

Green ICT Practices and Challenges: Electronic Waste Disposals Steps Awareness in Overcoming Environmental Erosion

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Abstract. This paper presents the preliminary results of the observation and survey conducted by the researchers to gain the statistics of disposals of ICT or electronic waste and peripherals in the implementation of Green ICT practices among Malaysian household and organizations in overcoming environmental erosion. Thus with the results through the survey done, researchers conclude the list of Green ICT challenges and the unknown steps need to be taken among Malaysian in the ways of disposing ICT waste and peripherals. This paper is about to open one's mind and heart to take seriously the issue, in order to 'green up' the country due to the chronic climate changes in the whole world today.

Keywords: Electronic waste, e-waste, ICT equipment, Green ICT, disposal, challenges.

INTRODUCTION

Malaysia Green Technology policy is launched on 24th July 2009 by Kementerian Tenaga, Teknologi Hijau dan Air (KETTHA). The basic purpose is to inform that Government is emphasizing the technology and yet preserving the earth for future sustainable green country. Under these policies, program initiatives and activities undertaken in order to make sure the natural resources and the natural environment can be conserved and improved the country's economic development.

Green technology refers to the development and application of products, equipment and systems to protect the environment and the natural environment and minimize or reduce the negative effects of human activities (Siti Rohani 2013). Realizing this concept is crucial, the energy used in the product and ICT equipment can be reduced in a number of effective measures in order to support the effectiveness of this technology.

Green ICT refer to the practice of production, use and disposal of computers, servers as well as the accessories such as monitors, mice, printers and networking equipment for efficient and effective ways by giving minimum impact or no impact at all to the environment (MAMPU 2010). Not to forget the use of smart phones, mobile phones, tablets and appliances also contribute to environmental pollution if it is not handled in the right way. Though this is a

common phenomenon but, humans do not realize it could cause a very negative impact on the efforts to preserve the environment.

There are three steps in implementing the Green ICT concept. There are, Acquisition Step, The Use of ICT Equipment Step, and the Disposal Steps. These three steps used being neglected by humans. Whereas to keep the environment healthy, as the ICT end user, one's must have Green ICT awareness on how to make it happen.

THE GREEN ICT CHALLENGES

This is the stage in which the disposal process should be disposed in accordance to the procedure to consider conservation of the environment. Electronic waste or e-waste that needed to be disposed shall comply to the procedure outlined by PekelilingPerbendaharaanBilangan 5 Tahun 2007 "TatacaraPengurusanAsetAlihKerajaan", and taking into account nature conservation about green practices and whether it can still be used and recycled again.

However, lack of awareness and implementation campaign does contribute to the failure of Green ICT in a country. Kogelman (2011) in her research found out that over a third organizations in Europe do not implement green ICT practices, and that the most prominent reason given was that there is no official legislation in their countries enforcing Green ICT practices. This applied to Malaysia too.

A Green ICT strategy has to start by increasing public knowledge about ICT and their effects on the environment, and by supporting environmental-related ICT skills and education. Computer scientists and communication technology professionals have to go green, in order to create awareness and culture that has to be encouraged. This is the main key to foster Green ICT. However, this effort is in a very slow progress compare to the increasing number in the use of ICT technology among Malaysian.

NEGATIVE IMPACT OF ICT UNCONTROLLED PRODUCT WASTE

The question of "While human eagerness for electronics and technology keeps growing, what happens to the old stuffs?" should be asked to each individual. This is to create awareness on how to start managing the electronic gadgets once they are done with it. According to wirefly.com, cell phone users get a new cell phone every 18 months averagely. In U.S, more than 100 million cell phones being tossed in the trash every year. EPA reported that over 112,000 computers are discarded every single day. 20 million televisions are dumped in the US every year. It is reported that only 13% of these electronics waste are disposed and recycled properly.

When electronic waste is dumped in a landfill, water flows through the landfill and picks up trace elements from these dangerous minerals. Eventually, the contaminated landfill water will get through the landfill layers. When it reaches natural groundwater, it introduces lethal toxicity. This will cause health risks range from kidney disease and brain damage to genetic mutations. Scientists have discovered that Guiyu, China, has the highest levels of cancer-causing dioxins in

the world. Seven out of ten children in the villages of Guiyu have too much lead in their bodies; 82% tested positive for lead poisoning. This was due to the contaminated soil and water.

Some news reported that most of the recycling companies, who claimed that they are having safe recycling e-waste system, were not recycling it at all. Instead they dumped everything into shipping containers and send them to the mainly rural area in Ghana, China, Hong Kong and several other third world countries.

THE GREEN ICT DISPOSALS CHALLENGES

Among the recommendations of the Malaysia government in making progress in the disposal of green ICT is to bring awareness to the Chief Information Officer(CIO) at the government and private agencies on their role in planning, implementing and coordinating the efforts and measures to assist the implementation of green ICT effectively in their organization.

