UTRECHT JOURNAL OF
INTERNATIONAL AND EUROPEAN LAW

Gideon Emcee Christian, 'Trade Measures for Regulating Transboundary Movement of Electronic Waste' (2017) 33(85) Utrecht Journal of International and European Law pp. 103–127, DOI: https://doi.org/10.5334/ujiel.435

RESEARCH ARTICLE

Trade Measures for Regulating Transboundary Movement of Electronic Waste

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International trade in used electrical and electronics equipment (UEEE) provides an avenue for socio-economic development in the developing world and also serves as a conduit for transboundary dumping of waste electrical and electronic equipment (WEEE) also referred to as electronic waste or e-waste. The latter problem arises from the absence of a regulatory framework for differentiating between functional UEEE and junk e-waste. This has resulted in both functional UEEE and junk e-waste being concurrently shipped to developing countries under the guise of international trade in used electronics.

Dealing with these problems will require effective regulation of international trade in UEEE from both exporting and importing countries. Although, the export of e-waste from the European Community to developing countries is currently prohibited, significant amounts of e-waste from the region continue to flow into developing countries due to lax regulatory measures in the latter. Hence, there is a need for a regulatory regime in developing countries to complement the prohibitive regime in the major e-waste source countries. This paper proposes trade measures modelled in line with WTO rules that could be adopted by developing countries in addressing these problems. The proposed measures include the development of a compulsory certification and labelling system for functional UEEE as well as trade ban on commercial importation of UEEE not complying with the said certification and labelling system. The paper then goes further to examine these proposed measures in the light of WTO rules and jurisprudence.

Keywords: Electronic waste; e-waste; UEEE; Sustainable development; quantitative restriction; WTO; GATT; TBT Agreement; technical regulation; standard; RoHS; WEEE

I. Introduction

The transboundary movement of used electrical and electronic equipment (UEEE) from developed to developing countries presents positive socio-economic benefits as well as negative health and environmental impacts to the developing world. The problem with international trade in used electronics lies in the absence of a regulatory framework for distinguishing between functional UEEE, and obsolete waste electrical and electronic equipment (e-waste). This problem is evident in the Basel Convention framework. While the Convention (including the Basel Ban) expressly prohibits transboundary movement of hazardous wastes to developing countries, it does not prohibit transboundary movement or trade in UEEE meant for *reuse*. Hence, a mere documentary declaration to the effect that a consignment of used electronic exports to a developing country is meant for reuse automatically takes it outside the framework of the Basel Convention. There is no requirement under the framework to verify if the shipment is in its actual state capable of reuse.

This regulatory gap has resulted in both functional and obsolete electronics flowing collectively to developing countries in the guise of international trade in used electronics. The massive transboundary movement of obsolete e-waste from Europe and North America to developing countries in the guise of international trade gives rise to environmental and public health concerns. It has been estimated that about 180 containers of used electrical and electronic products enter the Lagos (Nigeria) ports daily.[1]

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[1] *See* Ola Oresanya, 'E-Waste Management in Lagos State – The LAWMA Experience' (24 February 2011) Paper presented at the 2-Day International Summit on Regulations and Management of e-Waste in Nigeria.

Most of the containers consist of mixed functional and junk electronic equipment. Research studies in Nigeria and Ghana has estimated functional UEEE to constitute about 70% of UEEE imported into both countries.[2] Hence the remaining 30% represents junk e-waste that is shipped for the purpose of dumping.

While the functional electronics are traded as used electronics, the junk components are discarded in unregulated waste dumps. E-waste scavengers in these dumpsites employ archaic recycling methods including manual breaking and disassembly of electrical and electronic components of e-waste, open burning of plastic cables to extract copper wires, as well as open incineration of unwanted plastics components.[3] E-waste contains a 'witches' brew' of heavy metals and organic chemicals. Heavy metals found in e-waste include lead, mercury, cadmium etc, while its organic chemical contents include, among others, polychlorinated biphenyls and brominated flame-retardants.[4] Due to the presence of these substances, e-waste is generally considered a hazardous waste. Thus, improper handling or disposal of e-waste will naturally result in these substances escaping into the environment, constituting serious health and environmental hazards to people and communities, especially in developing countries where these junk electronics are now increasingly being dumped.[5]

Dealing with the e-waste problem in developing countries will require effective regulation of international trade in UEEE. This article proposes a combined framework involving technical regulations and import bans which could be adopted by developing countries either at regional, sub-regional or national levels in addressing the problems associated with international trade in UEEE. The technical regulation will entail the development of a certification mechanism in UEEE exporting countries by environmental NGOs or certification bodies.[6] The mechanism should incorporate the use of a product certification mark or label that would be attached to UEEE meant for export. The certification mark or label will serve as physical evidence of compliance with the standard for reusability. Hence, recyclers and/or UEEE exporters in exporting countries who meet the certification or similar certification schemes developed along those lines could be permitted to apply the certification marks or labels with a unique identification code on their exports. Enforcement officers at the borders of the exporting countries could conduct a random search of potential UEEE shipments to ensure that the shipments comply with the certification mechanism and hence with the exporting country's domestic regulations prohibiting export of e-waste to developing countries.

At the receiving end, enforcement officers in the ports of entry in developing countries could rely on the certification labels or marks as evidence of functionality of the UEEE bearing them. In addition, a trade ban on commercial importation of UEEE not complying with the stipulated certification scheme and labelling requirement could be imposed by developing countries to effectively bar the importation of e-waste.

The paper will examine measures for regulating transboundary movement of e-waste to developing countries. The paper will begin with a brief examination of WTO rules relating to trade regulation. It will then proceed to examine two possible approaches to regulating the transboundary movement of e-waste to developing countries. The first approach to be examined is the non-trade-restrictive framework that allows for a free trade in UEEE complemented by domestic measures for management and disposal of e-waste resulting from the free trade. The paper will proceed further to examine a trade restrictive framework incorporating a certification and labelling scheme and an import ban. The validity of these frameworks will be examined within the context of WTO rules under the Agreement on Technical Barriers to Trade (TBT Agreement) and the General Agreement on Tariffs and Trade (GATT).

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[2] See Olakitan Ogungbuyi, Innocent Chidi Nnorom, Oladele Osibanjo, Mathias Schluep, '*Nigeria e-Waste Country Assessment*' (2012) Basel Convention Coordinating Center for Africa (BCCC-Nigeria) <http://ewasteguide.info/files/Ogungbuyi_2012_BCCC-Empa.pdf> accessed 3 August 2011; Odeyingbo Olusegun Ayodeji, 'Assessment of the Flow and Driving Forces of Used Electrical and Electronic Equipment into and within Nigeria' (2011).

[3] Jack Caravanos, Edith Clark, Richard Fuller, Calah Lambertson, 'Assessing Worker and Environmental Chemical Exposure Risks at an e-Waste Recycling and Disposal Site in Accra, Ghana' (2011) 1 Blacksmith Institute Journal of Health & Pollution 16.

[4] *See* Jim Puckett and Ted Smith, *Exporting Harm: The High-Tech Trashing of Asia* (Diane Pub Co 2002).

[5] Staffan Lundstedt, 'Recycling and disposal of electronic waste – Health hazards and environmental impacts' (2011) Swedish Environmental Protection Agency Report 6417.

[6] An example is the e-stewards certification. The mechanism provides a measure of assurance that electronic equipment exported from e-steward certified recyclers/exporters conforms to the standard of functionality and a guarantee against obsolete e-waste export. See 'The e-Stewards Story' <http://e-stewards.org/about-us/the-e-stewards-story/> accessed 3 August 2017.

II. WTO Rules and Trade Regulation

One of the main objectives for which the GATT and its successor, the World Trade Organization (WTO) was established is to promote international trade between countries. International trade is perceived as promoting prosperity among nations, and to achieve this objective, the WTO system uses a series of rules designed to reduce trade barriers and promote a non-discriminatory trade system between countries. It sought to limit, if not prohibit, import bans (or quotas) and other border restrictions (tariffs).

The WTO rules bind all member states and the existence and binding nature of these rules implies that member states are obliged to take them into consideration in designing their trade policies, to ensure that such policies are in line with their WTO obligations. A WTO member state may be compelled to revisit a trade policy that contravenes any WTO rule. Member states are obliged to submit to WTO dispute settlement process relating to any challenge that their laws or practices are inconsistent with their WTO obligations, and they are bound by the decision reached.[7]

Notwithstanding their obligations to submit to dispute settlement process as stated above, each WTO member state has a sovereign right to protect their environment as well as the health of their inhabitants.[8] Thus free trade without any restrictions whatsoever is outside the scope of the objectives sought by the WTO framework. The WTO rules recognize the right of each member state to adopt legitimate policy measures aimed at protecting human health and environment within their territorial jurisdiction. Such measures could take the form of import restrictions and technical regulations, and requirements applicable to goods traded within their jurisdiction.[9]

Import restriction is a form of quantitative restriction and could take the form of express bans on the importation of certain goods into a country, imposition of import quotas, or embargoes on the issuance of import licenses. Reasons vary for decisions by states to restrict the importation of certain products into their territory. For instance, a state may impose import restriction on hazardous products which in its view pose a serious threat to human health and the environment. This right is recognized in the Basel Convention as well as the EU Legislation on Waste Shipment.[10]

Technical regulations could also be adopted by states to address particular safety and environmental concerns regarding specific products. Thus, technical regulations could take the form of a state requiring that a product meet certain minimal environmental standards before it could be legally imported into its territory. By applying technical regulations, a state can ensure that only products that meet a defined regulatory standard are imported into its territory. While import restrictions and technical regulations could be used to pursue legitimate state policy, they could also create unnecessary obstacles to international trade. This requires balancing a state's right to pursue legitimate policy objectives against the interests of the international community in removing unnecessary obstacles to international trade. This paper takes the position that technical regulations requiring the use of a certification mark or label on imported UEEE to serve as physical evidence of compliance with the requirement for reusability, and import restrictions on commercial importation of UEEE not complying with the requirement could be conveniently used as trade measures within the context of the WTO framework to regulate the transboundary movement of e-waste.

Governments in developing countries have a legitimate responsibility to adopt policy measures to prevent or minimize the transboundary dumping of obsolete e-waste under the guise of international trade in UEEE. In doing so, they may choose to adopt measures aimed at preventing or minimizing the accumulation of obsolete e-waste in their country, which will inevitably entail import ban or restrictions. Alternatively, they may permit free trade in UEEE while developing remedial measures for dealing with the consequential

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[7] Donald McRae, 'Trade and the Environment: Competition, Cooperation or Confusion?' (2003) 41 Alberta Law Review 745.

[8] WTO Doha Ministerial Declaration (14 November 2001) WTO Doc WT/MIN(01)/DEC/1 41 ILM 746 (2002) para 6. The Doha Ministerial Declaration States:

> 'We recognize that under WTO rules no country should be prevented from taking measures for the protection of human, animal or plant life or health, or of the environment at the levels it considers appropriate, subject to the requirement that they are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade, and are otherwise in accordance with the provisions of the WTO Agreements'.

[9] Mirina Grosz, *Sustainable Waste Trade under WTO Law: Chances and Risks of the Legal Frameworks' Regulation of Transboundary Movements of Wastes* (Martinus Nijhoff Publishers 2011) 360.

[10] Regulation No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste [2006] L 190/1, recital 9 explicitly acknowledge the right of states to prohibit the importation of hazardous and other wastes into their territories. See also Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (adopted 22 March 1989, entered into force 5 May 1992) 1673 UNTS 126, preambular para 6, art 4(1).

accumulation of obsolete e-waste. Such remedial measures may include but are not necessarily limited to the management and disposal of e-waste through landfilling, incineration or material recycling.

