

# Increasing Value Added of Recycling Business Management: A Case of Thailand

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**Abstract**—This policy participation action research explores the roles of Thai government units during its 2010 fiscal year on how to create value added to recycling business in the central part of Thailand. The research aims to a) study how the government plays a role to support the business, and its problems and obstacles on supporting the business, b) to design a strategic action – short, medium, and long term plans -- to create value added to the recycling business, particularly in local full-loop companies/organizations licensed by Wongpanit Waste Separation Plant as well as those licensed by the Department of Provincial Administration. Mixed method research design, i.e., a combination of quantitative and qualitative methods is utilized in the present study in both data collection and analysis procedures. Quantitative data was analyzed by frequency, percent value, mean scores, and standard deviation, and aimed to note trend and generalizations. Qualitative data was collected via semi-structured interviews/focus group interviews to explore in-depth views of the operators. The sampling included 1,079 operators in eight provinces in the central part of Thailand.

**Keywords**—Management, Recycling Business, Value Added.

## I. INTRODUCTION

CHANGES are suggested by some thinkers to be a result of a dynamic struggle of technology, communication, telecommunication, including the forceful competition in trade. The struggle between these forces results in the globalization of, for instance economic activity. These changes call for new quality and skills from a future workforce such as responsibility, initiation and capacity to work in groups) [1]. The changes give Thais wealth, health, and extravagant lifestyle. However, the lifestyle of the wealthy is the overriding threat to the national resource reservation [3], [9]. The expense of over use of natural resources causes Thailand trade deficit due to over imported amount of natural materials for business and industry. Waste separation/recycling could be a possible solution and is considered as one of the four urgent matters (i.e., unemployment, poverty, equality of income distribution, overuse of natural resources) in the National Agenda to be taken fast action for improvement. Responding to the policy, national campaign called 4Rs (i.e., Reduce, Reuse, Reject, Recycle) was launched for resource preservation as proof of an effort from the government [10].

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TABLE I  
NUMBER OF WASTE

Waste Type	Numbers (tons)
Bio-organic fertilizer and liquid fertilizer	200,000
Waste-recycling	2,950,000
- Glass	914,500
- Paper	737,500
- Plastic	354,000
- Metals	855,500
- Aluminum	88,500
Total	3,150,000

Source: 2009 Pollution Report by Pollution Control Department, the Ministry of Natural Resources and Environment

The number of waste both from household and industry has been rising due to number of factors, for instance increasing population, national economic growth, and industrial promotion. The waste to be recycled is collected mostly by local recycling operators (i.e., transferring of solid waste from the point of use and disposal to the point of treatment). As shown in Table I, the highest amount of waste is paper, steel, glass, and aluminum, respectively. However, it was reported in 2009 by the Pollution Control Department that there are still great amount of waste left unprofitably including paper, glass, plastic, steel, aluminum, steel and rubber. The total of waste that is left unprofitably hits 4.0 million tons per year, merely 22 percent of which (i.e., glass, steel, and paper) was recycled [2]. Reported during 2005 – 2009 the number of waste, particularly paper and plastics, in need for industry is increasing; however, the number of waste made available for recycling process is few. The need in recyclates is increasing due to vigorous campaigns run by government and business sections.

Recycling business is rapidly growing. Thanks to the fact that there are few number of recycling operators that operate with well-structured and complete recycling treatment, the business is full of prosperity with being success for economic well-being [5, 9]. In addition, the recycling business is perceived socially as ungracious by most people, and that keeps the share of recycling market/business low and uncompetitive. Interestingly, the demand for reused/recycled product in Thailand is rising. The number of waste (i.e., paper and plastic) made available for recycling/reuse is however lower than the demand. Respectively, 48 percent and 22 percent of the wasted paper and plastic are made used. It is clearly seen that a great market share of recycling (paper and plastic) business has high chance of success and would possibly bring great benefit.

Currently the amount of recycling operators (i.e., informal waste collectors -- waste pickers, junk men -- collecting recyclable materials by foot or in pushcarts, tricycles, and pickup trucks; licensed waste collectors -- full-loop recycling companies/organizations) is growing at rapid rate. They do curbside collection of mixed waste, in which all recyclates are collected and mixed in with the rest of the waste. The operators are different in administrative operation, budget, and waste management (i.e., collection -- to collect recyclates from the general waste stream; sorting -- automate process, removing by hands). To be standardized, there should be some form of organizational formats among the operators [8] including cooperatives, associations, companies, unions, and micro-enterprises to share mutual interest and to form partnership with business/government to increase selling power [4], [11].

