

3.5.2. Improving environmental performance of small and medium-sized enterprises (SMEs)

3.5.2.1. Introduction

Small and Medium-sized Enterprises (SMEs) are commonly recognised as one of the leading groups of economic activities globally, and pose enormous impacts on social issues. Most companies are currently categorised under SMEs and the goods and services that SMEs offer are diverse. Moreover, SMEs are suppliers for large enterprises. It is said that SMEs' performance, both positive and negative, in the Asia-Pacific region may be more influential than any other region in the world because of the rapid economic growth of the region today. The importance of SMEs in society can be recognised by looking at the recent institutional arrangement and policy development for assisting SMEs, not only in one nation, but at fora like the Asia-Pacific Economic Cooperation (APEC).

With their strong influence on economic and social matters, environmental impacts attributed to SMEs' activities are certainly significant, not only the magnitude but also the diversity. In spite of the fact, however, measures undertaken so far have not yielded impressive results, especially when compared to those of large companies. Thus, the environmental performance of SMEs remains weak in many parts of the region and it is believed that the environmental damage caused by SMEs will grow unless innovative strategies are devised.

(1) Research Framework

1) Research Objectives

In recognition of the importance of policy development to assist in improving the environmental performance of SMEs, research and analysis to compile Strategic Policy Options (SPOs), the final output of RISPO, that can be practically adopted by policy-makers in the region was conducted with the following objective:

To examine problems/constraints that SMEs are facing and identify practical means of improving the environmental performance of SMEs.

2) Research Scope

In order to reflect the diversity of the region at certain levels, economic achievement, social aspects and geographical location were taken into account for the scope of the research. For this reason, the research was carried out primarily in India and Thailand. India represents South Asia with a large number of unregistered and clustered SMEs and Thailand represents Southeast Asia with rapid economic growth and has strong support from the government. That gave the outcome of the research a more applicable nature to the extended countries.

Manufacturing industries have been identified as the focus of the research work for the following reasons: 1) The majority of SMEs are categorised as manufacturing industries; and, 2) Manufacturing industries have direct impacts on the environment while their environmental performance would be a key to improving the environmental quality as a whole.

3) Research Methodology

The research activities have been conducted in collaboration with the Energy and Resources Institute (TERI) of India, Thailand Environmental Institute (TEI) and Institute for Global Environmental Strategies (IGES) of Japan. Each institute had its own views and took into consideration the conditions in its own country for the research. This made the research, especially

the analytical part, more comprehensive.

The background information of SMEs, such as their economic situations, government environmental policies affecting SMEs and international and regional initiatives to support SMEs, have been collected through a literature review. In the meantime, good practices, mainly from India and Thailand, were collected for the Good Practice Inventory and examined for lessons learned.

Field studies at the sites of selected good practices were carried out. Interviews with owners/managers of factories and heads of industry associations were conducted by researchers from TERI, TEI, and IGES altogether in Thailand and India. The interviews used prepared questionnaires and factory visits were made. From these interviews valuable information was obtained and will be utilised.

Examining the information collected through the literature reviews and field studies, problems/constraints and underlying aspects of the problems were identified by the research team. Based on that, policy goals which would solve and/or mitigate these problems/constraints were established, followed by strategies. Under each strategy, strategic policy options (SPOs) were developed and the final research output of the project and the SPOs that were developed were reviewed by policy-makers, companies, and SME-experts for further improvement.

3.5.3.2. Strategies and Strategic Policy Options (SPOs)

(1) SMEs in society

1) SMEs in the socio-economy

Small and medium-sized enterprises (SMEs) support a substantial part of the economic activities of the region, thus social impacts of SMEs are significant. The number of SMEs in each country accounts for more than 85% and their domestic industrial production is between 60-70%. If unregistered SMEs are included, the number would be even higher. In Thailand, SMEs make up 99% of the total business enterprises and the number is increasing with 3.6% for small-sized and 9.8% for medium-sized of annual growth rate. Their contribution to the Gross Domestic Production (GDP) amounted to 40% in 1994. In India, 50% of the country's total exports are manufactured by SMEs.

The SMEs' contribution to the national economy results in social benefits. Approximately 4.5 million workers in Vietnam are employed by SMEs, while 75% of jobs in China are provided by SMEs. It is noteworthy that SMEs are often characterised by their strong cohesion with local communities. In India, most of the small scale industries (SSIs) primarily emerged in natural clusters. A cluster may be defined as a local agglomeration of enterprises that are producing and selling a range of related and complementary products and services. Semi-finished products are sent to other factories in the cluster for the next processing step or the final production. Thus, communication and interaction are taking place in the local community throughout the production process, creating trust and solidarity among the locals.

2) SMEs Development Policy

There is no common definition of SMEs among nations: each country applies its own definition and in some countries the definitions vary even among ministries.

