Middle East Technical University

Department of Sociology

Achievements and limitations of major transnational action in response to global e-waste crisis.

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Alparslan Teke

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Contents

Abstract

Through treadmill of production and unequal exchange theories, this paper will explore how electronic waste crisis is embedded within the global ecological injustice and evaluate the initiatives aiming to ameliorate the issue. Economically motivated trashing of developing countries by rich nations is increasingly acknowledged. In order to face the issue at the global level, there have been going on a complex web of negotiations among the public, governments, non-governmental organizations, and activist groups. While there have been achievements of these efforts to applaud, each come with loopholes and fundamental fallacies that leave the threat caused to environment and society. After providing a glimpse to this situation, paper concludes with arguing that the ongoing ecological injustice is a result of lack of democratic decision-making processes and an overemphasis on post-consumption treatment.

Introduction

We are disinclined to think where our garbage ends up. Electronic products are quintessential in this sense, and many of them contain materials hazardous when inadequately processed. Although many would think twice before throwing an obsolete smartphone or laptop in kitchen bin (but eventually do), few dispose them with proper care. Unfortunately, consequences of the latter action are not fundamentally different than the former either. If not in our municipal wasteland through our kitchen bin, a threatening amount of electronic waste produced globally ends up in dumps out of the sight of North America and Europe. Part of e-waste is actually systematically recycled with workers' rights and environmental responsibility. Bigger part is rather 'traded', without adequate planning, procedures, or whatsoever care after 'delivery'. Legally for instance by the virtue of utilizing each lacuna within legislations that ban e-waste exports, or illegally through in disguise of false labeling or bribing. This situation has deleterious consequences for people and environment, first and foremost in the destination of dumping, and then inevitably for all around the globe. What is peculiar to the problem of e-waste is this dilemma the individual is left with; damned if you recycle because then you contribute to the pollution and exploitation of the Global South, damned if you don't because you pollute your own backyard and prevent re-gain of potentially valuable material.

1. History and current situation of global e-waste trends

Let us now rewind a bit and start with drawing an empirical picture of global situation in electronic waste to see why it is a crisis. To do so, we would need a definition of it. There is no global consensus on what e-waste is but only approximating definitions. Mainly it includes various entertainment, communications, household and professional technologies that depend on

electricity to operate. Such scope already involves a huge range of products, and it gets wider as electronics become embedded in traditionally not computerized devices and the introduction of whole new products. One broad definition by Organisation for Economic Co-operation and Development defines it as “any appliance using an electric power supply that has reached its end-of-life” (OECD, 2011). Even to this definition it should be added a huge part of gadgets that are for example battery-powered. What is for sure is electronic devices are already complex enough for a smartphone to contain 500 to 1000 different materials, among which found toxic heavy metals as lead, cadmium, beryllium and mercury.

Toxic substances may have acute, chronic, or delayed health problems in case of exposure. When incinerated or dumped in wastelands, such substances have direct impact on air, soil, and water. The informal recycling sector magnify such risks. In 2016, near 45 million tonnes of e-waste was generated(Baldé et al, 2017, p.5). Only 20 per cent of it was documented to be collected and properly recycled(ibid.). Faith of remaining 80 per cent is what urges this paper to reiterate to need for revising the fundamental propositions of legislations, for they are most likely dumped, traded or recycled without proper care, with disastrous consequences for people and environment. More than half of the e-waste is generated by Americas and Europe (ibid., p.65, 73). Former has a bad record in collecting e-waste to recycle, with a mere 17 per cent. Whereas Europe does better, it still falls short, with a rate of 35 per cent documented to be collected and recycled(ibid.). There is no precise data on what happens to remaining undocumented waste, whether it is stored, reused, recycled or exported.

It was the incident of Khian Sea that brought international attention to the issue and mobilized governments and international bodies to take action. In 1986 and 1987, a vessel containing tonnes of ashes of incinerated solid waste collected by Philadelphian municipality

sought a place to dump its load all around South Atlantic, trying its chance with countries with much lower GDPs than the producers of the trash. It was rejected by all of them. One day, after vain search, the ship unloaded 3,700 tons at the shore of Haiti. Though it contained incinerated e-waste too, it was falsely labeled as 'soil fertilizer'. Things got absurdly upsetting when the representative of vessel's company ate a handful of dumped ash to prove that it was harmless (Pellow, 2007, pp.107-108). This incident brought first serious attention to illegal waste exporting to Global South.

