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Implementation of the Strategic Approach to International Chemicals Management: emerging policy issues

Background information in relation to the emerging policy issue of electronic waste

Note by the secretariat

1. The secretariat has the honour to circulate, in the annex to the present note, relevant background material on the emerging policy issue of electronic waste, as outlined in document SAICM/ICCM.2/10. The material is provided for the information of participants and has been reproduced as received without formal editing. The preparation of the material has been facilitated by Mr. Oladele Osibanjo (Nigeria).

2. The background material has been developed from the original submissions received on this issue from stakeholders ahead of the informal discussions held in Rome on 23 and 24 October 2008. The facilitators have followed the additional guidance developed by the informal Friends of the Secretariat planning group in preparing the document and have provided the opportunity for comment by Strategic Approach stakeholders by making drafts of the material available on the Strategic Approach website. The background material aims to set out how this issue meets the screening criteria for emerging policy issues developed during the informal discussions and to provide the rationale for the proposed cooperative actions on this issue contained in document SAICM/ICCM.2/10/Add.1.

3. There will be an opportunity for participants to discuss the background material at a technical briefing to be held on Sunday, 10 May 2009, from 9.30 a.m. to 1 p.m.

* SAICM/ICCM.2/1.

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Annex

Background information in relation to the emerging policy issue of electronic waste

Introduction

1. The electrical and electronic equipment sector is largely a globalized industry with production and assembly occurring mainly in developed countries. Electrical and electronic equipment comprises electrical gadgets such as, fridges, air conditioners, washing machines, microwave ovens, fluorescent light bulbs; and electronic products such as computers and accessories, mobile phones, television sets and stereo equipment. The global growth in electrical and electronic equipment production and consumption has been exponential in the last two decades, fuelled by rapid changes in equipment features and capabilities, product obsolescence, decrease in prices, and the growth in internet use. This has created a large volume of waste or obsolete electrical and electronic equipment (known as e-waste) in developed countries. With the globalization of trade in e-waste, there is a high level of trans-boundary movement of electrical and electronic devices as second hand or end-of-life electronic equipment into developing countries in an attempt to bridge the 'digital divide'.

2. E-wastes contain several persistent, bioaccumulative and toxic substances (PBT) including heavy metals such as lead, nickel, chromium, mercury and persistent organic pollutants such as polychlorinated biphenyls in capacitors in the older models which are still in the market, and brominated flame retardants. Thus globalization of e-waste has adverse environmental and health implications in the downstream end of the electrical and electronic equipment supply chain entailing disposal of waste, as developing countries are economically challenged, lack the infrastructure for sound hazardous waste management including recycling, or effective regulatory frameworks for hazardous chemicals and wastes management. Furthermore there is pervading low public awareness of the hazardous nature of e-waste with the use of low-end or crude waste management techniques. This raises an equity issue of developing countries receiving a disproportionate burden of a global problem, without having the proper technology. Even more important is the lack of infrastructure earlier mentioned, safety nets, governance and education to support such technology. Hence the profound concern for adverse socio-economic, public health and the environmental impact of toxics in e-waste in developing countries.

3. The significant contributions of electrical and electronic equipment to the rapid transformation of the quality of human life and the revolution of information communication technology (ICT) in global socio-economic development are recognised. Yet the fast growing volume of e-waste generation in developed countries and their imports by developing countries whether in a form of post-consumer goods or end-of-life equipment imported or generated domestically therefore require international discussions and actions to address the myriad of scientific, technological, policy, human and environmental health, as well as legal issues associated with e-waste management including toxics reduction in the upstream sector of electrical and electronic equipment supply chain.

4. The Overarching Policy Strategy of the Strategic Approach to International Chemicals Management (SAICM) recognises the importance of adopting a life cycle approach to chemicals management and for adequate information at all stages of the life cycle, in chemicals in products and illegal international traffic. Paragraphs 13, 14, 15 and 18 respectively in the Overarching Policy Strategy (OPS) are particularly relevant. Paragraph 13 states the 2020 goals of SAICM on sound management of chemicals throughout their life-cycle; paragraph 14 emphasises the need to minimize risks to human health and the environment as well as vulnerable groups subject to exposure to toxic chemicals throughout the life cycle of chemicals; paragraph 15 aims to ensure that: "information on chemicals throughout their life cycle including where appropriate, chemicals in products, is available, accessible, user friendly, adequate and appropriate to the needs of all stakeholders…." ; while paragraph 18 aims "to prevent illegal international traffic in toxic, hazardous, banned and severely restricted chemicals , including products incorporating these chemicals, mixtures and compounds and wastes". Similarly there are a number of activities in the Global Plan of Action concerning waste management and illegal traffic but none specifically address the special problems of electronic waste.

5. The e-waste policy issue is intrinsically linked to another emerging policy issue "chemicals in products", as they both address aspects of hazardous chemicals in finished goods. The exponential increase in the production and consumption of electrical and electronic equipment over the last two decades and the environmentally unsound management practices of e-waste leading to loss of valuable

material resources also establishes a linkage of this policy issue with the Marrakech process on Sustainable Consumption and Production (SCP), which addresses inefficient use of natural resources. The need for international cooperation and goal-oriented actions on e-waste multidimensional issues are recognised as many stakeholders are involved and have roles to play including industry, governments, customs, regulatory agencies, intergovernmental organisations of the United Nations, non-governmental organisations and the civil society.

