

Regulatory and Institutional Systems for Industrial Pollution Control in Yangon City

By. Ms. Khin Wynn (Myanmar)

1. Introduction

Managing environmental resources in the midst of a rapid urban transition taking place in the Southeast Asian region poses one of the greatest challenges to governments in this region. Moreover, the pace of urbanization, which refers to the average annual growth rate of urban population, has been remarkably high through the 1970-1995. Further more, the countries of ASEAN have proven to be one of the world's fastest-growing regional economies. The combination of rapid urban population and industrial growth has resulted in an increasing rate of pollution and accelerated deterioration of the natural and living environment. Cities in developing countries, in particular, have been besieged by heightening environmental risks for several decades. The most critical and immediate environmental concerns faced by governments in the region include the provision of safe and adequate water supply, sanitation, drainage and solid waste management, as well as the control of the treatment and disposal of industrial pollutants.

The potentials of environmental pollution in Myanmar pertain to air, water and soil pollution have been significantly arising in the recent years. The degree of environmental pollution may increase with population growth and industrial development. Industrial waste management will become one of the most important issues that should be paid more attention in managing the urban environment, as many industrial estates are located within the boundary of city area (capital as well as provincial city). There are nine industrial estates developed within the Yangon City boundary. Most of the industrial estates are located near the rivers in such a manner that they are accessible by both motor vehicles and cargo-ships. Although economically advantageous, locating these estates along & near the rivers will increase the potential of environmental degradation. Some factories have been illegally discharging untreated wastewater into the nearby rivers.

There is no specific institution assigned with the task for industrial waste management in Myanmar. Even though the Factories Act (1951) has provision concerned with industrial waste pollution control; there is no specific rules and regulations that can cope to accuse this problem in real practice. Improper management of industrial waste can cause not only pollution risks to quality of the urban environment but also health risks to the workers as well as the residents living in the areas near the industrial estates.

This paper will review the existing conditions of industrial estates in Myanmar, point out the possible environmental problems due to industrial establishments, evaluate the regulatory and institutional framework regarding industrial waste management, and finally discuss the applications of regulatory instruments, economic instruments and suasive measures for ensuring safe management of industrial waste.

2. Small & Medium Industries and Industrial Estates in Myanmar

2.1 The operation of SMIs development in Myanmar

Myanmar constantly made efforts for the establishment of industries after gaining independence in 1948. Generally, the private industrial establishments were small and medium industries, which had been developed with momentum till Myanmar economic system had been changed into a centrally planned economic system in 1970s. Since then the development in the functions of private industries have been reduced. Majority of private industries was nationalized in 1968 and 1974 accordingly. The public sector investment was to be the main driving force of the economic development and private industries have been confined to small-scale activities basing on domestic raw materials.

The deteriorating economic situation in the country in late 80's had promoted the Government to launch a new economic strategy implying a radical departure from the previous centrally planned system in favor of a more market-oriented policy framework. In particular, international cooperation such as Foreign Direct Investment is now encouraged to improve industrial competitiveness and to increase and diversify manufactured exports. Furthermore, deregulation and commercialization of state economic enterprises is envisaged.

A number of specific policy measures have already been taken by the Government which include promulgation of some laws and regulations to enhance the systematic growth of industries. Among them, the Private Industrial Enterprise Law dated November, 1990 and the Promotion of Cottage Industries Law dates October, 1991 stand out as two pieces of registration to promote, encourage, and foster the development of private and cottage industries. These are the two laws that would encourage the development of SMIs in the country.

2.2 Composition and distribution of SMLIs in Myanmar

Traditionally private industrial enterprises have concentrated in activities more emendable to small-scale industries. According to the census conducted in January 1998, it was found that 85 percent of total registered private industrial enterprises was small-scale industries (SSIs) leaving 11 percent for medium-scale industries (MSIs) and 4 percent for large scale industries (LSIs), respectively. Regional distribution of small and medium industries has indicated the most of the enterprises are concentrated on central areas like Yangon, Mandalay, Sagaing, Bago and Ayeyarwady Division.

2.3 Industrial estates in Myanmar

It is recognized that the SMIs sector consists of different types of enterprise. The common problem encountered is difficulties in renting or building suitable production plants in the area where they could reap the benefits of economies of scale, complementarities and efficient networking of industrial activities.

