

## Social capacity of waste and material management of Jakarta

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### Abstract

The Act regarding Waste Management was enacted in Indonesia in December 2008, requiring all citizens of Jakarta to segregate their waste for recycling. However, "social capacity" is required to achieve sound waste recycling. This refers to the people's cooperation and participation in waste management, which is vitally important for establishing a 3R society.

The purpose of this research is to determine the level of social capacity in Jakarta for becoming a 3R society, and to propose some effective policies to the government of Jakarta. This research was conducted via interviews with stakeholders of waste management in Jakarta, and a questionnaire survey with a sample of Jakarta citizens.

In 2004, Professor Kimura of Nagoya University interviewed the stakeholders of the waste management of Jakarta. This investigation was followed-up in 2007 by us, and the results were compared. The results showed that the social capacity of Jakarta was improving.

The following year, in 2008, a questionnaire survey with more than 300 Jakarta citizens was conducted, in order to gauge attitudes towards waste management policy, and the role of big business and individual citizens in waste management.

The survey results indicate that the social capacity of Jakarta is gradually increasing. There is a clear hope expressed by the citizens of Jakarta that the city will address the issue of waste management seriously, through such policies as new rules for waste management, educating the people through a media campaign, and the collection of recyclable waste from the front of supermarkets, for example. We propose to examine the introduction of the 'deposit system' versus the 'penalty system', with citizens' participatory conference.

*Keywords: social capacity, Jakarta, 3R, stakeholder interview and questionnaire survey.*



## 1 Introduction: what is the social capacity of waste and material management?

Three factors are needed in order to transform a municipality into a 3R (Reduce, Reuse, Recycle) society. These three factors are *trigger*, *leadership* and *social capacity* [1]. Trigger refers to a kind of crisis situation that arouses the attention of the citizens. Leadership refers to the top management of a municipality, or an NGO, and so on. Social capacity means the participation and partnership of all the actors including the public, the government, and companies to establish and keep the 3R system. This social capacity can be called “the social capacity of waste and material management”.

Social capacity is essential to the process of waste recycling, as recycling cannot be done without broad social understanding and cooperation. Therefore, *social capacity* refers to the people’s cooperation and participation in municipal solid waste management, which is vitally important for establishing a 3R society [2]. Without social capacity, a system of sound waste recycling cannot be achieved.

## 2 Background and purpose of the study

Jakarta is the capital city of Indonesia. The population of the metropolitan area is more than 23.65 million, and the population of the metropolitan special states (DKI) is about 12 million. DKI is composed of 5 cities, 43 districts, 265 wards, 2,499 town (RW) and 28,981 neighbourhood communities (RT). Each neighbourhood community is responsible for municipal waste collection. The amount of waste in Jakarta per day totals 6,000 tons. Municipal solid waste management is one of the most serious and emergent problems that Jakarta faces. Jakarta has only one final disposal landfill site and has scarce intermediate treatment facilities. Added to this, Jakarta does not currently have any fixed rules of waste reduction and waste separation.

The Act Regarding Waste Management (No.18, 2008) was enacted in Indonesia in December 2008, requiring all citizens of Jakarta to separate their waste for recycling. The purpose of the act is to establish a 3R system in each municipality, as requiring citizens to separate their waste would lead to waste reduction and recycling. Another purpose of the act is to promote 3R by encouraging cooperation among citizens, entrepreneurs and civil authorities. This cooperation is what is referred to as social capacity. If Jakarta is to adequately address its waste disposal problems, this social capacity must be present.

Thus, the purpose of this study is to determine the level of social capacity in Jakarta for becoming a 3R society, and to propose some effective policies to the government of Jakarta. This research was conducted via interviews with stakeholders of waste management in Jakarta, and a questionnaire survey with a sample of Jakarta citizens.



### 3 Method of research

The social capacity of waste and material management refers to the extent of positive participation in and partnership with waste management policy, by various groups within society. The effectiveness of waste management policy greatly depends upon this participation and partnership. All these groups who play a part in waste management in Jakarta are called *stakeholders*.

How is social capacity measured?

In this study, we interviewed stakeholders in Jakarta's waste management policy, and the relations between stakeholders were analyzed from their statements. As a result of the stakeholders' statement analysis, the quality of the partnership between stakeholders was made clear. In 2004, Professor Kimura of Nagoya University interviewed the stakeholders of the waste management of Jakarta [3]. This investigation was followed up in 2007 by us, and the results were compared.