6. This discussion of e-waste as a global challenge examines the current situation, challenges and opportunities, dilemma of developing countries and the way forward with pragmatic international, regional, national cooperative policy and regulatory interventions for toxics reduction and sound management of the hazardous chemicals contents in electrical and electronic equipment and e-waste based on life cycle approach with minimum risks to the environment and human health.

Background

7. The issue of e-waste was nominated by the African region at its second regional meeting on the Strategic Approach held in Dar es Salaam, from 16 to 17 July 2008, and by the Government of Peru. The problem described by the African region was one of lack of capacity for the environmentally sound management of wastes resulting in the release of toxic chemicals, such as heavy metals and brominated flame retardants into the environment thereby threatening human health in the region. The Government of Peru described the problem as the considerable volume of electronic wastes, mainly computers and televisions under the designation of second-hand products entering the country from all parts of the world. The Government of Peru, subsequently made an additional submission containing a detailed analysis of the situation concerning electronic waste in Peru. This submission is available on the Strategic Approach website.

8. The present paper was prepared by Professor Oladele Osibanjo, Executive Director, Basel Convention Coordinating Centre for the African Region in Nigeria. It was developed taking into account information collected from the Secretariat of the Basel Convention, other international organizations such as the United Nations Environment Programme (UNEP) and the World Bank, SAICM texts and resolutions of the International Conference on Chemicals Management (ICCM), as well as information in scientific literature. The paper was also developed taking into consideration emerging results of the implementation by the Basel Convention Regional Centres of various regional projects on electric and electronic wastes between the year 2004 and 2009, and the Nairobi Declaration on the Environmentally Sound Management of electronic waste at COP 8 in 2006. The first draft of the paper was placed on the SAICM website on 19 February 2009; and also sent to all SAICM focal points and relevant nongovernmental organizations by the SAICM secretariat to elicit inputs from stakeholders towards enriching the document. A teleconference was held on Monday 26 January 2009 for discussions and interaction with stakeholders who had indicated interest in participation. The second draft incorporated the written comments received from stakeholders. It was again placed on the SAICM website for comment. This third draft has taken into consideration further comments received up to 12th March 2009.

9. A side event during the second session of the ICCM (Geneva, 11-15 May 2009)is being organized by the secretariat of the Basel Convention in collaboration with the Convention Regional Centres entitled “Electronic and electronic wastes and the Basel Convention Regional Centres”. This will provide an additional opportunity for further discussion on the issue.

Magnitude of the problem

10. E-waste is one of the topical environmental issues of the 21st century. It has been identified as the fastest growing waste stream in the world, forecast to soon reach 50 million tonnes a year, while its generation is estimated at three times the rate of municipal solid waste. The useful life of consumer electronic products is relatively short, and decreasing as a result of rapid changes in equipment features and capabilities thereby causing unprecedented generation of large volumes of electronic waste.

Material flows in computers

11. In recent years, significant international transboundary movement has involved used and end – of-life personal computers and accessories, computer hardware, home appliances, old electrical devices, compact disc players, radio, fans, fluorescent tubes, medical equipment, television, transformers, switch boards and used mobile phones that have been transported from developed to developing countries , for the removal of usable parts, for repairs, refurbishment, reuse and for processing for the recovery of raw materials. Relatively cheaper labour costs, weak environmental regulations and occupational safety and

health laws have made developing countries attractive as the destinations for e-waste export from developed countries. Import and export statistics provided by Parties to the Basel Convention for the year 2000 show that there were imports of more than 17.5 million tonnes and export of 1.6 million tonnes designated as used electrical and electronic assemblies or scrap.

12. The growth of the personal computer industry started in the early 1980s and by 1989, an estimated 21 million units were sold worldwide; in 1998 this figure reached 93 million. This exponential increase in the sale of personal computers can be partly attributed to three factors: (i) the decrease in the price of personal computers, (ii) the emergence of the internet in the early 1990s, and (iii) the rapid increase in the raw processing power of desktop computers. In 2001, there were over 300 million internet users worldwide and this was estimated to increase to more than 500 million users by 2003.

(a) In the European Union (EU) the total weight of electronic appliances available on market in 2005 exceeded 9.3 million tons. Among these electronic appliances are 48 million personal computers (desktops and laptops); 32 million television displays and 776 million lamps[1]. The EU Directive on waste electrical and electronic equipment (2002/96/EC) requires e-waste to be collected and imposes strict requirements on the treatment of this waste in the EU Directive 2002/95/EC of the EU also restricts the use of certain hazardous substances (RoHS) in electrical and electronic equipment.

