TAX INCENTIVES ON WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT MANAGEMENT IN THAILAND[*]

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ABSTRACT

The living standard of today's world has come a long way with technological developments whereby increasingly advanced technology trends to upgrade and change the out-of-date electronic devices to new and more comfortable electronic device to support daily life. It is increasing at an enormous amount of end-of-life electrical and electronic equipment (EEE) which eventually becomes electronic waste (e-waste)/ waste electronic and electrical equipment (WEEE). The enormous rate of WEEE stream that has been generated is fueled by the rapid economic growth and increase demand for EEE is becoming global crisis. Regarding to the environmental management plan, it objects to conserve and recover the resources and environmental quality. The main objectives are to conserve and recover the soil, forest and water resources and water pollution, air pollution, sound pollution and the current waste situation. However, pollution caused by the hazardous wastes has not yet been considered as an important matter. The reason is because Thailand does not have direct or specific legal measures and legislations to manage and control the WEEE and the existing legal measures on WEEE management are still not effective. Consequently, this poor management of WEEE has led to the danger of environmental and human health because the materials contained in the EEE consists of heavy metals such as lead, mercury, cadmium, Brominated Flame Retardants (BFRs), plastics, beryllium which are directly and indirectly affecting the environment and including short-term and long-term human health. Even though Thailand is now trying to announce legal measures in controlling the generating of WEEE at the present, these measures might probably be close to the standard of WEEE controlling and management but it is yet to be covered on how Thai government could be more assertive in conserving natural resources and preventing hazardous effects through reusing, recycling and disposal of WEEE by the current inefficient waste disposal.

In Thailand, the legal measures on WEEE management and other existing provisions may not be efficient enough to support the government in dealing with the WEEE stream problem presently due to the indirect legal provisions applicable. In addition, most of the relevant legal provisions on the matter which are being enforced could be considered as control and order strategy which in order to conserve the environment may require more action than the standard requirement. In conserving the environment, the government needs the individuals' participation by using tax incentives measures to persuade the individuals to join the environmental conservation campaign. Moreover, the government should provide proper legal measure to monitor and manage WEEE problem in WEEE life-cycle. Regarding

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to this, there are provisions stipulated in the Draft of Electrical Equipment Management and Electronic and Other Wastes Act B.E. …, which introduced by the Pollution Control Department, that would be a solution to tackle the WEEE problem.

Therefore, this thesis will go through international, foreign and domestic legal principles and regulations relating to the WEEE management and analyze the possibilities and enforceability of the relating principles in handling the problems, including method in solving and improving any relating legal principles to WEEE, especially on tax and economic measures for applying and providing incentives for electronic waste management process.

Keywords: Electronic Waste, Waste Electronic and Electrical Equipment, E-waste, WEEE, Incentives, Tax Incentives.

