and Existing Waste Picker	To ensure that the sustainable waste collection operates properly
		2.2.3	An increase in waste infrastructure or assets to improve waste management system	The number of new waste infrastrucutures and assets that are able to improve waste management system	Asset data	Every quarter	Sahaja Waste Picker and The Environment Agency of Ambon City	To monitor the improvement in waste management of Ambon City
	2.3	Plastic Credits create revenue for Sahaja Waste Pickers						
		2.3.1	The number of plastic credits sold match the target	The number of plastic credit sold	Sales data	Every month	Sahaja Waste Picker and Plastic Credit Proponent	To monitor the sales of plastic credits

Note. Poverty measurement indicators are adopted from Multidimensional Poverty Index by Alkire et al., (2015)

F. Sahaja Waste Picker Business Forecast

Figure 15. *Net Income and loss of Sahaja Waste Picker Business Model*

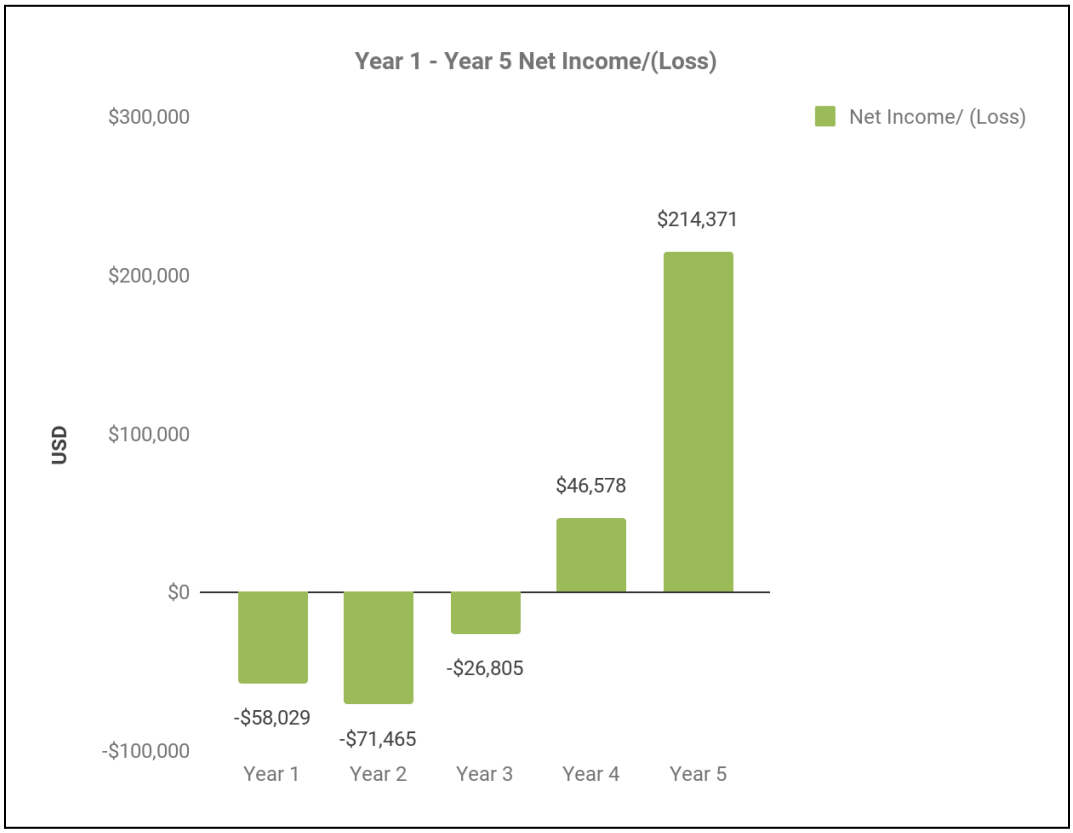
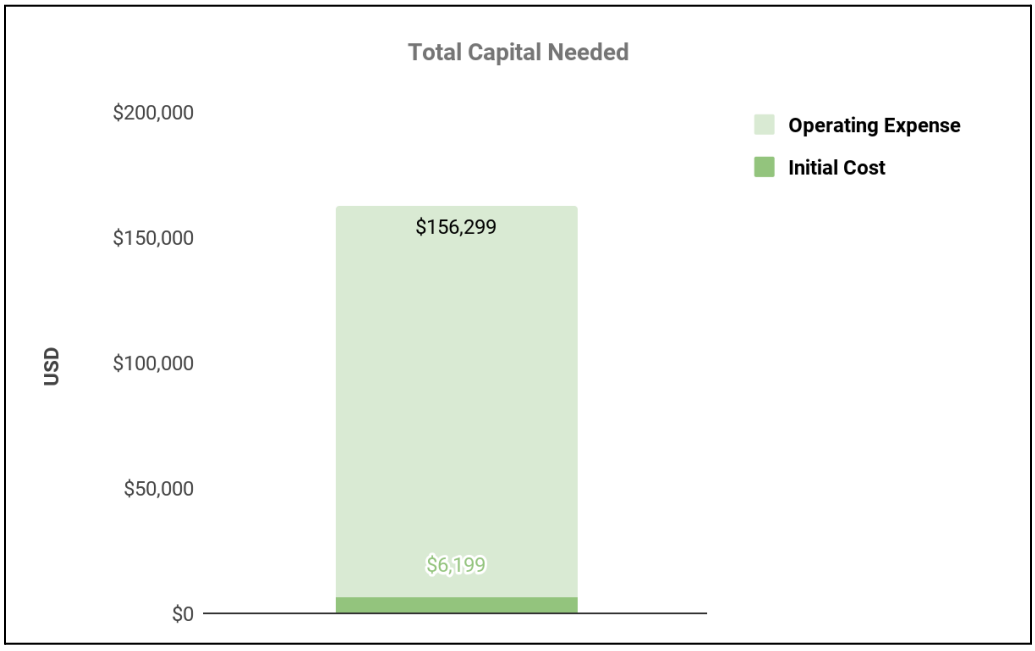