## II. RESEARCH METHODOLOGY AND RESULTS

Exploring the roles that Thai government plays on how they create value added to recycling business in the central part of Thailand, this policy participation action research combines quantitative and qualitative methods in both data collection and analysis procedures. The sampling includes 1,079 local operators in eight provinces. They are Phitsanulok, Nonthaburi, Pathum Thani, Bangkok, Nakhon Sawan, Nakhon Pathom, Bangkok, and Suphan Buri. The participants are randomly sampling via stratified sampling method at a confidence level of 0.95. Based on intensive review of literatures, questionnaires were developed to note trends and generalization. The measure coefficient of reliability of the questionnaires ranges from 0.7 up to standards set [7]. Frequency, percent value, mean scores, and standard deviation were employed for analysis. For qualitative data collection/analysis, 50 participants including recycling operators (licensed by Wongpanit Waste Separation Plant and by the Department of Provincial Administration) and government units (i.e., Pollution Control Department and Department Municipal Organization) in the provinces were selected via random sampling. They participated in informal interviews and focus group interviews. Content-based analysis was employed for their responses.

## III. FINDINGS

### A. Public Attention

Waste recycling gains attention from households. More attention was paid to sorting waste and making them ready for transferring to the place for recycling treatment. By means of the cooperation, the cost of separating recyclable materials from the rest of the waste is lower. The selling price of recyclable waste is satisfactory, and that becomes a motive for households to take part in recycling. Besides, collections are done by waste collectors at the point of residential areas with punctuality and a professional manner (e.g., registered list of customers). This provides public convenience and reduces the amount of waste sully the sidewalks.

### B. Obstacles

Licensed recycling operators are facing administrative costs, which keeps rising due to a poor accounting system, hard to access business information (e.g., sources of recyclates, advanced technology), and shortage of loans for short-term cash flow.

### C. Poor Mutual Cooperation

Mutual cooperation between recycling operators licensed by Wongpanit Waste Separation Plant and those by the Department of Provincial Administration is rate due to high competition (i.e., information is confined to certain operators so that few could access the sources of recyclates).

### D. Exceeding Number of Relevant Official Units

The exceeding number of government units causes the complexity of the liaison (i.e., response with seriousness and sincerity but do so with cumbersome and unwieldy administrative processes) [6].

### E. Strategic Actions

A 3-phased strategy was recommended: a) the short-term (1-year plan) is to develop a quality business system in terms of finance (e.g., efficient accounting system, low-cost logistics, low-interest/long-term loans for investment and cash flow), b) the medium term (2-3 year plan) is to support the use of advanced technology for waste separation/recycling, to create a sense of trust and teamwork among recycling operators in regions as part of the business community, to establish a center both for retraining/upgrading skills needed in the recycling business and for social structures (e.g., mutual cooperation among shared-interest operators, elicits for technical elites needed in the recycling business), c) the long-term (5 year plan) is to expand the domestic market abroad for goods/products made of recycled materials, to get the government assistance in terms of R&D for advanced technology/machinery development.

## IV. CONCLUSION

Thai government has paid attention to recycling to process materials (waste) into new products to prevent waste of potentially useful materials, reduce the consumption of fresh raw materials, energy usage, and air/water pollution by reducing the need for conventional waste disposal. National policies have been launched to raise public awareness about environmental management control for encouraging recycling practice among consumers both in households and industry. Responding to the policies, both government units and business firms have run campaigns to increase the care for natural resource usage/preservation. It is agreed that recycling/reusing could ease the country's economic loss due to the balance of trade deficit (e.g., the import of natural materials from abroad). Recycling business could play a key role in modern waste reduction, and support the implementation of the national policies as well as ease the

balance of trade. Due to the increasing need for recyclates and the great amount of recyclable waste left available, the recycling business is potentially growing. Households are cooperative since local recycling operators do curbside collection at residences. However, the exceeding amount of government units cause complexity in the liaison (i.e., response with seriousness and sincerity but do so with cumbersome and unwieldy administrative processes). It would be beneficial if the exceeding amount of government units could be streamlined so that cooperation between groups of them moves in the same direction.

## V. RECOMMENDATIONS

Based on the study, recommendations are made and divided into 5 parts as follows:

### 1. Government policies

1.1 To adjust taxation systems and tax rates for licensed operators.

1.2 To provide the recycling business financial securities so as to enable the business for commercial loan.

1.3 To create a model of control for regulating operations and entrepreneurs recycling businesses (e.g., licensing registered ones).

### 2. Business responsibility

2.1 To streamline the government units dealing with the recycling business so as to have unified registrations and rules.

### 3. Management

3.1 To have a coding system to get the recycling business running honestly (e.g., open bidding in public in the presence of all who may wish to witness).

3.2 To standardize pricing so as to provide benchmarks, that individual recycling operator can use to judge fair prices.

3.3 To provide low-interest business loans.

3.4 To solve the problem of illegal foreign labor (e.g., expanding the time period for registration).

### 4. Technology and transportation

4.1 To support in-house research on recycling technology (i.e., to advance garbage separation systems)

### 5. Education and campaign

5.1 To support training to retrain/upgrade skills needed in the business.

5.2 To establish centers for mutual cooperation among recycling operators to strengthen selling power.

5.3 To promote cooperation between the licensed/non-licensed recycling operators in an attempt to establish business networks.

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