Committee: Economic and Social Commission for Western Asia (ESCWA)

Topic B: Development of solutions for the future

Topic B: Development of solutions for the future management of electronic waste in Asian countries

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President:
Moderator:
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Introduction to the Committee

Commissions are intergovernmental platforms that, according to the United Nations, help achieve "regional integration, developing regional norms and standards, exchanging experience and fostering cooperation". They also "play a critical role in promoting a holistic approach to development in their regions, and balancing the economic, social and environmental dimensions of sustainable development in their member States". (United Nations, 2022).

The Economic and Social Commission for Western Asia (ESCWA) is one of the five Regional Commissions under the jurisdiction of the Economic and Social Council of the United Nations (ECOSOC). ESCWA was created on the 9th of August of 1973 "to represent the universal mandate of the United Nations at the level of the Arab region, initially located in Beirut (1974-1982), moved to Baghdad (1982-1991) and Amman (1991-1997), and subsequently returned to Beirut, its permanent headquarters" (ESCWA, 2022).

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Besides working on its main objective, another focus of ESCWA is to support its member countries with the implementation of the Sustainable Development Goals (SDGs), but also to generate reports and publications through analysis and critical data regarding the economic and social situation of the region. Lastly, it also contributes towards the promotion of peace, stability, and resilience in countries affected by conflicts, as a result of the complex political context that prevails in the region.

ESCWA is currently formed by the following 21 member States: People's Democratic Republic of Algeria, Kingdom of Bahrain, Republic of Djibouti, Arab Republic of Egypt, Republic of Iraq, Hashemite Kingdom of Jordan, State of Kuwait, Lebanese Republic, State of Libya, Islamic Republic of Mauritania, kingdom of Morocco, Sultanate of Oman, State of Qatar, Kingdom of Saudi Arabia, Federal Republic of Somalia, State of Palestine, Republic of Sudan, Syrian Arab Republic, Republic of Tunisia, United Arab Emirates and the Republic of Yemen. All of them are part of Western Asia. (United Nations, n.d.).

Introduction

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Electronic waste (e-waste) is becoming a fast-growing problem, deriving into a health and environmental crisis, mostly because devices are discarded as technology changes so hastily that they become obsolete. The report, 'Global E-Waste Monitor 2024', registered that, in 2022, Europe was the continent that produced the most per capita (with 17.6 kg), followed by Oceania (with 16.1 kg), America (with 14.1 kg), and Asia placing fourth with 6.4 kg; accentuating the problem, current e-waste recycling solutions are inefficient:

Many recycling activities involve processing e-waste into individual components, which are then shipped outside the country for further processing and materials recovery. Manual processes make disassembly activities economically challenging owing to high labor costs, high disposal fees, and high prices for disassembled e-waste components. (Baldé et al., 2024). Most of the disposals are informally collected or undocumented, "in 2019, an estimated 53.6 million tonnes of e-waste were produced globally, but only 17.4% was documented as formally collected and recycled" (World Health Organization, 2023).

Industrial development in Asia came at an accelerated rate, leaving consequences on the environment and the population (for instance, leaving the vulnerable population exposed to climate change). Like with other gadgets, the region has "a strong position in

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next-generation electric-vehicle batteries – more than half the world's patents for solid-state batteries were filed in Asia–" (Woetzel L. & Seong J. 2021). But this is leading to overproduction, and now they found themselves generating almost half of the world's e-waste (30 billion kg), as 'The Global E-waste Monitor 2024' reported. Moreover, there are relatively few countries in Asia that have adopted e-waste policies or established clear e-waste collection targets.

East and Southeast Asia are some of the principal receptor regions of the disposal for recycling management, since the process involves handling metal and mineral extraction, it is more conveniently done in countries where "labor laws and safety don't protect those doing the meticulous and dangerous work" (Lotzof, K., n. d.). Unfortunately, these recipient regions "often have low recycling rates and a high presence of informal workers in the domestic sector" (Baldé et al., 2024).

South Asia "produced 2,621 kt (kilotons) of e-waste in 2015, and production has steadily increased each year with production totaling 2,912 kt, 3,261 kt, 3,641 kt, and 4,057 kt in 2016, 2017, 2018, and 2019 respectively" (Priyashantha, A. K. H., Pratheesh, N., & Pretheeba, P., 2022). India is the main producer of e-waste in SouthAsia, which is "not a surprise as India owns one of the largest electronic markets (particularly IT and telecommunication) in the world. In the region, the majority (approximately 80%) of e-

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waste comes from India, which comprises old computers, laptops, cell phones, cameras, and more" (Priyashantha, A. K. H., Pratheesh, N., & Pretheeba, P., 2022).

As for East Asia, they do have the capacity to recycle and process e-waste. This makes it attractive for other major electronic-devices producer regions to ship their e-waste, they mainly export these devices to Western Europe (exporting 34.8 million kg), North America (exporting 29 million kg), Northern Europe (exporting 11.6 million kg) and Southeast Asia (exporting 9.9 million kg), according to The Global E-waste Monitor 2024.

Only 18 countries in Asia have a national e-waste policy, and 11 of them adopted policies that follow the Extended Producer Responsibility (EPR) principle, which "aims to make producers responsible for the environmental impacts of their products throughout the product chain, from design to the post-consumer phase" (Organisation for Economic Co-operation and Development, 2016). They also include laboral policies to give producers (which include manufacturers, suppliers, retailers, and importers) economic incentives like promoting greener manufacturing, financially supporting the collection, and sustainable recycling, as the Economic and Social Commission for Asia and the Pacific wrote (2021).

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On the other hand, there are inadequate policies for the discarded technology, which are the following:

- Incinerated, dumped in landfills, or end up with backyard recyclers, exposing workers, vulnerable communities, and the environment to poisonous heavy metals such as lead, cadmium, mercury, chromium, and halogenated substances such as brominated flame retardants (BFR), and polyvinyl chloride (PVC). (Greenpeace, 2005)

- For some, e-waste became an attractive business and warehouses were established, but "most of the warehouses in developing countries are not properly functioning, and unsafe informal e-waste recycling using low-cost primitive techniques has become prevalent due to the higher cost of formal recycling facilities" (Priyashantha, A. K. H., Pratheesh, N., & Pretheeba, P., 2022).

- Overall, inefficient legal implementation, lack of awareness in the population, and weak formal e-waste collection, and recycling processes allow the escalation of environmental and public health problems.

- Any place where e-waste is landed, their pollutants contaminate the air, water, and sediments. Some of the consequences are "the alternation of

native microbial communities, soil physio-chemical properties, carbon cycle, plant productivity, etc." (Priyashantha, A. K. H., Pratheesh, N., & Pretheeba, P., 2022). In the same paper, it is mentioned that some common heavy metals in electronic devices, if exposed to high quantities and/or long periods, can cause serious health damage. For example, aluminum can cause harm to the nervous system, loss of memory, bone and brain damage, induced osteomalacia, lung problems, and anemia, among other diseases. Arsenic is another common heavy metal that can cause skin and lung cancers, cardiovascular disease, skin lesions, etc.

