Improving sustainable waste management for private actors in Indonesia

Policy Brief

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Executive summary

This policy brief presents the main findings of a research conducted in the waste management in Indonesia. The survey report was the product of the collaboration between the Centre of Transdisciplinary and Sustainable Science (CTSS) of IPB University and Maastricht School of Management (MSM). In line with their joint objectives, the research principally aims at assessing the needs of the private actors in the waste management in order to explore the potential role of CTSS in the organic waste management. While conducting this research, additional discoveries, which are not distinct to the biowaste, have erupted. The purpose of this policy brief is to provide policymakers in the waste management with recommendations based on our findings.

There have been growing concerns over the current waste management in Indonesia. The short-term solution of open dumping is unsustainable as it brings many negative environmental, social and economic impacts.
The conducted research aims at identifying the generic successes, shortcomings and needs of the private sectors involved in the waste management. The main impediments to reaching a more sustainable waste management can be categorized into 6 different subject areas. The most important recommendations to improve the waste management are:

Public awareness
Increasing public awareness and participation utilizing public debates, training programs, education, knowledge.
Technical capability
Increase the technical capabilities of the waste actors. This starts from innovation and research but also include the dissemination of novel methods.
Infrastructure
Increase investments towards infrastructure and equipment and assess the feasibility of large-scale facilities with regard to organic waste.
Collaboration
Enhance effective collaboration between all relevant stakeholders, including public figures, private actors, academics and community-based actors.
Governance
Refine governance capabilities with regard to accountability, corruption, policies and goals, while emphasizes the importance of good management.
Financial capacity
Develop economic capacity with the help of an integrative business plan and the creation of a viable marketplace.

Introduction

In recent years, topics around environmental degradation and climate change have erupted in public debates. There is growing scientific evidence of the impacts of global warming on our environment. One major contributor to greenhouse gases that is often neglected is the waste sector. Indeed, it is estimated that more than 2.12 billion tons of waste are piled up in landfills or dumped in waterways.

In Indonesia, concerns over their waste management have been growing as more than 200,000 kg of waste is produced every day. Waste dumping has been a way to "solve" the country's enormous waste issue as more than 60% of the trash ends up in open landfills. However, the population and leaders know this method of disposing of trash is unsustainable and needs to be solved quickly as the overcapacity of landfills is becoming critical. In addition, not only is there a land scarcity to accommodate for landfills but most landfills in Indonesia are neither sanitary nor monitored. Naturally, simply dumping waste has many environmental, social and economic consequences.

Firstly, the main concern is the environmental impact of unsustainable waste management. The mounting piles of trash release a great amount of greenhouse gases, such as carbon dioxide and methane, while creating numerous health issues for the nearby residents. Trash pollution takes numerous forms: pollution of soil, oceans, groundwater, and air pollution. In addition to landfills, burying trash, illegal dumping or backyard burning are common practices as citizens are not aware of the harmful environmental impacts.

Second, many social challenges arise from poor waste management. In particular for the large number of scavengers or ‘Pemulung’, who are working in dangerous conditions in deplorable landfills. With no formal education or marketable skills, they are considered as a marginalized segment of the population that needs waste to earn a living. The public health of the trash pickers as well as the overall Indonesian population are at risk.

Last but not least, the environmental and social challenges exacerbate the economic aspect.

Indeed, in the short term, landfills are adopted as they are rather inexpensive and easy to manage. However, in the longer term, the costs to shift from this detrimental method to sustainable waste management will certainly be high. In addition, waste management is not only costly for the government but also pushes for an extractive economy, where resources are not infinite. On the other hand, the Indonesian waste industry has a great potential to be the catalyst to job and income creation.

Hence, this policy brief aims at identifying the generic successes, failures and needs of private actors involved in the waste management in Indonesia. Subsequently, recommendations will be drafted for policymakers in order to reach a more sustainable waste system. The overall results show that there is room for improvement in six areas of focus: public awareness, technical capability, infrastructure, collaboration, governance, and financial capacity of those actors.