Table 3.5-11 Definition of SME

Country	SMEs Classification	
	Employment	Asset
<i>Asia Pacific</i>		
Australia ¹	Small <20 employees Medium 21-200 employees Large > 200 employees	
Brunei ²	Small <10 employees Medium 10-100 employees Large > 100 employees	
P.R. China	Large < 2000 (industrial sector) < 3000 (construction sector) < 500 (wholesale/retail) < 3000 (transportation & posts) < 800 (hotels & restaurants) Medium ≥ 300 (industrial sector) ≥ 600 (construction) ≥ 100 (wholesale/retail) ≥ 500 (transportation/posts) ≥ 400 (hotels & restaurants) The rest are classified as small enterprises.	Large < RMB 400 million < RMB 400 million Medium > RMB 40 million > RMB 40 million (1 US \$ = 8.27 RMB, as of 07/04/05)
India		Small scale: Maximum investment in plant and machinery (excluding land, buildings etc.) – Rs 10 million Medium scale: No formal definition, as yet. (1 US\$=Approx. Rs 45)
Indonesia ¹		SMEs <200 million rupiahs (excl. land & buildings) (1 US\$ = 9,310 rupiahs, as of 14/12/04) ³
Japan ⁴	SMEs <300 employees (for manufacturers)	SMEs <300 million Yen (1US\$ = 103.66 Yen as of 01/02/05)
Malaysia ¹	SMEs <200 employees	15 million ringgits (1 US\$ = 3.80 ringgits as of 14/12/04) ³
The Philippines ²	Small 10-99 employees Medium 100-199 employees Large > 199 employees	Small 1.5-15 million pesos Medium 15-60 million pesos Large > 60 million pesos (1 US\$ = 56.08 pesos, as of 14/12/04) ³
Singapore ²	SMEs <200 employees	15 million SGD (1 US\$ = 1.64 SGD, as of 14/12/04) ³
Thailand	Small <50 employees (manufacturing) <50 employees (service) <25 employees (trading-wholesaling) <15 employees (trading-retailing) Medium 50-200 (manufacturing) 50-200 (service) 25-50 (trading-wholesaling)	Small <50 million baht <50 <50 <30 50-200 million baht 50-200 50-100

	15-30 (trading-retailing)	30-60 (1 US \$ = 39.67Baht, 14/12/04)
Vietnam ²	SMEs <500 employees	10 billion VND (1 US\$ = 15,774 VND, as of 14/12/04) ³
Others		
Bulgaria ²	Small <50 employees Medium n/a	20 million BGL (1 US\$ = 1.46 BGL, as of 14/12/04) ³
France ¹	SMEs <250 employees	
Poland ¹	Small <50 employees Medium 51-250 employees Large > 250 employees	
United Kingdom ¹	Small <50 employees Medium 51-250 employees Large > 250 employees	
South Africa ¹	SMEs 20-250 employees	

Source:

Confederation of Indian Industries. <http://www.ciionline.org/Services/112/Images/defsme.pdf>
 ASEAN-EU Partenariate'97. <http://aeup.brel.com/sme/index.html>
 Bank of Thailand. http://www.bot.or.th/bothomepage/databank/FinMarkets/ExchangeRate/exchange_e.asp
 Ministry of Economy, Trade and Industry. <http://www.chusho.meti.go.jp/teigi/index.html>
 Asian Development Bank (ADB). May 2002.
http://www.adb.org/Documents/Reports/Dev_SME_Fin_System/sme_v3_w.pdf

National governments increasingly promote the SMEs development in recognition of the critical roles played by SMEs in the socio-economy. They have set policies and supporting measures for the purpose of economic development. Departments/Offices assisting SMEs' business have been set up in most countries of the region. The SME promotion Act and the SME Development Master Plan were set forth in 2000 in Thailand, and the Office of Small and Medium-sized Enterprise Promotion was established in order to develop a policy framework and implementation plan and act as a coordinating body for the collaboration with other agencies. The government of Vietnam has adopted a number of measures, such as the establishment of centres for consulting and supporting SMEs, expanding domestic and international markets and coordinating technical assistance from international organisations.

In India, only SMEs are allowed to produce certain products and therefore are protected from competition with large companies. Moreover, because of the specialties of the local sectors, municipal and state governments are often in better positions to play leading roles and offer tailored measures for the SMEs' development.

One of the most appreciated measures initiated by governments may be the financial supporting arrangements.

Box : Financial Institute for SMEs in India

The Small Industries Development Bank of India (SIDBI) was established as the principal financial institution in April 1990 under an Act of the Indian Parliament. SIDBI has been assisting the entire spectrum of Small Scale Industries (SSI), including the small village and cottage industries, through suitable schemes tailored to meet the requirements of setting up of new projects, expansion, diversification, modernisation and the rehabilitation of existing units. The SSI sector, including the small units, comprises the domain of SIDBI's business. The bank also finances industrial infrastructure projects for the development of the SSI sector. Three major dimensions of the SIDBI's financial assistance to the small scale sector are: indirect assistance to primary lending institutions (PLIs); direct assistance to small units; and, development and support services. SIDBI's schemes of indirect assistance envisages credit to SSIs through a large network of 913 PLIs spread across the country with a network of over 65,000 branches. The assistance is provided by way of refinance, bills rediscounting, and resource support in the form of short term loans/line of credit (LoC) in lieu of refinance. The SIDBI's other assistance services are: a foreign currency assistance programme; venture capital support line of credit in favour of State Financial Corporations (SFCs) and State Industrial Development Corporations (SIDCs). The bank extends development and support services in the form of loans and grants to different agencies working for the promotion and development of the SSIs and small industries. Over the years, the initiatives of the SIDBI under promotional and developmental activities have crystallised into the following important areas: enterprise promotion with emphasis on rural industrialisation, human resource development to suit the SSI sector needs, technology up-grades, quality and environment management, marketing and promotion and information dissemination.

At the regional level, the SMEs development has been widely discussed. The Asia-Pacific Economic Cooperation (APEC) has been paying special attention to SME development, and periodically holds SME ministerial meetings. At the 10th Meeting in 2003, for example, the ministers of member countries discussed key factors to strengthen APEC's entrepreneurial society and endorsed the action plan to promote micro-enterprise in APEC economies.

The Asian Development Bank (ADB) also regards SMEs as a critical driving force for economic development and provides several technical assistance (TA) projects for SME development. For example, Bangladesh received a US\$ 600,000 TA grant in 2002 for SME development and export expansion which included better access to markets and value-added products for export.