This incident has been seen as the driving force behind the proposition of Basel Convention which aimed to reduce hazardous waste generation and restrain the exports of them. Although in years signed and ratified by a large number of developed countries, the major e-waste generator Americas' participation rate is low in this Convention. Indeed, US came to be one of the major opponents of the regulations; Greenpeace identified it one of the seven opponents of the ban since they declared their aggressive rejection towards total ban of hazardous material as the proposed action required(Puckett and Fogel, 1994). Khian Sea incident also vividly depicted the global environmental injustice regarding waste flows. 'Hidden flows' of e-waste was started to be tracked by environmental transnational activist groups and scientists. One important action in this direction, the report *Exporting Harm: The High-Tech Trashing of Asia* published in 2002 revealed that 50 to 80 per cent of waste collected for recycling in the US are not recycled domestically but exported to Asian and African countries(SVTC and BAN, 2002, p.2). Following figure shows the outcome of the investigations on known and suspected routes of e-waste dumping.

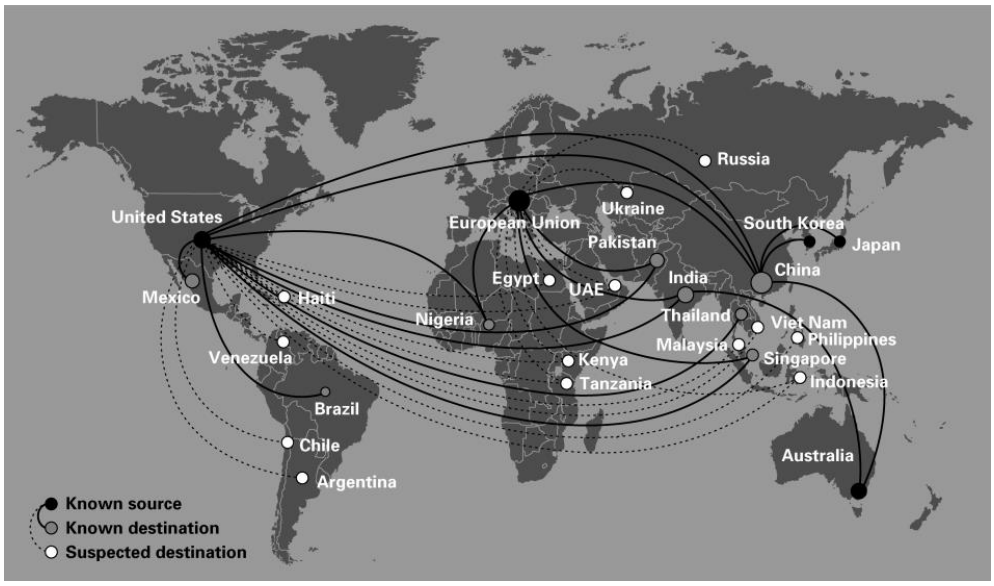

Figure 1. Known and suspected routes of e-waste dumping (Dayaenni and Doucette in Pellow, 2005, p. 192)

Global e-waste problem becomes further alerting because of the proliferation of information and communication technology products. By 2016 in the US, phone ownership is almost 100 per cent, tablets at least half of it, and more than one third of adults own a smartphone, a computer, and a tablet(Baldé et al, 2017, pp.19-20). This might not have been big a problem if these products were durable; on the contrary, as responding to the demand of affordability by the consumers, producers reduce the costs that results in products with shorter lifecycles(ibid.). Consequently the annual e-waste generation is in constant increase, at a rate outweighing that of municipal waste(Pellow, 2005, p.187). Projections show an exponential increase with serious consequences that will eventually disturb the West as well if not only the way we dispose, but also produce and consume, doesn't change significantly.

2. E-waste crisis as a practice of ecological injustice

This chapter will elaborate the treadmill of production and unequal exchange theories as two complementary approaches while discussing how e-waste contributes to global ecological

injustice. It will additionally try to show the inadequacies of ecological modernization theory in the face of the same problem.

Treadmill of production theory underlines the capitalist maxim of infinite economic growth that guides the decisions of production as the driving force behind environmental and social degradation. With the economic boom following the Second World War, newer technologies transformed the manufacturing industry into one that is more energy and chemical intensive. Profit returns of investment in technology, together with globalized mass consumption through penetration of Western capital in Global South lead producers and investors to sustain such growth. This in turn required more amount of natural resources to be extracted in order to respond the growing consumption. But it also meant more waste generated and toxicity of wastes raised(Gould et al., 2004, p.300). This is the treadmill, a mechanism that feeds itself through more production and consumption. Its undermining of natural and social resources is a major contradiction of capitalism for they are the necessary conditions for production and capital, i.e. nature, urban, labor power(O'Connor, 1991).