Secondly, popular sentiment towards waste management policy was investigated via a public questionnaire. In 2008, a questionnaire survey with more than 300 Jakarta citizens was conducted, in order to gauge attitudes towards waste management policy, and the role of big business and individual citizens in waste management.

## 4 Results

### 4.1 Stakeholder interview

The outline of the stakeholders' interview in 2007 is shown in Table 1 [4]. The relationships of the stakeholders based on interview research done in 2004 is shown in Figure 1. The same relationships between stakeholders based on the interview research in 2007 is shown in Figure 2 [4].

Table 1: Outline of stakeholder statement on interview research.

Affiliation of stakeholder	Activities for waste management in Jakarta	Evaluation and opinion of other stakeholders	Evaluation and opinion of waste management in Jakarta
NGO (1)	<ul style="list-style-type: none"> <li>✓ Empowerment of community</li> <li>✓ Participation in decision-making process</li> </ul>	<ul style="list-style-type: none"> <li>✓ Being critical to the administration</li> <li>✓ Evaluate the participatory conference held by DKI Jakarta</li> </ul>	<ul style="list-style-type: none"> <li>✓ Basically oppose the expansion of the intermediate processing facilities and the final disposal landfill</li> <li>✓ Public environmental education is important</li> </ul>



Table 1: Continued.

Affiliation of stakeholder	Activities for waste management in Jakarta	Evaluation and opinion of other stakeholders	Evaluation and opinion of waste management in Jakarta
NGO (2)	✓ Environmental education for students of elementary school	✓ Cooperating with ministries ✓ Looking for some sponsors	✓ Want to learn the intermediate processing technology of Japan more ✓ The cost is a problem though the advanced processing is important
National Development Project Agency (Bappenas)	✓ Budget allocation ✓ Management of Ministries	✓ Facilitator among ministries (but role is weak)	✓ In this agency, the priority of the waste management policy is low
Sanitation Department of DKI Jakarta	✓ Municipal solid waste management in Jakarta ✓ Planning of waste management	✓ The most important actor in waste management of Jakarta ✓ More facilities need to be constructed	✓ Less of intermediate processing facilities ✓ Waste management system is direct dumping, which is difficult because of traffic congestion ✓ Less of final disposal landfill
Ministry of the Environment	✓ Enacting legislation; 3R policy	✓ The projects of Unilever Indonesia are evaluated highly	✓ Cooperation with other ministries ✓ Partnership with Unilever Indonesia has effectively educated residents in waste separation and waste reduction
Ministry of Public Works	✓ Facilities construction ✓ Policy planning ✓ Plans for construction	✓ Gathering cases and information from other countries ✓ Getting Japanese ODA	✓ Interested in garbage recycling, especially composting ✓ Fund with KITA (Kitakyushu, in Japan)
Indonesia University (1)	✓ (Professor)	✓ The government is optimistic ✓ NGOs are pessimistic	✓ Social circumstances are different to the situation in developed countries

Table 1: Continued.

Affiliation of stakeholder	Activities for waste management in Jakarta	Evaluation and opinion of other stakeholders	Evaluation and opinion of waste management in Jakarta
			<ul style="list-style-type: none"> <li>✓ Separation activity will not be easily established in Jakarta</li> <li>✓ It is effective to enact penal regulations</li> </ul>
Indonesia University (2)	✓ (Professor)	✓ There is no cooperation between stakeholders	✓ It is extremely difficult to introduce waste separation as a policy
Newspaper company, KOMPAS	<ul style="list-style-type: none"> <li>✓ Reporting</li> <li>✓ Environmental campaign</li> </ul>	✓ The media knows neither the problem nor the system related to waste very well	<ul style="list-style-type: none"> <li>✓ Concern for waste problem is not high</li> <li>✓ Making an article of resident's protest campaign</li> </ul>
BPPT	✓ Soil and water analysis of final disposal landfill		<ul style="list-style-type: none"> <li>✓ Improvement of final disposal landfill</li> <li>✓ Securing the amount of disposal is the most important</li> </ul>
Maker, Unilever Indonesia	✓ Green-clean project	<ul style="list-style-type: none"> <li>✓ Making a commodity of which women are the main consumers</li> <li>✓ Projects that especially educate women</li> <li>✓ Cooperating with the Ministry of the Environment and the media</li> </ul>	<ul style="list-style-type: none"> <li>✓ The recycling of containers (such as shampoo bottles) is a principal object</li> <li>✓ When separation and the recycling of garbage were promoted, garbage in the community was reduced by half</li> </ul>

From the 2007 interview results, we can conclude that the partnership and cooperation among stakeholders is still inadequate. However, what is particularly striking is the government's desire to accelerate waste reduction and separation by cooperation with NGOs and business groups, acting as a facilitator between parties. The government is still the biggest stakeholder of waste management, as it was also in 2004.