As mentioned before, Asia is impacted by the reach of recycling in its different countries; here are some examples of the different reaches of some countries regarding e-waste management:

- ○ **Bangladesh** is a country in South Asia and one of the primary producers of e-waste in the region; according to The Global E-waste Monitor 2024, over 350 million kg annually at a rate of 2.2 kg per capita. The country "has few licensed e-waste dismantlers and they use basic resource

recovery practices that are polluting and unsafe. In the absence of formal e-waste infrastructure or enforcement of e-waste legislation, the e-waste is mainly handled by the informal sector" (Baldé et al., 2024)

- **Pakistan** is another large generator of e-waste, according to The Global E-waste Monitor 2024 it made an estimated 556 million kg in 2022. "It is also a destination for e-waste exported from other countries, with a study published in 2017 estimating that approximately 95.4 million kg of e-waste were imported into Pakistan annually". The country also lacks adequate legislation for handling the disposal of this kind of waste, and doesn't have an effective e-waste management system as "The recycling sector in Pakistan is dominated by informal operators" (Baldé et al., 2024).

- **India** is a diverse country in South Asia (with multiple religions, ethnicities, and, languages), and is also a big e-waste generator. India is "a forerunner in the region when it comes to e-waste legislation and infrastructure for collection and recycling" (Baldé et al., 2024). Its first policy was the 'e-waste (Management and Handling) Rules, 2011' by the government through the Ministry of Environment and Forests, and aimed

at the whole chain (from the producer to the consumer), dividing the products and specifying them.

○ **China** is a major producer of technological devices and the highest e-waste generator in Eastern Asia. Though, legal construction is not the main problem in China, since the government has already "implemented various policies and regulations and has undertaken initiatives to manage e-waste". The challenge remains in public awareness, "many consumers in China know little about the proper disposal and recycling of e-waste, and this often leads to e-waste being discarded in regular waste streams" which then leads to the "absence of an effective e-waste collection and transportation system". Also, "due to the high transportation costs and logistical challenges, many e-waste recyclers in China are located in large urban centers, which results in e-waste from rural areas being left uncollected or improperly disposed of" (Baldé et al., 2024).

○ **Japan**, as another major producer of EEE, is promoting a circular economy approach to e-waste management. The Global E-waste Monitor 2024 writes it has a regulated framework for e-waste management, where the Resource Circulation Act is the principal law for collection and

recycling. "Under this law, manufacturers and importers are responsible for collecting and recycling e-waste, and consumers are required to separate their e-waste for proper disposal". Japan is also making efforts to make the population aware of the crisis, for example:

○ Japan has been promoting the use of more sustainable products through eco-labeling programs, which are used to identify products that meet certain environmental criteria; Eco Mark is the most widely recognized eco-label. (Baldé et al., 2024)

○ **The United States** produced around 7,200 million kg in 2022, according to The Global E-waste Monitor 2024. It is one of the main competitors in the EEE market, and its production comprised a large share of total manufacturing activity in the country in 2023, as the U.S. Department of Commerce wrote. As a response, the government has established e-waste recycling programs, and within the country; some "states have also enacted laws prohibiting e-waste landfilling and incineration, and requiring separate treatment" (Baldé et al., 2024).

○ **South Korea** is a big technological device producer and one of the 18 countries in Asia with an e-waste policy. And, according to The Global E-

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waste Monitor 2024, it has managed to handle e-waste effectively, and the Ministry of Environment has set a goal, "to promote a circular economy by extending the lifespan of EEE, reducing waste generation and promoting recycling and resource recovery".

- **Iceland** produced 22 kg of e-waste per capita in 2022, which is roughly compared to 11 laptops or a microwave. With this high number, the country has implemented laws aligned with the 'Waste Electrical and Electronic Equipment (WEEE) Directive of the European Parliament and of the Council', which has the objectives of:
    - Preventing the creation of WEEE.
    - Contributing to the efficient use of resources and the retrieval of secondary raw materials through reuse, recycling, and other forms of recovery.
    - Improving the environmental performance of everyone involved in the life cycle of EEE. (European Commission, 2024)
- **Norway** produced 140 million kg of e-waste in 2022 according to The Global E-waste Monitor report (2024). And generates 27 kg per capita,

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which positions the country as the highest e-waste generator in Europe. This country also has implemented WEEE strategies.
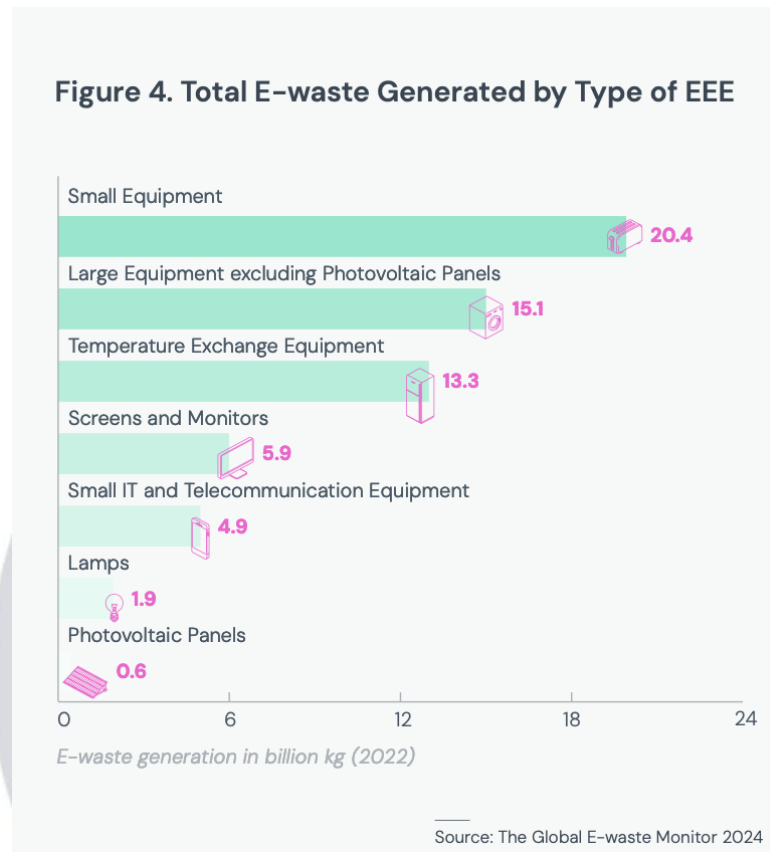
○ **Denmark** generated 131 million kg of e-waste in 2022, according to The Global E-waste Monitor report (2024), from which 79 million kg were documented as formally collected and recycled. That translated into 22,3 kg per capita, which is roughly equivalent to around 110 smartphones. From all that data it can be intuited that the legislation exists, but not the social awareness. Still, there are no official statistics about the contamination caused by these types of disposal, but overall, soil, air, and water quality are good.

