CHAPTER III

ELECTRICAL AND ELECTRONIC INDUSTRY IN THAILAND

This chapter presents the background on the electrical and electronic sector in Thailand including relevant environmental concerns, management of the industry and the stakeholders involved. The chapter is divided into three main sections. Section one provides an overview on the electrical and electronic industry and its position in the Thai economy. It will include related government organizations and the environmental impact of the industry. Section two explores the role of the government and its responsibility in environment management and CSR. Section three, examines how 'Global market pressures' affect the electrical and electronic industry in Thailand in their CSR application in environmental management.

3.1 Industry Overview

The Electrical and Electronic (EE) sector has significantly expanded over the past decade and has been one of the main sectors contributing to export-led economic growth in Thailand. Thailand exported as much as 96,531 US dollars in 2004 with 14.94 and 16.94 percent growth in 2005 and 2006 respectively (MOC 2007)[1]. Although, the country went through political instability in 2007, export still grew by 18.63 percent in the first half of the year. The amount of trade demonstrates the importance of global markets to the Thai economy. Electronic products, specifically computer components parts are the top export product, followed closely by electrical components as the eleventh most export product to the world market (DEP 2006).

The value of Thailand's EE exports represents 34 percent of the nation's total export, amounting to $44.6 billion baht in 2006 (MOC 2007). The EE industry has grown steadily since the mid 1980 at an average rate of 10 percent annually,

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[1] Ministry of Commerce department of export promotion, importance of trade in Thai economy

accelerated by both domestic and global demand driven by modernization and the digital era (FTI 2001).[2] The increase in export value of EE industry is due to various factors such as co-operation of joint venture companies in expanding the export markets, the transfer of production base to Thailand for maximising production capacity to serve the growing overseas markets of computer related industry, and the development of information technology system. In 2005, EE products experienced robust growth. Over 25 percent of this growth was in integrated circuits (52.3 percent), followed by radio, television sets, compressor parts, and microwave ovens (BOT 2006,OIE 2007).

According to the Office of Industrial Economics (OIE), EE industry production grew at the rate of 15 percent in 2007 with electronic products as a main contributor. Electronic production increased by 22 percent, specifically from Hard Disk Drive (HDD) and Integrated Circuit board (IC) with a growth of 27 and 33 percent respectively. Electrical production growth on the other hand contracted by 4 percent from lower demand on air-conditioner and small home appliances (e.g. rice cooker) together with an intensity in export competition from China.

In 2007, the export of EE products increased by 12 percent. Electronic products alone grew 17 percent and electrical products at 3 percent (OIE 2007). Thailand's main export markets are ASEAN countries, which account for 22.7 percent of total export, followed by the United State at 22.5 percent, the European Union at 21.7 percent, Japan 19.4 at percent and China at 13.7 percent (DEP 2007). The Middle-East is also becoming a significant market for the industry. The sub-region had shown considerable increase in home appliances demand specifically on televisions (30 percent) and refrigerators (21 percent), amounting to 18 percent of total electrical products export (OIE 2007).

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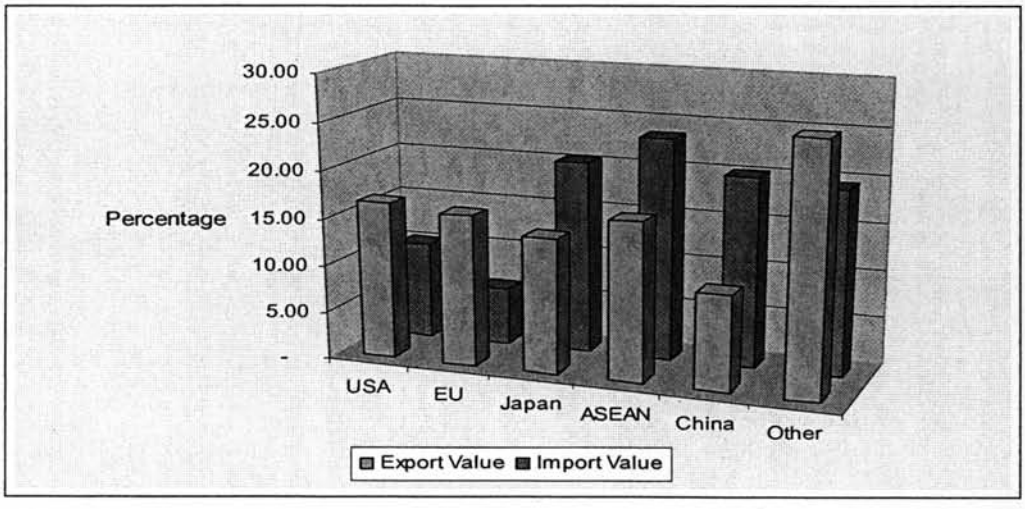
[2] Average annual growth rate in accordance with the Federal of Thai Industry Electrical and Electronic Alliance Industry Club which also resembles the data from the Bank of Thailand and the Electrical and Electronic Institute