บทคัดย่อ

ด้วยสถานการณ์ของโลกในปัจจุบันได้พัฒนาไปอย่างรวดเร็ว เทคโนโลยีใหม่ๆ ที่ทันสมัยและได้รับการพัฒนาเพื่อตอบสนองความต้องการของผู้บริโภคที่ต้องการอุปกรณ์อิเล็กทรอนิกส์ที่ทันสมัยและสามารถอำนวยความสะดวกในการใช้ชีวิตประจำวัน เมื่อความต้องการของผู้บริโภคต่ออุปกรณ์อิเล็กทรอนิกส์มีมากขึ้น ผู้ผลิตก็เพิ่มปริมาณการผลิตมากขึ้นตามไปด้วย และเมื่อมีการผลิตที่มากขึ้นส่งผลให้การแข่งขันในตลาดอุปกรณ์อิเล็กทรอนิกส์มีมากขึ้นตามไปด้วย อย่างไรก็ตามความทันสมัยและความสะดวกสบายจากอุปกรณ์อิเล็กทรอนิกส์เหล่านี้ ไม่ได้นำมาซึ่งด้านดีเพียงอย่างเดียว เนื่องจากเมื่ออุปกรณ์อิเล็กทรอนิกส์เหล่านี้หมดอายุการใช้งานหรือไม่เป็นที่ต้องการของผู้ใช้อีกต่อไปก็จะถูกทิ้งและกลายเป็นสภาพเป็นซากผลิตภัณฑ์เครื่องใช้ไฟฟ้าหรือที่รู้จักกันในชื่อ ‘‘ขยะอิเล็กทรอนิกส์’’ ซึ่งก่อให้เกิดปัญหามลพิษไม่เพียงแต่เฉพาะในประเทศไทย แต่ขยะอิเล็กทรอนิกส์ดังกล่าว กลายเป็นปัญหาใหญ่ในสังคมโลกที่ซึ่งเป็นที่น่ากังวล และการแก้ไขปัญหาดังกล่าวเป็นเรื่องที่ทุกคนจะต้องให้ความร่วมมือไม่เพียงแต่ภาครัฐ แต่รวมไปถึงผู้ผลิตและผู้บริโภคด้วย

เนื่องจากซากผลิตภัณฑ์ฯ หรือขยะอิเล็กทรอนิกส์ มีอัตราเพิ่มขึ้นอย่างรวดเร็วเพราะปัจจุบัน การแข่งขันในตลาดอุปกรณ์อิเล็กทรอนิกส์มีอัตราการแข่งขันที่สูงมาก การออกแบบผลิตภัณฑ์ส่วนใหญ่จะมุ่งเน้นไปที่ความสวยงามและความทันสมัย แต่ไม่ได้คำนึงถึงความคงทนและความเป็นมิตรต่อสิ่งแวดล้อมเท่าที่ควร ดังนั้น อุปกรณ์อิเล็กทรอนิกส์เหล่านี้จึงมีอายุการใช้งานที่สั้น โดยเฉลี่ยประมาณสองปี และเมื่อหมดอายุการใช้งานก็กลายเป็นขยะอิเล็กทรอนิกส์ การกำจัดขยะอิเล็กทรอนิกส์ก็กระทำได้ยากเนื่องจากอุปกรณ์อิเล็กทรอนิกส์ส่วนมากประกอบไปด้วยสารเคมีอันตรายที่ส่งผลกระทบต่อสิ่งแวดล้อมและสุขภาพของมนุษย์ ปัจจัยต่างๆ เหล่านี้ทำให้ทั่วโลกหันมาให้ความสำคัญกับการจัดการซากผลิตภัณฑ์ฯ หรือขยะอิเล็กทรอนิกส์อย่างครบวงจร โดยเริ่มตั้งแต่การวิเคราะห์ส่วนประกอบที่เป็นมิตรต่อสิ่งแวดล้อมไปจนถึงการนำกลับมาใช้ใหม่ การใช้ซ้ำ การแยกชิ้นส่วน และการกำจัดอย่างถูกวิธี ทั้งนี้รวมถึงการออกมาตรการต่างๆ เพื่อสนับสนุนและส่งเสริมการจัดการขยะอิเล็กทรอนิกส์อย่างครบวงจร

วิทยานิพนธ์ฉบับนี้จะนำเสนอสถานการณ์ปัญหา แนวคิดและวิธีการทางกฎหมายในการจัดการปัญหาการจัดการซากผลิตภัณฑ์ฯ หรือขยะอิเล็กทรอนิกส์ในต่างประเทศและในประเทศไทย