In designing trade measures tailored along the framework of trade bans or restrictions, a WTO member state has an obligation to bring the measures within the context of WTO framework bearing in mind that generally, WTO rules frown upon measures that restrict trade. A non-trade-restrictive policy (if possible and feasible in dealing with the identified problem) will be less contentious and may represent the best possible option. Hence, in developing a framework to regulate the transboundary harm arising from e-waste, the starting point should be an analysis of non-trade-restrictive remedial measures as well as the feasibility of such measure(s) within the context of developing countries. If this analysis reveals that the measure(s) do not provide a viable solution to the problem, it then becomes imperative to extend the analysis to other trade restrictive measures within the confines of the WTO framework.

III. Non-Trade-Restrictive Frameworks

Developing countries could adopt a non-trade-restrictive framework for the management of health and environmental impacts arising from transboundary movement of obsolete e-waste. This could take the form of a framework permitting free trade in UEEE, coupled with a domestic process for the safe disposal and management of junk electronics or e-waste that will inevitably flow along with such used goods. The latter process will require state of the art incineration, landfilling or recycling technology necessary to curtail the health and environmental risks from such e-waste. Whether such technologies exist in developing countries to make this framework viable will be discussed later.

Health and environmental protections are legitimate public policy objectives which states are allowed to set and pursue by measures or policies they choose.[11] Thus in developing policy measures to achieve their health and environmental objectives, states are obliged to adopt measures that do not unnecessarily interfere with international trade. It is only when such measures are not reasonably available that states are required (subject to WTO rules) to use measures 'which entail the least degree of inconsistency with other GATT provisions'. This is known as the 'least-trade-restrictive-approach'. Hence it is important to examine whether the non-trade-restrictive framework above (which does not entail any obstacles to international trade) is feasible in addressing the health and environmental impacts arising from transboundary movement of e-waste to developing countries.

This stage of our analysis will entail an examination of 'remedial measures' for the safe disposal and management of obsolete e-waste in developing countries. Examination of these remedial measures will also require examination of the risks associated with the implementation of the measures as well as the availability of resources or technology for the implementation of the measures.

A. Landfilling

The process of e-waste disposal via landfilling will require an organized e-waste collection system, transportation to and final disposal in designated landfills. Risks associated with landfilling as an e-waste management strategy have been highlighted in various research studies.[12] These studies drew attention to the possibility of toxic chemicals used in the production of electronic equipment leaching from e-waste landfills and contaminating underground water system. This risk exists even in developed countries with state-of-the-art landfilling facilities, and is exacerbated by the lack thereof in developing countries. In developing countries, therefore, e-waste is indiscriminately disposed of in open landfills and in stagnant water bodies, resulting in underground and fresh water contaminations. Thus landfilling of e-waste in developing countries is not an effective measure to prevent or curtail the adverse health and environmental impacts arising from international trade in UEEE.[13]

[11] WTO Appellate Body, 'European Communities – Measures Affecting Asbestos and Asbestos-Containing Products' Report (2001) WT/DS135/AB/R DSR 2001:VII 3243 para 168.

[12] Yong-Chul Jang and Timothy G Townsend, 'Leaching of Lead from Computer Printed Wire Boards and Cathode Ray Tubes by Municipal Solid Waste Landfill Leachates' (2003) 37(20) Environmental Science & Technology 4778–4784; Erik Spalvins, Brajesh Dubey and Timothy Townsend, 'Impact of Electronic Waste Disposal on Lead Concentrations in Landfill Leachate' (2008) 42(19) Environmental Science & Technology 7452–7458.

[13] The inadequacy of landfilling as a viable process for disposing e-waste is evident from the fact that even in the United States where state-of-the-art landfilling facilities exists, states are now passing legislation banning the disposal of e-waste in landfills. See Toby Talbot, 'NY joins 24 states banning electronic waste from landfills' *The Post Star* (4 January 2011) <http://poststar.com/news/local/article_407399cc-1814-11e0-9d0e-001cc4c002e0.html> accessed 3 August 2017.

B. Incineration

The most common form of e-waste incineration found in developing countries is informal incineration in open landfills and dumpsites. Research studies have noted extremely high levels of toxins' emissions in open burning of e-waste.[14] For example, Gullett et al. noted particularly high emissions of toxins in the open burning of insulated wires and PC-boards mainly due to high PVC and BRF contents.[15]

Accordingly, the incineration of e-waste results in large emissions of hazardous substances that may constitute threats to humans and the environment directly exposed to the emissions, as well as contributing to the global spread of such substances.[16] Although such risks associated with formal and informal incineration of e-waste may be reduced through state-of-the-art recycling technology, such technology is not readily available in developing countries.[17]

C. Recycling

E-waste recycling entails breaking down various components of electronic equipment, thus liberating valuable materials and reusing the same in the manufacturing process. The recycling of e-waste in developing countries presents greater risks to human health and the environment as a result of exposure to large levels of fumes and dust containing hazardous substances. It also presents occupational hazards to workers involved in the processing of the waste. For example, workers engaged in the informal dismantling of CRTs may be exposed to phosphor powder covering the inner surface of the front panel, barium oxide in the electron gun and lead present in the glass.[18] Improper disposal of broken CRTs on surface ground may result in large amount of hazardous compounds leaching into the environment.[19] For example, research studies have reported high level of heavy metals in the communities surrounding informal e-waste processing sites in China, illustrating the health and environmental risks associated with informal e-waste recycling in developing countries.[20]

Even formal recycling of e-waste still presents risks. This is evident in the process of collection and dismantling, mechanical shredding and separation, as well as pyrometallurgical and hydrometallurgical processing.[21] Peters-Michaud noted high levels of lead and cadmium in the vicinity of the shredders in a modern US based e-waste recycling facility.[22]

Of the three remedial measures discussed above, recycling seems to be the most environmentally-friendly. In essence, it is the best of the worst alternatives as it extracts the greatest environmental benefit from e-waste. E-waste recycling results in the conservation of natural resources by reducing the amount of virgin resources that are utilized in the production of new electronics. These benefits cannot be ignored, notwithstanding the impact of recycling on human health and the environment especially in developing countries. While state-of-art recycling technologies might help in reducing (but not eliminating) these impacts, such advanced technologies are not readily available in the developing world.[23]

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[14] Volker Zelinski, W Lorenz, Muefit Bahadir, 'Brominated flame retardants and resulting PBDD/F in accidental fire residues from private residences' (1993) 27(8) Chemosphere 27(8) 1519–1528;
Anna Leung, Zong Wei Cai, Ming Hung Wong, 'Environmental contamination from electronic waste recycling at Guiyu, Southeast China' (2006) 8 Journal of Material Cycles and Waste Management 21–33.

[15] Brian K Gullett, William P Linak, Abderrahmane Touati, Shirley J Wasson, Staci Gatica, Charles J King, 'Characterization of air emissions and residual ash from open burning of electronic waste during simulated rudimentary recycling operation' (2007) 9(1) Journal of Material Cycles and Waste Management 69–79.

[16] Lundstedt (n 5).

[17] ibid 69.

[18] ibid 74.

[19] Stephen E Musson, Yong-Chul Jang, Townsend T and Il-Hyun Chung, 'Characterization of lead leachability from cathode ray tubes using the toxicity characteristic leaching procedure' (2000) 34(20) Environmental Sciences & Technology 4376–4381.

[20] Anna O W Leung, Nurdan S Duzgoren-Aydin, K C Cheung, Ming H Wong, 'Heavy Metals Concentrations of Surface Dust from E-waste Recycling and its Human Health Implications in Southeast China' (2008) 42(7) Environmental Science and Technology 2674–2680.

[21] Lundstedt (n 5) 70–73.

[22] N Peters-Michaud, John Katers, J Barry, 'Occupational risks associated with electronics demanufacturing and CRT glass processing operations and the impact of mitigation activities on employee health and safety' (2003) Proceedings of the Electronics and the Environment, IEEE International Symposium 323–328; Morf et al. in their study of a Swiss recycling plant engaged in mechanical treatment of e-waste, found milligrams per gram of various BFRs (particularly PBDEs) in the fine dust fraction recovered in the off-gas purification system of the plant.

[23] Mathias Schluep, Christian Hagelüken, Christina Meskers, Guido Sonnemann, 'Market potential of innovative e-waste recycling technologies in developing countries' (2009) World Congress Davos 1–8.

I argue that material recycling, just like landfilling and incineration, is not *currently* an effective or feasible framework for management of e-waste in developing countries. It is also not currently a feasible framework for reducing risks to human health and the environment arising from accumulation of e-waste so as to justify free trade in UEEE in the region. These 'remedial measures' discussed above carry their own risks and require the commitment of resources, and technology not readily available in the developing world. The risk being addressed here encompasses what the Appellate Body in *EC – Hormones* describes as the 'risk in human societies as they actually exist, in other words, the actual potential for adverse effects on human health in the real world, where people live and work and die'.[24]

However, assuming for the purpose of argument that landfilling, incineration and recycling are effective measures for the disposal and management of e-waste in developing countries, and that developing countries have the resources and capacity for environmentally sound management or disposal of obsolete e-waste via landfilling, incineration and recycling, an argument could still be made against a trade regime which permits transboundary movement of obsolete e-waste from Europe and North America to developing countries. This argument is founded on the fact that it is contrary to the rules of international law to permit free trade that allows for transboundary movement of obsolete e-waste to developing countries for disposal or recycling.

Obsolete e-waste as opposed to functional UEEE comes within the definition of hazardous waste in the Basel Convention.[25] Whilst the latter can be traded as goods (or used goods), the former is not classified as goods, being waste in nature and with the risks associated with its constituents. In the absence of any existing framework for effectively differentiating between the two, e-waste is now conveniently shipped to developing countries in the guise of UEEE. This is because the hazardous nature of e-waste makes it the subject matter of a much rigorous regulatory regime. Transportation of obsolete e-waste across national borders for recycling or disposal come under the rules for transboundary movement of hazardous wastes set forth in the Basel Convention and the Basel Ban Amendment. One of the fundamental principles and objective of the Convention is that hazardous waste should be recycled or disposed of as close as possible to their source of generation.

Additionally, the Basel Amendment bans transboundary movement of hazardous wastes from developed to developing countries. Even in limited situations where the transboundary movement of hazardous waste is possible (between developed countries), it must be in line with the provisions of the treaty which requires among other things *prior informed consent* of the receiving country. The facts presented above along with the thinking in international law evidenced in the Basel Conventions point towards the need for a rationale application of trade restraint in international trade in UEEE especially where such trade obviously has the tendency to provide a conduit for transboundary movement of obsolete e-waste to developing countries in violation of the *Basel Convention*. Although the Basel framework bans the transboundary movement of e-waste to developing countries, the absence of any measure under the framework for differentiating between e-waste and functional UEEE is a major defect in the Basel framework that continues to sustain the problems associated with e-waste shipment to developing countries.

The discussion of the remedial measures evident in the non-trade-restrictive framework above clearly shows that this framework does not adequately safeguard against the health and environmental impacts associated with international trade in UEEE in developing countries. Hence it cannot form a sound basis for a sustainable framework for the management of the negative impacts arising from international trade in UEEE.

IV. Trade-Restrictive Measure for Control of Transboundary Movement of E-Waste

The discussion so far has noted that a non-trade-restrictive, remedial measure involving landfilling, incineration or recycling of e-waste is not feasible in addressing the health and environmental impacts arising from transboundary movement of e-waste to developing countries. Hence it is necessary to examine whether a preventive, trade-restrictive measure modelled in line with WTO rules may be a more sustainable solution.

[24] WTO Appellate Body, 'EC Measures Concerning Meat and Meat Products (Hormones)' Report (1998) WT/DS26/AB/R, WT/DS48/AB/R DSR 1998:I 135 para 187.