Treadmill theory sees production at the core of the problem, because it is the producers who decide about the allocation of resources and technologies i.e. capital in the last instance. It discredits the consumerist approaches, arguing that "the relationship between consumption and ecosystems is at best indirect"(Gould et al., 2004, p.301). Its effects are thought as conditioned by the production process and social distributions, through the power of deciding on production, economic distribution, and of decision-making itself. Furthermore, needs and desires that drive consumption are also determined by preexisting conditions of production. Its disbelief of a social and ecological amelioration through a reshaping of consumption behavior at the individual level stems from the observation that it is the treadmill elite who decides on the natural resource inputs

and waste outputs under the regulations imposed by state and through negotiations with civil society. A strong emphasis on pluralism and democratization means collective actions of NGOs and social movements are the key actors that can work counter to social and ecological degradation. Consequently, instead of focusing on consumption rates and choices, it is the democratization of production that would make a difference according to treadmill theory.

One soft spot of treadmill theory came to be its emphasis on economic structure that overshadows other factors contributing to the ecological crisis. As findings show, certain groups of people are more likely to suffer the primary consequences of global ecological injustice. Here, world systems theory of unequal exchange functions complementary to treadmill theory particularly its contributions to think of the injustice among countries and hemispheres. Sustaining the core – periphery division in the form of Global North and Global South, unequal exchange theory draws attention to the socio-economic and ecological disparities between countries(Jorgenson et al. 2009, p.266). Through value extraction from lesser-developed countries in forms of labor and natural resources, and externalization of negative consequences of consumption upon those countries back again, it grows environmental deterioration and takes away the consumption ability of those countries. Put it simply, it shows how certain nations build wealth upon the suffering of others. It is a double, recursive exploitation; profit extracted from natural resources and labor of nations particularly with low footprint adds to the purchasing power of developed nations, and as they consume more, they export the waste to those lesser-developed countries, further disadvantaging them.

As treadmill of production theory helps us put the sufficient emphasis on the role of capitalist mode of production, unequal exchange theory further enables us to grasp the global disparities present in socio-economic and environmental chances. One the other hand, another

prominent framework within ecological literature, namely ecological modernization, falls short in supplementing our analysis. As embedded in the name, it suggests that production processes are coming in accord with environmental sustainability through developments based on social (increasing awareness), political (policy making), and economic (efficiency) criteria. It is intriguing how the period ecological modernization sees as a new industrial revolution that brings production along the ecological lines extensively corresponds to the emergence of e-waste crisis. Aforementioned trends such as penetration of capital, mass production, and consumer culture rose at the same time with the developments ecological modernization esteems. Additionally, ecological modernization theory is reluctant to take in account the inequalities between societies. It is further problematic for it presupposes the ecologically responsible technological developments are economically feasible and politically attainable(Pellow, 2007, p.20).

Given this theoretical framework, it would be expected from any initiative concerned around the issue to acknowledge certain dynamics, stipulate a set of basic demands, and pressure relevant authorities. In the light of treadmill theory it is the democratization of decision making processes that must be aimed, primarily from production to waste management. Unequal exchange theory necessitates institutions dealing with the issue to evaluate the issue in the broader inequalities that are remnants of the colonialization, hence stipulating the inclusion of receiver communities at each level of decision-making in order to successfully resist the capitalist and racist degradation of the environment and communities. From this point of view, externalization of negative consequences of production decisions on consumers is by no means acceptable.

3. Achievements and setbacks of transnational action

Currently there is a complex web of organizations and movements that operate at various levels from local to global in order to reduce the environmental and health consequences of hazardous waste. They push legal bodies, intergovernmental organizations, producers, and consumers to take action in the face of same problem with different focuses and methods. This chapter will introduce what some of these initiatives are from transnational activity to local initiatives and how legal and (inter)governmental bodies respond to their demands in enforcement.

