

A Networking Seminar on KitaQ System Composting in Asia



SEMINAR REPORT

29 June – 01 July 2011

JICA Kyushu International Center, Kitakyushu, JAPAN

This report was finalized on the basis of the information provided, discussions and outputs of working groups of the Networking Seminar on KitaQ System Composting in Asia held in Kitakyushu, Japan during 29 June – 01 July 2011. It was edited by D.G.J.Premakumara and H. Kazuyoshi in IGES with the assistance of H. Jian, A. Mutsumi and S. Risako. The authors would like to thank all the participants for their contribution. A special thank also goes to Dr. Yoshida and Mr. Yao, JICA for their valuable expertise given in organising the workshop sessions as well as Ms. Tamura and Mr. Kodama, JICA Kyushu, Mr. Mitoma, Kitakyushu City, Mr. Nagaishi and Ms. Morimoto, KITA, Mr. Maeda and Ms. Murakami, IGES and Mr. Takakura and Ms. Yaoya, J-POWER group/JPec for their valuable support and technical inputs in organising this seminar.

Copyright © Japan International Cooperation Agency (JICA) and Institute for Global Environmental Strategies (IGES) All rights reserved.

Published by

Japan International Cooperation Agency (JICA)
Kyushu International Center
2-2-1, Hirano, Yahata Higashiku, Kitakyushu-shi, Fukuoka, 805-8505, Japan
Tel:81-93-671-8347 Fax: 81-93-671-0979
URL: <http://www.jica.go.jp/kyushu>

Institute for Global Environmental Strategies (IGES)
Kitakyushu Urban Centre
International Village Center 2F, 1-1-1, Hirano, Yahata Higashiku, Kitakyushu-shi,
Fukuoka, 805-0062, Japan
Tel: 81-93-681-1563 Fax: 81-93-681-1564
URL: <http://www.iges.or.jp/kitakyushu>

Disclaimer: Although every effort is made to ensure objectivity and balance, the publication of research results or translation does not imply JICA or IGES endorsement or acquiescence with its conclusions.

Printed in Japan

A Networking Seminar on KitaQ System Composting in Asia

29 June-01 July 2011

*Japan International Cooperation Agency,
Kyushu International Center,
Kitakyushu, Japan*



DAY 1: 28 June

A Courtesy Visit to Kitakyushu City Office



DAY 2: 29 June

Welcoming Remarks



Presentations from Each Participating City



DAY 3: 30 June

Discussions on Capacity Development in Solid Waste Management



Site Visit to Ano Community Center



DAY 4: 1 July

Site Visit to Bin/Can Center



Presentations on Action Plans of Respective Cities



Table of Contents

1. Summary	1
2. Proceedings	4
2.1. Opening Ceremony and Introduction to Seminar	4
2.1.1. Welcoming Remarks	4
2.1.2. Introduction to Seminar and JICA Training Activities	4
2.2. Lessons Learned: Solid Waste Management and Composting in Asian Cities	5
2.2.1. Balikpapan, Indonesia	5
2.2.2. Makasar, Indonesia	6
2.2.3. Palembang, Indonesia	6
2.2.4. Semarang, Indonesia	7
2.2.5. Tarakan, Indonesia	7
2.2.6. Cebu, Philippines	8
2.2.7. Kampar, Malaysia	9
2.2.8. Sibul, Malaysia	9
2.2.9. Nonthaburi, Thailand	10
2.3. A Successful Application of KitaQ System Composting in Surabaya	10
2.3.1. How to Make Takakura Compost and How to Solve the Practical Problems in Using Compost	10
2.3.2. Successful Implication of KitaQ Composting in Municipal Solid Waste Management in Surabaya City	11
2.3.3. Observation of Community Composting and Organic Farming in Kitakyushu	12
2.4. Experiences in Establishing Sustainable Material-Cycle Society in Kitakyushu City	13
2.4.1. International Environmental Cooperation Strategies and Municipal Solid Waste Management in Kitakyushu City	13
2.4.2. Kitakyushu Initiative and Replication of Surabaya Composting Model in Other Asian Cities	14
2.4.3. Best Practices of Japan: Municipal Solid Waste Management and the 3R Approach	16
2.5. Capacity Development in Solid Waste Management with Special Reference to the Introduction of KitaQ System Composting	16
2.5.1. Introductory Session and Visioning Exercise	17

2.5.2. Discussion Session 1: Identify the Necessary Capacities for Promotion of Composting in Solid Waste Management -----	17
2.5.3. Observation of Citizen Participation in Promoting 3R Activities and Community Composting Programme in Ano Community Centre -----	18
2.5.4. Group Presentation: Identify the Necessary Capacities for Promotion of Composting in Solid Waste Management -----	19
2.5.5. Observation of Bin/Can Recycling Centre in Honjo - -----	22
2.5.6. Discussion Session 2: Identify Strategic Actions for Composting Model Cities in Asia -----	22
2.5.7. Discussion Session 3: Identify Follow-up Actions -----	25
2.6. <i>Wrap-up and closing Remarks</i> -----	27
 List of Annexes	
• Map of Cities -----	29
• Concept Note -----	33
• Participant List -----	39
• Presentations -----	45

1. Summary

Solid Waste Management (SWM) is considered to be one of the most serious environmental issues confronting urban areas in Asia. The growth of urban populations and economies has resulted in a corresponding growth of solid waste that local governments are finding difficult to manage. Existing dumpsites are reaching capacity and finding new candidate sites for dumpsites is becoming increasingly difficult. The solution lies in reducing the amount of waste that reaches dumpsites. Composting of organic waste is considered not only to be an effective measure for municipal solid waste reduction, but for raising environmental awareness and community building as well, especially in developing countries, where organic waste accounts for more than half of the total amount of waste. The Japan International Cooperation Agency (JICA) is also taking steps to apply composting through its various environmental programmes aiming to promote the 3Rs (reduce, reuse and recycle) around the world.

The KitaQ System Composting evolved from the experiences of Surabaya's Solid Waste Management Model. It was first piloted in Kampong Rungkot Lor, an urban community adjacent to Surabaya's largest industrial site, where a local non-governmental organisation (NGO), Puskakota, with technical assistance provided by the Kitakyushu International Techno-Cooperative Association (KITA), encouraged the community to separate waste at source. The organic waste is then collected separately and treated at a nearby composting centre adopting the Takakura Method of composting, a simple composting method introduced by Koji Takakura of J-POWER group/JPec, utilising locally available fermentation microorganisms or native microorganisms (NM), rather than effective microorganisms (EM). The material recovery facility (MRF) was established to collect inorganic materials and linked them with existing informal recycling businesses.

The organic material easily putrefies and emits foul odours unless it is treated properly. The Takakura Method of composting dissolved many of the organic components of raw garbage in a short period of time (particularly in the tropics) by cultivating fermentation microorganisms from locally available materials such as fruit skin, fermented foods, rice bran, chaff and leaf mould, and mixing the cultivated microorganisms with organic waste to achieve natural fermentation. Further, the method is simple and economically viable as it requires only readily available materials and emits no foul odours and leachate.

The pilot project brought about various benefits in addition to the production of compost, such as extra economic opportunities for community members, improved sanitary conditions and a greener and cleaner environment. Based on this success, Surabaya City started to support the decentralised, community-based composting programmes at the city-wide level, building partnerships with other stakeholders, such as the women's network (PKK), local NGOs, academic institutions, waste pickers, private ventures and the media, in heavy contrast to centralised, larger-scale and highly technical composting methods. This supportive policy environment has helped to reduce the amount of waste being transported to final disposal sites by as much as 30% within six years, enhanced recycling by removing organic matter from the waste stream and improved the city's overall waste collection system. Surabaya's achievement exemplifies how a city can reduce a large amount of waste in a short period of time with a limited budget by integrating composting into municipal solid waste management, emphasising decentralised, community-managed methods with appropriate technology,

enabling participation of various stakeholders, and providing supportive policy and capacity building.

Utilising the Kitakyushu Initiative for a Clean Environment (KI), a programme of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), which was adopted at the 4th Ministerial Conference on Environment and Development in Asia and the Pacific (MCED4) held in Kitakyushu, Japan in 2000, Kitakyushu City, KITA, and the Institute for Global Environmental Strategies (IGES) has worked together to share Surabaya's successful waste management model with other cities in Asia. It was further used in JICA technical cooperation projects for solid waste management and training programmes for overseas participants and Japan Overseas Cooperation Volunteers (JOCVs). This was followed by reports of other successful applications by local governments mobilising support from various sources. For this reason, the Takakura Method of composting has become a popular technology for organic waste recycling, and the applicable model of municipal composting in cities has become known as the KitaQ System Composting.

Against this background, a regional seminar was organised in Kitakyushu City from 29 June to 1 July 2011, inviting related cities and organisations to share and discuss their successful experiences and challenges in promoting the KitaQ System Composting in municipal solid waste management in Asia, develop/promote relationships and identify areas for future cooperation. The seminar further assisted participants in:

- assessing good practices and challenges in waste management in respective cities,
- developing networks among related cities and organisations which are promoting composting of organic waste for further cooperation in the future, and
- assessing needs to develop capacity building materials for KitaQ System Composting.

The seminar was attended by 20 participants representing 10 cities from Asia, including cities from Indonesia (Balikpapan, Makassar, Palembang, Semarang, Surabaya, Tarakan), Philippines (Cebu), Malaysia (Sibu, Kampar), and Thailand (Nonthaburi), plus a number of additional speakers and observers from the host country, Japan. Invited participants included representatives from respective local governments. The seminar featured presentations, interactive discussions and site visits. The second and third days of the seminar were made up of workshops, both in small group discussions and in plenary sessions, which were designed to draw on the lessons learnt from the city presentations in the first day.

The participants identified the following promotional factors that create a favourable environment for the composting of municipal solid waste management (MSWM): increasing waste generation, inadequate collection and uncontrolled disposal of solid waste; high proportion of organic waste; recent efforts at global, national and local levels in promoting the 3Rs; strong political interest and support; public education, awareness and pressure; partnerships with relevant stakeholders; existing knowledge and pilot programmes on composting; and existing networks with international agencies.

Further, it was identified that the decentralised, community-based approach of the KitaQ System Composting is effective for cities in reducing waste generation due to its low financial costs, and thereby facilitates the establishment of a sound material-cycle society. The composting process can be initiated with very little capital and low operating costs, is flexible for implementation at the household, community and city-wide levels, integrates

existing informal sectors involved in the MSWM, and provides excellent opportunities to improve the city's overall MSWM system. As well, the Takakura Method, a composting technology in the KitaQ System Composting, is also simple, easy-to-follow, locally-relevant and has great potential to be transferred, adapted and replicated without too many outside resources.

By all accounts, the seminar and workshop were successful in achieving planned objectives. A key outcome of the seminar was a commitment of the participants to take initiatives in planning, design and implementation of community-based composting programmes at the city level, taking into account their specific situations in collaborating with other organisations, entities and local residents. They further identified the importance of the following actions to promote successful community-based composting programmes, such as strong political will and commitment; integrated SWM strategies developed with the involvement of all stakeholders; inter-departmental coordination and networking with other organisations; clear guidelines and education programmes for waste separation, collection, transportation and composting; integrating informal recycling systems; strong community leadership and public participation; establishing both community award systems and legal enforcement to motivate community participation; and enabling policies, laws and regulations.

The participants further agreed to work together regardless of borders and share their knowledge and experience so that they might help each others to promote composting in SWM in their cities. Participants also noted that this type of seminar was very useful as a forum for sharing knowledge and information, so that those with less understanding and experience could benefit from those with more experiences, and recommended that it be repeated regularly to advance this endeavour. Another key message that emerged from the seminar was the importance of establishing the KitaQ System Composting network involving key organising institutions (JICA Kyushu, Kitakyushu City, KITA and IGES) in order to raise awareness and educate all stakeholders about relevant issues and to increase capacity among the participants, begin new training programmes, document best practices and develop training manuals for knowledge transfer and technical cooperation in SWM from the perspective of capacity development.

2. Proceedings

The seminar consisted of plenary presentations and interactive discussions, site visits and was followed by workshops and break-out sessions. Presentations and conclusions are summarised below. All speaker presentations as well as supplementary materials, such as the seminar background paper and list of participants, are attached in the annexes.

Wednesday, 29 June

2.1. Opening Ceremony and Introduction to Seminar

2.1.1. Welcoming Remarks

- *Mr. Keiichi Muraoka, Director General, JICA Kyushu*
- *Mr. Hiroshi Imanaga, Director General, Environmental Bureau, Kitakyushu City*

The seminar officially started with welcoming remarks from Mr. Keiichi Muraoka, Director General of JICA Kyushu. He warmly welcomed the participants from different countries to the seminar. Mr. Muraoka then highlighted the environmental impacts of cities in Asia and briefly explained JICA's involvement in the field of environmental management, such as air pollution, water pollution, waste management and climate change measures. He further emphasised that composting is an effective method to reduce organic waste that needs to be dumped and can be easily replicated in many cities in Asia. For this reason, this seminar provided a good opportunity for participants to share good practices, discuss lessons learned and strengthen networking.

Following this, Mr. Hiroshi Imanaga, Director General of the Environmental Bureau, Kitakyushu City, welcomed the participants. He explained that since 1980, Kitakyushu City has been engaged in international environmental cooperation in Asia. To date, more than 6,000 participants have been invited to Kitakyushu City for technical training on environmental issues under a cooperation scheme between JICA, KITA, and the City of Kitakyushu. One of its very successful initiatives was the promotion of composting in Surabaya City. As a result, Surabaya City has been successful in reducing its waste generation by 30% with the adoption of composting and raising public awareness. Mr. Imanaga also stressed that this composting method can be applied in other cities in Asia.

2.1.2. Introduction to Seminar and JICA Training Activities in KIC (Kyushu International Center)

- *Mr. Akihiko Kodama, Training Programme Division, JICA Kyushu*

Mr. Akihiko Kodama, Training Programme Division, JICA Kyushu, gave a brief introduction to the seminar. He explained the activities of JICA Kyushu and gave some examples of public participation and training programmes. Public participation programmes include the Japan Overseas Cooperation Volunteers (JOCV) programme and JICA partnership programmes; training programmes focus on environmental management, energy and resources, such as waste management techniques and environmental education. As of 2010, JICA Kyushu has conducted 146 training programmes, inviting 823 participants from 97 countries. Among them, 333 participants attended 39 training programmes on environmental

management and energy and resources.

Mr. Kodama further explained JICA's strategy on solid waste management (SWM) and emphasised the importance of building a sound material-cycle society, developing the capacities of governmental organisations, improving collection, transportation and disposal and promoting activities to address climate change issues. After that, he explained the purpose of the seminar and mentioned that the main objective was to share good practices and challenges and enhance partnership among participant cities. He further stated that presentations by participant cities, related organisations and experts would be highlighted at the workshop, site visits and observations would be carried out at an organic farming compost site and community activities in the Ano community centre and recycling facilities, and that a workshop session would be held to facilitate discussions among participants.

2.2. Lessons Learned: Solid Waste Management and Composting in Asian Cities

During the session of lessons learned, a representative from each city made a presentation about SWM and composting in their respective cities. The participants were provided guidelines prior to the seminar to help in the development of their presentations and were requested to consider the following topics, such as a basic introduction to the city; overview of solid waste management, trends and strategies; composting in municipal solid waste management; success factors, barriers and challenges in promoting composting in SWM; required international assistance and a conclusion to the presentation.

2.2.1. Balikpapan, Indonesia

- *Mr. Arie Soetjiadi, Expert Staff, Conservation of Natural Resources, Environmental Agency, Balikpapan City*

Balikpapan City is located in East Kalimantan and has a total population of 614,681 (2010). The total land area of the city is 503.33 sq. km and 85% of the city is covered with hilly areas. The total waste generation in the city is 160 tons per day and more than 60% is organic waste. Mr. Arie explained that Balikpapan City has developed a SWM strategy to reduce the waste to be disposed by 10% in the next three years, and tried to improve the legal system and raise public awareness toward environment conservation, including solid waste management. Some of the key points from his presentation are as follows:

- Currently, the city has only treated about 70% of the total waste generated. The remainder is not collected.
- Though the city has spent 35% of the SWM budget for operational waste disposal services, only 1% is allocated to composting.
- The municipality has developed the vision of a “clean, beautiful, and comfortable city” under the Community-Based Solid Waste Management (Pengelolaan Sampah Berbasis Masyarakat – PESAMAS) project, which drives all environment activities in the city.
- Both through formal and non-formal education, the municipality is involved in raising public awareness on environmental issues in general and SWM, specifically.
- Currently, Balikpapan City has eight composting programmes at the household, neighbourhood and city levels that have been initiated by different stakeholders, such as NGOs, the private sector, city government and the provincial government.

- The market mechanism for composting is not yet fully functioning. Thus, composting activities are still limited. The final composting product from the compost centres operated by the city office is used for public parks and greenery. As well, there are problems in marketing the compost produced by NGOs and communities.
- The successful factors for the progress of SWM and composting are incentives via Adipura awards and enforcement of environmental regulations.
- The key barriers are a lack of awareness and poor service coverage due to the city's hilly topography and poor spatial planning.
- The municipality requires assistance in improving urban planning, developing an approach to strategy planning to alert the people about the importance of proper waste management, policy advocacy, capacity building for relevant stakeholders, and extending possibilities to market compost products.
- The city has tried to solve these issues by improving urban planning and policymaking abilities.

2.2.2. Makassar, Indonesia

➤ *Mr. Andi Murtan, Chief of Urban Cleaning Management Division, Makassar City*

Makassar City had a total population of 1,339,374 in 2010. According to Mr. Andi, the city has faced tremendous challenges in SWM and key points from his presentation are as follows:

- Due to a lack of appropriate facilities and infrastructure, the collection of waste has been inadequate. The city collects only 80% of waste generation in the city.
- There has been an increase in waste generation in line with population growth and urban functions. Further, the city is facing some other issues in SWM, such as high disposal cost, high transporting cost, and unclear assignment of roles for local societies and businesses.
- As a result, the municipality has tried to formulate a new SWM system and action plan based on the 3Rs with support from JICA and Kitakyushu City under the PESAMAS.
- Under this new SWM strategy, the city is aiming to reduce the waste to be disposed by 5-10% within the next three years by promoting waste separation at source and establishing composting programmes at household and neighbourhood levels.
- The municipality is planning to establish three composting centres by 2012, carry out campaigns to raise public awareness, promote recycled products, and enhance monitoring of environmental management projects. Further, the city has planned to develop manuals for community-based solid waste management and training programmes for capacity development for city staff.

2.2.3. Palembang, Indonesia

➤ *Ms. Nyimas Ida Apriani, Head of Environmental Degradation Control Division, Environmental Agency, Palembang City*

Palembang City had a population of 1,665,681 in 2009. The total land area of the city is 400.61 sq. km and is divided into 16 districts and 103 sub-districts for administrative functions. The city showed a high economic growth rate of 8.24% in 2010. The total waste generation in the city is about 100 tons per day and 79% is residential waste. According to the waste composition in the city, 47% of the waste is organic. About 66% of the total waste

generated is treated by the city and of this, 8% is recycled, including composting. Ms. Apriani explained the new SWM paradigm in the city based on the ECO CITY concept and key points are summarised as follows:

- The city has developed a new SWM strategy based on the ECO CITY concept.
- To achieve the city's aim of becoming an ECO CITY, Palembang has introduced four programmes, such as eco-friendly villages, eco-friendly offices, eco-friendly schools and eco-friendly markets.
- The eco-friendly village programme aims to decrease waste at the household level and awarded the best practices of households, through which the city has promoted the efforts of local residents.
- The eco-friendly school programme aims to develop environmental education and reduce waste generation at school through the introduction of 3R programmes.
- The eco-friendly office programme focuses on introducing waste management and 3R systems at offices.
- The eco-friendly market programme was introduced to reduce the waste generated at city markets.
- The mayor himself has made a commitment to these programmes.
- The city is working in partnership with the private sector to produce compost from the PT.Pusari area and the traditional market in the city.
- The main challenge is the lack of an integrated SWM system. The municipality has been facing budget shortages and human resource limitations in SWM. The city has also faced difficulties in raising public awareness. Since some residents think that the municipality takes full responsibility for environmental management, it is difficult to change public behaviour. There is also a lack of social environmental responsibility by many local companies.

2.2.4. Semarang, Indonesia

➤ *Mr. Berkah Wahyudi, Environmental Board, Semarang City*

Semarang City had a population of 1,555,984 in 2010. The city generates about 700 tons of waste per day and 62% is organic. Mr. Berkah presented the SWM in the city, with the following key points:

- The city has the large area for landfills and the recycling rate is only 9%.
- There are many insects swarming around untreated waste, which has caused sanitary issues. Unauthorised cows roam freely around the landfill site.
- The KitaQ System Composting has been promoted in some neighbourhoods after proper training has been carried out for households. Composting baskets have been distributed free of charge to the households who have received training.
- The importance of waste separation, collection and composting has been officially recognised by the city authority under the leadership of the mayor.

2.2.5. Tarakan, Indonesia

➤ *Ms. Sonya Wijayanti, Cleansing Department, Tarakan City*

Tarakan City had a total population of 230,093 people in 2010. The area of the city is 657 sq. km and total waste generation is about 577 tons per day. The waste collection coverage of the city is about 87%, and 54% of this waste is generated in residential areas. According to the

waste composition, 52% of waste is comprised of organic materials. Ms. Sonya explained the SWM and composting programmes in Tarakan City and key points of her presentation are as follows:

- The disposal system for solid waste has changed since 2005.
- The municipality has established the 3SR (Sorting, Reuse, Reduce, and Recycle) system.
- The city is aiming at 10% waste reduction in the city by 2014, increasing the coverage of waste management services.
- Since 2007, the municipality has been promoting composting programmes at household, community-based and market facilities.
- There are three types of composting methods are applied by Tarakan City, including the Takakura Home Method, Windrow and Barrel Composter.
- The city has taken initiatives to build partnerships with different stakeholders, such as schools, the private sector, community groups, and the media to implement composting programmes.
- The final products are used for city gardens, purchased by private companies, and sold to markets.
- The success of composting programmes is dependent upon the involvement of all stakeholders. The main barrier is finding good markets for the final product.

2.2.6. Cebu, Philippines

- *Mr. Pacres Jose Rey, Officer-in-charge, Cebu City Environment and Natural Resources Office, Cebu City*

Cebu City is the second largest in the Philippines, next to Manila and has a total land area of 326.10 sq. km. As of the 2000 census, the total population of Cebu City was 718,821 people in 137,864 households. The total waste generated in the city is about 411 tons per day and organic waste is about 50%. Mr. Rey presented the SWM strategy of the city and the progress in promoting pilot compost programmes.

- SWM is one of the key environmental issues in the city.
- The municipality has set up relevant legal and institutional frameworks for SWM and aimed to reduce half of its waste to be disposed within next three years.
- To achieve its objectives, new initiatives and actions are being taken to build partnerships with relevant stakeholders, such as City Academic Network, the business and industry sector, religious sector, and international organisations.
- The city started its composting programme in 2004 with the City Agriculture Department and took initiatives to establish a vermin-composting programme in one community. The programme became a showcase project in the applicability of the technology, but was not scaled up for wider practice.
- In 2007, the KitaQ System Composting was introduced to Cebu City under the Kitakyushu Initiative for Clean Environment implemented by Kitakyushu City and IGES. Through a wider network of the urban poor, academia, parishes and businesses, the city aimed to introduce the KitaQ System Composting for half of its city population. In addition to that, composting centres will be introduced for markets and other larger organic waste producers.
- The compost product will be purchased by the city government for its greening programme and support for farmers in upland agricultural areas. For this, the city has

already allocated PHP 2.5 million, but the mechanism for the purchase has yet to be established.

- The success factors for community-based composting programmes are political support, public participation, and technical know-how.
- The main challenges are inadequate information concerning solid waste management, shortage of human resources, and budget constraints.

2.2.7. Kampar, Malaysia

➤ *Mr. Goh Seng Chee, Assistant Environmental Health Officer, Kampar District Council*

The total population in the Kampar District Council area was 101,183 people in 2010. Estimated total waste generation is 117 tons per day and waste collection coverage is 67%. According to the waste composition, 39% of waste is food waste and 60% of waste is generated by households. Mr. Goh presented the SWM strategy of Kampar District Council and its efforts to promote composting at the community level.

- According to the new SWM strategy of Kampar, the city aims to decrease landfills by 22% by 2020. It was developed under a JICA supported project with an original completion date in 2010, but the city has decided to try to complete this initiative by 2020 by promoting public awareness and establishing an effective recycling system to minimise the amount of waste.
- Currently, the recycling rate in Kampar is about 13% of total waste generated. Thirteen model schools, two community initiatives, 20 trainers, recycling network units in district offices, and an information network have already been established.
- The city has been promoting participation of communities, NGOs, and universities with international cooperation, such as JOCV.
- The composting programme started in 2010 and the Takakura baskets were distributed to 86 households on a trial basis. However, the programme identified some barriers such as a lack of knowledge, attitudes and skills, market for final products, low market value for compost, and the sensitive characteristics of compost content, especially for *halal* food or *haram* religious periods.
- The success factors for composting are waste segregation at source, pure organic materials, larger quantities, good quality and market value.

2.2.8. Sibiu, Malaysia

➤ *Mr. Yong Ing Chu, Assistant Secretary, Sibiu City*

Sibu City is located in central Sarawak. The area under the jurisdiction of Sibiu City is 129.5 sq. km with a population of 162,348 people in 2010. The key points of Mr. Yong's presentation are as follows:

- According to the waste composition, 49% of the waste generated is organic and can be used for composting.
- The community composting programme started in 2008, with pilot projects in two residential neighbourhoods and two secondary schools. Activities are mainly focused on awareness raising, demonstration projects, free compost bin distribution and follow-up inspection. Further, a community-based composting centre was established for market waste.
- With regard to community composting, JICA has assisted with solid waste

management projects in Sibuh municipality under the JICA Partnership Program.

- The KitaQ System Composting was introduced to the city in 2009 and 288 baskets have been distributed thus far. In order to promote this initiative, the municipality has enhanced monitoring and follow-up.
- Despite the efforts to promote composting, the scale is small in comparison with Surabaya.
- The municipality has been facing technical issues to ensure the sustainability of the composting initiative. The city has been trying to equip its residents with the appropriate knowledge and skills to encourage them to continue composting even if they have difficulties.

2.2.9. Nonthaburi, Thailand

- *Ms. Pornsri Kicham, Municipal Secretary, Nonthaburi City*

Nonthaburi City has an area of 38.9 sq. km and a population of 263,553 people (106,074 households) in 2010. Ms. Pornsri explained the environmental management and composting programmes in the city. Key points follow:

- Nonthaburi was one of the first cities to join the Kitakyushu Initiative Network in 2001.
- In 2002, the city started a pilot project on waste reduction through the promotion of waste separation and recycling with support from UNESCAP and IGES. As a result, the city has succeeded in achieving a 37% waste reduction within one year.
- Since then, the city has taken initiatives to implement one project per year with assistance from different agencies, such as the construction of a composting plant in 2002, implementation of infectious waste management in 2004, GPS vehicle monitoring system in 2005, night soil (human faeces) management in 2006, hazardous waste management in 2007, the establishment of a wastewater treatment plant at the municipal office in 2009, and PSP & EPS foam separation and solar cell in 2011.
- The only composting plant in Nonthaburi started operations in 2002 by applying Italian technologies with financial assistance from the Asia Urbs Programme. The capacity of the compost plant is five tons per day and uses market waste. The technology is called Entsorga Technology.
- KitaQ System Composting recently began operations in 2011, and faces difficulties in dissemination. This is one of the biggest reasons that Nonthaburi participated in the seminar.
- The municipality has realized that policy, small scale, simple techniques, team work and motivation are keys to success of the community-based composting programmes.

2.3. A Successful Application of KitaQ System Composting in Surabaya

In this session, participants had an opportunity to acquire both theoretical and practical knowledge on KitaQ System Composting and its evolution in Surabaya City. Further, participants visited one of the organic farming sites located in Wakamatsu (near J-POWER group/JPec) to get firsthand experience in utilising compost for organic farming in Japan.

2.3.1. How to Make Takakura Compost and Solve the Practical Problems when Using Compost

- *Mr. Koji Takakura, Deputy Director, Wakamatsu Environment Research Institute, J-*

POWER group/JPec

- *Ms. Sayaka Yaoya, Wakamatsu Environment Research Institute, J-POWER group/JPec*

Mr. Takakura and Ms. Yaoya explained to the participants about the basic methods of using the Takakura composting system and elaborated on how to solve the practical problems that emerge during the implementation of composting schemes. Key points from their presentation are as follows:

- Microorganisms, moisture control, and aerobic conditions are important elements for Takakura composting.
- Various microorganisms are used during the composting process. It cannot be finished using only one kind of microorganism. The priority of the microorganism changes according to the stage of composting. The most important point to remember is not to expect the natural proliferation of the microorganisms, but to adjust accordingly.
- Composting has three stages of transition.
- In the first stage, easily decomposable organic matters are quickly decomposed with useful microorganisms. Both good and bad microorganisms can be used in the easily decomposable organic materials. The large amounts of harmless moulds and bacillus in the compost should be increased by adding fermented food such as *Aspergillus oryzae* and lactic acid bacteria. This is important to prevent rot.
- In the second stage, the majority of a botanical organism, such as the vegetables, is fibered. To deal with this situation, actinomycetes are suitable for decomposition of cellulose and the hemi cellulose. *Actinomycetes* live in the hums.
- In the third stage, decomposition of the lignin contained in the plant, such as the vegetables, is slow. The basidiomycete, a mushroom, is suitable for resolution of lignin.
- Fermentation microorganisms and bacterium can be found in the region. Microorganisms that are related to the fermented food are effective. When the fermented food is unavailable, decomposed fallen leaves (hums) are very effective. It is not only effective for the composting, but also collecting microorganisms from the local area are good for matching the soil in the respective area.
- Aerobic decomposition is effective for composting and is quicker than anaerobic decomposition.
- Effective moisture conditions for composting are 40-60%. Microorganisms perform poorly when moisture is low. However, when moisture is too high, the microorganisms become oxygen-deficient and result in anaerobic decomposition and rot.
- The best C/N ratio of compost is 20.

2.3.2. Successful Implication of KitaQ System Composting in Municipal Solid Waste Management in Surabaya City

- *Ms. Ema Agustina, Department of Public Works and Spatial Planning, Surabaya, Indonesia*

Surabaya City, the second largest city in Indonesia, next to Jakarta, had a population of two million in 2010. It is the centre of development in East Indonesia and can be divided into 31 districts and 160 sub-districts for administrative purposes. As many other cities in developing Asia, Surabaya City faced tremendous challenges in managing solid waste. The total waste

has increased with population growth, economic development, urbanisation and new lifestyles. As a result, the city authority took initiatives to implement the new SWM strategy which is focused on reducing waste at its source and processing waste in the landfill by using environmentally friendly technologies. Ms. Ema explained how Surabaya has succeeded in reducing its waste generation by 30% especially through the introduction of community-based solid waste management and composting. In addition to her presentation, she used a short video to explain Surabaya's efforts in SWM and composting. Key points from her presentation are as follows:

- The municipality has been promoting community-based waste management programmes with community involvement in its management through 3R implementation. The basic concept of these community-based programmes is reducing waste at source, waste sorting (organic and non-organic waste) and proper waste treatment, such as organic waste processed into compost, recycling waste sold to scavengers or used to make recycled products. The remainder is sent to a sanitary landfill.
- The implementation structure of the community-based solid waste management programme is socialization to the community (city authority in partnership with NGOs), recruitment and training of cadres, distribution of cleaning tools (composter bin, Takakura composting baskets, cart, and establishing composting centres), involving communities, processing organic waste into compost, selling recyclable materials to scavengers or used for recycled products.
- Since 2002, the municipal authority distributed about 20,000 compost baskets to households and established 16 composting centres throughout the city.
- Further, the municipal authority took the initiative to motivate communities to create community-based SWM programmes by giving incentives to those communities that are willing to become involved (Green and Clean Campaign), as well as incentives to environmental carders through the national day award system in recognition of their service. At the same time, the city strictly enforced the laws and regulations for those that do not obey the rules.
- Surabaya's achievement in reducing waste generation is highly recognised at the international level. The city has received nine international awards so far.
- However, the municipality is still facing some issues, such as low awareness of waste disposal, generation of waste by hawkers and markets, increase of product waste, which cannot be reused, reduced, and recycled, and little knowledge on simple waste technology, which can create products with economic value.

2.3.3. Observation of Community Composting and Organic Farming

➤ *Ms. Sanae Yoshihara, Yoshihara Farm*

At the end of the session, participants visited Yoshihara Farm, an organic farm in Wakamatsu, Kitakyushu City and observed how compost was produced and how it is utilised in organic farming. Through communication with Ms. Yoshihara, owner of the farm, the participants explored the challenges and constraints in promoting composting and organic farming. Ms. Yoshihara explained that three important points need to be considered for organic farming:

- Organic farming is not only farming without using pesticides and fertilisers, it is also a way to enrich the earth from the food.
- Organic farming is a system to manage foods from soil to mouth.

- Organic farming is a system that circulates and sustains life.