(b) The United States EPA estimates that over 5 billion computers, televisions, cell phones, printers, gaming systems, and other devices have been sold since 1980, generating 2 million tons of unwanted electronic devices in 2005 alone, with only 15 to 20 percent being recycled and the vast majority ends up in landfills with potential contamination of ground water. Concerns over the hazardous materials found in electronic waste, such as lead and mercury, have led many States in USA to ban electronic devices from their landfills. Consequently there is widespread stockpiling of waste electrical and electronic equipment in homes. In California for example, it is estimated that about 6 million obsolete personal computers and televisions are stored in homes and another 10,000 are joining them every day. According to estimates, between 50% and 80% of e-waste collected for recycling in the US each year is being exported, amounting to about 10.2 million personal computers. South Korea also exports about 1.8 million used computers to China each year, to avoid paying the steep recycling and disposal costs within its own borders, providing example of South South trade in waste electrical and electronic equipment.

(d) Most developing countries are currently undergoing rapid advancement in information and communication technology (ICT) through the use of computers. A very significant proportion of ICT users including internet services in developing countries rely on secondhand equipment from developed countries, primarily from Europe and North America. Some of these countries manufacture or assemble computers locally to supplement imported computers while the relative proportion varies from country to country. Nigeria has a few companies assembling computers locally but production statistics is not available. Nonetheless about 95% of computers in use in Nigeria are imported.

(e) Nigeria imports annually at least 5 million units/year of personal computers equivalent to 60,000 metric tons/year mainly from USA (45%) and European Union (45%). A recent study in Kenya in 2008 supported by Hewlett Packard (HP), the Swiss Federal Institute for Materials Testing and Research (EMPA) and the Global Digital Solidarity Fund (DSF) suggests that the total e-waste generated from only computers, monitors and printers each year is about 3,000 tons. This amount of e-waste is expected to increase as the importation and use of computers increases in coming years – best illustrated by the higher imports of IT in 2007 compared to previous years, with a growth of over 200%

(f) In China, about 14 million personal computers have been sold in 2005 in addition to 48 million television displays, nearly 20 million refrigerators and 7.5 million air conditioners in 2001[2]. India had an installed basis of 5 million personal computers in 2006. Waste electrical and electronic equipment is also a growing concern in South America where, since 2000, the use of personal computers in the region has grown around 15% a year[3]. For example Peru manufactures locally about 75% of computers in use while the computer industry grew astronomically by 70% in 2007.

[1] UNU WEE Directive Review Study, 2007

[2] W. He et Al., WEEE recovery strategies and the WEEE treatment status in China. Journal of Hazardous Materials B136 (2006) 502-512.

[3] World Development Indicators Database

13. Data is, however, scarce on the in-flow of new computers and other electronic and electrical equipment from the original equipment manufacturer. A major challenge in ascertaining the material flow of electronic and electronic equipment is the lack of reliable national data on import and export o in developing countries. For example, existing databases in developing countries do not distinguish between new, used and end-of life mobile phones and computers.

Material flows in mobile phones

14. The introduction of the global system of mobile communication (GSM) and the use of mobile phones have also revolutionized communication in both developed and developing countries. In July 2000, the Group of Eight developed countries (G8), established the 'Okinawa Charter on Global Information Society' at the Okinawa Summit in Japan. This is an initiative to bridge the 'digital divide', aimed at improving the access to communication technologies in the world's poorer countries. This Charter and other similar initiatives have since revolutionalized information and communication technologies (ICT) in developing countries. Mobile phones serve not just as a personal luxury or an addition to traditional land line telephones, but also as a primary means of communication in areas of the world where communication infrastructure is not in place. Mobile phones fill a need for communication among billions of people in almost every country on the planet. They have created significant economic expansion in national and global economy, with employment creation and poverty alleviation.

15. In 2005, there were more than 1.32 billion GSM subscribers around the world connected to 626 GSM networks operated in about 198 countries worldwide. It was estimated that the number of mobile phones in use worldwide in 2003 was 1.3 billion and this was predicted to double by 2006. Recent reports from the International Telecommunication Union (ITU) suggest that Africa is the world's fastest growing market for mobile phones. Mobile subscribers on the continent by 2005 were estimated at 51.8 million, a staggering 1000% increase since 1998. The projected growth of the number of subscribers is put at between 100 and 200 million by the year 2010. This prediction will be surpassed as mobile phone subscribers in Nigeria has already reached 50 million in 2006, a record 10,000% increase since 2000. Importation of cheaper second hand sets from developed countries contributed significantly to the widespread availability and use of phones by all segments of the society including both the affluent and the common man.

16. In the case of mobile phones, for example, its use has grown exponentially from the first few users in the 1970s, to 1.76 billion in 2004, and more than 3 billion in April 2008[4]. Eventually these mobile phones will be discarded, whole or in parts. In developed countries this quite often takes place sooner before they cease to operate. According to some recent studies, the first owner will generally replace their mobile phone within two years because they want newer features or because the older phones are incompatible with new services. In addition mobile phones are rapidly replacing fixed line phones in developing countries and countries with economies in transition. The result of that growth is a waste management problem when such phones reach the ends of their lives and in many cases thrown into a closet or drawer and finally discarded with the household garbage

17. Worldwide estimates have it that by 2005, there will be above 500 million mobile phones weighing 250,000 tonnes stockpiled in drawers, closets and elsewhere, waiting to be disposed. In the United States, mobile phone use was projected to reach approximately 175 million by 2005. Meanwhile, experts estimate that 130 million mobile phones will be discarded in the US by 2005, resulting in 65,000 t of mobile phone waste. Between 1999 and 2003, 2.5 million phones were collected for recycling or reuse in the US accounting for less than 1% of the millions of phones retired or discarded each year. About 15 million mobile phones are replaced each year in the United Kingdom.

