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

1. INTRODUCTION

The Business Environment Council Ltd (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 Construction 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 construction sector in Hong Kong was reviewed by completion of the 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 *Construction Sector* was one of three industries selected at the end of this task for more detailed study;

Task 3 - to examine in detail 10 companies from the construction 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 construction SME;

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

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

2. CHARACTERISTICS OF THE HONG KONG CONSTRUCTION INDUSTRY

Hong Kong's construction sector is a major part of the economy and stands out on review of most socio-economic and environmental parameters. For example, it is ranked second within the service grouping on number of SMEs (more than 600 nos.)[1], second on value added (11.7%)[2], and first for energy consumption (30.5%) and chemical waste output (26.4%)[3]. The construction industry is characterized by its large number of sub-contractors. Numerous specialist operators, who often use short-term labour, typically support the large lead contractors. The industry is highly competitive and works to tight deadlines. Completion on time is a high priority.

Construction activities result in on-site and off-site environmental and amenity impacts that affect the community and the wider environment. These

[1] With 20 to 50 members of staff. As there were some 200,000 companies in Hong Kong as per Government's record at the time of study (the majority of them were SMEs), it is not feasible to complete a study for all sizes of SMEs within a short timeframe. The employment size defined aforesaid enabled the Study more cost effective.

[2] It indicates the total value added of a Major Industry Group as a percentage of total value added in service industry. Higher priority is given to sectors that contribute more outputs to local economy. Economic output, i.e. contribution to GDP, is the basic measure of economic significance.

[3] Information on socioeconomic and environmental status was derived from the figures of September 1999 provided by Census and Statistics Department, HKSAR Government.

impacts, particularly noise, dust, water and waste arisings, have been subject to close legislative control. Despite these efforts, the construction sector consistently attracts more prosecutions for violation of environmental legislation than any other industry. Amid tight deadlines and intense competition it seems that the sector as a whole has yet to embrace a culture of environmental compliance and continuous improvement.

3. EMS IMPLEMENTATION WITHIN THE HONG KONG CONSTRUCTION SECTOR

3.1 Large Construction Companies

At the time of the study approximately 30 large construction or related companies in Hong Kong had achieved ISO 14001 certification[4]. 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) Benefited from ISO 14001 implementation; and
b) Experienced difficulties during EMS development and implementation.

The benefits included cost savings from improved process efficiency, enhanced business competitiveness and marketing edge, smoother operation, improved staff quality, and ability to respond to the prevalent and growing supply chain pressure related to environmental management.

The difficulties included low levels of technical know-how, availability of industry specific information, low basic awareness of staff and subcontractors, and limitations of physical space on site to facilitate the implementation of environmental improvement programmes[5].

[4] Information as at June 2001, there are 136 companies/departments in Hong Kong were known to be certified to ISO 14001 (source of information: http://www.epd.gov.hk/), a large proportion being in (or related to) the construction sector (about 20%).

[5] For example, appropriate recycling facilities have yet to be provided by the Government for the recycling of construction materials. The limited spaces of the small construction sites discourage the installation of pollution control equipment or the implementation of environmental practice (e.g. waste segregation).

The overall findings suggest that large construction 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 project management, quality, safety and health, human resource and the environment.

3.2 Construction SMEs

The study found no evidence to suggest a trend towards the uptake of EMS by Hong Kong's SME construction companies. One SME architect had been certified[6], and only a small number of other companies were developing EMS during the study period.

For the majority of construction SMEs, the study found that companies have little or no awareness of the potential threats and opportunities arising from the implementation of ISO 14001.

Key perceptions in the industry can be summarised as:

- ISO 14001 is not necessary[7] since clients do not require ISO 14001 certification. Environmental requirements sometimes included in tenders can be managed without an EMS;
- Implementation of EMS provides no tangible benefits;
- EMS implementation requires significant capital investment, manpower and other resources such as equipment.

Two companies that participated in the case study were in the process of developing EMS in response to client pressure and an awareness of the global trend towards EMS implementation. These companies both recognised the benefits associated with EMS implementation, however only one company indicated that it might seek ISO 14001 certification. The environmental requirements of

[6] As at June 2001, only one SME (providing architectural services) out of 136 companies/departments in Hong Kong was known to be certified to ISO 14001. Source of information: http://www.epd.gov.hk/

[7] In one example, the client set no deadline for EMS development although it had been mentioned in the tender document.

the MTRC for its construction projects were cited as a strong driver for the development of an EMS.

