



Best Practices Database

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Effective Solid Waste and Land management in Tangerang City *Indonesia*

Best Practice

New for 2002

Categories:

- Poverty Eradication:
 - income generation
 - job creation
 - vocational training
- Economic Development:
 - capital formation
 - enterprise development (formal and informal sectors)
 - investment development
- Environmental Management:
 - environmental remediation
 - pollution reduction
 - resource management

Level of Activity:

Ecosystem:

Summary

Solid waste disposal in Final Disposal Site (FDS) Rawakucing area, Neglasari district, Tangerang city, had been done for eight years, with total accumulation amount of solid waste 2,049,600,000 kg. Heap of solid waste and insufficient sanitation system caused the environmental pollution and resulted in community suffering for nearby 561 people lived in Kedaung Baru area. Poverty, slum, poor human resource quality, poor health and economic level, scrapping the solid waste for living and drinking polluted water, are their daily life.

Establishing the priority scale is an effort expected to be the solution for mentioned problems. Begin in 1999 for first stage, testing, analyzing, and developing technology for solid waste treatment had been carried out. End of March up to December 2001, the developed technology was applied in converting 1,440,591 kg of organic solid waste into 115,591 kg of good quality organic fertilizer. The fertilizer then was applied into horticulture plant, such as onion, eggplant, and vegetable, as a trial in Tangerang city. In addition, 71,000 kg of fertilizer was used as a trial in Central Tapanuli regency, North Sumatera province, with a good result. Solid waste treatment in Rawakucing FDS had also given an opportunity for job creation to 16 people from surrounding neighborhood and reduced the load of pollution in Rawakucing area.

Narrative

1. Situation before the initiative began

Solid waste treatment in Rawakucing Final Disposal Site (FDS), which is not well-planned, unprofessional, and has been implemented for eight years, results in load of 2,016,000,000 kg heap of solid waste in FDS. Solid waste disposal by open dumping system and insufficient sanitation caused the environmental pollution and resulted in community suffering for nearby 121 household, 561 people lived in Kedaung Baru sub district, the area close to the Rawakucing FDS, Neglasari district, Tangerang city. Poverty, slum, poor nutrition, poor human resource quality, poor health and economic level, scrapping the solid waste for living and drinking polluted water, are the living condition for most of community in the neighborhood of Kedaung Baru area.

2. Establishment of Priorities

Solid waste has been a classical problem for most of local government in Indonesia, particularly in urban area. To find an

alternative solution of solid waste treatment, it requires the systematic process, which will involve various parties from government and community side. Several issues to be done in stages are:

- q Gathering the information on solid waste treatment problem from many aspects
 - q Selecting and testing the existing solid waste treatment technology
 - q Improving the treatment in quantity and quality
 - q Establishing the institution with the intention that the plan for solid waste treatment would be well planned, under control, and reach the goal to improve the environmental quality and economic condition for the neighborhood
- This activity worked out by involving supports from many parties, particularly the Mayor of Tangerang city who persistently assisting the efforts of solid waste treatment development.

3. Formulation of Objectives and Strategies

To attain the goals of effective and sustainable solid waste treatment development, it is important to look at the local potential that has correlation between solid waste treatment activity with mostly the agricultural activity. For that reason, solid waste treatment could be sustainable if implemented along with land utilization or agricultural land cultivation using the organic fertilizer. Some strategic steps to be carried out are:

- q Involving the entire stakeholder: government, academic experts, private sector, etc.
- q Utilizing and developing the efficient technology appropriate with the local needs to improve the production quantity and quality.
- q Establishing the coordination to strengthen the information network and product distribution system.

4. Mobilization of Resources

In 1999 up to March 2001, the activity focused on the research, experiment, and development of solid waste treatment technique, which required funding for procurement of material, equipment, and operational cost, from several sources such as:

- a. Cost for procurement of equipment and material sourced from the Mayor and Settlements Department Office of Tangerang city as a grant.
- b. Operational cost in 1999 up to March 2001, for maintenance, equipment, raw material, gasoline, electricity sourced from grant from the Mayor, Settlements and Cleansing Department Office, dr. Nuriman, Masbar, Gusri, and the revenue from selling the fertilizer as well. Whilst from April 2001, the operational cost for solid waste treatment could be self-financing by selling the fertilizer. Human resources mobilization for 16 people sourced from the neighboring community.

5. Process

Problems faced

Conventional system of solid waste treatment in Rawakucing FDS for eight years, by open dumping and insufficient sanitation system had caused an environmental pollution, mainly in groundwater pollution. The problems worsen by several factors, such as:

1. Poor quality of human resources
2. Continually implementation of open dumping system deteriorate the environment, particularly groundwater in neighboring Rawakucing
3. Lack of community participation in planning and implementing solid waste treatment
4. Lack of business sector awareness by dumping the hazardous waste to the FDS
5. Poor community awareness in participating in solid waste treatment by disobey the government appeal to sort the solid waste, into organic and inorganic, before dumping.