E- waste generation and management

18. Worldwide about 500 million personal computers reached the end-of-life in the decade between 1994 and 2003 and these contain approximately 2,870,000 ton of plastics, 718,000 ton of lead, 1,363 ton of cadmium and 287 ton of mercury. Most of these end-of-life personal computers will end up as waste in developing countries releasing their hazardous constituents, endangering the environment and human health. E-waste is growing at a rapid and uncontrollable rate and is the fastest growing portion of the municipal solid waste stream. Currently electronic waste constitutes 1% of municipal waste in the US and 4% in the EU.

[4] Source: www.gsmworld.com

19. Personal computers constitute the second largest component next to cathode ray tubes in the e-waste stream. Personal computers also contain the largest amount of printed wiring board among electronic products. The cathode ray tubes in computer monitors and televisions contain about 8% lead by weight; amounting to about 2–4 kg of lead each. Computer cathode ray tubes present a disposal problem because of their growing magnitude in the waste stream and their role as a major source of lead in municipal solid waste. Consumer electronics accounted for 27% of lead discards in municipal solid waste in 1986 in the United States and is projected to comprise 30% of lead discards by 2007. By 2000, cathode ray tubes were projected to contribute 29.8% of all lead in municipal solid waste and approximately 98.7% of all lead from electronics. Lead is included in cathode ray tubes for various reasons among which is providing shield necessary for x-rays.

20. Due to the increasing costs of recycling problematic waste fractions such as cathode ray tubes and printed wiring boards more and more of such e-wastes are being exported to weaker economies in avoidance of paying the costs necessary to mitigate the risk. However, in countries that lack the efficient recycling capacity (e.g., developing and economies in transition countries) to manage such fractions, it will be necessary to export some e-wastes to developed countries. As a consequence, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (the Basel Convention) and other control mechanisms and prohibition decisions are seen as extremely important to serve the dual function of eliminating illegal or exploitive trade while regulating necessary trade (i.e., for environmental reasons and not economic ones). Currently however, the market is driving recyclables across borders, primarily for exploitive reasons, rather than to improve environmentally sound management or efficient materials recovery. The flood of e-waste trade and second-hand electronics is taking place faster than the development of policies, safeguards, legislation, and enforcement, leading to serious problems in importing countries. Perhaps the challenge of complying with stringent environmental safeguards and controls; and the economic costs in developed countries are responsible for the adoption of the easier option of exporting e-waste to developing countries and further fuel the increase in the globalisation of trade in waste.

21. According to estimates, between 50% and 80% of e-waste collected for recycling in the developed countries each year is being exported, amounting to more than 10.2 million personal computers. It can be assumed that the disposal of obsolete electronic products is fundamentally driven by the production of new ones. This implies that the growth in global electronic production of 4.4% in 2002, and 6.8% in 2003 will result in similar growth in e-waste generation. Currently the main route of disposal of e-waste in most developed countries is through export to developing countries in the name of ‘bridging the digital divide. Too often, justifications of ‘building bridges over the digital divide’ are used as excuses to obscure and ignore the fact that these bridges double as toxic waste pipelines to some of the poorest communities and countries in the world.)

22. It can be assumed that the disposal of obsolete electronic products is fundamentally driven by the desire and possibility of consumers to purchase newer more capable products. This implies that the growth in global electronic production of 4.4% in 2002, and 6.8% in 2003 will result in similar growth in e-waste generation. Often, upgrades in software or new technologies can spur rapid obsolescence and sell offs of equipment which is often exported in a hand-it-down phenomenon to developing countries from developed countries. Currently the main route of disposal of e-waste in most developed countries is through export to developing countries. Often this practice is justified in the name of helping the poor and less fortunate, as part of ‘bridging the digital divide’. According to Basel Action Network (BAN is a non-governmental organization focusing on trade in toxic materials), too often, justifications of ‘building bridges over the digital divide’ are used as excuses to obscure and ignore the fact that these bridges double as toxic waste pipelines to some of the poorest communities and countries in the world.

23. The recent BAN coordinated study in Nigeria “Exporting Reuse and Abuse to Africa” revealed the level of transboundary movement of secondhand and scrap electrical and electronic equipment into developing countries. The report showed an estimated five million personal computers, with a weight estimated at 60,000 metric tons is imported annually into Nigeria through the major sea port of Lagos alone. The BAN study observed that about 25–75% of the imported secondhand computer wares are unusable junk that are non-functional or unrepairable. This amounts to the importation of 15,000–45,000 tons of scrap recyclable electronic components, which may contain as much as 1000–3,600 tons of lead. In Nigeria, there is virtually no capacity for material recovery operations for electronic waste, as a result of which these items become discarded in local dumps. Assuming this trade continues unabated, with an annual increase of 10%, then an estimated 40 million units of personal computers or monitors (or 468,000 metric tons of e-scrap) would have been imported over the period 2005–2010. This will amount to an importation of about 40,000 metric tons of lead for the period under

consideration or 77,000 tons of e-scrap/year. Secondhand computer wares are also imported through donations by charities to organizations and educational institutions (a minor source of import) which imports have also been found to contain 20-80% junk.

