

# Policy options to promote energy efficient and environmentally sound technologies in small- and medium-scale industries

M. Thiruchelvam, S. Kumar\*, C. Visvanathan

*School of Environment, Resources and Development, Asian Institute of Technology, P.O. Box 4, Klong Luang, Pathumthani 12120, Thailand*

## Abstract

The rapid industrialization of Asian developing countries has pushed the need for more energy at the cost of environmental degradation. Though large industries are targeted for energy conservation and pollution prevention, small and medium scale industries (SMI) also contribute to significant pollution. This paper discusses the role of SMI in the economy, its energy consumption and impact on the environment. An overview of the energy and environment policies of China, India, Sri Lanka, the Philippines and Vietnam, and the role of energy efficient and environmentally sound technologies (E<sup>3</sup>ST) as a viable means to meet these modern challenges in SMI is discussed. The barriers faced in adopting these technologies have been identified and an analysis has been done of the various strategies and policy options available to governments to promote E<sup>3</sup>ST in SMI. Examples and illustrations of such successful efforts have also been highlighted.

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## 1. Introduction

Small- and medium-scale industries (SMI) play a vital role in the developing economies by contributing to the national economic output and employment generation and are considered as engines for economic growth and development. These industries are found in all major manufacturing sub-sectors (food processing (tea and desiccated coconut), textile, foundry, brick and ceramic, etc.) and constitute about 85% of the total number of manufacturing establishments in Asia (Visvanathan and Kumar, 1999). In China, more than 99% of industries are classified as small and medium scale (CESTT, 1999). There are characteristic sub-sectors that constitute the major part of the SMI sector in each country. For example, in the Philippines nearly 45% of the food processing and desiccated coconut sub-sectors are SMI, while in China 95% of foundry industries and 80% of textile industries belong to the SMI category. In many Asian countries, SMI account for 60–70% of the domestic industrial production and

contribute 75–80% of the export earnings (about 30–40% of this is from direct exports and the rest from subcontracts and ancillary supplies (Vepa, 1997)). Nearly 60–70% of the total labour force in the manufacturing sector are employed by the SMI in most Asian countries. SMI usually employ traditional and labour intensive technologies and decision-making is usually by an individual, generally by the owner.

Economic development needs energy. To support industrial growth, governments need to provide reliable and cost effective energy to the industries. However, large-scale energy consumption leads to negative environmental impacts such as GHG emission, deforestation, loss of biodiversity, resource depletion, emissions to water and soil, and waste disposal. One option to minimize/eliminate these negative impacts are by the use of energy efficient and environmentally sound technologies (E<sup>3</sup>ST). Though, large industries could easily adapt E<sup>3</sup>ST and benefit financially, SMI are still reluctant to adapt them due to their inherent characteristics and resistance to change. To promote the dissemination of E<sup>3</sup>ST in SMI in selected Asian countries, a regional research programme was coordinated by the Asian Institute of Technology (AIT)

\*Corresponding author. Tel.: +66-2-524-5410; fax: +66-2-524-5439.

E-mail address: kumar@ait.ac.th (S. Kumar).