Methodology

The research was conducted with a focus on Java island as it is home to more than half of Indonesia's population, despite accounting for a small land area. Hence, the island is the major contributor to waste generation considering its dense population. Data were collected through primary and secondary data. Secondary sources of data were documents and literature around sustainable waste management systems, specifically in Indonesia, while the collection of primary data approach has been done in two steps.

First, a survey has been taken by 79 actors involved in the waste management. The questionnaire was divided into three sections: the successes, barriers, and demographic information of the respondents. The first two sections were further divided into three sustainable components: social, institutional, and economic aspects.

Second, successful follow-up interviews were conducted with four of those respondents. The interviews were used to collect more detailed insights and data from the respondents. The responses from the interviewees were also checked for logical relationships. The two methods were used so that comprehensive data could be collected.

Limitations

At the time of the research, the restrictions due to Covid-19 hampered the optimal operation of this research.

First, the collection of data has been more challenging given the social distancing constraints and the difficulty to conduct research in the field.
Second, given the fairly low number of respondents (79), it is difficult to infer any causal interpretations. Rather, it is important to bear in mind the purpose to identify the generic shortcomings, opportunities and needs of the private actors involved in the waste management.

Third, the research has omitted the high diversity present in the country. Indeed, cultural, ethnic, and social differences are quite stark between regions, provinces and even villages. That applies to the waste management as the provision of public services is decentralized to the local government. Thus, waste management system and environment might differ from one location to the other, resulting in contradictions, especially in different rural areas where traditional knowledge is important.

Main findings

Social mobilization and acceptance

- There are perceptions that communities are somewhat open to waste management activities, attempt to embed it in the culture and to share common values. However, public awareness is still an issue, especially regarding waste segregation at the household level.

- Surprisingly, segregation does not seem to be as much of an issue compared to the collection of waste. Priorities around an adequate collection of waste are seen as more important than the segregation.

- Community education and training are still considered important to increase awareness and participation.

- Unexpectedly, only a small percentage of the respondents view training and educational programs as beneficial. However, this argument depends on the type and quality of the training received. From our interviews, waste bank actors have welcomed training from the government but think it is not enough, especially around human resources and business training. Instead, suitable technology and practices are lacking.

- With regard to incentives, social as well as monetary incentives are not recognized as successful. Respondents think communities still respond better to monetary incentives, but it is not enough to motivate segregation.

Stakeholder, legal and institutional arrangements

- Respondents perceive a lack of effective collaboration with the overall stakeholders. However, collaboration seems more successful with communities and collectors, activities which are often undertaken by neighboring associations.

- The majority of participants think that there is no cohesive and long-term strategy, common goals and shared values as well as cohesive policies. Nevertheless, these elements are not perceived as problematic as each city or village needs to contextualize their priorities to the local needs.

- Rather, it seems that more than 70% of respondents view management as an issue. However, municipalities, local authorities, and the respondents have not prioritized good operational and overall management.

- Another issue is corruption and leadership accountability. Inconsistencies of public authorities and insufficient rules and regulations hinder business opportunities and often result in bribery.

- Waste management seems also to be impeded by scavengers and informal sectors because they depend on landfills to earn their living.

Financial and operational requirement

- The main identified issue with regard to the economic aspect is the lack of assessments of potential revenues, costs and barriers of their organizations.

- Despite this shortcoming, only 11% of the respondents are not economically viable on their own.

- Surprisingly, it does not seem that funding and investment is an issue but rather, the lack of infrastructure and equipment, such as shelters, facilities, warehouses, roads or trucks, hinders sustainable waste management.

- Specifically, with regard to organic waste, it is adamant that costs are high, while biowaste has low economic value, which results in a non-viable or profitable business.