24. A considerable part of the e-waste exported from developed countries is exported illegally in contradiction to international (Basel Convention) or regional (EU waste shipment regulation; African Bamako Convention) legislation from either of the following perspectives:

(a) completely illegal shipment, where the rules applicable are not respected; or

(b) e-waste that is shipped under a false pretence, e.g., e-waste reported to be post-consumer products for re-use, while they are clearly are no longer fit for re-use.

25. The questions of how much e-waste is generated, from where and to where it is moving are difficult to answer. This is worsened by the current system of gathering information in which second hand used and waste products are by and large invisible to national statistics in production, sale and trade-in goods. Hong Kong and Australia were the first countries to develop guidelines for distinguishing between used goods and e-waste.

26. Most developing countries have neither a well-established system for separation, storage, collection, transportation, and disposal of waste nor the effective enforcement of regulations relating to hazardous waste management .They do not have legislation dealing specifically with e-waste and there is lax enforcement of existing laws dealing with general waste management. Formal recycling of e-waste using efficient technologies and state-of-the-art recycling facilities is rare. As a result electronic wastes are managed through various low-end management alternatives such as disposal and eventual burning in open dumps, backyard recycling and disposal into surface water bodies.

27. The crude recycling operations in these countries can seriously jeopardize the health of workers and severely pollute the environment. Furthermore waste management occurs in the informal sector of the economy involving thousands of poor people ignorant of the hazard of exposure to toxins in e-waste. The most vulnerable groups especially children and women are actively involved in e-waste scavenging and crude recycling activities.

28. E-waste contains valuable ferrous (e.g., iron), non-ferrous (e.g., aluminium, copper) and precious and special (e.g., gold, palladium, platinum, silver, indium, gallium) metals that can be obtained from dismantling of computer cases, frames, wires, cables and other components. The rising value of these materials makes recycling more economically viable and attractive.

29. Crude recycling for e-waste is currently taking place for example in Asia-Pacific countries such as China and India, and in some African countries such as South Africa, Senegal, Ghana and Nigeria. These crude ‘backyard’ recycling processes include open burning of plastics (to reduce waste volume) and copper wires (to salvage valuable metals, e.g., copper), and strong acid leaching of printed wiring boards (to recover precious metals) etc., These operations are usually carried out without use of personal protective equipment or pollution control measures. The crude material recovery processes have resulted in multimedia environmental pollution while exposing millions of people to toxins including persistent organic pollutants, such as dioxins/furans as well as brominated flame retardants including polybrominated diphenyl ethers and polybrominated biphenyls in waste electrical and electronic equipment plastic. These substances are restricted or regulated by two directives of the European Commission (EC. 2003bc).

30. The problem of developing countries is compounded because infrastructure for solid waste management is weak and ineffective. Co-disposal of assorted domestic and hazardous wastes in open dump sites is generally practiced. Continual disposal of e-wastes on these hazardous dumpsites makes them a chemical time bomb if appropriate safeguards and regulatory control measures are not introduced and implemented sooner than later. The small island developing States of the Pacific, Caribbean and Indian Oceans have peculiar problems as they do not produce e-waste but suffer from the consequences of poor disposal of imported products containing e-waste and other persistent toxic substances. The volumes of e-waste from these countries are relatively small, so regional programs may prove to be a more cost-effective way to resolve e-waste problems.

Relevance of the issue

31 The e-waste issue is a global problem arising from globalisation with transboundary movement among all countries and all regions and therefore requires global solutions. There is a lack of neither labelling nor communication mechanism on the myriad of hazardous substances content of electrical and electronic equipment and waste electrical and electronic equipment along the supply chain to guide

stakeholders especially retailers and end users; and reduce risk to human health and the environment. This is particularly important in the downstream end of the supply chain where people in developing countries get exposed to hazardous substances by employing crude processing methods for recovery of precious metals from e-waste and open burning of e-waste for disposal along with municipal solid waste or dumping on unlined landfills with potential for ground water contamination. This may inhibit some developing countries from meeting the Millennium Development Goals on water and sanitation by 2015.

32. Recycling of e-waste occurs in the informal sector in developing countries with women, children and unemployed youths actively involved in crude processing methods without personal protective equipment and thereby exposing themselves to inorganic and organic toxins with potential adverse health impacts. Although crude recycling provides employment for youths, hazardous substances in e-wastes may actually worsen their poverty.

33. A major concern of developing countries is that the consignment of admixture of electrical and electronic equipment and waste electrical and electronic equipment are not shipped as wastes, but as second hand products. Therefore, technically they do not fall under the Basel Convention at this stage. However, many of these products are near their end-of-life, so many developing countries have the challenge of dealing with these wastes in an environmentally sound manner. Yet many of these products come primarily from developed countries which prohibit export of e-waste to developing countries. In other words there are no common understanding, definition, and classification at the international level, of what electronic waste and parts are to be regulated under hazardous waste law, rules and procedures, while each country decides on its own.