Governmental authorities, especially the Ministry of the Environment and the Department of Sanitation in DKI Jakarta, have realized that empowering citizens and private organizations has a great effect on waste reduction and recycling.



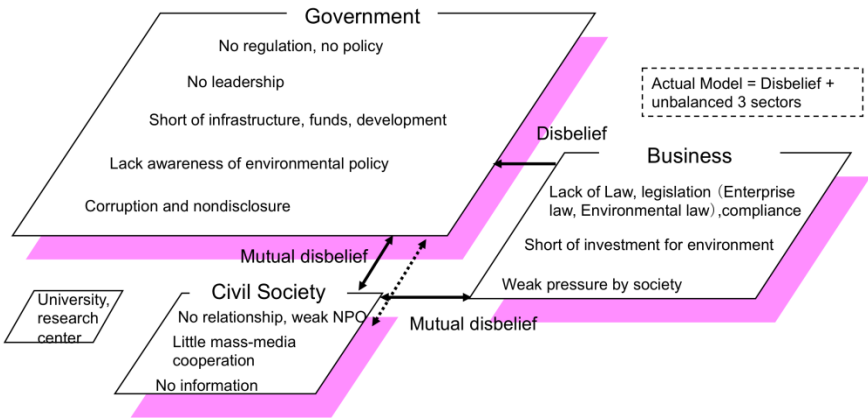


Figure 1: Antagonizing model of Jakarta (Kimura [3]).

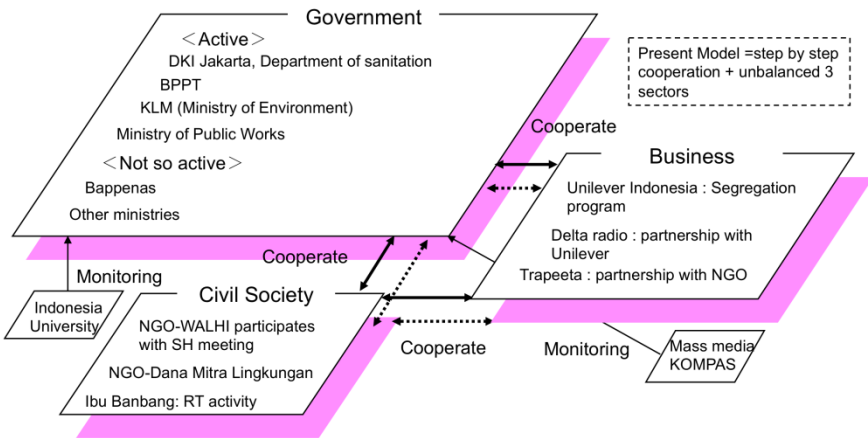


Figure 2: Partnership developing model of Jakarta (Okayama [4]).

However, it must be remembered that all stakeholder interviewees are experts in waste management. In order to measure public awareness of and attitudes towards waste and waste reduction and recycling, it was necessary to conduct a questionnaire survey with Jakarta citizens.

4.2 Questionnaire survey

Brief overview of the survey

Survey object	Residents of DKI Jakarta, 10 regions of DKI Jakarta
Date of survey	10th to 14th November, 2008
Procedure	10 staff met 30 residents and did face-to-face Q&A
Number of questions	n=19
Number of answers	n=307



The ten surveyed regions are roughly divided into villages and housing complexes. As for the respondents, 61.8% live in villages, and 38.2% live in housing complexes.

46.7% of the households in a village have a monthly income between one million rupiah and three million rupiah. 29.8% of households in a housing complex have a monthly income between one million rupiah and three million rupiah, while 28.9% have an income greater than five million rupiah. (One million Indonesian rupiah is about a hundred and ten US dollars.)