Thursday, 30 June

2.4. Experiences in Establishing a Sustainable Material-Cycle Society in Kitakyushu City

This session was devoted to give participants some ideas about the national policy framework for the establishment of a Sound Material-Cycle Society in Japan and shared the experiences of Japanese cities in implementing this aim in collaboration with different stakeholders. Kitakyushu City shared its experiences in building an internationally recognised, environmentally leading city through the establishment of a sustainable material-cycle society. Following this, IGES made a presentation on the success of Surabaya case from an academic perspective and its replication in other Asian cities under the Kitakyushu Initiative. Further, IGES shared the findings of its recent study on the best practices of Japan in municipal solid waste and the 3Rs approach and announced its new initiative in establishing the environmental model cities programme in Asia with the Secretariat of ASEAN.

2.4.1. International Environmental Cooperation Strategies and Municipal Solid Waste Management in Kitakyushu City

- *Ms. Seiko Kubo, Deputy Director, Office for International Environmental Strategies, Kitakyushu City*

Kitakyushu City has a long history of tackling and recovering from environmental pollution. The city has been recognised as an environmental model city in and outside the country and has been exporting its environmental technologies and knowledge to many Asian countries. Ms. Kubo explained to the participants about the city's environmental strategies, highlighted its experiences in building a Sound Material-Cycle Society based on the national policy framework and discussed the city's waste administration, basic plan for SWM, waste separation and collection, promotion of eco-town for waste recycling and final treatment methods including the new initiative to promote composting for kitchen waste at the household level. Key points from her presentation are as follows:

Municipal Waste Management

- According to the Waste Disposal and Public Cleansing Law, waste refers to refuse, bulky refuse, ashes, sludge, excreta, waste oil, waste acid and alkali, carcasses and other filthy and unnecessary matter in solid or liquid state.
- Municipal wastes have been treated by the local government, while industrial waste is treated by businesses directly.
- The legal framework has been strategically set up to establish a recycling-based society and the role assignment between parties is clearly demarcated.
- The Extended Producer Responsibility aims to control the generation of waste by holding producers responsible not only for the production and delivery of products, but also for the disposal of the products after use.
- The development of strategies for waste treatment in Kitakyushu City can be divided into three stage: Stage 1—Disposal oriented process (before 1993), Stage 2—Recycling-oriented process (1993-2000) and Stage 3—Environmentally-sound process

(after 2000).

- The basic plan of municipal waste treatment in Kitakyushu City was formulated in 2001 and aimed to increase in the recycling rate from 13% to 25% within 10 years.
- To achieve this target, the city developed a basic view on the sorting and recycling of wastes, such as raising awareness and understanding of residents, establishment of recycling technology, demand for recycled products, and efficiency including cost performance.
- Local efforts for recycling domestic garbage were further encouraged by subsidising collection by local volunteer organisations and promoting household composting.

Green Growth Strategies

- The Kitakyushu Green Frontier Plan includes the city's strategy for the establishment of a low carbon economy. According to the plan, the city aims to establish a sustainable society with prosperity to be shared through generations by reducing CO₂ to protect the environment, achieve happiness, health, a comfortable and convenient life while also simultaneously pursuing the achievement of sustainable economic development. The city further aimed to achieve a CO₂ reduction target of 40% of economic growth in 2050, including 50% within the city and 150% in Asia.
- Kitakyushu's five development strategies for sustainable development are urban development, industrial development, human development, social development and sustainable development in Asia.
- To achieve a low carbon economy, the smart usage of industrial potential energy has been encouraged. As a part of this initiative, the Zero Carbon Emission Town Development (Jono Area) has been formulated.
- The Kitakyushu Eco Premium and Eco-Town has been established to facilitate resource circulation and eco-industries.
- Kitakyushu has been involved in developing win-win relationships in Asia through environmental cooperation to mitigate environmental pollution and realise the creation of a low carbon economy.
- The Asian Partnership Programme towards shared prosperity has trained 6,207 participants from 138 countries and dispatched 160 experts to promote environmental projects in Asia.
- The Kitakyushu Initiative, a city-to-city environmental cooperation network of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), was established to share good practices in urban environmental management.
- The Kitakyushu Asian Centre for Low Carbon Society was established in 2010 aiming to promote carbon reduction and vitalise economies in Asia.
- Kitakyushu's low carbon technologies are transferred to realise the creation of a low carbon economy in Asia.

2.4.2. Kitakyushu Initiative and Replication of Surabaya Composting Model in Other Asian Cities

➤ *Mr. Toshizo Maeda, Acting Director, IGES Kitakyushu Urban Centre*

The Kitakyushu Initiative is a programme of ESCAP, which was adopted at the 4th Ministerial Conference on Environment and Development in Asia and the Pacific (MCED4) held in Kitakyushu City, Japan. Its main objective is to improve the urban environment and

human health by promoting environmental actions at the local level. IGES Kitakyushu Urban Centre served as the Secretariat of the Kitakyushu Initiative Network during its implementation and facilitated the replication of good practices as well as capacity-building programmes for integrated urban environmental management in Asia. The replication of Surabaya's community-based solid waste management and composting model in many other cities utilising city-to-city cooperation and inter-city networks was a successful dissemination of good practices under the Kitakyushu Initiative in Asia. Mr. Maeda briefly presented the experiences of the Kitakyushu Initiative and replication of the Surabaya composting model in other Asian cities. Key points from the presentation:

- Summarising the presentations made by the participant cities in the first day, Mr. Maeda emphasised that the total amount of wastes in all participating cities has continued to increase due to the economic growth. This shows that immediate attention is required to develop strategies for waste reduction in these cities.
- Surabaya, the second largest city in Indonesia has already proven that it can achieve substantial waste reduction (20% within four years and 30% in five years) by promoting composting at household and community levels. It was evident that one ton of composting can be reduced to an additional 1-2 tons of dry waste through the reuse and recycling of waste.
- This results in not only waste reduction, but also social and environmental benefits, such as better household environments, greener and cleaner streets, environmental education, employment opportunities, promotion of recycling, production of herbs and vegetables and income from the sales of compost products.
- It was important to build partnerships among different stakeholders for the successful implementation of the composting programmes. Surabaya's model compost project started from one community. It was then scaled up by the city government with the establishment of composting centres and distribution of compost baskets. The programme was further replicated by organising community clean-up campaigns in cooperation with NGOs, the private sector and the media.
- Selecting a suitable composting method was another successful factor of the Surabaya model. KitaQ System Composting is low-cost, low-tech, easy to operate, uses only local materials, has no offensive smell, no leachate, is fast, requires less space required and results in good quality compost.
- Financial analysis of composting in Surabaya has shown that promotion of composting and waste segregation required only 1-2% of the total SWM cost of the city and a reduction of USD 48,000 can be achieved per year by reducing waste.
- Based on the experiences of Surabaya City, Sibuh City derived some recommendations for its aim to reduce waste generation by 10% to 20% in a period of three years. These recommendations included the construction of a market waste composting centre (processes two tons per day), four community composting centres (processes two tons per day), distribution of compost baskets to 1,000 households, organisation of a clean-up campaign, establishment of compost purchasing scheme and technical assistance from KITA, Kitakyushu City, IGES and JICA.
- The support from the national and local governments are important, especially at the initial stage of SWM, and the roles of inter-mediators, such as NGOs and community groups, are essential for replicating and scaling up good practices. Replication from city-to-city can be facilitated by external agencies.

2.4.3. Best Practices of Japan: Municipal Solid Waste and the 3R Approach

➤ *Dr. D.G.J.Premakumara, Policy Researcher, IGES, Kitakyushu Urban Centre*

Japan had moved towards the principle of sustainable development as the basis of its society and to establish the Sound Material-Cycle Society in 2000. This law aims to promote sustainable societies where the consumption of natural resources and environmental loads are minimised through shared responsibility among authorities, businesses and residents. It calls for preventing waste generation (reduce), promoting the cyclical use of products (reuse, recycling) and ensuring proper waste disposal. The Ministry of Environment Japan (MOEJ) formulated the fundamental plan for establishing a Sound Material-Cycle Society (2003, 2008), which outlined the practical steps that should be taken to reach the goal of becoming a Sound Material-Cycle Society.

Under the above legislative foundation provided by the central government, local governments in Japan have enacted measures to achieve targets through the cooperation of different stakeholders, especially through the encouragement of community participation. Dr. Premakumara presented the key findings of some case studies that focused on the efforts being taken across Japan to establish a more resource efficient society, including both large cities (Yokohama, Nagoya, Kitakyushu) and small cities (Minamata, Oki Town). It gave the participants some idea about the implementation processes, innovative actions and major achievements in each case study city. A key message was that a 20%-40% waste reduction was achieved by each city promoting waste separation, collection and recycling with its residents. This requires:

- strong leadership and commitment of the local government (both political and responsible agencies),
- a joint vision generated through active involvement of key stakeholders, including local authority, civil society, business sector (formal and informal) and academics,
- establishing a clear definition and classification rules and proper sorting, collection and treatment mechanism based on local conditions,
- increasing public awareness on new waste separation and collection systems,
- promoting partnership among different stakeholders in the city, while facilitating their own innovative activities,
- establishing recycling stations to convert the waste into resources after they are collected, and
- no high-end inputs, but only continuous communication and enabling environment.

2.5. Capacity Development in Solid Waste Management with Special Reference to the Introduction of KitaQ System Composting

➤ *Overall facilitator: Dr. Yoshida Mitsuo, Senior Advisor (Environment), JICA*

➤ *Reporter: Dr. D.G.J.Premakumara, Policy Researcher, IGES*

Surabaya's achievement exemplifies the reduction of a large amount of waste in a short period of time with a limited budget by establishing an Integrated Sustainable Waste Management System, which is based in institutional, social, environmental, political, technical and financial aspects. It also emphasises the critical role of involving various stakeholders, covering waste prevention and resource recovery, including interactions with other urban systems and promoting and integrating different habitat scales from household,

neighbourhood to city. It was not only a technical matter in introducing the KitaQ System Composting. This requires providing support for capacity development of the beneficiary city, instead of simple technical transfer.

2.5.1. Introductory Session and Visioning Exercise

➤ *Dr. Yoshida Mitsuo, Senior Advisor (Environment), JICA*

Dr. Yoshida gave an introductory lecture on capacity development in solid waste management with special reference to the KitaQ System Composting. His presentation included the following topics, including the reasons why capacity is required for solid waste management and composting, the concept of capacity development, different levels in capacity development and components of capacity at each of these levels. He emphasised that the quality of waste collection/transportation service and final disposal is enhanced in line with economic growth in cities. However, the SWM service qualities are widely diversified even in the same level of economic growth. Economic growth is not only a factor for qualified SWM. Many other factors including capacity development must be considered. He then briefly explained the flowchart of composting in solid waste management and necessary factors for capacity development at each level including waste generation, collection transportation, composting processes and product utilisation. Further, he explained the comprehensive feature of capacity development in the organisational aspect for composting and the enabling environment that is required.

2.5.2. Discussion Session 1: Identify the Necessary Capacities for Promotion of Composting in Municipal Solid Waste Management

After the introductory presentation of Dr. Yoshida, participants were broken into four discussion groups, including organisation/institution for composting, community-based approach, marketing of compost and financial sustainability and public awareness. These groups were divided based on the successful factors and key challenges identified by the participants in their city presentations in the first day of the seminar. Participants were then asked to choose a group on their own considering the situation and most relevance for their cities. The three participants came from Balikpapan City were requested to join with three different groups to provide more variation within the discussions. Participants from the host country were able to select the group of their choosing.

The participants were then asked to select a group leader to present the group findings voluntarily in the presentation session at the end of the day. Each group was given a summary sheet of key points identified under the each theme from the city presentations and asked them to consider these points during their discussions. Within each group, participants debated and identified the necessary capacities required at different levels and promoting/inhibiting factors to achieve them. Each group has a group facilitator to make the discussion more effective by creating interaction and exchange between the group members. The breakout groups had the following composition:

	Group 1: Organisation/institution for composting	Group2: Community- based approach	Group 3: Marketing/financial sustainability	Group 4: Public awareness
<i>Group Leader</i>	Cebu	Sibu	Balikpapan	Nonthaburi
<i>Group Member</i>	Balikpapan	Kampar Palembang Balikpapan IGES	Makassar Semarang IGES	Surabaya Tarakan
<i>Group Facilitator</i>	Mr. Maeda Toshizou, IGES	Ms. Tamura Eriko, JICA	Mr. Yao Kazuya, JICA	Ms. Murakami Emiko, IGES

2.5.3. Introduction of Citizen Participation in Promoting 3R Activities and Observation of Community Composting Programme in Ano Community Centre

➤ *Ms. Nobuko Uchiyama, Manager, Ano Community Centre*

Drawing upon the lessons learned by the Great Hanshin-Awaji Earthquake in 1995, Kitakyushu City has taken actions to establish the number of community halls (social education facilities) in primary school districts and renamed them as community centres which serve as a place for voluntary activities of the respective community. Ms. Uchiyama explained about public participation in promoting 3R activities at Ano Community Centre. In addition, the participants had a chance to attend the practical observation in a Training of Trainers programme in the community centre to promote composting at the household level. Key points from Ms. Uchiyama's presentation are as follows:

- Ano Community Centre was established with subsidies from Kitakyushu city to support social welfare for the local community and encourage the voluntarily activities of the residents.
- The centre has been involved in a wide range of activities, such as community actions, continuing education, welfare, eco-friendly recycling, youth development, child-raising support, health care and fitness, disaster and crime prevention.
- The Ano community centre is one of the most active community centres in the city in promoting recycling activities. Nine categories of resource materials are covered all year around. In addition, a recycling bazaar for second-hand books, daily utensils and clothes is organised in summer holidays and cultural festivals.
- The community centre has set up an environmental working group and has been organising composting seminars since January 2011 aiming to minimise kitchen waste and produce good quality compost for the soil of vegetable gardens.
- It was focused on promoting activities that can be involved by all sections of the society, such as children, adult and elderly people.

2.5.4. Group Presentation: Identify the Necessary Capacities for Promotion of Composting in Municipal Solid Waste Management

After participants returned from Ano Community Centre, they further engaged in group discussions and then returned to the plenary session to share the results of their discussions. The group leaders presented their discussion outputs. Others were given an opportunity to add or make any comments after the each presentation. These were considered in putting together the final list as below:

Group 1 – Organisation/institution for composting

➤ *Group Presenter: Mr. Pacres Jose Rey, Cebu City*

<i>Promotion Factors</i>		<i>Inhabiting Factors (Obstacles)</i>	
Strong support from the Mayor Available knowledge and experience of composting in the city Existing SWM programmes in the schools Existing network with other stakeholders, such as academic, civil society, business sector and international agencies Existing SWM laws and ordinances Trained staff available for composting promotion		Weak support from other departments Limited budget and financial resources Inadequate personal staff and equipment Lack of incentives and enforcements	
<i>Capacity Level</i>		<i>Description of Capacities</i>	
Individual		Better communication skills for leaders Improve motivation and moral of staff Education and skill development programmes for staff in each level	
Organisational		Develop briefing materials about SWM Measures for additional funding Sufficient staff and equipment Reward system within the organisation Education of staff management	
Institutional & Societal		Network between decision makers and other staff Public awareness campaign Coordination among different departments New regulations, laws and by-laws for introducing waste separation, collection and composting Strong enforcement of existing laws Reward system	

Group 2 – Community-based initiatives

➤ **Group Presenter: Mr. Yong Ing Chu, Sibü City**

Promotion Factors	Inhabiting Factors (Obstacles)
Existing community-based composting centers Available partnership with other stakeholders Strong community leaders Existing community-based organisations and social capital Existing networks with international agencies, like JICA Environmental awareness among residents	Low education among community members Low-priority of SWM for residents Misconception that SWM is the responsibility of the local authority Lack of law enforcement Lack of human resources Weak network among people within the community as well as outside community Lack of budget allocation for community-based initiatives No incentives Lack of commitments by both residents and authorities Cultural differences Political influence at community level Lack of awareness
Capacity Level	Description of Capacities
Individual	Motivation for cadres Training courses, seminars on SWM Communication skills
Organisational	Integrated SWM system Coordination between stakeholders Gender participation Waste bank programme Community centres and community-based organisations Strong leadership at community level Clear role and responsibilities for community leaders 3R programmes at community level Training on composting methods Strengthened networks
Institutional & Societal	Local regulations Incentives and enforcements Private sector partnership and CSR Technical guidelines Strong political will Integrated environmental management programmes Policy and guidelines External funding from donors Partnership with different stakeholders

Group 3 – Marketing and economic sustainability

➤ **Group Presenter: Mr. Arie Soetjadi, Balikpapan City**

Promotion Factors	Inhabiting Factors (Obstacles)
Promotion campaign National standards for composting are set Cost-benefits analysis	Less demand Subsidy provided for chemical fertiliser Lack of regulation No agricultural functions in the city
Capacity Level	Description of Capacities
Individual	Knowledge and coordination skills of cadres Cost-benefit analysis skills of head of official Fostering knowledge of facilitation to strengthen linkages with communities
Organizational	Advertising and marketing by involving other stakeholders
Institutional & Societal	Standard procedure Strengthening collaboration between different stakeholders, especially with private sector ventures Raise awareness for CSR Political will and support

Group 4 – Public Awareness

➤ **Group Presenter: Ms. Pornsri Kicham, Nonthaburi City**

Promotion Factors	Inhabiting Factors (Obstacles)
Existing public awareness campaigns Organizes seminars for socialisation Good education Demonstration Participation of stakeholders Good cooperation Incentives Competition Reward and punishment system are available Documentation and sharing of best practices	Culture differences to achieve consensus People mindset Lack of responsibility Lack of supportive policies, regulations and laws Economic disparities
Capacity Level	Description of Capacities
Individual	Knowledge, attitude, individual skills Accumulate experiences
Organizational	Seminars planning and implementation Infrastructure (building) Technology Database/information Build networking
Institutional & Societal	Local regulations, environmental permit and laws Education programme for residents through media Educate local leaders to guide small groups for one direction

Friday 01 July

2.5.5. Site Visit to Bin/Can Recycling Centre in Honjo

There are two facilities in the Kitakyushu City for can and glass bottle recycling, where waste is separated into cans, glass bottles, plastic bottles, paper containers (milk cartons) and plastic trays for sale. In the morning of Day 3, the participants visited Honjo recycling centre and observed its functions. This centre was built for two objectives with subsidies from Kitakyushu City: the promotion of recycling and to guarantee jobs for handicapped people (fifteen handicapped workers are employed at the centre). The separated waste is sent to Eco-Town for recycling.

2.5.6. Discussion Session 2: Identify Strategic Actions for Composting Model Cities in Asia

Participants were once again divided into four groups to discuss the actions needed to achieve the strategies identified in the previous session. The group composition was primarily the same as the previous session. Dr. Premakumara then presented the draft actions, which was identified by him after a brainstorming session with Dr. Yoshida and key members of the coordination committee, including JICA, IGES, Kitakyushu City, KITA and Mr. Yao from JICA, and was also based on the group findings of the previous session. Following this, there were discussions within each group about the list and each group was asked to share their ideas or comments. There were further discussions before finalising the list of actions and other groups are also provided opportunity for additional points. At the end of the session, the following list of actions were identified as the strategic actions to overcome the key challenges cities are facing in implementing community-based composting programmes in Asia.

Group 1: Marketing

Challenges/Issues

- Insufficient market demand for composting
- Scepticism and lack of awareness on organic fertiliser
- Competition from chemical fertilisers
- Far distance to market (farmers)
- Poor quality

Suggested Solutions/Actions

Create and sustain a market for compost

- Develop an appropriate marketing strategy
- Prepare a demand map and business plan based on production capacity
- Set-up demonstration projects and offer free samples
- Integrated with existing markets and distribution networks
- Use of compost by local government for its city greening and parks
- Promote new life-styles on organic farming
- Offer support to composters conceptually and financially that is accessible, applicable and consistent

- Shift subsidies towards organic fertiliser
- Use compost for soil rehabilitation
- MoU among local authorities

Ensure quality control

- Separate waste at source as much as possible
- Collect and contain industrial waste stream separately from street sweeping waste, market waste and household waste
- Introduce and support waste segregation at the household level into organic and non-organic
- Develop national/local standards for compost
- Establish national/local certification system for compost
- Carry-out research and development on compost quality in cooperation with academic and research institutes
- Design and implement training programmes on compost quality control

Regulation

- Enforcement for officers to buy compost
- Spatial planning (e.g. building parks)
- Eliminate subsidy for chemical fertiliser and shift to compost

Group 2: Public Awareness

Challenges/Issues

- Community lacks commitments
- Lack of awareness, understanding and enthusiasm

Suggested Solutions/Actions

Generate awareness, understanding and enthusiasm

- Design and implementation of information, education and communication programmes with assistance of CBOs, NGOs and others
- Explain and promote the economic, social and environmental benefits of community composting schemes
- Select appropriate organisational approaches for composting schemes based on the level of community capacity
- Integrate all stakeholders into planning, design and implementation and marketing of a composting programme
- Establish an award system to motivate public participation for community composting activities
- Establish partnerships with the private sector, mass media, and academic institutions in designing and implementing socialisation programmes and award systems
- Create community rules and law enforcement for ones who not obey the schemes
- Social punishment for non-cooperative body

Group 3: Design of Community-based Composting Schemes

Challenges/Issues

- Insufficient knowledge and technical expertise
- Trepidation prevents those yet to acquire the necessary skills from initiating compost schemes.
- Those with limited knowledge produce low-quality compost that is less marketable and could be contaminated.
- Lack of seed capitals for infrastructure development (land cost, building cost, and other equipment necessary)
- Cost for operational and maintenance

Suggested Solutions/Actions

Selection of appropriate approach

- Appropriate composting approach (household basket/backyard composting or community composting centre) and appropriate composting method (Takakura, Windrow, box or in-vessel) need to be selected taking into account technical, financial, socio-cultural and institutional capacity.
- Select appropriate sites for community composting centres
- Support of community leader (opinion leader)

Development and design of collection system

- Assess the target community interest and land availability for construction of community composting centres
- Collect possible data on the solid waste generation in the community, its composition and existing conditions of the service
- Select the appropriate waste collection system
- Promote waste separation at household level
- Organise and introduce fee collection
- Integrated solid waste management strategy

Community participation and mobilisation for composting programme

- Creating networks between competent composters (public organisations, private entrepreneurs and NGOs) and those institutions and individuals eager to learn more can vastly improve the quality and quantity of compost production.

Operation and maintaining a composting programme

- Operation and monitoring
- Trouble shooting
- Control the quality

Group 4: Organisational/Institutional

Challenges/Issues

- Lack of appropriate legal framework
- Lack of clear vision and strategic plans
- Lack of coordination among staff in the same department and also different departments and sections

- Lack of coordination between other stakeholders
- Existing procedures have limitations
- Lack of skills and capacities
- Political influence

Suggested Solutions/Actions

Developing strategic plans

- Collect baseline data
- Prepare an integrated plan showing clear vision with active participation of different stakeholders
- Establish appropriate legal framework
- Allocate sufficient budget
- Create coordinating system
- Invite different stakeholders to coordinating, monitoring committees
- Establish training programmes
- Create network with international agencies
- Facilities and equipment
- Intellectual asset
- Resource centre (e.g. data collection, information sharing)
- Commitment of the staff for implementation
- National policy and strategy to support compost promotion

2.5.7. Discussion Session 3 – Identify Follow-up Actions

- *Facilitator: Dr. Yoshida Mitsuo, Senior Advisor (Environment), JICA*
- *Reporter: Mr., Yao Kazuya, Associate Expert, Global Environmental Department, JICA*

Finally, participants were given an opportunity to identify and present some follow-up actions after their return based on the experiences gained through attending the seminar. They were advised not to list up long list of dreams of actions and asked to focus on more practical and easy to implement within their regular work responsibilities. Participants then came to plenary and shared the list of actions to work on. Further, key members of the organising committee also shared their views and possible opportunities for follow-up action. The lists of recommended actions are as follows:

Balikpapan

- Establish regulation for marketing compost
- Establish special mechanism for promoting composting in the municipal office
- Initiate collaboration with mining companies for marketing compost
- Consider the importance of promoting gardening and parks in spatial planning
- Campaign for the mayor to promote compost

Makassar

- Obtain support of the mayor to establish regulations for composting
- Establish composting centres in district and sub district
- Promote household composting
- Establish campaigns for the communities to promote

- Collaborate with private sector, university, NGO and schools

Palembang

- Continue on-going activities in the area of composting (environmental cadre in the community, eco-community)
- Strengthen staff capacity to support community-based programmes
- Initiative to collaborate, network and lobby with other stakeholders (private sector, farms, NGOs, etc.)

Semarang

- Establish compost centres in every sub-district
- Collaboration and getting strong commitment from every stakeholder for implementation
- Establish regulation to encourage participation of other stakeholders

Tarakan

- Improve commitment and effort on composting and community-based SWM (five community-based solid waste management projects)
- Promote waste separation at household level
- Socialization and promotion of composting at the community-level (especially schools, women groups, etc.)
- Develop compost quality standard for local government to promote use in farming
- Improve partnership with other stakeholders (media, academic bodies, etc.)

Cebu

- Publish manual of KitaQ System Composting and centralised windrow composting
- Prepare the next year budget for compost activities (500,000 pesos →double in 2011)
- Modification of 2011 budget for community-based composting

Kampar

- Establish compost centre in the market
- Replication of household composting to two new communities
- Implement training of trainers programme (university and school students)
- Networking and dissemination of information in 13 local authorities

Sibu

- Management of existing compost centre by collaborating with other stakeholders (e.g. private company)
- Replication of KitaQ System Composting in one more community
- Share experience with neighbouring cities

Nonthaburi

- Start a pilot project for KitaQ System Composting
- Prepare education, seminars, communities, budget, leaflets, schools, city-produced seed compost
- Take action to decrease the use of chemical fertiliser in the municipality (e.g. public parks)

Surabaya

- Moving towards integrated environmental planning (Not only waste management)
- Continue and improve community activities on composting
- Introduce more community compost centres (involvement of shopping centres)
- Encourage recycling business

Key members of the organising team shared the possible support that could be provided from their side. Mr. Takakura recommended that the best way to recycle kitchen waste is to make compost. It can rehabilitate degraded soil and has a lot of advantages for city authorities. However, the successful implementation of KitaQ System Composting requires initiatives by local authorities, collaboration with residents, private companies through Corporate Social Responsibility (CSR) and the development of human resources.

Mr. Mitoma from Kitakyushu City indicated that the city has already take actions to inform the people in Kitakyushu City about this seminar through mass media and hope to collaborate with participating cities not only to promote composting, but also in other SWM activities, such Eco-Town development.

Representing KITA, Mr. Nagaishi said it will take action to follow-up with Kitakyushu City and IGES. Ms. Morimoto from KITA also emphasised that environmental education for young people is a very effective tool to educate adults and that real, hands-on experience for children is very important (e.g. site visit for children to see environmental facilities).

Dr. Premakumara from IGES pointed that as a research institution, IGES would like to work closely with JICA, Kitakyushu City and KITA in the following actions, such as further studies on the success of the Surabaya case study and the development of training materials (manuals, video documentary, and case study series) to share this information and experience with other cities, assist cities in preparing integrated solid waste management plans based on composting and 3Rs, document and share the experiences of Japanese cities in promoting 3Rs, conduct policy dialogues to promote community-based composting in SWM, and design and implement training and capacity building programmes.

Ms. Tamura, JICA Kyushu, thanked the all participant cities for their commitment and active participation throughout the seminar. The seminar was very successful in identifying opportunities to share experiences and promote activities on composting. Further, JICA had a great opportunity to learn from the practical experiences of the cities, which will help in developing training/capacity building materials and new training programmes to support composting in SWM. She also indicated JICA's interest in continuing this type of seminars in the future.

2.6. Wrap-up and Closing Remarks

- *Mr. Keiichi Muraoka, Director General, JICA Kyushu*
- *Mr. Hideo Naito, Executive Director, Office for International Environmental Strategies, Environmental Bureau, Kitakyushu City*
- *Ms. Pornsri Kicham, Municipal Secretary, Nonthaburi, Thailand*

The three-day seminar concluded with closing remarks from Mr. Keiichi Muraoka, Director General of JICA Kyushu. He thanked all participants and emphasised his great expectations

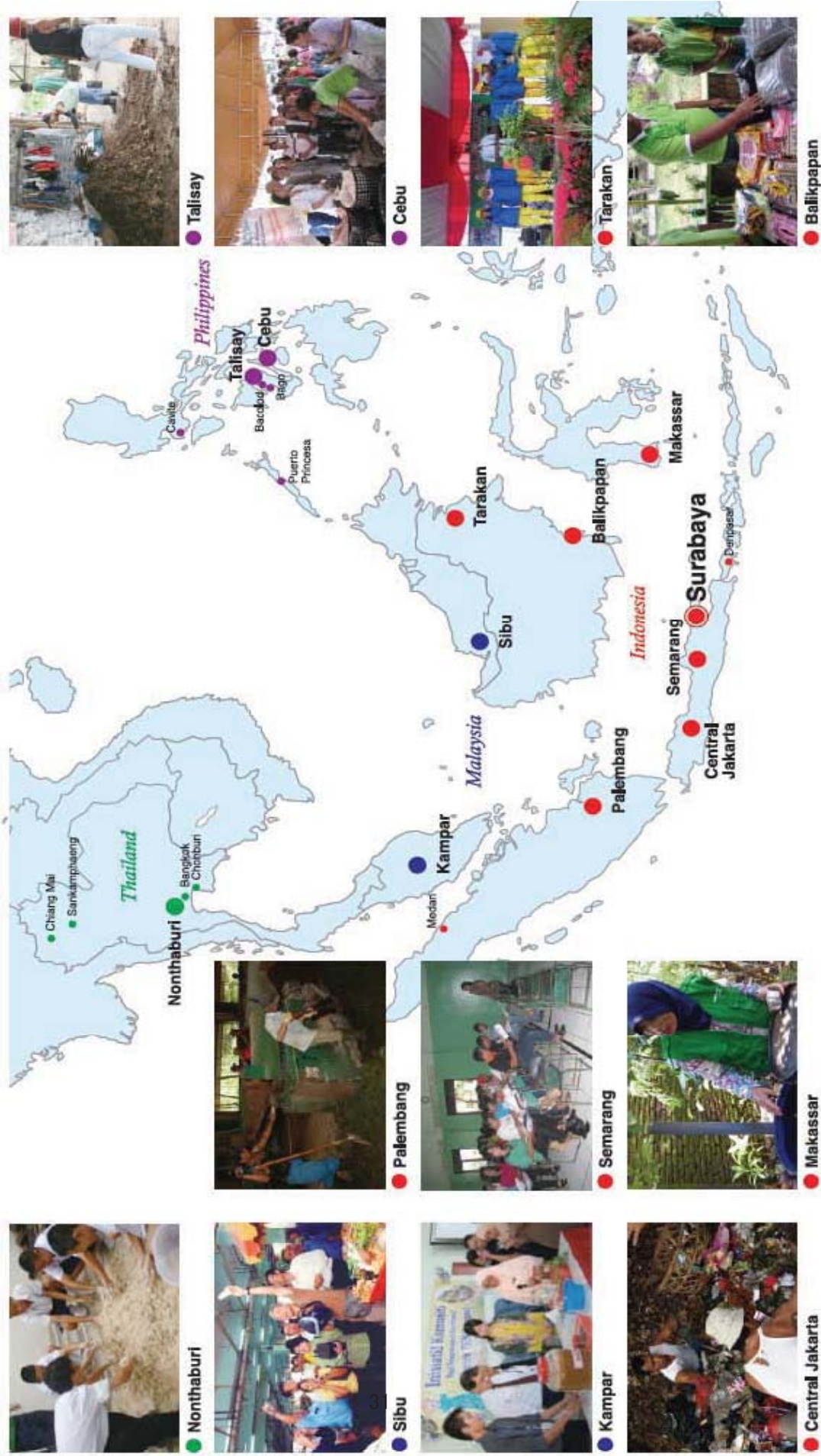
of the outcomes of the seminar. The information shared and lessons learned during last three days of the seminar will benefit the new initiatives of all participating cities. Specially, action plans formulated by respective cities will be effective in enforcing sustainable SWM. Strengthening the local administration in developing countries is one of the JICA missions and this seminar is one of themes.

Mr. Hideo Naito, Executive Director of Office for International Environmental Strategies, Environmental Bureau, Kitakyushu City extended his the gratitude to the participating cities for their attendance and active participation in the seminar. He spotlighted Kitakyushu's work on the composting project in Surabaya and other Asian cities with Mr. Takakura, J-POWER group/JPec, since 2002. KitaQ System Composting has great potential for replication, especially in Asian cities. Making adjustments with local conditions is the key to dissemination of KitaQ System Composting. Mr. Naito concluded his remarks saying that Kitakyushu City welcomes all contact and inquires from respective cities.

In response to the above remarks, Ms. Pornsri Kitcham, Municipal Secretary of Nonthaburi City in Thailand, expressed her appreciation to Kitakyushu City, JICA, IGES and all organisations on behalf of all the delegates for the organisation of the seminar. Further, she expressed her expectation that all participating cities would implement action plans making full use of the knowledge, skills, and lessons learned in this seminar and noted that there is a need for mechanisms to make many of the actions coming out from the seminar and group discussions a reality.