Awareness program among members of public service and private sectors as well as the citizen of a country shall be held so that all may receive, inculcate and practice the right culture of Green Technology in the use of ICT. It is important to understand that when an individual, a household or an organization has reached that 'I'm done with you my Gadget Pal' they will absolutely being dumped. The question is 'Where to dump?', or 'How to dump?' or 'Does it worth the money?' and etc. This question is on everyone's mind. Even if someone took the e-waste to any local recycling center, there is a high probability that it won't get recycled properly or worst that it won't get recycled at all but being dumped too.

Dosomething.org said that only 12.5% of e-waste is currently recycled. The rest were dumped. 20 to 50 million metric tons of e-waste are disposed worldwide every year. It is worrying. In these gadget-driven days, people upgrade their electronic fairly often. This fast rapid changes technology of IT used to urge people to buy a new cell phone, laptop and many more without thinking twice about buying the latest technology frequently. So it tells us that the frequency of recycling rate do not accommodate the frequency of ICT goods that sells briskly now.

THE INITIAL FINDINGS: THE DISPOSALS OF ELECTRONIC WASTE

As ICT sector is one wide field, this survey only outlines the scope of ICT products namely, personal computer, laptop, printer, hand phone, charger, and ICT gadgets.

In several organizations in Malaysia, it appears that from the responses almost one quarters of responded that there is no dedicated officer who regulates and monitors ICT waste in an organization. Almost quarter of the organizations responded to the survey actually dispose of their old computers and electronic wasteto the electronic recycling companies. Around quarters of respondents donate their electronic wasteto the charitable organizations. Over two third of the respondents just neglect it by putting it in the dustbin, keep it in their drawer, and never really bother where it goes afterwards. Some did mention that, the cleaner might take it to the recycle center.

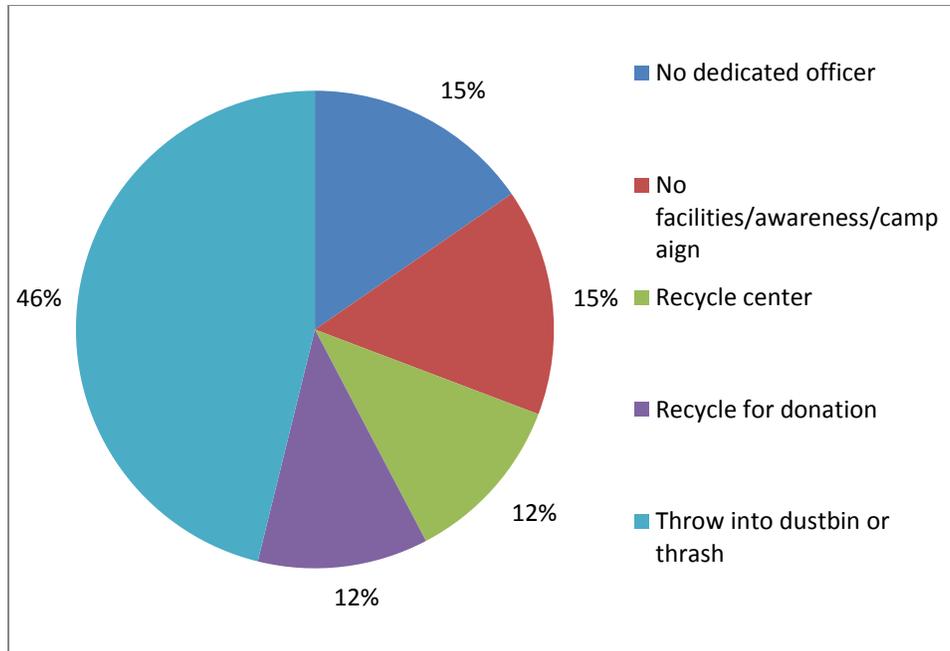


Figure 1: Disposals of e-waste in an organization

While in a household of Malaysia, the responses were quite not favorable. This leads to unmanageable of dangerous chemicals like lead, cadmium, beryllium, mercury, and brominated flame retardants. These hazardous materials have a high risk of polluting the air, contaminating soil and leaching into water sources. It appears that from the responses almost three quarters of responded that there is no right channel to dispose the ICT waste or peripherals. There is no center or specific place to dump all the waste. So, this leads to dustbin dumping, river dumping, and most of them put it as an accessory in their home by putting it in a cabinet or became a toy for their children to play with. This is totally without doubt is dangerous.

Only almost quarter of the household responded to the survey actually dispose of their old computers and electronic waste to the electronic recycling companies or recycle center if only the recycle center accept to buy it as a recycle products. If it is declined, then they will just dump it in a dustbin.