3) Environmental Impacts by SMEs in the Asia-Pacific Region

While it is widely accepted that SMEs play a significant role in the economic development in the Asia-Pacific region, they also exert considerable pressure on the environment, not individually, but collectively. SMEs are voracious consumers of resources and energy and the result is a significant generation of waste by-products. There are a number of problems that deprive SMEs from achieving their full potential: they use obsolete technology; lack finance; lack access to export markets; lack market information; are resistant to change; and, the decision-making is done by the owners of these companies. These problems contribute to environmental degradation. For example, there are approximately 2000 motor repair workshops in Nepal. These shops dispose of an estimated 460,000 litres of kerosene directly into the soil without concern for the likelihood of serious contamination of the water supply.

Sri Lanka is the world's second largest producer of black tea. As an SME industry, tea production provides Sri Lankans with 200,000 direct jobs and over one million people are employed indirectly, making it the country's largest employer. However, Sri Lanka consumes 4.45 to 6.84 kWh of energy to produce one kilogram of tea. Also, the industry's CO₂ emissions amount to 2.49 kg of CO₂ per kg of tea produced. This amounts to a total annual CO₂ emission of approximately 700,000 tons.

Available research data suggest that SMEs are responsible for more than 50% of the industrial pollution in the region. It is said that food and beverage industries are the major polluters of air and water in Thailand, and the industries are dominated by SMEs. This would suggest that the SMEs contribute significantly to environmental damage.

4) Initiatives for SMEs' Sustainable Development

As threats to the environment by SMEs increase, immediate measures to improve the conditions are necessary. Nevertheless, SMEs are incapable and/or indifferent to conform to environmentally-friendly practices due to financial constraints, lack of proper information and a lack of motivation. Under the current situation, international organisations, along with local and national governments, must play important roles in stimulating SMEs to improve their environmental performance.

In this context, governments of Japan have offered assistance to SMEs. Governments promote relocation to industrial parks where SMEs have access to shared pollution control and waste treatment facilities. Moreover, local governments provide local SMEs with subsidies for training, guidelines, and consultation fees. As one of the most recent initiatives by governments, Eco Action 21, an environmental performance assessment programme for SMEs which is less complicated and costly than ISO 14001, is promoted in many ways. Many municipalities are holding seminars to disseminate the Eco Action 21 agenda, producing brochures with worksheets, and providing financial assistance for the registration of participants.

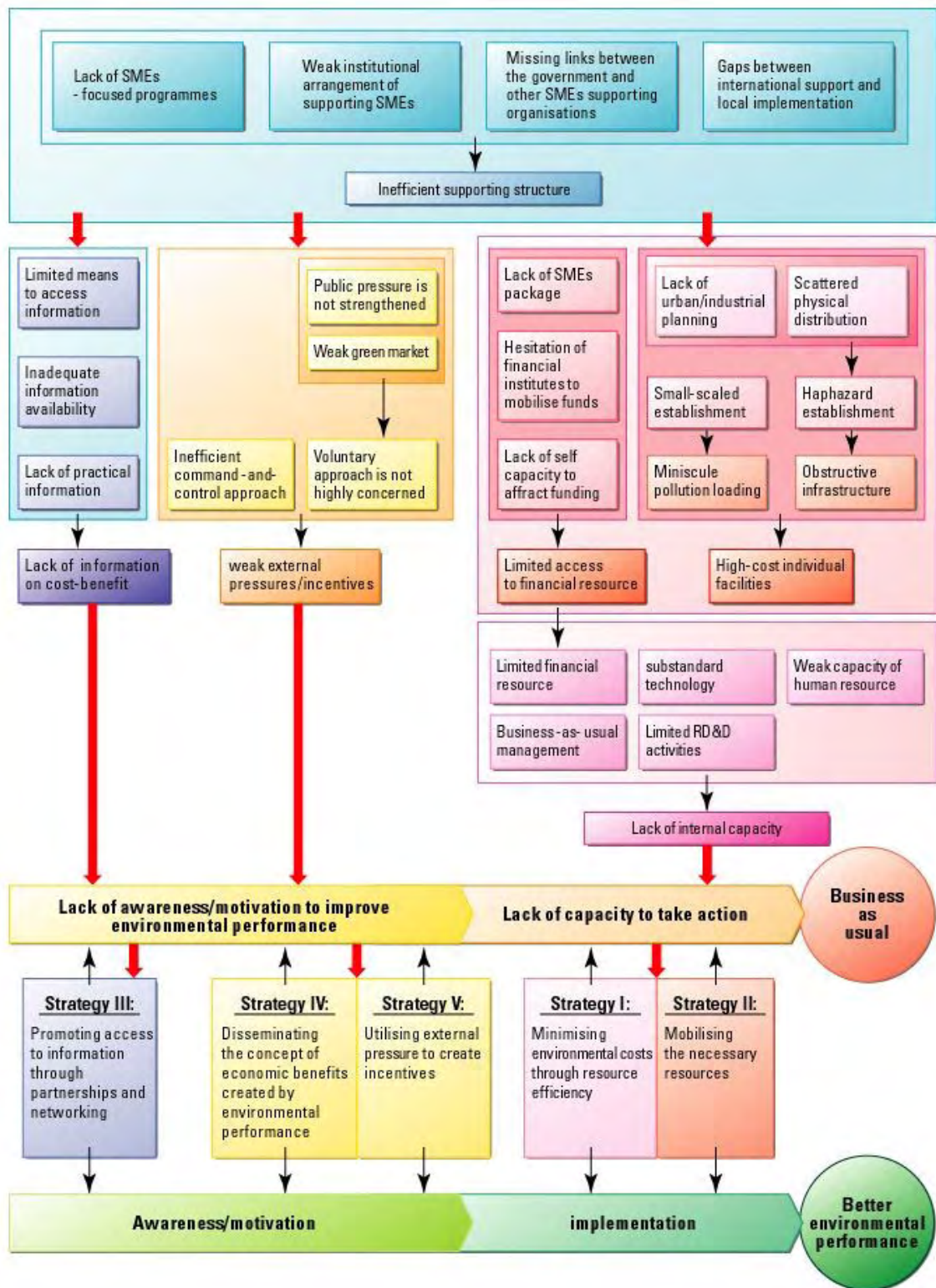
At the international level, the United Nations Industrial Development Organisations (UNIDO) administers a number of projects for cleaner production with special attention to SMEs' environmental performance. The United Nations Asian and Pacific Centre for Transfer of Technology (APCTT) provides assistance for environmentally-sound technologies, ranging from energy efficiency to waste management, setting the primary target on SMEs. The Global Reporting Initiative has just started a programme to develop the "SME Handbook on Sustainability Reporting."