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

3.3 The Overall Trend Towards EMS Implementation in the Construction Industry

Larger companies in Hong Kong have a strong culture of environmental compliance and many go beyond compliance to continually improve performance. In the construction sector, major developers have begun to use ISO 14001 implicitly as a tool to encourage improved environmental performance from contractors, by including clear EMS requirements (but not ISO 14001 certification explicitly) in their tenders. This has created a top down pressure on larger construction companies to become ISO 14001 certified. These companies will in turn pass environmental requirements on to their subcontractors, which may in turn affect SMEs at a later stage.

To date, these actions have been taken on a voluntary basis, however it is suggested in the Construct for Excellence Report of the Construction Industry Review Committee that mandatory ISO 14001 certification may be considered at a later stage when the construction industry has acquired more expertise in tackling the environmental challenge [8]. The overall message is clear, it is time for the construction industry to act on the environment and take corporate responsibility seriously.

4. FACTORS INFLUENCING ISO 14001 EMS IMPLEMENTATION IN THE CONSTRUCTION INDUSTRY

The study highlights three interrelated factors that clearly influence the uptake of EMS by construction SMEs:

a) Supply chain pressure created by the Government and private sector

SMEs focus on client requirements, because failure to meet such requirements will result in loss of business opportunities, termination of contracts or reduced milestone payments. However, supply chain pressure for EMS implementation, a vital driver for its widespread uptake, is limited in Hong Kong. As the major construction client, Hong Kong SAR Government has a pivotal role to play in rectifying this, with significant benefit to the environment.

As mentioned above, some government departments and large developers impose environmental requirements on prime contractors, requiring them to adopt environmental management plans and implement green measures with positive effect. However, this practice is neither widespread nor explicit in driving EMS adoption by construction SMEs lower down the subcontractor's chain.

b) Financial assistance

Generally, it takes 12 to 18 months for a SME to develop an EMS complying with ISO 14001 requirements, depending on the existing status of EMS and the amount of resource scheduled to devote (e.g. manpower and time). Based on the findings of the study it is estimated that the development of an EMS in a Hong Kong construction company may cost between HK$200K to HK$500K, depending on the scale and activities of the company. This range includes the cost for

- an external consultant (at the mid-high range, about HK$120K to 200K) or the cost for internal staff time (at the low-mid range);
- Implementation of management programmes (e.g. capital investment for pollution control equipment), which varies depending on the status of existing pollution control;
- Staff training costs included in consultancy fees for EMS development. For approved training courses[9], the cost is around HK$8,000 per person (two to three members of staff usually receive this type of training);

[8] Construct for Excellence – Report of the Construction Industry Review Committee (January 2001).

[9] For example: IEMA (Institute of Environmental Management Association, UK) Approved Advanced Training Course on Auditing.

- First time certification (about HK$20K to 30K).

Recurrent costs can amount to at least HK$10K per year depends upon the scale of operation and activities, including:

- Training for new or existing members of staff;
- Surveillance visits (once in every six months, about HK$7,000 per man-day, typically lasting two to three man-days); and
- Implementation of additional environmental management programmes for continuous improvement.

Most construction SMEs operate to tight budgets. The indicated cost of ISO 14001 certification is seen in the industry as prohibitive. Hence the provision of financial is essential.

c) Awareness of the benefits and knowledge and technical know-how

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

The study finds that highlighting of the benefits and further outreach to management of SME's to increase awareness and engage their commitment are surely needed.

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 construction sector may serve to positively influence awareness.

5. RECOMMENDED SUPPORT STRATEGY

The support strategy for the construction 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 financial assistance for EMS implementation; and
- Providing industry specific technical support and information.

Local and overseas experience has clearly shown that supply chain pressure is one of the most effective factors in increasing the need for EMS adoption and ISO 14001 certification for SMEs. As a major client, government is in a strong position to influence the construction industry by exerting EMS supply chain pressure [10]. In addition, the large contractors who subcontract the works to SMEs could also impose environmental requirements to contractors. In doing so, the adoption of EMS among the construction industry will be speeded up. As mentioned earlier, the Construction Industry Review Committee may consider the mandatory ISO 14001 certification at a later stage. It is a good timing to explore the creation of supply chain pressure.