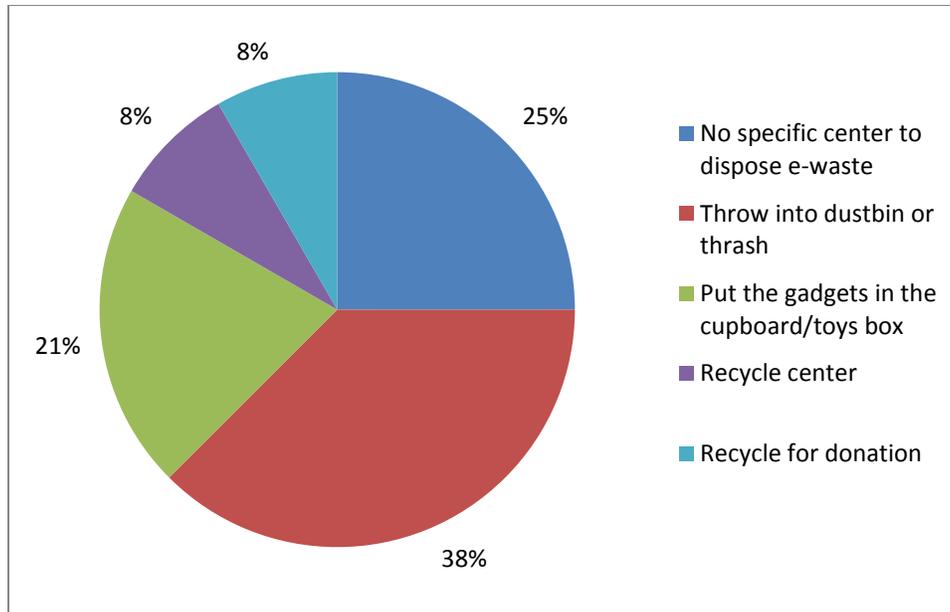


Figure 2: Disposals of e-waste in a household

THE CAMPAIGN REVIEW: DISPOSAL STEPS AWARENESS

As a researcher, we sense that this matter is very serious. With above results we come out with several guidelines in making a difference with one's daily lifestyle and decision. Review about several steps in disposing e-waste being taken into account whether it may be applied to the Malaysian environment or otherwise.

Municipal council like PerbadananPutrajaya (PP), MajlisPerbandaranSubang Jaya (MPSJ) and MajlisPerbandaranLangkawi (MPLBP) had some out with restriction to all government agencies, commercial buildings, and the neighborhood to start with splitting between dry garbage and leftovers. If any do not comply with the restrictions they will be compounded. However, data gained until April 2016 from PP and MPSJ, only 40% did comply with the restriction. However, they are striving more to get engagement from the residents.

Second option is to find the recycling center nearby. They are actually lots of 'PusatKitarSemula' everywhere. It is just the matter of whether they accept e-waste or only papers, aluminium can, or plastic bottles accepted. Education and awareness is needed in this step. Citizens are encouraged to go around their neighborhood to ask around and aggressively try to find a place where e-waste is accepted. There is even a 'KitarSemulaBateri' box provided in a shopping mall. An interview session done with the recycling center in Sungai Chua and they informed researchers that they do accept electronic waste but not at a high price. Recycler Locator application should be developed by the municipal council so the citizen may get to know where to dump the e-waste.

Drop off location is the third approach where it does increase the awareness numbers among the communities. Schools, universities, mosques, surau, may post in a calendar that includes the recycling days. The unwanted electronic waste can be dumped on the designated drop off location. At the same time, charity day is organized by collecting the e-waste where it will be sold as a recycling item to the vendor. However, most of the drops off locations were filled with papers, cans, plastic bottles, and home furnishings. Electronic waste is rarely to be seen. It is about time to put it into drop off calendars.

Option number four is by donating electronics that still have life left. Reusing is an option to reduce e-waste pollution. Sharing is caring anyway.

The fifth step is nowhere to be seen in Malaysia so far. However it is being aggressively implemented in US under the name of Best Buy retail and in Japan. Best Buy makes sure that the recyclers we work with adhere to the highest guidelines and standards so that the products customers bring into our stores for recycling don't end up in landfills or in foreign countries, and that all hazardous materials are disposed of properly (*Levin, moneycrasher.com*). Hopefully, this is as an eye opener to any ICT retail company out there in Malaysia coming out with the effort to overcome environment erosion.

Tokyoites, who wish to sell their used gadgets, may go to a district named Akihabara where companies like Sofmap or a host of small secondhand stores in the area will be happy to help by buying back the gadgets. Kaitori (Buy-back) services will come in trucks to your organizations or apartments. The reality of handling e-waste in Japan is far more complex than we could imagine but somehow the determination to get back the green land makes them really work on it. With that, the results are amazing where almost 85% of their communities recycling stuffs and generating revenue at the same time. (Tonezi, 2012)

CONCLUSION

In the paper, researchers described the initial results of the disposals of e-waste among Malaysian. Ideally, Malaysian may try not to be pulled too much into the new technology. Malaysian may be part of the solution with the guidelines of the above e-waste disposals steps. This will help much in the effort of proper recycle of e-waste. Last but not least, let us support government to make our country a little more greener.

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