Map of Cities

Map of Cities



Source: Kitakyushu City, 2011

Concept Note

A Networking Seminar on KitaQ System Composting in Asia

Concept Note

1. Background:

Composting of organic waste is considered as one of the effective measures for waste reduction and environmental awareness building among communities, especially in developing countries, where organic waste accounts for more than half of the total amount of waste. The Japan International Cooperation Agency, JICA, also applies the technique in various projects to promote 3R (reduce, reuse, recycle) around the world.

KitaQ system, a composting method invented by JPec Co., Ltd has successfully reduced the amount of waste in Surabaya City in Indonesia by 30% since 2004 through an organic waste composting project implemented by Kitakyushu City, involving more than 20,000 households in the project. Utilizing its international environmental city network, Kitakyushu City, Kitakyushu International Techno-Cooperative Association (KITA) and the Institute for Global Environmental Strategies (IGES) has worked together in introducing KitaQ system to cities in Asian countries. Now the city owns various experience and knowhow to promote composting of organic waste and community participation in waste management.

JICA Kyushu also has introduced KitaQ system in its projects for training of overseas participants and Japan Overseas Cooperation Volunteers (JOCVs).

In this networking seminar, related cities and organizations are invited to share their successful experiences and challenges, thus to enforce their relationships, and discuss about further cooperation.

2. Objectives:

- (1) Assessing good practices and challenges in waste management by cities from Indonesia, the Philippines, Malaysia and Thailand to make good use of the experiences in related projects.
- (2) Developing network among related cities and organizations which are promoting composting of organic waste for further cooperation in the future.
- (3) Assessing needs to develop an educational material of KitaQ system.

3. Date:

June 28 – July 2, 2011 (Main program: June 29 – July 1, 2011)

4. Venue:

JICA, Kyushu International Centre (KIC), Kitakyushu City, Japan

5. Participants:

The participants include local government representatives from the following cities:

- Indonesia (Balikpapan, Makassar, Palembang, Semarang, Surabaya, Tarakan)
- Philippines (Cebu, Talisay)
- Malaysia (Sibu, Kampar)
- Thailand (Nonthaburi)

6. Programme Outline:

Sponsor: JICA Kyushu

Cosponsor: Kitakyushu City, KITA, IGES

Day 1 – 28 June	
	<i>Arrival in Japan</i>
15:00 – 15:30 15:30 – 16:00	<ul style="list-style-type: none"> • A courtesy visit to Kitakyushu city office • Visit to Environmental Museum in Yahata
Day 2 – 29 June	
09:00 – 10:15	<i>Opening Session</i>
09:00 - 09:15	<ul style="list-style-type: none"> • Welcoming Remarks <ul style="list-style-type: none"> ➢ Mr. Keiichi Muraoka, Director general, JICA, KIC ➢ Mr. Hiroshi Imanaga, Director general, Environmental Bureau, Kitakyushu City
09:15 – 09:30	<ul style="list-style-type: none"> • Introduction to seminar and JICA Training Activities in KIC, Mr. Akihiko Kodama, Training Programme Division, JICA, KIC
09:30 – 12:30	<ul style="list-style-type: none"> • Lessons learned: solid waste management and composting in participant cities Presentations by the participant cities (20 minutes for each presentation)
12:30 – 13:30	<i>Lunch Break</i>
13:30 – 14:30	<ul style="list-style-type: none"> • Lessons learned: solid waste management and composting in participant cities Presentations by the participant cities (20 minutes for each presentation)
14:30 – 15:00	<i>Moving to Jpec, Wakamatsu</i>
15:00 – 16:10	<ul style="list-style-type: none"> • Demonstration and discussions on how to make a Takakura Composting and how to solve the practical problems in using compost. <ul style="list-style-type: none"> ➢ Mr. Koji Takakura, Deputy Director, Wakamatsu Environment Research Institute ➢ Ms. Sayaka Yaoya, Wakamatsu Environment Research Institute
16:10 – 16:50	<ul style="list-style-type: none"> • Successful practice of composting in municipal solid waste management in Surabaya City <ul style="list-style-type: none"> ➢ Presentation by the representatives from Surabaya City (30 minutes) ➢ Q&A (10 minutes)
16:50 – 17:10	<i>Moving to Yoshihara Farm</i>
17:10 – 18:10	<ul style="list-style-type: none"> • Observation on community composting and organic farming Guide by Ms. Sanae Yoshihara, Yoshihara farm
Day 3 – 30 June	
09:00 – 10:15	<i>Experience's in Promoting Sustainable Material-Cycle Society in Kitakyushu City</i>
09:00 – 10:00	<ul style="list-style-type: none"> • International Environmental Cooperation Strategies and Municipal Solid Waste Management in Kitakyushu City Ms. Seiko Kubo, Deputy Director, Office for International Environmental Strategies, Kitakyushu City
10:00 – 10:20	<ul style="list-style-type: none"> • Kitakyushu Initiative and replication of Surabaya composting model in other Asian cities Mr. Toshizo Maeda, Act. Director, IGES-KUC
10:20 – 10:30	<i>Tea Break</i>
10:30 – 12:00	<ul style="list-style-type: none"> ➢ Capacity development for Municipal Solid Waste Management and Composting in Asia Dr. Mitsuo Yoshida, Senior Advisor (Environment), JICA

12:00 – 13:00	Lunch Break
13:00 – 13:30	Moving to Ano Community Center
13:30 – 14:00	<ul style="list-style-type: none"> • Introduction of citizen participation in promoting 3R activities Ms. Nobuko Uchiyama, Manager, Ano Community Center
14:00 – 16:00	<ul style="list-style-type: none"> • Observation of community composting programme in Ano Community Center.
16:00 – 16:30	Moving to JICA, KIC
16:30 – 18:00	<ul style="list-style-type: none"> • Discussions on successful factors, constraints, and challenges in promoting composting in municipal solid waste management in participant cities Facilitator: Dr. Mitsuo Yoshida, Senior Advisor (Environment), JICA Assistant: Dr. D.G.J.Premakumara, IGES-KUC
18:00 – 20:00	Reception at JICA, KIC
Day 4 – 01 July	
08:00 – 10:30 10:30 – 12:00	Site Visit: bin/can recycling center Group Discussions Facilitator: Prof. Mitsuo Yoshida, Senior Advisor (Environment), JICA Assistant: Dr. D.G.J.Premakumara, IGES-KUC
	<ul style="list-style-type: none"> • Preparation on follow-up action plans and implementation strategies for composting model cities programme.
12:00 – 13:00	Lunch Break
13:00 – 16:45	<ul style="list-style-type: none"> • Discussions on identifying effective mechanisms for follow-up and networking among participants.
16:45 – 17:00	Wrap-up and Closing Remarks ➤ Mr. Keiichi Muraoka, Director general, JICA, KIC
17:30 – 19:00	Farewell Party

Participant List

List of Participants

Name	Institution/Position
<u>Balikpapan City, Indonesia</u>	
Arie Soetjadi	Expert staff Conservation of Natural Resources Environmental Agency of Balikpapan (BLH)
Panti Suhartono	Head of Natural Resources Conservation Division Environmental Agency of Balikpapan (BLH)
Amiruddin Abdul Malik	Head of Community Supervision Division Environmental Cleanliness, Parks and Cemetery Service of Balikpapan (DKPP)
Sudirman Djaya Leksana	Head of Park and Cemetery Service Division Environmental Cleanliness, Parks and Cemetery Service of Balikpapan (DKPP)
Hairul Ilmi	Head of Sanitary Landfill Manggar Environmental Cleanliness, Parks and Cemetery Service of Balikpapan (DKPP)
Astani Abdul Manap	Head Secretary Environmental Cleanliness, Parks and Cemetery Service of Balikpapan (DKPP)
Fahrianoor Rullah Hakim	Head of Environmental Law Enforcement Sub-division Environmental Agency of Balikpapan (BLH)
Murni Supeno Wijanarko	Head of Natural Resources and Environmental Management Subdivision Regional Development Planning Board of Balikpapan (BAPPEDA)
Rosmarini	Head of Environmental information and regulation Division Environmental Agency of Balikpapan (BLH)
Elvin Junaidi Malik Saleh	Head of Cleanliness Division Environmental Cleanliness, Parks and Cemetery Service of Balikpapan (DKPP)
Antos Padmawidjaja	Director Environmental NGO YAYASAN PEDULI
<u>Makassar City, Indonesia</u>	
Andi Murtan	Chief of Urban Cleaning Management Division City Government Makassar South Sulawesi
<u>Palembang City, Indonesia</u>	
Nyimas Ida Apriani	Head of Environmental Degradation Control Division Environmental Agency-Palembang City
<u>Semarang City, Indonesia</u>	
Berkah Wahyudi	Environmental Board, Semarang Municipality

Name	Institution/Position
<u>Surabaya City, Indonesia</u>	
Ema Agustina	Public Works and Spatial Planning Department, Surabaya City
<u>Tarakan City, Indonesia</u>	
Sonya Wijayanti	Cleansing Department, Tarakan City
<u>Cebu City, Philippines</u>	
Pacres, Jose Rey	Officer-in-Charge Environment and Natural Resources Office, Cebu City
<u>Kampar City, Malaysia</u>	
Goh Seng Chee	Assistant Env. Health officer Kampar district council, Perak.Malaysia
<u>Sibu City, Malaysia</u>	
Yong Ing Chu	Assistant Secretary, Sibu Municipal Council
<u>Nonthaburi City, Thailand</u>	
Pornsri Kichtham	Municipal Secretary, Nonthaburi City

Name	Institution/Position
<u>Kitakyushu City</u>	
Imanaga Hiroshi	Chief Executive, Environment Bureau
Naito Hideo	Executive Director, Office for International Environmental Strategies Environment Bureau
Hitsumoto Reiji	Director, International Environmental Strategies Division Environment Bureau
Shigeoka Akinori	Director, Kitakyushu Asian Center for Low Carbon Society International Environmental Strategies Division Environment Bureau
Ogata Shinichi	Director, Kitakyushu Asian Center for Low Carbon Society International Environmental Strategies Division Environment Bureau
Kubo Seiko	Deputy Director, International Environmental Strategies Division Environment Bureau

Name	Institution/Position
Motoshima Naoki	Deputy Director, International Environmental Strategies Division Environment Bureau
Takeuchi Shinsuke	Manager, Kitakyushu Asian Center for Low Carbon Society International Environmental Strategies Division Environment Bureau
Iizuka Makoto	Manager, Kitakyushu Asian Center for Low Carbon Society International Environmental Strategies Division Environment Bureau
Morimoto Misuzu	Deputy Director, Kitakyushu Asian Center for Low Carbon Society International Environmental Strategies Division Environment Bureau
Masuda Ryouji	Kitakyushu Asian Center for Low Carbon Society International Environmental Strategies Division Environment Bureau
Mitoma Yousuke	International Environmental Strategies Division Environment Bureau
Yamashita Shingo	International Environmental Strategies Division Environment Bureau
<u>KITA (Kitakyushu International Techno-cooperative Association)</u>	
Nakazono Satoshi	Chief Executive, KITA Environmental Cooperation Center Kitakyushu International Techno-cooperative Association
Nagaishi Masaya	Director, KITA Environmental Cooperation Center Kitakyushu International Techno-cooperative Association
<u>JPEC (J-POWER Group JPec Co.,Ltd)</u>	
Suetake Shinji	Director, J-POWER Group JPec Co.,Ltd Wakamatsu Environment Research Institute
Takakura Kouji	Deputy Director, J-POWER Group JPec Co.,Ltd Wakamatsu Environment Research Institute
Yaoya Sayaka	J-POWER Group JPec Co.,Ltd Wakamatsu Environment Research Institute
<u>JICA (Japan International Cooperation Agency)</u>	
Muraoka Keiichi	Director General, Japan International Cooperation Agency Kyushu International Center
Yoshida Mitsuo	Senior Advisor, Japan International Cooperation Agency
Yao Kazuya	Associate Expert, Global Environment Department Japan International Cooperation Agency

Name	Institution/Position
Tamura Eriko	Director, Training Program Division, Japan International Cooperation Agency Kyushu International Center
Nishida Shiuko	Program Officer, Training Program Division, Japan International Cooperation Agency Kyushu International Center
Kodama Akihiko	Program Officer, Training Program Division, Japan International Cooperation Agency Kyushu International Center
<i>JICE (Japan International Cooperation Center)</i>	
Suzuki Makiko	Translator, Japan International Cooperation Center
<i>IGES (Institute for Global Environmental Strategies)</i>	
Murakami Emiko	Director, Kitakyushu Urban Centre Institute for Global Environmental Strategies
Maeda Toshizo	Acting Director, Kitakyushu Urban Centre Institute for Global Environmental Strategies
Premakumara Jagath Dickella Gamaralalage	Researcher, Kitakyushu Urban Centre Institute for Global Environmental Strategies
Mekaru Hiroshi	Visiting Researcher, Kitakyushu Urban Centre Institute for Global Environmental Strategies
Huang Jian	Associate Researcher, Kitakyushu Urban Centre Institute for Global Environmental Strategies
Hirohata Kazuyoshi	Research Assistant, Kitakyushu Urban Centre Institute for Global Environmental Strategies
Aoi Mutsumi	Intern, Kitakyushu Urban Centre Institute for Global Environmental Strategies
Sakai Risako	Intern, Kitakyushu Urban Centre Institute for Global Environmental Strategies

Presentations



Introduction to

Networking Seminar on KitaQ System Composting in Asia and JICA KIC Training Activities

Akihiko Kodama
Training Program Division, Kyushu International Center
Japan International Cooperation Agency

国際協力機構



Outline

1. Introduction to JICA KIC
 - (1) What is KIC?
 - (2) What does KIC do?
2. Introduction to the Networking Seminar
 - (1) Background
 - (2) Purpose
 - (3) Contents



国際協力機構



1. Introduction to JICA KIC

What is KIC? - location

JICA branches in Japan



国際協力機構



1. Introduction to JICA KIC

What does KIC do? (1)

Citizen participation programs

- Japan Overseas Cooperation Volunteers (JOCV)
- JICA Partnership Programs

Community-based Solid Waste Management System
Development Project in Sibuh Municipality



国際協力機構



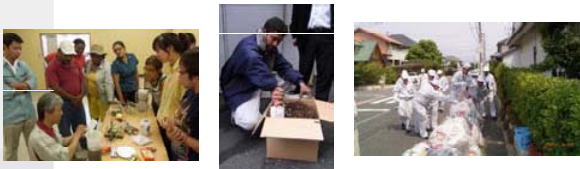
1. Introduction to JICA KIC

What does KIC do? (2)

Training programs

- Seeing is believing!
- Focus on Environmental management and energy & resources

Waste Management Technique and Environmental Education



国際協力機構



1. Introduction to JICA KIC

What does KIC do? (3)

Facts of training programs in KIC (as of 2010)

22...	Years old
97...	Countries
146...	Training Programs
823...	Participants

For environmental management and energy & resources...

39...	Training Programs
333...	Participants

国際協力機構



1. Introduction to JICA KIC

What does KIC do? (4)

JICA's strategy on waste management

1. Building a sound material-cycle society
2. Developing capacity of governmental organizations
3. Improvement in collection, transportation and disposal
4. Promoting activities to address climate change

Table 1 Achievements in waste management sector (FY 2000 to FY 2009)
* Japanese fiscal year (FY): April-March

Assistance type	Technical cooperation							Grant aid project	
	Technical cooperation project	Technical cooperation for development planning	JICA Partnership Program	Individual experts	Trainees	JOCV (Junior Volunteers)	FV (Senior Volunteers)		
No. of projects	29	22	22	139 (persons)	1710 (persons)	61 (persons)	65 (persons)	4	10
Total amount of projects (million yen)	3,583,040	1,574,900	145,824	747,771	2,370,554	200,954	367,223	28,427,000	2,405,700
Total amount of cooperation in the field of waste management for FY 2000 - FY 2009 period: 39,905,114 (thousand yen)									

国際協力機構



2. Introduction to the Networking Seminar

Background

JICA's works



Kitakyushu's works



KitaQ System Composting

国際協力機構



2. Introduction to the Networking Seminar

Contents

1. Presentations
 - By cities
 - By related organizations
 - By experts
2. Site visits and observations
 - To a farm utilizing compost
 - To a workshop for community
 - To a waste treatment facility
3. Discussions among participants

国際協力機構



2. Introduction to the Networking Seminar

Purpose

1. Sharing good practices and challenges
 - Feedback to related projects
 - Development of educational materials
2. Enforcement of partnerships
 - Assessment of needs & seeds
 - Development of strategies in the future

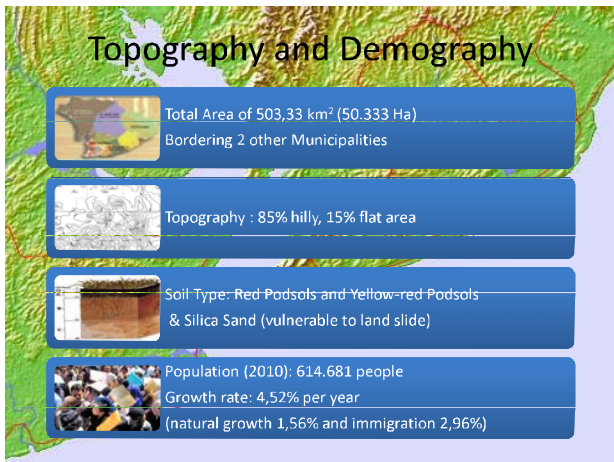
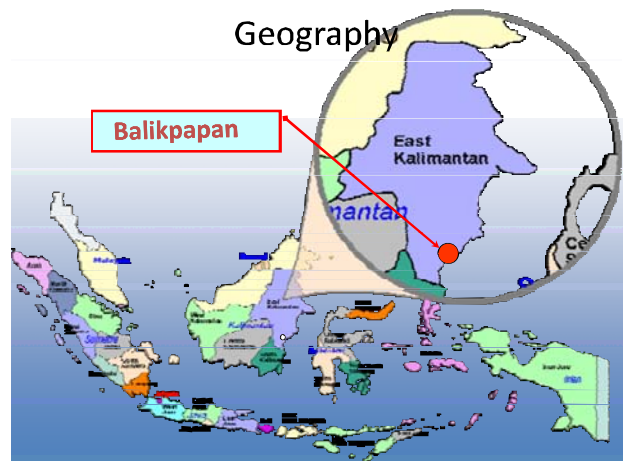
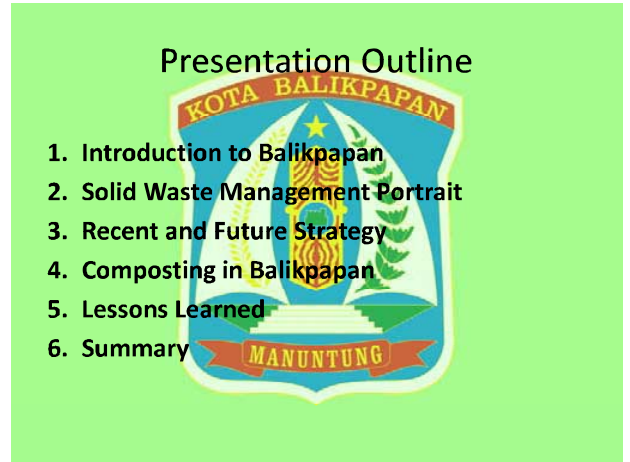
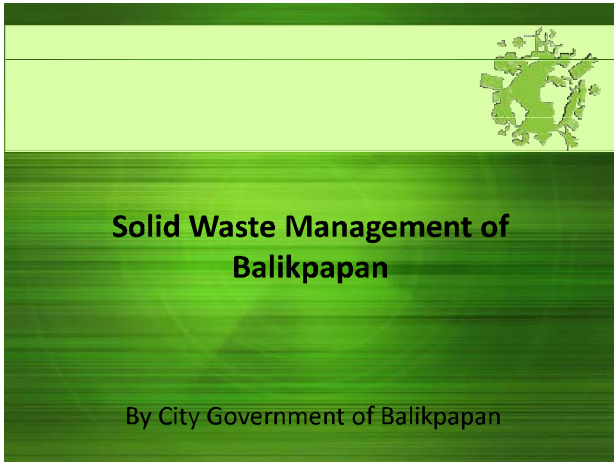
国際協力機構



Thank you very much for your attention!



国際協力機構



General Overview

Waste disposal site with Sanitary Landfill system to minimize environmental impacts

International cooperation project (PFSAMAS) to reduce the amount of produced solid waste by 10% within 3 years

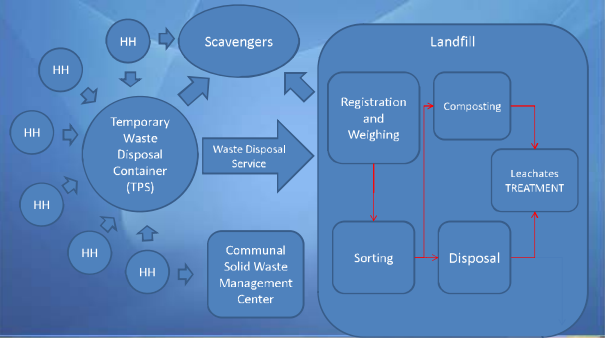
Improvement of legal aspects and law enforcement against littering

Raising environmental awareness through education and public campaign

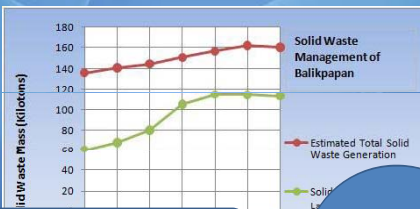
Adjusting waste management principle to local characteristics to improve the effectiveness ("Trash Bank")



Waste Disposal Mechanism



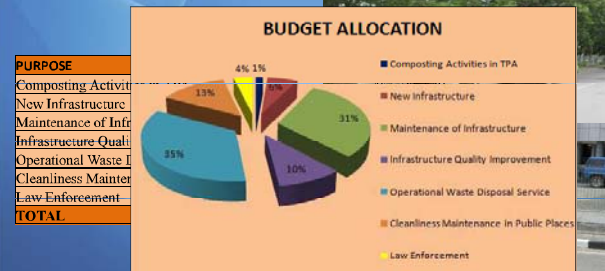
Baseline Information (1)



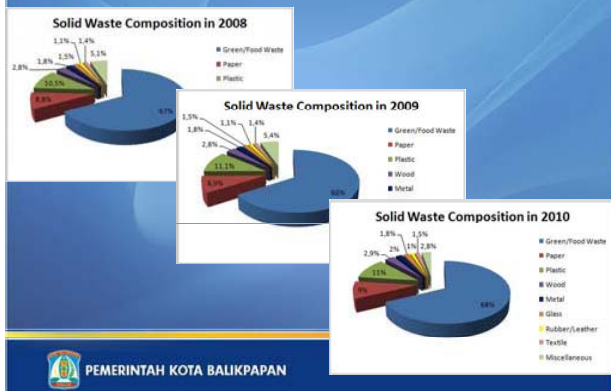
In 2010
Through Composting : 525 tons/month (app.. 3,98%)
Through Recycling : 564 tons/month (app.. 4,28%)
Through other uses : 86 tons/month (app.. 0,66%)

8,92%

Baseline Information(2)



Waste Characteristics



Recent and Future Strategy (1)

VISION: Balikpapan as a clean, beautiful, and comfortable city

MISSIONS Up to 2015:

1. To improve the health quality of the sanitation worker and community in general
2. To improve community awareness and involvement on solid waste management and extend the capacity building in environmental management
3. To improve city cleanliness via integrated solid waste management until 2015 (CGH, 3R, communal composting program)
4. To cover the required infrastructure for solid waste management until 2015

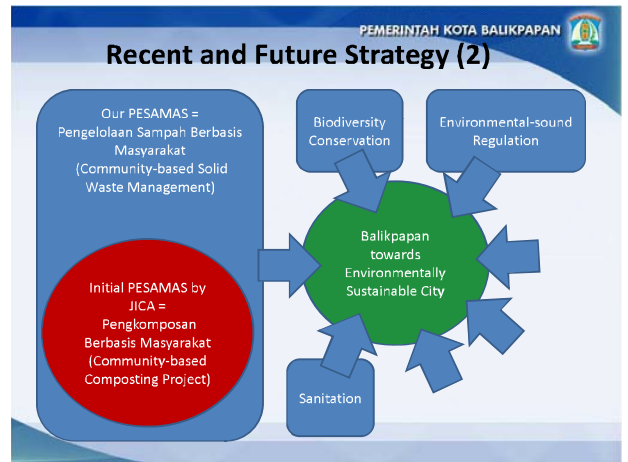
PEMERINTAH KOTA BALIKPAPAN

Recent and Future Strategy (1)

VISION: Balikpapan as a clean, beautiful, and comfortable city

MISSIONS Up to 2015:

1. To improve the health quality of the sanitation worker and community in general
2. To improve community awareness and involvement on solid waste management and extend the capacity building in environmental management
3. To improve city cleanliness via integrated solid waste management until 2015 (CGH, 3R, communal composting program)
4. To cover the required infrastructure for solid waste management until 2015



PEMERINTAH KOTA BALIKPAPAN

Recent and Future Strategy (3)

Progress, results or targets are achieved already

- Landfill gas utilization in progress
- Some behavior change have been observed to be more aware to the regulation regarding littering
- Law enforcement operation from once a year to 4 times a year.
- Total solid waste Reduction by 8,92% in 2010
- Construction of new composting center, especially in the coastal residential area.

PEMERINTAH KOTA BALIKPAPAN

Recent and Future Strategy (4)

FUTURE PLANS

- To expand and promote composting center to be citywide
- To promote community solid waste management via "trash bank"
- To promote environmental education (for sustainable development)
- To improve the human resources via capacity building for the relevant stakeholders
- To increase public involvement on solid waste management.
- To promote environmental sustainability via various mass media.
- To improve law enforcement
- To implement reward and punishment mechanism.

PEMERINTAH KOTA BALIKPAPAN

Recent and Future Strategy (5)

Through Formal Education

- Based on the concept of Education for Sustainable Development
- Nationwide program with emphasizing environmental issues at the global to local level ("Mangrove High school" and "Rainforest High school")
- To the recent date, 11 Schools in Balikpapan are officially appointed as "Adiwiyata School"

PEMERINTAH KOTA BALIKPAPAN

Recent and Future Strategy (5)

Through Non-Formal Education

- Public counseling emphasizes on 3R concepts and practices, legal aspects
- Manggar Landfill as an environmental education center emphasizes on solid waste issues
- KWRPH as an environmental education centre with a special facility for malayan sun bear, also promotes composting
- Well-run Composting Centers as learning places

Composting In Balikpapan



PEMERINTAH KOTA BALIKPAPAN

Composting in Balikpapan (1)

Name of Program/Project/Activity	Scale	Initiator	Since	Annual Budget (USD)	Composting Method
Community composting project at Talaga Sari	Neighbourhood	NCO	2003	50,000,000,00 IDR	Talukara and aerobic composting
Composting activity at tertiary Landfill Manager	Citywide	City Government	2005	463,996,540,00 IDR	Wind row
Community composting program at Prapuan-Telaga Sari	Sub-district	Multistakeholders	2006	125,000,000,00 IDR	Shaded Talukara
Community composting program Reaggas	Neighbourhood	Provincial Government	2009	no data	Wind row
Household and Community composting project	Citywide	City Government	2008	1,400,000,000,00 IDR	Talukara
Community composting project in 3 traditional markets	Citywide	City Government	2009	956,000,000,00 IDR	Wind row
Household composting project for residential area in Sepauagan	Household	Provincial Government	2008	no data	Talukara
Household composting project for residential area in Gunung Samudra	Household	NBO and Private Sector	2008	100,000,000,00 IDR	Talukara

PEMERINTAH KOTA BALIKPAPAN

Composting in Balikpapan (2)

Partners	Role
Chevron	Donor via CSR
Total	Donor via CSR
PERTAMINA	Donor via CSR
YAYASAN PEDULI	Motivator
PT BES	SWM Business company
BP MIGAS	CSR Coordinator
Adiwiyata schools	Practitioner
Kaltim post group	Campaign and Dissemination
PERKUMPULAN STABIL	Motivator
Consortium of Environmental Organization in Balikpapan	Motivator and Coordinator

Mobilization via Governmental Instances (BAPPEDA, BLH and DKPP)

PEMERINTAH KOTA BALIKPAPAN

Composting in Balikpapan (3)

- Compost products produced by governmental facilities are for local consumption only
- Compost products produced by local community will be purchased by the city government but in small scale only
- Green/Food Waste as Fish pellets

Lessons Learned



PEMERINTAH KOTA BALIKPAPAN

Success Factors

Incentive via Adipura awards

Enforcement of Environmental regulation
UU no. 18 Tahun 2008 and PERDA No. 10 Tahun 2004

CGH Programs

PEMERINTAH KOTA BALIKPAPAN

Barriers and Challenges

- Contrast diversity in Education level requires different approaches
- Lack of Awareness
- Regulation to be actually enforced
- Mediocre coverage for garbage disposal service due to hilly topography and poor spatial planning

PEMERINTAH KOTA BALIKPAPAN

Required Assistance in

- Improving urban planning
- Approach Strategy Planning to alert the people the importance of proper waste management
- Policy Advocacy to produce realistic regulation concerning waste management to be implemented
- Capacity Building for relevant stakeholders in managing and utilizing garbage
- Extending Possibilities to market compost products

PEMERINTAH KOTA BALIKPAPAN

Improvement of Slum Areas (1)

- Is Located in the Buffer Zone Area of Pertamina RU. V (Oil Refinery)
- Was built by local community over 30 years ago through encroachment of formerly mangrove area
- Measures are needed to minimize environmental impacts through ICMM Project since 2000

Over-Water Village Margasari

Raising Environmental Awareness

PEMERINTAH KOTA BALIKPAPAN

Improvement of Slum Areas (2)

Before the Project

➔

After the Project

PEMERINTAH KOTA BALIKPAPAN

SUMMARY

- The City Government of Balikpapan is striving to improve solid waste management, water resources management, and air quality with solid planning and MRV principles
- PESAMAS has been integrated to the mid-term urban development master plan to reduce solid waste generation, primarily but not exclusively through composting
- The City Government of Balikpapan set a priority on environmental education as a main tool to raise environmental awareness in general
- The City Government of Balikpapan is engaged in national to international cooperation activities to improve environmental quality of urban area





Economic & social conditions affect garbage problem

Parameter :

- Population growth
- Economic growth
- Consumption patterns of society
- Packaging and behavioral patterns of the population
- Activities of city functions
- Population density and building
- The complexity of urban problems

Waste Problem :

- Number → Much more
- Composition → Increasingly diverse
- Management → Traditional / Conventional
- Condition → *MIX & MATCH*
- Cost management → NOT ADEQUATE



WASTE DEFINITION

The rest of the day-to-day activities of human and or from natural processes that form solid

WASTE MANAGEMENT OBJECTIVES

- Reduce waste generation
- Handle garbage (sorting, collecting, transporting, and processing the final in where the final processing)
- So as to create a good environment, clean, and healthy

MAKASSAR CITY POPULATION IN THE LAST TEN YEARS

Nu	Year	NUMBER OF MALES (Soul)	NUMBER OF WOMEN (Soul)	NUMBER OF POPULATION (Soul)
1	2000	547,687	565,001	1,112,688
2	2001	557,050	573,334	1,130,384
3	2002	565,882	582,430	1,148,312
4	2003	572,686	587,325	1,160,011
5	2004	582,382	596,641	1,179,023
6	2005	582,572	610,862	1,193,434
7	2006	611,049	612,491	1,223,540
8	2007	618,233	617,006	1,235,239
9	2008	601,304	652,352	1,253,656
10	2009	610,270	662,079	1,272,349
11	2010	642,098	697,276	1,339,374

TABLE WASTE AND ARE HANDLED PER DAY IN THE CITY OF MAKASSAR

LOCATION	GENERATION (M3/Day)	TO THE TOTAL GENERATION (%)	UNTREATED WASTE (M3/Day)	DIFFERENCE IN THE GENERATION AND UNTREATED (M3/Day)
Industrial / Household				
Direct	226.46	6.15	216.81	9.65
Indirect	318.42	8.65	282.18	36.24
	1325.61	36.02	1155.67	169.94
NUMBER	1,870.49	50.82	1,654.66	215.83
Total :				
Urban Area	588.36	15.99	522.99	65.37
Suburban Area	134.41	3.65	120.47	13.94
Rural Area	112.95	3.07	108.82	4.13
Urban Area	74.68	2.03	67.45	7.23
Suburban Area	94.26	2.56	84.32	9.94

COMPARISON LIST OF WASTE HANDLING THE CITY OF MAKASSAR IN (M3/ DAY) FROM 1997/1998 TO DECEMBER 2010

NU	YEARS OF SERVICE	WASTE GENERATION	UNHANDLED	% OF THE GENERATION
1	1997/1998	2.913,40 M3/DAY	2.753,79 M3/DAY	94,52%
2	1998/1999	3.311,60 M3/DAY	2.987,40 M3/DAY	90,21%
3	1999/2000	3.535,20 M3/DAY	2.996,67 M3/DAY	84,77%
4	2000	3.816,00 M3/DAY	3.064,00 M3/DAY	80,29%
5	2001	3.918,00 M3/DAY	2.675,30 M3/DAY	68,28%
6	2002	3.560,00 M3/DAY	2.871,84 M3/DAY	80,67%
7	2003	3.748,00 M3/DAY	3.251,74 M3/DAY	86,76%
8	2004	3.580,15 M3/DAY	3.121,55 M3/DAY	87,19%
9	2005	3.546,21 M3/DAY	3.109,56 M3/DAY	87,69%
10	2006	3.582,01 M3/DAY	3.151,27 M3/DAY	87,97%
11	2007	3.661,81 M3/DAY	3.245,29 M3/DAY	88,63%
12	2008	3.812,69 M3/DAY	3.315,20 M3/DAY	86,95%
13	2009	3.680,03 M3/DAY	3.278,12 M3/DAY	89,08%

**GARDENING BUDGET ALLOCATION AND CLEANLINESS
FISCAL YEAR 2011**

	Capping FUND	REALIZATION	PHYSICAL	REST OF
Public Cemetery	Rp. 2.197.070.000	Rp. 458.777.500		Rp.
	Rp. 31.787.000	Rp. 600.000		Rp.
Water Resources and Electricity	Rp. 109.800.000	Rp. 27.450.000		Rp.
Vehicle Licensing Office / Operations	Rp. 101.380.000	Rp. 22.500.000		Rp.
	Rp. 5.454.100	Rp. -		Rp.
Components / Lighting Office Buildings	Rp. 2.975.000	Rp. -		Rp.
Supplies	Rp. 73.750.000	Rp. 17.500.000		Rp.
Regulation	Rp. 6.720.000	Rp. 1.680.000		Rp.