EE industry export is forecasted to grow no less than 10 percent in 2008 with electronic products as a main driver countering further expected 4-5 percent contraction of electrical products due to higher raw material and labor costs amid intensity in export competition (OIE 2007). Nevertheless, imports has also shown significant increase on account of reliance on raw materials and parts required by policies of the joint venture companies as some locally-produced raw material and electronics parts could not meet both quality and quantity requirements of the all the product producers (BOT 2007).

Chart 1 EE products Trade Distribution 2006



Note: Source IISD and ITD

The Asian and Pacific regions produce 40 percent of the world electronic products and equipment partly due to its abundance in natural resources, low cost labor and technology development capabilities (NECTEC 2007). [3] Nevertheless, export competition has grown in parallel with production. Main export competitors are China, Vietnam, India, and Malaysia (FTI 2007). For example, small home appliances such as rice-cookers faced an 11 percent decrease in export, but China increased their export by 57 (OIE 2007).

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[3] An interview with Mr. Stanley .H, a speaker from U.S on Standards on Electrical and Electronic components and parts at the Workshop on Standards and Conformity Assessment Activities, coordinated by NECTEC, Bangkok 2007.

Thailand has become one of the major hubs in Asia for the EE industry through the integration of a global supply chain and the ability to encompass extensive activities in the production process. The structure of the Thai Electronic Sector (Appendix A) illustrates diverse relationships among business operators and their interaction with the world market showing an interconnectedness of the stakeholders. According to the Electrical and Electronic Institute, the EE industry comprises of 1,441 manufacturers, 114 traders, 22 supporting-service providers (testing service, certified body, and consultant), 98 software providers and 564 non-specifics (e.g. plant and machinery maintenance, SME suppliers), totaling 2,189 EE businesses.

The structure of the Thai electronic sector implies that whatever one does will also affect others in correspondence to the nature of business. The degree and intensity of influence may vary according to the structure of the company (ownership, size) and its location (economy, rules and regulations, politics).[4]

3.1.1 Electrical and Electronic Industry Impacts on the Environment

The main environmental concerns in the EE sector strem from energy use, pollution emission, soil and water contamination, production waste generation and used products disposal (PCD 2007). According to the Bureau of Water Technology and Industry pollution management, the EE sector's main environmental impact is the volume of electronic-waste, otherwise known as e-waste, produced. E-waste is of particular concern as it may contain hazardous and toxic substances such as lead, chromium and mercury that can detrimentally impact human health and the environment, directly and indirectly (EEI 2007, UNCTAD 2006). For example contaminants found in computer equipment include chromium, mercury and

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[4] Considering production process, product entrance and exit in the markets or widely known as life-cycle impact assessment (LCA) developed by the EU.

cadmium. Computer monitors alone contain 4-8 lbs of lead, and plastic components that contain polyvinyl chloride.

Thailand has developed a national legislation to address the domestic environmental concerns with respect to the three main categories of e-waste: *waste generated domestically; waste imported; and second-hand* waste (Tingsabadh 2007). Under the Hazardous Substances Act, B.E. 2535 (1992), the notification of Ministry of Industry dated 30th September 2003, e-waste is defined as a Type 3 Hazardous Substance,[5] for which appropriate treatment is required. The producers, importers, exporters or sellers of Hazardous Substance Type 3 must register and apply for a license to produce, import or even possess the substance. They must notify the quantity of production, import and export to the relevant government authority. (Hazardous Substances Act; Article 20(1)(2)).