The extent to which the issue is a cross-cutting nature

34. Electric and electronic equipment has improved the lives of people everywhere. Information and communication technology development and rapid expansion has revolutionized communication and international commerce (e-commerce) with unprecedented high volumes of production and usage of consumer electronics. This has a synergistic relationship with the Marrakech process on sustainable consumption and production (SCP). The high turnover in the production of information and communications technology-equipment has caused rapid computer and mobile phone products obsolescence which in turn has generated rapid and uncontrollable high volume of e-waste driving a global e-waste trade. This provides national and regional governance challenges in e-waste management in all regions and countries. All stakeholders, including original equipment manufacturers, consumers and recyclers, have a role in developing and promoting information exchange in hazardous substances content of electrical and electronic equipment and waste electrical and electronic equipment to minimize toxics reduction and health risk.

35. The business interests in the issue of waste electrical and electronic equipment has a number of aspects. The value of materials in discarded appliances varies across different categories and products. Consequently the economic impacts in taking back the equipment varies. The impact of different processing technologies and activities needed for the treatment of different equipment also varies (e.g., cooling and freezing equipment, large appliances, cathode ray tube appliances, lamps, etc.). For this reason, the economic impacts of downstream activities such as the collection, transportation, pre-processing, shredding, separation, etc. are different and reflect different economic priorities.

36. In addition, end-of-life electric and electronic equipment have a social impact since the recovery and the reuse of its parts and materials is a valuable source of income to poor communities. The recovery of end-of-life equipment in developing countries can have a significant adverse health and environmental impact without compliance with labor standards. Therefore in many developing countries and countries with economies in transition, e-waste is both an emerging problem and an economic opportunity due to the growth of disposal of electronic devices that contain materials that are both hazardous and valuable. In addition, the lack of regulation and law enforcement in the recycling and disposal of waste in most developing countries is a subject of concern due to the development of an unregulated informal sector that benefits from the growing e-waste business. This situation nonetheless provides opportunity for capacity-building of the informal sector in repair and refurbishment of end-of-life, and sound technology transfer to promote international best practices in the reuse, recovery and recycling of e-waste.

Level of knowledge about the issue

37. The BAN/Silicon Valley Coalition, BAN/SVC (2002) film and report entitled: “Exporting harm: the high tech trashing of Asia” and the, BAN (2005) film and report on “The digital dump: exporting re-

use and abuse to Africa" drew international attention to the global e-waste trade between developed and developing countries. These films have stimulated and catalysed international, regional and national awareness and reactions on the need for sustainable control of the e-waste trade. Governments and non-governmental organizations in South America including Colombia, Peru, and Argentina; Asia -Pacific including China, Japan and India; and Africa including Egypt, South Africa, Kenya, Morocco, and Senegal have carried out projects on e-waste including inventory, collection and recycling of e-waste.

38. Some States in the United States such as California have enacted regulations on the sound management of e-waste. The EU has adopted common regulations on e-waste for all member states. In order to address challenges encountered by countries on e-waste management, experience has been acquired from the development of several projects and their implementation through the Basel Convention Regional Centres located in Argentina, China, Egypt and Indonesia. The issue is definitely well known as there are continual reports in the news and electronic media on e-wastes dumping in developing countries. The steady growth of scientific literature and international/regional meetings on e-waste issues offer good testimony of the wide knowledge of the issue.

The extent to which the issue is being addressed by other bodies

39. The Basel Convention is the multilateral environmental agreement dealing with hazardous waste. E-wastes are characterized as hazardous wastes under the Convention when they contain components such as accumulators and other batteries, mercury-switches, glass from cathode-ray tubes and other activated glass, PCB-capacitors or when contaminated with cadmium, mercury, lead or PCBs. Also, precious ash from incineration of printed circuit boards and glass waste from cathode-ray-tubes and other activated glasses will be characterized as hazardous wastes. There is a constraint however as electrical and electronic equipment is imported into developing countries as new or second articles and often with e-waste being the major component. Since the consignments are not declared as waste, this surreptitiously exempts e-waste consignments from the provisions of the Basel Convention.

40. The Basel Convention has developed two initiatives in order to foster the participation of the private sector in the efforts towards the environmentally sound management of e-waste. In 2002 the Mobile Phone Partnership Initiative (MPPI) was launched when 12 manufacturers signed a Declaration entering into sustainable partnership to develop and promote the environmentally sound management of end-of-life mobile phones. In addition three telecommunication operators also signed a Declaration entering into sustainable partnerships in July 2005. The overall objective of the MPPI work programme, which involved many stakeholders besides the partners, was to promote the objectives of the Basel Convention which are applicable to the issue of end-of-life mobile phones

41. Most recently the Partnership for Action on Computing Equipment (PACE) was adopted, together with its work plan, at the ninth meeting of the Conference of Parties to the Basel Convention in June 2008. It was created as a multi-stakeholder partnership between industry, government, academia and civil society to address the environmentally sound management of used and end-of-life personal computers. The proposed scope of work and structure of the PACE was developed through an interim group comprised of representatives of personal computer manufacturers, recyclers, international organizations, academia, environmental groups and governments. The objective of the PACE is to provide new and innovative approaches for addressing emerging issues on used and end of life computing equipment.