WASTE MANAGEMENT OF OPERATING COSTS LAST SEVEN YEARS

YEARS	COST OF OPERATIONS & MAINTENANCE	COST ADMINISTRATION	CAPITAL EXPENDITURES	TOTAL COST SERVICES
2005	Rp. 5,984,467,958	Rp. 3,340,375,000	Rp. 205,000,000	Rp. 9,529,842,958
2006	Rp. 9,068,802,500	Rp. 1,958,757,725	Rp. 526,000,000	Rp. 11,553,560,225
2007	Rp. 9,094,289,890	Rp. 4,529,584,195	Rp. 331,226,900	Rp. 13,955,100,985
2008	Rp. 10,297,627,335	Rp. 3,985,964,400	Rp. 14,518,825,800	Rp. 28,802,417,535
2009	Rp. 9,087,857,703	Rp. 3,776,397,720	Rp. 2,877,504,774	Rp. 15,741,760,197

PROBLEMS

- Still limited facilities and infrastructure management
- The difficulty of placing land container
- Increase in waste generation in line with population growth and urban activities
- Collection process is less hygienic (Unlimited)
- Schedule has not fulfilled the collection and transporting waste
- Traffic density on the operating line
- The difficulty of access roads at the of processing

**OLD PARADIGM (CURRENT)
WASTE MANAGEMENT**

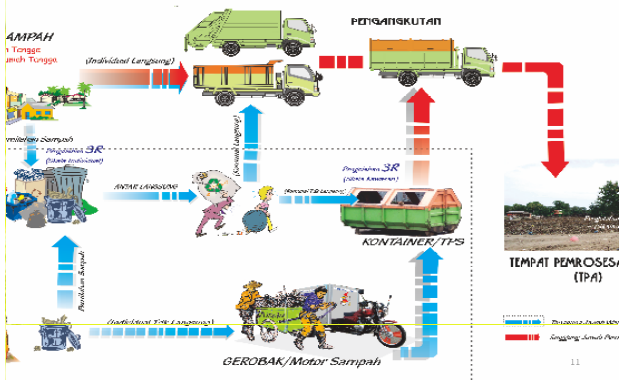
TOGETHERS → TRANSPORT → THROW

HOW TO CAUSE THIS ISSUE :

1. LANDFILL BURDEN IS VERY HIGH, LIMITED LAND AREA
2. OPERATIONAL COST HIGH
3. POSE AN INCREASINGLY SEVERE ENVIRONMENTAL IMPACTS :
 - AIR POLLUTION
 - WATER POLLUTION
 - SOIL CONTAMINATION
4. WASTEFUL OF RESOURCES
5. LESS ROOM FOR THE ROLE OF COMMUNITY & BUSINESSES

10

**KEBIJAKSANAAN UMUM
TEKNIS PENGANGKUTAN SAMPAH
KOTA MAKASSAR**



11

CURRENT PARADIGM MANAGING WASTE



WASTE MANAGEMENT OF A NEW PARADIGM

PRINCIPLES OF WASTE AS A RESOURCE prioritize
Prioritize PRINCIPLE POLLUTION CONTROL

IMPLEMENTATION OF PRINCIPLES TSB ACTIVITIES PERFORMED :

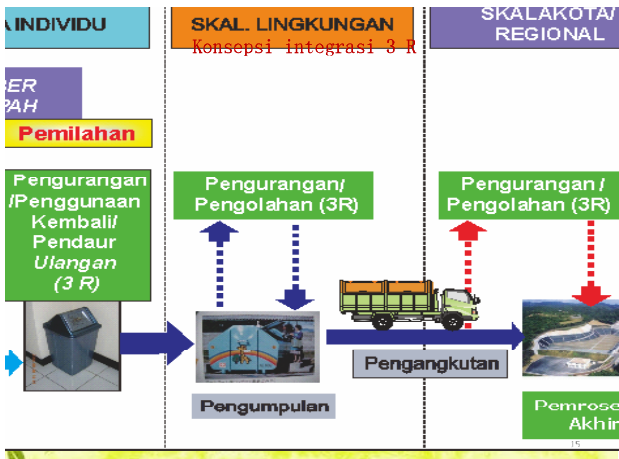
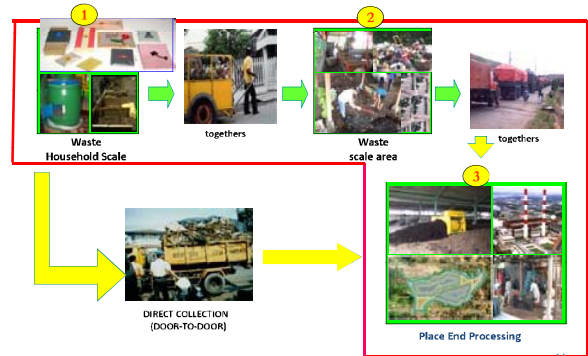
1. 3R (*REDUCE, REUSE, RECYCLE*).
2. EXTENDED PRODUCER'S RESPONSIBILITY (EPR).
3. *WASTE TO ENERGY*.
4. END MANAGEMENT That: *ENVIRONMENTAL FRIENDLY (SANITARY LANDFILL)*.

KEUNTUNGAN CARA INI:

1. SAVES RESOURCES.
2. EXPENSES pollutants reduced.
3. ECONOMIC VALUE & OPEN EMPLOYMENT.
4. LOW OPERATIONAL COST.
5. EXPENSES landfill is reduced.

13

NEW PARADIGM MANAGING WASTE



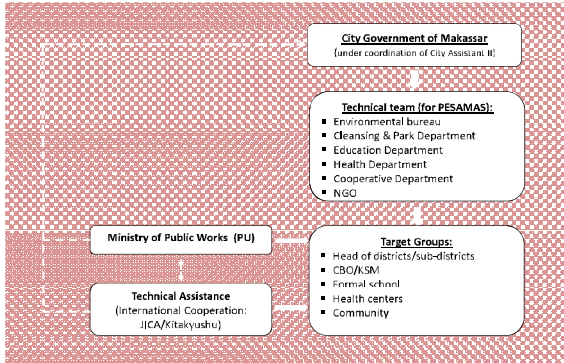
ACTION PLAN FOR WASTE REDUCTION PROGRAM THROUGH COMPOSTING (PESAMAS) IN MAKASSAR CITY (2011-2013)

ANDI MURTAN
Chief of Urban Cleaning Management Division
Cleansing & Park Department
City Government of Makassar
INDONESIA

COMMITMENT OF CITY GOVERNMENT FOR COMPOSTING & 3R

- Promoting a community based composting (PESAMAS) is a model of waste reduction program up to 5-10% within next 3 years by optimizing waste separation through composting (household and communal level), under technical assistance of Kitakyushu City/JICA
- Conducted grass-root project for composting (2009) under technical assistance of Kitakyushu City/JICA & physical supports from Ministry of Public Works (PU)

ORGANIZATIONAL STRUCTURE



Action 1: PROMOTE COMPOSTING PRACTICES

No.	Activity	Indicator of Activity			Stakeholder	Financial Sources	Expected Support from JICA
		2011	2012	2013			
1.1	Communal composting for residential area	Operated 3 composting centers at Pisuanana Wares (CI) TanaLenna & Sانبung Jawa		Established 2 composting centers at 2 residential area	Makassar City, NGOs, Public Works (PU)	Makassar City, PU	Technical assistance for composting and improving management of composting centers
1.2	Household composting (TIN)	Distributed 500 THM units	Distributed 1,500 THM units	Distributed 3,000 THM units	Makassar City, community, NGOs	Makassar City	Technical assistance for composting & awareness campaign modules
1.3	Composting for school (Elementary school)	30 school 350 THM units	45 school 450 THM units	60 school 600 THM units	Makassar City, school, PU	Makassar City, PU	Technical assistance for composting and environmental education module for school
1.4	Composting at health center	60 centers 67 THM	112 centers 126 THM	138 centers 150 THM	Makassar City, health centers	Makassar City	-
1.5	Composting for park	7 parks 21 aerobic composting units	Established 1 composting center at nature park		Makassar City	Makassar City	Technical assistance for composting & modules
1.6	Composting at public facilities (bus station)	Distributed 30 THM & 8 aerobic composting units	Distributed 25 THM & 8 aerobic composting units	Distributed 25 THM & 8 aerobic composting units	Makassar City	Makassar City	-
1.7	Composting for traditional market	-	-	Established 1 composting center at 1 market	Makassar City, PU	Makassar City, PU	Technical assistance for composting & modules
1.8	Operational support for composting center	CM for 3 composting centers	CM support for 3 composting centers	CM support for 3-5 composting centers (including compost centers for market)	Makassar City, PU	Makassar City, PU	-
1.9	Recurrent transportation for disposing residue to landfill	1 unit transportation	2 units container for residue collection	1 unit transportation	Makassar City, PU	Makassar City, PU	-

Action 2: ENVIRONMENTAL AWARENESS CAMPAIGN

No.	Activity	Indicator of Activity			Stakeholder	Financial Sources	Expected Support from JICA
		2011	2012	2013			
2.1	Makassar Green & Clean (MGC)	50 Districts	75 Districts	100 Districts	Makassar City, NGOs, private sectors, communities, MGC, media	Makassar City, private sector, media	-
2.2	Selecting motivator & facilitator for environmental cadre	Motivator team (10 person), facilitator team (50 person) and cadre team (1,500 person) available	Motivator team (10 person), facilitator team (75 person) and cadre team (2,250 person) available	Motivator team (10 person), facilitator team (100 person) and cadre team (3,000 person) available	Makassar City, NGOs, private sectors, communities, MGC, media	Makassar City, private sector, media	-
2.3	Developing manual guideline for solid waste management at source level	Draft manual guideline of waste separation at source level	Draft manual guideline of waste collection and transportation	Dissemination manual of waste management	Makassar City	Makassar City	Technical assistance for developing Standard Operational Procedure (SOP) for solid waste management at source level

Action 3: CAPACITY BUILDING

No.	Activity	Indicator of Activity			Stakeholder	Financial Sources	Expected Support from JICA
		2011	2012	2013			
3.1	Short-course on waste management policy to Japan for the decision makers level		Conducted short-course policy on waste management to Japan for the decision makers level		Makassar City	Makassar City, JICA	Training package (program, local transport)
3.2	International training/short-course for improving technical capacity on SR implementation in Kitakyushu City/other cities in Japan		Assign at least 1 person of technical staff to international training	Assign at least 1 person of technical staff to international training	Makassar City	Makassar City	Training package (program, accommodation & local transport)
3.3	Study tour of waste management (local/national level)	Conducted at least 1 time study tour on waste management (local/national level)	Conducted at least 1 time study tour on waste management (local/national level)	Conducted at least 1 time study tour on waste management (local/national level)	Makassar City, NGOs, community, PU	Makassar City, PU, JICA	Training program & local transport

Action 4: PROMOTING RECYCLING PRODUCT

No.	Activity	Indicator of Activity			Stakeholder	Financial Sources	Expected Support from JICA
		2011	2012	2013			
4.1	Promoting of compost utilization	Research & Development for compost quality and composition Identify compost demands/supply in Makassar City & South Sulawesi Province Promoting urban farming concept at household/residential area (traditional herb plan, organic vegetables, etc)	Identify mechanism of compost marketing Established piloting project for organic farming Promoting urban farming concept at household/residential area (traditional herb plan, organic vegetables, etc)	- Established piloting project for organic farming Promoting urban farming concept at household/residential area (traditional herb plan, organic vegetables, etc)	Makassar City, Community	Makassar City	Technical assistance for promoting organic farming/urban farming & introducing an environmental business system on recycling product for local government (LS)
4.2	Marketing for recycling handicraft products	Identification the demand & capacity of recycling crafts producer in Makassar City	Identify mechanism of recycling crafts marketing		Makassar City	Makassar City	

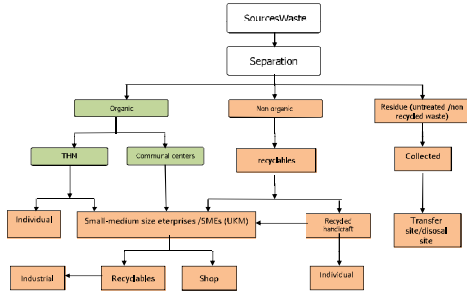
Action 5: MONITORING FOR PROJECT IMPLEMENTATION

No.	Activity	Indicator of Activity			Stakeholder	Financial Sources	Expected Support from JICA
		2011	2012	2013			
5.1	Establish PESAMAS team	Established PESAMAS team by Mayor decree (SR, Walkota)	-	-	Makassar city, NGO	Makassar City	-
5.2	Monitoring & evaluation	Identify mechanism for project monitoring & evaluation Conducting monitoring & evaluation activity	Identify lesson learnt & input for project improvement	Identify lesson learnt & input for project improvement	Makassar City, PESAMAS team, community, PU	Makassar City	Technical assistance for monitoring & evaluation scheme (including the monitoring & evaluation tools/software, etc)



CITY OF MAKASSAR

Schematic Model for PESAMAS Implementation in Makassar City



Examples :

- Takakura Home Method (THM) and
- Aerobic- Composter volume 110 ltr



Thank You



Gambaran Umum Kota Palembang

- ✓ Area : Luas wilayah 400,61 km²
- ✓ Administrative : Divided into 16 Distric and 103 sub distric
- ✓ Population : Total ± 1.665.681,1 person (Source: Data Dinas Capail 2009)
- ✓ Population Growth : 1,80 % per year
- ✓ Economic Growth : 6,7 %(dengan migas); 8,24 %
- ✓ Pendapatan per kapita : Rp. 14.712.175,- (dengan migas)
- ✓ Economic Structure : Domination by Trade and Services sector

Basic Information of Solid Waste:

NO	Waste	VOLUME (m ³)/Month	% (from total waste generation)
a.	Transfer to FDS.	75.000	66.0
b.	Waste Management :	8.650	8.33
	(1). Composting.	3.300	-
	(2). Recycle	1.350	-
	(3). Others	4.000	-
c.	Not Transport to FDS	28.850	25.64

Waste Characteristic

- ▶ Waste generation amount/ratio by source:
 - Residential : 79,20 %
 - Market : 8,51%
 - Industry : 6,86%
 - Commercial : 2,64%
 - Other : 2,79%
- ▶ Waste Composition:
 - Organic : 47,4 %
 - Plastic : 14,5 %
 - Paper : 15 %
 - Metal : 2,5%
 - Other : 20,6 %

Waste Management in Palembang City-Indonesia

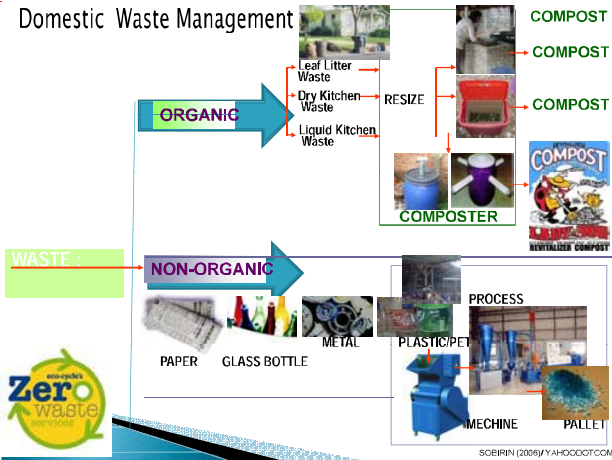
×PREVIOUS PARADIGM



NEW PARADIGM SORTED WASTE FROM THE SOURCE



Domestic Waste Management



Solid Waste Management Strategy of Palembang City

Vision : Palembang Ecocity

Mision: Environmental Management of Palembang City to Clean, Green and Blue.

Programs:

1. Eco Friendly Village
2. Eco Friendly Office
3. Eco Friendly School
4. Eco Friendly Market

1. Eco Friendly Village

Is : Eco friendly Village base on Community Development

Goal: To reduce waste generation in Final disposal site



CRITERIA OF ECO FRIENDLY VILLAGE :

- COMMUNITY ORGANIZATION THAT RESPONSIBILITY TO ENVIRONMENTAL MANAGEMENT
- SORTED WASTE
- COMPOSTING
- CLEAN WATER
- SANITATION
- GREENING
- TEMPORARY DISPOSAL SITE AND GARBAGE PLACE
- CLEAN WASTE
- DECORATIVE PLAT ARRANGEMENT
- HERB
- RENEWABLE ENERGY
- BIOPORI INFILTRATION HOLE / WELLS

2. Eco Friendly School

Goal :

- Environmental Education of school ages
- Waste Management 3R System
- Involving the participation of student in Environmental Management
- To reduce waste generation from school



PRAKTEK PEMILAHAN DAN PENGOLAHAN SAMPAH ATAU 3R KE SEKOLAH DALAM RANGKA PROGRAM SEKOLAH RAMAH LINGKUNGAN



3. Eco Friendly Office

Goal :

- Waste management 3R system at the office
- To reduce waste generation to final disposal from office.



Pembilahan Sampah dan Pengomposan di kantor Pemerintah

4. Eco Friendly Market

Goal :

- Waste management 3R system at the market
- To reduce waste generation to final disposal from market



COMPOSTING OF INDUSTRY SCALE

COOPERATION BETWEEN PALEMBANG CITY GOVERNMENT AND PT. PUSRI (PRIVATE SECTOR) ON URBAN WASTE MANAGEMENT

SOURCE OF ORGANIC WASTE:

1. Organic waste from Residential in around of PT.PUSRI
2. Organic Waste from Traditional market in Palembang City

PENGOMPOSAN SKALA INDUSTRI LOKASI PT. PUSRI



Sampah Pasar yang dikelola Pupuk Oranik PT. Pusri

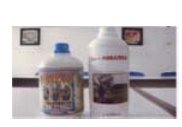
PENGOMPOSAN SKALA INDUSTRI LOKASI PT. PUSRI



Sampah Organik perumahan

Pelibatan Partisipasi Stakeholder dalam Pengelolaan Lingkungan

1. PRODUKSI PUPUK CAIR PENGOLAHAN KOTORAN KAMBING LOKASI SUKAWINATAN KECAMATAN SUKARAMI



2. PENGOMPOSAN DI TPA OLEH KOPERASI PEMULUNG LOKASI SUKAWINATAN KECAMATAN SUKARAMI



3. PELATIHAN KADER LINGKUNGAN



Program Kebersihan Lingkungan Perkotaan

Alat Angkut	Jumlah	Kapasitas per unit (m ³)
Gerobak sampah	390	1-1.5 M3
Dump truck besar	70	6 M3
Dump truck kecil	26	6 M3
Trailer container	163	6 M3
Motor sampah	12	1 M3



Pelayanan	Tingkat Pelayanan	
	2009	2010
Luas daerah pelayanan	400,61 (ha)	400,61(ha)
Jumlah penduduk terlayani	1.150.000 jiwa	1.150.000 jiwa
Jumlah penduduk terlayani terhadap jumlah penduduk	71,85 %	71,85 %

Fasilitas Pengolahan Sampah	Luas
TPA I	25 Ha
TPA II	40 Ha

Pasukan kuning sedang membersihkan salah satu jalan Protokol

UPAYA PENGEMBANGAN PENGELOLAAN PERSAMPAHAN

1. Penyusunan kebijakan manajemen pengelolaan persampahan
2. Penyediaan prasarana dan sarana pengelolaan persampahan
3. Peningkatan Operasional dan Pemeliharaan prasarana dan sarana Persampahan
4. Pengembangan teknologi pengelolaan persampahan
5. Peningkatan kemampuan aparat pengelola persampahan
6. Sosialisasi Kebijakan Pengelolaan Persampahan
7. Peningkatan Peran Serta Masyarakat dalam pengelolaan Persampahan

ENVIRONMENTAL PROBLEMS

- Haven't yet a system of integrated waste management .
- Increasing of Waste Production
- There are still many companies that have not been carrying out social responsibilities for environment
- There are some people still think cleanliness is responsibility of city government

continue

- Limited budget for integrated environmental management
- Facilities and infrastructure are limited
- Still determining how the management of the right to be applied in various types of waste
- Amount of Human resources for environmental management are limited.
- Human Resources have limited knowledge about environmental technology on waste management



Solid Waste Management And Composting Practices in Semarang

- Jumlah Penduduk Kota Semarang Tahun 2010 1.555.984 jiwa (BPS, 2010)
- Volume timbulan sampah di Kota Semarang sebesar 6500 m3/hari
 - sampah organik : 62 %
 - sampah anorganik dapat dimanfaatkan : 29 %
 - sampah anorganik tidak dpt. dimanfaatkan : 9 %
- Total sampah yang ada di TPA : 700 ton

Kondisi TPA Di Kota Semarang



ALUR PELAYANAN SAMPAH Di Kota Semarang

a. Rumah Tangga



b. Niaga/Tempat Usaha



c. Fasilitas Sosial



Beberapa Upaya Pengelolaan Sampah Yang Dilakukan di Kota Semarang

1. Pembatasan/pengurangan timbulan sampah (*Reduce*)
 - Dengan menggunakan Takakura



2. Pemanfaatan kembali sampah (*Reuse*)



Rumah Pilah Di Kota Semarang Bantuan Jepang



Beberapa Contoh Rumah Pilah & Rumah Kompos Di Semarang



Lokasi Tempat Pengolahan Sampah Terpadu Di Kota Semarang

10 Informasi Sistem Pengolahan TPT (Candi Pengolahan Sampah Terpadu) di Kota Semarang

No	Lokasi	Kapasitas	Usia (Tahun)	Jumlah Operasi	Perencanaan dan Pengawasan	Jumlah sampah masuk (kg/opsi)	Jumlah limbah yang dihasilkan	Harga per kilogram
1	Pusat Pemilahan Sampah Terpadu (PPT) Kota Semarang	500 t/opsi	50 t/opsi	2 orang	TPT terpadu yang sudah direncanakan dan diregulasi	100 t/opsi (sampah organik)	500 kg	Rp 2000/opsi
2	Rm. Bina Lir Pks. Semarang Utara	10 t/opsi	10 t/opsi	2 orang	Aksi 1 yang sudah direncanakan dan diregulasi	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi
3	Rm. Pembangunan Ciri Pks. Pembangunan	10 t/opsi	10 t/opsi	2 orang	Tidak ada	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi
4	Rm. Pembangunan Ciri Pks. Pembangunan	10 t/opsi	10 t/opsi	2 orang	Keberhasilan 1 orang yang direncanakan	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi
5	Rm. Pembangunan Pks. Pembangunan	10 t/opsi	10 t/opsi	2 orang	Tidak ada	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi
6	Rm. Pembangunan Pks. Pembangunan	10 t/opsi	10 t/opsi	2 orang	Tidak ada	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi
7	Rm. Pembangunan Pks. Pembangunan	10 t/opsi	10 t/opsi	2 orang	Tidak ada	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi
8	Rm. Pembangunan Pks. Pembangunan	10 t/opsi	10 t/opsi	2 orang	Tidak ada	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi
9	Rm. Pembangunan Pks. Pembangunan	10 t/opsi	10 t/opsi	2 orang	Tidak ada	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi
10	Rm. Pembangunan Pks. Pembangunan	10 t/opsi	10 t/opsi	2 orang	Tidak ada	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi
11	Rm. Pembangunan Pks. Pembangunan	10 t/opsi	10 t/opsi	2 orang	Tidak ada	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi
12	Rm. Pembangunan Pks. Pembangunan	10 t/opsi	10 t/opsi	2 orang	Tidak ada	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi
13	Rm. Pembangunan Pks. Pembangunan	10 t/opsi	10 t/opsi	2 orang	Tidak ada	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi
14	Rm. Pembangunan Pks. Pembangunan	10 t/opsi	10 t/opsi	2 orang	Tidak ada	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi
15	Rm. Pembangunan Pks. Pembangunan	10 t/opsi	10 t/opsi	2 orang	Tidak ada	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi

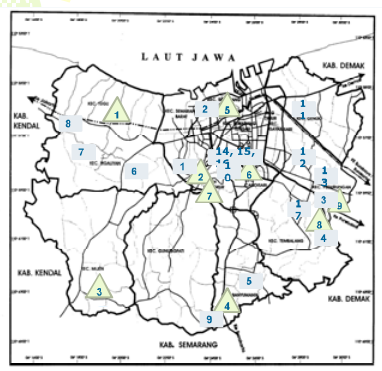
Kelompok Pengolah Sampah Terpadu Di Kota Semarang

No	Alamat	Kapasitas	Usia (Tahun)	Jumlah Operasi	Perencanaan dan Pengawasan	Jumlah sampah masuk (kg/opsi)	Jumlah limbah yang dihasilkan	Harga per kilogram
1	Pusat Pemilahan Sampah Terpadu (PPT) Kota Semarang	500 t/opsi	50 t/opsi	2 orang	TPT terpadu yang sudah direncanakan dan diregulasi	100 t/opsi (sampah organik)	500 kg	Rp 2000/opsi
2	Rm. Bina Lir Pks. Semarang Utara	10 t/opsi	10 t/opsi	2 orang	Aksi 1 yang sudah direncanakan dan diregulasi	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi
3	Rm. Pembangunan Ciri Pks. Pembangunan	10 t/opsi	10 t/opsi	2 orang	Tidak ada	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi
4	Rm. Pembangunan Ciri Pks. Pembangunan	10 t/opsi	10 t/opsi	2 orang	Keberhasilan 1 orang yang direncanakan	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi
5	Rm. Pembangunan Pks. Pembangunan	10 t/opsi	10 t/opsi	2 orang	Tidak ada	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi
6	Rm. Pembangunan Pks. Pembangunan	10 t/opsi	10 t/opsi	2 orang	Tidak ada	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi
7	Rm. Pembangunan Pks. Pembangunan	10 t/opsi	10 t/opsi	2 orang	Tidak ada	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi
8	Rm. Pembangunan Pks. Pembangunan	10 t/opsi	10 t/opsi	2 orang	Tidak ada	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi
9	Rm. Pembangunan Pks. Pembangunan	10 t/opsi	10 t/opsi	2 orang	Tidak ada	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi
10	Rm. Pembangunan Pks. Pembangunan	10 t/opsi	10 t/opsi	2 orang	Tidak ada	10 t/opsi (sampah organik)	100 kg	Rp 2000/opsi

Daftar Penerima Keranjang Takakura Di Kota Semarang

DAFTAR PENERIMA KERANJANG TAKAKURA DI KOTA SEMARANG

No	Nama	Alamat	No. Telp	Alamat	No. Telp	Alamat	No. Telp
1
2
3
4
5
6
7
8
9
10



KOTA SEMARANG

PETA LOKASI TPST DAN TR

1. TPST

2. TR

3. BUKAN TPST

4. BUKAN TR

5. BUKAN TPST DAN TR

6. BUKAN TPST DAN TR

7. BUKAN TPST DAN TR

8. BUKAN TPST DAN TR

9. BUKAN TPST DAN TR

10. BUKAN TPST DAN TR

11. BUKAN TPST DAN TR

12. BUKAN TPST DAN TR

13. BUKAN TPST DAN TR

14. BUKAN TPST DAN TR

15. BUKAN TPST DAN TR

16. BUKAN TPST DAN TR

17. BUKAN TPST DAN TR

18. BUKAN TPST DAN TR

19. BUKAN TPST DAN TR

20. BUKAN TPST DAN TR

21. BUKAN TPST DAN TR

22. BUKAN TPST DAN TR

23. BUKAN TPST DAN TR

24. BUKAN TPST DAN TR

25. BUKAN TPST DAN TR

26. BUKAN TPST DAN TR

27. BUKAN TPST DAN TR

28. BUKAN TPST DAN TR

29. BUKAN TPST DAN TR

30. BUKAN TPST DAN TR

31. BUKAN TPST DAN TR

32. BUKAN TPST DAN TR

33. BUKAN TPST DAN TR

34. BUKAN TPST DAN TR

35. BUKAN TPST DAN TR

36. BUKAN TPST DAN TR

37. BUKAN TPST DAN TR

38. BUKAN TPST DAN TR

39. BUKAN TPST DAN TR

40. BUKAN TPST DAN TR

41. BUKAN TPST DAN TR

42. BUKAN TPST DAN TR

43. BUKAN TPST DAN TR

44. BUKAN TPST DAN TR

45. BUKAN TPST DAN TR

46. BUKAN TPST DAN TR

47. BUKAN TPST DAN TR

48. BUKAN TPST DAN TR

49. BUKAN TPST DAN TR

50. BUKAN TPST DAN TR

51. BUKAN TPST DAN TR

52. BUKAN TPST DAN TR

53. BUKAN TPST DAN TR

54. BUKAN TPST DAN TR

55. BUKAN TPST DAN TR

56. BUKAN TPST DAN TR

57. BUKAN TPST DAN TR

58. BUKAN TPST DAN TR

59. BUKAN TPST DAN TR

60. BUKAN TPST DAN TR

61. BUKAN TPST DAN TR

62. BUKAN TPST DAN TR

63. BUKAN TPST DAN TR

64. BUKAN TPST DAN TR

65. BUKAN TPST DAN TR

66. BUKAN TPST DAN TR

67. BUKAN TPST DAN TR

68. BUKAN TPST DAN TR

69. BUKAN TPST DAN TR

70. BUKAN TPST DAN TR

71. BUKAN TPST DAN TR

72. BUKAN TPST DAN TR

73. BUKAN TPST DAN TR

74. BUKAN TPST DAN TR

75. BUKAN TPST DAN TR

76. BUKAN TPST DAN TR

77. BUKAN TPST DAN TR

78. BUKAN TPST DAN TR

79. BUKAN TPST DAN TR

80. BUKAN TPST DAN TR

81. BUKAN TPST DAN TR

82. BUKAN TPST DAN TR

83. BUKAN TPST DAN TR

84. BUKAN TPST DAN TR

85. BUKAN TPST DAN TR

86. BUKAN TPST DAN TR

87. BUKAN TPST DAN TR

88. BUKAN TPST DAN TR

89. BUKAN TPST DAN TR

90. BUKAN TPST DAN TR

91. BUKAN TPST DAN TR

92. BUKAN TPST DAN TR

93. BUKAN TPST DAN TR

94. BUKAN TPST DAN TR

95. BUKAN TPST DAN TR

96. BUKAN TPST DAN TR

97. BUKAN TPST DAN TR

98. BUKAN TPST DAN TR

99. BUKAN TPST DAN TR

100. BUKAN TPST DAN TR

101. BUKAN TPST DAN TR

102. BUKAN TPST DAN TR

103. BUKAN TPST DAN TR

104. BUKAN TPST DAN TR

105. BUKAN TPST DAN TR

106. BUKAN TPST DAN TR

107. BUKAN TPST DAN TR

108. BUKAN TPST DAN TR

109. BUKAN TPST DAN TR

110. BUKAN TPST DAN TR

111. BUKAN TPST DAN TR

112. BUKAN TPST DAN TR

113. BUKAN TPST DAN TR

114. BUKAN TPST DAN TR

115. BUKAN TPST DAN TR

116. BUKAN TPST DAN TR

117. BUKAN TPST DAN TR

118. BUKAN TPST DAN TR

119. BUKAN TPST DAN TR

120. BUKAN TPST DAN TR

121. BUKAN TPST DAN TR

122. BUKAN TPST DAN TR

123. BUKAN TPST DAN TR

124. BUKAN TPST DAN TR

125. BUKAN TPST DAN TR

126. BUKAN TPST DAN TR

127. BUKAN TPST DAN TR

128. BUKAN TPST DAN TR

129. BUKAN TPST DAN TR

130. BUKAN TPST DAN TR

131. BUKAN TPST DAN TR

132. BUKAN TPST DAN TR

133. BUKAN TPST DAN TR

134. BUKAN TPST DAN TR

135. BUKAN TPST DAN TR

136. BUKAN TPST DAN TR

137. BUKAN TPST DAN TR

138. BUKAN TPST DAN TR

139. BUKAN TPST DAN TR

140. BUKAN TPST DAN TR

141. BUKAN TPST DAN TR

142. BUKAN TPST DAN TR

143. BUKAN TPST DAN TR

144. BUKAN TPST DAN TR

145. BUKAN TPST DAN TR

146. BUKAN TPST DAN TR

147. BUKAN TPST DAN TR

148. BUKAN TPST DAN TR

149. BUKAN TPST DAN TR

150. BUKAN TPST DAN TR

151. BUKAN TPST DAN TR

152. BUKAN TPST DAN TR

153. BUKAN TPST DAN TR

154. BUKAN TPST DAN TR

155. BUKAN TPST DAN TR

156. BUKAN TPST DAN TR

157. BUKAN TPST DAN TR

158. BUKAN TPST DAN TR

159. BUKAN TPST DAN TR

160. BUKAN TPST DAN TR

161. BUKAN TPST DAN TR

162. BUKAN TPST DAN TR

163. BUKAN TPST DAN TR

164. BUKAN TPST DAN TR

165. BUKAN TPST DAN TR

166. BUKAN TPST DAN TR

167. BUKAN TPST DAN TR

168. BUKAN TPST DAN TR

169. BUKAN TPST DAN TR

170. BUKAN TPST DAN TR

171. BUKAN TPST DAN TR

172. BUKAN TPST DAN TR

173. BUKAN TPST DAN TR

174. BUKAN TPST DAN TR

175. BUKAN TPST DAN TR

176. BUKAN TPST DAN TR

177. BUKAN TPST DAN TR

178. BUKAN TPST DAN TR

179. BUKAN TPST DAN TR

180. BUKAN TPST DAN TR

181. BUKAN TPST DAN TR

182. BUKAN TPST DAN TR

183. BUKAN TPST DAN TR

184. BUKAN TPST DAN TR

185. BUKAN TPST DAN TR

186. BUKAN TPST DAN TR

187. BUKAN TPST DAN TR

188. BUKAN TPST DAN TR

189. BUKAN TPST DAN TR

190. BUKAN TPST DAN TR

191. BUKAN TPST DAN TR

192. BUKAN TPST DAN TR

193. BUKAN TPST DAN TR

194. BUKAN TPST DAN TR

195. BUKAN TPST DAN TR

196. BUKAN TPST DAN TR

197. BUKAN TPST DAN TR

198. BUKAN TPST DAN TR

199. BUKAN TPST DAN TR

200. BUKAN TPST DAN TR

WALIKOTA SEMARANG

Surabaya, 12 Agustus 2013

Halaman: 1 dari 1

1. Nama: ...

2. Alamat: ...

3. No. Telp: ...

4. ...