There are many more initiatives that have been carried out and all of them intend to improve the situation. Still, SMEs in the region face a number of problems and difficulties in order to improve their environmental performance.

5) Problems SMEs Face

Because of their unique characteristics, SMEs face a variety of problems. In this section, the problems are examined in connection with two stages of environmental performance improvement.

Environmental performance improvement can be divided into two major stages, namely, awareness raising and implementation. The awareness raising is significant as it relates to the establishment of a solid foundation for SMEs to move towards environmental improvement.



i) Stage I: Awareness Raising

Lack of information on the cost-benefits of improving environmental performance

Basically, a fundamental obstacle to improving environmental performance of the SME sector is a lack of knowledge and information concerning environmental issues. SMEs generally have a perception that the only driving force to improve environmental performance is legislative compliance. Moreover, SMEs tend to believe that their processes have little or no impact on the environment due to their small-scaled production. This perception is derived from the fact that they have limited information on the operational losses in their production processes. Hence, this mental model prevents a great number of SMEs from realising the hidden costs of inefficiencies in production. Accordingly, the SMEs keep running their businesses as usual and resist change.

In order to motivate the SMEs to improve their environmental performance, critical information on cost-benefits can illustrate the benefits of environmental improvement and help to develop a positive attitude regarding environmental improvement. However, it seems that such information is not widely disseminated in the SME sector.

Weak external pressures/incentives

Environmental policy development in various countries began with command-and-control (CAC) measures. Accordingly, regulatory instruments were applied to force polluters to comply with regulations and standards. However, due to the large number and distribution of SMEs, the command and control approach became less efficient due to resource limitations in terms of the monitoring and inspecting of personnel and budget allocation. While public pressure regarding environmental conservation and requirements by global markets on environmental standards increases, most companies are carefully watching the International Standard Organisation (ISO) certification and the introduction of Environmental Management System (EMS) within their corporate and manufacturing facilities. Most industries, particularly those producing goods for export, are focussing on developing environmentally-friendly products. However, most SMEs, unlike large-scale industries, are not fully aware of the trend in the international market since they are often isolated from it.

In addition, voluntary approaches, such as ISO 14000, green labelling, and clean technology have become other means of management of natural resources and the environment as the market created was stimulated by consumer demand. However, compared to the SME sector, large firms are more active in taking voluntary initiatives.

ii) Stage II: Implementation

Lack of Internal Capacity

Even though a number of SMEs are moving towards better environmental performance, they are limited from taking action. The major obstacles are their weak capacity and limited resources in terms of:

- Financial resources - One of the major obstacles is the limited financial resources of SMEs since the majority of the SME sector is pursuing a survival business strategy. They suffer from financial problems, such as late payment of bills and lack of access to loan financing, they find it difficult to adapt to the changing markets and they lack the capability to attract new financial resources. As a consequence, the adoption of full-scaled EMS, such as the ISO 14001 model, or the installation of pollution abatement technologies, seems to be too costly for SMEs. Moreover, investment capital for major process improvement is another issue of concern since accessibility to financial resources is a major problem for a number of SMEs as they tend to lack self-capacity to attract funding from local, regional and national financial institutions and also from international institutions and organisations. The problem has a

supply and demand component. From the supply side, SMEs face difficulties in obtaining loans due to the banks' perceptions of high associated risks. On the demand side, SMEs often have inadequate financial statements and lack accounting records, business plans and the necessary knowledge to present their business case in a realistic and favourable light to financial sources. In order to address this problem, there is, therefore, a need for better information flows among the financial providers, the SMEs and the concerned government agencies.

- Human resources – Lack of trained and qualified human resources is another barrier that requires improvement. Generally, human resource allocation in the SME sector is limited to essential business functions, such as technical, accountancy, sales and marketing. In most cases, there are no environmental personnel in the SMEs to undertake related tasks effectively.
- Technologies – Utilisation of outdated technology, as a result of limited capital investment, makes the SME sector less competitive. The majority of SMEs is relying on dated technologies that cause pollution and are inefficient in production. In addition, inappropriate pollution abatement technologies result in inefficiencies in pollution treatment.
- RD&D activities - RD&D activities are limited in the SME sector. This inhibits innovative improvement within the sector. One of the major reasons for the poor performance is technological obsolescence coupled with information deficiency and poor management practices. Thus, SMEs lack technical capacity in these enterprises to identify, access, adapt and adopt better technologies and operating practices to improve their environmental performance.
- Business-as-usual operation and management - Normally, SMEs function in a business-as-usual mode. They are not fully aware of the emergence of a new business environment, for example, non-tariff barriers, new trade and technology.

The nature of the SMEs' establishment is a major problem affecting environmental improvement of SMEs in terms of infrastructure as the physical distribution of SMEs tends to be haphazard. Many of SMEs are located in concentrated commercial and residential areas, thus, they are unable to expand their sites and install pollution treatment facilities. Moreover, the scattered distribution prohibits the development of shared treatment facilities, while the stand-alone treatment system of SMEs is not in an economy of scale to operate efficiently.

Weak Supporting Framework

Despite obstructive structures in the awareness-raising and implementation stages, the framework supporting SMEs is weak. Also, the various programmes supporting the performance of SMEs have not helped SMEs effectively.