There are several ways in which the management of e-waste impacts economies, societies, and the environment. It is also important to recognize the important spill-over effects and to assess the direct and indirect costs. This includes the price paid by society in terms of long-term and externalized health and environmental costs emanating from unmanaged hazardous substances and greenhouse gas emissions. (Baldé et al., 2024). And for this to change, improvements should be made in current e-waste recycling methods, since the current ones have a net loss of USD 37 billion in the world's current e-waste management practices, according to The Global E-waste Monitor 2024.

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Figure 4. Total E-waste Generated by Type of EEE

Small Equipment — 20.4

Large Equipment excluding Photovoltaic Panels — 15.1

Temperature Exchange Equipment — 13.3

Screens and Monitors — 5.9

Small IT and Telecommunication Equipment — 4.9

Lamps — 1.9

Photovoltaic Panels — 0.6

E-waste generation in billion kg (2022)

Source: The Global E-waste Monitor 2024

Percentage of generated EEE by category (2022)

(Baldé et al., 2024)

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Figure 7. E-waste Generated and Documented as Formally Collected and Recycled by Region
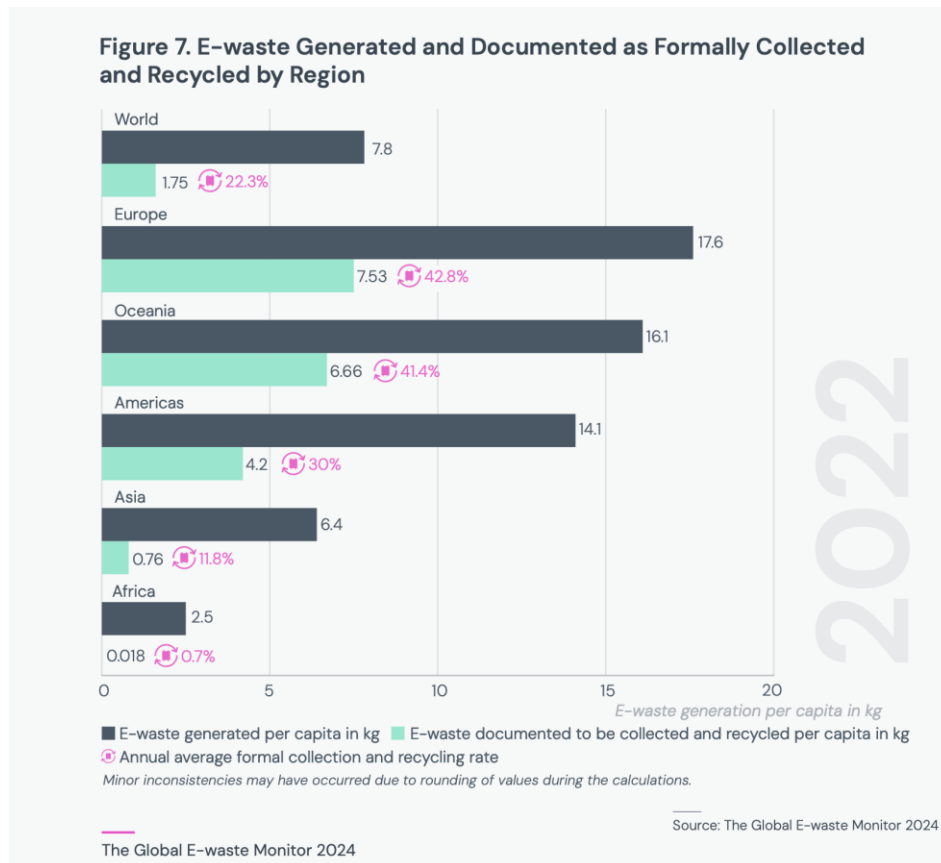
Percentage of electronic waste around the world (2022)

(Baldé et al., 2024)

Regardless of Asia's conditions and management, throughout the years, Asia has created solutions and conventions in order to improve and control their technological waste:

1989: The Basel Convention

Approved under the supervision of the United Nations Environment Program (UNEP), the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal,* better known as *Basel Convention,* is an international treaty adopted by the Conference of Plenipotentiaries on March 22, 1989 in Basel, Switzerland. However, it did not come into effect until May 5, 1991. It was designed to reduce the production of hazardous wastes and 'control their transboundary movement' (which refers to the regulation and supervision of transporting hazardous wastes from one country to another), to ensure environmentally rational waste management by promoting international cooperation through tracking and coordination mechanisms.

According to the Basel Convention's guidelines, we now know that this process must be implemented through norms and procedures to guarantee the proper movement of hazardous wastes to protect both human and environmental health from the adverse effects of toxic wastes.

Nevertheless, over time, additional nations have joined this treaty, so currently, the Basel Convention has the participation of 191 countries, of which 189 have ratified the agreement. (Basel Convention, 2011.).

Requirements and compliances for members

Countries that are party to the Basel Convention are subject to several requirements, among them:

1. Prior notification and consent: Before moving hazardous wastes across borders, the exporting country must notify the importing country and obtain its consent.

2. Environmentally safe practices: Hazardous wastes must be managed and disposed of in ways that minimize negative impacts on human health and the environment.

3. Periodic Reports: Countries must submit annual reports regarding transboundary movements of hazardous wastes as well as measures taken to ensure implementation of the Convention.

4. Prohibition of export to non-party countries: Hazardous wastes should not be exported to countries that are not party to the Convention unless bilateral, multilateral, or regional agreements compatible with the Convention are in place.

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Challenges

Despite all the positive contributions that the Basel Convention intends to achieve, challenges have been hacked by the treaty which limits the full accomplishment of its objectives. For starters, it has been hard to ensure that all countries fulfill their obligations since in some cases it can be problematic due to a lack of resources, capacity, and political will. Consequently, despite regulations, illegal movements of hazardous wastes continue to be a problem. In addition, emerging waste management issues, such as e-waste and plastics, represent new challenges in terms of regulation and technology.

As a consequence, greater cooperation between countries is needed to improve hazardous waste management and address illegal trade.

Manage emerging issues

As a result of the emerging issues in the last few years, such as electronic and plastic wastes, the Basel Convention has put in place a series of strategies:

1. **Plastics Amendment:** In 2019, by adopting an agreement to incorporate plastic wastes into the framework of the Convention, strengthening the control over the transboundary movement of these wastes.

2. **Technical Guidelines:** Technical guidelines have been developed regarding the environmentally sound management of e-waste, which includes suggested practices and available technologies related to recycling and disposal.

