

## Sustainable Participatory Community Waste Management

### 1. Definition

Waste refers to any materials left over after consumption, use or activity in the community that generates it, ranging from household, accommodation, workplace, plant, shop, business area, service establishment, fresh market, institute, organization to agency. It can be classified into (1) organic waste, e.g. food left-over, vegetable and fruit debris, and lawn clippings, 2) re-usable waste, e.g. glass, paper, metal, plastic, aluminum, and rubber, 3) general waste, e.g. fabric shred, dust, cobweb, ashes, dung, carcass, scrap, and food container, and 4) hazardous waste, e.g. electric bulb, dry cell, battery, unused medication, and chemical container.

Waste management refers to all the activities and actions required to manage waste, including minimization, segregation, re-use, collection, handling, transport, and disposal, as well as other waste-related activities such as prevention and problem solving.

Sustainable participation refers to the efforts made by community members to participate in activities related to waste management, including providing information and understanding, as well as creating awareness. It is geared toward waste reduction in the places that generate waste, and reduction of toxic or hazardous waste that may come with the municipal waste and contaminate it in the process. Waste management is done through the 3Rs that are reducing, reusing, and recycling to save resources, costs and environment.

Community refers to an area where a group of people live and have something in common, including physical and biological ties, with a clear geographical boundary administered as a community. The community can be rural or urban. Each community has activities using common resources and operating under the same rules and regulations.

### 2. Waste situation

Increasing steadily, waste poses a serious concern to the country, due to the population growth, technological development, economy, industry, and consumption. As a whole, in 2016 Thailand saw about 27.4 million tons of waste per year or about 74,073 tons per day, an increase of 190,000 tons compared to 2015. Of this amount, Bangkok recorded about 4.2 million tons per year, while all the provinces registered about 22.88 million tons. At present, the country was able to dispose of about 20.36 million tons of waste, thus leaving about 10.13 million tons uncollected. Provinces with more than one million of uncollected waste were Nakhon Si Thammarat and Chachoengsao, while those with more than 500,000 tons of waste were Kanchanaburi, Chon Buri, Rayong, Surat Thani, Songkhla, Phetchaburi, Phang-Nga, Satun, Prachuab Khirikhan, Samut Prakan, Phetchabun, Nakhon Ratchasima, Roi Et, and Sakaeo.

In addition, there is about 3.5 million tons of hazardous waste generated from various sources across the country. This hazardous waste could be classified into 3 types. 1) Community hazardous waste, industrial waste, infectious waste, and especially electrical and electronic waste account for about 393,070 tons or 65%, while household waste represents 213,249 tons or 35%. They consist mostly of batteries, spray cans, and dry cells. 2) Hazardous industrial waste represents about 2.8 million tons per year,

65% of which are not properly treated. 3) Infectious waste accounts for about 55,750 tons per year, mostly from public and private hospitals, clinics, medical establishments, animal hospitals, laboratories with hazardous waste, 75% of which are properly treated by incinerators designed for the purpose.<sup>(3)</sup>

## **2.1 Waste Disposal**

Most community waste disposal today is the duty of a local government organization. Waste is generated from the production of goods and services in plants and workplaces as well as from community consumption. It is put in the trash bin or container designed for sorting: general waste, recyclable waste, infectious waste, and hazardous waste. It is then collected by collection trucks for further segregation according to the method used by the local agency concerned. The unwanted waste will then be disposed of.

Today, the waste collection process in Thailand is beset with management problems at point of origin. Inappropriate methods of reduction, segregation, reuse, and disposal method, as well as lack of public participation, have led to much waste uncollected in local government organizations which also face problems of management, manpower, budget and legal constraints.

## **2.2 Health and environmental impacts from waste**

Waste management without systematic and good management practice has adverse impacts on health and the environment, leading to considerable waste increase, some being uncollected in the community. Some areas have become breeding grounds of disease-carrying animals and insects, especially stagnant pools of water polluted by organic and inorganic material, heavy metals, germs, and other toxins. These harmful substances can further contaminate water sources on and under the ground, affecting public consumption. In addition, there is air pollution caused by the burning of waste, e.g. dusts, sulphur dioxide, carbon monoxide and dioxin. It has negative health impacts, caused by skin contact, breathing, and eating, leading to illnesses and diseases, including vomiting, headache, digestive diseases, allergy, and cancer.