Figure 3 shows the level of recognition of the word “recycling” by the respondents, Figure 4 shows respondents’ waste separation habits, Figure 5 shows the respondents’ ability to separate waste, Figure 6 shows their favourite way of composting, and Figure 7 shows public attitudes towards the present waste management system.

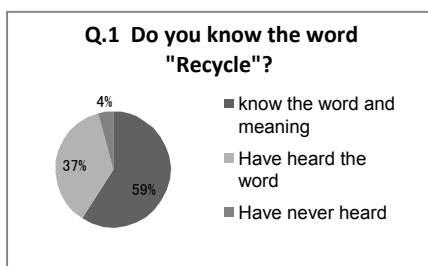


Figure 3: Recognition of “Recycle”.

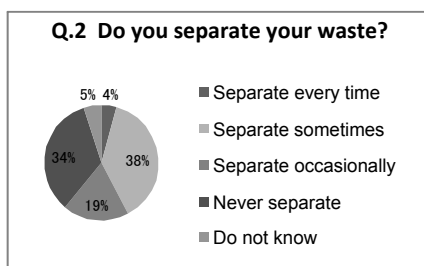


Figure 4: Waste separation habits.

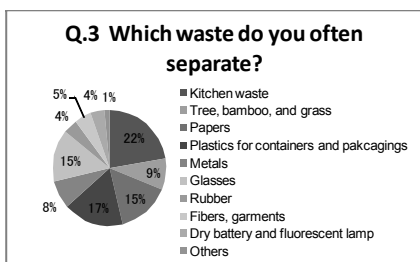


Figure 5: Ability to separate waste.

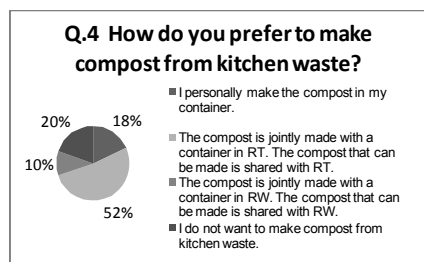


Figure 6: Favourite way of composting.

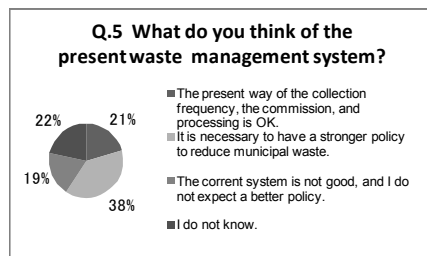


Figure 7: Public attitudes toward the present waste management system.

The word “recycling” is known by 96% of respondents, and so is well recognized. 61% of respondents separate their waste to some extent, while 22% say they are able to segregate garbage or kitchen waste. When asked how they make compost, 52% said they share a composting container in the community. 21% said they are satisfied with the present waste management system, while 38% wanted the government to decrease municipal waste. 19% said that it is not possible for them to expect the government to improve waste management policy, even though they were not satisfied with the present system. From this, we can observe that there is a lack of trust towards the government by about 20% of the respondents.