[25] Although the original draft of the Basel Convention did not provide a definition for e-waste, later amendment to the original Convention, particularly Decision IV/9, which came into force in 1998, made changes to Annex VIII and went further to include additional Annex (Annex IX) to the Convention. Annex VIII lists specific materials which shall constitute hazardous waste and this list includes materials which come within the class of e-waste such as waste electrical and electronic assemblies or scrap containing components such as accumulators and other batteries, mercury-switches, glass from cathode-ray tubes and other activated glass and PCB-capacitors, or contaminated with constituents such as cadmium, mercury, lead, polychlorinated biphenyl. See Annex VIII, para A1180.

Going further, this paper will propose adopting a trade-restrictive framework in the form of a technical regulation and import ban as preventive measures for dealing with the problem. The paper will therefore examine the feasibility for the adoption of a compulsory certification and labelling system as well as a prohibition on commercial importation of used electrical and electronic devices not complying with the said certification and labelling system.

A. Development of Certification and Labelling System

The first aspect of the proposed framework will require the development of an international certification system for UEEE. The proposed certification system (which is non-existent in the Basel Convention framework) will serve to set a standard which UEEE must comply with before it can be fit for export to developing countries. The certification framework could be developed building on the e-stewards certification system.[26] The e-stewards certification system was developed by a coalition of electronic equipment recyclers, environmentalists, industry leaders, health and safety, and technical experts working with the Basel Action Network (BAN), a non-governmental organization focused on halting the transboundary flow of e-waste to developing countries. The e-stewards certification is awarded to electronic recyclers that comply with the highest environmental standards with respect to recycling, refurbishing, processing and the disposal of such equipment.

The e-stewards certification process provides a high level of assurance that e-stewards certified recyclers and exporters consistently adhere to set standards. It precludes a certified recycler from exporting e-waste to developing countries. Only UEEE which has been tested and is shown to be fully functional may be exported to developing countries. The mechanism provides a measure of assurance that UEEE exports from e-steward certified recyclers/exporters conform to the standard of functionality, and hence a guarantee against obsolete e-waste export. This element of the e-stewards certification is very important as it serves to differentiate between functional UEEE and junk e-waste which contributes to adverse health and environmental impact in the region.

A framework that can be used to adequately restrict the transboundary flow of obsolete e-waste to developing countries can be developed building on the e-stewards certification system. The current e-stewards certification mechanism can be further developed to incorporate the use of a product certification mark or label which can be affixed to UEEE to serve as a physical evidence of compliance with set criteria. Hence recyclers and/or UEEE exporters in developed countries who meet and obtain the e-stewards certification or similar certification schemes developed along that line can apply the certification marks or labels with a unique identification code on their exports. The development of such certification systems by environmental NGOs or certification bodies in developed countries should be accompanied by a regulatory regime in developing countries which, among others, requires compliance with a certification and labelling mark as a condition for import eligibility for UEEE.[27]

The use of certification labels in the electronics industry is not new. Over the years, regulatory and voluntary standards has been designed and applied on various consumer products including electronic products.[28] In many cases, consumer choice of products has often been influenced by environmental standards where such exist, and there is at least one specific instance of a government procurement directive which requires government agencies' purchase of high-tech equipment to comply with an environmental certification standard.[29] Thus the application of environmental labelling and certification systems is growing and is also changing in nature from hitherto voluntary standards to regulatory standards.[30]

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[26] <http://e-stewards.org/learn-more/for-recyclers/overview/benefits-of-certification/> accessed 3 August 2017.

[27] While environmental NGOs and certification bodies in developed countries are in the best position to develop the certification scheme proposed, governments in developing countries are most suited to take the regulatory measures to enforce the certification scheme. Governments in developed countries have little incentive to take serious steps to halt dumping of e-waste in developing countries. Lawrence Summers, Chief Economist and Vice President of the World Bank (as he then was) in a leaked internal memo justified the migration of dirty industries to poor developing countries in Africa on the ground that these countries are vastly *under*-polluted. See *The Economist* (8 February 1998) 66.

[28] For example, Sweden's TCO standards and Germany's Blue Angel standard have quietly influenced product designs by high tech companies such as Dell and HP. More so, eco-labels like Japan's PC Green Label, Scandinavia's IT Eco Declaration, and Energy Star, as well as Canada's Environmental Choice have been applied to consumer products and other products which meet standards making them less harmful to the environment. See Elizabeth Grossman, *High tech trash: digital devices, hidden toxics, and human health* (Island Press 2006) 5.

[29] During the Bill Clinton era in the United States, the administration issued a directive specifying that the federal government would only buy Energy Star certified products. See Executive Order 13221 of July 31, 2001.

[30] In the United States, the regulatory standard requires that all home appliances must comply with the Appliance Standards Program established by the US Department of Energy and the Federal Trade Commission. In addition, appliances that meet the rigorous

The EC's Waste Electrical and Electronic Equipment Directive (WEEE Directive) and Restriction of Hazardous Substances Directive (RoHS Directive) represent successful attempts to mandate environmentally sound product standards at regional level. Manufacturers are required to certify their products as complying with the set standards before placing them for sale in the EU market. Compliance with the Directives in some cases is required to be evidenced by a design mark in the product e.g. the recycle logo. Non-compliance with the Directives will result in the products being ineligible for sale in the EU.

It is argued here that the idea behind certification scheme and label can be applied in developing a certification framework for regulating the transboundary flow of e-waste into developing countries. To reduce the transboundary movement of e-waste to developing countries in the guise of UEEE export, such a certification system should be developed with the objective of distinguishing functional used electronics meant for resale from obsolete e-waste devices transported for dumping which in essence constitutes a health and environmental hazard. Electronic products that meet the criteria for reuse and functionality could be identified by a certification mark or label, while those that fail to meet that criteria (and hence e-waste) should be ineligible for importation into the territory of the applicable developing country.

However, one important analysis that must be made relates to the applicability of the proposed certification and labelling scheme *vis-a-vis* WTO Agreements such as the Agreement on Technical Barriers to Trade (TBT Agreement)[31] and the GATT. To be viable, a certification and labelling scheme must be designed to conform to the provisions of WTO Agreements otherwise they may invoke WTO dispute resolution mechanisms. Hence it is important at this stage to consider the relevant WTO agreements and their jurisprudence in relation to the applicability of certification schemes and marks in international trade.

V. Certification and Labelling Through the Lens of WTO Agreements

Within the context of WTO Agreements, the various labelling schemes available in international trade can be classified into two broad categories – mandatory or voluntary. A mandatory scheme is usually mandated by law or a regulatory instrument and enforced by regulatory mechanism. It could take the form of a 'negative content' labelling or 'content neutral' labelling.[32] A mandatory 'negative content' labelling warns consumers of the adverse health or environmental effect of a particular type of product,[33] and requires the disclosure of reliable product information that otherwise might not be disclosed. Such information disclosure has the dual effect of enabling the consumer to make an informed purchasing decision while at the same time providing incentive for manufacturers to improve their products to achieve higher environmental standards.[34]

In considering the applicability of certification and labelling schemes under the GATT/WTO agreements, it is important to determine first whether the scheme is mandatory or voluntary; whether it constitutes a 'technical regulation' or 'standard'. The applicability of certification and labelling schemes is specifically governed by the TBT Agreement and generally by the provisions of GATT.

A. Applicability of the TBT Agreement

The possible technical barriers to trade covered by the TBT Agreement include technical regulations and standards. The TBT Agreement defines 'technical regulation' as:

> '[A] document which lays down product characteristics or their related processes and production methods, including the applicable administrative provisions, *with which compliance is mandatory*'.[35]

On the other hand, 'standard' is defined as:

energy efficiency standard set by the United States Environmental Protection Agency (EPA) are permitted to use the 'Energy Star' certification label.

[31] WTO, Marrakesh Agreement Establishing the World Trade Organization (15 April 1994) 33 I.L.M. 81 Annex 1A Legal Instruments – Results of the Uruguay Round.

[32] Matthias Vogt, 'Environmental Labeling and Certification Schemes: A Modern Way to Green the World or GATT/WTO-Illegal Trade Barrier?' (2003) 33 Environmental Law Reporter 10522.

[33] A good example of such label is found in regulations mandating the labelling of any product containing ozone depleting substances. UN Protocol on Substances That Deplete the Ozone Layer (1987) 26 ILM 1541.

[34] Vogt (n 32) 10523.

[35] Annex 1:1 (emphasis supplied).

> '[A] document approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for products or related processes and production methods, *with which compliance is not mandatory'*.[36]

While in the case of technical regulations compliance is mandatory, this is not the case with regards to standards. However, in both cases, the document may include or deal exclusively with terminology, symbols, packaging, *marking or labelling requirements* as they apply to a product, process or production method.[37] Since the certification mechanism and labelling scheme proposed in this research is intended to be mandatory, the framework will be analysed in the context of a technical regulation.

In seeking to interpret the definition of 'technical regulation' as contained in the TBT Agreement, recourse must be had to the general rule of interpretation contained in Article 31.1 of the Vienna Convention:[38]

> '[A]treaty shall be interpreted in good faith in accordance with the *ordinary meaning* to be given to the terms of the treaty in their context and in the light of its object and purpose'.[39]

The WTO Appellate Body in *US – Gasoline*[40] noted that '[o]ne of the corollaries of the general rule of interpretation in the Vienna Convention is that interpretation must give meaning and effect to *all* the terms of a treaty'.[41]

The interpretation as well as the meaning and applicability of 'technical regulation' in international trade has been the subject of in-depth analysis in WTO jurisprudence. In the *EC-Asbestos Case,* the panel formulated a three-pronged approach in the analysis of what trade measure constitutes a 'technical regulation'.[42] According to the Appellate Body, a measure constitutes a 'technical regulation' if three basic conditions are met: (i) the measure applies to an identifiable product or group of products; (ii) it lays down one or more characteristics of the product; and (iii) compliance with the product characteristics is mandatory. These basic conditions are further discussed below.

(1) The measure applies to an identifiable product or group of products

While the TBT Agreement requires that a technical regulation must relate to an *identifiable product or group of products*, this does not necessarily imply that the product or group of products must be expressly identified in the document containing the measure. This was the position taken by the Appellate Body in *EC-Asbestos*. In clarifying the Panel's position on this issue, the Appellate Body noted that:

> 'A 'technical regulation' must, of course, be applicable to an *identifiable* product, or group of products. Otherwise, enforcement of the regulation will, in practical terms, be impossible... However, ... this does not mean that a 'technical regulation' must apply to 'given' products which are actually *named*, *identified* or *specified* in the regulation. Although the TBT Agreement clearly applies to 'products' generally, nothing in the text of that Agreement suggests that those products need be named or otherwise expressly identified in a 'technical regulation'. Moreover, there may be perfectly sound administrative reasons for formulating a 'technical regulation' in a way that does not expressly identify products by name, but simply makes them identifiable – for instance, through the 'characteristic' that is the subject of regulation'.[43]

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[36] Annex 1.2 (emphasis supplied).

[37] id (emphasis supplied).

[38] Vienna Convention on the Law of Treaties (adopted 23 May 1969, entered into force 27 January 1980) 1155 UNTS 331 art 32.

[39] Emphasis supplied.

[40] WTO Appellate Body, 'United States – Standards for Reformulated and Conventional Gasoline' Report (1996) WT/DS2/AB/R.

[41] ibid 23.

[42] WTO, 'European Communities – Measures Affecting Asbestos and Asbestos-Containing Products' Panel Report (2001) WT/DS135/R and Add.1, as modified by Appellate Body Report WT/DS135/AB/R, DSR 2001:VIII 3305; This approach was subsequently adopted in 'EC – Sardines' as well as 'US – Tuna II'. See WTO, 'European Communities – Trade Description of Sardines' Panel Report (2002) WT/DS231/R and Corr.1 as modified by Appellate Body Report WT/DS231/AB/R DSR 2002:VIII 3451; and Panel Report, 'United States – Measures Concerning the Importation, Marketing and Sale of Tuna and Tuna Products' (2011) WT/DS381/R 2011.