3. **Cooperation and Technical Assistance:** International cooperation has been promoted, offering technical assistance to developing countries to improve their skills in the management of e-waste and plastics.

The Effectiveness of the Convention

The effectiveness of the Basel Convention has certainly been called into doubt, arguments in favor of its effectiveness include:

1. **Standard Setting:** It has established a global framework around the regulation of the movement of hazardous wastes, promoting environmentally sound management practices.

2. **Reducing Illegal Movements:** It has helped reduce illegal movements of hazardous wastes by enhancing awareness and regulation.

3. **Capacity Building:** It has influenced international cooperation, strengthening the capacities of developing countries in hazardous waste management.

However, it also faces criticisms and several challenges, such as:

1. Inconsistent Fulfillment: The implementation and application of the Convention differs significantly among countries, limiting its overall effectiveness.

2. Persistent Illegal Movements: Despite regulations, illegal movements of hazardous and e-waste persist.

3. Technical and Financial Challenges: The lack of financial and technical resources in some countries limits their ability to fully implement the requirements of the Convention.

The Basel Convention has made significant progress on hazardous waste regulation, however, it still faces significant challenges that must be addressed to improve its overall effectiveness.

1995: The Basel Ban Amendment

Adopted in 1995 at the Conference of the Parties to the Second Extraordinary Meeting of the Basel Convention, the *Basel Ban Amendment,* also known as the *Basel*

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Amendment, is an international agreement that forms part of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes as well as their Reduction.

Goals

The main objective of this amendment is to prevent developing countries from receiving hazardous wastes and to protect their public and environmental health according to 3 principles:

1. **Prevent** the transference of hazardous wastes from developed to developing countries.

2. **Protect** developing countries from risks associated with inadequate hazardous waste management.

3. **Promote** an environmentally sound management of waste worldwide.

Social Implications

The amendment intends to protect communities in developing countries that could be exposed to the risks of hazardous waste. Risks include public health concerns and unsafe working conditions for employees at waste management centers.

Economical Implications

The amendment prevents unfair economic exploitation by developed countries that transfer their hazardous waste to countries with less rigorous regulations. In addition, it seeks to encourage local waste management and recycling in waste-generating countries.

Environmentally Implications

The amendment is aimed at preventing environmental pollution in developing countries that lack adequate infrastructure to safely handle and treat hazardous waste, contributing to the protection of ecosystems and the mitigation of global pollution.

2009: The China WEEE Regulation

China's Waste Electrical and Electronic Equipment (WEEE) Regulation, which was created in 2009, is a regulation that handles and recycles waste electrical and electronic equipment in the country. It forms part of China's attempts to control the environmental and health impact generated by e-waste, as a consequence of the accelerated expansion of the electronics industries and technology consumption.

Its objectives and mandates are based on:

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1. <u>Reducing</u> the amount of e-waste generated.

2. <u>Promote</u> recycling and recovery of valuable materials.

3. <u>Minimize</u> the environmental impact and health risks associated with the inadequate management of these wastes.

China WEEE Regulation Conditions

1. **Extended Producer Responsibility (EPR):** Producers and distributors of electronic products are responsible for the collection, recycling, and treatment of waste from their products once they reach the end of their useful life.

2. **Registration and Licensing:** Companies that handle e-waste must be registered and licensed to operate, ensuring adherence to treatment and recycling standards.

3. **Treatment Standards:** Specific producers are established for the management of e-waste in order to ensure the collection of valuable material and the safe disposal of hazardous components.

4. **Reporting and Monitoring:** Companies must report regularly about the amount of waste treated and about recycling activities carried out, ensuring governmental control and supervision.

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E-products covered

China's WEEE regulations cover a wide variety of electronic products, including:

- ICT (Information and Communication Technology) equipment: Cell phones, computers, printers, etc.

- Household appliances: Refrigerators, washing machines, microwaves, etc.

- Other electronic devices: Televisions, radios, audio and video equipment, etc.

Management and recollection of electronic wastes

To manage and collect the rising amount of e-waste sustainably, this regulation addresses 3 main proposals. First, establish collection systems that include specific pick-up points and recovery services to ensure that e-waste is properly managed. Secondly, to implement techniques and technologies to separate and treat the components safely, dealing with the waste in manners that maximize the recovery of reusable materials and minimize the environmental impact. Lastly, promote awareness campaigns to educate consumers and corporations about the importance of recycling and the proper management of e-waste.

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2011: International E-Waste Management Network (IEMN)

The *International E-Waste Management Network (IEMN),* founded in 2011, is an international network. Its purpose is to facilitate effective e-waste management through international cooperation and sustainable practices to minimize the environmental and health impact of these products at the end of their useful life.

The creation of this network was encouraged by a specific factor: Rapid technological innovations. Such changes have resulted in large increases in e-waste and raised the need for a structured approach that addresses the environmental and health risks caused by these developments.

IEMN Projects and Initiatives

Some outstanding projects and initiatives launched by the IEMN include:

1. **Global E-Waste Monitor:** This project aims to track and analyze global trends in e-waste generation and management.

2. **Training Workshops:** IEMN organizes training workshops and sessions to improve the technical and management skills of interested parties in e-waste management.

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3. **Knowledge Sharing Platforms:** Supports and creates platforms that facilitate the exchange of information as well as best practices between countries and organizations.

As a result of the safe and responsible e-waste management proposals that have been developed and implemented thanks to the IEMN, we can now prove the effectiveness of this network just by observing the evolution of sustainable practices in several countries, like Japan or Iceland.

Future Objectives

IEMN's upcoming plans include the expansion of its membership network, increasing the reach of its projects that address emerging e-waste challenges, as well as strengthening global cooperation towards enhancing e-waste management practices. These future-specific initiatives involve the development of new technologies for e-waste recycling, reinforcing regulations, and promoting innovation in e-waste treatment.

IEMN's Achievements

Some of IEMN's achievements are:

1. <u>Increased Awareness:</u> They have increased global awareness about the importance of e-waste management and the critical role of sustainable practices.

2. <u>Improved Practices:</u> They have assisted several countries in developing and implementing more effective e-waste management systems.

3. <u>Enhanced Cooperation:</u> They foster international cooperation and knowledge sharing, leading to more coordinated efforts that address e-waste challenges.

IEMN's work has contributed to significant progress in e-waste management on a global scale, however, ongoing efforts are still required to address the emerging challenges in this area.

2018: International E-Waste Day launched by the World Health Organization (WHO)

Launched in 2008 by the World Health Organization (WHO) to address the rising problem of e-waste and its impact on human and environmental health. *The International E-Waste* Day encourages awareness and the responsible recycling of electronic devices.

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The creation of an awareness day was inspired by the necessity of educating the public about the risks of e-waste to encourage concrete actions that would reduce the generation of e-waste and improve e-waste management.