Figure 16. *Total capital needed to run the business of Sahaja Waste Picker*



Sahaja Waste Picker would be able to reach the breakeven point in the fourth year if Sahaja Waste Picker could handle 75 metric tonnes of inorganic waste in the first year, 200 metric tonnes in the second year, 550 metric tonnes in the third year, and 1000 metric tonnes in the fourth year. It is reachable and rationale because it only takes 0.2 tonnes per day (first year), 0.5 tonnes per day (second year), 1.5 tonnes per day (third year), and 2.7 tonnes per day. The calculation assumes that the average price of inorganic waste sold is USD 0.15/kg (Kristanto et al., 2021). Moreover, it also assumes that the plastic credit is able to be operated from the first year of operation — plastic comprises 45% of total inorganic waste. One plastic credit contains 1 tonne of plastic waste that could be sold to relevant companies or institutions with USD 500 per credit — the price could be fluctuated according to the market condition. Using our business model, one Sahaja Waste Picker will be able to employ **75 waste pickers**, **10 drivers**, **4 managers**, and **14 officers** (comprising of operation officers, general affairs officers, and communication officers) in the fifth year. The business model will require USD 6,199 to start running and $156,299 to operate before it generates net income.

G. Risk Assessment

Table 6. *Risk Analysis of Sahaja Project*

	Risk Title	Risk Category	Description of Risk	Probability	Impact	Overall	Indicators & Triggers	Management Action	Mitigating Action	Residual Risk
1.	Fail to understand the root cause and waste picker (local) context	Context	Failure in understanding the root cause and local context will likely to make the project fail	Possible	Severe	Severe	Improper design and implementation of research, Only observing and analyzing at the beginning (understanding root cause and local context is a continuous journey), did not involve the subject in the project design or only involve a few of them (or only people in power)	Treat	1. Ensuring that Sahaja creates well-design research 2. Understanding that knowing the complexity of root cause and local context is a long journey 3. Acknowledge Sahaja's position as an outsider that knows nothing about the Ambon community. Ambon community, especially the waste pickers, should be the first and top priority sources of understanding to find the root cause, local context, and solution 4. Involving all the necessary subjects into the project design (not just people in power or did not involve anyone at all)	Moderate
2.	Carbon credit partnership failure	Delivery	Our carbon credit business model relies on a third party — the plastic credit proponent. Therefore, if the partnership fails, it will affect the business operation of plastic credits	Unlikely	Severe	Major	Bad communication between Sahaja Waste Picker and the partners, bad transparency, unclear work structure, unclear objective and key results, and bad reporting	Treat	1. Ensuring that Sahaja Waste Picker picks the right partner — a partner who is credible and certified 2. Creating work system, communication, and transparency at the earliest stage of the work 3. Creating a system of report progress and objective-key results monitoring 4. Creating a specific team to engage with partners	Minor
3.	Waste segregation business failure	Operational	The business process of waste segregation did not work as intended	Possible	Severe	Severe	Waste picker did not work as intended, bad logistical planning in waste transport, bad team cohesion among waste pickers	Treat	1. Train the Waste Pickers and ensure that knowledge transfer occurs by doing an assessment 2. Ensuring that the human resources planning works as intended by creating a monitoring and evaluation scheme 3. Giving a guideline for waste pickers when undesired events happen such as when there is logistical delay	Moderate
4.	Sahaja team misused the fund	Fiduciary	Funding is used inefficiently and unproperly by the team members	Possible	Major	Major	bad financial procedure, bad auditing, and untransparent financial management	Treat	1. Establishing a team of financial officers 2. Assessing the current system of audit and money transfer, and making improvements based on the assessment 3. Create a more transparent financial management	Moderate

5.	Fail to deliver the education and empowerment objectives	Delivery	Leads to a failure in waste pickers empowerment	Possible	Major	Major	Bad educational planning, lack of understanding in the local context, did not involve the local communities in designing the education, bad implementation	Treat	1. Make sure that the education curriculum is well-planned 2. Hiring expert in education and empowerment project 3. Involving the relevant stakeholders (such as the waste pickers themselves) in the educational design	Moderate
6.	Political Risk	Context	Failure in understanding the risk that cause by political dynamics (such as the willingness of local government or the involvement of local politicans)	Likely	Severe	Severe	Communication failure with political actors, did not involve local government and local politicians in the process which possibly could hindered the program	Treat	1. Creating communication before starting the project, especially with local government and influential stakeholders 2. Establishing a good partnership with related stakeholders	Moderate
7.	Infrastructure failure	Operational	The waste transfer station is hardly broken so it needs fixing	Unlikely	Severe	Major	Bad communication with local government, bad waste transfer station mapping	Treat	1. Ensuring that Sahaja already has a good map of the good waste transfer station 2. Picking a reliable waste transfer station instead of the broken one 3. Ensuring that permission to local government and related stakeholders already achieved	Minor
8.	Organization legal issue	Operational	Fail to establish the legal status of the organization and project	Possible	Major	Major	Lack of understanding in legal process	Transfer	Hire a lawyer or law consultant	Minor
9.	Environment Health Safety Risk	Safeguarding	Waste picker did not follow the procedure of safety when they are doing work	Likely	Major	Severe	Not using health and safety equipment when doing work, Did not understand the safety concept, Bad transfer knowledge process about safety	Treat	1. Ensuring that workers already understand the safety procedure 2. Assessing the understanding of safety by creating an assessment 3. Waste Picker lead should ensure that all waste pickers who are working are provided with safety equipment and using it while doing the work	Minor
10.	Inclusivity issue	Safeguarding	Biases towards minorities internally (the team) and externally (the locals, partners, and donors)	Possible	Major	Major	Unconcious bias, exclusive work culture, lack of understanding about equity and inclusivity	Treat	1. Involving the workers in project design and implementation 2. Ensuring that research is done properly 3. Make sure DEI is applied in the organization 4. Creating a system that enables open communication, transparent work, and inclusive works culture	Moderate

Note. Developed from Department for International Development (2013)