[43] WTO Appellate Body, 'European Communities – Measures Affecting Asbestos and Asbestos-Containing Products' Report (2001) WT/DS135/AB/R DSR 2001:VII 3243 para 70.

As can be seen from the Appellate Body's line of reasoning, the requirement that a 'technical regulation' be applicable to an *identifiable product, or group of products* is important for legal compliance and enforcement. It will be practically impossible for traders to comply with, as well as for regulatory agencies to enforce, a 'technical regulation' if it is not clear which identifiable product, or group of products it relates to.

(2) Lays down one or more characteristics of the product

The definition of 'technical regulation' in Annex 1.1 of the *TBT Agreement* clearly shows that the document must stipulate one or more of the *product characteristics*. To better comprehend this definition, it is necessary to examine the ordinary meaning of the word *characteristics.* This has been defined as 'a distinguishing trait, quality, or property'.[44] Thus, product characteristic within the context of the *TBT Agreement* refers to objectively definable trait, attribute, quality, property etc which distinguishes a product from another or in essence a distinguishing mark. Annex 1.1 of *TBT Agreement* lists some of these characteristics to include 'terminology, symbols, packaging, marking or labelling requirement'.

In *EC – Sardines,* the Appellate Body noted that 'product characteristics' goes beyond the features and intrinsic qualities of a product to include related characteristics such as means of identification, the presentation and appearance of a product.[45] The Appellate Body in *EC -Asbestos* noted that technical regulations may lay down or stipulate product characteristics in positive form by requiring that a product or group of products (as the case may be) must possess certain characteristics, or in the alternative, it may prescribe the characteristics in negative form by requiring that a product or group of products must not possess certain characteristics. In both cases, the regulation 'lays down' certain characteristics which are binding in nature – in one case it does so affirmatively, and in another case by negative implication.[46] The Appellate Body differentiated this from a situation in which a regulatory measure imposes an outright ban on a product in its natural state without prescribing or imposing any characteristics to the product. In the latter case, the measure consists of a prohibition as opposed to a 'technical regulation',[47] which would fall outside the specific context of the *TBT Agreement* and will be governed by the more general context of the *GATT*.

Product characteristics may be evidenced by 'marking or labelling requirements'. This phrase is used in the definitions of 'technical regulation' and 'standard', and they carry the same meaning in both cases. The only difference in the usage of this phrase in the definitions of 'technical regulation' and 'standard' is that compliance with the marking or labelling is mandatory in the former but voluntary in the latter. Thus, in the case of technical regulation, marking or labelling requirements refers to a set of criteria or conditions that must be fulfilled before a mark or label can be applied or used, or before the product can be marketable. Applying this provision in the *US Tuna II,* the panel noted that:

> 'the US dolphin-safe labelling provisions define the conditions that must be met in order to bear a 'dolphin-safe' label. In so doing, they 'convey criteria to be fulfilled' in order to qualify for such label. They therefore lay down 'labelling requirements' within the meaning of Annex 1.1'.[48]

The later part of Annex 1.1 refers to marking or labelling requirements 'as they apply to a product, process or production method'. While the use of the term 'as they apply to' implies that the marking and labelling requirement must be related to a 'product, process or production method', the use of 'or' in Annex 1.1

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[44] Merriam Webster online dictionary <http://www.merriam-webster.com/dictionary/characteristics> accessed 3 August 2017.

[45] WTO Appellate Body, 'European Communities – Trade Description of Sardines' Report (2002) WT/DS231/AB/R DSR 2002:VIII 3359, 189. The Appellate Body in EC – Asbestos para 67 noted that:

> 'the definition of a 'technical regulation' provides that such a regulation 'may also include or deal exclusively with terminology, symbols, packaging, marking or labeling requirements'. The use here of the word 'exclusively' and the disjunctive word 'or' indicates that a 'technical regulation' may be confined to laying down only one or a few 'product characteristics''.

[46] EC -Asbestos (n 43) para 69. In US Clove Cigarette, the Panel noted that the U.S. measure in issue lays down product characteristics in negative form by requiring that 'a cigarette ... shall not contain'. The Panel was of the view that the negative form of the requirement does not alter the fact that the measure lays down product characteristics. See WTO 'United States – Measures Affecting the Production and Sale of Clove Cigarette' Panel Report WT/DS406/R, as modified by Appellate Body Report WT/DS406/AB/R.

[47] The Appellate Body ruled at para 71 that the French Decree prohibiting asbestos fibres:

> 'does not, in itself prescribe or impose any 'characteristics' on asbestos fibres, but simply bans them in their natural state'. Hence the measure in the Decree consisted only of a prohibition on asbestos fibres, and did not constitute a 'technical regulation'.

[48] WTO, 'United States – Measures Concerning the Importation, Marketing and Sale of Tuna and Tuna Products' Panel Report (2011) WT/DS381/R para 7.76.

indicates a disjunctive connotation. In this sense, the subject matter of marking or labelling requirements must be confined to at least one of these items.

The Panel in *US Tuna II* was satisfied that the US safe-dolphin label requirement 'appl[ied] to' a product – namely, the tuna product. Technically, this was sufficient for the Panel to rule that the measure falls within the scope of the second part of Annex 1.1. However, on further analysis, the criteria or condition for the use of the 'dolphin-safe' label in tuna products is subsistent on the process or production method, namely the method utilized in harvesting the tuna products. Hence while the label is applied on the final product, the condition for the use of the label is complied with during the harvesting process for the tuna products. Thus, a tuna product is only fit to use the label if the 'tuna contained in the product were harvested using a method of fishing that is not harmful to dolphins'.[49]

It might be safe then to state that the technical regulation should apply to the product and the process or production method where a trade measure requires a particular process or production method be followed in the processing of a product, and compliance with the said method is mandatory in other for the product to be fit to bear a mark or label which is essential for marketing the product. This is just one example of a document that can be said to 'lay down' or stipulate product characteristics within the context of Annex 1.1.

(3) Compliance with the product characteristics is mandatory

This is the third and most important element of 'technical regulation'. Mandatory compliance distinguishes a 'technical regulation' from a 'standard'. The use of the phrase 'with which compliance is mandatory' implies that compliance with the measure in question is obligatory, compulsory or required by law or regulation. To this effect, the Appellate Body in *EC – Asbestos* noted that:

> 'A 'technical regulation' *must*, in other words, regulate the 'characteristics' of products in a *binding* or *compulsory* fashion. It follows that, with respect to products, a 'technical regulation' has the effect of *prescribing* or *imposing* one or more 'characteristics' – 'features', 'qualities', 'attributes', or other *'distinguishing mark'*. (Emphasis supplied)[50]

Hence a trade measure which prescribes a marking or labelling requirement, and imposes compliance with the requirement as a compulsory condition which must be fulfilled before a product or group of products could be imported, distributed, sold, or otherwise marketed in a jurisdiction qualifies as a 'technical regulation'. The Panel in *US Tuna II* rightly noted that:

> '... compliance with product characteristics or their related production methods or processes is 'mandatory' within the meaning of Annex 1.1, if the document in which they are contained has the effect of regulating in a legally binding or compulsory fashion the characteristics at issue, and if it thus prescribes or imposes in a binding or compulsory fashion that certain product must or must not possess certain characteristics, terminology, symbols, packaging, marking or labels or that it must or must not be produced by using certain processes and production methods. By contrast, compliance with the characteristics or other features laid out in the document would not be 'mandatory' if compliance with them was discretionary or 'voluntary''.[51]

The adoption of 'marking and labelling requirements' as a measure in international trade would entail establishing conditions that a product needs to satisfy before being able to bear a designated mark or label. The mere fact that a trade measure incorporates this requirement does not imply that compliance is mandatory unless expressed or implied from the document. It must be evident that the document in which the trade measure is contained has the effect of regulating in a legally binding way the use (or non-use) of the mark or label. It must be able to impose or prescribe in a legally binding fashion that a product or group of products must possess certain marking or labels. Where the document prescribes compulsory use of a label, it may also go further to state that the label may not be used unless the prescribed conditions are met.

The framework proposed in this paper argues for the development of a certification scheme which entails the application of a certification mark or label on UEEE which has passed the test of functionality. Such a certification scheme could be developed by environmental NGOs or certification bodies in developed

49 United States Code, Dolphin Protection Consumer Information Act (DPCIA) subsection 1385(d)(1), title 16, section 1385.

50 EC -Asbestos (n 43) para 68.

51 WTO (n 48) para 7.111.

countries. The paper further proposes the adoption of such framework by developing countries, making it a mandatory or legal requirement for imported UEEE. A mandatory requirement will be the most effective way to ensure sufficient compliance with this framework. A voluntary standard will not provide any incentive for compliance.[52]

The proposed measures are best undertaken by developing countries because most developed countries (especially in Europe) already have laws prohibiting the shipment of e-waste to developing countries. It is only reasonable that the latter take their fair share of responsibility to prevent the inflow of e-waste at their end. Also, shipment of e-waste to developing countries presents a cheap and cost effective means of getting rid of developed world's e-waste in the developing world's backyard. If the trend has to stop, serious measures to that effect should come from those who bear the burden at the receiving end rather than those who benefit by maintaining the status quo.

The mandatory nature of the framework (technical regulation) would be vital in ensuring compliance, thus preventing the current use of international trade in used electrical and electronic equipment as a conduit for the transboundary movement of junk, obsolete e-waste.

The mere fact that a trade measure qualifies as a 'technical regulation' does not necessary imply that it is inconsistent with the TBT Agreement. However, to be valid, it must conform with certain binding requirements outlined in the *TBT Agreement*. These requirements will be examined *vis-à-vis* the proposed framework.

VI. Legal Analysis of the Compatibility of Used Electronics Labelling Schemes with the TBT Agreement

The analysis presented above leaves no doubt that the certification and labelling scheme proposed in this paper qualifies as a technical regulation within the context of the *TBT Agreement.* However, certain legal implications will arise from imposing certification and labelling requirements on UEEE as proposed in this paper. These legal implications become more evident considering the fact that the same certification and labelling requirements are not imposed on new electrical and electronic equipment. Of course, imposing requirements on new products will not be necessary because international trade in the latter does not pose a similar threat of harm to health and environment as the former does. Moreover, the certification and labelling scheme proposed above is meant to segregate functional UEEE from obsolete e-waste, and international trade in new electrical and electronic equipment does not give rise to the transboundary movement of obsolete e-waste – the very mischief the certification and labelling scheme is meant to address.

Hence, it is necessary to examine the compatibility of the certification and labelling scheme within the context of the *TBT Agreement* and the WTO/GATT legal system, especially in the light of the WTO provisions relating to the application of the technical regulation to 'like products', and its impact on international trade. The legality of a trade measure classified as a technical regulation is dependent on its consistency with the substantive requirements set out in Article 2 of the *TBT Agreement.* The Article provides in part:

> '2.1 Members shall ensure that in respect of technical regulations, products imported from the territory of any Member shall be accorded treatment *no less favourable* than that accorded to *like products* of national origin and to *like products* originating in any other country.
>
> 2.2 Members shall ensure that technical regulations are not prepared, adopted or applied with a view to or with the effect of creating *unnecessary obstacles to international trade*. For this purpose, technical regulations shall not be more trade-restrictive than necessary to fulfill a legitimate objective, taking account of the risks non-fulfillment would create. Such legitimate objectives are, *inter alia*: national security requirements; the prevention of deceptive practices; protection of human health or safety, animal or plant life or health, or the environment. In assessing such risks, relevant elements of consideration are, *inter alia*: available scientific and technical information, related processing technology or intended end-uses of products'. [emphasis added]

The analysis of Article 2.1 in light of the proposed certification and labelling scheme will turn on whether new and used electrical and electronic equipment are considered 'like products' within the context of the

[52] A survey of Canadian corporate executives reveal that 16% of the executives were motivated to take action on environmental issues when government programs were voluntary, while 95% were motivated to take action on environmental issues to ensure compliance with government regulation. *See* Ontario Federation of Labour, 'Creating Ontario's Toxic Reduction Strategy' Submission to the Ministry of Environment.