Conclusions

From the needs assessment, it is clear that the current waste management is not sustainable and there are still many elements that need to be improved in order to reach sustainable waste handling in Indonesia. The conducted research had a focus on organic waste because it was intended to be in line with the priority of CTSS in food security and food sovereignty. However, the study discovered many other social, institutional, and economic aspects that need to be enhanced.

The ongoing waste issue lacks public awareness and participation as there are still stigmas revolving around the actors in the industry. Education and training have been either insufficient or poorly undertaken, limiting the positive impact on the commitment of communities. However, public knowledge around waste needs to be combined with a qualified collection, otherwise, segregation at the household level will be worthless. In order to reach those goals, the effectiveness of incentives needs to be reviewed and constructive training and educational programs need to be promoted.

Collaboration in the complex issue of waste management is crucial, yet it is not perceived as effective. Hence, a fruitful partnership needs to be developed, in particular with local authorities and government. Public authorities have inconsistent patterns and are sometimes prone to corruption and ask for bribes. Moreover, the regulations and policies being distinctive from one village to another is not an issue but rather, the regulatory environment is not optimal, often hindering business opportunities. Collaboration with the informal sector is also crucial in order to improve the current status quo. Lastly, management skills need to be developed for all the different stakeholders so that they can build their capacity.

Even though the respondents are mostly considered as environmental actors, their economic viability is still essential in order to run their business and not rely on external funds. The different actors certainly miss this economic and business approach to their activities. Precisely, an integrated business plan is missing as stakeholders generally do not assess their revenues, costs, and barriers before starting their business. In addition, direct funding or investments is not perceived as an

issue. Alternatively, the survey participants favor financing towards required infrastructure, equipment, and tools. Effective waste management often needs economic incentives, especially in emerging countries. The lack of a viable market to sell and buy waste has been hindering sustainable waste management, specifically for the market of biowaste.

Recommendations

Against this background, numerous recommendations can flow from these conclusions. The recommendations revolve mainly around six areas of focus:

1. Public awareness

- Enrich public debates around waste management in order to increase awareness.
- Develop effective education and training programs for local communities, for example in school and public spaces.
- Disseminate knowledge around the benefits of good waste management and circular economy at the local level as to increase participation levels.
- Identify compelling incentives to promote waste management activities for local communities, based on evidence and research.

2. Technical capability

- Research innovative waste technology that is inexpensive, easy, and adaptable to local needs.
- Spread those novel techniques, equipment, or tools. This should be joined with technical training to the actors in order to optimize the use of new technology. Ultimately, aiming at strengthening skilled human resources.
- Improve the services, skills and operational planning of collectors of waste through training, education, monitoring and evaluation.

3. Infrastructure

- Increase investments towards infrastructures such as shelter, warehouses and roofs.
- Increase investments towards equipment and tools, such as trucks, roads and appropriate technology.
- Assess the potential of large-scale facilities with regard to biowaste disposal in order to increase the economic incentives.

4. Collaboration

- Enhance collaboration between all the relevant stakeholders.
- Emphasize partnership with public authorities.
- Include more the private actors in order to maximize the provision of public services.
- Endeavor to incorporate the informal sector (pemulung) in the formal sector. One approach is through a semi-contractual form.

5. Governance

- Review vision, goals and strategies of waste management and include the participation of other stakeholders.
- Organize sensitization and awareness forums for leaders, authorities, and government on the importance of good waste management as well as potential training.
- Develop guidelines or monitoring schemes in order to enhance accountability and decrease corruption.
- Develop and adapt policies based on different contexts and on evidence-based decision-making.

6. Financial capacity

- Develop and implement economic capacity to increase the understanding of business principles, financial statements, planning and budgeting. This can be done through training or the construction of manuals and materials for different stakeholders.
- Put in place an effective marketplace to sell and buy waste in a more efficient and accessible way. For instance, a digital forum to make the exchange easier and more transparent.