Sahaja Project Budget

A. Budget Composition

Table 7. *Budget composition*

Cost Category by LINE ITEM			Year 1	Year 2	Year 3	Total
1. Total Personnel (Salaries & Fringe)			$241,680	$253,627	$217,824	**$713,131**
2. Total Travel			$93,000	$62,500	$6,750	**$162,250**
3. Total Equipment			$21,300	$0	$0	**$21,300**
4. Total Other Direct Costs			$19,650	$18,650	$18,650	**$56,950**
5. Consultants			$4,500	$0	$0	**$4,500**
Sub-total, Direct Costs			$380,130	**$334,777**	**$243,224**	**$958,131**
Indirect Administration Costs		10%	$38,013	$33,478	$24,322	**$95,813**
6. Total Subawards			$0	$0	$0	**$0**
Sub-total, Sub-awards			**$0**	**$0**	**$0**	**$0**
Total, Direct, Indirect, Subawards			**$418,143**	**$368,255**	**$267,546**	**$1,053,944**
Cost Category by PROJECT OBJECTIVE			**Year 1**	**Year 2**	**Year 3**	**Total**
Project Mgmt	Project Management		$173,480	$143,752	$124,619	**$441,851**
Objective 1	Initiating the Sahaja Project		$16,380	$0	$0	**$16,380**
Objective 2	Conducting a preliminary and feasibility research to prepare for the project execution		$67,270	$770	$770	**$68,810**
Objective 3	Establishing Sahaja Waste Pickers		$113,400	$100	$0	**$113,500**
Objective 4	Operating the responsible waste segregation business		$9,600	$182,245	$45,875	**$237,720**
Objective 5	Operating the plastic credits business		$0	$7,910	$71,960	**$79,870**
Sub-total, Objective			**$380,130**	**$334,777**	**$243,224**	**$958,131**
Administration Costs			$38,013	$33,478	$24,322	**$95,813**
Total, by Objective and Indirect Costs			**$418,143**	**$368,255**	**$267,546**	**$1,053,944**

In general, the project will be implemented for three years with a total cost of USD 1,053,944. The cost consists of direct costs, indirect costs, and sub-awards. For the direct cost, it is divided by personnel costs (USD 713,131), travel costs (USD 162,250), equipment cots ($21,300), other direct costs (USD 56,950), and consultant (USD 4,500). On the other hand, the indirect costs will be USD 95,813 and the sub-awards will be USD 0 since we did not require third parties in the project.

Personnel costs consist of the management team and field team. The management team is working on high-level strategies such as determining the objectives and key results of Sahaja, organizing the entity, developing a partnership with key stakeholders, conducting research for development, and designing and executing the organizational plan. The management team will reside in the headquarter in Jakarta but will work in Ambon City if it needs to. The management team consists of Executive Director, General Affairs, Program Manager, Communication Manager, Finance Manager, Human Resources Manager, Legal Manager, Operation Manager, Human Capital Manager, Research Manager, Public Relations Manager, and Community Relations Manager. On the other hand, the field team focuses on executing the technical plan of the project. It consists of educating waste pickers, executing the plan with the local government to educate the Ambon citizens to segregate waste, monitoring the waste segregation business operation, and assisting in plastic credit execution until the Sahaja Waste Picker is able to work independently.

The travel costs are divided into research travel, partnership travel, and monitoring and evaluation travel. Research travel is used to complete field research to understand the local context and construct the plan to establish waste segregation and a plastic credit business model. Moreover, the field research will also be conducted for creating a curriculum design and public participation plan to educate the waste picker, local communities, and local citizens to get involved in sustainable waste management. The research travel will be completed by the research manager, research officers, operation manager, operation officers, human capital manager, and human capital officers. Partnership travel will be done by the public relations manager and public relations officers to gain partnership with local stakeholders, local government, and plastic credit proponents. The last travel cost is monitoring and evaluation travel. Monitoring and evaluation travel is used to assess the implementation of the Sahaja Model and understand how it is impacting Ambon City. It will be conducted once in the second year and twice in the third year.

