

Fourth Regional 3R Forum in Asia

“3Rs in the Context of Rio+20 Outcomes – The Future We Want”

Ha Noi, Viet Nam, 18-20 March 2013

Country Analysis Paper

(Draft)

< Vietnam >

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1. Background

The process of industrialization and economic development in Vietnam is currently taking place rapidly with the formation and development of many production sectors and increased needs for goods, materials, and energy, boosting national socio-economic development. However, this has resulted in serious concerns about the environment, especially the handling of solid waste. Basing on the origin of waste generation, 46% of solid wastes are produced in urban areas, 17% from industrial production; rural solid wastes and wastes released by craft villages and the medical sector account for the remaining percentage.

The collection ratio of domestic, industrial solid wastes and wastes from urban services, industrial zones, processing zones is approximately 83-85% in urban areas and around 40-55% in rural areas. Most of the urban solid wastes are not classified at source and collected and transported together to the landfill. The solid waste reuse, recycling and treatment in general and hazardous waste management and treatment in particular have not met the requirements of environmental protection. Many solid waste treatment plants were developed and operated but facilities for disposal, treatment and the solid waste treatment capacity as well as productivity is still beyond the requirements. The solid waste recycling and reusing activities are fragmentary.

To address the situation, the Vietnamese government is taking steps such as revising its environmental protection laws and adopting Vietnam Agenda 21; approving the National Strategy of Integrated Solid Waste Management up to 2025, vision towards 2050; promulgating the National Strategy on Environment Protection to 2020, with Vision to 2030. The reduction of solid waste, reuse and recycling are being promoted as part of Vietnam's strategies and regulations.

2. Policies, programmes and institutional

Waste reduction, reuse and recycling have been mentioned as one of the key issues on environmental protection among directions and policies of Vietnam. The *Law on Environmental Protection 2005* has regulated promoting waste reduction, reuse and recycling as one of the key policies for environmental protection, that has encouraged people to use recycled, environment-friendly products and also extended producers' responsibility in the collection and treatment of certain kinds of after-use waste products. *Resolution No. 41/NQ-CT of the Politbureau on environmental protection in the period of accelerating the country's industrialization and modernization process* as well as *Directions on sustainable development of Vietnam (Vietnam Agenda 21)* encourage people to save natural resources and energy; use environment-friendly products and packaging materials; minimize toxic and persistent wastes; recycle and use recycled products. *National Strategy on Environment Protection to 2020, with Vision to 2030* has provided objectives, contents and solutions for environmental protection. Waste reduction, reuse and recycling is regarded as one of the solutions for integrated solid waste management.

Some of the environmental legislations in Vietnam are listed below:

- *Resolution No. 41/NQ-CT of the Politbureau on environmental protection in the period of accelerating the country's industrialization and modernization process;*
- *Directions on sustainable development of Vietnam (Vietnam Agenda 21);*

- *National Strategy on Environment Protection to 2020, with Vision to 2030;*
- *The Law on Environmental Protection 2005;*
- *Decree No.59/2007/ND-CP dated 9 April 2007 of the Government on Solid Waste Management*
- *Decision No.2149/QĐ-TTg approving the national strategy for integrated management of solid waste up to 2025, with a vision to 2050.*
- *Circular No. 12/2011/TT-BTNMT dated April, 14th, 2011 of the Ministry of Natural Resources and Environment on stipulating hazardous waste management.*
- *Circular No. 46/2011/TT-BTNMT of the Ministry of Natural Resources and Environment on providing for the environmental protection of craft villages.*
- *Decision No.1216/QĐ-TTg dated on September 05, 2012 on “the National Strategy on Environment Protection to 2020, with Vision to 2030”*

Besides, Vietnam Environment Protection Fund has established in 2002 with responsibilities in receiving funds from the state budget; grants, contributions, commissioned by organizations and individuals at home and abroad to provide financial support for environmental protection activities (including 3R activities) throughout the country. Another type is Recycle Fund firstly established in Ho Chi Minh City. This Fund provides financial support for recycling activities.

At present, MONRE has developed a “3R program” and expected to submit to the Prime Minister in the mid of this year (2013). The Program will provide a plan and a list of projects as well as solutions for people’s awareness improvement, finance support and investment, science and technology support....

In near future, Vietnam also considers regulations on recycling management in order to develop a recycling industry. These plans are expectedly contribute to environment protection activities.

3. Technologies and infrastructure development;

Source separation for solid waste is a relatively new activity in Viet Nam, which has not yet become a common practice and has been only experimented on household garbage in some big cities including Hanoi, Hochiminh and Danang. With underdeveloped infrastructure and incoherent management system, in many programs and projects, separated wastes had been collected and disposed together. The effectiveness of these projects, therefore, has not been high and as a result, people have not developed a habit of separating organic and non-organic wastes before dumping them.

Waste reduction in production, services and consumption is still almost neglected. There are no incentive policies or legal enforcement for which people practice solid waste reduction in a concrete manner. Similarly, there are no programmes encouraging people to save natural resources or there are some but their results have not been recognized. Only about 200 out of 200,000 enterprises (about 0.01%) have been applying the cleaner production approach, which is very effective in reducing wastes in production activities.

Waste reuse and recycling are more common and implemented by a system of individual garbage buyers and collectors. Most of households in Viet Nam have habit to separate recyclable wastes such as plastic, paper, metal, etc. for selling to the buyers. Through this system, recyclable and reusable materials are collected separately and delivered to recycling facilities in craft villages.