5. ...

6. ...

7. ...

8. ...

9. ...

10. ...

11. ...

12. ...

13. ...

14. ...

15. ...

16. ...

17. ...

18. ...

19. ...

20. ...

21. ...

22. ...

23. ...

24. ...

25. ...

26. ...

27. ...

28. ...

29. ...

30. ...

31. ...

32. ...

33. ...

34. ...

35. ...

36. ...

37. ...

38. ...

39. ...

40. ...

41. ...

42. ...

43. ...

44. ...

45. ...

46. ...

47. ...

48. ...

49. ...

50. ...

51. ...

52. ...

53. ...

54. ...

55. ...

56. ...

57. ...

58. ...

59. ...

60. ...

61. ...

62. ...

63. ...

64. ...

65. ...

66. ...

67. ...

68. ...

69. ...

70. ...

71. ...

72. ...

73. ...

74. ...

75. ...

76. ...

77. ...

78. ...

79. ...

80. ...

81. ...

82. ...

83. ...

84. ...

85. ...

86. ...

87. ...

88. ...

89. ...

90. ...

91. ...

92. ...

93. ...

94. ...

95. ...

96. ...

97. ...

98. ...

99. ...

100. ...

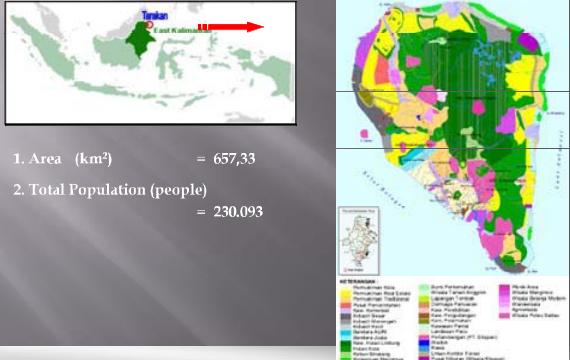




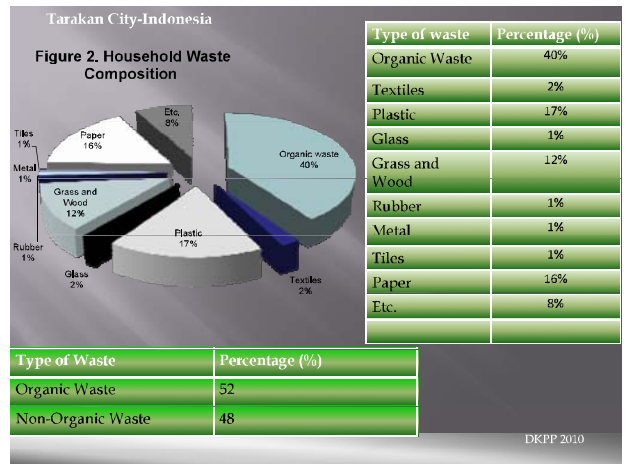
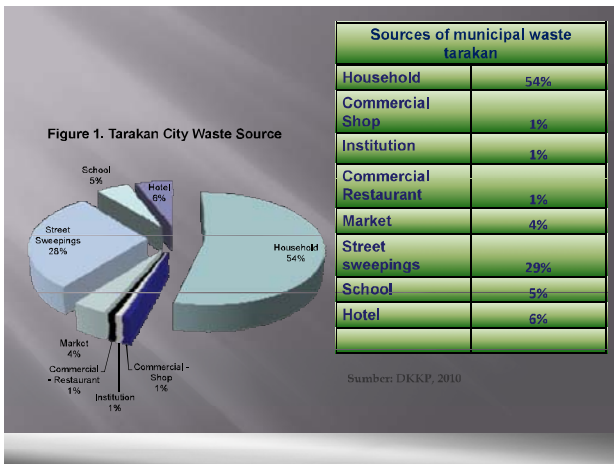
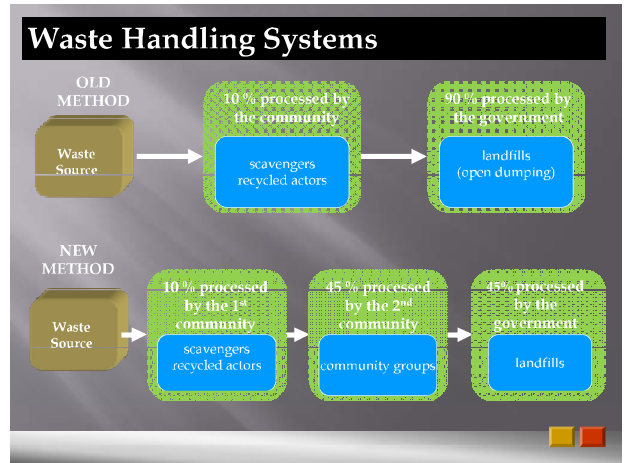
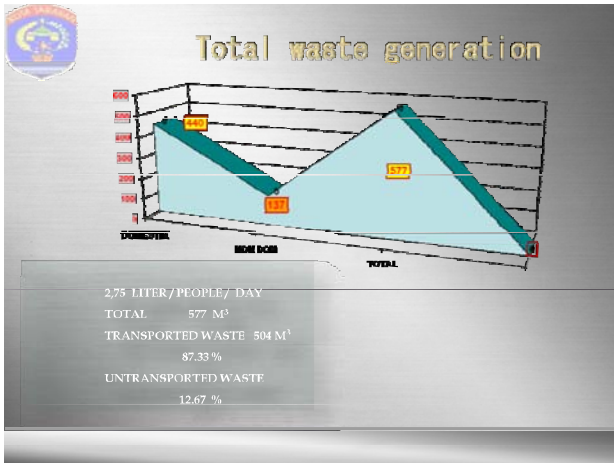
CLEANSING DEPARTMENT OF TARAKAN CITY LOCAL GOVERNMENT

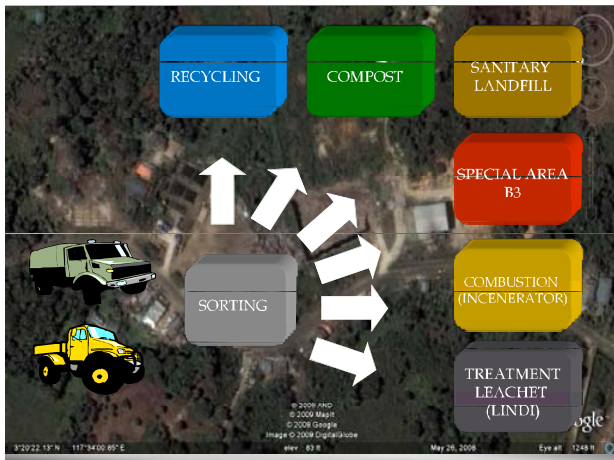
Sonya Wijayanti

TARAKAN ISLAND



1. Area (km²) = 657,33
2. Total Population (people) = 230.093



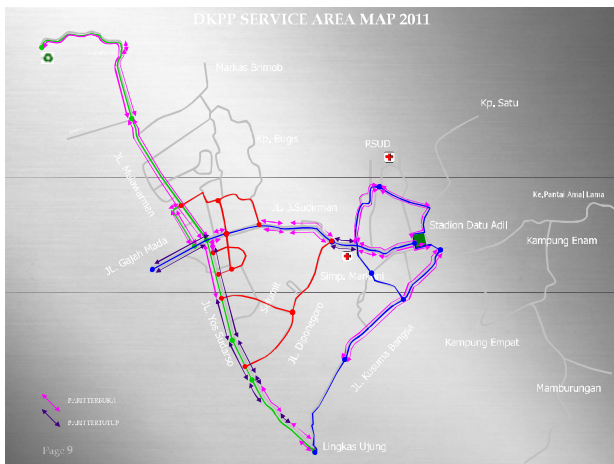


CLEANSING DEPARTMENT OF TARA KAN CITY

VISION :
 "AS THE BEST SANITATION DEPARTMENT AND THE CEMETERY GARDEN IN KALIMANTAN YEAR 2014 AND THE BEST LEVEL OF CITIES IN INDONESIA 2020"

MISSION :

1. The increased quantity and quality Hygiene Services, Garden and Cemetery;
2. Inceas Community Participation;
3. Building Coordination of partnership between government, business and society;
4. Doing Guidance;
5. Doing Supervision.



FLAGSHIP

- WASTE MANAGEMENT WITH S3R SYSTEM
- WASTE MANAGEMENT WITH HOUSEHOLD SCALE
- WASTE TREATMENT IN LANDFILLS
- SPECIAL AREA INTEGRATED
- APPLICATIONS SOLID WASTE BANK
- OUTSOURCING WORK
- AREA ADIPURA
- FOREIGN COOPERATION

TARGET

- Awake Hygiene in Areas of Operations
- Reduced Number of Waste
- Waste further towards zero waste
- Active participation of all elements of society
- Changing the mindset about waste (a problem - a blessing)
- CULTURAL CHANGE

- Replikasi bank sampah
- Pembuatan jadwal pembuangan dan pengangkutan sampah
- Green and Clean Competition
- Active participation of all elements of society
- Mengaktifkan program CSR perusahaan swasta

CHALLENGES, CONSTRAINTS AND OPPORTUNITIES

CHALLENGES

- COMMUNITY PARTICIPATION.
- OPTIMIZATION AND EFFICIENCY.
- IMPROVEMENT & DEVELOPMENT OF EXISTING SYSTEMS.
- HEALTHY ENVIRONMENT IS AFFORDABLE.

CONSTRAINTS

- OPERATION AND MAINTENANCE.
- COMMUNITY AWARENESS THAT WILL CLEAN AND HEALTHY ENVIRONMENT IS STILL LOW.

OPPORTUNITIES

- INSTITUTIONAL MANAGERS.
- DEVELOPMENT OF EXISTING.
- REDUCING COST OF SERVICES.
- USE OF LOCAL PRODUCTS
- DECENTRALIZATION / LOCAL AUTONOMY.

Composting in Municipal Solid Waste Management

- **Composting in Tarakan starting in 2007 until now**
- Composting program in Tarakan using the system:
 - a. Household Scale
 - b. Community-based composting
 - c. Composting center in the market
- **Types of composting technology :**
 - a. Takakura Method
 - b. Open Windrow
 - c. Barrel Composter

Composting in Municipal Solid Waste Management

- Stakeholders involved in the composting
 - a. Local government
 - b. Community Groups
 - c. Media Organization
 - d. School
 - e. Private Company
- Handling End compost
 - a. For sale to the public
 - b. In order to reforestation
 - c. Purchased by private companies
 - d. Used for garden city

Success factors at composting program

- a. Local government
- b. Community Groups
- c. Media Organization
- d. School
- e. Private Company

Barriers and challenges at composting program

- a. For sale to the public
- b. In order to reforestation
- c. Purchased by private companies
- d. Used for garden city

CEBU CITY PRESENTATION

Networking Seminar on KitaQ
Composting System in Asia
June 28-July 1 2011, Kitakyushu City,
Japan

Part 1: Solid Waste Management in Cebu City

Basic Information

Population: 799,079

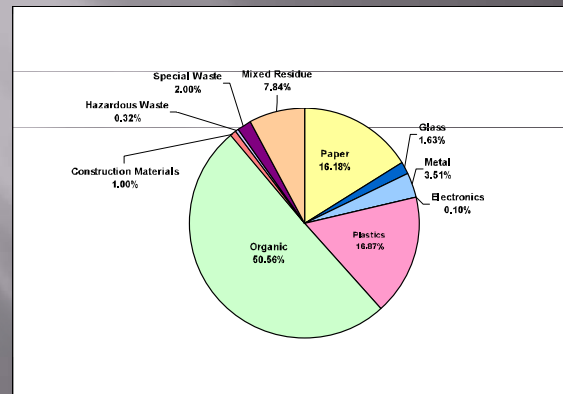


- Total Waste Generation: 411 tpd
- Total Waste Collection: 285 tpd est.
- Total Recycling: 21,044 tpd, worth Php 234,000.00/ day
- SWM Budget Allocation: Php 85M, 2008

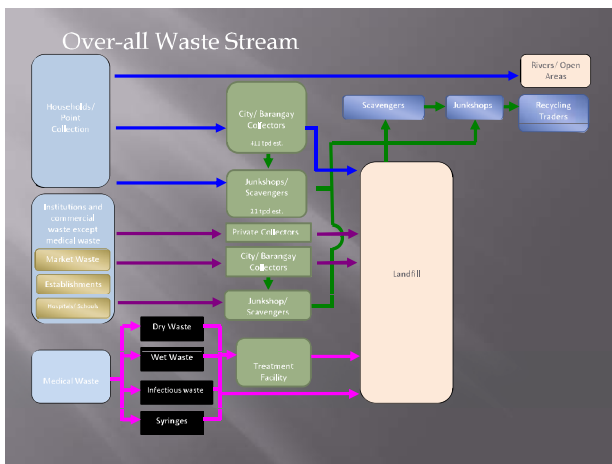
Waste Characteristics

- Waste Generation
 - Households
 - Institutions (schools, businesses establishments, offices, etc.)
 - Markets
 - Hospitals
 - Sweepings

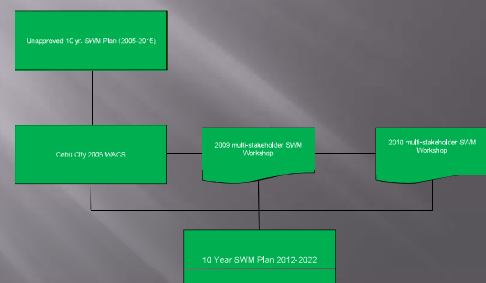
Waste Composition



Over-all Waste Stream



Solid Waste Management Strategy Year of Preparation



Vision and mission

“Cebu City with empowered stewards and stakeholders that nurture the environment through integrated solid waste management.”

Targets for waste reduction

Divert wastes by 50% from the Inayawan Sanitary Landfill within the next 3 years

Reduce wastes by 25% in the next 3 years.

Complete enforcement of the SWM laws and ordinances



Cebu City Landfill

New initiatives, actions or policy support taken to implement the strategy in partnership with other stakeholders

- ▣ Partnership with the academe through the City Academe Network (CAN) in the dissemination of information about SWM
- ▣ Partnership with the business and industry sector Cebu Chamber of Commerce and Industry (CCCI) for the financial support of SWM programs
- ▣ Partnership with the religious sector through the Archdiocese of Cebu and Interfaith sector for the participation of communities in SWM
- ▣ Partnership with international organizations such as IGES, KITA, UNEP, AusAid, etc. for technical and financial assistance for SWM programs

Progress, results or targets are achieved already

- ▣ Distributed around 1,500 bags of Takakura Mother compost which reduces around 750 kgs. of biodegradable waste per day
- ▣ Constructed a compost center with the assistance of KITA which can produced 4.5 tons of Takakura mother compost
- ▣ Partnered with schools and universities to put up their own Takakura distribution center



Takakura basket



- ### Issues, challenges, constraints
- ❑ Still a lot to be done in SWM
 - Many factors are still unknown, such as collection rate, collection efficiency, time efficiency, future waste generation, etc.
 - Weak participation level in waste segregation, reduction
 - Limited final disposal options
 - ❑ Weak CCENRO
 - Inadequate number of personnel
 - Inadequate financial resources
 - Few equipment
 - ❑ SWM components still lodged in other departments/ offices, like garbage collection and disposal
 - ❑ Few SWM practitioners in the locality that would support SWM policies and implementation

- ### Future actions
- ❑ Increase resources for CCENRO by convincing political decision-makers that a stronger environment office is an advantageous political step
 - ❑ Intensify SWM IEC through use of mass media and community dialogues
 - ❑ Increase individual and community participation in segregation and reduction by providing viable incentives such as purchase of compost, financial assistance, food for work, etc.



Part II: Existing composting programs in Cebu city

Composting programs began with implementation R.A. 9003 in 2004. The City Agriculture Department initiated vermi-composting in the agricultural areas in Cebu City. Hon. Nestor Archival also championed composting for the reduction of biodegradable wastes. Most of the programs were showcase projects in the applicability of the technology, which was successful for a time but was not scaled up for wider practice.

In 2007, Takakura Home Method of composting was introduced to the Cebu City Government through the City Planning and Development Office and Office of Hon. Edwin Jagmoc, then a city councilor. With Pagtambayayong Foundation, Inc., the City Government actively pursued a wider dissemination of the method. Unfortunately, there was a very limited response in the community and/or weak distribution mechanism.

Through a wider network of the urban poor, academe, parishes and businesses, we aim to distribute to about 50% of the city's households, or around 75,000 Takakura mother compost bags within the next 3 years. There would be distribution in the communities, parishes, schools and businesses. Aside from household composting, other waste generators such as markets and institutions will be strongly encouraged to do composting in their own premises.

Compost product will be purchased by the City Government for its greening program and support for farmers in upland agriculture. The city has allocated **Php 2.5M** for the purchase of compost. However, the mechanics for the purchase has yet to be decided.

Sharing lessons learned

- Identify success factors in promoting sustainable composting programs based on your own experience
 - Political support from political leaders
 - Strong public support and receptive public for environment programs
 - Reliable technical skills of personnel in Takakura composting method
- Identify barriers and challenges in promoting sustainable composting programs based on your own experience
 - Currently a weak institution that promote composting programs
 - Technical information resources is limited to trained personnel



- Identify what kind of external assistance you may need to improve your composting programs.
 - Technical support
 - Training of personnel, additional compost advisers
 - Acquisition of facilities, such as resource center, composting center, etc. and equipment, such as shredder, skidsteer
 - Financial support
 - Support for purchase of supplies
 - Personnel salaries

Solid Waste Management in Kampar District Council. Malaysia



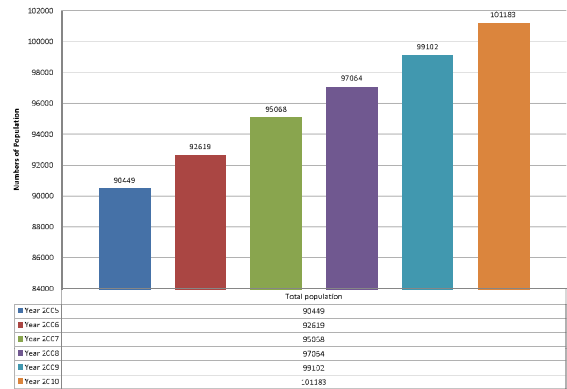
Kampar District Council, Perak, Malaysia

Operation area

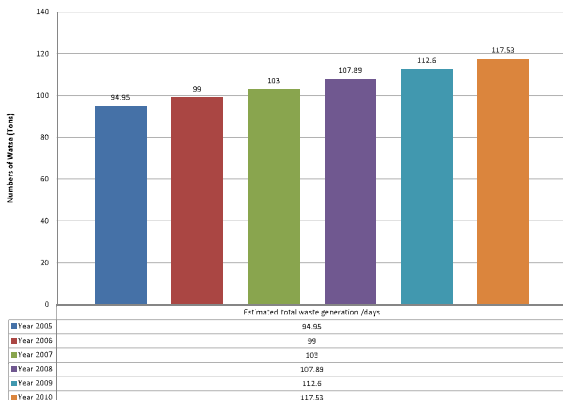


- 1) KAMPAR
- 2) MAMBANG
- 3) TRONOH MINES
- 4) GOPENG
- 5) KOPISAN
- 6) LAWAN KUDA
- 7) KOTA BHARU
- 8) JERAM
- 9) KUALA DIPANG
- 10) MALIM NAWAR
- 11) SUNGAI SIPUT (S)

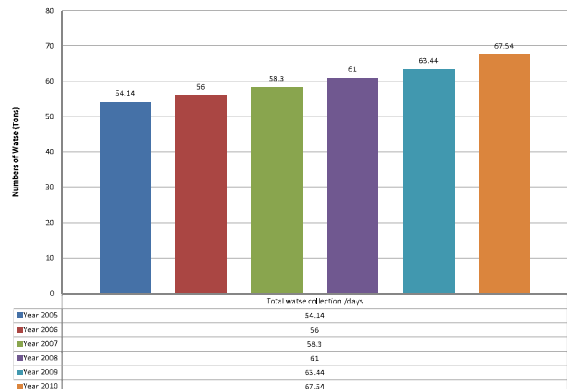
Total Population year 2005 - year 2010



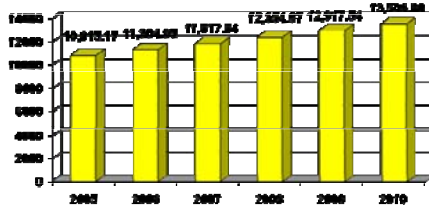
Estimated Total Waste Generation / Day



Total Waste Collection / Day



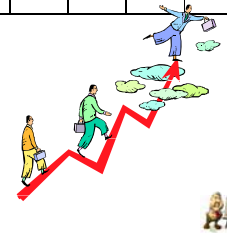
5. Total Recyclables (2005-2010)



No	Materials	2005	2006	2007	2008	2009	2010
(Tones/year)							
1	Papers	5,973.41	6,247.92	6,535.58	6,837.06	7,153.05	7,484.27
2	Plastics	2,810.57	2,931.91	3,058.68	3,191.11	3,329.47	3,474.04
3	Glass	1,336.38	1,398.34	1,463.30	1,531.41	1,602.82	1,677.71
4	Ferrous Metals	553.68	579.00	605.52	633.32	662.44	692.96
5	Aluminium	141.13	147.78	154.76	162.08	169.76	177.82
Total		10,815.17	11,304.95	11,817.84	12,354.97	12,917.54	13,506.80

MDKpr recycling Rate...

Recycling Rate (%)				
2006	2007	2008	2009	2010
5%	7%	9%	11%	13%



Total Municipal budget and its allocation for SWM

2006	2007	2008	2009	2010
RM8mil	8 mil	9 mil	10mil	12mil
RM 2.7 mil	3.4 mil	4.0 mil	4.3 mil	4.7 mil

Waste characteristic

Based on the landfill data, the recorded average total waste as disposed to be around **67.54 tones/day**

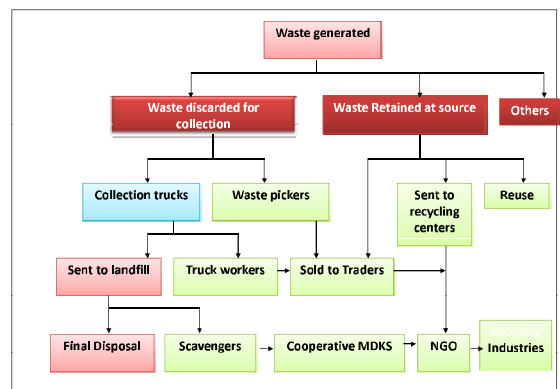
No	Generation Sources	Waste as collected (tones/day)	Percentage
1	Household	40.71	60.27%
2	Commercial	12.43	18.40%
3	Market	11.40	16.88%
4	Industrial	1.2	1.78%
5	Public Parks /Garden	1.8	2.67%
Total		67.54	100.0%

3. Waste Composition

- Food waste : 39.6%
- Paper : 31.2%
- Plastic : 8.1%
- Glass : 3.5%
- Scrap metal : 1.7%
- Aluminums : 0.7%
- Others : 15.2%



Waste Flow in MDKpr



SWM Strategy of Kampar

Year prepare : 2005



Vision :

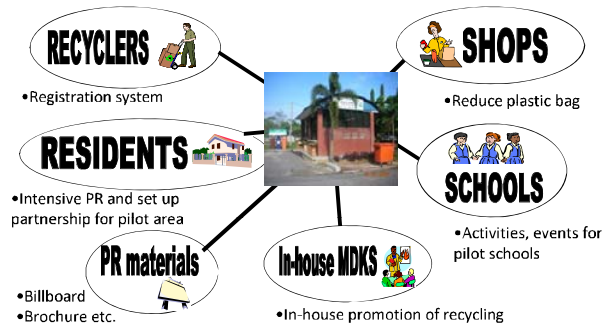
Reduce waste disposal to landfill by 22 % recycling rate by year 2020



Mission : To promote waste awareness minimization by increasing public and building effective recycling system

Action Plan

- Overall project plan for each targets.



Progress, results achieved already

- Achieve 13% recycling rate
- 13 model schools
- 2 community initiatives
- 20 trainers
- Recycle network unit in district office
- Information Network with recyclers

Issues

- **Issues** - privatization of SWM (federal level)
- **Challenges** : continuous and sustaining program
- **Constraints** : staff and finance
- **Future action** :
 - continue as LA 21 program
 - Compost centre at landfill site

Let's join 3R @ Golden Dragon Garden Community

How it get Started ?



Promotion of composting in Kampar



JOCV

to achieve ZERO WASTE society
用正确的方式进行再循环，
以达成“零垃圾”的社会

Let's try! COMPOST

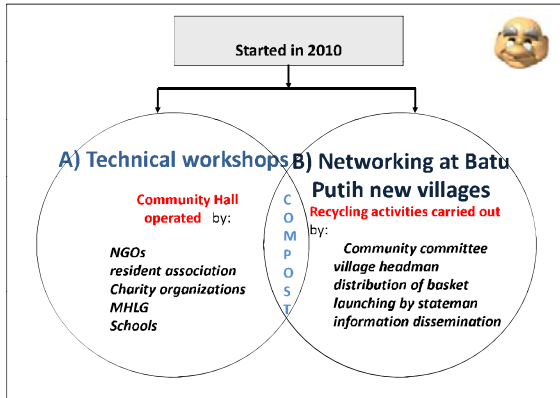
- 2 Cardboard Boxes
- Soil
- **Charcoal**
- **Kitchen waste** (Vegetable, fruits peels etc.)
- Mixing tool (shovel, turner, or lubber glove etc.)



Optional
Rice bran



Existing Composting Program



THM – household program (Pilot Project)

Takakura home method – 2 basket per household



Stakeholders involved, role and responsibilities

1. **NGOS – information dissemination**
2. **Schools – information, workshop, role model**
3. **Academic institutions – lead role model**
4. **Private sectors – financial support**
5. **District council – main committee (every month reporting progress)**

Mobilize external resources

- **Community participation – workshop with resident group.**
- **Launching by the statesman.**
- **NGO participation – handicap association e.g. Kampar beautiful Gates**
- **University students hands on project (community service society)**
- **International cooperation – JOCV**

Budget Allocation For Compost

- **Municipal budget (part of Local Agenda 21 program) → RM 30 K a year**
- **Federal government - RM 45 K**

Final product of compost

- **Promotion of backyard gardening**
- **Sell back to landscape department for own public places & garden use**

Lesson Learned

Success factor

- *Segregation at source*
- *Pure organic waste (homogenous) such as food and beverages industries is easier*
- *Bigger quantity and more sustainable*
- *Market value for compost is also crucial*

Barriers

- Lack of knowledge, attitude (do not segregate waste) and skills
- need continuous strengthening of project
- Market for compost is small
- Price is low
- Characteristic of compost content sensitive (Halal or haram perspective from religious point of view)

External assistance

- *Demand market with reasonable price*
- *Budget to implement compost needed*
- *If market is available → feasible doing compost)*
- *E.g. sell it back to landscape department of own office usage for public landscaping works*



Solid Waste Management and Composting in SibU

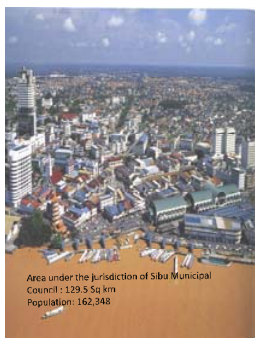
**SIBU MUNICIPAL COUNCIL,
SIBU, SARAWAK, MALAYSIA**

JICA
Kyushu International Centre
29 June 2011

Sibu – Gateway and Regional Centre of Central Sarawak,
Malaysian Borneo



Present SibU Town



Area under the jurisdiction of SibU Municipal Council : 129.5 Sq km
Population: 162,348



Overview of SWM

Revenue collected by SibU Municipal Council for waste collection for year 2010:- RM3.5 million
- Based on the 4% ARV (Assessment Rate/year)

Expenditure for solid waste management for year 2010:- RM5 million, which included RM310,020.00 for leachate treatment plant, RM948,112.00 for sanitary landfill and the rest Payment for refuse collection (4 contractors)

Waste Management

- Divided into 4 zones, therefore 4 contractors
- Collect on domestic and commercial waste
- Collection schedule:-
 - Residential areas:- 3 times a week
 - CBD areas & markets:- twice a day
 - Other commercial areas: once a day
- Disposed at Kemunyang Sanitary Landfill

SANITARY LANDFILL AT KEMUNYANG

Locality- Approximately 26 km from SibU town and is accessible via Jalan Kemunyang.