At the same time, the increasing number of industries particularly SMIs, has brought with it the undesirable environmental pollution problems related to an inadequate infrastructure, and problems related to location and the planned zoning. To cope with and to manage these problems, the Myanmar Industrial Development Committee (MIDC) has designated 18 industrial zones throughout the country. List of industrial zones in Myanmar and location map of industrial zones all over the country are attached as Appendix.

In fact, these zones are for the location of industries manufacturing for export and/or domestic consumption known as general industrial zone. Export Processing Zones (EPZs) have not been yet established for the location of industries manufacturing for export only. It is foreseeable that EPZ will soon be developed in Kyauktan Thilawa area, South Dagon Zone and Hlaingthayar Industrial Estate. In Mingalardon township of Yangon City, one industrial park has been established with Mitsui. Establishment of this is an ideal instrument to provide package of all facilities that manufacturers need, not only physical infrastructure but also incentive to support their activities in a short time.

3. Industry and Environment

Every industrial operation produces some amount of waste, no operation is 100 percent efficient in conversion of base materials into finished products or in its use of energy to produce these materials. The effect of industrial wastes on the environment and ultimately on human health depends on where the wastes go. Some may enter the atmosphere through exhaust stacks or from fugitive emissions, some may enter water bodies through wastewater effluent pipes or overland runoff, and some may enter the ground through burial or indiscriminate dumping and eventual leaching of the contaminants into the soil.

Some of the major environmental costs of rapid industrial development: contamination of water resources, including pollution of groundwater; unacceptable levels of air pollution; and unsafe handling and disposal of toxic substances. Figure (1) illustrates in details the possible environmental impacts that may arise from a proposed industrial activity.

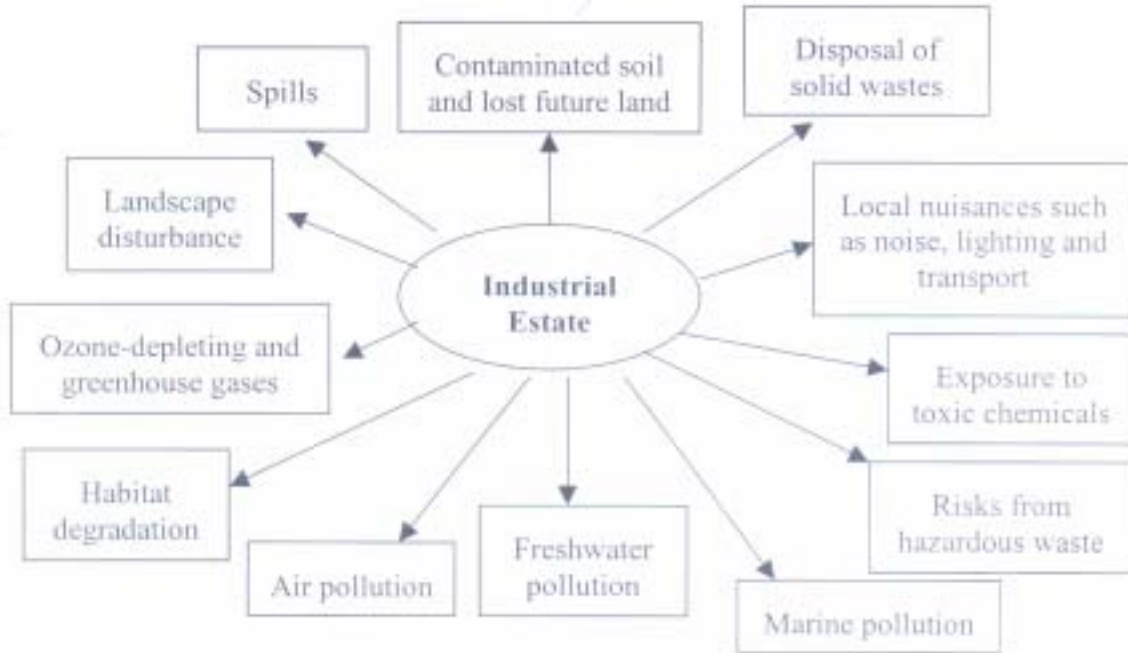


Figure 1. Detail of Possible Environmental Impacts of an Industry

4. Legal Framework Regarding Industrial Pollution Control

4.1 National Environmental Policy

With a view to establish sound environment policies in the utilization of water, land forests, mineral, marine resources and other natural resources for conserving the environment and preventing its degradation, the Government of the Union of Myanmar adopted the following National Environmental Policy in December 1994.

