

Rapid Trade and Environment Assessment (RTEA) Thailand

Electrical and Electronic Equipment – Environmental impacts of trade liberalization

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Thailand's electrical and electronic equipment (EEE) sector has expanded dramatically over the past decade and has been among the main sectors contributing to export-led growth in the country. The value of Thailand's EEE exports totalled US\$44.6 billion in 2006, constituting about a third of total exports (MoC, 2007). In 2003, Thailand, China and the Philippines together accounted for nearly one third of the value of world EEE exports (UNCTAD, 2006). In 2006, the main export markets were Association of Southeast Asian Nations (ASEAN) countries (17 per cent), the United States (17 per cent), the European Union (16 per cent) and Japan (14 per cent). The vast majority of EEE companies in Thailand are small- and medium-size enterprises (SMEs), producing EEE components and low-technology EEE products, which are increasingly being outsourced to Southeast Asian countries, including Thailand (EEI, 2007; ESCAP, 2007).

Key environmental concerns in the EEE sector

The main environmental concerns in the EEE sector stem from soil and water contamination, resource depletion, energy use and waste (GSEI, 2006; Liang *et al.*, 2006; DFT, 2005; O'Rourke, 2004). At the production stage, obtaining raw metal for **EEE production** consumes a large amount of energy, especially the process of extracting resources, which can also lead to degradation of the surrounding environment (DFT, 2005). When raw metal is shipped to a plant, it goes through a complex, high-energy-consuming process as it is converted into a finished product. Moreover, as demand for natural gas and raw metals increases with the increase in exports, the price of these inputs is also likely to increase.

EEE waste—referred to as WEEE or **e-waste**—often contains high levels of hazardous or toxic substances that can seep into the soil and groundwater, harming both human health and the environment. In Thailand, the volume of e-waste has grown at an alarming rate of 12 per cent per annum (PCD, 2004). For instance, the number of mobile phones that will be discarded is expected to increase from 11.5 million units in 2003 to 203.27 million units in 2008 (Wiriwutikorn and Bamrungwong, 2007). The sharp increase in e-waste has been linked to technological innovation and the expansion of market chains, which result in products being replaced sooner and an increase in the trade in waste as components to be used in other countries, respectively (ESCAP, 2007; O'Rourke, 2004).

Given the growing volumes and potential value of e-waste, formal and informal sectors of **waste collection and recycling** have developed in Thailand. The informal sector has come to play a particularly significant role. However, inappropriate storage and recycling processes have been associated with harm to human beings and the environment. Consumers and the recycling industry still lack the knowledge pertaining to how to deal with WEEE effectively. This is compounded by the fact that the economic conditions—characterized by high costs of recycling, technical challenges to dealing with hazardous substances and the undeveloped market demand for recycled products—do not favour recycling. The development of recycling activities is further hampered by the failure to enforce existing waste-control regulations and the lack of market-based incentives to encourage stakeholders to take an active role in waste management.

Regulatory and policy frameworks

Under Thai legislation, certain e-waste and used EEE are defined as hazardous substances in the hazardous-substance inventory list according to the September 30, 2003 Notification of the Ministry of Industry (MOI), issued under the authority of The Hazardous Substances Act, B.E. 2535 (1992). Owners of WEEE and used EEE—including producers, importers, exporters and sellers—must register and apply for a licence to produce, import or even possess these substances, and must notify the relevant government authority regarding the quantity of imports and exports. In addition, the MOI has developed a number of directives, such as the Directive on Industrial Policies for electrical and electronic products, which sets minimum levels of recycled input to be used in manufacturing and requires products to be labelled with the manufacturing date in order to distinguish old products from new ones.

In addition, a draft *National Strategic Plan for the Environmentally Sound Management of E-waste* has been drawn up by government agencies and private stakeholders responsible for WEEE in an effort to set up an integrated WEEE management system. The Strategic Plan is based on the following concepts: (a) produc-

ers or importers must pay for EEE scrap and the cost of treating e-waste according to the “Polluter Pays Principle;” (b) economic instruments are put in place to encourage the collection and separation of WEEE; (c) a financial mechanism is established to streamline WEEE management (the “WEEE Fund”); and (d) regulatory measures are set out specify to manage WEEE throughout the life cycle of EEE (PCD, 2003).

Other relevant regulations include:

- *Enhancement and Conservation of National Environmental Quality Act*, B.E. 2535 (1992);
- *Factory Act*, B.E. 2535 (1992);
- *Industrial Estate Authority of Thailand Act*, B.E. 2522 (1979);
- *Public Health Act*, B.E. 2535 (1992);
- *Industrial Product Standards Act* B.E. 2531 (1988); and
- *Import and Export Goods Act*, B.E. 2522 (1979);

Trade and environment issues in the EEE sector

The main trade and environment considerations associated with the expected growth in EEE exports include:

- (i) potential health and environmental harm caused by the production of EEE products to be consumed domestically or for export;
- (ii) potential health and environmental harm from the improper use of (legal and illegal) imports of WEEE; and
- (iii) enabling the EEE industry to meet the stringent standards in export markets and take advantage of market opportunities.

Environmental risks from increased **production** will vary according to the type of producer. For final or downstream producers, who usually require high-standard production facilities to make finished products, the risks are well-controlled. However, for mid-stream producers of parts and components—who continue to dominate the EEE industry in Thailand—production may be less well-managed and the risks of exposure and contamination can be greater.