Since it was the result of a cooperation between legal and civil bodies, Basel Convention would be a good start to unfold. It is the primary multilateral environmental treaty came into force in 1992 as a legal instrument to regulate the international flows of hazardous waste, and with 183 parties so far it is the major global action. It was the result of a collaboration between governments of developing countries where the waste was exported to, environmental activist groups which track these flows, and intergovernmental bodies that has global reach to enforce the restrictions. It is concerned with the illegal transboundary flows of, and is "[d]etermined to protect, by strict control, human health and the environment against the adverse effects which may result from the generation and management of hazardous wastes"(Basel Convention, 2018). It is based on the principles of environmentally sound management, prior informed consent (PIC), transparency, environmental precaution. It also requires ratified parties to develop domestic regulations of waste management in accordance with the Convention. In effect, it bans any free trading of hazardous waste, and for transboundary actions to take place, there must be present a PIC from both importers and exporters. This is a prima facie step towards reducing unequal exchange because it targets the externalization of the consequences of consumption through exports. But it has critical limitations and drawbacks too. Electronic waste that is traded for direct reuse is exempted from the hazardous

category. This exemption was made in order not to hinder the economic growth and digital advancements developing countries cultivate from second-hand technologies. However, the prevention of hazardous e-waste exports through false labeling was not secured with appropriate precautions of controls, certifications or other requirements(Khan, 2016, p. 253). Hence is a critical limitation on Convention's effect. In order for it to inspect the trade of non-waste, i.e. products, commodities, it should extend its scope to the production, which conflict with the interests of, for instance, World Trade Organization as technical obstacles to trade. This loophole within the Convention is easily exploited also through the trade of *almost end-of-life* products. Khan bases his criticism of the Basel Convention on this ground and argues that it ultimately safeguards corporate interests and sidelines environmental and societal concerns. In its essence, it reinforces state sovereignty in decision makings rather than empowering international regulatory frameworks(ibid., p.254). Recent developments require rethinking of such criticism. Before, the Ban did not have legally binding authority and negotiations went on to incorporate it within international law through amendment. This was achieved with Croatia's ratification of the treaty. Executive director of Basel Action Network(BAN), Jim Puckett, celebrated this development with the statement; "[t]he most important idea ever conceived to promote environmental justice at the global level is now law"(BAN, 2019). Named after the Basel Convention, BAN is the not-for-profit group that tracks the trends and flows in order to make sure the enforcement of regulations. In their own words, their mission is to "champion global environmental health and justice by ending toxic trade, catalyzing a toxics-free future, and campaigning for everyone's right to a clean environment"(Basel Action Network, n.d., /mission). In order to fulfil these missions, they use "interrelated policy, market solutions, and public engagement strategies that create systemic change"(ibid., /what-we-do). As a watchdog group, they do not avoid pointing out the flaws of

Basel Convention in practice as well. Keeping the loopholes within the extent of the Convention in mind, it is with the latest developments a major powerful achievement as result of negotiations and joint efforts between governments, organizations, and environmental and human rights groups.

Another major actor to consider is the European Union. It is not surprising that the Union is a major source of consumption and waste generation with its more than half billion population that reside in the some of the countries with the highest GDPs. After inner conflicts on the issue during the conferences took place in 1994, European Commission ratified and put into force the Basel Convention in 1994. Importance of EU's take on regulations regarding production of electronic goods and management of them afterwards is high and reach of them are likely to have direct consequences at a global scale. This is so because of two reasons. First, as mentioned above, it has a serious share in the waste generated. Second, it is more economically efficient for producers to standardize their products as fitting with European market instead of having different manufacturing standards for different markets(Lepawsky, 2012, p.1204). Two major directives the Union put in force are the Waste Electrical and Electronic Equipment Directive (WEEE) and Restriction of Hazardous Substances (RoHS). While former defines a set of responsibilities for producers while collecting and recycling their products, latter imposes prohibition of the use of certain toxic substances during production processes. RoHS distinguishes itself from many other regulations by the virtue of directly addressing the production process. This makes visible the taboo of production other parties have while elaborating the problem. Insofar as e-waste crisis is thought of as a problem emerging posterior to consumption, the point will be missed, and disincentives for producers will not be enough to bring their concerns in line with ecological ones. European Union directives are so far the strongest in terms of enforcing extended producer responsibility(EPR). EPR is the principle of producers being responsible for environmental impact

of their products throughout their life and also environmentally sound disposal after the end of their life cycles. It is simply the principle of polluter pays. Adhering to the EPR principles, directives require the financing of collection and disposal of WEEE used by households to be covered by producers. Currently, EU sets the goal of creating a circular economy through the maximization of utilization of waste as a resource which has implications for production processes to post-consumption management.