Cost of the Project- 8 Millions (RM)
(operational in 2001)

Land Coverage Area- Approximately 13 Acres

Capacity

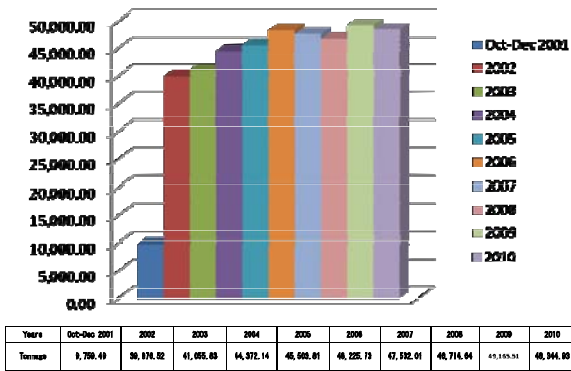
- Cell 1 = 60,000 cu m
 - Cell 2 = 37,000 cu m
 - Cell 3 = 28,000 cu m
 - Layer 2 (14 m - 19 m) = 81,000 cu m
 - Layer 3 (19 m - 24 m) = 39,000 cu m
 - Layer 4 (24 m - 29 m) = 11,000 cu m
- Total : = 256,000 cu m
- Life Span = 10 Years

MONTHLY TONNAGE DISPOSED AT KEMUNYANG SANITARY LANDFILL FROM 2001 UP TO DATE

YEAR	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
January	4,502.52	4,091.96	3,727.22	4,720.34	5,727.24	5,418.89	4,388.70	4,535.37	5,254.52	
February	3,229.13	2,834.32	3,174.31	4,132.09	4,196.90	4,583.21	3,978.00	3,628.73	4,362.78	
March	2,943.16	3,073.84	3,451.61	3,735.10	3,847.16	3,824.10	3,701.97	3,661.28	4,034.58	
April	2,982.61	3,170.12	3,391.28	3,400.13	3,604.95	3,595.16	3,595.23	3,789.14	3,844.78	
May	3,073.41	3,250.52	3,673.77	3,613.33	3,839.74	3,669.87	3,534.43	3,989.60	3,928.66	
Jun	2,854.83	3,189.92	3,363.06	3,351.20	3,524.21	3,342.34	3,352.16	3,727.81	3,795.59	
July	2,962.32	3,226.38	3,644.45	3,617.83	3,717.97	3,736.36	3,534.49	3,683.52	3,911.33	
August	2,929.51	3,218.91	3,682.21	3,520.13	3,789.63	3,617.31	3,530.12	3,930.05	3,919.63	
September	2,909.49	3,286.43	3,379.51	3,614.24	3,674.10	3,527.44	3,723.68	3,982.40	3,606.56	
October	1,591.07	2,232.09	3,662.26	3,465.46	3,936.78	3,816.58	3,819.12	4,614.67	4,393.17	3,608.67
November	3,332.28	3,480.21	4,175.93	4,127.41	3,318.72	3,716.37	3,642.77	4,496.42	4,636.03	3,935.22
December	4,848.14	4,777.24	3,957.24	5,385.85	4,013.92	4,791.86	4,755.45	4,284.87	4,143.58	
SUB-TOTAL	3,759.48	38,876.52	41,065.83	44,372.14	46,508.81	48,225.73	47,632.01	48,714.84	49,186.51	48,344.83

TOTAL TONNAGE UP TO DATE = 420,550.61

Monthly waste disposed at Kemunyang Sanitary Landfill, Sibul from 2001 up to date



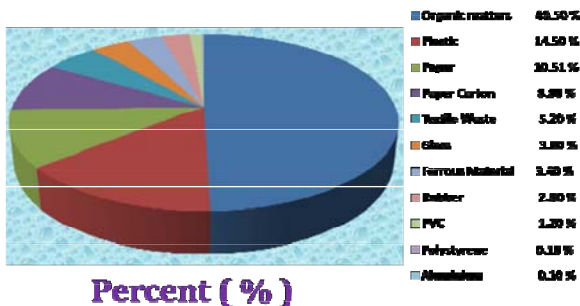
Total tonnage up to date = 420,550.61
Population Served = 162,348

Sanitary Landfill at Kemunyang. Refuse Composition [By Weight]

Item	Material	Percent [%]
1	Organic matters	49.50
2	Plastic	14.50
3	Paper	10.51
4	Paper Carton	8.80
5	Textile Waste	5.20
6	Glass	3.80
7	Ferrous Material	3.40
8	Rubber	2.80
9	PVC	1.20
10	Polystyrene	0.10
11	Aluminium	0.10

10

Waste Characterization





National Recycling Program

- Launched in SMC on **23 June 2011**
- 66 sets of three coloured recycling bins were distributed to schools, commercial centres, petrol stations and put at public places.
 - Brown for glass
 - Blue for paper
 - Orange for plastic & aluminium

Recycling – Aluminium Cans

Year	Total Amount Collected (kg)
2008	756
2009	1932
2010	1100
Jan – April 2011	161

Recycling – Old Newspaper (ONP) and Mixed Paper

Year	Total Amount Collected (kg)	
	ONP	Mixed Paper
2008	150,312	3,823
2009	132,279	2,092
2010	113,952	1,537.5
Jan – April 2011	33,502	13,993

Journey to Community Composting

- Started in 2008 (conventional method)
- Pilot projects in 2 residential neighborhoods and 2 secondary schools
- Activities
 - Briefing, demonstration, free compost bins, follow up inspection
 - Communal composting centre (Market hawkers and schools)
 - JICA ,under JICA Partnership Program (JPP) “Community-based Solid Waste Management System Development Project in Sibu Municipality assisted SMC in promoting THMC.

- Under JPP, experts from Japan were dispatched to Sibu:-
 - December 2009 – Regional Workshop
 - July 2010 – Follow up visit
 - November 2010 – Seminar and follow up visit to composting centre/households
 - February 2011 – Technical Workshop/Seminar

- Budget allocation (under Local Agenda 21):-
 - Municipal
 - Federal government
 - No cost/benefit analysis done at the moment.



December 2009



July 2010



November 2010



February 2011



**Small Composting Centre at
Seng Ling Road, Sibu**



Small Composting Centre at Seng Ling Road

- 20-50 kg of green waste (vegetables, fruits, etc) collected daily from Sibu Central Market, Rejang Park Market
- Usage of compost:- door gift, exchange, used as seed compost
- Challenges:- segregation of waste, shredder, cooperation from the hawkers/contractors, manpower



Environmental Management Nonthaburi municipality, Thailand



PORNSRI KICTHAM – Municipal Clerk

Nonthaburi municipality



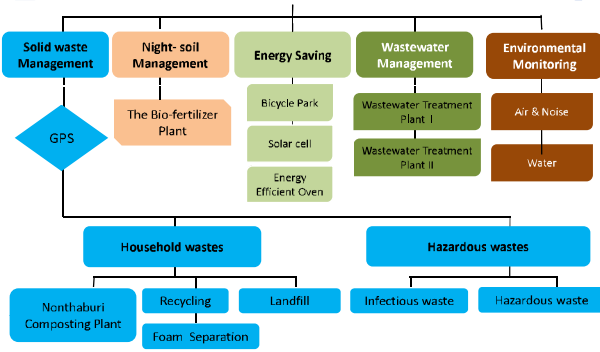
Area 38.9 sq.km.

Population 263,553

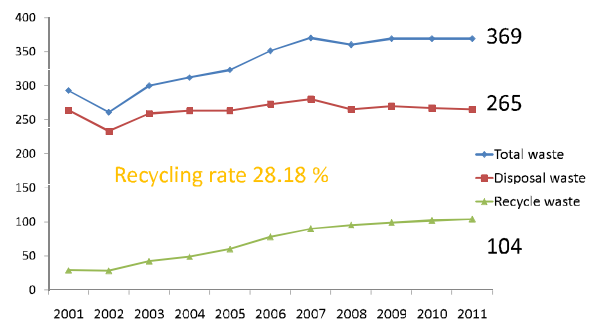
106,074 households



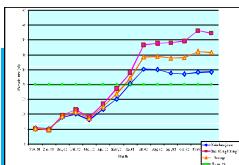
Urban Environment Management



Total waste generation, Total Waste collection and Recycling rate in Municipality , 2001-2011 (t/d)



2001 : First Meeting of the Kitakyushu Initiative Network, Japan



Recycling rate 37.2 % and 24.3 %

2002 : Pilot Project Maximizes Recycling & Minimizes Waste in communities

2002 : Nonthaburi Composting Plant

Organic fertilizer
5 tons/month



2004 : Infectious Waste Management

405,510 kg/year

98 hospitals & health clinics

2005 : GPS Vehicle Monitoring System

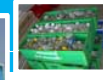


2006 : Night soil Management



12,000 Visitors,
70 tons ,
6,000 US\$ /year

2007 : Hazardous Waste Management



11,300 Kgs./year , 101,700 bulbs

2009 : Wastewater Treatment Plant at Municipal office



75 m³/day , BOD < 10 mg/L

2010 : PSP & EPS Foam Separation

Start July 2010

1,200 kg/month



2011 : Solar cell

Start Jan 2011

150 kilowatt/day

Promotion of Composting in Nonthaburi

Nonthaburi Composting Plant (started 2002)



Composting technology :
Kind of composting:
technology market
waste
Capacity : 5 tons/day

Budget supporting : Asia
Urbs Program

Partner : Nonthaburi , Thailand & Reggio Emilia ,
Italy & Barcelona , Spain



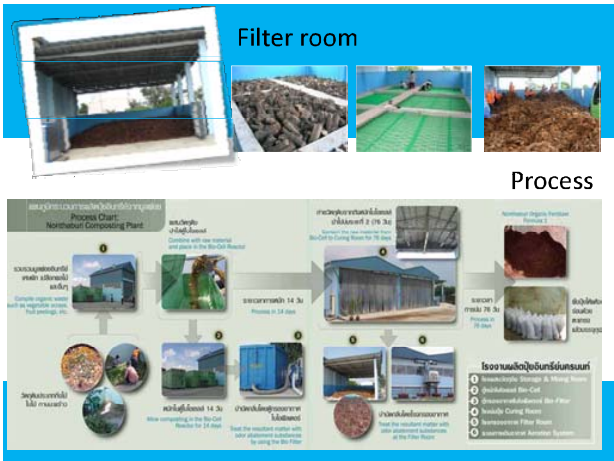
Mixing room

Bio-cells



Bio-Filter

Curing room



Filter room

Process



Composting Promotion : Takakura method



Key success factors

- ☆ Policy
- ☆ Small scale
- ☆ Simple technique
- ☆ Teamwork
- ☆ Motivation



Environmental Learning Center

Future Plan

1

Zero waste

2

2022 Beautiful Canal and Clean River in Nonthaburi



Waste from Electrical and Electronic Equipment : e-waste

3

- Thank you -



**Workshop of KITA-Q
(Takakura Composting) Method**

29.June. 2011
J-POWER Group JPec Co., Ltd
Wakamatsu Environment
Research Institute
Koji Takakura, Sayaka Yaoya

Important item of composting

- **Microorganisms**
- **Moisture control**
- **Aerobic(O₂:Oxygen)**

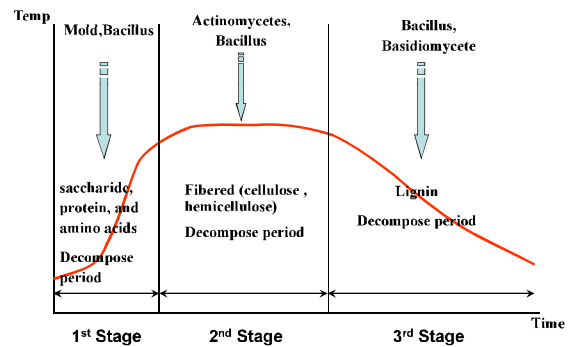
**Various Microorganisms
relate to the composting**

- The composting cannot be finished by only one kind of Microorganism .
- The priority kind of Microorganism changes according to the stage of the composting.
- Bacillus, Mold, Actinomycete , and Basidiomycete are necessary.
- Also in the category of the same kind of Microorganism, it's better a lot of kinds. (Diversity)



You do not expect the bacterium to proliferate naturally.
You adjust the bacterium with a purpose.

**Transition of composting and microorganisms
(It is advanced at the same time in the compost container.)**



Composting the 1st Stage

◎An important thing

Easily decomposable organic matters are quickly decomposed with a useful bacterium.

Both good and bad Microorganisms can use the easily decomposable organic matter.

For example,

Mold and E. coli bacteria proliferate on the condition. And, food poisoning and the allergy might be caused.



Countermeasure

Composting the 1st Stage

Increasing a large amount of harmless Molds and Bacillus in the compost.

"Fermented food such as Aspergillus oryzae and lactic acid bacteria" is added with a purpose.

→ It comes to prevent rot.

Composting the 2nd Stage

◎The majority of a botanical organism such as the vegetables is fibered.

cellulose , hemi cellulose, Lignin



Countermeasure

Actinomycetes is suitable for the decomposition of cellulose and the hemi cellulose.

(Actinomycetes lives in the hums.)

The hums can be made though a long time is needed.

Composting the 3rd Stage

◎The decomposition of the lignin contained in the plant such as the vegetables is slow.



Countermeasure

The basidiomycete is suitable for the resolution of lignin.

The basidiomycete is Mushroom

The fermentation microorganisms are gathered in the region.

- The microorganisms that relate to the fermented food is effective.
 - When the fermented food is unavailable, “Decomposed fallen leaves (hums) ” are very effective.
-
- Moreover, the bacillus, the type, Actinomycetes, and Basidiomycota can be collected at the same time.

The fermentation bacterium is gathered in the region.

- In addition, effective Microorganisms for the composting are on the surface of the vegetable and the fruit.
-
- They are collected by applying Japanese pickles [asazuke] by using salt water.
 - The increasing of miscellaneous germs is controlled with the salt. And, aimed **lactic acid Bacillus** and **yeast fungus** are collected.

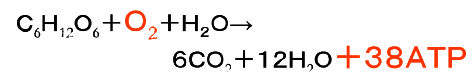
Anticipated efficacies in the fermentation Microorganisms

It is not only effective for the composting.

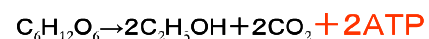
- Microorganisms collected in the local area are good matching the soil in that area.
- We expect fermentation Microorganisms can produce the substance like hormone and the material like vitamin and the effect of promoting the plant growth .
- A certain kind of Actinomycetes makes the antibiotic.

As for the composting, aerobic decomposition is good.

•Aerobic decomposition



•Anaerobic decomposition (alcoholic fermentation)



ATP (Adenosine triphosphoric acid):
Energy source of all lives

Aerobic decomposition is fast

The moisture control

The good condition is 40~60%.

- The activity of the microorganisms become slow when moisture is a little.
- When moisture is much, it becomes the oxygen-deficiency.
→ anaerobic and rot.



When moisture control is to 40-50% , the failure is few.
When moisture control is to 50-60% , decomposition is fast

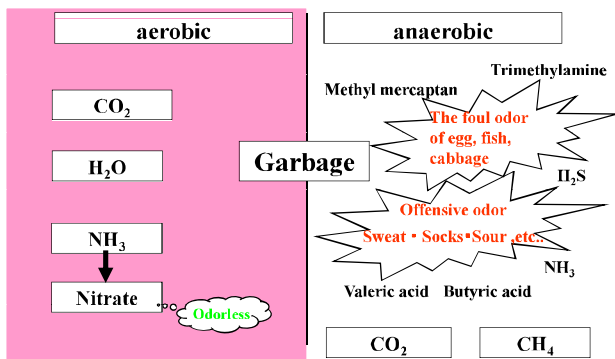
moisture and oxygen are related.

- Oxygen in air is 21%.
- Oxygen in water is 0.0008%(8ppm)
- When it is high moisture, much water enters the space and it changes to anaerobic.

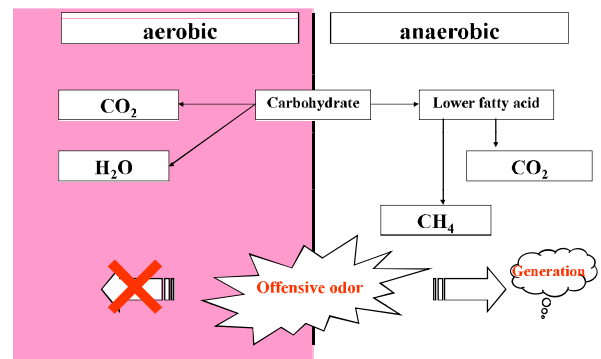


When it is high moisture, it is perishable.

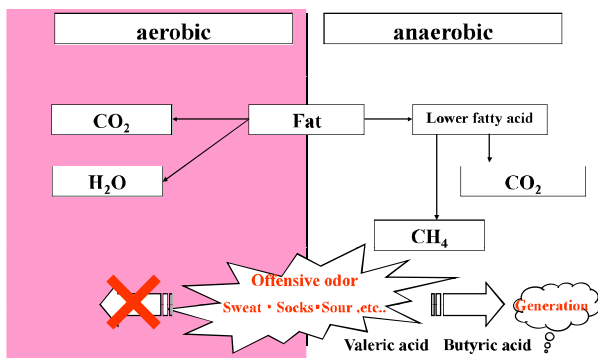
Difference between aerobic and anaerobic -1



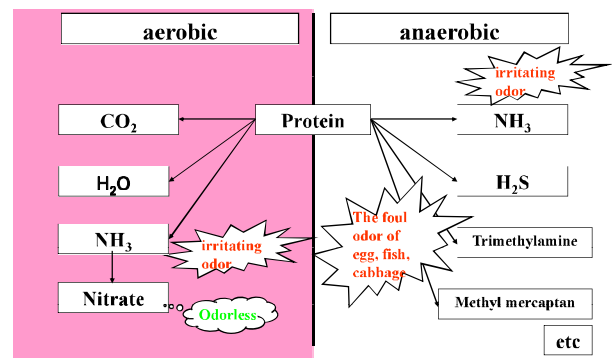
Difference between aerobic and anaerobic -2



Difference between aerobic and anaerobic -3



Difference between aerobic and anaerobic -4



Composting and C/N ratio (ratio of carbon/nitrogen)-1

- The best C/N ratio of the composting is 20.
- When the C/N ratio is high, decomposition is slow. (It needs long time)



- We need to adjust the C/N ratio for the garbage composting?
- No necessary, **because** the C/N ratio of garbage is 20 or less.

Composting and C/N ratio (ratio of carbon/nitrogen)-2

- What material is high C/N ratio?

→Hard plants are high.

Fallen leaves : 50~100, Straw : 110~150,

Rice **straw** and Rice husk : 70,

Sawdust : 300~1300 (The conifer is high.)



Composting and C/N ratio (ratio of carbon/nitrogen)-3

- Then, when material of the fermentation is made by sawdust, adjustments are necessary?

→Sawdust is not made compost. It only uses as a base material.

When garbage is decomposed, the entire C/N ratio falls. At the end, It becomes C/N ratio that can be used as compost.

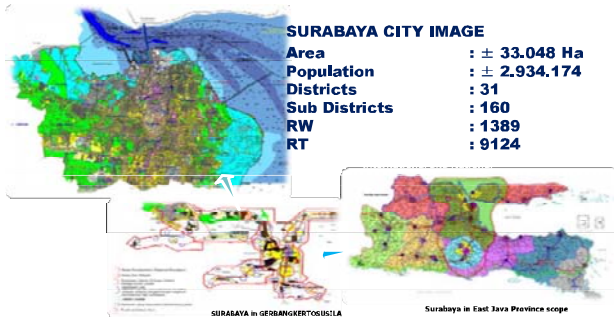


Community - Based Solid Waste Management as Best Practice in Surabaya City

EMA AGUSTINA, ST
Dinas Cipta Karya dan Tata Ruang



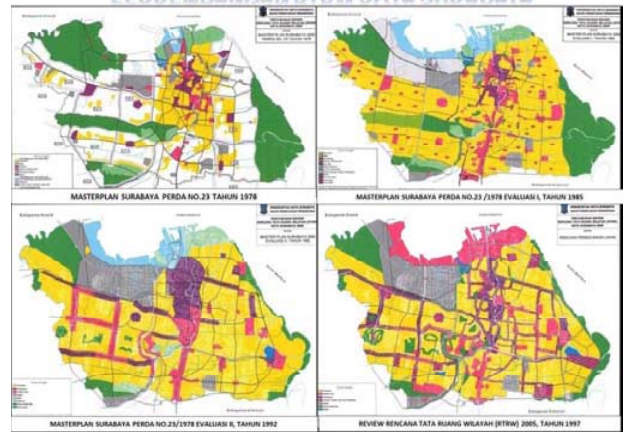
•The Second Biggest City in Indonesia after Jakarta;



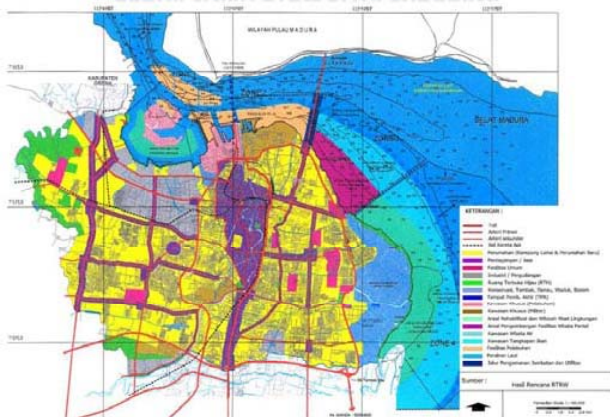
In national scale, Surabaya is the center of development in East Indonesia.
Regionally, Surabaya is the capital city and center of service and culture in East Java.

Surabaya City

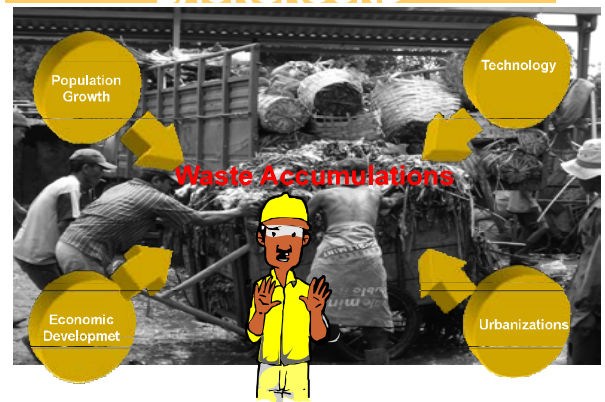
PERKEMBANGAN RTRW KOTA SURABAYA



PERDA 3/2007 RTRW KOTA SURABAYA



BACKGROUND

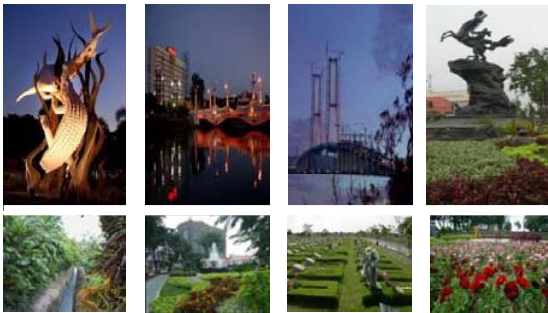


PROBLEMS



1. Low awareness on waste dumping
2. Hawker and market along the pedestrian causing waste
3. Product waste which cannot be reuse/reduce/recycle
4. Low knowledge on simple waste technology, which create product with economic value

SHOWING SHORT MOVIE ON BENOWO LANDFILL



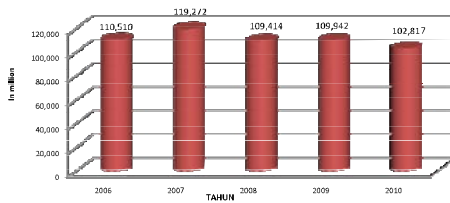
WASTE MANAGEMENT

"Waste management activities in the city of Surabaya is focused on reducing waste at its source, and processing waste in the landfill by using environmentally friendly technologies."

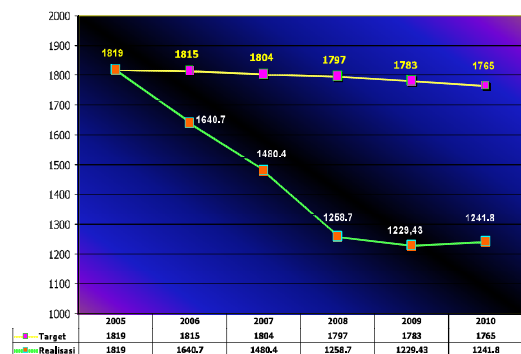
LOCAL BUDGET FOR ENVIRONMENT

NO	BUDGET	BUDGET				NOTES
		2009	%	2010	%	
1.	Total budget	4,364,366,780,398	100%	4,383,712,427,048	100%	
2.	Environmental budget					
	Sea, Fishery and Farming Development Program	35,334,139,497	0,8%	23,405,280,994	0,5%	Farming Dept.
	Environment Control and Conservation Program	11,430,786,632	0,3%	13,918,825,429	0,3%	Bappeko: Farming, Transportation, Environment
	Green Open Space and City Park Program	40,652,921,024	0,9%	58,200,507,958	1,3%	Farming, Spatial and Cleaning Dept.
	City Cleanliness Management Program	118,486,923,877	2,7%	105,705,809,320	2,4%	31 district, Cleaning Dept.
	TOTAL		4,7%		4,6%	

CLEANING AND LANDSCAPING DEPARTMENT OPERATIONAL BUDGET



Waste Dumped in Benowo Landfill



Waste Management Facility

A. Temporary Depot (TD)



No.	TYPE	NUMBER
1.	TD	163
2.	Waste treatment facility	16 compost center



PART 2



3R IMPLEMENTATION IN SURABAYA

1. COMMUNITY - BASED SOLID WASTE MANAGEMENT
2. COMPOSTING PROGRAMME



BEST PRACTICE IN SURABAYA CITY

- i. Community - Based Solid Waste Management
Community based waste management with community involvement in its management through 3R implementation

A. BASIC CONCEPT

- a. Reducing waste from its source: Reducing environment waste and reducing waste dumped into Landfill
- b. Waste sorting: between organic and inorganic waste
- c. Waste Treatment:
 - Organic waste processed into compost
 - Inorganic waste sold to scavenger or made into recycled products ingredients
 - Compost centre development



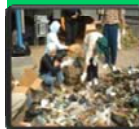
3R IMPLEMENTATION IN SURABAYA

COMMUNITY BASED WASTE MANAGEMENT

B. ACTIVITIES

Main activities for Community - Based Solid Waste Management Program :

1. Socialization to the community (City of Surabaya in cooperation with NGO helps the community such as : Bangun Pertlwi, Pusdakota, Sahabat Lingkungan etc)
2. Recruitment and training of cadres
3. Distribution of cleaning tools (composter bin, takakura basket, cart, and build compost centre)
4. Involving community :
 - a. Process organic waste into compost
 - b. Inorganic waste sold to scavenger or as recycle material
 - c. Compost center development and improvement



IMPLEMENTATION OF 3R IN SURABAYA CITY

- a. Socialization to the community
 - Socialization aims to spread the understanding of the importance of 3R starting from community level
 - Socializations are conducted in schools, communities (districts & sub-districts), markets and office buildings
 - Socialization targets: students, communities, businessmen and workers

Counseling activities



Environmental campaign



Socialization in school





PUBLIC CAMPAIGN

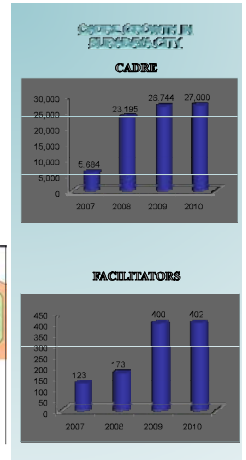
- To improve awareness and changing people habits
- Finding the most effective way in waste management by understanding people characteristics



IMPLEMENTATION OF 3R IN SURABAYA CITY

b. Recruitment and training of Cadre

- Environmental cadre has the responsibilities to guide their communities to conserve their own environment, especially in 3R issues.
- The environmental cadres has the responsibilities to share information and techniques of waste treatment to those who are in need.
- Facilitators are environmental cadres in sub-district level that coordinates environmental cadres.



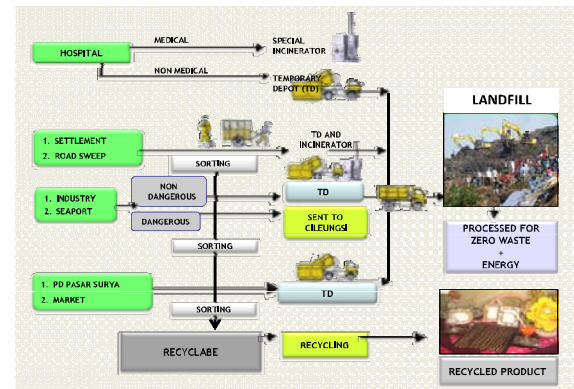
IMPLEMENTATION OF 3R IN SURABAYA CITY

c. Distribution of Cleaning Tools

- City Government of Surabaya distribute cleaning tools to help community in managing their own waste, tools given such as:
- Trash cart
 - to carry waste from the source into Transfer Station
 - Waste shredder
 - to shred waste before processing in compost center
 - Composter (Takakura basket, Composter bin, etc) given for free to communities who wants to separate and process their waste
 - City Government also build compost center using Government Budget. The proposals to build compost center can either come from City Government or communities with open site themselves



WASTE TREATMENT AND COLLECTION SCHEME



COMMUNITY WASTE SORTING



Recycled Product village



Gundih Sub-Dist, Bubutan Dist

PART 3

BEST PRACTICE IN SURABAYA CITY

II. Composting program

Follow up program from 3R implementation where separated organic waste processed into compost

A. BASIC CONCEPT

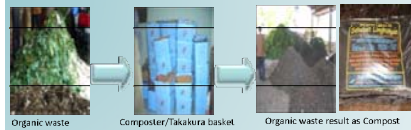
- a. Organic waste sorted and processed into compost
- b. Composting conducted in household and city scale
- c. In household scale composting using household scale composter
- d. In city scale composting using compost center. Surabaya has 16 compost centers

B. ACTIVITIES

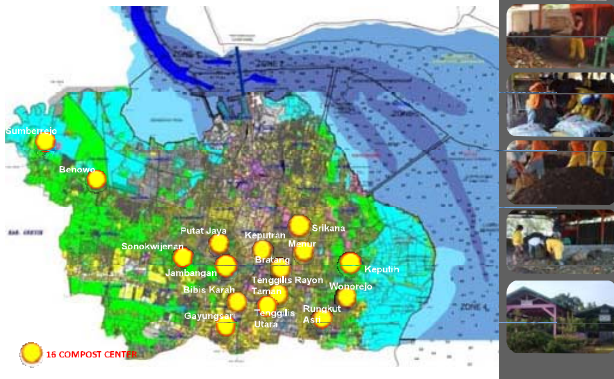
- a. Distribute household scale composter for free to socialized community
- b. Constructing compost center through community proposal or city government initiative

Distribution (till 2010) :
 - Takakura Basket reached 17,033 units
 - Composter bin reached 1,314 units

Distributed composter bin
 Distributed Takakura Basket

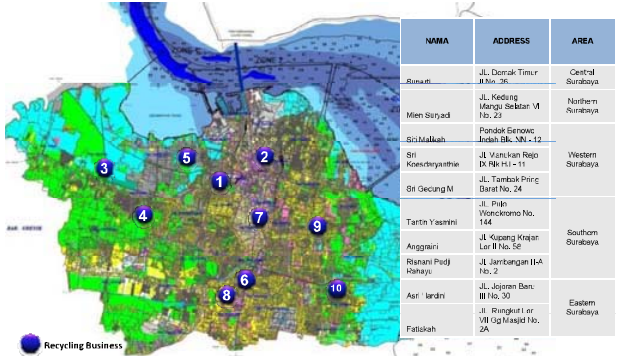


COMPOST CENTER SPREAD IN SURABAYA



IMPLEMENTATION OF 3R IN SURABAYA

Waste Recycling Business Distribution



COMPOST CENTER TRADITIONAL MARKET : KEPUTRAN



COMPOST CENTER SETTLEMENT : TENGGILIS UTARA



COMPOST CENTER BENOWO LANDFILL



COMPOST CENTER CLEANING AND LANDSCAPING DEPARTMENT OFFICE (MENUR)



COMPOST CENTER SEED GARDEN : WONOREJO



COMPOST VOLUME in SURABAYA COMPOST CENTER

No.	Location	January 2011		February 2011	
		Input (M3)	Output (M3)	Input (M3)	Output (M3)
1.	Bratang	347,00	173,50	300,50	150,30
2.	Menur	359,50	179,80	314,00	157,00
3.	Keputran	111,50	55,75	99,00	49,50
4.	Pitai Jaya	385,80	192,90	347,90	173,95
5.	Rungkut Asri	252,00	126,00	220,00	110,00
6.	Siklana	122,50	61,25	107,50	53,75
7.	Benowo	226,50	113,25	203,50	101,75
8.	Bibi Karah	131,00	65,50	122,00	61,00
9.	Sono Kwijen	364,00	182,00	321,50	160,75
10.	Tenggilis Utara	133,00	66,50	154,50	77,25
11.	Wonorejo	305,00	152,50	275,00	137,50
12.	Gunungsari	107,50	53,75	97,50	48,75
13.	Tenggilis Rayon Taman	173,00	86,50	156,00	78,00
14.	Jambangan	127,00	63,50	98,00	49,00
15.	Sumbergejo				
16.	Kepuh (Liponsos)				

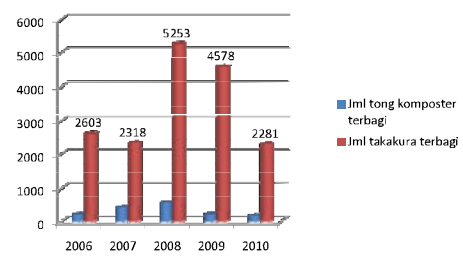
Catatan: PK Sumber Rejo dan PK Liponsos baru direvitalisasi Maret 2011
Dinas Kebirukan dan Perumahan, 2011

SEVERAL TAKAKURA AND COMPOSTER IN OFFICES

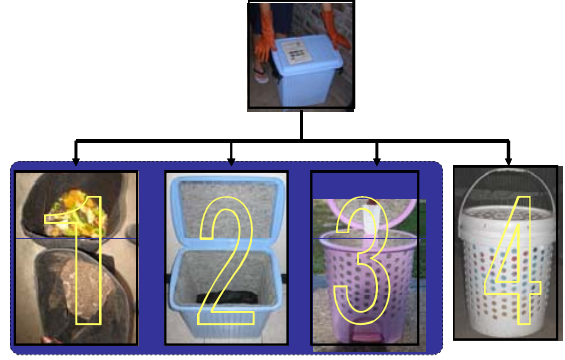


COMPOSTING PROGRAM (HOUSEHOLD SCALE)

Takakura and composter bin distribution (2009) :
-Takakura up to 13.669 unit / tahun
-Composter up to 795 unit / tahun



TAKAKURA HOME METHOD



WASTE MANAGEMENT BASE ON COMMUNITY



User of TAKAKURA Home Method in RUNGKUT LOR Kampung: 130 user

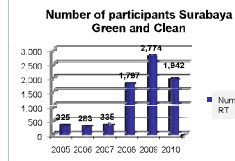
SEVERAL AREA SUCCEEDED IN REDUCING WASTE