The management of electrical and e-waste waste in an environmentally sound manner worldwide has gained considerable attention due to the significant increase in the volume of e-waste (refer to Chart 2).[6] Concern has been raised in Thailand around e-waste management, especially with the prospect of expansion of the EE industry (FTI 2007). The current status of hazardous waste is of concern. The waste recovery rate is not more than two-thirds, while waste growth significantly exceeds the EE industry growth by two to three times (Tingsabadh 2007). A substantial amount of household appliances are expected to become obsolete due to rapid technological change and consumer behavior. Televisions, personal computers and refrigerators are expected to increase by 12 percent from 1.7 million units in 2003 to 4.3 million units

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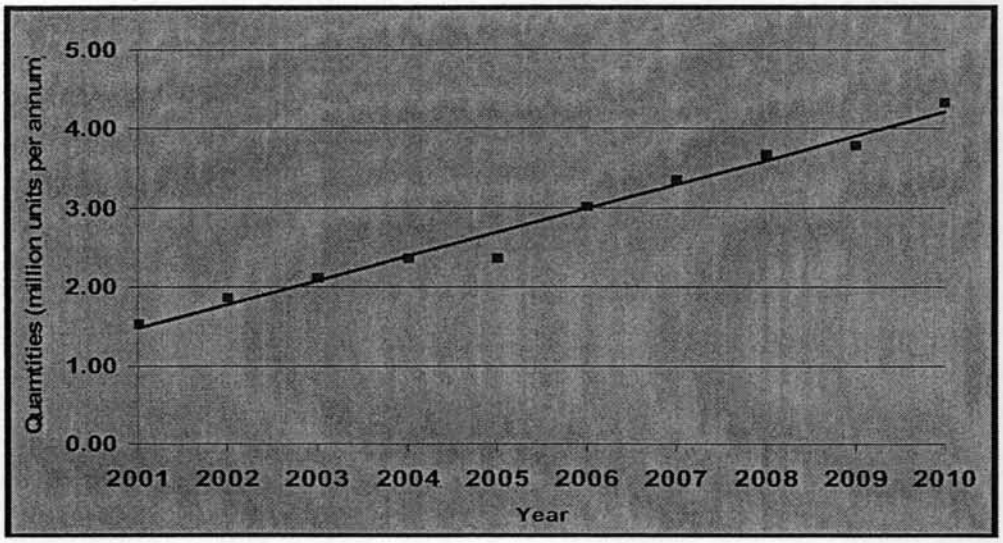
5 Hazardous substance: "explosive substances, inflammable substances, oxidizing and peroxiding substances, toxic substances, pathogenic substances, radioactive substances, genetic transforming substances, corrosive substances, irritating substances, or other substances whether chemical or not, which may cause danger to human-being, animal, plant, property or the environment" The Enhancement and Conservation of National Environmental Quality Act B.E. 2535 (1992)

6 Global movement to promote environmentally friendly waste disposal such as the Basel convention and enactment of WEEE, RoHs and REACH.

in 2010. Mobile phones are expected to increase at 17 percent from 11.5 million units to 203.27 million units in 2008.[7]

Chart 2 Estimated E-Waste Growths in Thailand 2001-2010



Note: Source PCD 2004

In broad summary, the environmental impacts of the EE sector can be categorized into two main categories: production process and consumer waste disposal. The production process involves extraction of raw materials, transportation, transformation, and product formulation which generates different type and degree of environmental impacts. It also generates waste such as metal scrap, small plastic bits, cables and microchips. For example, polluted air and water, if untreated, will have considerable impact on the environment. If hazardous e-waste is dumped into a landfill site, heavy metal from mobile batteries and other wide range of toxic substances could seep into the soil and underground water. Accumulated cadmium in damaged soil, in time, will expand contaminated parameters into agriculture areas that can be passed along the food chain (PCB). Contaminated water, if consumed, will damage the central nervous, blood and reproductive systems, and can also lead to kidney failure.

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[7] Ibid (Charit Tingsabadh and Pracha Jantasarsophon)

EE products are produced from plastic and metal components which are the products of chemical compounds from natural gas separation extracted during crude oil refinery. Oil prices will undoubtedly influence the price of natural gas and its by products. Raw material extraction consumes a large amount of energy that leads to degradation of the surrounding environment. Such factors determine product prices and most importantly 'profits' which is the main principle of business and a foundation for social and environmental responsibility capability.