- Weak institutional arrangement of supporting SMEs - Linkages among agencies involved with the SMEs' development have not been strengthened. The network of institutions that is supposed to deliver supporting programmes to SME development is fragmented and cannot offer the corresponding services effectively.
- Lack of SMEs-focussed programmes - Many developing countries previously pursued a strategy of accelerated industrialisation based on large-scaled enterprises. Accordingly, development programmes and investment schemes were established in light of large industry promotion while there are limited focussed programmes that are devoted to SME development.
- Missing links between the government and other SMEs supporting organisations – Even

though there have been a number of organisations that support the SMEs' development, including academic and financial institutions and NGOs, the development goals tend to be haphazard since the network of major governmental agencies and other organisations has not been strengthened.

- Gaps between international support and local implementation - Even though the environmental improvement of SMEs has drawn the attention of international organisations, the international support for SMEs development cannot reach local SMEs effectively. The major barriers include language and the adjustment of the programmes to the local context.

SMEs have been struggling with these problems for many years and their challenge becomes more severe when they wish to improve their environmental performance.

(2) Strategies

1) Framework of Strategies

As stated in the previous sections, small and medium-sized enterprises are an important sector in the economies of almost all developing countries as they provide employment and livelihood options to the growing population, particularly to the poor and disadvantaged sections of society. In many cases SMEs constitute up to 85% of all enterprises in the country and account for one-half to two-thirds of the total non-agrarian employment and gross domestic product worldwide. But, they are a highly unorganised sector of the economy and are characterised by low technical and managerial skills and limited access to expertise and finance. The majority of SMEs are not fully aware of the harmful effects of their activities on the environment, specifically with regard to the global environmental problems like climate change.

Based on the examination of the issues and problems that SMES are facing, coupled with their impacts on the economy and society, certain policy goals, strategies and corresponding strategic policy options have been formulated to meet the multi-dimensional and multi-phase demands of the SME sector. Table 2 describes these policy options along with the goals and strategies. (see also Diagram 1). It is important to mention that the strategic policy options are generic in nature and require modification and adaptation while keeping in mind the specific needs of the small and medium-sized enterprise segment that are being targeted, and more importantly, recognising the differing policy environment in the various countries in the Asia-Pacific region.

The eleven SPOs have been described separately in detail in terms of the critical instruments, expected impacts, evaluation with respect to sustainability, equity and efficiency and the implementation issues. In all the cases, a few related good practices that can be referred to have also been mentioned. However, a brief explanation of the various strategies and corresponding strategic policy options will follow.

Table 3.5-12 Policy goals, strategies and corresponding strategic policy options under the sub-theme “Improving Environmental Performance of Small and Medium-sized Enterprises”

Policy Goal	Strategies	Strategic Policy Options
Secured resources to assist SMEs in their environmental performance	Minimising environmental costs through resource efficiency	Promoting the adoption of Environmental Management System (EMS) for SMEs
		Promoting resource sharing and application of shared facilities through industrial clustering and networking
		Developing research, development and demonstration programmes for adoption of cleaner technologies in SMEs
		Promoting energy and waste exchange centres
	Mobilising the necessary resources	Improving SME access to finance
		Applying partnerships for inter-city technical cooperation
Widely disseminated and exchanged information necessary for environmental performance	Promoting access to information through partnerships and networking	Accelerating information dissemination through local support and local NGOs
		Strengthening roles of industry associations for information flow and active communications
Increased motivations to act in environmentally sound practice	Disseminating the concept of economic benefits created by environmental performance	Facilitating consulting services to improve environmental performance
	Utilising external pressure to create incentives	Greening the supply chain with the prospect of social responsibility
		Initiating media campaigns to stimulate green markets

(3) Strategy 1: Minimising environment costs through resource efficiency

SMEs consume a significant portion of the energy and natural resources in any economy, either directly, as inputs in the production processes, or, indirectly in various activities that are linked to the SMEs. Minimising the cost for the environment through resource efficiency is a major strategy that has been formulated. Environmental Management Systems (EMS) can serve as effective tools for improving the environmental performance in SMEs as they encourage resource efficiency in production. This will help to minimise waste and pollution and will conserve resources. In developing countries, industrial establishments have developed haphazardly and many times it is not possible to distinguish between the industrial and urban zones. Accordingly, one of the best policy options is the application of shared waste treatment facilities in designed areas. This will help the SMEs in terms of cost-sharing and supply chain management. Development of specific and focussed RD & D programmes for the adoption of cleaner technologies in SMEs, tailor-made to suit the needs of local industries, will help minimise waste and conserve natural resources. Simultaneously waste/energy exchange centres can be promoted to help in waste/energy exchange among SMEs and SMEs and large organisations.

i) SPO 1: Promoting the adoption of Environmental Management System (EMS) for SMEs

An Environmental Management System (EMS) can serve as an effective tool for improving the environmental performance in SMEs as it encourages resource efficiency in the production process. Consequently, it can help to minimise waste, pollution and energy consumption. A policy framework to promote EMS in SMEs is comprised of three main actors: the major responsible agency as the project owner; collaborators from various sectors with a wide range of expertise; and, participating SMEs. The main actors can be linked to the “satellite model” in which the responsible governmental agency plays the leading role in the implementation while private consultants and NGOs, as collaborators, play an active part in working closely with the SMEs to systematically develop the EMS in their firms.

ii) SPO 2: Promoting resource sharing and application of shared facilities through industrial clustering and networking

In the Asia-Pacific region, SMEs contribute to over 95% of total enterprises and generate more than 50% of the region’s GDP. In developing countries, industrial establishment has evolved haphazardly. Unsurprisingly, SMEs in industrial zones cannot be distinguished from those in urban zones and this poses serious concerns to environmental and health impacts. The majority of SMEs in the urban zones are not aware of the impact they are having on the environment and urban dwellers around them.