Some craft villages which recycle paper, plastic and metal, etc. have been strongly developed and contributed to job creation, poverty reduction and improving people's income

and lives. Statistics in 2003 showed that about 52,000 tons of papers, 25,000 tons of plastic and 735,000 tons of waste metal were recycled by craft villages in the North. However, most recycling technologies used by craft villages are old, out-of-date and seriously polluting ones have caused serious pollution in craft villages which recycle paper, plastic and metal, thus impairing people's health and lives.

In the area of compost production from household garbage, the number of compost production facilities is too small and thinly distributed in some big cities. The compost market has not been really developed, and people still prefer using chemical fertilizers for crop production. Despite the recent development and application of our technologies which have been proved to be effective in recycling and treating solid waste, the replication of these models and technologies in the whole country in coming time requires the greater investment from the State and the whole society.

The main treatment methods in Vietnam:

- *Organic waste: composting (22 facilities treat about 15% total of waste)*
- *Recyclable waste (plastic, metal, glass): recycling in craft village and small and medium facilities. These village use low technologies, contribute to pollution issues.*
- *Thermal technology: Burning with energy recovery/ Burning in cement kiln/ incinerator*
- *Solidification: material compression, block... to construction material*
- *Landfill.*

4. New emerging waste streams

Hazardous waste accounts for 15%-20% of the industrial solid waste. This waste is the potentially dangerous source of pollution to the environment and the community's health.

In the field of hazardous waste management, Vietnam has issued the Circular No. 12/2011/TT-BTNMT dated April, 14th, 2011 of the Ministry of Natural Resources and Environment on stipulating hazardous waste management. This Circular stipulates hazardous waste management. The Circular provides for: the classification and sorting of hazardous wastes; conditions for hazardous waste management practice; procedures for the compilation of dossiers for registration of hazardous waste generators and for the grant of hazardous waste management practice licenses and identification numbers; transboundary transportation of hazardous waste; examination and certification of the implementation of contents of environmental impact assessment reports and requirements; and for responsibilities of organizations, individuals and competent state agencies.

Hazardous waste is collected, transported and handled by provincial Urban Environment Company and private companies/enterprises licensed by MONRE or DONRE (provincial Department of Natural resource and Environment).

The number of facilities and companies involving in transporting and treating hazardous waste being licensed by the MONRE has increased annually. By 2012, the MONRE has granted 80 licenses on transporting hazardous waste and nearly 50 licenses on treating hazardous waste to individuals and organizations.

At present, hazardous waste treatment technologies widely applied in Vietnam include two-level static incinerator (more than 50%), concretization (cementing), which is shown in below table:

No.	Technology	Number of centers applied	Number of system modules	Capacity
1	Two-level static incinerator	23	28	50 – 1000kg/h
2	Co-process in cement kiln	2	2	30 ton/h
3	Landfill	2	3	15.000 m ³ /h
4	Concretization (cementing)	19	19	1 – 5 m ³ /h
5	Oil recycling	20	20	3 – 20 ton/day
6	To treat refuse light bulb	10	10	0.2 ton/day
7	Electronic waste treatment	6	6	0.3 – 5 ton/day
8	Waste battery demolishing and recycling	9	9	0.5 – 200 ton/day
9	Solvent recycling	13	13	0.25 – 1.2 m ³ /h
10	Barrels rising	15	15	60 – 1000 unit/day
11	Waste water treatment	20	23	6 – 25 m ³ /h
12	Metal recovery (zinc residue, salt of alkaline metals)	4	10	0.1 – 1 ton/h

5. Agricultural and rural solid waste

Nearly 70% of the Vietnamese population is living in the rural areas. The economic and labor restructuring is taking place at a slow speed, though the rural production is moving multi-sectorial and being enhanced. With a positive development, Vietnam's rural areas face shortcomings and limitations in term of outdated technical and social infrastructure environmental pollution in many rural areas of Vietnam.

One of the major causes leading to the environmental pollution in rural areas is the solid wastes from agriculture activities, animal husbandry, abuse of pesticides, insecticides, fertilizers in agricultural production, solid wastes of craft villages and household garbage.

Vietnam has been trying to develop treatment methods for solid waste generating in rural areas. There are several main methods to recycle and reuse solid waste in rural areas such as compost, biogas, animal - aquacultural feed, bio – fuel, RDF-fuel material.

Compost (organic fertilizer)

The advantage of this decomposition is to help reduce environmental pollution, create organic fertilizer for soil and plants. Small-scale household compost production applied in rural areas.

Biogas

The Biogas program for Vietnam's Animal Husbandry sector has assisted farmers nationwide to build 18,000 biogas projects in phase I (2003-2005) in 12 provinces nationwide; 27,000 biogas projects by the end of 2006 and by late 2007, another over 16,000 biogas projects were built.

For phase II (2008-2011), the program expanded to more than 50 out of 63 cities and provinces nationwide. Currently, there are about 150,000 biogas projects available throughout the country (Source: National Biogas Office, 2008).

At the moment, Vietnam's animal husbandry is mostly on a household scale. Household animal husbandry waste is mostly treated in biogas tank to produce husbandry feed and fertilizer for cultivation. About 19% of this waste is directly released into the environment without any treatment.

Feed for aquaculture

Currently, animal and livestock manure are used in various ways to produce feed for aquaculture.

- Raise fishing worm for aquaculture: Buffalo, pig manure and cage bedding materials such as grass, rice straw and stubble, water-fern, sweet-potato plant, peanut plant... or dry leaves which are used as a grounding materials to raise fishing worm. In addition, fresh manure of grass eating animals can be eaten directly by the fishing worms, or can be mixed with fermented animal manure to feed the worms.

- Use chicken manure which is biologically fermented as a feed substitute in aquaculture.

However, animal manure collectors often prefer large-scale farms so Biogas tank is always a choice for small-scale household businesses.