The exponential demand on electrical and electronic products derived from technological development, modernization in developing countries especially China and the world population growth, assure further significant growth for the industry. Current environmental management has interestingly coincided with the integration of the Thai EE sector in the world market. The main export markets have enacted legislations in respect to society and the environment, emphasizing preventive measures by inducing "Reduce-Reuse and Recycle" on production inputs and e-waste.[8] Thus, Thailand is facing a challenge in maintaining competitiveness by meeting international standards, which require improvement in technology and production processes.

3.2 Government Roles and Responsibilities

Industrialization activities are bounded to rules and regulations of the country in which it is located. In an effort to combat worsening environmental conditions, the development of natural resources and environmental policy in the past decade has made major strides towards sustainable development. The promulgation of the Environmental Act and the Environmental Policy prove that environmental concerns have joined with economic and social issues in national development efforts. This sub section provides an overview of policy and regulation framework relevant to the EE

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[8] Such international requirements and its structural process will be explored in section 3.4 of this research.

sector in Thailand. Government industrial and environmental regulations identify agency responsibility, standards and CSR supporting activities.

3.2.1 Industrial Categories

Under the Factory Act (1992) 'Industry' is defined according to Encyclopedia Britannica (1768) as "The quality of steady application to work diligence, hence employment in some particular form of productive work, especially of manufacturing or a particular class of productive work itself, a trade of manufacture" (Simachokdee 2000). Industries are classified into three categories. First is according to production process; Extracting, Manufacturing, Servicing (supply input materials and machinery maintenance or can be referred to as Light engineering industry), Handicraft and Service (e.g. transportation, hotel) industries. Second by products and its inputs requirements; Heavy (heavy raw materials e.g. gold and steel, required machinery and technology) and Light industry (light weight finished products e.g. garments, canned food and Aluminium). Lastly by industry size: Home or cottage, Small-scale, Medium-scale and Large-scale industry.[9]

The categorization is based on the type of industry, location and environmental impacts for the purpose of regulation, domestic clarification and universal recognition. To supervise and monitor industrial activities, the Department of Industrial Works (DIW) uses two main industrial categories: by 'type' (production and products) totaling 107 industries with EE products falls under category 69-74, and by 'size'. Industries that fall under the small-scale category are the least polluting and those that fall under the large-scale category are potentially the most hazardous.

In order to receive and renew their license to operate, all firms must meet environmental requirements by submitting a map showing locations of schools,

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[9] Ibid. As specified in Factory Act (1992) and Bureau of Water Technology and Industry Pollution Management the Home or Cottage industry impacts on the environment is of little concern. Hence, the process of such activity is not stringently governed by law but any harmful consequences will be subject to penalties.

hospitals, roads and other features in a 50m area surrounding their facilities (DIW). This is a basic mandatory requirement for every industry in respect to the society and environment. Industries that potentially have serious impacts are required to conduct EIA prior to its establishment, as prescribed by law.[10]

Table 1 Electrical and Electronic Industrial Environmental Requirement

Industry Size	**EE Category** Machinery/ (HP) Horse power	Environmental Requirement
Small-scale	< 20 hp	Factory must be located more than 50 meters away from: residential areas, conservation areas, public and educational areas such as main roads, schools, parks, hospitals and temples
Medium-scale	< 50 hp	Same location requirements, **with EIA report** submission including; factory plan, type of machinery involved, its location and maintenance, and air-water-waste management systems. Electronic firms must also supply risks and accident management plans.
Large-scale	> 50 hp (more than)	

Note: Adapted from Factory Act (1992) and Department of Industrial Works (DIW).

3.2.2 Environmental Impact Assessment (EIA) for Industrialization

As a result of increasing environmental problems, the Environmental Impact Assessment (EIA) process has been applied in Thailand to identify impacts of the projects as well as to establish the appropriate mitigation measures as a tool for environmental planning and management for efficient use of natural resources for national development since 1981 (UNESCAP 2003). Under the Constitution of Thailand and the Factory Act (1992), any project or activity which may affect the

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10 The environmental requirements under Factory Act (1992) carried out by DIW under the supervision of MOI.EIA is however in accordance with the Environmental ACT (NEQA) 1992 carried out by National Environmental Board (NBE) under Ministry of Natural Resources and Environment.

quality of the environment shall not be permitted, unless its impacts on the quality of the environment have been studied and evaluated prior to the operation of such project or activities.[11] According to section 46-47 of the Enhancement and Conservation of National Environmental Quality Act (NEQA) B.E. 2535 (1992), the Minister of Science Technology and Environment (MOST), now Ministry of Natural Resource and Environment (MONRE), with the approval of the National Environment Board (NEB) have the power to issue a notification prescribing categories and magnitude of twenty-two projects or activities of government agency, state enterprise or private project which are required to submit EIA report to the Office of Environmental Policy and Planning (ONEP) and the Expert Review Committee for consideration and approval before further proceedings (ONEP 2005).