คำสำคัญ: ขยะอิเล็กทรอนิกส์, มาตรการส่งเสริม, การจัดการขยะอิเล็กทรอนิกส์

Introduction

The living standard of today's world has come a long way with technological developments whereby increasingly advanced technology trends to upgrade and change the out-of-date electronic devices to new and more comfortable electronic device to support daily life. It is increasing at an enormous amount of end-of-life electrical and electronic equipment (EEE) which eventually becomes electronic waste (e-waste)/ waste electronic and electrical equipment (WEEE). The alarmingly fast expansion rate of e-waste that has been generated is fueled by the rapid economic growth and increase demand for EEE or consumer electronic devices (CEDs) which emerging as a global crisis. Due to the hazardous effects and toxicity of e-waste, the problem has become a serious concern.[1]

1. Definition of E-waste or Waste Electrical and Electronic Equipment

Electronic waste or e-waste is regulated under the 1989 Basel Convention. The Basel Convention was mainly established as a mechanism to restrict movement of hazardous wastes and to minimize the generation of hazardous substances contained in e-waste.[2] The definition of "e-waste" has been given by the Basel Action Network (BAN) which defines e-waste as "encompasses a board and growing range of electronic devices ranging from large household devices such as refrigerators, air conditioners, cell phones, personal stereos, and consumer electronics to computers which have been discarded by their users[3]"

However, the e-waste is officially called as Waste Electrical and Electronic Equipment or WEEE globally. The definition of "WEEE" is stipulated under the Directive 2012/19/EU Of The European Parliament and Of The Council of 4 July 2012 on waste electrical and electronic equipment (WEEE) which means electrical or electronic equipment which is waste within the meaning of Article 3(1) of Directive 2008/98/EC, including all components, sub-assemblies and consumables which are part of the product at the time of discarding.[4] In light of this study, the term "e-waste" shall be referred as "WEEE" synonymously.

In Thailand, the definition of WEEE is not clearly stated in any existing Thai legislations. However, the Draft of Waste Electrical and Electronic Equipment Management and Other Wastes Act B.E. … ("the Draft") which was introduced by the Pollution Control Department stipulates the definitions of EEE[5] and WEEE[6] in the Section 4. The Draft is

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[1] Saphore J.M., Nixon H., Ogunseitan O.A. and Shapiro A. A., (2009), *How much e-waste is there in US Basements and attics? Results from a national survey*, **Journal if Environmental Management**, 90.

[2] Zoeteman B. C. J. and Krikke H. R., (2010), *Handling WEEE waste flows, on the effectiveness of producer responsibility in a globalizing world,* **International Journal of Advanced Manufacturing Technology**, 47, pp 415-436

[3] Puckett J., Westervelt S., Gutierrez R. and Takamiya T., (2005), *The digital dump. Exporting re-use and abuse to Africa*, **Report from the Basel Action Network**, Seattle.

[4] Article 3 (e) of Directive 2012/19/EU Of The European Parliament And Of The Council Of 4 July 2012 on waste electrical and electronic equipment (WEEE).

[5] The Draft of Waste Electrical and Electronic Equipment Management and Other Wastes Act B.E. … Section 4 "*Electrical and Electronic Equipment means the product that needs electric current or*

currently during processes of enacting the law. According to the Section 4 of the Draft, it stipulates the definition of EEE and WEEE which relate to the global terms. In regards to the definitions of EEE and WEEE, this will help the government to separate WEEE from solid waste and infectious waste for proper management of WEEE since it has to be especially conducted separately from other types of hazardous waste.

2. Problems of WEEE

Due to consumer's demands to have an ever comfortable and convenient daily life, the Information and Communication Technology (ICT) has generated the fast expansion rate of electronic and electrical equipment manufacturing, with advanced technology and application features[7], fueled by the rapid economic growth and increasing consumer's demand which is causing the shorter lifespan of electronic and electrical products.[8] The bloom of advanced and well-designed electronic and electrical equipment causes the upcoming WEEE stream which keeps dramatically increasing and is becoming the world crisis.