TBT Agreement. Subsequently, the analysis of Article 2.2 will focus on the impact of the said certification and labelling scheme on international trade in UEEE; for example, whether it constitutes an *unnecessary obstacle to international trade*.

A. Interpreting Article 2.1 of TBT Agreement

Before beginning a detailed analysis of Article 2.1, it is important to make some general observations. First, the analysis of Article 2.1 could take different dimensions depending on the circumstances of the case or measure in question. It could entail an assessment of the effect of the measure in question as it relates to the products of the complaining member country *vis-a-vis* the domestic products of the member country subject to the complaint (national treatment), or the effect of the measure in question in relation to the products of the complaining member country *vis-a-vis* 'like products' of any other country in the domestic market of the member country subject to the complaint ('most favoured nation' treatment).[53] It could also entail an assessment of the effect of the measure in question as it relates to the products of the complaining member country on the one hand, and the domestic products of the member country subject to the complaint as well as 'like products originating in any other country' on the other hand. Hence Article 2.1 of the TBT Agreement states that:

> 'Members shall ensure that in respect of technical regulations, products imported from the territory of any Member shall be accorded treatment no less favourable than that accorded to *like products of national origin* and to *like products originating in any other country*'.[54]

Article 2.1 covers both the national treatment and most favoured nation (MFN) principle. The national treatment obligation prohibits discrimination between like domestic and imported products while the MFN obligation prohibits discrimination between like products from different foreign countries in the domestic market. Since the analysis here focuses on whether new and used items of electrical and electronic equipment constitute 'like products', Article 2.1 will be considered in the context of the MFN principle. This is because the absence of local industries producing new electrical equipment in developing countries implies that new and used items of electrical and electronic equipment are imported into the countries. Hence, the issue for determination here is whether the proposed measure discriminates between new and used electrical and electronic equipment by imposing a certification and labelling requirement on the latter but not the former.

Secondly, the interpretation of Article 2.1 of the TBT Agreement should focus on the text of Article 2.1 read in the context of the TBT Agreement, including its preamble, as well as a consideration of the other contextual elements, such as Article III:4 of the GATT 1994.[55] The Preamble to the TBT Agreement is as much part of the context of Article 2.1 and provides insight into the object and purposes of the Agreement, which in turn assists with interpreting Article 2.1. The second,[56] fifth[57] and sixth[58] recitals of the Preamble are particularly helpful in the interpretation of Article 2.1.

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[53] The latter situation may arise where the country whose policy is the subject matter of the complaint does not have a domestic 'like product' but its policy or measure accord discriminatory treatment in its domestic market to 'like products' originating from other member countries.

[54] In 'US – Tuna II', Mexico challenged certain legal instruments of the United States establishing the conditions for the use of a 'dolphin-safe' label on tuna products. In examining the United States measure in the light of article 2.1 of the TBT Agreement (n 31), the Appellate Body noted that such examination should commence with assessing whether the measure at issue modifies the conditions in the US market to the detriment of Mexican tuna products as compared to US tuna products or tuna products originating in any other Member. See WTO Appellate Body, 'United States – Measures Concerning the Importation, Marketing and Sale of Tuna and Tuna Products' Report (2012) WT/DS381/AB/R.

[55] See WTO Appellate Body, 'United States – Measures Affecting the Production and Sale of Clove Cigarettes' Report (2012) WT/DS406/AB/R para 100.

[56] '*Desiring* to further the objectives of GATT 1994'.

[57] 'Desiring however to ensure that technical regulations and standards, including packaging, marking and labelling requirements, and procedures for assessment of conformity with technical regulations and standards do not create unnecessary obstacles to international trade'.

[58] '*Recognizing* that no country should be prevented from taking measures necessary to ensure the quality of its exports, or for the protection of human, animal or plant life or health, of the environment, or for the prevention of deceptive practices, at the levels it considers appropriate, subject to the requirement that they are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail or a disguised restriction on international trade, and are otherwise in accordance with the provisions of this Agreement'.

The Appellate Body in *US – Clove Cigarette*[59] acknowledged in relation to the sixth recital that the rights of Member states should not be constrained in relation to the adoption of measures necessary to fulfil certain legitimate policy objectives, provided that such measures are not applied in a manner that would constitute arbitrary or unjustified discrimination or a disguised restriction on international trade. Thus, WTO Member states can legitimately apply technical regulations in the pursuit of legitimate objectives – provided that such measures are even-handed and applied in a manner consistent with the provisions of the TBT Agreement. With these general observations noted, let us now turn to detailed examination of Article 2.1 of the TBT Agreement.

B. 'Like Products' Analysis

Article 2.1 of the TBT Agreement has been the subject of in-depth analysis by various WTO Panels and Appellate Bodies.[60] It obliges member states to extend any advantage enjoyed by domestic products or products of any WTO member state to *like products* originating from all other member states. Article 2.1 contains three basic elements that must be established: (i) the measure in issue is a 'technical regulation' within the meaning of Annex 1.1; (ii) the imported product is sufficiently 'like' the domestic product and other products from other countries; (iii) the treatment accorded to imported products is less favourable than that accorded to like domestic products and like products from other countries.[61] Having considered the meaning of 'technical regulation' above, and having come to the conclusion that the measure at issue here is a technical regulation, there remains the need for an examination of the concept of 'like product' within the context of the TBT Agreement.

Some domestic environmental measures differentiate between products that may be similar on their face or in their use but manifest different health and environmental implications when used and disposed. It has been argued that if health and environmental factors are taken into consideration in determination of 'likeness' of products under the WTO regime, Members states will enjoy considerable leeway in enacting domestic environmental and health measures. On the contrary, if these factors are not taken into consideration in determining the 'likeness' of products, efforts by Member states to adopt domestic environmental and health protection measures would be constrained.[62]

Interpreting the term 'like products' will require ascertaining the ordinary meaning of the term and interpret same 'in the light of the context and of the object and purpose of the provision at issue and of the object and purpose of the covered agreement in which the provision appears'.[63] Also relevant are WTO Panels and Appellate Body interpretations of similar terms as used in various provisions of the *GATT*.[64] The judicial authority for this is found in Article XVI:1 of the *Agreement Establishing the World Trade Organization* which clearly provides that except as otherwise provided, the WTO shall be guided by the decisions, procedures and customary practices followed by the GATT.[65]

One of the frameworks or approaches for determining the 'likeness' of products can be found in the GATT Working Paper report on *Border Tax Adjustments.*[66] This approach has been followed and developed by several WTO panels and Appellate Bodies.[67] The approach consisted of four general criteria for analysing 'likeness': (1) the properties, nature, and quality of the products; (2) the end-uses of the products; (3) consumers' taste and habits – more comprehensively termed consumers' perceptions and behaviour – in respect of the products; and (4) the tariff classification of the products.[68] These four general criteria were

[59] WTO (n 55) .

[60] WTO (n 42), (n 48), (n 43) (n 55).

[61] WTO (n 54) para 202.

[62] Nathalie Bernasconi-Osterwalder, Daniel Magraw, Maria Julia Oliva, Marcos Orellana, Elisabeth Tuerk, *Environment and Trade: a Guide to WTO Jurisprudence* (Routledge 2005) 8.

[63] WTO Appellate Body, 'European Communities – Measures Affecting Asbestos and Asbestos-Containing Products' Report (2001) WT/DS135/AB/R para 88–89.

[64] See for example Article I:1, II:2, III:2; VI:4, IX:1, XI:2(c), XIII:1, XVI:4 and XIX:1 of the GATT 1994.

[65] Marrakesh Agreement Establishing the World Trade Organization (n 31) Article XVI:1.

[66] WTO, 'Report of the Working Party on Border Tax Adjustments' (1970) L/3464 BISD 18S/97.

[67] See WTO Appellate Body, 'Japan – Taxes on Alcoholic Beverages II' Report (1996) WT/DS8/AB/R WT/DS10/AB/R WT/DS11/AB/R DSR 1996:I, 97, 113. See, also, WTO, 'United States – Standards for Reformulated and Conventional Gasoline' Panel Report (1996) WT/DS2/R para 6.8 as modified by Appellate Body Report WT/DS2/AB/R DSR 1996:I 29.

[68] The fourth criterion, tariff classification, was not mentioned by the Working Party on Border Tax Adjustments, but was included by subsequent panels (see, for instance, WTO, 'EEC – Measures on Animal Feed Proteins' Panel Report (1978) BISD 25S/49 para. 4.2, and 'Japan – Alcoholic Beverages' (n 67) para 5.6).

endorsed by the Appellate Body in *EC-Asbestos* as 'tools to assist in the task of sorting and examining the relevant evidence' for the purpose of determining 'likeness'.[69]

(1) The properties, nature, and quality of the products

The Appellate Body in *EC-Asbestos* noted that the assessment of 'likeness' under this head will require a full examination of the physical properties of the products.[70] It ruled that 'the tentacles' of physical properties and consumer taste criteria extend to evidence relating to health risks associated with a product.[71] This should also extend to the environmental impacts and risks, as well as the health impacts, posed by a product.

Unlike international trade in new electrical and electronic products, international trade in UEEE poses a special threat to human health and environments in the developing world. It is much more likely that greater quantities of used electronics shipped to developing countries will be improperly disposed of. This is not the case with new electrical and electronic equipment.

Moreover, as discussed above, the essence of the certification and labelling scheme for UEEE relates to the health and environmental impacts associated with international trade in UEEE. These impacts are not evident in international trade in new electrical and electronic equipment. The application of different regulatory frameworks to these products is supported by the difference in terms of risk to health and environment posed by the trade. The Panel in *US Clove Cigarette* noted the importance of taking into consideration the health objective of a trade regulation in analysis of 'likeness' between products.[72] Thus, there may be legitimate grounds for a state to require labelling for products based on the likelihood of their adverse environmental characteristics, while at the same time not requiring any label for similar products lacking those adverse characteristics.[73]

(2) The end-uses of the products

This relates to 'the extent to which products are capable of performing the same, or similar, functions (end-uses)'.[74] In *US Clove Cigarette*, the issue before the Panel was whether imported clove cigarettes and domestic menthol cigarettes are 'like products' within the context of Article 2.1 of the TBT Agreement. The Panel ruled that both imported clove cigarettes and domestic menthol cigarettes are 'like products' because they have the same end use, namely 'to be smoked'. The Appellate Body faulted this line of reasoning, noting that:

> '[T]o find, as the Panel did, that the end-use of both clove and menthol cigarettes is 'to be smoked' does not, in our view, provide sufficient guidance as to whether such products are like products within the meaning of Article 2.1 of the TBT Agreement. Also cigars, loose tobacco, and herbs share the same end-use of being 'smoked', although this does not say much as to whether all these products are like'.[75]

The Appellate Body's reasoning suggests that the end use criterion alone should not be taken as decisive in 'likeness' analysis. Products with the same or similar end-uses may share different physical properties.[76] Moreover, products that *prima facie* seem to have the same end uses may on detailed investigation reveal different end use.[77]

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[69] WTO (n 43) paras 101–103.

[70] ibid para. 114.

[71] id.

[72] WTO (n 46) para 7.427.

[73] Vogt (n 32) 10526. In *US Tuna II*, it was noted that Article 2.1 does not necessarily imply that WTO Members may not draw any regulatory distinction between products that have been determined to be like products.