This commemoration intends to achieve 4 particular goals:

1. Increase the amount of properly recycled e-waste.

2. Develop and improve e-waste recycling and management infrastructures.

3. Support the implementation of laws and regulations that favor sustainable e-waste management.

4. Promote the development of innovative technologies and methods for the recycling and management of electronic waste.

Who Supports The International E-Waste Day?

Several organizations, governments, and entities participate in International E-Waste Day, among the most important ones are:

1. United Nations University (UNU)

2. International Telecommunication Union (ITU)

3. United Nations Environment Program (UNEP)

4. Basel Convention Coordinating Centre

5. Companies in the Technology Sector: such as Dell, HP, and other companies involved in the manufacture and recycling of electronic products.

6. National and Local Governments: They implemented e-waste management policies and programs.

The cooperation of these entities has contributed to the effectiveness of the International E-Waste Day, expanding the reach of awareness-raising messages and campaigns by supplying technical, financial, and logistical resources towards recycling and management initiatives. It has all helped to facilitate cooperation, ensuring the maximum impact of activities and projects.

Overall, the International E-Waste Day has played a crucial role by mobilizing global efforts that address the e-waste challenge in the most effective and sustainable manner. All of this can be seen in its 4 main achievements:

1. Increased Public Awareness

2. Improved Recycling

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3. Policy and Regulation

4. Innovation and Development

This situation is affecting Asian countries because according to a recent UN report, it reveals that due to a strange twist in the global economy, China has become the largest dumping ground for electronic waste in the world. Approximately 70% of the electrical waste generated worldwide ends up on the Asian continent. It is proven that in 2019, 53.6 million tons of electronic waste were generated annually in its countries, which is an average of 7.3 kg per capita. The number is expected to grow by approximately 3.5% annually and reach 74.7 million in 2030. It has also been stated that, in the long term, e-waste manages to expel more or less than 10 of the most dangerous toxins for humans; for example, studies conducted by Shantou University Medical College in China revealed that many children examined in Guiyu had higher than normal levels of lead in their blood, which can impede brain development and the central nervous system. So, to envision how much e-waste is going to be in the world for future generations, the UN has revealed that it is believed that there will be 120 million tons of electronic straps in 2050.

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Unfortunately, in many Asian countries, electronic waste is received and processed as part of labor activities and there are no regulations to protect workers' health from contact with these wastes. Even people who are not involved in the separation of electronic waste materials end up with permanent health damage since there is a filtration of several chemicals in the environment. The chemicals involved are:

1. Brominated fire retardants
2. Cadmium
3. Mercury
4. Hexavalent
5. Chromium

6. Compounds
7. Nickel
8. Lithium
9. Beryllium cathode ray tubes
10. Zinc

There are quite a few specialized factories with the necessary knowledge to separate materials within electronic devices without causing harm to human health. However, some people dispose of their e-waste in the ocean because it is the easiest and most cost-effective option for them. But when people throw their e-waste into the sea or float around the world, there are many times that the solid objects themselves do not last

as long, but the toxins they contain remain floating in the sea. This is how toxic chemicals come to affect more countries.

This problem affects the sustainability of the environment in a lot of aspects, some of which are:

- The pollution of the sea means that future generations won't be able to drink fresh water for long.

- The toxic chemicals of e-waste impregnate the air.

- Because of the toxins that persist in the atmosphere, animals are suffering deadly consequences.

- Children are exposed to an extreme accumulation of chemicals in their bodies, exceeding what is considered the recommended levels appropriate for their health.

As a method of spreading, the sea is left with pollutants and the toxic chemicals pollute the ponds, streams, rivers, and lakes. This can cause gasses to be emitted into the atmosphere and cause imbalances in ecosystems. It also hinders economic development in both developing and developed countries alike, for example:

- Due to water contamination and waste, freshwater resources are being depleted, potentially necessitating the development of desalination technologies for potable water. Countries initially affected by this issue will likely experience economic decline, as expenditures on water will significantly increase beyond usual levels.

- Toxic substances in the soil will render it unsuitable for agricultural purposes, including the cultivation of crops such as wheat and sweet potatoes. Animals, which must feed before entering the food chain, are poisoned by these contaminants, which in turn affects human health, as meat sources such as chicken and fish become contaminated. This situation exacerbates public health issues and increases the demand for medical services, including healthcare professionals and related resources.

Asia is a continent with a very large population, so the damaged environment (air, ocean, and soil contamination) harms a greater number of people, which will force Asia to start investing in air purifiers, water purifiers, and soil fertilizers; leading to economic consequences.

Several countries within the Asian region have led important strategies to control electronic waste, for example, creating legislation on e-waste management, creating

waste collection, and recycling industries, and promoting awareness among citizens for the well-being of their health. One of the countries that has contributed the most is Malaysia; since 2012 it has focused on e-waste management methodologies, e-waste recycling practices, and waste disposal strategies. Another country that is helping is the Indian government, for they have implemented legislation on electronic waste, by making the rule that only authorized people in the dismantling and recycling of electronic waste can collect that waste.

Here are a few programs that carry out these objectives and their countries are:

- RENEW
- JCPRA (Japan)
- MAREA (Malaysia)

- Recycle India Foundation
- EPR (Taiwan)
- RFID (Korea)

Also, some of the above-mentioned strategies of Asia to keep our environment safe are:

- Building resilience amid disaster risks, this strategy lets natural disasters happen but it keeps the people safe with refugees or underground houses.

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- Promote Greener and more sustainable growth models, this strategy is more functional because it avoids all the things that damage the environment and shows the green spaces.

- Making taxes work for development in Asia and the Pacific, This strategy is making economic development, so people work and take care of the green spaces.

Asia is the world´s region with the greatest electricity consumption. In 2022, countries- within consumed a combined 12,674 terawatt-hours of electricity. The region is home to the world´s largest electricity-consuming country.

The materials that each device is made of, affect how is it going to be recyclable, such as:

- Batteries, the batteries need to be recycled differently because they can be combustible components, empty metal cells, and recovered metals.

- Cathode ray tubes (CRT), this is because the casing, internal circuit board, and CRT tubes are made of different materials.

Many countries around the world send their electronic waste to Asia, where labor is much cheaper than in Western countries. Unfortunately, countries such as China, India,

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Pakistan, Malaysia, Thailand, Philippines, Vietnam, Ghana, and Nigeria receive 80% of the world's electronic waste, generating exposure of dangerous waste to employees and not having the necessary protection to handle it. Also, there is a big possibility that many of these wastes may no longer be useful because most of them are at the end of their life capacity.

It is also important to mention that these Asian countries, with such cheap labor, are the ones that have the least restrictions in their territories for the importation of wastes, a situation that makes it much easier to export them to these places. Western countries, for the most part, have high levels of restriction on the import of electronic waste, therefore global trade is influenced by this type of products only being sent to developing countries with less capacity economically.