Moreover, the materials which are contained in EEE products mostly are considered as hazardous substances that may be harmful to the environment and human health if the disposal of WEEE is not conducted properly. Regards to the hazardous substances in EEE, EEE manufacturing has created in hazardous results such as cancer, severe hormonal disorders, respiratory problems, muscle weakness and also anatomical effect. In regard to Thailand's State of Pollution Report 2013 of Pollution Control Department, the report found that in 2013, the amount of 368,314 tons or 65.4 percentages of EEE were thrown away from households. WEEE was dumped by mixing with other solid wastes and most of the WEEE that is found in the household area was battery, cell phones, lubricant oil, mobile batteries, and fluorescents.[9] Hence, the WEEE was dumped mixing up with other solid wastes. This behavior of the household sector caused the government to spend a high amount of government budget to separate WEEE from other wastes. Besides spending the budget in separation of wastes, the government has also spent a big amount of the budget in order to provide medication and treatment for citizens and restoring the environment. In this regard, we could understand that the problems and the costs spending in WEEE management are connected to the behavior of people and unprofessional management.

3. WEEE Management Methodology

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magnetic field to work and if it is improperly managed when it becomes Waste Electrical and Electronic Equipment, it would cause negative effect to environmental and human health…"

[6] The Draft of Waste Electrical and Electronic Equipment Management and Other Wastes Act B.E. … Section 4 "*Waste Electrical and Electronic Equipment means Electrical and Electronic Equipment, inclusive any part of EEE that expired of lifetime using or abandoned or intended to be discarded by its owner*".

[7] Ray A., (2008), *Waste Management in developing Asia, Can trade and cooperation help?* **The Journal of Environment & Development**, 17(1), pp 3-25

[8] Widmer R., Oswald-Krapf H., Sinha-Khetriwal D., Schnellmannc M, and Heiz Boni H., (2005), *Global perspectives on e-waste*, **Environmental Impact Assessment Review**, 25, pp 436-458

[9] Udomsak Sinthipong. **Environmental Laws, 3rd edition**. (Bangkok: Winyuchon, 2013), p. 437-438

Referring to the management of WEEE disposal, there are methodologies in handling WEEE such as sorting, separation, storage, collection, incineration, landfills and treatment through biological process, physical-Chemical process. Besides the methodologies of WEEE management, there is an approach to tackle the WEEE stream which is Economic Instruments. The Economic Instruments is a policy to address environmental taxes and charges to the production and consumption in WEEE stream reduction. It is an alternative method for the government to address taxes into EEE production and changing consumer's behavior in consumption.

Environmental taxation is a well-known method which generally being used in worldwide environmental management. The government could use the environmental tax to minimize the wide range of harm to environment, such as waste disposal, by addressing the taxes to the polluters. The environmental taxes shall leave individual sectors to freely analyze on their liabilities on paying taxes. An environmental tax generally should be levied as directly as possible on the pollutant or action causing the environmental damage. Using the tax to increase the market cost of the polluting activity helps to incentivize the full range of potential abatement options: cleaner production processes; end-of-pipe abatement (i.e., measures to capture and neutralize emissions before they enter the environment); adoption of existing products which cause less pollution; development of new, less-polluting products; and reducing output or consumption.[10]

4. International and Foreign Laws on WEEE Management

The United Nation Environmental Program (UNEP) is providing guidance to policy-makers in developing countries on development of indicators that measure progress towards more sustainable patterns of consumption and production.[11] According to the economic growth and development patterns, it ensures that environment needs the Sustainable of Consumption and Production (SCP) concern.[12]

SCP has been defined as "The Production and use of goods and services that respond to basic needs and bring a better quality of life, while minimizing the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardize the ability to meet the needs of future generations."[13] This shows that the world is concerned on the environmental crisis on using hazardous substances in production. And now the world needs to reduce or limit the use of hazardous substances which would become WEEE in the final stages of EEE life span.