The projects and activities requiring EIA are categorized into seven groups: Industry, Residential Building and Service Community, Transportation, Energy, Water Resource, Watershed area, and Mine.[12] Specific industrial projects, namely, petrochemical, oil refinery, natural gas separation or processing, chlor - alkaline, iron and/or steel, cement, smelting other than iron and steel, pulp industry, pesticide industry or industry producing active ingredient by chemical process, chemical fertilizer industry using chemical process in production (ONEP 2005). The project proponent must employ consultant firms registered by ONEP and permitting agencies.

EIA is a theoretical assessment of impacts of the projects or activities to the environment and natural resources on a short and long term basis. It should recommend suitable measures to prevent or to correct the project's impacts to the environment and suitable methods to monitor environmental conditions. The steps involved in gaining permission to establish a manufacturing plant including environment impact assessment (EIA) is shown in (Appendix B).

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11 The Constitution of Thailand: Chapter 3: Section 56. Factory Act (1992): Section 32.

12 Dam or reservoir, irrigation, commercial airport, hotel or resort, mass transit system and expressway, mining, industrial estate or project of like characteristic of industrial estate, commercial port and harbour, thermal power plant, coastal reclamation, highway or road, residential condominium, land allocation, hospital, building in area adjacent to rivers, lakes or beaches or in the vicinity of National Park or Historical Park (MOST: NEB)

3.2.3 The Industrial and Environment Regulatory Framework

The main regulations and policies related to the EE industrial sector are the Factory Act B.E. 2535 (1992), the Enhancement and Conservation of National Environmental Quality Act (NEQA)13 B.E. 2535, Hazardous Substance Act B.E 2535, Industrial Estate Authority of Thailand act B.E. 2522 (1979), Public Health Act B.E 2535, and the Industrial Products Standards Act B.E 2511 (1968) (Tingsabadh, PCD 2007). These laws enable the authorities to monitor and control manufacturing plant establishment in respect to the surrounding environments (location and operation), including waste management (Appendix C).

According to interviews with the FTI and the EEI, regulations for industrial and environmental laws in Thailand are complicated for several reasons. Firstly, the presence of obscure legal context, overlapping provisions and supervision creates ambiguities, as well as hindering interpretation, enforcement and compliance. For example, table 2 shows IEAT regulated firms within industrial estates that would otherwise be regulated by DIW. The distinctive laws appear similar but the fact that they are different organizations with different orientations and presumably professional expertise implies that similar regulatory outcomes can not be assumed. Secondly, potential problems arise from weak cooperation among government agencies as well as personnel competency hampering governance, compliance and outcome. For example, case studies found that inspectors do not have expertise in either factory or environmental management; each agency also requests submission of comparable reports on the same issues. Factory establishment and environmental clearance certification process is exhibited in Appendix D.

3.3 Background to Government and CSR

Achieving the goals of sustainable development depends, to a large extent, on governance practices, particularly the effective implementation of national

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13 Can be referred to in short as Environmental Act promulgated for environmental protection which created NEB, PCD,

development strategies (NSDS) (OECD 2007). The Thai government discerns the importance of business participation, and in response,[14] conceived several CSR organizations and supporting activities. This section demonstrates main government CSR organizations, specifically in relation to the environment, background to current supporting activities, training, seminars, and incentives such as CSR and environmental friendly best practice awards. Public-private partnership'[15] between the state with private entities and non government organization has enhanced policy' effectiveness in Thailand, activities such as delivery of public services, development projects and programmes.