## **3. Agencies, organizations and mechanisms concerned with waste management**

The government and the National Council for Peace and Order have approved of the National Master Plan for Waste Management (2016-2021). The Pollution Control Department, Ministry of Natural Resources and Environment, has developed a policy framework for the management of solid and hazardous wastes at the national level. In this matter, the Prime Minister has instructed the Ministry of Interior and the Ministry of Natural Resources and Environment to prepare a 1-year action plan of "waste-free Thailand" along the "Pracharat" line, using the 3Rs principle of reduce, reuse and recycle. The objective is to reduce the amount of waste across the country by 5%. At present, the agencies responsible for or concerned with waste management under the national Master Plan for Waste Management (2016-2021) are as follows:

### **3.1 Four lead ministries:**

3.1.1 The Ministry of Natural Resources and Environment is responsible for proposing work plans, measures, and technical standards of environmental management regarding solid and hazardous waste management.

3.1.2 The Ministry of Interior is charged with waste management across the country in pursuance of the Act on the Maintenance of the Cleanliness and Orderliness of the country B.E. 2535 (1992) and its amendment (No. 2) B.E. 2560 (2017). It instructs every

province and local government organization to develop a 1-year action plan for waste management to be implemented urgently.

3.1.3 The Ministry of Public Health is responsible for setting rules and regulations on general waste management from upstream, mid-stream, and downstream under the Public Health Act B.E. 2535 (1992). Local government organizations are enforcement authorities and issue various by-laws, as well as taking action on infectious waste.

3.1.4 The Ministry of Industry is responsible for taking action on management of hazardous waste from industrial plants.

### **3.2 Eight supporting agencies:**

3.2.1 Ministry of Education

3.2.2 Ministry of Finance

3.2.3 Ministry of Energy

3.2.4 Ministry of Science and Technology

3.2.5 Ministry of Agriculture and Cooperatives

3.2.6 The Prime Minister's Office, by the Department of Public Relations

3.2.7 Ministry of Tourism and Sports

3.2.8 Ministry of Defense.

**3.3 Committee or sub-committee supervising the implementation of the Master Plan on Waste Management** sets guidelines for implementation of the national master plan and facilitates the monitoring, evaluation and review in light of the changing situation and the government's policy. It also reports the progress and obstacles of the implementation and proposes ways for improvement to the Cabinet. The lead ministry to take action under the Master Plan is the Ministry of Natural Resources and Environment by the Pollution Control Department, Department of Environmental Quality Promotion, and Office of Natural Resources and Environmental Policy and Planning.

**3.4 Provincial sub-committee supervising and driving waste management** sets guidelines for driving the action at provincial level, prepares a yearly action plan in accordance with the national master plan, facilitates the monitoring and evaluation of the provincial plan, and reports the progress to the committee/sub-committee supervising the implementation of the national master plan on waste management.

**3.5 Operation Center for Waste-free Thailand** is an agency operating under the Committee supervising and driving the action of the national master plan on waste management (2016-2021). The center is a result of the integration of the work carried out by six agencies concerned with waste management: Ministry of Interior, Ministry of Natural Resources and Environment, Ministry of Public Health, Ministry of Industry, Ministry of Education, and the Prime Minister's Office (Department of Public Relations). It is its duty to collect information on the work of agencies concerned and coordinate in the monitoring at provincial and national levels.

## **4. Current policies and legal measures**

### **4.1 Policy on the management of solid, sewage and hazardous wastes**

**4.1.1 National Master Plan on Waste Management (2016-2021)** was approved by the cabinet and the National Council for Peace and Order on 3 May 2016. The master plan provides guidelines for waste management in four stages:

(1) Disposing of accumulated uncollected waste at waste disposal sites in critical locations (old waste)

(2) Creating an appropriate model for solid and hazardous waste management (new waste), focusing on waste sorting at point of origin, serving as the center point of waste management and disposal using mixed technology and transforming waste into energy or maximizing its use

(3) Setting regulations and measures for solid and hazardous wastes

(4) Instilling disciplines in the people in the country aiming for sustainable management through public education and law enforcement in three stages of implementation: urgent (6 months), medium-term (1 year), and long-term (more than one year).