In regards to the global requirement for SCP which is introduced by UNEP, the SCP requires a fundamental rethinking of the way societies produce, use and dispose of products. The resource-intensive consumption and production patterns of the developed countries

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[10] Organization for Economic Co-operation and Development. **Environmental Taxation A Guide for Policy Makers**

[11] United Nations Environmental Program (UNEP). *SCP Indicators for Developing Countries*. **A Guidance Framework**. Introduction. p. 2

[12] *Id.*

[13] Noewegian Ministry of Environment, Olso Symposium, 1994.

cannot be replicated worldwide.[14] The rethinking requires a combination of radical innovation in terms of efficiency and connectivity that, together, will result in the transformation required to ensure the maintenance of critical natural capital.[15] In the context of growing population and increased consumption, particularly in the newly industrialized developing world, this declining natural capital stock will be insufficient to sustain current consumption and production patterns.[16]

Referring to the SCP, EU has adopted the SCP policy and has set up policies which aim to reduce environmental impact by planning long-term approaches. The purpose of setting up these policies is to turn in to a recycling society and to minimize the WEEE stream. Regarding to the minimization of WEEE, the methods of reusing, recycling, recovering and its disposing, incinerating and landfills are methods of the policies under the management of individual sectors and those processes cost financial and environmental expenses.[17] EU has two main legislations that considered as guideline for the WEEE management which are Directive 2011/65/EU (RoHS 2 - Restriction of Hazardous Substances) and Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE). Under the Directives, WEEE management systems must enable WEEE to be collected separately from other waste streams, and take-back schemes must enable consumers to return end-of-life electronics free of charge**.**[18] The Directive sets compulsory targets for collection and recovery of WEEE, with a combined target for recycling and component reuse. It requires prioritization of reuse over recycling wherever possible, as reuse is up to twenty times more environmentally beneficial than recycling.[19] The WEEE Directive makes producers financially responsible for the end-of-life management of their equipment. This is meant to encourage eco-design, where producers incorporate lifecycle thinking into product design by, for instance, reducing or eliminating toxic inputs, or increasing the product's ability to be reused and/or recycled.

Similarly, Japan, as the world best advanced technology developer, has become the leading country in WEEE stream reduction. In regards to WEEE management under the Japanese legislations, The WEEE management method in Japan is exercised by complying with the policy makers by requesting retailers to collect the EEE and postal networks for computers as of the kinds. The main purpose inspired by the idea that smaller item like cell phones, computer hardwares or small electronic devices are enable and easy to transport by postal networks. Moreover, the method provides convenient to those consumers by not going to the assigned WEEE drop-off location. This WEEE management method shows that the Japan regulations regarding to this study, at the same time, comply the both producer and consumer responsibilities to manage the environmental crisis in good conditions. Accordingly, the consumer shall bear the cost of recycling WEEE and the producer shall bear the cost of operation processes, including the recycling and collecting his own recycling products. Moreover, producer responsibility as mentioned shows that the model of take-back

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[14] Marrakech Process. **Third International Expert Meeting (June 2007)**. *Background Paper 2: Key Issues of Sustainable Consumption and Production*.
[15] United Nations Environmental Program (UNEP)
[16] *Id.* at p.9
[17] European Commission. *Being wise with waste*: **the EU's approach to waste management**
[18] Savage et al. 2006. *Implementation of the WEEE Directive in the EU*.
[19] **Computer Aid International. Report 2**: *WEEE Ver. 2.0 - What Europe must do*

system is capable of distinguishing brands and properties of the electronic devices by using barcode system. The producer of each product can identify the quantity of his recycling products in the market and can monitor to collection method. The take-back method shall be considered as create incentives for eco-designs[20] because of extensive producer control on the recycling operations. Not only the take-back system can monitor the electronic devices status, but also can guarantees fair cost allocation among recycling producers. The product design could be influence to the recycling producers because the laws and regulations presently pay most attention on recycling method whereby the other method as reuse method shall not be promoted for privileges as the recycling does. Thus, the producers shall have to design the products to be fully recycled regarding to the recycling cost reduction.