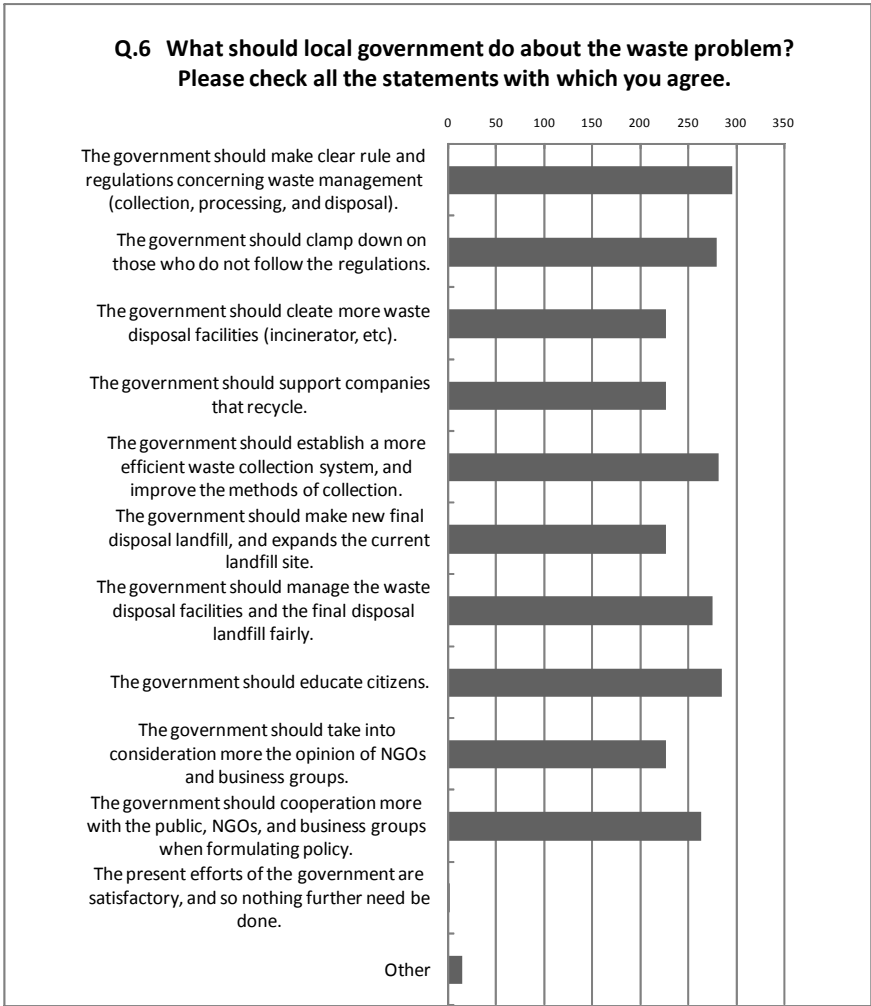


Figure 8: Opinions of citizens toward local government.





Figure 8 shows opinions of citizens towards the government, Figure 9 shows opinions of citizens towards business groups, Figure 10 shows opinions towards fellow citizens, and Figure 11 shows approval or disapproval towards concrete waste management programs and projects in Jakarta.

In question 5, about 20% answered “The present waste management system is good”. However, in questions 6, 7 and 8, respondents did not say “Your present activities are good” to the government, business groups and even citizens themselves. Citizens are not satisfied with the current activities of stakeholders,