The essence of the National Master Plan on Waste Management:

(1) Conceptual framework: minimization of the generation of solid or hazardous wastes at point of origin, promotion of solid and hazardous waste disposal at the center point of responsibility and participation of every sector.

(2) The target of the National Master Plan is to reduce waste nationwide by 5%.

(3) Measures for solid and hazardous wastes are: minimization of solid and hazardous wastes at point of origin, increase of management capability, and promotion of solid and hazardous waste management.

(4) Prioritization of areas: Large area (Model L), medium-sized area (Model M), small area (Model S), Transfer Station, and Stand Alone Area.

(5) Executing agencies are agencies concerned, central authorities, supporting agencies, the private and business sector, the people sector, community organizations or civil society.

(6) Turning plan into action: Providing understanding about the essence of the national master plan, integrating the work of various agencies and sectors concerned, using tools and mechanisms in a concrete manner, managing, monitoring and evaluating the performance.

#### **4.1.2 Short-term National Waste Management Master Plan (2016-2017) or 1-Year Action Plan of "Waste-Free Thailand" in line with Pracharat (2016-2017)**

At present the Thai government has announced a national policy on waste management and instructed the Ministry of Interior, together with the Ministry of Natural Resources and Environment, to prepare a short-term national waste management master plan (2016-2017) and 1-year action plan of "Waste-Free Thailand" in line with "Pracharat" (2016-2017). Emphasis is primarily put on action in two stages. The initial stage consists of waste reduction and segregation at point of origin based on the principle of 3Rs with the aim of minimizing solid and hazardous waste. Efforts are made to promote mechanisms to segregate and recycle solid and hazardous waste and to increase its value at point of origin. The middle stage focuses on the development of collection and transport systems, leading to effective waste management in the final stage in the future.

#### **4.1.3 Action plan on waste management by local government organizations**

On 7 August 2016 the National Council for Peace and Order (NCPD) approved of the Roadmap for the management of solid and hazardous waste and action plan to solve problems in areas where waste is not properly disposed of and accumulated uncollected. Instructions have been issued to Bangkok Administration, central authorities, provincial and local administrations to take action in every dimension accordingly. Action consists of four steps: disposal of accumulated uncollected waste, creation of models for

appropriate solid and hazardous waste management through reduction and segregation at point of origin, setting of regulations and measures on solid and hazardous waste management, and the building of discipline in people. The focus is on sustainable management, education and participation of the community, as well as law enforcement. As a result, local government organizations are obliged to prepare short-, medium-, and long-termed action plans on participatory waste management. The target is to secure successful strategy, action, monitoring and evaluation of community waste management in a concrete manner.

#### **4.1.4 12<sup>th</sup> National Economic and Social Development Plan (2016-2021)**

focuses on waste management as a top priority, promoting segregation mechanism for maximum recycle purposes, disposal of accumulated uncollected waste at disposal sites in critical locations, and creation of models of solid and hazardous waste management, focusing on transforming waste into energy, building discipline in people, all leading to sustainable management.

### **4.2 Legal measures in the management of solid, sewage, and hazardous wastes**

Currently Thailand has four important laws on community waste management:

#### **4.2.1 Enhancement and Conservation of National Environmental Quality Act, B.E. 2535 (1992)**

The law was enacted to prevent the degradation of the environmental quality, encourage the general public and private organizations to participate in the promotion and conservation of the environmental quality, define the power and duty of public agencies, state enterprises and local authorities as well as the guidelines for the work that does not come under any agency's responsibility, and establish an environmental fund to support the waste management systems of the public agency, state enterprise and the private sector. The Ministry of Natural Resources and Environment is responsible for taking action under this act.

#### **4.2.2 Public Health Act, B.E. 2535 (1992)**

The act is based on the principle that the public be given protection with regard to health and environmental hygiene or sanitation, while the Minister of Public Health has the power to issue ministerial regulations prescribing criteria, methods, and measures to control the living conditions suitable to the livelihood of the population. It also prescribes the methods to inspect, control, supervise or redress matter likely to have an impact on such living conditions, as well as undertaking waste management and control while having the power to determine a fine as appropriate.