5. Thai Laws on WEEE Management

In Thailand, the legislations concerning on WEEE management may not be efficient enough to support the government in dealing with the WEEE stream currently. Even though Thailand has legislations such as Factory Act B.E. 2535, Public Health Act B.E. 2535, Hazardous Substances Act B.E. 2535 and Enhancement and Conservation of National Environmental Quality Act B.E. 2535, but the legislations are not directly governing to reduce the WEEE stream. Thus the legislations govern in broad range of pollution control which opposites of the Directives of EU and the Japanese legislations that aims to reduce the quantity of WEEE stream by addressing the policies of reusing, recycling and recovering WEEE. Referring to the Enhancement and Conservation of National Environmental Quality Act B.E. 2535 that generally applies to industrial and infectious waste management through environmental planning and environmental quality standards and monitoring. However, the law does not emphasize on WEEE management but it aims to control and reduce pollution which would be applied when the pollution has been occurred. Nevertheless, the legislations are not efficiently enforced which it is found that when any damages arisen from hazardous substances or hazardous waste by producing, recycling, treatment, disposal and transportation, there is no legal measure to enforce the non-compliance to be fully liable for the damages. Despite the Enhancement and Conservation of National Environmental Quality Act B.E. 2535 stipulates the strict liability to the person who allows the leakage or contamination of pollution that causes of death, bodily harm or health injury of other person or causes damage to the property of any person (private or the state) whether it is willfully or negligently conducted, the person shall be liable and has to compensate to the injured or damaged person all expenses including government service for the clean-up of the pollution[21], but the environmental litigation is not easy for the injured or damaged person to prove that the cause has been arisen from such pollution leakage contamination.

However, the Pollution Control Department issued the Draft by concerning on managing the whole life-cycle of WEEE i.e. starting from environmental friendly design (eco-design which could extend the EEE lifetime, increasing durability and easy to separate its parts for reuse, recovery and recycle), take-back system, collection system and recycling

[20] Tojo, N. 2004. *Extended Producer Responsibility as a Driver for Design Change: Utopia or Reality?* **IIIEE Dissertations 2004:2**, Lund University.
[21] The Enhancement and Conservation of National Environmental Quality Act B.E. 2535, Section 96

process which would be considered as the prevention solution on WEEE management since the starting process. The extended producer responsibility (EPR) is also considered under the Draft provisions by assigning the producer responsibility for the cost of disposing electronic products and to produce the EEE as green product concerning on the method of recycle, reuse and recovery. The Draft also provides the provisions relating the WEEE management and the collection methodology which could help reduce the thrown away of EEE from individual sectors and prohibit the producer to deny its responsibility after producing the EEE.

Conclusion

In conclusion, the existing legal provisions in Thailand, the whole process of WEEE management in Thailand appears to have no direct legal provision in regards to WEEE management. The legal provisions being enforced shall be considered as indirect provision whereby the definition of WEEE has not yet been defined in any existing law. Since the definition has not yet been stipulated, it would be difficult for the responsible department of the government to exercise its managing plan of WEEE management. Furthermore, the conflict of duty is in doubt because of the many indirect provisions that are providing authority to the different departments. Moreover, the existing provisions are mostly in command and control strategy; therefore, the managing of WEEE could be difficult to reach the environmental conservation aspect. In contrary, if the government addresses the incentives measure, specifically the tax measure, from the manufacturing process up to the disposal or recycling processes, this could persuade not only the industrial sector, but also the household sector, to participate in environmental sound management. Moreover, in regards to the Draft of Waste Electrical and Electronic Equipment Management and Other Wastes Act B.E. …, there is a provision stipulated on tax incentives[22] which sounds effective enough to be applied. Moreover, Section 34 also provides the general scope of tax incentives which can be issued under the ministerial regulation later on. Therefore, it is necessary to enact the Draft to tackle the WEEE streams in Thailand.

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