In summary, the excessive use of technology, accompanied by the consumerism of electronic devices, has generated an increase in the excessive production of e-waste; because of this, many countries within the region have joined or created organizations to improve this situation, which are the following:

- **China**: China is one of the leading producers of EEE, and currently. The country is experiencing incredible growth in e-waste generation from both

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domestic and international sources. Formal e-waste management in China is driven by government agencies designed to improve e-waste recycling and disposal and to encourage manufacturers to take back their products. Thus, Chinese e-waste regulations are focused on extended producer responsibility, polluter pay, and the 3Rs (Reduce, Reuse, and Recycle) principles.

Informal e-waste recycling in China is often carried out by individual recyclers and not authorized dismantling companies. Informal recyclers purchase used items and often either dismantle or repair them for the second-hand market. This unregulated e-waste recycling method is currently flourishing in China. Informal recycling provides livelihoods for many Chinese citizens and is creating serious environmental and health concerns. E-waste generation and management in China have remained a major problem and are fuelled by China´s inexpensive labor and manufacturing abilities. Informal recyclers do the majority of e-waste collection and recycling in most cities throughout China.

● **India**: India has put rules around e-waste these are: Decrease: The first step in e-waste management is to reduce the amount of e-waste generated.

- ○ Reuse: Reusing electronic devices and components is another way to reduce the amount of electronic waste.

- ○ Recycle: Recycling is the most common and effective method of managing electronic waste. It involves extracting useful materials such as metals, glass, and plastics, which can be used to make new products.

- ○ Disposal: If electronic devices cannot be reused or recycled, they should be disposed of appropriately.

- **Japan:** In 2020, the Tokyo Metropolitan Government launched its Zero Emissions Tokyo Strategy, a plan to spend more than 74.6 million yen in fiscal year 2020 to achieve net-zero carbon emissions and reduce other short-lived climate pollutants through measures such as the removal of marine plastic waste and food waste. Japan is working with several countries, including Brazil and Malaysia, on a Global Methane Partnership to better capture and recover methane from landfills.

In 2016, the Global Warming Countermeasures Plan began work to reduce municipal solid waste and its resulting methane emissions by reducing direct

landfilling of organic waste and reducing and recycling as much waste as possible. Additionally, the plan promotes semi-aerobic landfill structures for any newly constructed landfills.

- **South Korea**: In 1986, South Korea enacted the Waste Management Law to promote the "three Rs:" reduce, reuse, recycle. However, it was in 1992 that the government established the Law for the Promotion of Recycling and Saving of Resources (Act on Resource Saving and Recycling Promotion), which first introduced the concept of "polluter pays", by establishing a fee for waste and requiring the purchase of special garbage bags for this use. However, in the late 1990s, the country began to see an increase in food waste as a result of higher living standards, frequent dining out, and more single-occupant households; in 2005 it was made illegal to send food waste to landfills. Since then, the amount of food waste has been decreasing, while in 2013, the government introduced mandatory recycling of organic waste using biodegradable bags.

Organizations involved

- **WHO (World Health Organization):** The World Health Organization was founded on the 7 of April of 1947. by United States, Brazil, Mexico, Turkey,

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United Kingdom, Iran, France, Canada, Australia, Peru, Colombia, Netherlands, Philippines, Norway, Argentina, Lisbon, Egypt, Chile, Ecuador, Saudi Arabia, Grece, Polonia, The Ukrainian Soviet Socialist Republic, The Byelorussian Soviet Socialist Republic, South African Union, China and Czechoslovakia, Belgium, Denmark, Poland, New Zealand, Iraq, Haiti, Cuba, Costa Rica, Dominican Republic, Ethiopia, Uruguay, Bolivia, Luxemburg, Venezuela. Siria, El Salvador, Panama, Guatemala, Honduras, Nicaragua, Yugoslavia, Paraguay, and Liberia.

WHO works worldwide to promote health, keep the world safe, and serve the vulnerable. Our goal is to ensure that a billion more people have universal health coverage, to protect a billion more people from health emergencies, and to provide a further billion people with better health and well-being.

- **ITU (International Telecommunication Union):** ITU was founded on the 17 of May 1865 by David Edward Hughes, Nikola Tesla, Alexander Stepanovich Popov, Guglielmo Marconi, and Jagadish Chandra Bose their coordinates are 46°13′23″N 6°08′12″E / 46.2229396, 6.1367762. The central offices are in Geneva, Switzerland this union is the specialized telecommunications agency of the United Nations Organization, in charge of regulating telecommunications at

an international level between the different administrations and operating companies.

- **UNIDO (United Nations Industrial Development Organization):** The United Nations Industrial Development Organization is the specialized agency of the UN that promotes industrial development for poverty reduction, inclusive globalization, and environmental sustainability. The mandate of UNIDO is to promote and accelerate sustainable industrial development in developing countries and economies in transition. The organization draws on four mutually reinforcing categories of services: technical cooperation, analytical and policy advisory services, standard setting and compliance, and a convening function for knowledge transfer and networking.

International Actions

- The **United Nations Environment Programme (UNEP)** was launched in 1972 to follow up and inform policy-makers across country members about the environment. The International Environmental Technology Centre (IETC) in

Osaka, Japan, has been working on e-waste management and the creation of proper strategies and policies. Through IETC, UNEP has completed reports on e-waste like 'The Future of Electric Vehicles and Material Resources'. Another of its publications on the matter is 'Future E-Waste Scenarios', whose goal is to evoke public discussions for the political agendas of governments and businesses to address such issues early on. IETC also has In-country advisory services, for example, there is currently an "activity to develop an action-oriented policy for E-waste management in Sri Lanka" through supporting the Government of Sri Lanka "to strengthen e-waste management in the country by developing an action-oriented policy on E-waste management" (UNEP, n.d.)

- **United Nations University (UNU).** United Nations University is "a global think tank and postgraduate teaching organization headquartered in Japan" (UNU, n.d.) and "an autonomous organ of the UN General Assembly dedicated to generating and transferring knowledge and strengthening capacities relevant to global issues of human security, development, and welfare" (Parajuly, K., Ternald, D., & Kuehr, R., n.d.). Its mission is to arrange collaborative research to educate on pressing global problems for the welfare of the United Nations and its member states. UNU, alongside IETC, has been researching the impact of e-waste and

sustainable solutions to the crisis, ('The Future of Electric Vehicles and Material Resources' is a report they made together).