3.3.1 Government CSR Organizations

Corporate Social Responsibility Promotion Center:

Established by the Ministry of Social Development and Human Security (MSDH), Office of the Permanent Secretary, Office of the National Commission on Social Welfare with an aim to strengthen social welfare structure to better protect, prevent and develop sustainable livelihood for communities, the center promotes private sector participation, consumer and people awareness, as well as monitor and evaluate state social welfare.[16]

National Center for Giving and Volunteering (NCGV):

Ministry of Social Development and Human Security (MSDH) and Office of the National Commission on Social Welfare established NCGV in response to

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14 Recalling the enactment of environment laws, policies, and organizations as well as integration in national development plan since the 1900c.

15 The term refers to forms of cooperation between public authorities and the world of business which aim to ensure the funding, construction, renovation, management or maintenance of an infrastructure or the provision of a service (EUROPA 2007).

16 As according to documents from "Business and State Affair and CSR" seminar on 19th July 2007, Bangkok, organized by CSR Promotion Center.

"Giving and Volunteering National Campaign" on 4th December 2007. The organization aims to promote social-responsible consciousness in Thai society as well as facilitate volunteer activities for the public such as an information center www.konjaidee.com (available only in Thai),

The Stock Exchange of Thailand (SET):

Corporate Social Responsibility Center is a knowledge based center that provides consultancy services and CSR awards for the past four consecutive years such as, Top Corporate Governance Report Awards, Corporate Social Responsibility Awards, and International Relation Excellent Awards, which include as many as 34 awards in 2004 and 42 in 2006 (SET 2007).

Corporate Social Responsibility Institute (CSRI):

The organization was developed by SET in September 2007 under the belief that CSR helps strengthen business management, sustainable growth, and competitiveness in the global market. CSRI is a knowledge center that aims to raise public-private awareness and be a focal-point for harnessing private entities participation in protecting and improving society and environmental well being.

3.3.2 Example of Non-Government CSR Organizations

Thai Business Council for Sustainable Development (TBCSD):

Established in November 1993 by Mr. Anand Panyarachun, former Prime Minster of Thailand, TBCSD is a strategic non-governmental organization that aims to promote environmental awareness within the business sector under the concept of "sustainable development". The organization's current membership includes 30 high profile business leaders from 28 companies (both Thai & MNC).

The Thai Environmental Institute (TEI):

Founded in May 1993 to provide secretariat support for the TBCSD on the belief that partnerships are the most effective approach to achieving a more sustainable way of life, TEI advocates a participatory approach to shared environmental responsibility and helps formulate environmental directives and link policy with action to encourage sustainable environmental management in Thailand by working closely with the private sector, government, local communities, other civil society partners, academia and international organizations (TEI 2007).

Thaipat Institute:

A non-profit organization under royal patronage which propagates and facilitates sufficiency economy related activities and CSR concepts to the private sector with their target group ranging from community municipal activities, other non-profit and non-governmental organizations and business corporations. The institute also coordinates with four other development organizations under royal patronage; PUEY Community Learning Center, Rural and Social Management Institute, School for Life and Thai Ruralnet.

Social Venture Network Thailand (SVN):

SVN is a nonprofit network developed by Sulak Siwaraksa[17] in 1991 with a commitment to building a just and sustainable world through business. And learning from each other through coordinating activities and exchanging practical experience. Members comprises of social-entrepreneurs, enterprises, academics, non-profit and government organizations as well as business corporations that assist them in developing their businesses and becoming more socially and environmentally responsible.

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17 A prominent social science scholar in Thailand. He is an activist, writer, professor and advisor to various organizations from government to both domestic and international non-government organizations. His most prominent works are on Buddhism and Social development.

Population and Community Development Association (PDA):

PDA was founded in 1974 by Mr. Meechai Viravidya[18] as a non-governmental organization that works to improve the lives of the rural poor. PDA woks closely with business corporations, helps form social programmes and arranges activities. PDA recruits and trains residents of villages and urban neighborhoods to provide information on family planning using community-based approach, and their activities include primary health care, HIV/AIDS education and prevention, water resource development and sanitation, income-generation, environmental conservation, promotion of small-scale rural enterprise programs, gender equality, youth development, and democracy promotion.