“The Wealth of a nation is its people, its cultural heritage, its environment and its natural resources. The objective of Myanmar’s environment policy is aimed at achieving harmony and balance between these through the integration of environmental considerations into the development process to enhance the quality of the life of all its citizens. Every nation has a sovereign right to utilize its natural resources in accordance with its environmental policies, but great care must be taken not to exceed its jurisdiction or infringe upon the interests of other nations. It is the responsibility of the State and every citizen to preserve its natural resources in the interest of present and future generations. Environmental protection should always be the primary objective in seeking the development.”

4.2 Existing environmental legislation

The environmental management pattern in Myanmar is largely sectoral with existing laws relating to environmental management being formulated and administered by the sectoral ministries and departments concerned. At present, there are 56 legal instruments in

Myanmar that can be termed as environmental. List of the existing laws on environmental protection and conservation in Myanmar is attached in Appendix.

4.3 Environment related laws in industrial sector

Myanmar sectoral laws of Industrial Sector having environmental provisions are the Private Industrial Enterprises Law (1990), the Factories Act (1951), the Oilfield (Workers and Welfare) Act (1951), the Petroleum Act (1934), the Oilfields Act (1918) and the Myanmar Insurance Law (1993).

Section 3 of the Private Industrial Enterprises Law provides to refrain or reduce from applying technologies, which cause environmental pollution. Section 11 requires considering in issuing certificate for registration of the private industries, the fact of not affecting the environment and not causing pollution.

Section 4 (1) of the Factories Act requires making effective arrangements for the disposal and cleansing of wastes generated by a factory. In other words, industry shall provide its own treatment plant to remove or reduce potential pollutants from its wastewater before disposing its effluent.

Sections 4 to 6 of the Petrol Act regulate the production, storage and transport of oil so as not to cause pollution and fire.

The Oilfields Act, under its Section 4(2), provides that warden of the oilfield is responsible to supervise the waste output of oil or natural gas exploration.

Under the Myanmar Insurance Law, an entrepreneur or organization operating an enterprise, which may cause pollution to the environment shall affect compulsory General Liability Insurance.

5. Institutional Framework Regarding Industrial Pollution Control

5.1 Myanmar Industrial Development Committee (MIDC)

Myanmar Industrial Development Committee is the main government body responsible of the development of industries in Myanmar. The MIDC was formed in July 1995 by the government notification No. 37/95 and its present chairman and deputy chairman are the Minister for Ministry of Science and Technology, and the Minister for Ministry of Industry (2) respectively. Its members are the Ministers from Ministry of Industry (1), Ministry of Agriculture, Ministry of Mines, Ministry of Energy, Ministry of Electric Power, Ministry of Labor, Ministry of Forest, etc. MIDC, therefore, is a high level committee capable of coordination the needs and problems of industries within its own organization. It only needs some difficult problems to be submitted to the higher authorities.

In order to achieve its objectives, the MIDC formed a working committee, consisting of Deputy Ministers and Heads of Departments from Ministries concerned with the industrial affairs.

The MIDC through its 9 sub-working committees had conducted industrial exhibitions, seminars and conferences on industrial promotion and technology matters. An Industrial Development Bank had also been formed to assist SMIs in their requirements of finance.

5.2 Myanmar Investment Commission (MIC)

All industrial establishments either under the Union of Myanmar Foreign Investment Law (1998) or the Myanmar Citizens Investment Law (1994) need to submit a proposal in prescribed form to the Myanmar Investment Commission. With the proposal the following must be attached.

- Documents supporting financial credibility
- Bank recommendation regarding the business standing
- Detailed calculation relating to the economic justification of the proposed project
- If it is hundred percent foreign investment, a draft contract to be executed with an organization determined by the Ministry concerned.
- If it is a joint venture, a draft contract to be entered into between the foreign investor and local counterpart
- If it is joint venture in the form of a limited company, draft Memorandum and Articles of Associations and also a draft contract between the foreign and local investors.