[74] WTO (n 43) para 117.

[75] WTO (n 55) para 129.

[76] A refrigerator containing Chlorofluorocarbons (CFCs) and another not containing such substances may have the same end uses in that they share the same application and can replace each other, however, they cannot be considered 'like products' because of their differing physical properties.

[77] For example, water and alcohol may generally have the same end use – to be drunk, but a detailed investigation may reveal that they do not have same end use. Whilst water is meant for thirst quenching, alcohol may have the end use of intoxication.

(3) Consumers' tastes and habits

Analysis of consumer preferences under Article 2.1 of the *TBT Agreement* would entail a consideration of the extent to which consumers are, or would be, willing and *capable* to choose one product over another for same end-use – for example, new electrical and electronic devices over used electrical and electronic devices (or vice versa). The driving force behind the massive growth in international trade in UEEE is the socio-economic situation in developing countries. Low-income and poverty makes it very difficult for majority of people in the region to afford brand new electrical and electronic devices. For this majority of consumers, whatever their preference for brand new electrical and electronic devices might be, the fact is that it is beyond their financial reach. Hence their capacity to acquire the same is highly limited, if not restricted. The economic situation tailors consumer perceptions and preferences in favour of used electrical and electronic devices. This economic reality which is directly related to consumer capacity, and which in turn determines consumer taste and preference, has a determinative impact on whether the two products are 'like'. Thus, consumers in developing countries have certain preferences for imported UEEE based on the low prices of these devices as compared to imported new devices. It is important to take these facts into consideration in the assessment of 'likeness'.

C. Conclusion on 'likeness'

New and used electrical and electronic equipment imported into developing countries differ in many respects: in terms of the magnitude of health and environmental risks they pose, and in terms of consumer taste and preferences. The analysis above shows that the two products are not 'like products' within the context of Article 2.1 of TBT Agreement.

However, assuming for the purpose of argument that the products in question are 'like products' within the context of Article 2.1 of TBT Agreement, this will still not invalidate the technical regulation proposed in this paper, it will rather invoke the 'no less favourable treatment' principle. The principle is to the effect that States shall accord 'treatment no less favourable than that accorded … to like products originating in any other country'. The term 'no less favourable treatment' was discussed within the context of the TBT Agreement by the Appellate Body in *US Clove Cigarette*.[78] The Appellate Body interpreted the term to prohibit both *de jure* and *de facto* discrimination 'while at the same time permitting detrimental impact on competitive opportunities for imports that stems exclusively from legitimate regulatory distinctions'.[79] The Appellate Body noted that such legitimate regulatory distinctions could include measures aimed at protection of human life or health.[80]

In determining whether imported products from member countries are subject to prohibited discriminatory treatment in the domestic market, the Appellate Body in *US – COOL*[81] took the view that the relevant question was whether the impugned measure 'affects the conditions under which like goods, domestic and imported, compete in the market'.[82] If the measure results in a detrimental impact on the imported products in the market place, such impact will be taken into consideration in the determination of less favourable treatment. However, if the detrimental impact arises from the decisions (e.g. purchasing decisions) of private actors and is not directly related to the measure, it cannot support a finding of discriminatory treatment under Article 2.1.

The Appellate Body in *US Clove Cigarette* also noted that the non-discrimination obligation in Article 2.1 of the TBT Agreement is similarly worded as that in *Article III:4* of the GATT.[83] The latter provision has been discussed by various WTO judges, who have highlighted three interpretative elements. First, the Appellate Body in *Korea – Various Measures on Beef* established that a formal difference in treatment of like products was not sufficient to show a violation of Article III:4.[84] Secondly, the issues as to whether a product is treated less favourably should be resolved by examining whether a measure modifies the conditions of competition

[78] WTO (n 55).

[79] para 175.

[80] para 173.

[81] WTO Appellate Body, 'United States – Certain Country of Origin Labelling (COOL) Requirements' Reports (2012) AB-2012-3.

[82] para 288.

[83] 'The products of the territory of any contracting party imported into the territory of any other contracting party shall be accorded treatment no less favourable than that accorded to like products of national origin in respect of all laws, regulations and requirements affecting their internal sale, offering for sale, purchase, transportation, distribution or use. The provisions of this paragraph shall not prevent the application of differential internal transportation charges which are based exclusively on the economic operation of the means of transport and not on the nationality of the product'.

[84] See WTO, 'Korea – Various Measures on Beef' WT/DS161/AB/R WT/DS169/AB/R para 137.

in the relevant market to the detriment of the imported product.[85] Thirdly, in the *US-FSC (Article 21.5-EC)* case, the Appellate Body stated that the examination of whether a measure involves less favourable treatment of imported products within the meaning of Article III:4 GATT must focus on close scrutiny of the 'fundamental thrust and effect of the measure itself' in the market place.[86]

It is important to determine whether there is an objective, rational, non-trade related basis for distinguishing between the products in question. If this is the case, it follows that no such breach can be said to have occurred. On the other hand, if no such basis could be established, it can be validly presumed that the principle has been breached.[87]

Assuming that the products in question here are 'like products', it is further argued that the application of the technical regulation proposed will not result in any violation of the principle. Although there might be formal differences in the treatment accorded to both products in the sense that the technical regulation applies to one but not the other, the measure does not modify the conditions of competition in the relevant market to the detriment of any of the products. The 'fundamental thrust and effect of the measure itself' in the market place is to prevent the flooding of the used electronics market with obsolete e-waste. More so, the distinction between the products is founded on an objective, rational, non-trade related basis.

Accordingly, the technical regulation proposed in this research in relation to certification and labelling requirements for UEEE does not seem to contravene Article 2.1 of the TBT Agreement. The next issue to be examined then is whether it constitutes an unnecessary obstacle to international trade within the context of Article 2.2 of the TBT Agreement.

D. Unnecessary obstacles to international trade

Article 2.2 of the TBT Agreement imposes additional requirements for the validity of technical regulations. First, technical regulations shall not be 'prepared, adopted or applied with a view to or with the effect of creating unnecessary obstacles to international trade'. Secondly, 'technical regulations shall not be more trade-restrictive than necessary to fulfil a legitimate objective, taking account of the risks non-fulfilment would create'. The second requirement tends to shed more light into the meaning of the first. A technical regulation that is more trade-restrictive than necessary would inevitably amount to an unnecessary obstacle to international trade.

In determining whether a technical regulation amounts to an unnecessary obstacle to international trade, it is important to inquire or determine whether the technical regulation is necessary taking into consideration the legitimate objectives of the member state applying the technical regulation. The context of the test for necessity here is open ended and this is evident from the use of the phrase '*inter alia*' in Article 2.2.[88] Article 2.2. was the subject of in-depth analysis by the Appellate Body in *US-Tuna II*.[89] In interpreting Article 2.2, the Appellate Body discussed the meaning of key terms in the provision such as 'legitimate objective', 'fulfilment', and 'not … more trade-restrictive than necessary'.

A 'legitimate objective' in Article 2.2 is a lawful or justifiable aim or target which the technical regulation seeks to achieve. The Appellate Body in *US-Tuna II* was of the view that a determination of the legitimacy of the objective requires taking into consideration (among others) 'evidence regarding the structure and operation of the measure'.[90] However, the Appellate Body in *US – COOL* took the position that a finding that the objective in question falls among those listed in Article 2.2 would bring an end to any further inquiry into the legitimacy of the objective.[91] It is important to note that Article 2.2 lists specific examples of 'legitimate objectives' including the protection of human health as well as environmental protection.

In relation to the 'fulfilment' of the legitimate objective, the Appellate Body in *US-Tuna II* noted that this relates to the extent of the contribution made by the technical regulation in realising the said objective at a level the member state considers appropriate.[92] The contextual support for this interpretation is found in the sixth recital of the preamble to the TBT Agreement which allows a member state (subject to certain limitations) to adopt measures necessary to achieve its legitimate objectives 'at the levels it considers

[85] id. See also Tamiotti, In: Wolfrum, R, Stoll, P and Seibert, A (eds), *Max Planck Commentaries on World Trade Law: WTO – Technical Barriers and SPS Measures* (Brill 2007) para 12.

[86] See US-FSC (Article 21.5-EC), WT/DS108/AB/RW para 215.

[87] Grosz (n 9) 379.

[88] See WTO (n 54).

[89] id.

[90] para 314.

[91] WTO (n 81) para 372.

[92] paras 315, 316.

appropriate'.[93] According to the Appellate Body in *US — COOL,* 'a panel adjudicating a claim under Article 2.2 must seek to ascertain—from the design, structure, and operation of the technical regulation, as well as from evidence relating to its application—to what degree, if at all, the challenged technical regulation, as written and applied, actually contributes to the achievement of the legitimate objective pursued by the Member'.[94]

A determination of whether a technical regulation is 'not more trade-restrictive than necessary' would invoke a 'necessity test'. This would require a consideration of factors identified by the Appellate Body in *US-Tuna II*, including: (i) the degree of contribution made by the measure to the legitimate objective at issue; (ii) the trade-restrictiveness of the measure; and (iii) the nature of the risks at issue and the gravity of consequences that would arise from non-fulfilment of the objective(s) pursued by the Member through the measure.[95] Consequently, in the context of Article 2.2, if the restriction on international trade resulting from the application of a technical regulation exceeds what is required to achieve the legitimate objective sought by the member state, the implication would be that the technical regulation is not necessary and is therefore an unnecessary obstacle to international trade.

Whether a measure affecting international trade is 'necessary' has also been considered in the context of Article XX(b) of the GATT. In *Korea – Various Measures on Beef,* the Appellate Body split the necessity test into two: first, a situation where a claim is made to the effect that the measure in indispensable, and secondly, where the measure is justifiably necessary even in the presence of other alternative measures. With regards to the first, the Appellate Body noted that 'the word 'necessary' is not limited to that which is 'indispensable'. However, a measure which is 'indispensable' would certainly pass the 'necessary test'. The Appellate Body noted that the second test involves a 'process of weighing and balancing' of a series of factors including (1) the contribution made by the measure to the enforcement of a regulation at issue; (2) the importance of the common interests or values protected by the regulation; and (3) the impact of the regulation on international trade.[96]

This process of 'weighing and balancing' was elucidated in the *EC-Asbestos* where the Appellate Body noted that the more vital or important the common value pursued, the easier it would be to accept as 'necessary' a measure designed to achieve those values or ends. Tamiotti has noted in his commentary that the WTO's 'weighing and balancing' process is particularly relevant in the context of Article 2.2, which is concerned with striking a balance between the legitimate objectives pursued by the Member state on the one hand, and the trade-restrictiveness of the measure on the other hand.[97] Furthermore, the use of 'unnecessary obstacles' in Article 2.2 suggests that some trade-restrictiveness is necessary and allowed. What is not allowed (and hence unnecessary) is a technical regulation that imposes more restrictions in international trade than is necessary to achieve the legitimate objective sought by the imposing member state.

A close examination of Article 2.2 clearly reveals that protection of human health and the environment (which are the main objectives of the certification and labelling scheme proposed in this paper) are legitimate objectives expressly recognized in the said provision. Thus, applying the TBT and GATT principles above, the objective pursued by the technical regulation proposed in this paper – the protection of human health and the environment – is a value that is both 'vital' and 'important to the highest degree'. The measure is 'necessary' to the extent that it will facilitate the importation of functional UEEEs into developing countries while at same time preventing the importation of e-waste that constitutes health and environmental hazards to the region. The measure should be held to constitute a *necessary* 'obstacle to international trade'.