Problems solving

For the first priority, actions to be done are:

1. Provision of water supply for the neighboring community to prevent them from consuming polluted water. The Mayor of Tangerang city had regularly provided sufficient water supply for the community at Kedaung Baru sub district.
2. Reduce the load of FDS by focusing on organic solid waste treatment from traditional markets with approximate volume of 150 m³ per day or nearly 11% of total solid waste.
3. Improve the quantity and quality of solid waste treatment.
4. Provision of land in the remote area, but this is unpopular solution since it will expand the polluted area.
5. Educate the community to involve in sorting the waste between organic and inorganic solid waste in the separate bins. If this practice runs well, it is expected that solid waste treatment can be done up to 60%. That refers to the research mentioned that 60-70% waste is organic waste, 20-25% is recycled by the scrapper, and 10-15% will be diminished with certain technology.

6. Results Achieved

In 1999-2001, the techniques for solid waste treatment and equipment advance, has developed as follows:

- q From the experiments, solid waste discovered to be converted to solid and liquid organic fertilizer.
- q From March up to December 2001, with the developed method, 1,440,591 kg of solid waste succeeded to be converted into 115,247 kg of organic fertilizer.
- q Solid waste treatment had given an opportunity for job creation for 16 people with daily wage of Rp 15,000,00 and also an average of Rp 50,000,00 per month from selling the fertilizers. Beside that, they also get incentive for supporting their children education at elementary level Rp 5,000,00 per month and baby delivery Rp 100,000,00. The cost for incentive obtained from the revenue selling the fertilizer.
- q Reduce the load of solid waste by converting 1,440,591 kg of solid waste into fertilizer.
- q Since end of year 2001, equipment for solid waste treatment had been modified that increase the capacity of converting

6,750,000 kg of solid waste into 675,000 kg of organic fertilizer per year.

q Converting solid waste to various economical commodities such as treating organic waste into solid and liquid fertilizer, treating coconut fiber into powder for plantation media and fiber for rope.

q Change in the community way of thinking in producing organic waste, mainly after they involved in the process of solid waste treatment.

q Because of the Mayor response, water supply from Tangerang Water Enterprise regularly delivered to the community neighboring Rawakucing FDS.

7. Sustainability

To ensure the sustainability of the efforts, it will require keen cooperation and participation with factors related in solid waste treatment, such as production, marketing, financial, and other supporting facilities. Products yielded and well-tested in quality, quantity and economic value as well, will have a good prospect in the future along with increase of raw material provision resulted from growth of consumption rate and population number.

q Financial: with the efforts for improving the system from 1999, solid waste treatment activity develop into self-finance activity since April 2001, particularly in financing the operational cost for converting solid waste into organic fertilizer. In March-December 2001, it has been produced 115,749 kg of organic fertilizer with the revenue of Rp 57,363,500,00 or 15-20% profit. Other significant aspects are job creation and alternative for future solid waste treatment.

q Through continuous improvement for production quality and quantity, solid waste treatment with large raw material potential will give the opportunity and raise the purchasing power for the partners in many aspects.

q Local community as partner in solid waste treatment gradually alters their working ethos and consumption pattern. Solid waste treatment has a promising prospect along with the agricultural development into using the organic fertilizer.

8. Lesson Learned

Environmental pollution at Rawakucing FDS and inconvenience of the neighboring community is a consequence from imbalance of policy implementation and conflict interest in decision-making process for solid waste management. Latterly results in community suffering and higher-cost solution to recover. This incidence could be a valuable and costly lesson to be learned. In the upcoming days, it is expected to do a better consideration by analyzing, planning, implementing, and controlling in a professional way.

Some actions to and will be done in the future, are:

q Continually analyze and develop solid waste treatment in every aspects, mainly in environmental and economic aspects. Target in 2002 is to convert 6,750,000 kg of solid waste into 675,000 kg of organic fertilizer, which will give an opportunity for 27 workers. Production of organic fertilizer is expected to support the plan to take advantage of 25 ha unutilized land and create job for 125 workers, with target of onion cultivation for 75,000 kg per year which will expect to gain Rp 300,000,000,00. This will encourage the growth of other sector of business to increase economic quality and ensure the market for 750,000 kg of organic fertilizer per year.

q Carry on the testing and developing of the solid waste treatment technology and variety of commodities produced, thus the result will be better in quality and quantity.

q Conduct the training in horticulture to utilize 37,000 ha of unutilized land in Central Tapanuli to give opportunities for job creation and income generation for 12,000 household of poor community. Gradually, with the existing potential Central Tapanuli regency is expected to be the center of horticulture.