Recently, effectiveness of EU directives was tested by BAN. Their 2018 report on Europe, *Holes in the Circular Economy: WEEE Leakage from Europe,* showed that EU continues to send its hazardous trash away through illegal exports. They found alive e-waste transfer routes between EU member states and three African countries of Ghana, Nigeria and Tanzania. This signaled weakness not only of EU regulations but also the Basel Convention, because all parties involved have ratified it. They found more likely illegal exports than unknown or likely legal flowing from EU member states to African countries(BAN, 2018). Furthermore, the report voiced its concern stemming from the alerting efforts of European bureaucrats during Basel meetings to introduce the category of "export for repair". This would blur the line between what is waste and what is not, and constitute a critical loophole(ibid., p.103)

At least as important as EU are the North American countries, namely USA and Canada. Canada did not ratify Basel Convention, but developed progressive domestic regulations from province to national level. United States also codified rules governing the e-waste management but remained outside of Basel Convention. Because of the patchwork trait of regulation and enforcement that is dispersed through municipalities to state jurisdictions to federal laws and international treaties, notwithstanding certain overarching rules and achievements, the US does not have a unified strategy or attitude towards electronic waste(Product Stewardship Institute,

2014, pp.26-27). Indeed, as stated in the report on Europe, “if Europe is leaking, the U.S. is hemorrhaging”(BAN, 2008, p.1). This is evident from the ratio of internally disposed waste to externalized amount, to U.S. representatives’ explicit opposition during Basel conferences, to contradictory application of EPR principles. Latter will unfold in the paragraph below in comparison of Canada and the U.S.

Legislations of the two countries have in common the defining of e-waste as a post-consumer problem and that producers should take the responsibility to fund the after life-cycle disposal of their goods. However, costs are left free to be internalized within the production or may be passed to the customers, and for certain, are not inscribed in the profits. Only crucial difference between the two jurisdictions seem to be whether this passing on to customer can be done visibly or not. In the USA except California, and plus Ontario of Canada, no jurisdiction prohibits invisible fees of environmental costs embedded in product prices. So whether it is prescribed to be financed by manufacturers or consumers, costs are ultimately externalized onto customer-citizens, which is opposed to EPR goals.

Such macro scale formations and actions are not in isolation from local, civil, and specific initiatives. Indeed, most large-scale awareness and action stem initially from grassroots movements. One such example is the Silicon Valley Toxics Coalition(SVTC) that is active since 1982. Based in California but reaching far out, it is a diverse group of research and advocacy focusing on human health and ecological justice in response to the deleterious effects of growing high-tech industry. They emphasize the protection of workers, community and the environment for a sustainable future. One remark coming from the founder of SVTC illustrates well how awareness and action forms bottom up: It was the individual efforts of participants of a conference in New York given by the founder Ted Smith when they went back to their countries that provided

valuable information for the important 2002 report of *Exporting Harm: The High-Tech Trashing of Asia.* It brought into light that 80 per cent of e-waste collected in North America ends up in Asian countries, and that recyclers function rather as waste traders.

Conclusion

One relevance for a waste reduction policy, and especially for electronic goods, of treadmill theory would lie at how production decisions determine the lifecycle, consumption and recycling of electronic products. This is important to reiterate because as mentioned above, almost all regulations by legal bodies target, and to a certain degree control, the post-production phase, with few exceptions such as RoHS. As the developments show, there is a growing awareness worldwide and international legislations are settling. However, amount of electronic waste produced is also constantly increasing. As we modernize, the more we consume and generate waste.

Also, treadmill theory's observation that production processes becoming more chemical intensive is still relevant in the sense that new materials being introduced each day in the production of electronics and this needs to be coupled with tests and legislative amendments in order to be classified, and hence regulated, as hazardous waste or not. In general, this is one of the setbacks of all major actions: Because they focus on processes after consumption, each leave a loophole for externalization of costs by producers on consumers and others. Due to the global unequal distribution of wealth and power, it is no mystery why corporate attitude is in favor of free trade of hazardous waste. Even if they are held responsible for the collection and recycling of the products after their lifecycles, dealing with them outside EU or USA's backyards is much favorable for proper capitalist action. One simple example behind this logic is, as the internal regulations of Northern countries get stricter such as requiring third party certificates for recycling

plants, dealing with them internally becomes more costly than trading them away. On the other hand, as shown in USA and Canada examples, though EPR concerns are stated and producers are prima facie held responsible for the environmental impact, it cannot effectively internalize the environmental costs which are determined by the decision of producers, not consumers.

All in all, current situation is far from achieving democratic decision-making, sustainability, and ecological justice goals. The questions of cultural and functional role of technological commodities in modern daily life, and their effect in our developing of consumption ethics, or on building of recycling infrastructures, i.e. a sustainable consumption and production are to be dealt once equal emphasis is established while approaching the problem.

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