NO	AREA	HOUSEHOLD	WASTE VOLUME (M3/ BLN)	
			BEFORE	AFTER
1	Rungkut Lor RW IV	1,165	65	16
2	Mojo RW XII	1,156	262	139
3	Kebonsari RW II	638	63,16	21,76
4	Wonokromo RW V	523	46,32	0
5	Komplek Kenjeran RW I	260	90	0
6	Pakis RW III	1,056	202,8	147,33
7	Karah RW V	500	58	13,34
8	Margodadi RW VII	681	178	60,25
9	Jambangan RW II	510	68	26
10	Kedung Baru RW V	350	14,4	4,32
11	Tenggilis Mejoyo RW IV	791	420	90
12	Ketintang RW III	720	618	210,4
13	Margorukun RW X	617	186,04	65,05

IMPLEMENTATION OF 3R IN SURABAYA

- !!!. Reward and Punishment
- Reward given to community willing to process waste is given through Green and Clean event
 - Reward to environmental cadre is given through national day awarding
 - Law Enforcement through Judicial Operations

Community participation through Surabaya Green and Clean



Surabaya Green and Clean 2005-2010



Creative recycling



SEVERAL AREA SUCCEEDED IN REDUCING WASTE (TOP 50 SURABAYA GREEN AND CLEAN 2010)

No.	District	Sub-District	RW
1	Bukzon	Gondok	1
2	Bukzon	Gondok	8
3	Bukzon	Gondok	9
4	Bukzon	Sendidi	6
5	Bukzon	Jepiro	4
6	Bukzon	Sepidi	1
7	Jambangan	Jambangan	1
8	Jambangan	Jambangan	2
9	Jambangan	Jambangan	5
10	Jambangan	Paprasangen	1
11	Jambangan	Kepusangen	1
12	Jambangan	Pirah	5
13	Jambangan	Jambangan	5
14	Tembak Sari	Seiding	10
15	Tembak Sari	Tembak Sari	6
16	Pegirian	Pegirian	6
17	Sawahan	Pegirian	13
18	Margorejo	Margorejo	5
19	Margorejo	Margorejo	5
20	Margorejo	Margorejo	4
21	Dukuh Pakis	Sigung Sari	7
22	Dukuh Pakis	Dukuh Widang	7
23	Sawahan	Pakis	3
24	Sawahan	Indahpuri	15
25	Banyu Urip	Banyu Urip	4

**SEVERAL AREA SUCCEEDED IN REDUCING WASTE
(TOP 50 SURABAYA GREEN AND CLEAN 2010)**

No.	Distrik	Perusahaan	PWF
25	Sukoharjo	Banyu Liris	15
27	Benawa	Babat Jarak	2
28	Gubeng	Gubeng	2
29	Gubeng	Barata Jaya	8
30	Gubeng	Indo	12
31	Gubeng	Kempaya	12
32	Gubeng	Gubeng	1
33	Rungkut	Rungkut Retail	9
34	Rungkut	Pertung Bank	3
35	Gerbangkertoselatan	Indomart	3
36	Widada	Nagames	9
37	Kebayoran	Kar-sen	13
38	Sukomawong	Tanjungputri	2
38	Tegay Sari	Pakingsono	2
40	Mondong	Dipati	3
41	Widada	Dipati Baru	4
42	Lakarsari	Licah Pabrik	4
43	Pabean Cahan	Praet Timur	2
44	Asemrowi	Asemrowi	1
45	Kelapa	Perak Perang	10
46	Widada	Nagapal Rejo	10
47	Widada	Nagapal Rejo	5
48	Gubeng	Dipati	5
48	Bubak	Pramo, Kertemes	2
50	Rungkut Atmal	Rungkut Teratai	2

SURABAYA ACHIEVEMENT IN ENVIRONMENT

1. ASEAN Environment Sustainable City Award 2011
2. Asian cities of the future 2009/2010
3. "Dubai International Award For Best Practices to Improve The Living Environment 2008" for Green and Cleas Initiative Indonesia
4. "The Green Apple Award 2007" for Environmental Best Practice
5. Energy globe 2005
6. Adipura 1988-1998 dan 2005-2010
7. Adiwiyata
8. Wahana Tata Nugraha
9. Green Building di Kota Surabaya: ASEAN Center for Energy Award (2002: Graha Pangeran, 2006: Graha Wonokoyo)



Introduction to the municipal waste administration

International Environmental Strategies Division
Environment Bureau
City of Kitakyushu

1. What is waste?
2. History of Japan's waste administration
3. Waste administration of Kitakyushu City

- (1) Kitakyushu City's view on the waste treatment
- (2) Waste treated by Kitakyushu City
- (3) Handling of waste other than the waste collected by the administration
- (4) Toward further reduction of the household-related waste
- (5) The latest situation and the challenges of Kitakyushu City

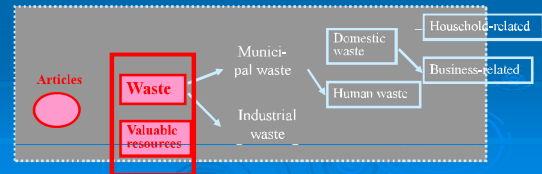
1. What is waste?

Definitions of waste

Definitions

"Waste" refers to refuse, bulky refuse, ashes, sludge, excreta, waste oil, waste acid and alkali, carcasses and other filthy and unnecessary matter, which are in solid or liquid state.

(*Waste Disposal and Public Cleansing Law*)



Kinds of waste and the parties responsible for the treatment



Municipal waste

Waste other than industrial waste

→ Treated by the local government

Industrial waste

Ashes, sludge, waste oil, waste acid and alkali, waste plastics and others stipulated by the government ordinances (total 21 items) among all the wastes left as a result of business activity

→ Treated by the discharging businesses

Examples of the Industrial Waste



Sludge



Waste oil



Waste plastics



Slag



Rubble



Soot and dusts

Sources: "Industrial Waste in Japan, 2005" of the Ministry of the Environment

The system of law for establishing the recycling-based society

Basic Law for Establishing the Recycling-Based Society (Enforcement in January, 2001)

A basic framework law for realization of the recycling-based society

[Promotion of recycling]

Law for the Promotion of Effective Utilization of Resources
Enforcement in April, 2001

[Promotion of proper treatment of waste]

Waste Disposal and Public Cleansing Law

Enactment of various recycling-related laws: Regulation to meet the characteristics of respective articles

Container and Packaging Recycling Law, Home Appliance Recycling Law, Food Recycling Law, Construction Material Recycling Law, End-of-Life Vehicle Recycling Law

Law on Promoting Green Purchasing

The role assignment between parties

➤ The role of the municipality

- ① To promote citizens' voluntary activities with regard to the reduction of waste within the jurisdiction
- ② To take necessary measures for proper treatment of waste
- ③ To make efforts toward efficient operation in the implementation of waste management, such as development of employees' capacity, maintenance of the facilities and improvement of the work method

➤ The role of the citizens

- ① To restrain generation of waste
- ② To sort and discharge waste
- ③ To promote reuse of waste by making use of reusable matters
- ④ To cooperate with the municipality for the reduction of waste and its proper treatment

➤ The role of the businesses

- ① Discharger's responsibility
To treat properly on the discharger's own responsibility
- ② Extended producer responsibility
To improve the design of products, containers, etc. and to take back and use them and so on

➤ The role of the national government

- ① To collect, arrange and use information so that waste be properly managed
- ② To promote technical development with regard to treatment of waste and to give technical and financial assistance to the municipalities etc.

Responsibility of the businesses

~ Extended producer responsibility (EPR) ~

A policy aiming at the control of generation of waste by "holding the producers responsible not only for the production and delivery of the products but also for the disposal of the products after use"



Manufacturing enterprises are held responsible to a certain degree to reduce throwaway products and increase durable products, easy-to-recycle products or products less apt to become waste so that reuse and recycle of products perform a function in the market economy.

2. Waste administration of Kitakyushu City

- (1) Kitakyushu City's view on the waste treatment
- (2) Waste treated by Kitakyushu City
- (3) Handling of waste other than the waste collected by the administration
- (4) Toward further reduction of the household-related waste
- (5) The latest situation and the challenges of Kitakyushu City

(1) Kitakyushu City's view on the waste treatment

➤ Transition of the view

Disposal-oriented process (Before 1993) Prompt and safe disposal of the discarded waste → One-way structure where the citizens discard the waste and the city disposes it

(Advancement in the amenity of everyday life)
→ Increase in the waste volume
→ Diversification of waste materials (e.g. plastics)
→ Increase in the throwaway products

Recycling-oriented process (From 1993) Introduction of the point of view of recycling materials → Initiation of the sorted collection of cans and bottles (1993)
→ Initiation of the sorted collection of PET bottles, initiation of the spot collection of cartons and white foam trays, and so on

Environmentally-sound process (From 2000)
Reducing, reusing and recycling waste and green purchasing (Purchasing and using recycled products)

Basic plan of the municipal waste treatment in Kitakyushu City

- Formulation in February, 2001
- Basic philosophy: From the "disposal-oriented process" to the "environmentally-sound process"
- Increase in the recycling rate : From 13% to 25%
→ Development of comprehensive policies based on reducing, reusing and recycling waste including the purchase and use of recycled products (Green Purchasing)
- Planned implementation term: 10 years up to and including 2010

Basic view on the sorting and recycling of waste

1. Understandability for the citizens

→ To refrain from classifying too precisely to sort

2. Establishment of the recycling technology, demand for the recycled products

→ Materials would not be recycled without a recycling mechanism.

3. Efficiency including the cost performance

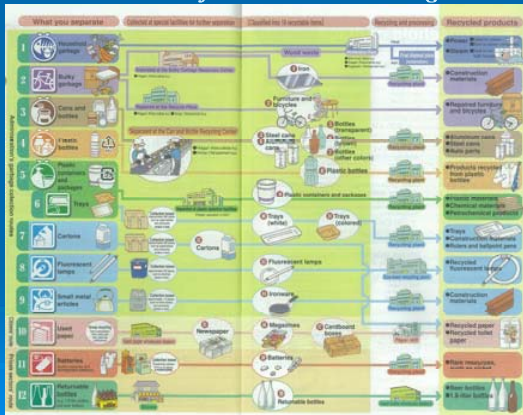
To make maximum use of the private and citizens' collection routes

→ The cost for collection would increase along with the increase in the kinds to be sorted.

(2) Waste collected by Kitakyushu City

- Household-related waste (twice a week) (50-yen charge/45 liter bag)
 - Garbage, waste paper, plastic products, etc.
- Bulky waste (once a month) (300-yen to 1000-yen charge)
 - Furniture, bedclothes, etc.
- Plastic containers and packaging (once a week) (12-yen charge/25 liter bag)
- Cans, bottles and PET bottles (once a week) (12-yen charge/25 liter bag)
- Cartons, food trays, small metallic articles, fluorescent tubes (from time to time)
 - (Into the collection boxes placed in the supermarkets etc. in the city)
- Brought-in waste (100-yen charge/10kg)
 - Waste brought into the facilities of the city by enterprises or collection and transportation businesses (700-yen charge/100kg before October, 2004)

Destination of Resources and Garbage



① Flow of the household-related waste treatment

From the collection and transportation to the incineration and final disposal

Designated bags of household-related waste

- Take recyclable resources and garbage to designated stations by 8:30 AM on collection days in specified methods.
- Specified bags are sold at supermarkets and convenience stores.

Household Garbage	Cans and bottles	Plastic bottles	Plastic containers and packages
<ul style="list-style-type: none"> ● Kitchen garbage ● Paper ● Pottery ● Cloth 	<ul style="list-style-type: none"> ● Cans ● Bottles 	<ul style="list-style-type: none"> ● PET bottles ● Plastic bottles 	<ul style="list-style-type: none"> ● Plastic containers ● Packaging
<ul style="list-style-type: none"> ● Collection days: Twice a week (Mon and Thu or Sat and Fri.) ● Collection place: Household Garbage Station 	<ul style="list-style-type: none"> ● Collection days: Every Wednesday ● Collection place: Recycling Station 	<ul style="list-style-type: none"> ● Collection days: Every Wednesday ● Collection place: Recycling Station 	<ul style="list-style-type: none"> ● Collection days: Once a week (specified day in your area) ● Collection place: Recycling Station
<ul style="list-style-type: none"> ● Prices: Large (45-liter bag) 500 yen Medium (30-liter bag) 330 yen Small (15-liter bag) 220 yen Extra small (5-liter bag) 110 yen 	<ul style="list-style-type: none"> ● Prices: Five, 25-liter bag: 60 yen 	<ul style="list-style-type: none"> ● Prices: Five, 25-liter bag: 60 yen 	<ul style="list-style-type: none"> ● Prices: Large (Five, 45-liter bag) 100 yen Small (Five, 25-liter bag) 60 yen

※ The Recycling Station is where cans, bottles, and plastic bottles are put out.

Waste-collection point (Gomi station)



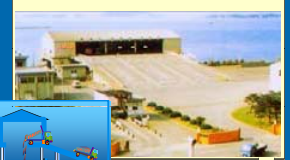
A scene of collection of the household-related waste



Refuse truck



Final disposal of waste



② Sorted Collection of Recyclable Materials 1

→ Waste collection in the paid designated bag – once a week
(Materials brought by the citizens in the designated bag to the recycling material station will be collected)

1. Cans and bottles
2. PET bottles
3. Plastic containers/packaging

Designated bags of recyclable waste

● Take recyclable resources and garbage to designated stations by 8:30 AM on collection days in specified methods.
● Specified bags are sold at supermarkets and convenience stores.

Household Garbage	Cans and bottles	Plastic bottles	Plastic containers and packages
<ul style="list-style-type: none"> Kitchen garbage Grass/leaves Stuffed toys Stuffed animals Stuffed dolls 	<ul style="list-style-type: none"> Cans Bottles Others 	<ul style="list-style-type: none"> Plastic bottles Others 	<ul style="list-style-type: none"> Plastic containers Plastic packages Others
<p>● Collection days: Twice a week (Mon. and Thu. for the 1st and 3rd Fg.)</p> <p>● Collection place: Household Garbage Station</p>	<p>● Collection days: Every Wednesday</p> <p>● Collection place: Recycling Station</p>	<p>● Collection days: Every Wednesday</p> <p>● Collection place: Recycling Station</p>	<p>● Collection days: Once a week (specified day in your area)</p> <p>● Collection place: Recycling Station</p>
<p>● Prices:</p> <p>Large (45-liter bag): 500 yen</p> <p>Medium (30-liter bag): 330 yen</p> <p>Small (20-liter bag): 220 yen</p> <p>Extra small (10-liter bag): 110 yen</p>	<p>● Prices:</p> <p>Five, 25-liter bags: 60 yen</p>	<p>● Prices:</p> <p>Five, 25-liter bags: 60 yen</p>	<p>● Prices:</p> <p>Large (45-liter bag): 100 yen</p> <p>Small (20-liter bag): 60 yen</p>

※ The Recycling Station is where cans, bottles, and plastic bottles are put out.

Plastic Containers/Packaging

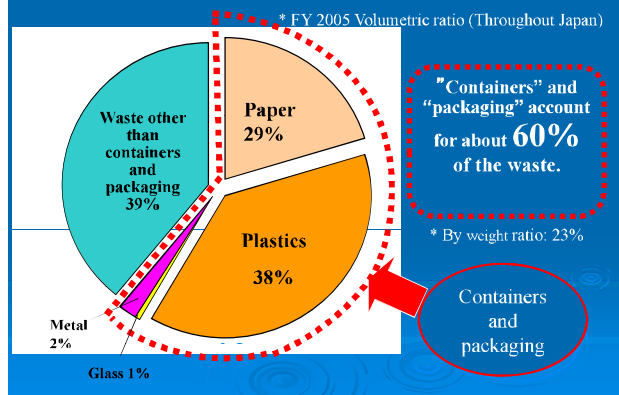


This symbol is the marker. Those are the plastic containers and packaging that become waste when the contents in them are used up.



* Those not the object of sorting as "plastic containers - and packaging"
* Plastic goods other than containers or packaging
Examples: Plastic goods such as video tape, toy, washbowl, etc.

The rate of containers and packaging accounting for the household-related waste



Containers and Packaging Recycle Law (Enforcement in 1995)

To establish a recycle system by which the amount of containers and packaging is reduced as far as possible and the discarded containers and packaging are recycled.



- Citizens
→ Correct sorting
- Municipality
→ Collection, storage
- Businesses manufacturing or using containers and packaging
→ Recycling with due responsibility

Collection spots of the recyclable waste (Cans, bottles, PET bottles and plastic containers and packaging)



A scene of separation of the recyclable waste



Cans and bottles recycling center



Plastics recycling center

③ Sorted Collection of Recyclable Materials 2

→ Things collected in special collection boxes placed at different locations such as certain supermarkets in the city.

1. Cartons and trays
2. Fluorescent tubes
3. Metal objects (pots, kettles, etc)

Collection box of food tray at supermarket



Recycling of fluorescent tubes



Recyclable materials of fluorescent tubes

A collection box of small metallic articles



(3) Local Efforts for Recycling Domestic Garbage

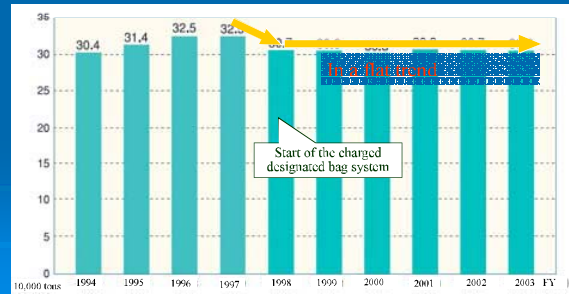
- ① Waste paper
(Subsidizing 7yen/kg for the collection by the local volunteer organizations (depending on collection methods). The organizations also collect waste cloth and reused bottles.)
- ② Composting of food waste
(Composting domestic food waste and utilize manure at schools or parks to grow flowers, etc.)
- ③ Pruned branches/mowed grass
(Partially collected by the neighborhood associations to be composted after being used in factories as spread under the livestock)
- ④ Waste food oil
(Partially collected by the neighborhood associations and used as fuel for the waste collection vehicles after refinement.)

(4) Toward further reduction of the household-related waste

~ Revision of the household-related waste collection system ~
(Coming into practice in July, 2006)

Transition of the amount of waste until the revision of the system

Reduction of 6% was achieved by introducing the system of designated bags for household-related waste in FY 1998. After that, however, the amount of waste has been in a flat trend.



Basic concept of the revision

1. Further promotion of recycling and reduction of waste
2. Securement of fairness of the cost sharing
3. Sharing of a certain degree of responsibility by the citizens as the dischargers
4. A large amount of cost related to waste treatment and recycling

Enrichment of the recycling and separation system

Improvement of the awareness toward reduction by the revision of the charge

Putting the two schemes together

To aim at the reduction of waste by 20%

The early-morning manner improvement campaign



A scene of the starting day of the sorting system of plastic containers and packaging

- About 13,200 persons attended the early-morning guidance throughout the city.
(About 11,700 citizens, 1,550 city employees)
- The total number of attendants during the 10 days from 6:30 to 8:30 am counted to about 100,000 persons.
(There is no similar example in other cities of the same size.)

The reduction effect immediately after the revision of the collection system of household-related waste
(The total amount of waste collected from July to December, 2006)

From July to December, 2006	(For comparison) From July to December, 2003
93,484 tons	126,815 tons

→ Reduction of about 33,300 tons, with the reduction rate of 26%

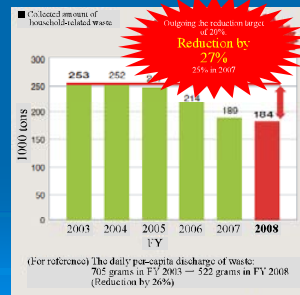


Right before the revision



Immediately after the revision

Recent record of the collected amount of household-related waste

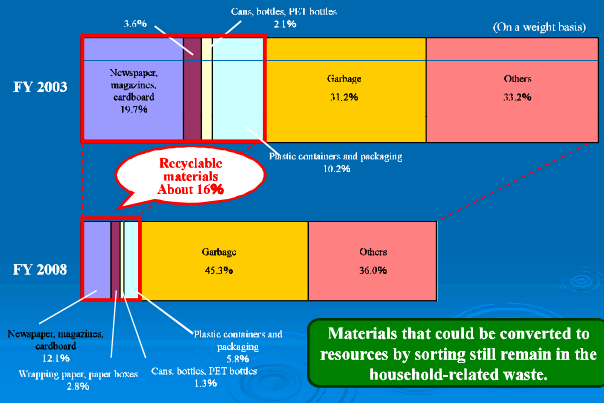


2003	2008
258,306 tons	187,707 tons

70,599 tons
(Reduction by 27%)

(For reference) The daily per-capita discharge of waste: 705 grams in FY 2003 — 522 grams in FY 2008 (Reduction by 26%)

Composition of the waste in the designated bags for household-related waste



Kitakyushu Green Growth Strategies

International Environmental Strategies Division
Environment Bureau, City of Kitakyushu



Green Frontier
環境を元にした都市 北九州



Kitakyushu Green Frontier Plan
Strategy for Low Carbon Economy

Sustainable Society with Accumulated Prosperity by Generations

- ✓ To Reduce CO₂ to Protect the Environment,
- ✓ To achieve Happiness and Health & Comfortable and Convenient Life
- ✓ To simultaneously Achieve Sustainable Economic Development
~ Net Compression but promotion of Economy

CO₂ Reduction Target with 40% of Economic Growth in 2050

- ✓ City Area: 50%
- ✓ Asian Region: equivalent to 150% the Kitakyushu's Emission

5 Strategies for sustainable development



Green Frontier
環境を元にした都市

Japan's New Growth Strategy

Scenario for revitalizing Japan Approved by the Cabinet in June 2010

Toward Becoming the World's No.1 Environmental Energy Power

One of the seven strategic fields

Green Innovation

[Target by 2020]

New market of over 50 trillion yen
New jobs for 1.4 million workers

One of the 21 national strategic projects

Deployment in Asia

Integrated infrastructure deployment overseas

[Target by 2020]

New market of 19.7 trillion yen

Kitakyushu City's 2020 target (in GDP equivalent)

New market of 350 billion yen, new jobs for 10,000 workers

Kitakyushu's Resources & Capabilities for Low Carbon Economy

Overcoming Severe Environmental Pollution

Worst Air Pollution caused closing a school

In 1960s → **Present**

Citizen enjoying Blue Sky

Swimming at Dokai Bay

"The Dokai Bay, Sea of Death"
Erode Screw of ship and E. coli bacteria died.

Recovered Blue Skies and Sea, People Enjoying

Kitakyushu's success was introduced by the OECD's Environmental Report as "from Grey City to Green City" in 1985.4

Kitakyushu's Resources & Capabilities for Low Carbon Economy

Key Factors: Partnerships among Multi-Stakeholders

Residents

Residents' observation of a private company

Learning how to measure air pollution with a university professor

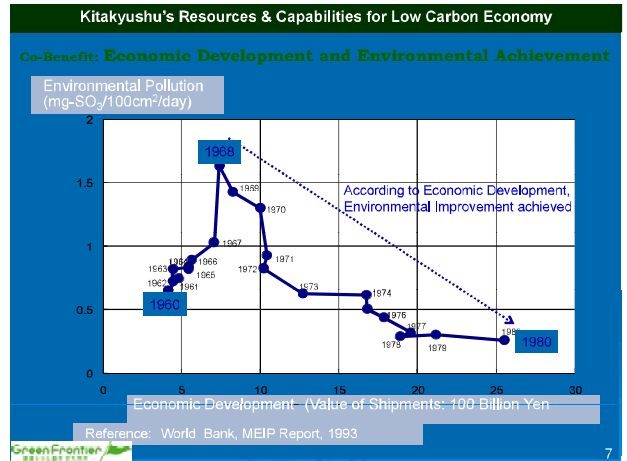
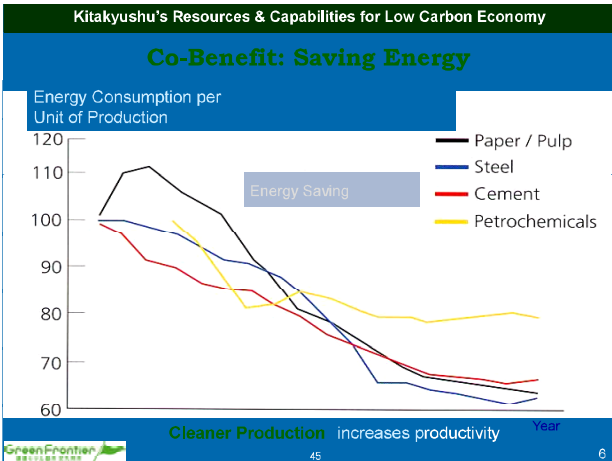
Partnership

Environmental control & environmental infrastructure
Local Government

Cleaner Productions & pollution control equipment
Private Enterprises

Local Initiative & Partnership
Environmental Technology & Environmental Investment
Education & Participation of Citizens
Environmental Governance

Reference: ESCAP "Kitakyushu Initiative for a Clean



Leading Urban Development with integrated Low Carbon Technologies

Zero Carbon Emission Town Development (Jono Area)

- 1) Private Vehicle Free Zone with Convenient Public Transportation System
- 2) Power Self-Support by the use of Renewable Energy
- 3) Long-Life Housing with High Heat Insulation materials and Energy-saving Facilities
- 4) Rich Greenery with People's Planting
- 5) Environmentally Friendly Town with People's advanced awareness and activities

Leading Urban Development with integrated Low Carbon Technologies

Kitakyushu Smart Community Project (Higashida Area)

Hydrogen (by-product)

Power grid

IT grid

Smart Community Center

Hydrogen Network

Natural Gas Co-Generation System

Fuel cells

Smart Building

Hydrogen Supply Station

Photovoltaic Generation

Smart Houses

Smart School

Smart Data Center

Rept-a-cycle Station

Wind Power 15 thousand kw (Virtual)

Realization of optimized energy use per region through cooperation between residents and mainly energy sources and introduction of a control system for both energy supply and demand.


CO₂ Reduction: 50% Investment: \$ 150 million (Tentative)

Industrial Development by Using of Local Potential


Smart Usage of Industrial Potential Energy




Large-scale of Photovoltaic Generation on Roofs of Factories




Usage of Abundant potential Energy of Factories



Houses & Buildings



Urban Agriculture



Hydrogen Town

Coke Factory → Hydrogen Station for Vehicle → Houses & Stores

Industrial Development by Using of Local Potential

Kitakyushu Eco Premium

Low Carbon Economy through Products and Services



Water-saving type automatic faucet with a self-power generation function (TOTO)



Rented type Eco-Apartment House with Photovoltaic Generation, First in Japan (ShibauraTokki)



Efficient electromagnetic plate and sheet which contributes to energy saving (Nippon Steel)

to environmental impact reduction in the city, are designated as the "Eco-Premium". Environmental consideration activity of the whole city through industrial field is promoted to its expansion and growth.

Dist. Saving Energy, Saving Resources, Maintenance Free, etc.

Promoting Eco Industry in Kitakyushu

Kitakyushu Eco-Town

for facilitating Resource Circulation and Eco-Industries



Practical Research Area Facilities for Practical Research: 16



Comprehensive Eco-Industrial Complex, Hibiki Recycling Area

Environment: 31.4%

Economy:

Promoting Eco Industry in Kitakyushu

Examples of Resource-Circulation Projects in Kitakyushu Eco-Town



Plastic PET Bottle Recycling Project



Office Equipment Recycling Project



Home Appliance Recycling Project



Automobile Recycling Project

Kitakyushu's International Cooperation with Asian Cities

Asian Partnership Programme towards Shared Prosperity

Trainees Received: 138 countries 6,207 people
Experts Dispatched: more than 160 people
Coordinating Cities' Cooperation Network in Asia
Promoting Environmental Projects in Asia



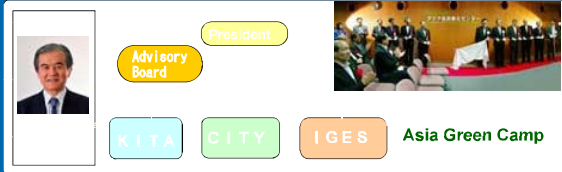
City-to-City Environmental Cooperation Network

City of Dalian's Environmental Improvement, China
Dalian received the Global 500 Award from UNEP
Exchange of Memorandum on Cooperation for establishing Eco-Town with Tianjing at Prime Minister's Office

City of Surabaya's Composting Project, Spreading to more than 20 thousand households

Towards Realizing Low Carbon Economy in Asia

Kitakyushu Asian Center for Low Carbon Society



Utilize regional resources: Local Govt, Local Industry, Local University, Local NPO, Local Resident, Local Resource

Assistant technology transfer

Develop Specialist

Conduct Surveys/Researches & release info

Method of Technology Transfer

Services for Private Enterprises

- 1 Integrate technologies as a customized package
- 2 Assist technologies renovation to address needs
- 3 Assist verification testing
- 4 Assist in surveys for confirming marketability
- 5 Assist in submission of application for subsidy
- 6 Sending a delegate etc.



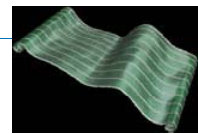
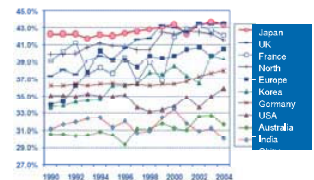
Technology Transfer to Asian Market

Establishment of Business Model For Technology Transfer

Utilizing a network of Asian cities

/Asian City Network for Environmental Improvement /Organization for the East Asia Economic Development

Kitakyushu's Low Carbon Technologies relevant to Asian Region



Example of System Technology Application Pilot plant for water recycling (Water Plaza)

- 1 Sewage water membrane treatment area
- 2 Membrane filtration area (2F: Monitoring Building)
- 3 Testbed area

Water Plaza
Computer generated images

Water Plaza is:
A water recycling pilot plant combining membrane filtration of waste water and seawater desalination (capacity: 1.4Kt/m²/day)
-Development & demonstration of world-class technology
-Showroom function for communicating information
-Application in field training of overseas districts
Water output from sewage water: 1,000m³/day
Output from seawater: 400m³/day
★ Status in FY2009 (achieved)

Location of Water Plaza
JR Kokura Station
Kitakyushu City Hall
Hiogaki Water Treatment Center
Wastewater release point
Seawater
Sea

International Attention to Local Actions



Mr. Xi Jinping, Vice President of the People's Republic of China, visited Kitakyushu on 16 December 2009.

People's Daily on 17 December 2009:
The City of Kitakyushu has rich experiences on environmental conservation and advanced technologies, and Kitakyushu would be worth the model for Chinese cities.

Development of WIN-WIN Relations

We will challenge to achieve mitigation of environmental pollution and realization of low carbon economy as well as improvement of quality of life with green jobs in Asia.
Kitakyushu hopes to be the base of low carbon revolution in Asia.



Replication of Surabaya's Composting Practices: A main activity of the Kitakyushu Initiative

JICA Kyushu, 30 June 2011
 Toshio Maeda, IGES Kitakyushu Urban Centre



Background

Status in 2001

(Photo courtesy of PKK Surabaya)

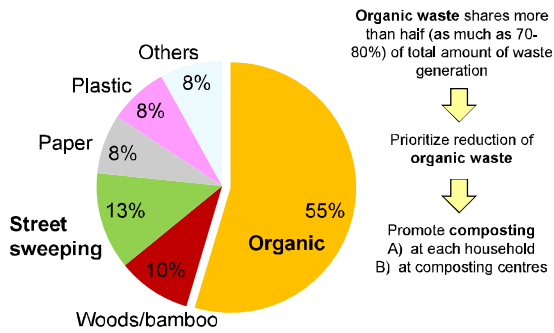
New Benowo Landfill: 800 scavengers; 35km from city centre; Surrounded by fish ponds; demand for waste reduction is high

Current Status

Keputih Final disposal site was closed in 2001 due to opposition by residents. Waste filled the streets and drains.