Recently, much attention was paid to industrial clusters because of their competitiveness. Researchers from different academic fields, such as industrial organisation theory, economic geography, technology economy and management, conducted numerous studies on the structure, mechanism, evolution and competition of industrial clusters. Many international organisations, including the UNCTAD, OECD, UNIDO and the World Bank, recognised industrial clusters as a promising measure to economic development.

Accordingly, industrial relocation and clustering with an appropriate application of shared waste treatment facilities can be a promising approach to tackle the problem holistically while providing advantages to SMEs in terms of cost-sharing and supply chain management.

This policy option can be promoted through the provision of economic incentives to the target industries while strengthening the regulatory framework to provide pressure on the SMEs. Moreover, partnerships and institutional arrangements are crucial supporting instruments that contribute to the success of the implementation of policy.

iii) SPO 3: Developing research, development and demonstration programmes for adoption of cleaner technologies in SMEs

This SPO looks at the need to develop specific and focussed RD&D programmes for the adoption of cleaner technologies in SMEs. It is important to consider that the SMEs, in general, do not have the inherent financial and technical capacity to undertake research or adaptation activities that would help them improve their energy and environmental performance. Moreover, SMEs remain isolated from technological developments that are taking place in their respective areas and hence continue to use traditional and obsolete technologies that are inefficient and environmentally un-friendly. It is generally accepted that SMEs are in a special situation and require support from the government, specifically with regard to their research and development-related issues. It is therefore important to identify such small and medium scale enterprises in developing countries (preferably a group of enterprises having a similar technological base and operating practices) and then develop tailor-made programmes that focus on these groups of enterprises. The various instruments that could be used for the development of such specific RD&D programmes are technologies, partnerships, awareness/capacity-building and organisational structures. Such programmes should be developed through dialogue that involves all the stakeholders. These programmes could be managed by reputed, national level R&D organisations with the active involvement of local industry partners. Long-term technological support could also be planned by having research organisations dedicated to the specific technological needs of the SME.

iv) SPO 4: Promoting energy and waste exchange centres

Taking waste from one company and using it as a raw material in another company helps to create new revenue, is cost-saving and simultaneously addresses social and environmental concerns. However, this mechanism is not widely applied in the industrial sector as a viable exchange practice that requires a well-established network of potential waste/energy providers and users. In order to stimulate waste/energy exchange, information on by-product synergies, energy and steam cascading, alternative fuels and energy auditing and co-generation must be developed systematically. The action can be led by coordinating bodies that organise and manage waste/energy exchange information systems appropriately to create a matching mechanism for material exchange and waste recycling activities within the industrial sector. This will encourage viable material exchange systems and create dynamic markets for reusable and recyclable industrial wastes. In addition, the role of a material exchange centre is not only that of coordination, but also that of a resource centre that provides information on industrial waste recycling. Such a centre could publish a quarterly journal that would be distributed among its members and arrange seminars and technical workshops. However, it is important that companies actively participate together in identifying synergies and that related governmental agencies provide support in terms of regulations.

(4) Strategy 2: Mobilising the necessary resources

To improve the environmental performances of SMEs, it is imperative to mobilise the necessary resources. Many studies have identified finance as one of the most important factors determining the survival and growth of SMEs in the developing world. Specific strategic policy options to improve the SMEs' access to finance has been visualised that will promote a stable, diverse, well-functioning financial system capable of effectively servicing SMEs by working on micro-level initiatives that impact the SMEs' access to credit directly. To tackle the problem of "the lack of internal capacity," an innovative policy option relating to technical cooperation at the municipal level is emphasised. It will meet the needs at the local level and help mobilise the resources needed for the SMEs to perform environmentally more effectively. Also, it will create opportunities for eco-businesses.

i) SPO 1: Improving SME access to finance

Despite their dominant numbers and importance in job creation, SMEs have traditionally faced difficulty in obtaining formal credit or equity. Commercial bank loans extended to SMEs are often limited to a period that is too short for them to pay off any sizeable investment. Access to

competitive interest rates is reserved for selected blue-chip companies while the loan interest rates offered to SMEs remain high. Banks in many developing countries have traditionally lent overwhelmingly to the government which offered less risk and higher returns.

Commercial banks are generally biased toward large corporate borrowers who provide better business plans, have credit ratings, more reliable financial information, better chances of success and higher profitability for the banks. When banks lend to SMEs, they tend to charge a commission for assuming risk and apply tougher screening measures that drive up costs on all sides. Commercial banks in developing countries often prefer to lend to governments and thus the public-sector crowds out the private-sector.

Well-functioning and sustainable mechanisms for SME financing require institution-building and a market approach. Lending institutions must improve their ability to provide financial services to SMEs through commercial mechanisms that lower costs and minimise their risk exposure. Only in this way will financial institutions find SME lending to be more profitable and thus be encouraged to construct lending programmes targeted at SMEs.

ii) SPO 2: Applying partnerships for inter-city technical cooperation

This policy option introduces measures to tackle the problem of “a lack of internal capacity.” Cooperation at the municipal level is emphasised because it often works more effectively compared to cooperation at the national level.

Activities between cities through the inter-city cooperation programme can include: transfer and exchange of environmentally-sound technologies (EST), such as pollution control, solid waste treatment, and waste water treatment; dispatching experts for technical assistance; holding technical training programmes and study tours targeting SMEs. Simultaneously, the SMEs themselves could be actively involved in the implementation of such programmes by participating in the programme design and sharing their experience as experts.

The significance of this SPO is that it would not only mobilise the resources needed for the SMEs’ environmental performance but create opportunities for eco-businesses. Active cooperation in EST, especially related to recycling, would stimulate entrepreneurship of the SMEs in establishing or developing eco-businesses that result in the creation of workplaces at the local level. In addition, through networks of the cooperation, by-product synergy between various cities would be a positive attempt at achieving the goal of zero emissions.