Moving to the equipment costs, the money will only be used in the first year since the cost is used to start the project. The equipment consists of office tools, projectors, laptops, research toolkits, and vehicles for transportation in Ambon City. For other direct cost categories, it will include the Jakarta office and Ambon office rent for the daily operations. The Ambon office will be the accommodation for the worker who needs to do fieldwork at Ambon. We will also need to cover our costs in some equipment maintenance and fuel like the vehicles. Regarding consultants, we will only need help from a legal consultant to assist us in initiating the project and organization.

B. Value for Money

In Indonesia, the waste management system is a complex problem where only a small amount of waste is recycled (approximately 9%), and a lot of the waste is going to the landfill or leaking into the environment. Moreover, a lot of waste pickers are involved in the system where they only gain a small amount of money from selling the valuable solid waste — the worst they could get is USD 1.3/day and the best is only USD 5/day. The condition of waste pickers could get worse by being trapped in debt or experiencing illness. Therefore, we believe that the project of Sahaja is valuable because its intervention could help in improving the waste management system by increasing the recovery of inorganic waste and also improving the well-being of waste pickers by providing them a more stable income and access to social protection services.

For the first pilot project, we choose to implement our project in Ambon City which experiences waste leaking (for example, plastic waste leaks to the sea), and its final disposal is believed to be overloaded soon since the city is already producing 220 tonnes of waste every day. Through our business forecast, one Sahaja Waste Picker model could recover 3825 metric tonnes of inorganic waste in five years and provide more than 100 jobs for the local communities. The model is also scalable since it did not require complex technology, it just requires a partnership with an existing waste picker, a spot to segregate waste, and a vehicle to transport the segregated waste to the recycling center. Regarding spots to segregate waste, Ambon City has approximately 200 temporary storage that could be used for the waste picker to segregate the waste, it will only require permission from the local government. The Sahaja model will also help its worker who majority will consist of the waste picker to gain access to social protection services, especially healthcare services. Moreover, the Sahaja model also helps the waste picker

to connect with other waste pickers since their work at Sahaja will be more organized. The organization of work at Sahaja will help them to gain better social capital which will reduce their psychological tension which usually leads to mental health problems.

Moreover, our model also benefits people outside the Sahaja system. Through our model, we help the environment by increasing the rate of segregation and recycling. We also help in creating a culture of sustainability where we develop a plan with the local government so that the citizen is accustomed to the culture of waste segregation. Our plan of sustainability is also aligned with the plan of the Ambon Government as it is mentioned in their 5-year plan. The alignment will help the project to scale up and increase the impact on the people of Ambon City. Moreover, the benefits that the waste picker gain will also spill to its family, especially their children. Through an increase in income, the waste picker will be able to spend more on nutritious food and education which in return could increase social mobility and the well-being of their family.

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ATTACHMENT

Attachment 1. Inorganics Waste Categorization Report Prototype

Inorganic Waste Category	Detailed Inorganic Waste Category	Name of Detailed Inorganic Waste	Weight (kg)
Plastic	PET (1)	PET (1)	
	Other	Clear Mica	
	HDPE (2)	Toys	
		Jerrycan	
		Bottle cap	
	PVC (3)	PVC Pipe	
	LDPE (4)	Gallon bottle cap	
	PP (5)	bucket	
		Glass	
		Clear PP	
	PS (6)	Crystal	
		Styrofoam	
		Colored Plastic	
	Other (7)	CD	
		Shoes	
		hose/cable	
	Asoy	Bubble Wrap	
		Crackle Plastic Bag	
	PE	PE	
MLP (Multi-layered plastics)	MLP	Sachet, Pouch, Bottle label	
Paper	Box	Box	
	Duplex Paper	Duplex Paper	
	Mix Paper	Mix Paper	
	Newspaper	Newspaper	

	Magazine	Magazine	
	SWL	SWL	
	Used Beverage Carton	Milk Carton	
Metal	Metal	Aluminum	
		Iron	
		Babet	
		Can	
		Cabin	
		Other Metal	
Glass	Porcelain	Porcelain	
E-waste	E-waste	Electronic Waste	
Other Inorganics	Rubber	Rubber	
	Tote Bag	Tote Bag	