The Commission may issue a permit if the proposal is approved. Any enterprise, which has obtained a permit from the Commission, can commence its business operations as a sole proprietorship, partnership or a limited company.

The Myanmar Investment Commission made a resolution with respect to the preservation of the environment at its 8/94 meeting in June 1994. All present and future projects duly permitted by the Commission under the Union of Myanmar Foreign Investment Law or the Myanmar Citizens Investments Law, shall in their contracts incorporate the provision that they shall undertake to install proper sewage and industrial wastewater treatment system and other environmental pollution control procedures.

5.3 National Commission for Environmental Affairs (NCEA)

The Government of the Union of Myanmar formed the National Commission for Environment Affairs (NCEA) in February 1990. The Commission acts as the national

focal point for environmental matter vis-à-vis other countries and international organizations, coordinates the work of various line ministries and departments and reports directly to the Cabinet.

The NCEA was established with the mandate; to develop sound environment policies in the utilization of forests, aquatic, land, mineral resources, marine resources and other natural resources in order to safeguard the environment and prevent its degradation, to set environmental standards and lay down rules and regulations to control pollution including water pollution, air pollution, noise pollution, disposal of hazardous wastes and toxic chemicals; to lay down short, medium and long term environmental plans, policies and strategies that take into account both environmental needs and developmental requirements; and to promote environmental awareness through information and education so as to foster public participation in environmental protection endeavors.

The Commission is chaired by the Minister for Foreign Affairs and its members include a secretary, a joint secretary and heads of various departments of the respective line ministries.

5.4 Department of Human Settlement and Housing Development (DHSHD)

The DHSHD under the Ministry of Construction is playing an active role in the development of industrial areas in Yangon Division. The department has developed several industrial zones in and around Yangon City, the main aim being to incorporate industrial zones as part of the overall comprehensive development plan of Yangon City and the region. Since 1990, DHSHD has started developing industrial zones in various city expansion programs.

Shwepyitha Industrial Estate was established as the first industrial zone developed by DHSHD. The main aim was to accommodate potential investors in the industrial sector and to create employment opportunities for people living in Shwepyitha. Being the first zone, roads, power and infrastructure support was provided at bare minimum standard only.

Due to strong demand for industrial land in Shwepyitha, the department had to develop second industrial zone in Dagon-south Township to attract small and medium scale industries. Infrastructure provision was further improved compared to Shwepyitha.

The third industrial zone developed was Hlaingthayar Township in the western side of Hlaing River. Better infrastructure such as concrete roads and drains was provided, while areas for services were also earmarked and developed in parallel with the development of basic infrastructure. However, there are still needs to facilitate the proper treatment facilities. Take-up level in Hlaingthayar Industrial Estate has been found to be much faster than compared to other industrial zones.

Due to the strong demand for industrial land, the department is also expanding this program in other townships within and around Yangon City. Vacant land for setting up

waste treatment is reserved in each zone for later addition. List of industrial zones developed by the DHSHD and location map of industrial zones within Yangon City is attached as Appendix.

Direction No. (1/97) for industrial estates management by DHSHD

To coordinate and manage the industrial estates in a systematic way, there was a need of a committee (the representatives of all factory owners) to be collaborated with branch-office of DHSHD. Consequently, the representative committee was formed in conformity with the Direction No. (1/97) notified by DHSHD in each and every industrial estate. Each industrial estate has been managed by the branch-office and the representative committee according to this Direction. The content of the Direction relevant to this study is discussed below.

Under the heading of duties and responsibilities of the committee, administration according to the directions of DHSHD, maintenance of existing infrastructures, allocation of the funds, rules and regulations of the industrial production, case of employer and employee, etc. are mentioned respectively.

Under the heading of financial sector management, the purposes for which regular fund is allocated are mentioned respectively, the fund allocation for industrial wastewater treatment, collection and disposal is exclusive.

Under the heading of rules and regulations for factory owners, compliance with existing rules and regulations, payment for the fund, air pollution control, water pollution control, sanitation system, solid waste disposal, environment pollution control, maintenance of common properties, etc. are mentioned respectively.