Having regard to local economic downturn, SMEs are under financial constraint. Financial assistance would then play a role when the demand for ISO 14001 implementation and certification increase to pay for advice in EMS development by a consultant, provide staff training and install pollution control equipment.

Provision of industry specific technical support and information to assist the SMEs to develop and implement an EMS is also crucial. However, this support will not encourage SME to implement an EMS if they do not perceive a need to be ISO 14001 certified.

In view of the above, the relative effectiveness of the three elements of the support action plan will be in the order of (a) creation of supply chain pressure, (b) provide financial assistance and (c) provide industry specific technical support and information.

[10] In 2000, the Government spent HK$45.8 billion and HK$23.0 billion in housing and infrastructure, respectively; accounting for about 17% (the 2nd highest) and 9% (the 7th highest) of total public expenditure. (Source of information: http://www.censtatd.gov.hk/).

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.

- where possible, the recommended *Construction Industry Support Action Plan* (CISAC) 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 construction sector (e.g. financial assistance) whereas some of them include strengthening of existing mechanisms (e.g. provision of SME specific training and bringing resources together under a One-stop Construction EMS Centre).

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

5.1 Creation of Supply Chain Pressure via Procurement Influence

As mentioned earlier, government and large contractors are in a strong position to influence the construction industry by exerting green supply chain pressure. The strategy recommends that government include greater emphasis on the weighting of environmental scores in tender assessments, and environmental requirements in contracts. This establishes a level playing field where the cost of environmental management can be priced-in by contractors and, in turn, requirements be driven down to sub-contractors.

Supply chain pressure can be applied through the incorporation of environmental and EMS requirements in government works tender pre-qualifications and further by encouraging large construction companies and developers to impose similar requirements for ISO 14001. These strategy approaches are detailed in Appendix 1.

Although the procurement influence programme requires time to formulate (i.e. it needs change of Government policy, consultation and a change of culture in the construction 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 procurement influence, it is recommended that the EPD to liaise with Works Bureau to study the feasibility of establishing a Task Force under the Provisional Construction Industry Coordination Board (PCICB)[11]. The Task Force should include representatives from Government bureaux/departments related to construction activities (e.g. Works Bureau, works departments), trade associations, professional institutes (e.g. HKIE), major utilities (e.g. MTR, KCR) and academic institutes to review the feasibility of the proposed actions and establish a programme for implementation.

It is recommended that a working group be formed quickly to work out the details and consult relevant parties.

5.2 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

[11] Works Bureau is the lead agency of the Government in the PCICB and provides secretariat service to the Board at present.

implementation for local SMEs in the construction 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.

As mentioned earlier, pricing-in the cost of EMS development in the tender is one of the proposed strategies to be considered under creating supply chain pressure. If this can be achieved, it can be argued that financial assistance is not required. However, financial assistance will be required to encourage SMEs that do not work on Government projects, and also to drive a more rapid change in SME's further down the supply chain, that may be less influenced by top down pressure.

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 and SME Committee of Trade and Industry Department (TID) to discuss the feasibility of the proposed actions. The task force described above could also undertake this consultation.

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 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 construction sector SMEs shall be encouraged by the Government to apply these funding to develop an EMS.

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

A One-stop Resource Centre is recommended to provide construction sector SMEs with all essential information required for 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 self-help tools, advice on EMS implementation, training and coordination of mentoring, research and development activities. The recommendations for this centre are detailed in Appendix 1.

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) could propose to establish a Centre and applies for funding through existing funds[12].

6. TIMEFRAME REQUIRED FOR THE ESTABLISHMENT OF THE SUPPORT PLAN

The three proposed programmes; creating supply chain pressure, providing financial assistance, and establishing a One-stop Resource Centre are the basic but vital elements of a strategy to ensure and support ISO 14001 implementation.

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 procurement influence and financial assistance. It is recommended that the task force to review these issues be established as soon as possible, as mentioned perhaps under the remit of the Provisional Construction Industry Coordination Board.

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

[12] BEC has expressed interest in developing and operating the One-stop Resource Center.