- **Asian Development Bank (ADB).** Asian Development Bank is a financial institution that opened in 1966 with the Philippines as the host country. It is committed to finding a way to build sustainable and prosperous economies, eradicating extreme poverty throughout Asia and the Pacific (it has 68 member countries of which 19 are out of the region). The ADB still hasn't made a project to address the e-waste crisis. But The Southeast Asia Development Solutions Knowledge and Innovation Platform (SEADS) (a platform created by ADB to spread information through reports, symposiums, webinars, and other events) has written about the subject, as it did on the article 'Soaring E-Waste Affects the Health of Millions of Children, WHO Warns' on 2021. Several examples of multilateral programs, protocols, and actions demonstrate a coordinated and diverse effort to address the growing e-waste challenge in Asian countries including:

Government Programs

- **E-Waste Management Rules, 2016**

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A set of rules that imposes responsibilities on manufacturers to ensure the collection and recycling of e-waste, this body of rules was implemented by the government of India to manage and recycle e-waste efficiently.

- **HARL (Home Appliance Recycling Law)**

In Japan, the Home Appliance Recycling Law stipulates specific requirements for the recollection and recycling of items such as televisions, refrigerators, washing machines, and air conditioners, promoting a sustainable life cycle for these devices.

- **Waste Electrical and Electronic Management Act**

To minimize the environmental impact of these wastes, South Korea has implemented this law to ensure the collection, recycling, and safe disposal of electrical and electronic equipment.

- **National Pilot Program for the Recycling and Treatment of Waste Electrical and Electronic Products**

China has launched this national pilot program to enhance the recycling and adequate treatment of discarded electronic products, promoting innovation in recycling technologies and the necessary infrastructure.

Government Protocols

- **National E-Waste Management Guidelines**

Numerous Asian countries have developed national guidelines for the management of e-waste, providing a regulatory framework for the safe collection, treatment, and recycling of these waste materials.

- **National E-Waste Management Master Plan**

National Master Plans have been set up to establish long-term goals and comprehensive strategies for e-waste management, including collaboration between the public and private sectors.

Multilateral Actions

- **APEC (Asia-Pacific Economic Cooperation)**

APEC works on economic and technical cooperation among countries in the Asia-Pacific region, which includes specific initiatives for e-waste management and the promotion of green practices.

- **StEP (Solving the E-Waste Problem)**

StEP is a global initiative that brings together diverse stakeholders to address the e-waste problem through the development of sustainable solutions and the promotion of effective policies, however, it is not exclusively reserved for Asia.

UN Actions

To address the growing challenge of e-waste, the UN started promoting sustainable life, and the reduction of environmental impact and health impact associated with this waste, through these seven initiatives and programs that are:

Basel Convention: The Basel Convention has been led by UNEP since toxic waste from household appliances was discovered. It was founded in May 1992 to control the cross-over movement of electronic waste, including that this project ensures that exports and imports with the purpose of illegal work are non-existent, and the disintegration and elimination of said waste.

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Stockholm Convention: This initiative was constructed with the function of promoting the gestion of the treatment of e-waste and studies to find sustainable solutions for recycling and reusing waste.

Global E-waste Monitor: The Global E-waste Monitor is the program that performs analysis and research and provides data as well as statistics on electronic waste. The Global E-waste Monitores is a collaborative initiative, it works with different programs to accomplish their purpose. The primary collaborations are:

1. International Telecommunication Union (ITU): This is the specialized program that is responsible for the communication and giving data to the Global E-waste Monitor.

2. United Nations Environment Programme (UNEP): This agency supports the elimination of e-waste and publicity, but is focused on the environment and how to help the environment.

3. International Solid Waste Association (ISWA): This collaboration specializes in strategies to guarantee the consumption of products diminishes and the number of recycled products increases.

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Training and Technical Assistance Initiatives: The UN always participates in advertising for public awareness, making campaigns, technological notices, or posters. This program focuses on the education needed to keep people´s health safe, this includes capacity building for e-waste collection and recycling, implementing appropriate management systems, and education and awareness about e-waste management.

Promotion of International Standards and Best Practices: Based on previous research, these initiatives are required to be legal to be used; to achieve this it is necessary to acquire laws that allow factories that eliminate e-waste. This scheme works with the governments to make deals and create adequate legislation that meets national requirements and standards.

Public Awareness Campaigns: The UN provides technical assistance and capacitation in developing countries to instruct people on the gestion of electronic waste. These projects help to strengthen the local infrastructure teams of recycling.

Promotion of Circular Economy: This initiative is made to find the circular economy, to be precise the circular economy is looking for ways to minimize waste and maximize the use of reused resources, this implies the creation of products easier to disassemble and the fomentation of recycling.

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Since ESCWA is informed about the presence of e-waste, it has carried out investigations on the subject to have detailed information and producer reports to prove solutions and strategies that can work or fail. To solve this issue this organization is working to find alternatives and eradicate the problem, but the solutions that until now the ESCWA has given were:

- Policy Development: The ESCWA recommends that Asian countries create policies and laws to eliminate every illegal work and authorize people to know the correct management of electronic waste.

- Education and Awareness: This organization proposes to send campaigns and courses of awareness about the danger in which they could be exposed to the toxic gasses emitted by the waste and cause serious harm to human health.

- Regional Support: ESCWA recommends that different countries join forces to combat this problem with different strategies and thus be able to find a solution.

Without exception, all countries around the world have their own opinions, solutions, and ways to confront a problem. In the case of technological waste, not all countries or regions have come up with solutions to face this problem. However, some countries have created laws, implemented policies, inaugurated organizations, and

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established systems for the movement and management of electronic waste. Following these countries with their e-waste management:

- **Switzerland:** In Switzerland are three producer responsibility organizations (SLRS), (SWICO recycling) and (SENS) These organizations are responsible for e-waste management in the country, these programs are an accepted and comprehended system and cover a wide range of EEE. The consumers have to dispose of the e-waste through retailers or by collecting it at a located collection point, and they have to pay the ARF for purchasing a new product. So they bear the responsibility of the final finances for e-waste management.

- **Germany:** Germany is near Switzerland but the management is different, the e-waste is collected directly from individual households without any chagrin from customers for e-waste disposal, the informal collection is not allowed. After the collection stage, e-waste is handed over to the producers.

- **Japan:** In Japan, they made a basic law to promote recycling and reuse to ensure that it is well managed. The E-waste infrastructure includes: collecting, logistic, and reprocessing technologies.

- **China:** As far as China is concerned, China has made good efforts to have better collection and recycling of e-waste in the public and private sectors. China's

government has issued many environmental laws and technical guidance related

to e-waste management.