3.3.3 Example of CSR Promotion Activities

MSDH and NCGV launched 'Giving and Volunteering Society National Campaign' on 4th December 2007[19] with three main proposed strategies. To raise public 'giving' consciousness in honoring H.M King's 80th birthday anniversary in the year 2007, to induce state policy supportive integration, and produce measures that facilitate volunteer activities for the government, private sector and public at large. The MSDH supervises the public consciousness campaign; the Ministry of Finance (MIF) is to form financial policies to support campaign implementation, allowing tax exemption to social responsible private entity[20] as well as donation from entities and individuals. The Ministry of Education and Ministry (MOE) of Interior proposed to recalibrate the educational curriculum to include social-awareness and contribution into their courses. An example of the proposed activities is that all officials in every government agency are allow to participate in volunteer activities

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18 A founder and owner of condom brand "Meechai" in Thailand since 1970. He left his family to run the business to establish PDA to continue his work on improving the lives of the rural poor. He was awarded one of the Asia Best 50 people in 2007 by Times Magazine.

19 Documents and information from the 3rd annual meeting conference held at Bangkok Convention Center, 4th December 2007.

20 Translated from Thai "องค์กรการกุศลสาธารณะ". Criteria detail is however not provided at the conference.

for five of their working days per year, and each private entity can manage their organization's employee volunteer work-leave with additional choice to use as tax exemption.

With an aim to raise public awareness as well as promote social and environmental good practices under the concept of CSR, various organizations and institutions continuously hold workshops, seminars and conferences to form a supporting network and promote knowledge building for both suppliers and consumers as well as provide training programmes and consultancy services. Workshops on Standards and Conformity Assessment Activities organized by the National Electronic and Computer Technology Center (NECTEC)[21] in conjunction with the American Chamber of Commerce in June 2007 had an aim to build national science and technology capability. A two day seminar on United States products standards requirement and how it can benefits business and facilitates trade/ ensure safety, workshop covered a wide range of products from software, telecommunications, EE and, ICT products (NECTEC 2007).

The Corporate Social Responsibility Promotion Center and the Thai Chamber of Commerce organized a "Business and State Affair and CSR" seminar in July 2007 for the pubic with distinguished speakers from the government (TISI), academic institutions as well as the private sector (Siam Cement Group) advocating CSR as a concept. This featured the principles, development, approaches, application and mutual benefits of CSR (MSDH 2007). SVN regularly organizes a visit to business sites and locations to share and exchange knowledge, experiences, as well as creating a network to help strengthen business capabilities to become more socially and environmentally responsible. For example, a visit to a community energy development center "Yean-Asom" promoting efficient use of energy, and self-

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21 NECTEC was established by the Ministerial Cabinet in Sep 1981 and developed under the Science and Technology development Act (1991) which

sustainability in Mae Hong Son province, Northern of Thailand was organized on 15th July 2007.[22]

Most recently, CSRI in cooperation with Thaipat Institute launched a "6 CSR trends in 2008" public announcement on 29th January 2008, to publicize analysis of propensity and directions of CSR future trends in Thailand. The event was attended by various organizations as well as the media, accentuating CSR concepts to business entities, government and the public at large.

Government organizations and agencies also grant various best and good practice awards and certificates to business corporations who met such required criteria. According to phone interviews[23] with DIW and PCD officials, awards' criteria are subject to specific programmes and supervising organization discretion which are undertaken in accordance with national development, funding, and urgent issues at the given time. SET has been granting annual CSR Awards since 2003, PCD granted seven "Best Environmental Practice Awards" in 2007, and recently MOI initiated "Chaopraya Project" to promote water conservation in the river basin in response to increasing concern. The project is carried out by MOI supervising organizations (DIW, PCD) and the Ministry of Natural Resources and Environment (DEQP, ONEP).

3.4 Background to EE Domestic Products Standards

In Thailand, the Industrial Standards Institute (TISI) is a focal point for standardization for international recognition in response to national policies, business and society's concerns. TISI standardization covers products specification, production process and testing, in order to protect consumer rights as well as environment and natural resources, and to strengthen business capabilities for sustainable competitiveness. Upon the recognition of the intensity of competition in the global

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22 See www.svnasia.org (only available in Thai).