With regard to waste management, the act was amended in 2007, giving the local authorities the power to collect, transport, or dispose of waste in the area under their jurisdiction. Action can be taken as follows: (1) doing the work themselves, while the collection fee charged to the public must not exceed the rate as prescribed in the ministerial regulation, (2) working with another public agency or another local administrative authority, (3) assigning the responsibility to a person to do on their behalf under the supervision of the local administrative authority, (4) allowing a person to do the work as a business deal or earn compensation in return for his service. The local administrative authorities will prescribe the service fee rate that the private operator can charge to the public.

#### **4.2.3 Act on the Maintenance of the Cleanliness and Orderliness of the country B.E. 2535 (1992) and its amendment (No. 2) B.E. 2560 (2017)**

The act gives the power to local government organizations (LGO) (but not provincial administrative organization or PAO) to undertake waste management, just as does the Public Health Act, B.E. 2535 (1992), with additional provisions as follows: (1) Local government organizations shall have the power to make commercial use of solid waste, while business operators making commercial use of such waste need to have a permit to do so. (2) There shall be cooperation between local government organizations regarding the waiving of operational conditions under the Establishment of Local Administrative Organization Law, and in the case of cooperation with the private sector there shall be similar waiving of conditions under the Joint Public-Private Joint Law. (3) The Department of Local Administration shall have the power to submit a request for budget from the State in support of waste management work of the local government organizations. (4) There shall be a central committee with a duty to promote and advise local government organizations in the preparation of the waste management plans in line with the provincial development plan, while the provincial governors shall have the power to establish provincial committees to monitor and supervise the implementation of the projects/plans concerned. (5) Permits shall be extended to five years for business operations of waste disposal or enterprises making commercial use of solid waste.

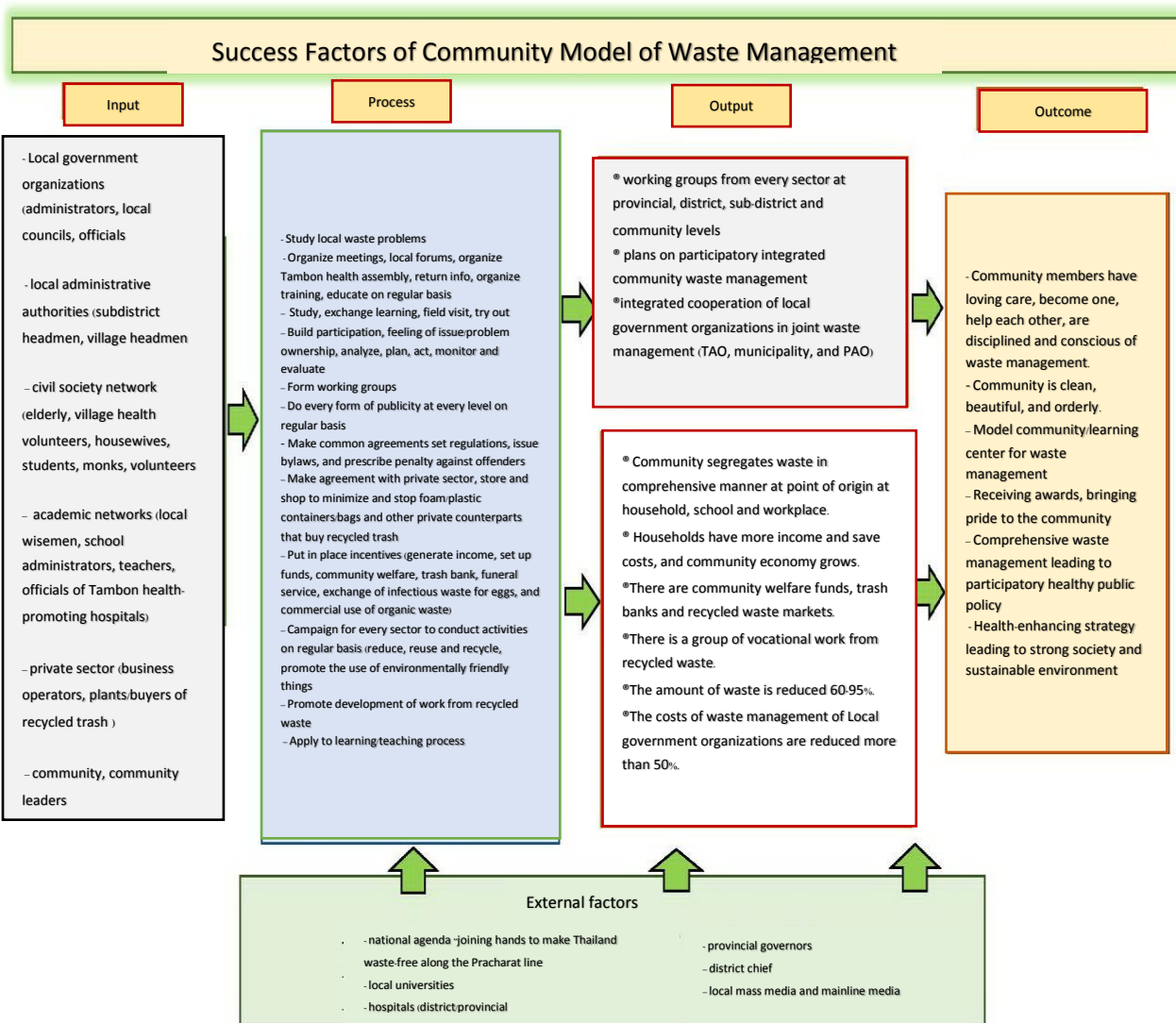
However, this Act does not cover the management of community infectious and hazardous wastes.