Local governments need to play numerous roles in leading inter-city cooperation: managing cooperation; identifying counterparts; mobilising budgets; planning programmes; and, facilitating stakeholder coordination. Thus, an institutional arrangement is required for the local governments to handle the associated work for inter-city cooperation.

(5) Strategy 3: Promoting access to information through partnerships and networking

Information is lacking on the availability of technological options for environmental improvement in the small-scale industry sector. A special strategy to promote access to information through partnership and networking has been formulated. This strategy will help in the wide-scale dissemination of information on the various aspects of environmental pollution improvement and cleaner technological options in small-scale industry sector. Also, it will help to reduce waste and energy use while saving on costs. This can be achieved through the active participation of industrial associations, local NGOs and support systems.

iii) SPO 1: Accelerating information dissemination through local support and local NGOs

There is inadequate information on better technological options for the small scale industry (SSI) sector, and the present structure of the SSI necessitates innovative approaches for reaching out to the SSI units that are dispersed in clusters in different geographical locations. In accelerating information dissemination of cleaner technologies among SSIs, local support services/NGOs are expected to play important roles. Critical instruments, such as partnership between different stakeholders and improving awareness/capacity-building, need to be explored in order to achieve better results.

One of the major impacts of this policy option will be the availability of information on better technological options for the various SSI sectors. As each SSI sector often requires different or unique arrangements, the adoption of the improved technological options by the SSI units that suit the local conditions and their own interests would help more in improving energy efficiency. This, in turn, would lead to a reduction in pollution at the source. To promote technology adoptions among various SSI sectors, it is necessary that the information on technological options reach the industry. As the SSI sectors are generally located in remote areas in clusters, development and strengthening of local support and local NGO systems would play a crucial role. The evaluation of the intervention would depend on various factors, such as sustainability of the local support system, an increased level of interaction between the industry and the local support system and enhanced adoption of various technological options.

iv) SPO 2: Strengthening roles of industry associations for information flow and active communications

Under this SPO, industrial associations (IAs) play a central role in gathering and sharing information. This information ranges from the availability of environmentally-sound technologies (EST) to financial support programmes that assist SMEs' environmental performance. Moreover, by using existing networks and/or establishing new networks, IAs, in collaboration with NGOs, would be able to host training sessions/seminars on such topics as environmental education targeting and corporate responsibility.

Developing ties with SMEs and large corporations is another critical part of this SPO. Large companies would be able to transfer knowledge of environmental management that they have accumulated from past practices to SMEs, not only through their supply chain, but also through the IAs' intervention. The active and strengthened ties would induce new business opportunities which would produce economic gains for both sides.

Furthermore, the interaction between SMEs and governments, especially at local levels, could be improved with the initiatives of the IAs. Setting up a regular meeting and facilitating communication for the exchange of information and opinions between parties would certainly promote mutual understanding and trust.

(6) Strategy 4: Disseminating the concept of economic benefits created by environmental performance

To improve the environmental performance of SMEs, it is of utmost importance to disseminate the concept of economic benefits created by environmental performance. Making technical and management expertise accessible to the SMEs will improve their environmental performance considerably. This would not only help the SMEs but benefit the population in and around the SMEs' cluster that stand to gain in terms of a better environment.

i) SPO 1: Facilitating consulting services to improve environmental performance

Technical and management expertise plays an important role in the growth of enterprises. The level of technology and management systems being generally low in SMEs, incremental improvement has a far greater potential to reap benefits in the SMEs as compared to larger companies. It is often the owner who acts as the manager and technologist. Bringing in consulting services helps these small organisations to acquire knowledge of systematic operating procedures, problem identification and problem solving.

For the development of consulting services as a policy option for the long-term benefit of environment performance, it is important to visualise the instruments that would give shape to the implementation of such an option. Consulting services should:

- Be affordable and appropriate,
- Be helpful in the development of ideas while utilising traditional knowledge, and,
- Be accessible by the smallest players while being in touch with the internationally best consulting services.

Implementation of such a policy requires collaboration between government and non-government agencies, between institutions and individuals with technical expertise, and among the SME workers and managers. The implementation would thus require:

- a. mobilisation of expert human resources
- b. financial resources
- c. exploitation of existing information exchange networks
- d. an existing SMEs' association's network

(7) Strategy 5: Utilising external pressure to create incentives

It is necessary to initiate public awareness campaigns to increase consumers' interest in a cleaner environment since public pressure can force SMEs to improve their environmental performance. For achieving this objective, the media can play a critical role in amplifying the message as it reaches out to the public, namely to the consumers. If the SMEs do not receive direct public pressure, a push from the buyers of their products, generally large corporations, would provide a strong incentive for the SMEs to act more environmentally-responsible.

i) SPO 1: Greening the supply chain with the prospect of social responsibility

Greening the supply chain refers to buyers (most cases large companies) requesting their suppliers/manufactures (in most cases SMEs) to practice environmental responsibility in their business operations. This includes environmentally-sound production processes and green procurement. This can be a powerful tool that can influence companies into greener operations and allow them to be more socially responsible in their practices.

This SPO effectively utilises the relationship between buyers and suppliers to induce suppliers to become more conscious of their environmental performance. Buyers are expected not only to request suppliers to produce their products with environmentally-conscious processes, but simultaneously

offer assistance that suppliers may need to improve their environmental performance through seminars and training.