23 On 8th January 2008.

market through non-tariff barriers, TISI also supports and promotes knowledge building and technological research and development (R&D) to ensure fair trade and eliminate trade barriers caused by standardization measures

3.4.1 Categorization of Products Standards in Thailand

Product standards are categorized according to International Certification for Standards (ICS).[24] The general term 'standard' is applied to all normative documents such as standards, technical reports, standardized profile, technical specifications and regulations, guides, codes of practice, technology trend assessments, etc. and the draft of such documents (ISO 2005: ICT). The ICT is a hierarchical classification consisting of three levels: level 1 covers 40 fields of activities in standardization[25]; the field are then subdivided into 392 groups (level 2); each group branches into sub-groups defined by specific issues and processes. Product standards are then classified according to their subject: for example, EE products-related standard 43.060.50: categorized under index field 43 (road vehicle engineering), group 060, sub group 50 , the "Electrical Equipment, Control System" standard (ISO 2005: ICT).

In Thailand, standardization is categorized and classified in accordance with international ICT rules by index, grouping with little modification in sub-sections with two main applications: Industrial products standards (2,722), and community products standards (1,351) (TISI 2008). There are 33 compulsory standards in Electrical and Electronic engineering. [26] Industrial products license application is shown in Appendix E.

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24 Also used by ISO system: a structure to catalogue international, regional and national standards as a basis for standing order systems, also facilitate harmonization of information and ordering tool

25 E.g. road vehicles, engineer, agriculture

26 OTOP products such as local wine, coconut products, hand-made silk, chili paste http://www.tisi.go.th/standard/comp_eng.html

3.4.2 Industrial Labeling

. Under the Ministerial regulations notification dated 29 November 2007 industrial labels are to reduce from five to two labels. This is to facilitate less complex application process and costumer clarification (TISI 2008).

Present

Mandatorv TIS mark

Voluntary TIS mark

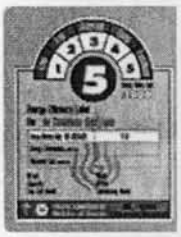
Prior 5 TIS marks:

- Mandatory
- Voluntary
- Work Safety
- Electromagnetic comparability (EMC)
- Environment

'S

OTOP mark

(Community product)



Energy Efficiency Label

Example of Certification Organization in Thailand:

Underwriters Laboratories

Leadership 2010

Management System Certification Institute (Thailand)

Product safety standards developers and certification organizations provide services ranging from product safety testing and certification, management registration (e.g.TIS, ISO, ROHs, WEEE), performance testing, compliance solutions, inspection and training services.

3.4.3 Thai Eco-Labels

TGPN

The Thai Green Label Scheme was initiated

by the Thailand Business Council for Sustainable Development (TBCSD)[27]. It is an environmental certification awarded to specific products that are shown to have minimum detrimental impact on the environment in comparison with other products serving the same function. It was formally launched in August 1994 by Thailand Environment Institute (TEI) in association with the MOI (TEI 2007). The scheme aims to raise awareness of producers and consumers in order to increase efficient resource use and reduce waste gemeration, promote the concept of resource conservation, pollution reduction, and waste management. There are currently 39 products eligible for eco-labels, including EE products such as refrigerators, computers and mobile phones. Currently, 66 out of 161 awarded a "green label" as of year 2006 (TEI 2007).

With the realization of life-cycle assessment (LCA) that "Greening the Supply Chain (GSC)" model (TGPN) aims to facilitate process that allows buyer companies to reach out to small- and medium-sized suppliers to improve their environmental management and more efficient use of resources which led to increased productivity and better product quality (TEI 2007). The project delivers technical assistance and training to manufacturers on basic environmental management and efficient use of resource. Result from applied project have found that GSC not only generates environmental benefits and reduce occupational health risk, but also offers opportunities for cost reduction and enhances their competitive advantage.[28] Procedure of the development for Thai Eco-label product criteria is illustrated in Appendix F.

The green label criteria have been developed under the guidance of the following principles: An environmental assessment of the product using life cycle consideration, taking into account all aspects of environmental protection, including the efficient use to row materials and focusing on opportunities to achieve significant

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27 Established in November 1993 by Mr. Anand Panyarachun, former Prime Minster of Thailand. With objective to promote environmental awareness within the business sector under the concept of "sustainable development", current membership of 30 high profile business leaders from 28 companies (both Thai & MNC) (TBCSD 2007).

28 TGPN is a model project for Development of Greening the Supply Chain in Thailand. Its aim is to promote and support LCA and eco-design and management application to manufacturers and suppliers.

reductions in detrimental environmental impacts (TEI 2007). For examples, reduction of waste production, and minimization of energy and water consumption. Including assess capability to meet proposed criteria with reasonable process modification and or improvement.