#### **4.2.4 Determining Plans and Process of Decentralization to Local Government Organization Act, B.E.2542 (1999)**

Under this Act there is a committee to look after the decentralization to local government organizations, maintain the cleanliness and orderliness of the country, and dispose of solid waste, sewage and waste water. It also empowers provincial administrative organization (PAO) to set up and supervise overall waste water treatment systems, disposal of common solid waste and sewage, and environmental and pollution managements.

### **5. Case studies of models of community waste management in Thailand**

The following are the case studies and analysis of various models of community waste management: 1) Community of Ban Nong Chot, Municipality of Non-Daeng Sub-district, Nakhon Ratchasima Province, 2) Community of Ban Hat Kruat, Hat Kruat Sub-district, Mueang District, Uttaradit Province, 3) Municipality of Somdet Sub-district, Somdet District, Kalasin Province, 4) Municipality of Siwilai Sub-district, Bueng Kan Province, 5) Municipality of Pho-Chai Sub-district, Roi Et Province, 6) Community of Ban Nong Bua, Mon-Pin Sub-district, Fang District, Chiangmai Province, 7) Community of Pitiwinla, Phraeksa Sub-district, Samut Prakan Province, 8) Municipality of Bang Duea Sub-district, Mueang District, Pathum Thani Province, 9) Municipality of Tha Kwang Sub-district, Saraphi District, Chiangmai Province, and 10) Ratchaprachanukhro School, Phetchabun Province. The studies reveal that there are a number of success factors in the community waste management, as illustrated in the following chart:



## 6. Constraints, problems and obstacles

Thailand may have in place its policies and plans on waste management, but the policy management is not as effective as it should be, whether it adopts a centralized or combined approach. The following are some of the problems and obstacles encountered:

1) There is a lack of integration between agencies responsible for policy, legal provisions, measures and budget.

2) Local government organizations do not have enough capacity to manage waste effectively.

3) There is no participatory process from the general public, public agencies, state enterprises, education institutes, schools, religious places and private business establishments.

4) There is lack of support, promotion, and publicity from agencies, organizations and institutes, with regard to such matters as model schools, model communities, or business enterprises and dealers that have instituted an effective and sustainable waste management.

Consequently, it is imperative to mobilize thinking from all sectors for sustainable participatory community waste management to come up with approaches appropriate to the community context concerned.

## 7. Issue for consideration of the National Health Assembly

Requesting the National Health Assembly to consider Document HA10/Draft Resolution 4 on “Sustainable Participatory Community Waste Management”.

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