42. Other international initiatives on the sound management of e-waste include the Basel Convention Partnership on the Environmentally Sound Management (ESM) of Electrical and Electronic Wastes (E-waste) in the Asia-Pacific Region launched by the secretariat of the Basel Convention with funding from the Government of Japan;, Solving the E waste Problem (StEP) of the United Nations University UNU and UNESCO; the Global e-Sustainability Initiative (GeSI) – E-waste Working Group established by UNEP DTIE, as well as the relevant EU directives on waste electrical and electronic equipment and restricted hazardous substances. Links between these initiatives are weak.

43. UNEP's Division of Technology, Industry and Economics (DTIE) has worked with the Informational Communications and Technology (ICT) sector through the Global e-Sustainability Initiative (GeSI) since 2001. UNEP DTIE has prepared two e-waste manuals that are available at http://www.unep.or.jp/ietc/SPC/publications.asp. UNEP DTIE iscurrently co-chairing the GeSI E-Waste Working Group (EWWG) composed of twelve ICT companies. The GeSI EWWG is preparing an EoL questionnaire that is meant to ensure an environmentally sound management of the End of Life (EoL) chain for the electronic equipment out of use by ICT companies. Moreover, the GeSI EWWG is working on a roadmap for material stewardship in the ICT sector. Finally, UNEP DTIE's International

Environmental Technology Centre (IETC) is carrying out a pilot project on e-waste in Cambodia, in addition to a number of Integrated Waste Management projects in countries such as Brazil, China, India and Kenya, where e-waste is an important fraction in the total waste stream. The EU Africa e-waste project involving 8 African countries including Nigeria and Senegal will soon commence. One of the objectives of the proposed project is to build the capacity of the informal sector (where most of the unsound waste management occurs) in repairs and refurbishment of near end-of-life and end-of.life electrical and electronic equipment.

44. Many web sites and internet-based portals exist (e.g., the Swiss Federal Laboratories for Materials Testing and Research (EMPA), the UK Government, PACE, and StEP) but there is a need for a mechanism to integrate the information provided by these networks. Many institutions also are doing good work on electronic waste but too often these are not interconnected (for example Oeko-Institut, IGES, EMPA, Oakdene Hollins, and Arizona State University). Many industries and industry organizations have taken action to improve the environmental performance in regard to electronic waste (for example, Hewlett-Packard, Intel, Bureau of International Recycling, and the International Solid Waste Association. Finally, non-governmental organizations have played and continue to play a key and active role in promoting global awareness on e-wastes issues (e.g., BAN, Silicon Valley Toxics Coalition and Greenpeace).

45. Waste management was discussed at the recent 25th session of the UNEP Governing Council and the elements of the decision that ensued spoke about the need to seek and strengthen cooperation with other bodies. There is therefore urgent need for directional global actions involving multistakeholders and multi-sectoral cooperation to address the global e-waste problem in a holistic manner for the present (of present) and future generations.

The feasibility of the action proposed

46. The concerns of the original proponents of e-waste as an emerging policy issue, that is the African Region and the Government of Peru were the lack of capacity for the environmentally sound management of e-wastes resulting in the release of toxic chemicals into the environment thereby threatening human health in the region; and the avalanche of considerable high volume of end-of life computers and televisions from all over the world often disguised as second –hand products.

47. In their original submissions the African region requested the second session of the ICCM to prioritize the following activities:

(a) Promote extended producer responsibility by manufacturers;

(b) Assist African governments to develop strategies for the environmentally sound management of electronic waste, and the illegal trade of electronic waste and near end-of –life electronic goods; and

(c) Assist African Governments to establish appropriate legislation to control the illegal traffic of electronic waste.

48. In its original submission, the Government of Peru requested that the ICCM should analyze the responsibility of developed countries which allow for the dissemination of these articles almost at the end of their life cycle at such low costs that disproportionate interest is generated among importers without caring about negative impacts to health and the environment.

49. In relation to changing unsustainable patterns of consumption and production, the Johannesburg Plan of Implementation calls for a renewed commitment as advanced in UNCED Agenda 21, to the sound management of chemicals throughout their life cycle and of hazardous wastes for sustainable development as well as for the protection of human health and the environment; and support developing countries in strengthening their capacity for the sound management of chemicals and hazardous wastes by providing technical and financial assistance.

50. The need to improve arrangements for the integration of waste and chemicals management, product design and sustainable development and the transboundary movement of hazardous wastes are clearly brought into focus for the issue of electronic waste. A number of specific challenges have been identified in the preceding sections :

(a) e-waste as hazardous waste is being surreptiously exported improperly to developing and economies in transition countries as second hand products;

(b) processing of e-waste to retrieve precious metals (gold, silver, copper, palladium etc) is being undertaken without environmental and human health protection considerations;

(c) human exposure to hazardous substances in e-waste and release of these substances into the environment during processing is taking place because local capacity is lacking;

(d) there is a lack of global framework to integrate activities on e-waste that are being carried out in different fora; and

(e) specific capacity-building for developing and economies in transition countries and technical cooperation on this issue is needed.