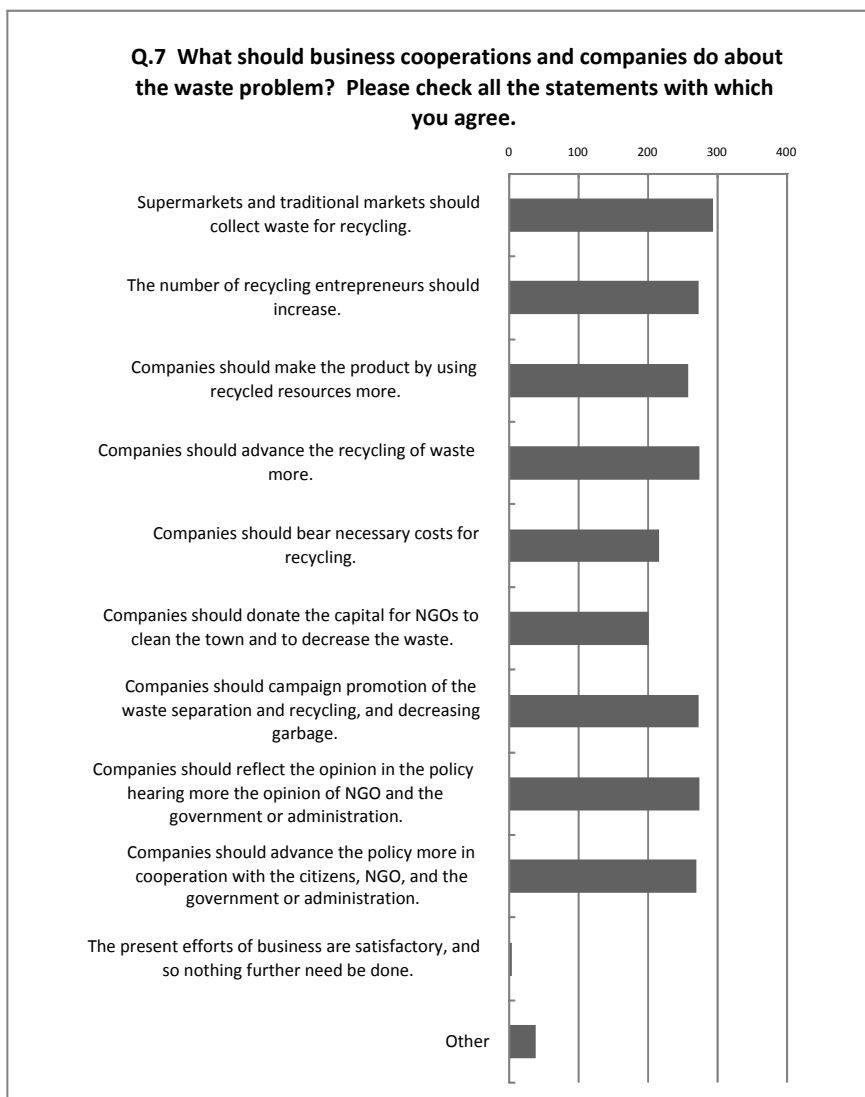


Figure 9: Opinions of citizens to towards business groups.



and are hoping for increased effort from those stakeholders. In question 6, 96% of respondents want the government to provide clear rules for recycling and waste reduction. In the same question 6, the proposal “It is necessary to educate the citizens more” also elicits a lot of agreement.

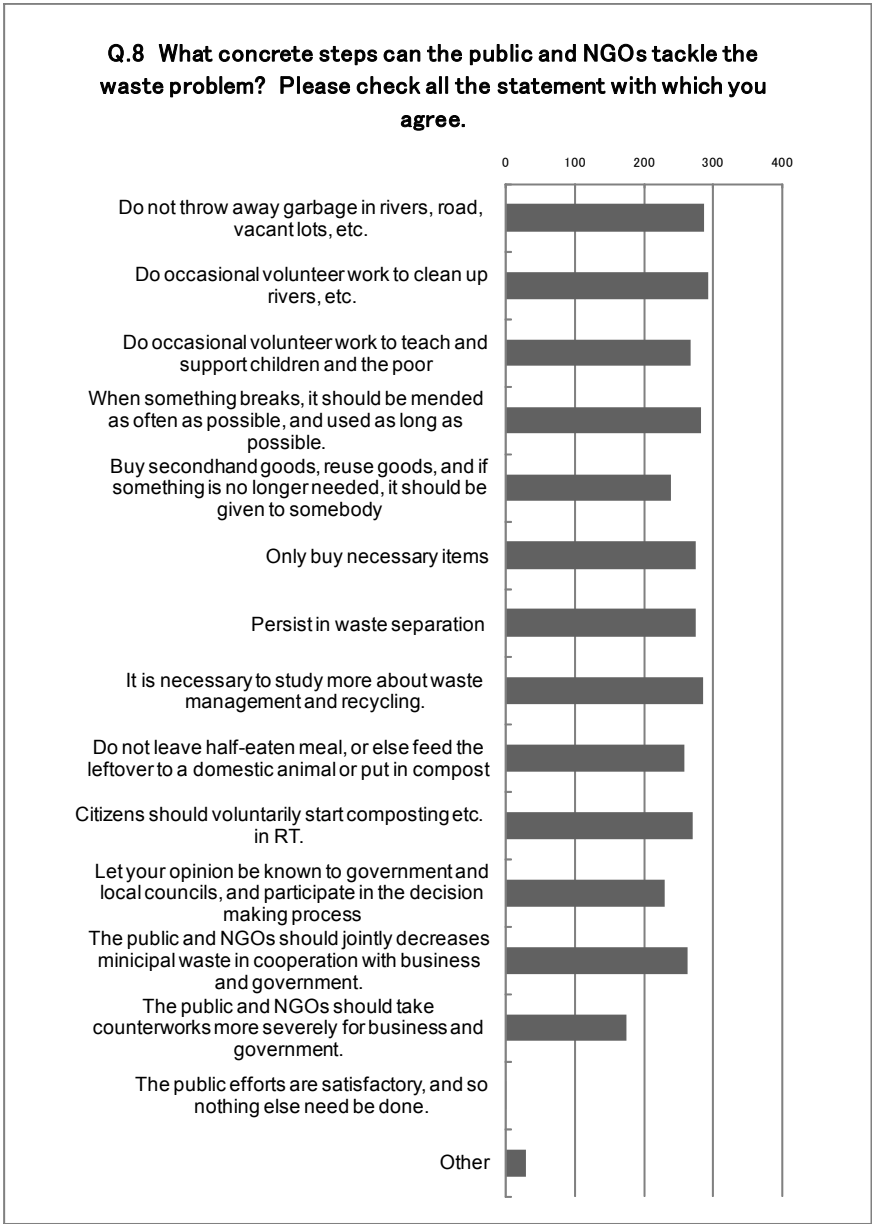


Figure 10: Opinions towards fellow citizens.