5.5 Yangon City Development Committee (YCDC)

The YCDC, which has a ministerial status, is responsible for planning, development, infrastructure provision and operation, and the general management of the city. It has responsibilities for provision of municipal services to the 33 townships making up the city area.

YCDC as authorized body (city-level) for urban environmental management

The Government enacted Yangon City Development Law in May 1990 according to the State Law No. 11/90 in order to implement the city development projects effectively and to carry out the city management efficiently. The City of Yangon Municipal Act was enacted in 1972 under British Government. It was amended in 1991 as the Law Amending the City of Yangon Municipal Act.

Section 33(1) of the Yangon City Development Law provides that YCDC can promulgate the new rules and regulations with the approval of the Government according to the requirements for performing its duties and responsibilities. Moreover, Section 33 (2) of

the Yangon City Development Law provides that YCDC can pronounce the necessary orders, directions, and procedures in order to carry out its duties and responsibilities more effectively.

YCDC has enacted 12 sectoral rules and regulations in December 1999 through consultation with the Attorney General Office and by the approval of the Government based on the above-mentioned law and act and the experience faced in implementation stage. Moreover, YCDC has also promulgated orders, directions, and procedures from time to time according to needs of the situation.

Existing rules and regulations (by YCDC) related to industrial waste management

Under the provisions of YCDC Order No. 3/96, any kind of waste (solid/liquid/gas) generated from construction, business, factory and gardening is not allowed to dispose of discharge to public places (common properties) such as roads, drains, lakes, streams, creeks and valley (low-land area).

Section 5(4) of the YCDC Order No. 10/99 provides that YCDC has authority to direct the responsible persons of any business, factory, and hospital to avoid flowing piling, scattering, disposing or discharging of solid waste and/or wastewater coming from their activities to public places (common properties).

Section 5(7) of the YCDC Order No. 10/99 regulates the factories of industrial estates of prevention of environmental pollution via the agency/organization that develops the industrial estates. If any activity such as construction, business and factory causes environmental pollution, the owner (or) producer (or) user of this activity needs to install necessary treatment system. YCDC has authority to inform any government agency (or) organization that allows implementing this activity in order to take action for this purpose.

Section 5(10) of the YCDC Order No. 10/99 also requires making pollution control arrangements prior to the establishment of any business. The person, who intends to establish any business and/or factory, needs to propose the environmental pollution control plan to YCDC. Only after getting permission from YCDC, the person can continue implementing his activity.

Section 7(7) of the YCDC Order No. 10/99 prohibits discharging of wastewater into common properties. Nobody shall be allowed disposing and/or flowing of – sewage, wastewater from any activity such as business, factory – into drainage, creeks and rivers without necessary treatment for compliance with standards, norms and criteria designated by the agency concerned.

5.6 Directorate of Regional Industrial Coordination and Inspection (DRICI)

Directorate of Regional Industrial Coordination and Inspection is one department under Ministry of Industry (1) with main responsibilities of inspection for regional industrial enterprises, coordination for industrial research and development, establishment of

standards and criteria, and industrial education. In order to prevent the pollution and destruction of the natural environment by the wastes discharged by the factories under its management, Ministry of Industry (1) has prepared Water and Air Pollution Control Plan deemed as a standing order. The department plays a great role in implementing this Pollution Control Plan.

In the course of uniform observance of Water and Air Pollution Control Plan of the MOI-1, for the prevention of pollution of and damage to the natural environment by the wastes discharged by the factories under its management, the programs of works are progressively developed and carried out by the department.

The department has collected data and information regarding pollution control and also made field inspections to find out the situation of compliance with the Water and Air Pollution Control Plan by the factories under MOI-1 and the factories are being accordingly instructed.

5.7 Myanmar Scientific and Technological Research Department (MSTRD)

One of the cabinet-decisions of the State Peace and Development Council (SPDC), the Government of Myanmar, is to monitor and control the river water pollution in order to maintain the quality of river water as drinking water as well as agricultural water for long-term use. (Decision from the cabinet-meeting 1/99 of SPDC)

There is also guidance by the SPDC to initiate wastewater management and treatment practices in order to control pollution due to the effluents from state-owned factories as well as privately-owned factories all over the country.

According to the guidance, the Minister for Ministry of Science and Technology has established a committee to set up and implement the procedures for pollution control in a nationwide basis, appointing the Director General of Myanmar Scientific and Technological Research Department as chairman of this committee.