In addition, the measure is justifiably necessary even in the presence of other alternative measures. Earlier, this paper examined the use of non-trade-restrictive measures which allow for free trade in UEEE. The measure was examined in conjunction with a domestic framework for the safe disposal and management of junk electronics or e-waste that will inevitably flow along with used electronics. Such domestic disposal or management processes will entail the use of incineration, landfilling and recycling.

Many problems associated with the non-trade-restrictive measure were highlighted. It was noted that state-of-the-art incineration, landfilling and recycling technologies still leave communities vulnerable to the adverse health and environmental impacts associated with e-waste; that such state-of-the-art technologies are not readily available in developing countries; and that even if they are available, a

[93] WTO (n 81) para 373.

[94] id.

[95] para 322.

[96] para 164.

[97] Tamiotti (n 85) para 20.

trade measure which permits the unrestricted transboundary movement of junk e-waste from developed to developing countries will be contrary to the principles of the Basel Convention and Basel Ban Amendment. Thus, the non-trade-restrictive measure available will not achieve the legitimate objective of protection of human health and the environment. Accordingly, the trade measure proposed in this research does not constitute an *unnecessary* obstacle to international trade and hence does not contravene Article 2.2.

VII. Import Restriction

As has been noted above, the idea behind the proposed certification and labelling scheme is to provide a mechanism for differentiating between functional UEEE and obsolete e-waste which constitutes a threat to public health and the environment in developing countries. While this paper advocates for free trade in the former, it proposes the application of an import ban by developing countries with regards to the latter. The reason for the trade ban stems from the negative health and environmental impacts associated with e-waste in developing countries. One possibly affected GATT provision in respect of import ban on obsolete electronics is the prohibition on quantitative restrictions. The negative attitude towards quantitative restriction is evidenced in Article XI:1 of the GATT which provides:

> 'No prohibitions or restrictions other than duties, taxes or other charges, whether made effective through quotas, import or export licences or other measures, shall be instituted or maintained by any contracting party on the importation of any product of the territory of any other contracting party or on the exportation or sale for export of any product destined for the territory of any other contracting party'.

Article XI:1 formally forbids 'prohibition' and 'restriction' in relation to the importation of goods from Member states. Member states generally cannot forbid the importation of the products of other Member states into their market. In the *Brazil – Tyres case*,[98] the WTO panel found that Brazil's ban on the importation of retreaded tyres was a violation of Article XI:1. As Bernasconi-Osterwalder notes, 'the trade and environment debate focuses on whether or not the use of trade related-measures to protect the environment and human health are permissible under the WTO framework'.[99]

It is acknowledged that the measure proposed in this paper – namely, the imposition of import ban by developing countries on importation of obsolete electronics – is inconsistent with Article XI:1 since an import ban is within the scope of a 'prohibition' in Article XI:1. However, although the WTO trade regime generally prohibits the application of trade-restrictive measures such as import bans by member states, WTO rules and jurisprudence acknowledge the existence of limited circumstances where such measures can nevertheless be necessary and justified. The Appellate Body in *US – Gasoline case* noted that 'there should not be, nor need be, any policy contradiction between upholding and safeguarding an open, non-discriminatory and equitable multilateral trading system on the one hand, and acting for the protection of the environment, and the promotion of sustainable development on the other'. Thus, WTO rules provide exceptional circumstances in which import bans could be justified. These exceptions are examined further in the light of the trade measure proposed in this paper.

A. General Exceptions: Article XX of the GATT

Article XX of the GATT enumerates the various categories of measures that member states can validly adopt in pursuit of legitimate state policies outside the confine of trade liberalization. It provides a guide for the resolution of conflicts that may arise between trade and other legitimate policy goals that a Member state may seek to pursue such as the protection of human health or the environment. Suffice it to state that the exceptions in *Article XX* are 'limited and conditional'.[100] They are limited because they restrictively apply only in defined circumstances, and they are conditional because the validity of a measure under *Article XX* is further subject to the condition that it does not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade.[101]

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[98] WTO, 'Brazil – Measures Affecting Imports of Retreaded Tyres' Panel Report (2007) WT/DS332/R as modified by Appellate Body Report WT/DS332/AB/R DSR 2007:V 1649.

[99] Bernasconi-Osterwalder (n 62) 76.

[100] See WTO 'US – Shrimp' Report (1998) WT/DS58/AB/R para 157.

[101] id.

The relevant provision of Article XX states:

> 'Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures:
> (a) ...;
> (b) necessary to protect human, animal or plant life or health;'

Article XX(b) affirms the right of Member states to enact measures to protect human life or health. It thus provides an appropriate context for considering whether the import ban proposed in this paper can be justified within the context of WTO trade regime as evident in GATT. WTO jurisprudence has established the procedure for determination of legality of a trade measure within the context of Article XX(b). Thus, the Panel identified a three-step approach in *United States – Gasoline*. According to the Panel, a party invoking Article XX(b) has the burden of proving:

(1) that the policy in respect of the measures for which the provision was invoked fell within the range of policies designed to protect human, animal or plant life or health;
(2) that the inconsistent measures for which the exception was being invoked were necessary to fulfil the policy objective; and
(3) that the measures were applied in conformity with the requirements of the introductory clause of Article XX.[102]

(1) Policy designed to protect human life or health

The first step in the analysis here is the identification of the existence of a health risk. The Panel in *EC – Asbestos* noted that inasmuch as this first step includes the notion of 'protection', the use of the phrase 'policies designed to protect human life or health' implies the existence of a health risk.[103] If no health risk is identified, then it implies that the measure was not designed to protect against any health risk. In fact, such a measure might evidently be protectionist in nature and hence a disguised restriction on international trade contrary to the principles and philosophies of trade liberalization. In the *EC – Asbestos case*, France passed legislation that prohibited 'the manufacture, import, domestic marketing, exportation, possession for sale... of all varieties of asbestos fibres or any product containing asbestos fibres'. The Panel found that the use of chrysotile-cement products constituted a risk to human health sufficient to bring the measure within the scope of application of Article XX(b). In coming to this conclusion, the Panel considered the evidence before it, which tended to show that handling of chrysotile-cement products constitute risks to human health.[104]

In analysing whether the Panel came to the right conclusion in holding that the French prohibition fell within the category of measures designed to protect human life or health, the Appellate Body in that case found that 'the panel remained well within the bounds of its discretion in finding that chrysotile-cement products pose a risk to human life or health'.[105] Thus a finding to the effect that a product constitutes a risk to human life or health makes a *prima facie* case for the existence of a risk necessitating protection.

Having identified a health risk necessitating protection, the next step involves the weighing of relevant evidence to determine whether the measure in question was designed to provide protection against the identified risk. Suffice it to state that this examination does not and need not extend to an assessment of the policy goals. In other words, it is not necessary at this stage, neither is it required, to assess a Member state's choice of 'weapon' to protect its population against an identified health risk, or the level of protection it seeks to achieve through such a measure. The Appellate Body in the *Brazil – Tyres case* noted that 'it is within the authority of a WTO Member to set the public health and environmental objectives it seeks

[102] WTO (n 67) para 6.20.
[103] WTO (n 42) para 8.170.
[104] ibid para. 8.193.
[105] WTO (n 43) para 162.

to achieve, as well as the level of protection it wants to obtain, through the measure or policy it chooses to adopt'.[106]

In *EC – Asbestos*, France opted to 'halt' the spread of asbestos-related health risks by *prohibiting* all forms of amphibole asbestos, and by severely restricting the use of chrysotile asbestos. The Appellate Body, while accepting that the measure was clearly designed and apt to achieve the level of health protection sought by France, noted that it is perfectly legitimate for a Member state to seek to halt the spread of a highly risky product by banning the product while at same time allowing the use of a less risky product in its place. In essence, a measure which seeks to regulate or prohibit the importation or sale of a product which constitutes a risk to human health falls within the range of policies designed to protect human life or health.

Obsolete electronic components consist of harmful and toxic constituents. The health and environmental risks associated with the transboundary movement of e-waste as well as their management and disposal in developing countries has been well researched and documented. A trade measure which seeks to prohibit the transboundary movement of obsolete e-waste to developing countries is appropriate to provide some form of protection against the risks associated with the disposal and management of such products in developing countries.

Having determined that the product(s) subject to the trade regulation or restriction constitutes a health risk, and the trade measure adopted provides a measure of protection against such risk, then the requirement under this head is met, what is left to be considered is whether the measure is necessary to fulfil the stated policy objective under Article XX(b).

(2) Necessity of the inconsistent measures

The analysis here will traditionally focus on the meaning of 'necessary' as used in Article XX(b). The term was also used in Article XX(a) and (d). The panel in the *Section 337 case* had interpreted 'necessary' within the context of Article XX(d) thus:

> '...a contracting party cannot justify a measure inconsistent with another GATT provision as 'necessary' in terms of Article XX(d) if an alternative measure which it could reasonably be expected to employ and which is not inconsistent with other GATT provisions is available to it. By the same token, in cases where a measure consistent with other GATT provisions is not reasonably available, a contracting party is bound to use, among the measures reasonably available to it, that which entails the least degree of inconsistency with other GATT provisions'.[107]

Based on the Panel's interpretation, a trade measure is 'necessary' within the context of Article XX(d) if there are no other reasonably available measures which are consistent with other GATT provisions, and the measure in question is the least GATT-inconsistent measure reasonably available to achieve the level of protection sought by the Member state. Although this interpretation was undertaken in relation to Article XX(d), the panel in *Thai Cigarette*[108] held that the same interpretation could be applied in relation to Article XX(b). The panel, following the line of reasoning in *Section 337 Case,* stated that:

> '...the import restrictions imposed by Thailand could be considered to be 'necessary' in terms of Article XX(b) only if there were no alternative measures consistent with the General Agreement, or less inconsistent with it, which Thailand could reasonably be expected to employ to achieve its health policy objectives'.[109]

The panel noted that the meaning of the term 'necessary' under paragraph (d) should be the same as in paragraph (b). It reasoned that the same term was used in both paragraphs and the same objective was intended. More so, the fact that paragraph (d) applies to inconsistencies resulting from the enforcement of GATT-consistent laws and regulations while paragraph (b) applies to inconsistencies resulting from health-related policies did not justify a different interpretation of the term 'necessary'.[110]

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[106] WTO Appellate Body, 'Brazil – Measures Affecting Imports of Retreaded Tyres' Report (2007) WT/DS332/AB/R DSR 2007:IV 1527 para 140.

[107] WTO, 'United States – Section 337 of the Tariff Act of 1930' Panel Report (1989) BISD 36S/345 para 5.26.

[108] WTO, 'Thailand – Customs and Fiscal Measures on Cigarettes from the Philippines' Panel Report (2001) WT/DS371/R, as modified by Appellate Body Report WT/DS371/AB/R.

[109] ibid para 75.

[110] ibid para 74.