Governments should play significant roles in assistance of the SPO. In order to ensure non-discrimination among suppliers in their home countries and in the exporting countries, in terms of the gap in environmentally-sound production processes, governments must establish rules and regulations. Furthermore, governments could monitor buyers (large companies) to ensure that they do not place excessive pressure on the suppliers (SMEs) to perform environmentally-sound practices that require capabilities beyond what they possess. In this regards, governments should instruct large companies to offer support programmes to the SMEs to help them reach higher standards.

ii) SPO 2: Initiating media campaigns to stimulate green markets

Awareness is the basic tool for the protection of the environment. It is important to take a concrete step to raise the awareness of environmental problems for the local people, since public awareness can be a driver for SMEs to improve their environmental performance. In the positive aspect, customers' preferences on green products may provide opportunities for SMEs to take advantage in meeting the need of niche markets. Moreover, raising environmental awareness in general public also assists in strengthen public participation in environmental management, particularly at local level. As a result, local communities can monitor environmental quality in local areas and also play a critical role as a watchdog group to monitor environmental impacts from local factories.

The media plays an important role in influencing public perception and promoting environmental awareness. Therefore, a well-organised media campaign should be considered as a prerequisite to the environmental conservation process. In certain instances the media may have to be motivated to play a progressive role in environmental issues.

Despite media playing a key role in the campaigns, the combination of active participation by the media and governmental agencies, private organisations and NGOs contribute to the creation of various information channels that strategically capture a variety of target groups.

3.5.2.4. Conclusion

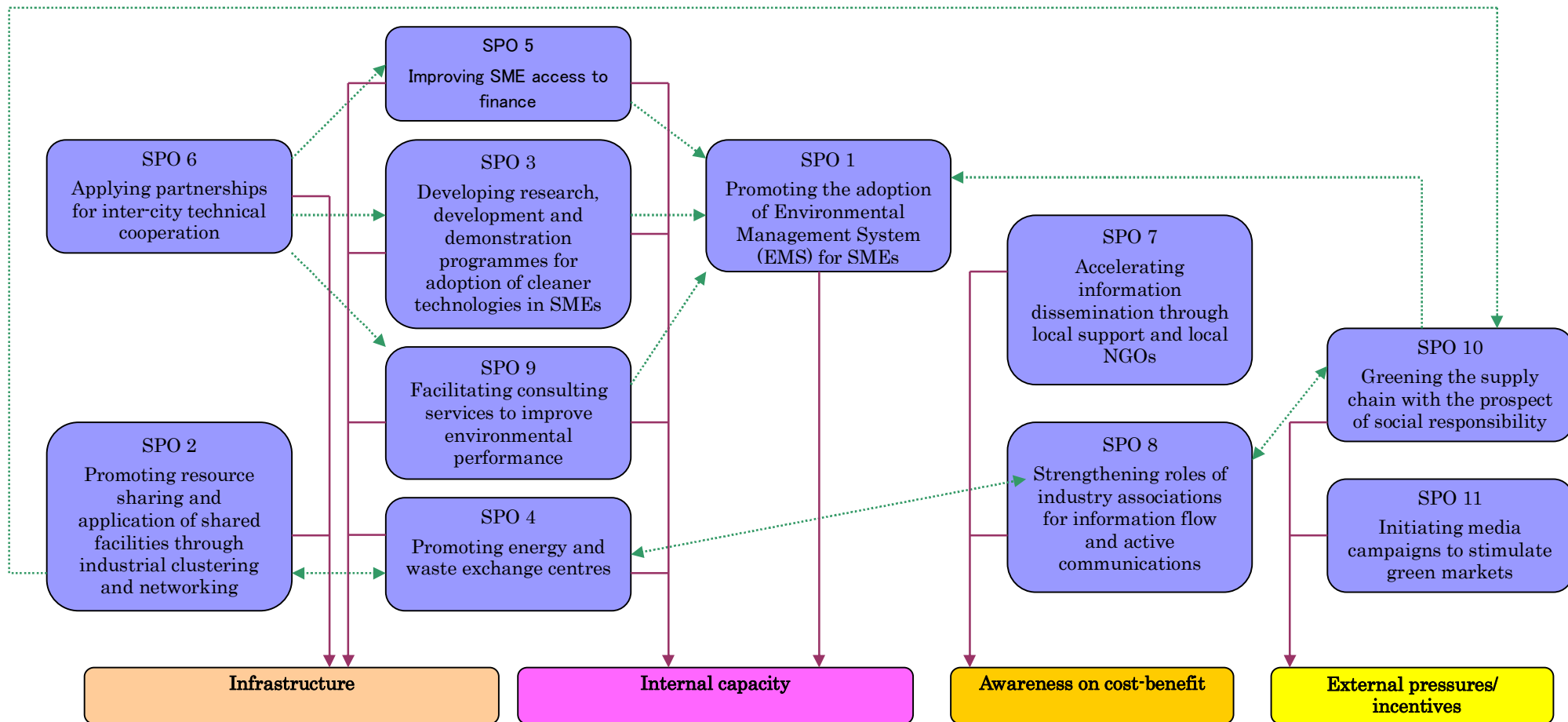
Policy that assists SMEs in improving their environmental performance is not only limited to its functions as an objective, but also creates positive impacts on the socio-economy. Thus, strategic policy options (SPOs) developed from this research bring meaningful stimulation to policy makers.

The examination of the roles of SMEs in society, economic activities, and their impacts on the environment provides a basis of identifying the problems/constraints that SMEs face, and these problems are widely spread, complicated and interact with each other. The strategies and SPOs have been developed in accordance with the analytical framework of the problems and obstacles in order to provide a platform for improving the environmental performance of SMEs.

The SPOs presented are not mutually-exclusive, but rather interrelationships among the SPOs can be seen (Figure 3.5.31). Indeed, they are mutually-supportive in order to achieve the effective policy delivery.

This suggests that the strategic framework developed in the theme can be applied as a set of policy options with strategic interrelationships. Elaboration of such a policy framework can be delivered in various optimal subsets of selected policy options in order to be suitable to the uniqueness of political and market structure value and social aspects of a country.

Figure 3.5-31 Strategic Policy Framework for Improving Environmental Performance of SMEs



3.5.2.5. References

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