6. Discussion

6.1 Regulatory measures

The government's first line of control is usually a direct form of control through the use of regulations. Primarily these are cases of setting standards and granting permits.

Emission standards are set of each pollutant or for each pollution source, based on the perceived level that will provide environmental and health safety. Industries are required to meet these standards. If they do not, substantial fines can be levied or those responsible can even be imprisoned. These regulations and fines are described in the pertinent laws and their applicable regulations. The result has been a substantial decrease in the number of violations and a general improvement in environmental quality.

The granting or withholding of permits, licenses, or other authorizations is another important tool for controlling pollution. The permits or licenses are generally tied to an air or water quality standard and may be subject to the fulfillment of specific conditions such as compliance with a code of practice, installation of a treatment plant or pollution control equipment within a certain period, etc. One major advantage of permits and licenses is that they facilitate the enforcement of environmental programs by including in one document all of a facility's pollution control obligations.

6.2 Economic measures

Most important policy instruments from an economic point of view are called as market-based incentives or economic instruments for environmental protection. Primarily they are cases of pollution charges and subsidies.

User charges are direct payments for the costs of collective or public treatment of pollution. They are used most often in the collection and treatment of municipal solid waste and for the discharge of wastewater into sewers. With respect to water pollution control, for example, user charges are fees paid to water authorities to allow discharges of industrial wastes into public sewers.

Subsidies is a general term for various forms of financial assistance, which must act as an incentive for polluters to alter their behaviors or which are given to firms facing problems in complying with imposed standards. There are several types of financial assistance such as grants, soft loans, tax allowances, and enforcement incentives.

6.3 Suasive measures

Voluntary programs are seen as a tool to foster innovation, stimulate information exchange, and, ultimately, change to culture surrounding environmental compliance. Therefore, voluntary programs incorporate the first wave of pollution prevention implementing devices, because the main barrier to overcome is a change in the culture of industrial decision making – a culture that would not be subdued by mandatory programs.

Pollution prevention has many benefits that can be broadly categorized under tangible economic rewards and public goodwill and support. For example, pollution prevention: creates cost savings, enhances process efficiency, avoids or reduces regulatory costs, reduces future liabilities, improves protection of worker health, improves public image. Among the voluntary programs that lead to pollution prevention actions, 'Good Housekeeping' is one of the simplest measures to be implemented though the benefit achieved is significant.

'Good Housekeeping' practices relate to a lot measures dealing with preventing the loss of materials, minimizing waste, conserving and saving energy, and improving operational and organizational procedures. The implementation of these practices is relatively easy and the cost is usually low. Thus, they are particularly suitable for small and medium enterprises.

7. Conclusion

In most developing nations industrial pollution control is viewed as a luxury, if it is considered at all. Industrial development is given a high priority in most of these nations because such development creates employment and generates revenue that is badly needed by the country. International investors and multi-national industries are attracted to the country by such as low-cost labor, tax incentives and, in some instances, the lack of environmental regulations. The result of these short-range decisions is one of the reasons causing health and environmental problems in the developing countries.

The trend towards and option of market-oriented economy and privatization has made tremendous impact on the development of the Yangon City. Investments pouring into Myanmar by the foreign firms and local entrepreneurs have contributed to a certain extent to industrial development activities within Yangon City boundary. In fact, the amount of pollutants generated through the industrial activities from the industrial estates in Yangon is still negligible compared to the other industrialized countries in the region. At the moment, the adverse effect of pollution on the environment is not so serious but it is evident that careful attention must be needed for the near future and the required action programs should be planned and initiated.

Based on a review of developing countries' context, most reports provide information on the existence of standards or other regulatory or economic instruments and highlight the inadequacy of existing institutions and personnel to carry out effective monitoring and enforcement activities. The legal framework (i.e., laws, ordinances, regulations, sanctions for noncompliance) covering pollution control and waste management should define the responsibilities of each organization in implementing relevant laws and the procedures by which the responsible agencies should carry out their functions.

Meeting the urban environmental challenges with regard to industrial pollution control requires responsibilities to be shared and actions to be taken by a host of stakeholders including national government, local government, non governmental organizations, communities, the private sector and international agencies.