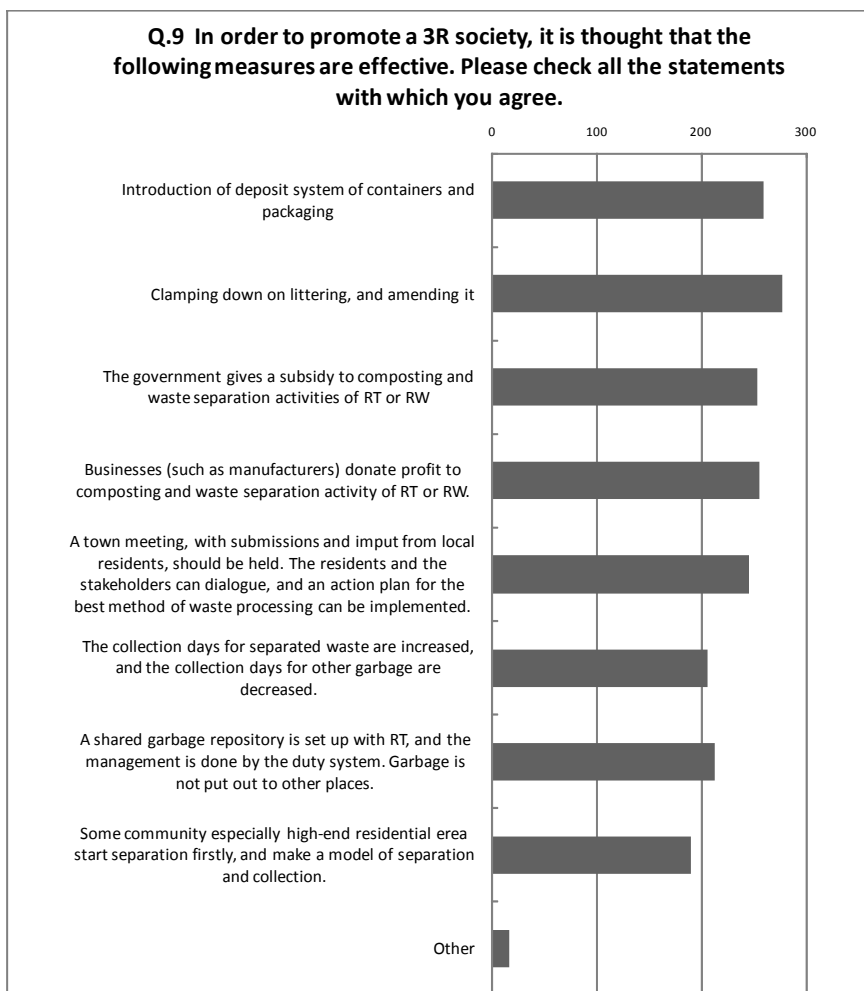


Figure 11: Agreeable wastes management programs and projects.

These results seem to suggest that citizens in Jakarta distrust the government, but even so, desire that the government make an effort to educate the public to a greater extent about waste management, as well as create clear rules and legislation concerning waste disposal. The public is prepared to cooperate in reducing waste, and to accept legislation concerning such.

## 5 Conclusion

From the results of this research, it can be said that social capacity is increasing in Jakarta. It is highly possible that an effective 3R society can be established in Jakarta, and so the government is encouraged to advance such a policy.



There is a clear hope expressed by the citizens of Jakarta that the city will address the issue of waste management seriously, through such policies as new rules for waste management, educating the people through a media campaign, and the collection of recyclable waste from the front of supermarkets. In consultation with citizens, the government would be well advised to consider the introduction of the 'deposit system' versus the 'penalty system'.

(A final note about the survey data: questions 6 to 9 were all multi-answer questions. As respondents were allowed to choose every answer they agreed with, many people agreed with every proposal in the question. I would like to conduct this research in Jakarta again, after improving the form of the questions.)

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