9. Transferability

The efforts for solid waste treatment and make use of unutilized land had been formally and informally informed to the various society. Some of them even made a visit to the location, for instance the Ministry of Settlements and Regional Infrastructure, former Ministry of Home Affairs, Regent and Deputy Regent of Central Tapanuli, Deputy Mayor of Medan, World Bank, HOPE Project, Germany students, JICA, and other society.

Advantages for the neighboring community is to create job field and reduce the environmental pollution. Advantages for the local government is to lessen the load of Rawakucing FDS and develop solid waste treatment system, besides conduct the training in solid waste treatment and involve in establishing horticulture training center in Central Tapanuli.

Particular replication in Central Tapanuli regency, North Sumatera

The Regent of Central Tapanuli requested the Mayor of Tangerang to replicate the system in their regency, after Regent and Deputy Regent of Central Tapanuli paid a visit to the Mayor of Tangerang city and the location. The activity would be done by utilizing local potential in their area. With the agreement from the Mayor of Tangerang, in the end of April 2001 the activity began.

Key Dates

1. With Mayor of Tangerang city

To discuss the solution for solid waste treatment and environment improvement in Rawakucing FDS and surrounding.

2. With Regent of Central Tapanuli regency

To discuss the plan for horticultural development and used of 37.000 ha unutilized land as an effort to solve the poverty eradication for 12.000 household in Central Tapanuli regency.

3. With Mayor of Medan city, North Sumatera province

To expose the plan for solid waste treatment in Medan city.

4. With Head of Cleansing department Office, Sibolga city, North Sumatera province

To design the plan for solid waste treatment in Sibolga city.

5. With the Director of PD Pasar Jaya, DKI Jakarta province

To discuss the plan for solid waste treatment in Central Markets in Jakarta city.

References

- a. Multa Fidrus, The Jakarta Post, "Garbage, a source of rags and riches", December 5, 2001.
- b. Sinar Indonesia Baru Newspaper, "Pembangunan Industri Pupuk Organik dimulai di Tapteng (The beginning of development of organic fertilizer industry in Central Tapanuli)", September 23, 2001.

Additional Partners

Partner 4

Name : Ir. Engkan Kelana

Street address : Jl. KS Tubun no.95,

Public Works Department Office of Tangerang

P.O Box : -

City : Tangerang

Postal Code : -

Country : Indonesia

Telephone : 0811 944782

Fax : -

E-mail : -

Contact Person : -

Type of Organisation : Personal

Partner Support : Financial support

Partner 5

Name : Masbar

Street address : Jl. Raya Kelapa Dua no.25

P.O Box : -

City : Jakarta Barat

Postal Code : -

Country : Indonesia

Telephone : 021 - 5300445

Fax : -

E-mail : -

Contact Person : -

Type of Organisation : Personal

Partner Support : Financial support

Contact

Gusri Effendi S.

Rawakucing sub district, Neglasari district

Tangerang City, Banten Province

Indonesia

Tel: 0818 143700, 0812 8139794

Type of Organization: Community-based organisation (CBO)

Nominating Organization

Forum Komunikasi Pengusaha Kecil dan Menengah Indonesia

Anwar Simanjuntak, SE.
FKPKMI
Jl. Cideng Barat no.62 B
Jakarta Pusat
Tel: 021-3524838
Type of Organization: Non-governmental organisation (NGO)

Partners

Tangerang City Government
Drs. Moh. Thamrin, Mayor of Tangerang City
Jl. Daan Mogot no.69
Kota Tangerang
Indonesia
Tel: 021 - 5523677
Type of Organization: Local Authority
Type of Partner Support: Financial Support

Housing and Settlements Office of Tangerang
Rostiwi, SKM., Head of H&S Office
Jl. KS Tubun, Gd. Cisadane Lt.II
Tangerang
Indonesia

Tel: 021 - 55795707
Type of Organization: Central Government

dr. Nuriman Mahyudin
Jl. Windukarya, Gd. Windu Karya
Health Department Office of Tangerang
Tangerang
Indonesia

Tel: 021 - 5527055
Type of Partner Support: Financial Support

Financial Profile

Year	Total in US \$	Part. 1	Part. 2	Part. 3	Part. 4	Part. 5	Gusri E.
1999	4,762	4,762	-	-	-	-	-
2000	10,000	-	6,000	-	-	-	4,000
2001	28,809	14,741.9	9,523.8	190.5	428.6	-	3,571
2002	810	-	-	-	-	-	810

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