In line with the reasoning above, it is submitted that the test of necessity under Article XX(b) will require a two-step analysis. The first step will entail what may be referred to as 'No GATT consistency' test and will require a determination that there is no GATT consistent measure reasonably available to achieve the level of protection sought or desired by the Member state. The second step will entail what may be referred to as the 'least GATT inconsistency' test. This requires a determination to the effect that of all the GATT inconsistent measures available to achieve the level of protection sought by the Member state, the measure in question is the least trade-restrictive.[111]

A determination of the necessity of the inconsistent measure will require a comparison of the trade measure in issue with other alternatives. To qualify as a viable alternative, a measure must not only be less trade restrictive than the measure at issue, but it should also be capable of achieving the level of protection desired by the Member state.[112] In addition, the alternative measure must be reasonably available taking into consideration the circumstances of the Member state whose measure has been called into question. As the Appellate Body indicated in *US – Gambling Case* '[a]n alternative measure may be found not to be 'reasonably available' ... where it is merely theoretical in nature, for instance, where the responding Member is not capable of taking it, or where the measure imposes an undue burden on that Member, such as prohibitive costs or substantial technical difficulties'.[113]

The Appellate Body in *Brazil – Tyres*[114] found that the complaining member bears the burden of identifying less restrictive alternatives, the onus then shifts to the responding Member to show that the suggested alternative is not reasonably available, or if available, is incapable of achieving the same level of protection sought by it. In *Brazil – Tyres*, the European Communities (EC) challenged Brazil's imposition of import restriction on re-treaded tyres. Brazil sought to justify the import restriction on the basis of health and environmental concerns. It argued that used tyres contain highly polluting and combustible materials so that their incineration in open landfills discharges hazardous toxic substances, resulting in air, soil and water contamination. It further argued that used tyres that were not incinerated become fertile breeding ground for mosquitos which in turn increase the transmission of serious diseases like dengue, yellow fever, and malaria. Brazil argued that because of the large quantity of waste tyres it already has in its territory, additional importation would constitute serious threat to public health and the environment. The EC on the other hand argued that import restriction was not necessary since Brazil could apply other alternative measures to reduce accumulation and improve the management of waste tyres in Brazil. Such alternative measures, the EC contended includes landfilling, stockpiling, incineration of waste tyres in cement kilns, and material recycling.

The Appellate Body found that the proposed alternative measures were fraught with 'prohibitive costs or substantial technical difficulties' resulting in the measures not being *reasonably* available.[115] The import ban imposed by Brazil was thus held to be necessary since its implementation (unlike the measures proposed by the EC) does not involve prohibitive costs or substantial technical difficulties which were beyond the capacity of Brazil as a developing country.

As noted earlier, the alternative measures to address the health and environmental risks associated with transboundary movement of obsolete e-waste to developing countries include landfilling, recycling and incineration. These measures carry their own risks, and these risks do not arise in the case of non-generation

[111] Important emphasis needs to be placed on the level of protection sought by the Member state. Thus the availability of other GATT inconsistent measures which are less trade-restrictive, or other GATT consistent measures which are capable of achieving a measure of protection below the level of protection sought by the Member state, will not invalidate the necessity of the measure chosen by the Member state. The primary reason is that it is within the sovereign right of a Member states to seek any level of protection it wants to achieve. Further, Howse and Tuerk argued that 'a measure that is indispensable for achieving a member's chosen level or protection will be 'necessary', regardless of its being vastly more trade-restrictive than the next less trade restrictive alternative, and regardless of whether the less trade-restrictive alternative comes very close to achieving the member's chosen level of protection'. See Robert Howse and Elisabeth Tuerk 'The WTO Impact on Internal Regulations – A Case Study of the Canada–EC Asbestos Dispute' In: Bermann, G, Mavroidis, P, (eds.) *Trade and Human Health and Safety* (CUP 2006) 77–117, 114. See also WTO, 'EC – Asbestos Case' Panel Report para 8.171.

[112] In the 'US – Tuna', the appellate body while accepting that the measure relating to the use of United States 'dolphin safe' label was discriminatory and inconsistent with Article 2.1 of TBT Agreement (n 31), noted that the alternative measure proposed by Mexico was not a viable alternative within the context of Article 2.2 as the proposed alternative measure contributes to a lesser degree in the realization of the policy objective sought to be achieved by the United States. See (n 54) para 330.

[113] WTO Appellate Body, 'United States – Measures Affecting the Cross Border Supply of Gambling and Betting Services' Report (2005) WT/DS285/AB/R DSR 2005:XII 5663 (Corr.1 DSR 2006:XII 5475) para 308.

[114] WTO Appellate Body, 'Brazil – Measures Affecting Imports of Retreaded Tyres' Report (2007) WT/DS332/AB/R DSR 2007:IV 1527.

[115] ibid para 171.

measures such as import bans. Additionally, these alternative measures are not adequate to achieve the level of protection similar to import bans, and just like the measures proposed by the EC in the *Brazil – Tyres Case*, they come with 'prohibitive costs and substantial technical difficulties' far beyond the capacity of developing countries. These alternative measures are not reasonably available, hence the proposed import ban is 'necessary' to fulfill the policy objective of protecting human health within the context of Article XX(b) GATT.

(3) Conformity with the requirements of the introductory clause of Article XX

The validity of a GATT inconsistent measure which has been found to be necessary under any of the paragraphs in *Article XX* is subject to its meeting the requirements in the introductory clause or chapeau: that the measure in question is 'not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade'. The Appellate Body in *United States – Gasoline* has emphasized that under the *Chapeau,* it is not the measure as such that should be examined, rather it is the manner in which the measure is being *applied*.[116]

A determination to this effect will require two separate examinations. First, a determination as to whether the application of the measure in question constitutes a means of arbitrary or unjustifiable discrimination, and secondly, whether the application of the measure is a disguised restriction on international trade. The chapeau requirements are necessary to prevent the abuse of *Article XX* exceptions and ensure that they are not used to surreptitiously circumvent Member states' obligations to ensure free trade in goods. Thus, the chapeau requires the exercise of good faith by Member states in seeking to implement legitimate policy objectives.[117]

(i) Means of arbitrary or unjustifiable discrimination

The panel in *EC – Asbestos* adopted the view that an analysis under this head would first require an examination as to whether the measure in question is 'discriminatory' in application.[118] If the measure is determined to be discriminatory, then the analysis will turn on the nature of the discrimination, i.e. whether it is *arbitrary* or *unjustifiable.* Accordingly, the question of whether the discrimination was arbitrary or unjustifiable will arise when facts of discrimination have been established. 'Discrimination' as used in the *Article XX* chapeau covers discrimination between products from different supplier countries and discrimination between domestic products vis-a-vis imported products.[119] In this context, it will be difficult to fault a measure as discriminatory where it legitimately prohibits the importation of a product without any reference to its origin,[120] and the product in question is not produced in the country where its importation is banned.

Additionally, it is not sufficient to show that the implementation of the policy is discriminatory in nature, it must be shown that the discrimination is *arbitrary* or *unjustifiable*. This would require an inquiry into the cause or rationale for the discrimination taking into consideration the objective of the measure in question. A rationale totally unrelated to the objective of a measure which had previously been found necessary under

[116] WTO Appellate Body, 'United States – Standards for Reformulated and Conventional Gasoline' Report (1996) WT/DS2/AB/R DSR 1996:I, 3. This was the approach that had earlier been adopted in the 'US – Spring Assemblies' BISD 30S/107 para 56. Thus while paragraphs (a) to (j) of Article XX focuses on analysis of the measure in question, the Chapeau is concerned with the application of the measure to ensure that it does not constitute an 'arbitrary or unjustifiable discrimination' or 'a disguised restriction on international trade'.

[117] The Appellate Body in United States – Gasoline noted that the principle of the chapeau is that while the rules of exception in Article XX may be invoked as a matter of legal right, they should not be applied in such a way as to frustrate or defeat the rights of other parties under the substantive rules. In essence the exceptions must be applied reasonably with due regards to both the parties claiming right under the exception as well as those entitled to rights under the general rule; ibid 22.

[118] WTO (n 42) para 8.226. This is important because if the measure is not discriminatory in its application, then it cannot constitute an arbitrary and unjustifiable discrimination between countries where the same conditions prevail.

[119] *De jure* discrimination is used to refer to a measure that clearly differentiates between products based on their country of origin, while *de facto* discrimination refers to distinctions which, though not expressly linked to the origin of the products, but nevertheless results in discrimination between product from different countries. See Grosz (n 9) 379.

[120] In 'US – Spring Assemblies', the panel found that an exclusion order directed against patent-infringing assemblies was not discriminatory because it was directed at all foreign sources. See WTO, 'US – Spring Assemblies' Panel Report (1982) BISD 30S/107 para 54–55.

any of the paragraphs in *Article XX* can thus be said to be arbitrary or unjustifiable.[121] On the other hand, if discrimination between countries is based on a rationale legitimately connected to the policy of an *Article XX* exception, such discrimination is not arbitrary or unjustifiable within the context of the *Chapeau.*

(ii) Disguised restriction on international trade

The Appellate Body in *EC – Asbestos* noted that the key in understanding the scope of 'disguised restriction on international trade' lies on the meaning of the word 'disguised'.[122] Thus 'to disguise' (*desuiger*) means to 'conceal beneath deceptive appearances, counterfeit', 'alter so as to deceive', 'misrepresent', or 'dissimulate'.[123] Disguised restrictions will be evident where the exception rules in Article XX are not applied in good faith, e.g. where the true nature of the measure in question is to foster protectionism contrary to the substantive rules.[124] Identifying a protectionist or trade-restrictive motive in a measure might be problematic, but it has been suggested that reliable pointers may be obtained by considering the design, architecture and structure of the measure in question.[125]

Where the true effect of the implementation of a trade measure that has been found necessary under any of the paragraphs in *Article XX* is to protect domestic products or provide less favourable treatment to other country suppliers, this will amount to a disguised restriction. Thus, the measure proposed in this paper is aimed at protecting human health and the environment in developing countries. It is not a cloak for pursuit of trade-restrictive objectives or protectionism so as to fall foul of the *chapeau.* It is the argument here that the proposed measure could be validly adopted by developing countries in pursuit of the legitimate policy objective of reducing the adverse health and environmental impacts arising from the transboundary movement of e-waste.

VIII. Conclusion

International trade in used electrical and electronic equipment has metamorphosed into a conduit for transboundary dumping of e-waste into developing countries resulting in adverse impact on human health and the environment. This trend is the result of absence of effective regulatory framework for distinguishing between functional used electronic equipment and obsolete e-waste. This paper has sought to develop an effective trade measure based on a certification and labelling system as well as a trade ban within the context of WTO Agreements. It is argued that the adoption of the measure proposed in this paper will go a long way towards reducing the transboundary dumping of e-waste in developing countries and consequently reducing the adverse health and environmental impacts associated with e-waste in developing countries.

Acknowledgements

The author is grateful to Profs. Amir Attaran and Markus Gehring for their research supervision. The author acknowledges research grants from the Social Sciences and Humanities Research Council of Canada (SSHRC), International Development Research Centre (IDRC) Canada, and Centre for International Governance Innovation (CIGI). The author is thankful to the anonymous reviewers who provided helpful comments to the draft of this paper.

Competing Interests

This article is based on the author's doctoral research thesis.

[121] In 'Brazil – Tyres case', the Appellate Body examined the rationale for the discriminatory application of Brazil import restriction on retreaded tyres. The discriminatory application stems from Brazil's decision to comply with the ruling of an arbitral tribunal. While acknowledging that the decision was rational, the Appellate Body was quick to note that the rationale bears no relationship to the objective of measure in question. In 'United States – Gasoline', the Appellate Body assessed the two explanations provided by the United States for the discrimination resulting from the application of its baseline measure at issue. The explanations were found by the Appellate Body to be unsatisfactory, resulting in a ruling that the application of the baseline establishment rules resulted in arbitrary and unjustifiable discrimination; WTO (n 116) 29.

[122] The Appellate Body was of the view that the word 'restriction' is not of much importance in as much as any measure falling within Article XX is a restriction on international trade. WTO (n 43) para 8.236.

[123] *Petit Larousse Illustré* (1986) 292; *Le Nouveau Petit Robert* (1994) 572.

[124] See WTO (n 116) 25.

[125] See Wolfrum, 'General Agreement on Tariffs and Trade' In: Wolfrum, Stoll and Hestermeyer (eds), *WTO – Trade in Goods* (Brill 2011) para 45.

How to cite this article: Gideon Emcee Christian, 'Trade Measures for Regulating Transboundary Movement of Electronic Waste' (2017) 33(85) Utrecht Journal of International and European Law pp. 103–127, DOI: https://doi.org/10.5334/ujiel.435

Submitted: 24 July 2017 **Accepted:** 24 July 2017 **Published:** 31 August 2017

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