51. Given that the above challenges cross different areas of responsibility, not surprisingly there were a range of views on the way forward and the specific actions to be proposed for consideration by the International Conference on Chemicals Management. Underpinning them all was a strong consensus of the need to avoid duplication of the lead role of the Basel Convention in MPPI, PACE and other initiatives. A number of views were put forward that these efforts should be strengthened through synergy and cooperation with other fora including StEP and UNEP's DTIE, while also advocating better funding of the Basel Convention itself. Due to the complexity of the issues, there was also a range of opinion about whether necessary actions were or were not part of existing work programmes.

52. The Technology Industry Council (ITI) recalled that SAICM was founded on the principle that it should avoid duplication and help concentrate scarce, limited resources to those areas that are not receiving adequate attention. It also emphasized the need for Basel Convention to continue with its mandate on hazardous waste issues including e-waste. These views are consistent with the general views within the working group on these issues. ITI further indicated that implementation of the European Union REACH Programme concerning the restriction of six hazardous substances is already addressing the reduction of toxics in e-waste and that the e-waste issue is a duplication of the emerging issue on chemicals in products. The prevailing situation globally is at variance with this position. The numbers of hazardous substances in e-waste are far beyond the six specific hazardous substances restricted under REACH. The EU directive on the Restriction of Hazardous Substances is not far reaching and not universally applicable. Published scientific data has shown that the levels of heavy metals and brominated flame retardants in e-waste imports into developing countries are far in excess of threshold limits set in Europe and North America. Obviously the impact of any green design initiatives that are ongoing is yet to manifest in the e-waste coming into developing countries. Meanwhile the crude processing of e-waste goes on unabated in third world countries, exposing vulnerable groups to hazardous chemicals and worsening poverty. These facts underscore the need for an international framework and global action to deal with the issue of toxics reduction in e-waste across all regions of the world. Furthermore comprehensive scientific data is lacking on the fate of hazardous substances during the crude processing of e-waste as well as their environmental and health impacts. The specific challenges and of developing and economies in transition countries, as well as small island developing States who have identified e-waste as an emerging global issue cannot be ignored.

53. Another view saw SAICM as being uniquely positioned to bridge the gap between the Conventions and other institutions that deal with different aspects of the e-waste issue. Noting that many activities are already underway within the Basel Convention and/or STEP context, or are slated for future consideration under Basel, this stakeholder went further to advocate that the second session of the International Conference on Chemicals Management may wish to consider requesting the secretariat to convene relevant stakeholders in a workshop focused on key, cross cutting e-waste topics. The workshop could be held on the margins of the Commission for Sustainable Development (CSD) meeting in 2010 or 2011 since waste is one of the agreed themes for the upcoming CSD cycle. The panel could draw on e-waste experts to present on topics such as:

(a) Report from the UNEP Executive Director on UNEP's implementation of the recent Governing Council decision on waste. For example, the presentations could address actions envisaged under the Bali Strategic Plan with respect to e-waste (GC 25/8 para 2) and/or describe pilot projects and demonstrations on waste management planed under Bali (para 4);

(b) Discussion led by Basel secretariat on possibility of developing guidance or creating a clearinghouse of existing documents distinguishing between second hand and e-waste and/or creating a « 4th R », an issue of particular importance to Small Island Developing States (SIDS);.

(c) Discussion led by GHS secretariat on current labeling efforts that may be interest to e-waste constituents;

(d) Presentation from UNDP, UNIDO and other intergovernmental organizations on their efforts to integrate waste management into activities;

(e) Presentation from APEC on recycling initiative on e-waste.

54. The majority of comments received in the preparation of this background information document support the proposal that the second session of the International Conference on Chemicals Management be requested to establish a working group that will address issues not being addressed and likely not to be addressed by Basel Convention especially :

(a) the development of effective global strategies including incentives for the reduction of toxic substances; and eventual phase-out in electrical and electronic products and e-waste to minimise human exposure; including product green design, green procurement/consumption , while also tackling the issue of minimising rapid product obsolescence.

(b) the scientific study of the fate of priority hazardous substances especially brominated flame retardants in e-waste during processing;

(c) the development of a global framework on information on hazardous substances content of electrical and electronic products and waste including guidance on sound management; and

(d) the establishment of global framework or mechanism to address solutions and guidance to prevent harmful near-end of life exports of used electronics that may not technically be waste but for which the environmental liabilities of their import far outweigh the benefits to the receiving country. This latter issue is of great interest to many African, Asia-Pacific, Caribbean and Latin American countries and other developing and economies in transition countries including Small Island Developing States (SIDS). Capacity-building needs in these regions on sound hazardous chemicals management deserve priority action to ensure global success of SAICM and other multi-lateral environment agreements on chemicals and wastes.

55. Implementing the proposed actions is feasible, and would fulfil and implement the SAICM 2020 goal including paragraphs 13 – 18 of the Overarching Policy Strategy of the Strategic Approach and relevant items of the Global Plan of Action including 44, 54, 71-73, 80, 83, 84, 119, 186, 190, 194 and 204.

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