Harm from improper use of **imported WEEE** can emerge during the waste stream, for example, during the waste-separation process. Recyclers risk health impacts from coming into contact with chemicals or inhaling dust or carcinogenic fumes while handling e-waste. There are also environmental risks of toxic waste substances contaminating the local environment. Moreover, inappropriate storage of imports of WEEE at the port while they are waiting to be claimed by the importer can cause health and environmental damage.

Concerns have also been raised that Thailand could become a **dumping ground for WEEE** from other countries, notably in the context of the recently-concluded Japan-Thailand Economic Partnership Agreement (JTEPA). The trade in such waste is governed by the Basel Convention, a multilateral treaty, which regulates the transboundary movements of hazardous wastes and their disposal. Thailand has already established a reasonably efficient monitoring and inspection system for goods at various entry points; however, there has to be a continuous effort to monitor the movement of goods within the country to ensure that WEEE is not being illegally imported for disposal in Thailand.

At the same time, measures to minimize or recycle e-waste could provide **opportunities for increasing competitiveness, accessing foreign markets and responding to consumer demand**. Recovering materials for production from domestically-recycled WEEE, for instance, could compensate for possible shortages in, and reduce reliance on, costly imports of raw materials.

In addition, exporters of EEE will be required to meet stringent standards in export markets. In recent years, Thailand’s main trading partners—notably the EU, Japan and the U.S.—have enacted comprehen-

sive legislation with mandatory requirements for waste management that emphasize prevention, reuse, recycling and recovery of e-waste. The EU, for instance, has put in place a WEEE directive to address problems associated with the disposal of electronic waste. In addition, the EU's Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) aims to limit the use of hazardous substances in EEE and to reduce waste-management concerns. Thailand's EEE exports will have to comply with the WEEE and RoHS directives in order to gain access to the EU market. The Thai RoHS alliance was set up—bringing together research institutions and testing laboratories in the private and public sectors—to provide a platform for sharing experiences and pooling resources among EEE industry stakeholders.

At the regional level, the ASEAN Sectoral Mutual Recognition Arrangement (MRA) for Electrical and Electronic Equipment facilitates trade in certified products by ensuring that countries incorporate tests that demonstrate conformity with mandatory requirements.

Moreover, private sector initiatives are being implemented to address some of the environmental concerns in the sector while taking advantage of marketing opportunities for environmentally-friendly products. For instance, leading industrial companies have acquired ISO 14000 certification—an internationally developed voluntary standard for environmental management—to meet consumer demand. Moreover, the Thailand Business Council for Sustainable Development (TBCSD) initiated the “Thai Green Label Scheme” in 1994 with the cooperation of MOI and the Thailand Environment Institute (TEI). The labelling scheme allows consumers to make environmentally-conscious purchasing decisions while reducing environmental impacts during the life-cycle of products such as refrigerators, computers and mobile phones.

Policy recommendations

A number of **government policies and initiatives** could be developed to improve environmental sustainability and mitigate potential negative environmental impacts in the sector:

- Thailand should take steps to urgently enact the draft Thai WEEE Act as a framework for the public and private sectors involved in the EEE sector.
- There is a need for further assessment and data collection pending enactment of the Thai WEEE Act to ensure government authorities build capacity to implement it.
- The Clean Production Approach in the EEE industry should be supported by government policies, such as investment promotion incentives, tax deductions for research and innovation expenditures related to clean production.
- The government should support the development of the domestic EEE de-manufacturing industry through the use of Board of Investment (BOI) incentives and other tax measures on waste discharge.

The **private sector** also has a key role to play in improving the environmental sustainability of the EEE industry in Thailand:

- Thai EEE associations, such as the Electrical, Electronics and Allied Industry Club of the Federation of Thai Industries, should continue to study the impacts of international standards in the EEE industry, in order to ensure their input into the formulation of, and their compliance with, further policy developments such as the WEEE and RoHS directives and the Thai WEEE Act.
- The Thai EEE industry needs to play a proactive role in terms of building innovation in product design. Research and development should be expanded to ensure that products consume fewer resources, recycle easily, or are reusable. Moreover, industry should take the responsibility as the producer to promote green procurement and eco-design.
- The Thai-EEE private sector needs to continue to work with government agencies to meet the challenges of increasingly-rigid environmental requirements in export markets beyond the WEEE and RoHS directives. Meeting these requirements will not only maintain export growth, but serve to establish health and environmental standards that benefit Thailand.

In terms of **capacity building**, there is a need to focus on the end of the EEE-product life-cycle. This is not because the production phase is unimportant, but because Thailand acts mainly as an assembler of products designed elsewhere by firms with production facilities in Thailand. Domestic recycling in Thailand is still relatively undeveloped, and in particular, inadequately equipped to deal with technologically-advanced e-waste. It is here that there is a special need for capacity building to strengthen Thailand's domestic EEE-manufacturing industry:

- De-manufacturers and recyclers need to be made aware of WEEE and proper waste management. They also require continuous training to understand sound waste treatment. The MOI could conduct training and issue certificates to guarantee qualifications in EE sustainable management. Certified recyclers should be required to provide a compliance record, including environmental-management systems, and undergo continuous monitoring as well as annual audits.
- E-waste information campaigns have the potential to be highly successful. They represent an inexpensive, but effective strategy to manage e-waste in Thailand.
- Efforts to encourage technology transfer and knowledge-sharing could be strengthened. For example, leading EEE industries from the EU, the U.S. or Japan should be given incentives to transfer technologies to assist in clean production and final disposal. Moreover, information-exchange at the regional level could help avoid or at least minimize the shifting of e-waste between countries.

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