Points to Discuss

1. **Context**

- Function of the committee
  - ▪ Involvement in this problem
- Development in Asia
  - ▪ Economically
  - ▪ Socially
  - ▪ Culturally
  - ▪ Technologically
- Management of electronic waste must be improved
  - ▪ Increase in electronic wastes
    - ▫ Improper E-waste management

- o Current Problem

  - ▪ Amount of electronic waste that is generated in various countries in Asia

    - ● Global effects because of these wastes

      - o Environmental pollution

      - o Health risks

  - ▫ Collaboration

    - o Nationally

    - o Internationally

2. **Development**

- ● Impact of electronic waste

  - ▪ Year of the increase of wastes

    - ● Countries that waste more

      - o Most thrown items

        - ▪ Direct impact of the wastes of other countries to Asia

- Theories of economic growth and development
  - BLAST
  - GALA
    - Amartya Sen
  - Impediments for the prevention of wastes
- Causes and consequences of the lack of proper waste disposal
  - Protocols and strategies to address the poor management of electronic wastes
    - Protocols
      - Regionally
      - Internationally
    - Strategies
      - Regionally
        - Cooperation between Asian countries to share the best resources and practices for better electronic waste management
      - Internationally

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▪ International partnerships for funding electronic projects and programs for electronic wastes

▪ Solutions

▫ Proper waste management

o Recycling facilities

o Collection systems

▫ Creation and implementation of eco-friendly products

▫ Awareness campaigns

References

Official Sources (books, UN official pages, .pdf, .gob, among others)

MUNTCP

CEPAL. (s/f). *Convenio de Basilea sobre el Control de los Movimientos Transfronterizos de los Deshechos Peligrosos y su Eliminación.* Cepal. https://observatoriop10.cepal.org/es/tratado/convenio-basilea-control-movimientos-transfronterizos-deshechos-peligrosos-su-eliminacion#:~:text=El%20Convenio%20de%20Basilea%20sobre,de%20desarrollo%20provenientes%20del%20extranjero.

Baldé, C. P., Kuehr R., Yamamoto, T., McDonald, R., D'Angelo, E., Althaf, S., Bel, G., Deubzer, O., Fernandez-Cubillo, E., Forti, V., Gray, V., Herat, S., Honda, S., Iattoni, G., Khetriwal, D. S., di Cortemiglia, V. L., Lobuntsova, Y., Nnorom, I., Pralat, N., Wagner, M. (2024). *The Global E-waste Monitor 2024.* Global Waste.

https://api.globalewaste.org/publications/file/297/Global-E-waste-Monitor-2024.pdf

Basel Convention. (n.d.). *Home Page.* Basel.

https://www.basel.int/

Basel Convention. (2011). *Parties to the Basel Convention on the control of Transboundary Movements of Hazardous Wastes and their Disposal.* Basel.

muntcp

https://www.basel.int/Countries/StatusofRatifications/PartiesSignatories/tabid/4499/Default.aspx

Basel convention. (2011). *The Basel Convention Ban Amendment.* Basel

https://www.basel.int/Implementation/LegalMatters/BanAmendment/Overview/tabid/1484/Default.aspx

CNN. (11 de junio, 2013). *China, el basurero electrónico del mundo.* Cnnespanol.

https://cnnespanol.cnn.com/2013/06/11/china-el-basurero-electronico-del-mundo

CRBAS, Centro Regional BAsilea para América del Sur. (n.d.). *International E-Waste Management Network (IEMN).* Bcrc-argentina. https://bcrc-argentina.net.ar/international-e-waste-management-network-iemn/

Economic and Social Commission for Western Asia. (2022). *Our vision, mission & history.* Unescwa.

https://www.unescwa.org/about/mission

EL SIEVER. (July 1st, 2019). *An analysis of electronic waste management strategies and recycling operations in Malaysia: Challenges and future prospects.*

Sciencedirect.

https://www.sciencedirect.com/science/article/abs/pii/S0959652619309035

European Commission. (n/d). *Waste from Electrical and Electronic Equipment (WEEE).* Environment. https://environment.ec.europa.eu/topics/waste-and-recycling/waste-electrical-and-electronic-equipment-weee_en

E-waste (Management and Handling). (May 12th, 2011). *Ministry of Environment and Forests Notification.* Meity.

https://www.meity.gov.in/writereaddata/files/1035e_eng.pdf

Gobierno de México. (25 de noviembre, 2015). *Convenio de Basilea.* Gob. https://www.gob.mx/semarnat/acciones-y-programas/convenio-de-basilea

Gobierno de México. (25 de noviembre, 2015). *Documento Oficial Del Convenio de Basilea.* Gob. https://www.gob.mx/semarnat/documentos/documento-oficial-del-convenio-de-basilea#:~:text=Las%20negociaciones%20culminaron%20en%20la,22%20de%20marzo%20de%201989

muntcp

Greenpeace. (2024). *El peligro de los residuos electrónicos*. Greenpeace.

https://www.greenpeace.org/argentina/el-peligro-de-los-residuos-electronicos/

Greenpeace. (September 28th, 2005.). *TOXIC TECH: Looming e-waste problems for Thailand and Philippines.* Greenpeace.

https://www.greenpeace.org/philippines/story/948/toxic-tech-looming-e-waste-problems-for-thailand-and-philippines/

Iberdrola, (n.d.). *La contaminación tecnológica, un problema del siglo XXI.* Iberdrola.

https://www.iberdrola.com/sostenibilidad/que-es-basura-tecnologica

Naciones Unidas. (20 de agosto, 2024). *Documentación del Sistema de las Naciones Unidas.* Un.

https://research.un.org/es/docs/unsystem/escwa#:~:text=La%20Comisi%C3%B3n

Topic B: Development of solutions
for the future management of
electronic waste in Asian countries

muntcp

%20Econ%C3%B3mica%20para%20Asia,para%20Asia%20
Occidental%20(CESPAO).

Organización Mundial de la Salud. (18 de octubre, 2023). *Desechos eléctricos y electrónicos.* Who.

https://www.who.int/es/news-room/fact-sheets/detail/electronic-waste-(e-waste)

Organization for Economic Co-operation and Development. (September 20th, 2016). *Extended Producer Responsibility.* Oecd.

http://dx.doi.org/10.1787/9789264256385-en.

Priyashantha, A. K. H., Pratheesh, N., & Pretheeba, P. (August 4th, 2022). *E-waste scenario in South-Asia: an emerging risk to environment and public health.* East. https://doi.org/10.5620/eaht.2022022

UN. (December 9th, 2011). *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes.* Unep. :https://www.unep.org/resources/report/basel-convention-control-transboundary-movements-hazardous-wastes

United Nations. (September 15th, 2024). *Status of Treatments, Environment.*

Treaties.

https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII

-3-a&chapter=27&clang=_en

U.S. Department of State. (n.d.). *Basel Convention on Hazardous Waste*s. State.

https://www.state.gov/key-topics-office-of-environmental-quality-and-

transboundary-issues/basel-convention-on-hazardous-wastes/

World Health Organization. (October 18th, 2023). *Electronic waste (e-waste).*

Who. https://www.who.int/news-room/fact-sheets/detail/electronic-waste-(e-

waste)

United Nations Environment Programme. (n.d.). *E-Waste Management.* Unep.

https://www.unep.org/ietc/what-we-do/e-waste-management

Parajuly, K., Ternald, D., & Kuehr, R. (n.d.). *The Future Of Electric Vehicles And*

Material Resources. