TABLE OF CONTENTS

List of Figure

List of Appendix

EXECUTIVE SUMMARY –
STUDY ON SMALL AND MEDIUM SIZED ENTERPRISES (SMES) IN ISO 14001 ENVIRONMENTAL MANAGEMENT SYSTEM (EMS) IMPLEMENTATION -
SUPPORT ACTION PLAN FOR THE ELECTRONICS AND RELATED PRODUCTS SECTOR

1. INTRODUCTION

The Business Environment Council (BEC), in association with GHK Hong Kong Ltd and BMT Asia Pacific Ltd was commissioned by the EPD to conduct a study on *Small and Medium Sized Enterprises (SMEs) in ISO 14001 Environmental Management System (EMS) Implementation* in December 1999.

This executive summary provides an overview of the key findings of a detailed study into the uptake of EMS by SMEs in the Electronics and Related Product Sector, and recommends a support plan that will act as a driver for the more widespread adoption of ISO 14001.

1.1 Background

Over 30,000 companies worldwide have adopted ISO 14001 since its launch in September 1996. This has been driven partly by perceived threats of loss of market share, and partly by the opportunity of improved competitiveness.

The extent to which these threats and opportunities exist and the barriers to the uptake of ISO 14001 in the electronics and related products sector in Hong Kong was reviewed by completion of four tasks as follows:

Task 1 - to conduct local and international research (literature review, questionnaire and telephone surveys) on the market threats and opportunities to local SMEs as a result of the international adoption of the ISO 14001 standard, and to investigate the present status of ISO 14001 implementation amongst the local SME's;

Task 2 - based on the findings of Task 1, and taking into account social, economic and environmental parameters, to develop two priority lists of Major Industry Groups (MIGs) for in depth study (one for the manufacturing sector, the other for the service sector). The *Electronics and Related Products Sector* was selected at the end of this task for more detailed study;

Task 3 - to examine in detail 10 companies from the electronics and related products sector as case studies to:

a) Identify the barriers to the implementation of EMS;
b) Examine the gap between their existing EMS and the requirements of ISO 14001; and
c) Estimate the costs for implementing an ISO 14001 EMS in a typical electronics and related products SME.

Task 4 - based on the findings of Task 3 to:

a) Identify the areas of support needed by the electronics and related product sector; and
b) Propose an ISO 14001 EMS Support Action Plan.

2. CHARACTERISTICS OF THE HONG KONG ELECTRONICS AND RELATED PRODUCTS INDUSTRY

Hong Kong's electronics and related products sector is comprised of companies manufacturing radios, televisions, communication equipment, computers, electronic parts, electrical appliances, electrical toys, machinery and equipment. This collectively achieves significance on a range of both socio-economic and environmental parameters. On social-economic parameters, it is first in value-added[1], second in number of establishments[2] and compensation to employees[3], and third in number of persons engaged[4] and

[1] The total value added of a MIG as a percentage of total value added in manufacturing industry. Economic output (i.e. contribution to GDP) is the basic measure of economic significance (source of data: Report on 1997 Annual Survey of Industrial Production, pp. 35 – 44).
[2] The total number of establishments in a particular MIG as a percentage of total number establishments of manufacturing industry (source of data: Report on 1997 Annual Survey of Industrial Production, pp. 35 – 44).
[3] The total compensation of employees of a MIG as a percentage of total compensation of employees in manufacturing industry (source of data: Report on 1997 Annual Survey of Industrial Production, pp. 35 – 44).
[4] The total number of people employed in a particular MIG as a percentage of total number of people employed in manufacturing industry (source of data: Report on 1997 Annual Survey of Industrial Production, pp. 35 – 44).

contribution to external trade[5]. It also ranks high in environmental parameters, being first in chemical waste output [6] and third in energy consumption[7].

The type of products in the electronics industry ranges from video games to consumer electronics goods. A particular strength of Hong Kong enterprises lies in their production of consumer electronics for original equipment manufacture (OEM) customers. These local enterprises are among the world's largest suppliers of consumer electronics, especially audio and video equipment, calculators, electronic diaries, office organizers and pocket dictionaries.

In the 1980s and 1990s, Hong Kong manufacturers benefited from the low-cost business environment of the Pearl River Delta (PRD) area. But as electronics companies move towards more technology-intensive products, there has been a shift from low-profit-margin, mass-produced, labour-intensive products to capital-intensive, equipment-intensive, high-value-added products. As the Hong Kong SAR Government aims to develop Hong Kong as the regional hub for the high-tech industry, it is expected that some production of high-tech electronics products will be relocated back to Hong Kong.

3. EMS IMPLEMENTATION WITHIN THE HONG KONG ELECTRONICS AND RELATED PRODUCTS SECTOR

3.1 Large Electronics and Related Products Companies

At the time of the study approximately 36 electronic and related products or related companies (the majority of them are large companies) in Hong Kong had achieved ISO 14001 certification[8]. Two of these larger, certified companies participated in the case studies researched during this study.

Key findings from these organisations were that they had:

a) realised the global trend in EMS adoption and international environmental requirements (e.g. European Union's requirements on eco-labelling and packaging, etc.) within the electronics sector;
b) been driven to adopting a corporate environmental policy and EMS by the desire of improving business performance;
c) provided support [9] to suppliers and subcontractors to assist them in meeting environmental requirements;
d) benefited from ISO 14001 implementation; and
e) experienced difficulties during EMS development and implementation.

The benefits included: cost savings from improved quality; enhanced business competitiveness and marketing edge; reduced environmental incidents, accidents and complaints; and the ability to respond to the prevalent and growing supply chain pressure (from clients or headquarters) related to environmental management.

The difficulties included: low levels of technical know-how (e.g. identification of environmental aspects); availability of industry specific information, pollution control equipment and technology; low basic awareness of staff; and constraints in manpower, time and cost to maintain the EMS after certification. In addition, controlling the environmental performance of SME suppliers and subcontractors is also a major concern. SMEs lack the knowledge and resources to develop an EMS, and also have difficulties in influencing their upstream suppliers to meet environmental requirements.

The overall findings suggest that large electronics companies in Hong Kong are gradually adopting EMS and ISO 14001, as part of the broader trend towards improved management across a range of business issues including quality, human resource and the environment. Some large companies (e.g. Philips) are also beginning to set a timetable

[5] The domestic exports of a MIG in 1998 as a percentage of total domestic exports in manufacturing industry (source of data: Annual Review of Hong Kong External Trade, pp. 66 – 71).
[6] Source of data: Chemical Waste Treatment Centre.
[7] Source of data: Hong Kong Energy End-use Data (1986 – 1996), Electrical and Mechanical Services Department.
[8] As at June 2000, 105 companies/departments in Hong Kong were known to be certified to ISO 14001 (http://www.epd.gov.hk), a large proportion being in (or related to) the electronic and related products sector (about 34%).
[9] Via Suppliers Day, training, discussion, clarification, etc.

for their suppliers (large or SMEs) to acquire ISO 14001 EMS certification; whereas others indicated that they might impose EMS requirements in the future but had set no definite deadline at the time of study.

3.2 Electronic and Related Products SMEs

At the time of Study, there were 138 SMEs electronics and related products SMEs (with between 20 to 100 employees) operating in Hong Kong. The study found no evidence to suggest a trend towards the uptake of EMS by Hong Kong's SME electronic and related products companies. Few SMEs had been certified, and only a small number of SMEs were developing EMS during the study period.

For the majority of electronics and related products SMEs, the study found that companies have little or no awareness of the potential threats and opportunities mentioned in Section 3.1 arising from the implementation of ISO 14001.

Key perceptions in the industry can be summarised as:

- ISO 14001 is not necessary[10] since clients do not require ISO 14001 certification;
- Implementation of EMS provides no tangible benefits;
- EMS implementation requires significant capital investment, manpower and other resources such as equipment.

One company that participated in the case study was in the process of developing EMS in response to pressure from European and Japanese clients. This company also recognised the benefits associated with EMS implementation.

Respondents in the broader surveys indicated that their companies would only establish EMS if they became subject to direct supply chain pressure. The majority of respondents also expressed that financial and technical support would be strongly required for EMS development.

3.3 The Overall Trend Towards EMS Implementation in the Electronics and Related Products Industry

Larger companies in Hong Kong have a strong culture of environmental compliance and many go beyond compliance to continually improve performance. Along with intensified competition, foreign suppliers have posed an increasing threat to Hong Kong's electronics exports. Some local operations of international companies have begun to use ISO 14001 implicitly as a tool to encourage improved environmental performance from suppliers, by imposing clear EMS requirements. As international environmental awareness is increasing at a rapid pace, the supply chain pressure from buyers of electronics products is expected to drive the implementation of green measures in the production process. Further it is expected that international environmental requirements (e.g. European Commission's directives on waste from electrical and electronic equipment) may force Hong Kong electronics manufacturers to change their production practices with some implication on their costs.

4. FACTORS INFLUENCING ISO 14001 EMS IMPLEMENTATION IN THE ELECTRONICS AND RELATED PRODUCTS INDUSTRY

The study highlights three interrelated factors that clearly influence the uptake of EMS by electronics and related products SMEs:

a) Supply chain pressure created by the private sector and (to a smaller degree) Government

SMEs focus on client requirements, because failure to meet such requirements will result in loss of business opportunities. However, supply chain pressure for EMS implementation is limited in Hong Kong, and a vital missing driver for its widespread uptake. The large/international electronics companies can play a pivotal role in rectifying this, with significant benefit to the environment. In addition, the Hong Kong SAR Government can also play a role in exercising market influence as it (e.g. Government Supplies Department, GSD, Electrical and Mechanical Services Department, EMSD), purchases goods

[10] For example, one client set no deadline for EMS development although it had been mentioned in the tenders document.

from electronics and related products SMEs (or via wholesalers or trading companies)[11].

b) Awareness of the trend of EMS adoption, benefits/knowledge and technical know how

Various private sector, government and electronics industry organisations have provided environmental and EMS awareness seminars and guidance materials, however these have failed to impact as a positive driver on the electronics and related products SMEs. This may be due to the lack of other drivers to encourage EMS uptake, or perhaps due to their targeting approach.

The study finds that a strengthening of the message of global trends in EMS adoption, requirements and benefits, and further outreach to SME management, is therefore to increase awareness and engage their commitment.

Some "new energy" for, or "re-branding" of such existing programmes is therefore recommended. Specific literature and training courses on EMS development and implementation in the SME electronics and related products sector will also serve to positively influence awareness.

c) Financial assistance

Based on the findings of the study it is estimated that the development of an EMS in a Hong Kong electronics and related products company may cost between HK$200,000 to HK$500,000, depending on the scale and activities of the company. This range includes the cost for an external consultant (at the mid-high range) or the cost for internal staff time (at the low-mid range). It also includes estimated costs of implementing management programmes (e.g. capital investment for pollution control equipment and staff training) and first time certification.

Most electronics and related products SMEs operate to tight budgets. The indicated cost of ISO 14001 certification is seen in the industry as prohibitive. Hence the provision of financial, as well as technical support, is essential.

[11] The electronics goods can be manufactured in Mainland China or Hong Kong.

5. RECOMMENDED SUPPORT STRATEGY

The support strategy for the electronics and related products sector focuses on three core elements that are described below and illustrated with details in Figure 1 and Appendix 1. The three elements of the strategy are:

- Creation of supply chain pressure (to overcome the lack of a driving force for EMS implementation and ISO 14001 certification);
- Providing industry specific technical support and information; and
- Providing financial assistance for EMS implementation.

For each of the three elements, a number of specific programmes, actions or mechanisms have been proposed based on overseas and local experience in supporting EMS implementation among SME groups. It is important to note that:

- where possible, the recommended *Electronics Industry Support Action Plan* (EISAC) makes use of existing initiatives or organisations to further ISO 14001 take-up by SMEs. This is intended to maximise cost effectiveness and minimise set up times;
- it is not appropriate to assign priority to any particular initiative. This is because the factors affecting ISO 14001 adoption are many and interlinked. The prioritisation of technical support, for example, without financial support or supply chain pressure will not (as has been found in the past) encourage ISO 14001 certification. Similarly the encouragement of supply chain pressure without providing technical or financial support may jeopardise the viability of some SMEs;
- at this time, none of the potential key players from the Government sector proposed in the recommended programmes have been consulted on their views, the proposed programmes or actions are subject to amendment after consultation;
- it is vital that all of the support programmes are associated with a high impact promotional campaign to ensure that SMEs realise the increasing supply pressures they face, and that the HKSAR Government is ready to support them.

Some of the proposed programmes, actions and mechanisms are new to the Hong Kong electronics and related product sector (e.g. financial assistance for EMS) whereas some of them are to strengthen existing mechanisms (e.g. provision of SME specific training and bringing resources together under a one-stop electronics EMS shop).

The three elements of the strategy are described below in more detail.

5.1 Creation of Supply Chain Pressure via Market Influence

As discussed previously, current demand for EMS support programmes is limited among SMEs in the electronics and related product sector. One of the major reasons is the lack of specific EMS requirements in tenders/specifications (only few large companies clearly specified EMS requirements in tender/contract).

Local and overseas experience has clearly shown that supply chain pressure is the most effective factor in increasing the need for EMS adoption and ISO 14001 certification for SMEs.

Supply chain pressure can be applied through encouraging large ISO 14001 certified electronics and related products companies and the government departments that purchase such products (e.g. EMSD) to require their suppliers to be certified to ISO 14001. This strategy approach is detailed in Appendix 1.

The subcontracting practice in the local electronics and related products sector is "multiple-layer". Most local electronics SMEs supply their goods to larger local electronics companies. It is anticipated that supply chain pressure will be limited to those SMEs that are part of the supply chain of large international companies or corporation that practice more stringent environmental management. Nonetheless, it is not known whether local electronics companies that currently do not require suppliers to adopt an EMS will change their policy as the business environment and supply chain pressure evolve over time, giving rise to additional environmental needs.

Although the market influence programme requires time to formulate (i.e. it needs consultation and a change of Government policy and culture of the electronics industry), it is crucial to the support strategy. Without successful creation of supply chain pressure, the study finds that SMEs will not develop an EMS, even if financial assistance and technical support become available.

To initiate the market influence, it is recommended that the government to take the initiative to contact the industry and set up a series of consultations. The consultation should include representatives from Government department related to electronics activities (e.g. EPD, TID, EMSD, GSD), ISO 14001 certified electronic companies, trade associations[12], professional institutes (e.g. HKIE), and academic institutes to review the feasibility of the proposed action and establish a working group to work out the details if the proposed actions are found feasible.

5.2 Provision of Knowledge and Technical Know How via a One-stop Resource Centre

A One-stop Resource Centre is recommended to provide electronics and related products SMEs with all essential information required for understanding the global adoption of EMS, the establishment and continuous improvement of an EMS. In addition, it should coordinate the services provided by various parties and communicate the needs of SMEs to the relevant parties to ensure barriers to EMS uptake are overcome.

The scopes of service provided by the One-stop Resource Centre include the provision of trade specific environmental information and news, self-help tools, advice on EMS implementation, training, and coordination of professional exchange programmes and mentoring activities. The recommendations for this Centre are detailed in Appendix 1.

[12] For example: HK Electronics Industry Council; HK & Kowloon Electro-plating Trade Merchants Association Ltd.; HK & Kowloon Electric Trade association; HK Electronic Industries Association; HK Electronic Industry Council, Hong Kong Electrical Appliances Manufacturers Association, Hong Kong & Kowloon Electrical Appliances Merchants Association Ltd.

The options of operating the one-stop resource centre are as followed.

a. Relevant Government department(s) (e.g. EPD (the existing Environmental Resource Centre), TID (SME Centre)) is/are to develop/operate/co-operate the Centre.
b. A Consultant could be commissioned by Government to develop and operate the Centre.
c. A private sector body (e.g. an NGO such as BEC, HKPC) could propose to establish a Centre[13] and applies for funding through existing funds[14].

5.3 Providing Financial Support for EMS Implementation via Financial Assistance

The case study findings indicate that financial constraints are one of the major barriers to EMS implementation for local SMEs in the electronics sector.

Financial assistance can drive a more rapid change in SME's further down the supply chain, that may be less influenced by top down pressure.

The financial assistance can be exercised via the provision of grants or loans; these strategy approaches are detailed in Appendix 1. It should be noted that the scope of the study did not include consultation with other government departments, e.g. Finance Bureau (FB) and SME Committee of Trade and Industry Department (TID) to discuss the feasibility of the proposed actions. The EPD can take an initiative to consult FB and TID.

The Government has allocated a total amount of $1.9 billion to set up four SME Funding Schemes in early 2002 to help SMEs build up their strengths and redress their weaknesses in order to face the prevailing challenges. Among the four funding schemes, three of them would be most relevant to helping SMEs enhance their environmental performance. They are SME Business Installations and Equipment Loan Guarantee Scheme, SME Development Fund and SME Training Fund. It is proposed the electronics and related products SMEs shall be encouraged by the Government to apply these funding to develop an EMS.

6. TIMEFRAME REQUIRED FOR THE ESTABLISHMENT OF THE SUPPORT PLAN

The three proposed programmes; inducing market influence, establishing a One-stop Resource Centre and providing financial assistance, are the basic but vital elements of a successful support strategy.

As described, the three programmes are closely related and should be implemented in parallel. However, it is anticipated that time will be needed to review Government and industry practices, establish programmes for market influence and financial assistance. It is recommended that the consultation on these issues be established as soon as possible.

Regarding the One-stop Resource Centre, it is envisaged that the Centre could be established immediately, as the proposed actions require a moderate level of coordination and do not require a long lead-time or extensive background preparation.

[13] Including the expanding of existing service (e.g. HKPC is operating a Cleaner Production Centre for the Electronic Industry; and a SME Centre (non-MIG specific).
[14] BEC has expressed interest in developing and operating the one-stop resource center.