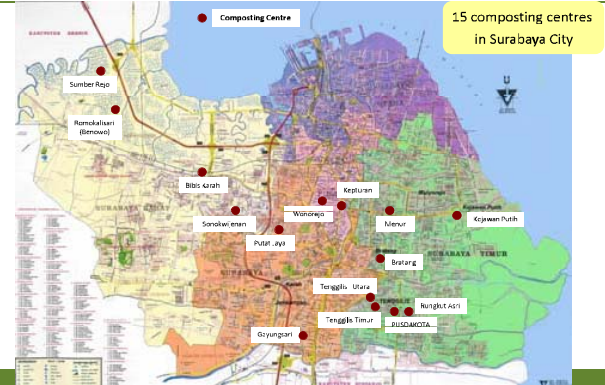


Waste Composition in Surabaya



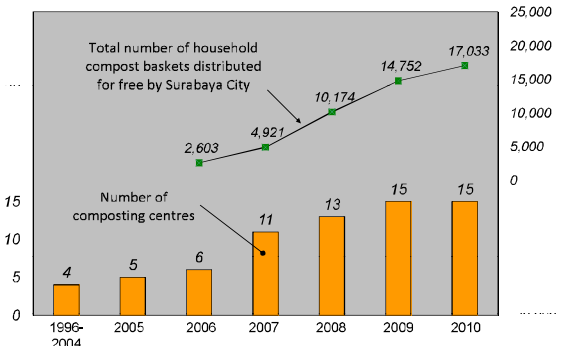
Inputs by the city

Map based from B. Sams, Surabaya, Indonesia
 Figure-7 Location of composting centres in Surabaya



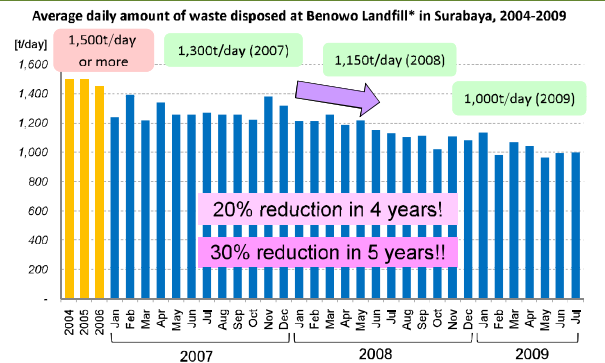
Inputs by the city

(Data source: Cleansing and Landscaping Dept., Surabaya)



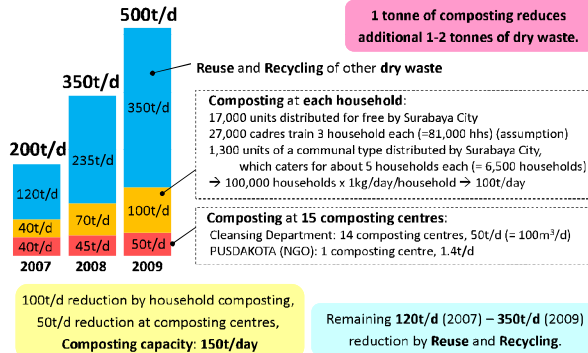
OUTPUT: WASTE REDUCTION

* Note: Benowo is the only final disposal site in Surabaya City.
 (Data source: Cleansing and Landscaping Department, Surabaya)



Output: waste reduction

(Data source: Cleansing and Landscaping Department, Surabaya)



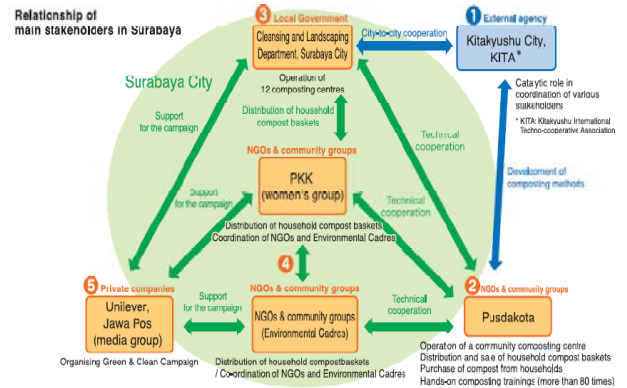
Social and environmental benefits



Social and environmental benefits



Main Stakeholders



Surabaya's successful solid waste management model

Step 1.
Development of a model community,
from 2004 to 2006:
Cooperation between Kitakyushu
International Techno-cooperative Agency
(KITA) and Pusdakota (a local NGO),

Starting a model project

(photo courtesy of KITA)



Development of a model community (Pusdakota (NGO)'s activity)



Achievements by KITA's intervention

(photo courtesy of KITA)



PUSDAKOTA's compost centre: before and after KITA's intervention

Surabaya's successful solid waste management model

**Step 2.
Scaling up the model project
by the City Government,
from 2005 – 2011:**

- Setting up composting centres
- Distributing compost baskets to residents

Composting and its positive impacts in Surabaya

(Photos cited from "Sparkling Parks in Surabaya", Cleaning Department, Surabaya City, 2008)



Activities of PKK (a women's group) and Environmental Cadres



Surabaya's successful solid waste management model

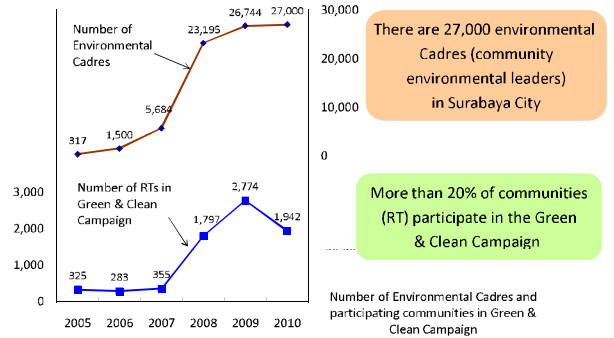
- Step 3.
Organising a community clean-up campaign,
from 2005 – 2011:**
- Cooperation with NGOs, private companies and the media
 - Successful involvement of citizens in the waste management activities

Community and Private Sector Involvement



Community Environmental Leaders (Cadres)

Source: Surabaya City



There are 27,000 environmental Cadres (community environmental leaders) in Surabaya City

More than 20% of communities (RT) participate in the Green & Clean Campaign

Number of Environmental Cadres and participating communities in Green & Clean Campaign

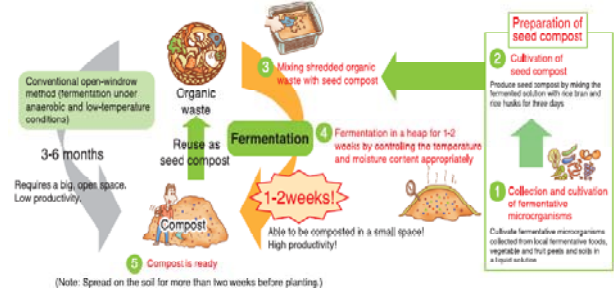
Surabaya's successful solid waste management model

Efficient Composting Method

- High productivity (within 2 weeks)
 - Using only local materials
- No offensive smell, no leachate
- Fast, cheap and good quality!

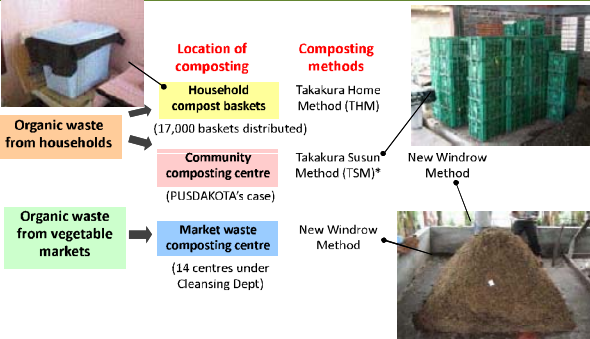
COMPOSTING METHODS

Figure 8 Operational flow of Takakura Composting Method (Presented by Hirotsu (2009), with technical supervision by Kiyoshi Takakura, JPR Co., Ltd.)



- Features:
1. Fast and less space requirement
 2. No foul smell (not rotting)
 3. Low-cost, low-tech and easy operation
 4. Using only local materials
 5. Active microorganism in compost enriches the soil

Composting Options



Types of composting options in Surabaya

Surabaya's successful solid waste management model

Financial Analysis of Composting Practices

- Is composting financially sustainable?

Costs of composting promotion

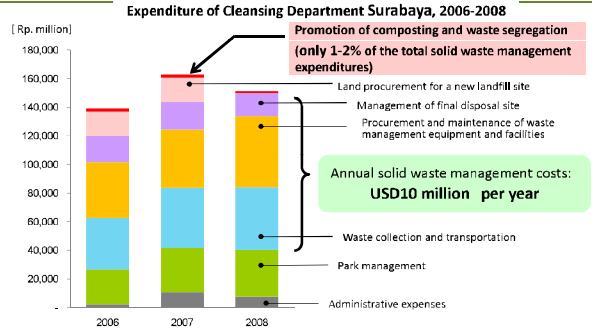


Figure 5. Annual expenditures of Cleansing and Landscaping Department, Surabaya, 2006-2008
(Data source: City Development Planning Department (DASPPKAD) Cleansing and Landscaping Department, Surabaya prepared by IGES (2009))

How much is the solid waste management cost per tonne?

Waste management cost in Surabaya: (collection and landfill management) **USD10 million/year (2007)**

Divided by 1,300t/day x 365days: **→ USD21/t**

Landfill construction cost (27ha): **USD6.5 million**

Divided by 1,500t/d x 365days x 5yrs & 1,300t/d x 365days x 2yrs **→ USD2/t (not including cover soil)**

Waste management cost: **USD23/t or more**

Is operation of a composting centre financially sustainable?

PUSDAKOTA (NGO)'s composting centre:
1.4t/day collection → 40t/month collection
→ 10t/month of compost production

Sales of compost: 10t/month @ USD100/t
→ Income USD1,000/month

Expenditure: USD650/month (incl. labor and utility costs)

→ Profit: USD350/month = USD4,200/year
→ **Can purchase a new shredder!! (If all the compost is sold...)**

Plus, cost saved from waste reduction (40t/month)
→ Hidden profit: 40t/month x USD23/t = USD900/month = USD11,000/year
→ **City government may think about giving a subsidy for building a composting centre.**

How much did the city save by reducing waste?

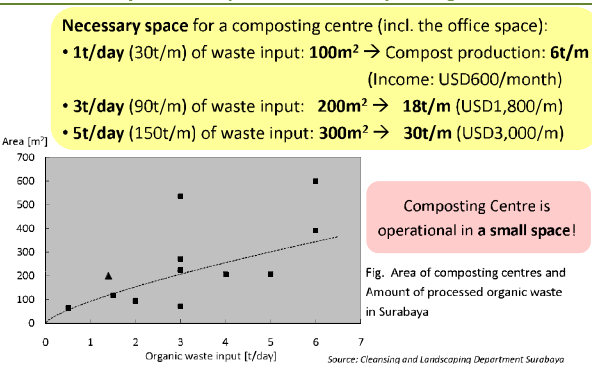
14 composting centres in Surabaya City:
Composting 50 t/day = 1,500 t/month

Compost production: 300t/month (20% of input)
→ Replacing the purchase of soil conditioners 300t/m x USD20/t = USD6,000/month

PLUS, cost saved from waste reduction: 1,500t/month x USD23/t = USD34,000/month

→ Profit: USD40,000/month = USD48,000/year

How much space is required for a composting centre?



Does free distribution of compost baskets make business sense?

Distribution of household compost baskets in Surabaya:

- 17,000 units distributed for free by the city in 5 years
- Distribution cost: USD10/basket x 17,000 = USD170,000
- Campaign cost: USD10/basket x 17,000 = USD170,000
- Total cost: **USD340,000**

Benefit:

- Waste reduction: 17t/day (= 17,000 households x 1 kg/day/household)
- Cost saved from waste reduction: 17t/d x 365days x USD23/t = **USD140,000/year**

Cost recovery in 2.5 years!

Enlarged benefit:

- Waste reduction: 40t/day (2007)
- Cost saved from waste reduction: 40t/d x 365days x USD23/t = **USD330,000/year**

Cost recovery in 1 year!!

Why people practice composting at home?

Household financial analysis:

Organic waste: **1kg/day/household**
→ **30kg/month**
→ Compost: **6kg/month** (20% of input)

Purchasing price: **USD0.07/kg** (= USD70/t)
→ Income: **USD0.42/month**
→ **Not enough economic incentive.**

Main driving forces are:
improvement of kitchen environment & self-use of compost for plants and gardens

Dropping out rate is High!
(only 20% continue practicing)

→ **Need a monitoring system (= Community environmental leaders)**



Estimated GHG emissions avoided at landfills

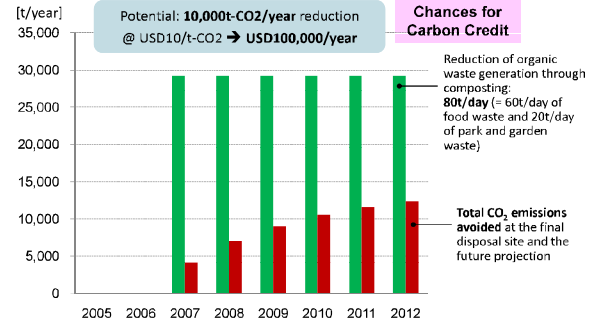


Figure 6. Reductions of organic waste generation and consequent greenhouse gas emissions in Surabaya (Prepared by Masdu (2009), based on the first order decay model from Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site (version 04), CDM Executive Board, UNFCCC)

Recommendations for other cities to achieve 10-20% waste reduction in 3 years

e.g. Actions for 10-20% reduction in waste generation

Inputs in Surabaya:

Waste generation: 1,500 t/day → 1,300 t/day
→ Composting Centres: processing **40 t/day** (= 2-3% of total waste)
Population: 3 million (= 600,000 households)
→ Household compost baskets: **17,000 units** (= 2-3% of households)

10-20% reduction target

Inputs in Sibul, Malaysia (proposal):

Waste generation: 130 t/day → 110 t/day (15% reduction)
→ Composting Centres: process **5 t/day** (= 4% of total waste)
Population: 200,000 (= 40,000 households)
→ Compost baskets: **1,000 households** (= 2.5% of households)

e.g. Possible actions in Sibul, Malaysia

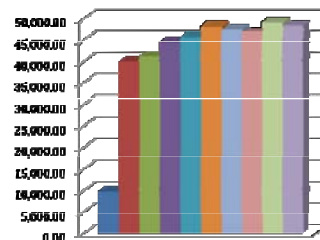
Target 20 t/day reduction
130 t/day → **110 t/day**
(**5 t/day** by composting & **15 t/day** by recycling)

- Market-waste composting centres**
 - Process **2 t/day** (= producing 0.4 t/day)
- Composting centres in communities and schools**
 - Process **0.5t/day** @ 4 sites → **2 t/day**
- Distribution of compost baskets to residents**
 - 1,000 households (2.5% of the total households) → **1 t/day**
- Organising a community clean-up campaign**
 - Involve private companies, local newspapers and TV programmes
- Compost purchasing scheme**
 - City starts purchasing the compost for park maintenance
 - Free distribution to farmers; marketing of compost
- Technical assistance** by Kitakyushu City, KITA, IGES and JICA

Results in Sibul, Malaysia

Total amount of solid waste is not decreasing...

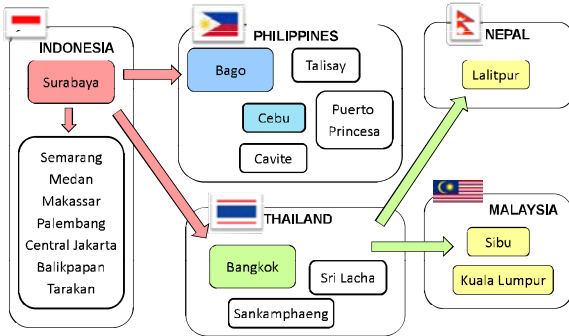
- Population is increasing
- Economy is growing
- More consumption, more waste
- The scale of composting practices may not be large enough...



It requires a **systematic and city-wide approach** to achieve total waste reduction.

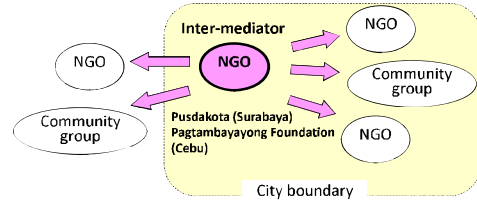
Commitment by the Mayor (leader) and responsible officers is a prerequisite.

Spreading Surabaya's model in other cities and countries



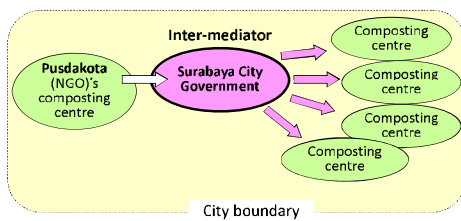
Model 1: Replication by NGOs

Roles of **inter-mediators** are essential for replicating/scaling up good practices.



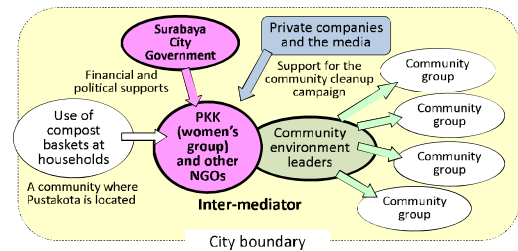
NGOs facilitate **replication** of good practices to other NGOs and community groups within and outside the city. But, they face difficulties in mobilizing resources from local governments.

Model 2: Scaling Up by Local Governments



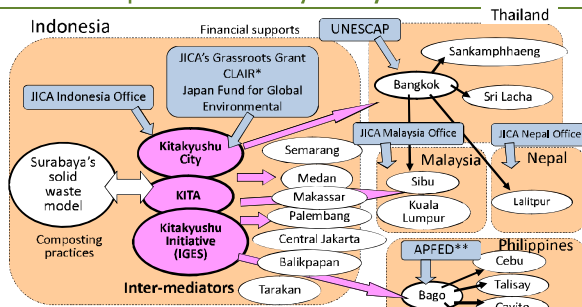
Local governments can **scale up** NGOs' good practices within the city. (It usually does not go beyond the city boundary.)

Model 3: Scaling Up by Local Governments and NGOs



Local governments can assist NGOs/community groups in **scaling up** good practices to other NGOs/community groups within the city.

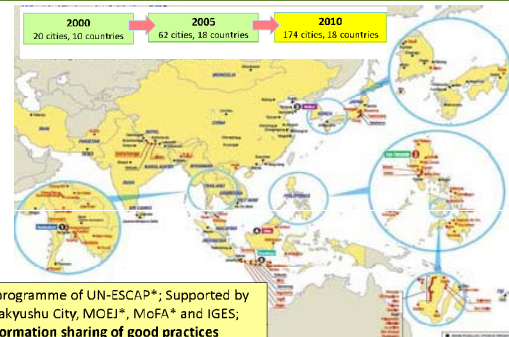
Model 4: Replication from City-to-City



External organizations can facilitate **replication** of good practices from cities to cities.

* CLAIR: Council of Local Authorities for International Relations
** APFED: Asia Pacific Forum for Environment and Development

Kitakyushu Initiative for a Clean Environment (2000-2010)



A programme of UN-ESCAP*; Supported by Kitakyushu City, MOEJ*, MoFA* and IGES;
Information sharing of good practices
* UN-ESCAP: UN Economic and Social Commission for Asia and the Pacific
* MOEJ: Ministry of Environment, MoFA: Ministry of Foreign Affairs



Kitakyushu Initiative Final Report

- Describes the outputs and achievements of the KI programme
- Provides recommendations to national and local governments, as well as managers of inter-city programmes similar to KI
- Presented to the Ministers and delegates of the MCED 6*, Astana, in Sep/Oct 2010

* MCED 6: 6th Ministerial Conference on Economy and Development in Asia and the Pacific

Capacity Development in Solid Waste Management

With Special Reference to the Introduction of KitaQ Composting

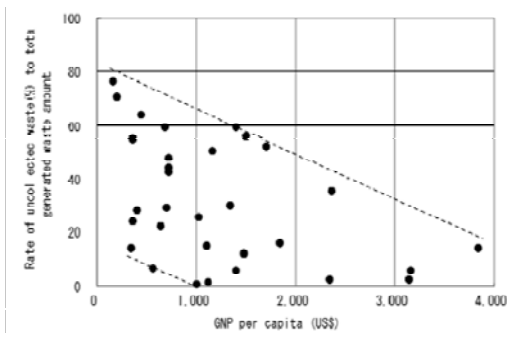
Mitsuo YOSHIDA, Ph.D.
Senior Advisor (Environment)
Japan International Cooperation Agency (JICA)
Yoshida.Mitsuo.2@jica.go.jp

Kitakyushu City, June 30, 2011

Outline of the Presentation

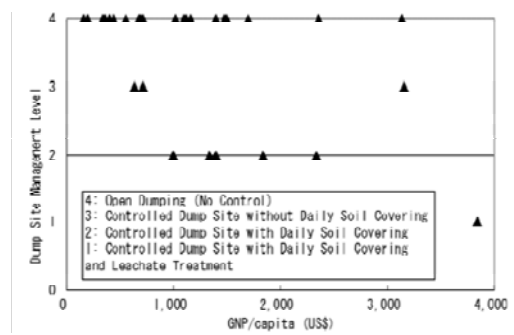
- (1) Introduction – Why we discuss Capacities?
- (2) Capacities required for Solid Waste Management and Composting
- (3) Capacity Development
- (4) Group Discussion

Economic Growth vs. Waste Collection/Transportation in SWM



Cross-country Analysis, Yoshida(2011)

Economic Growth vs. Waste Final Disposal in SWM

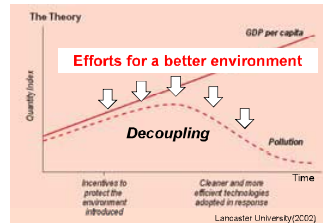


Cross-country Analysis, Yoshida(2011)

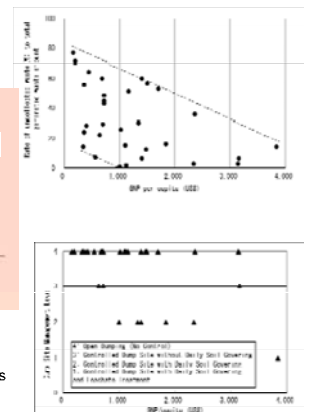
Economic Growth vs. Development of SWM

- The quality of waste collection/transportation service is enhanced with economic growth.
- The quality of waste final disposal is enhanced with economic growth.
- However, the SWM service qualities widely diversified even in the same level of economic growth.
- Economic growth is one factor for qualified SWM, but **other factor(s)** are probably much more important when .

Environmental Kuznets Curve



Environmental pollution increases over time while a country is economically developing, and then after a certain level of economic growth is attained, environmental load begins to decrease.



Efforts for a better environment in SWM sector

- Qualified SWM system
 - Minimizing waste generation
 - Waste discharging in good manner
 - Well-organized waste collection/transportation
 - Recycling
 - Sound environment final disposal of minimized amount of waste
- KitaQ Composting is one of the Efforts.
- Capacity Development

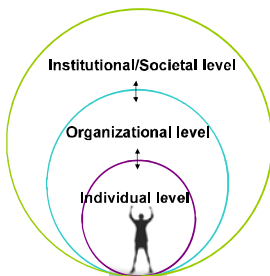
The Efforts are collectively called:
Capacity Development (CD)

- **Capacity Development Concept:**
- **Comprehensive:** Capacity Development (CD) refers to the ongoing process of enhancing the problem-solving abilities of a country/society by taking into account all the factors at the individual, organizational, and societal levels.
- **Endogenous:** Defining capacity as the ability of a country to solve problems on their own and considering it as a complex of elements including institutions, policies, and social systems, the concept of CD attaches great importance to proactive and endogenous efforts (ownership) on the part of the country.

JICA(2006)



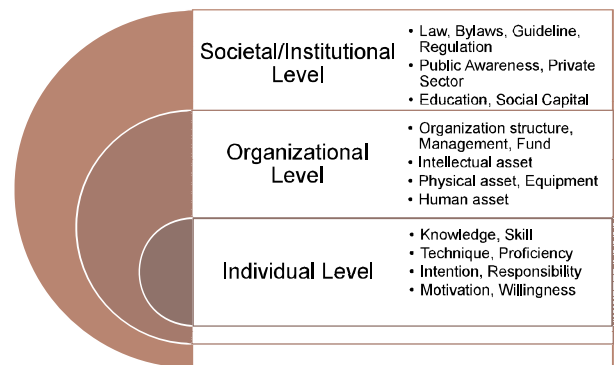
Capacity at different three levels



Issues in practice

- (1) Organization without qualified individuals
- (2) Qualified individuals but poor activity of organization
- (3) Qualified individuals and well organization, but poor acceptance in the society

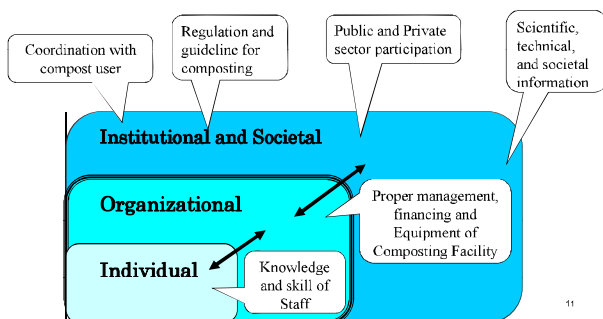
Components of Capacity at Each Level



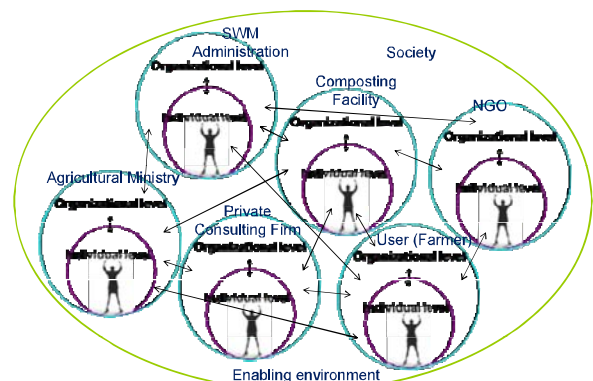
Yoshida(2006)

Comprehensive feature of Capacity

(An Example for Composting Organization)



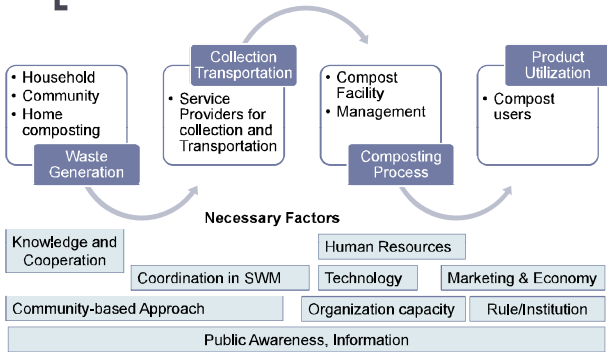
11



Actual society is an ensemble of various individuals and organizations, the Stakeholders.

12

A Flowchart of Composting in Solid Waste Management



General Questions observed in the City Reports

- What are necessary capacities?
- What are promotion and inhibiting factors?
 - For:
 - Establishing Organization/Institution for Composting
 - Introducing Community-based Approach
 - Marketing of Compost and Financial Sustainability
 - Raising Public Awareness

[Group Discussion]

- Scaling-up and Replication Strategy

Discussion Groups

- Formation of the Discussion Groups
 - Group Leader
 - Group Members
 - Collaborators
- Points of Discussion
 - What is the necessary capacities?
 - What is promotion and inhibiting factors?
- Reporting (evening session)

Topics of Group Discussion:

Promotion Factors		Inhibiting Factors (Obstacles)	
Level	Capacities		
Individual			
Organizational			
Institutional Societal			

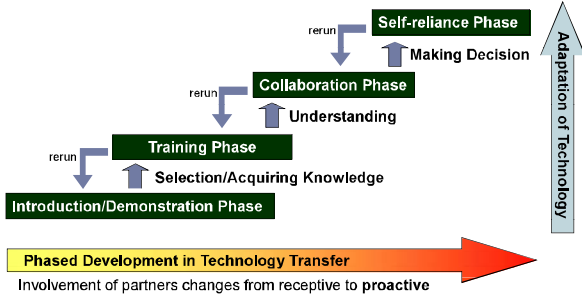
Workshop Activities

- June 30
 - Keynote Lecture (Now)
 - Group Discussion
 - Reporting and Discussion
- July 01
 - Summary of the Promotional Factors, Obstacles, Lessons and Challenges
 - Strategy

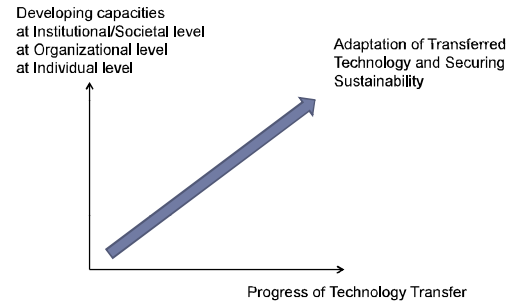
Transferring technology

- It is widely accepted that technology is one of the major forces underpinning socio-economic growth and national development.
- Developing countries, thus, need technologies to alleviate their economic difficulties.
- Efficient technology transfer would lead to an efficient use of resources and national development.
- Main concern is what is the responsible factor to effectiveness of transferring technology.

Phased Development in Technology Transfer



Technology Transfer and Capacity Development



Practical

- Stakeholder Analysis
- Problem Analysis
- Capacity Assessment
 - SWOT Analysis
 - Organization Scanning
- Capacity Development Strategy

(1) Stakeholder Matrix in Waste Composting

	Waste Generation & Discharging	Waste Collection & Transportation	Composting Process	Utilization of Compost products
Public Sector				
Private Sector (Formal)				
Private Sector (Informal)				

(2) Problem Analysis Matrix in SWM

	Waste Generation & Discharging	Waste Collection & Transportation	Composting Process	Utilization of Compost products
Problem(s) to be solved				
Causes of the Problem				
Background				

23

(3) Capacity Assessment Matrix in SWM

	Waste Generation & Discharging	Waste Collection & Transportation	Composting Process	Utilization of Compost products
Individual level				
Organizational level				
Institutional level				
Societal level				

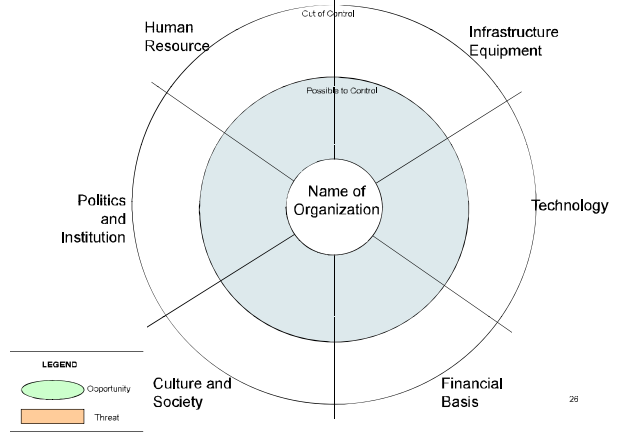
24

SWOT Analysis

A SWOT analysis must first start with defining a desired end state or objective.

<p>Strengths characteristics of the organization that give it an advantage over others in the sector.</p>	<p>Weaknesses characteristics that place the organization at a disadvantage relative to others.</p>
<p>Opportunities external chances to make greater profits in the environment.</p>	<p>Threats external elements in the environment that could cause trouble for the business.</p>

Organization Scanning Diagram



**INVITATION TO A NETWORKING SEMINAR ON
KITAQ SYSTEM COMPOSTING IN ASIA**

Date: June 30, 2011 (1:30 p.m. – 2:30 p.m.)
Place: No.1 Meeting Room, Ano-o Community Center

Eco-friendly Recycling Activity of Ano-o Community Center

Nobuko Uchiyama, Director-General
Ano-o Community Center

Drawing upon the lessons learned by the tragic Great Hanshin-Awaji Earthquake in 1995, the city government of Kitakyushu has increased its number of community halls (social education facilities) from one per junior high school district to one per primary school district, and has renamed them “community centers,” redefining their role as a base camp for voluntary activities of the community residents.

A community center is involved in a wide range of activities such as the following:

1) Community actions	5) Youth development
2) Continuing education	6) Child-raising support
3) Welfare	7) Health care and fitness
4) Eco-friendly recycling	8) Disaster/crime prevention

The Ano-o Community Center is currently particularly active in eco-friendly recycling activity. The following nine categories of resource materials are recovered all year round.

(1) Used paper: cardboard, newspapers, magazines, wrapping paper (the City subsidizes the cooperating citizen groups)	Implemented as voluntary action of the residents; Collection and recycling done by contracted professionals
(2) Cans: steel cans, aluminum cans (except for those collected by the City)	
(3) Ink cartridges	
(4) Caps from plastic bottles (for welfare)	
(5) Aluminum pull-top can tabs (for welfare)	
(6) Small metal items: Pot, frying pan, etc.	The City collects and recycles
(7) Milk carton	
(8) Styrofoam tray	
(9) Used tempura oil from households	

In addition, a recycling bazaar for second-hand books, daily utensils and clothes is run during summer holidays and at cultural festivals. The proceeds are donated collectively to the Japanese Red Cross Society once a year.

At the initiative of local residents, the members of the Environment Working Group and others organized the first compost workshop last January, with a follow-up class a week later. The second workshop will be held on the above date as an activity of fiscal 2011.

Through this activity, we hope to minimize kitchen waste, produce good quality compost and improve the soil of the vegetable garden that is worked on as a community effort.

Environmental problems are an urgent issue. We at the Center are focused on promoting activities that all residents of the community, children and adults alike, can participate in without much difficulty.



Japan International Cooperation Agency

Kyushu International Center

2-2-1, Hirano, Yahata Higashiku,
Kitakyushu, Fukuoka, 805-8505, Japan

Tel: 81-93-671-8347 Fax: 81-93-671-0979

<http://www.jica.go.jp/kyushu>



Institute for Global Environmental Strategies

Kitakyushu Urban Centre

International Village Center 2F, 1-1-1, Hirano,
Yahata Higashiku, Kitakyushu-shi,
Fukuoka, 805-0062, Japan

Tel: 81-93-681-1563 Fax: 81-93-681-1564

<http://www.iges.or.jp/kitakyushu>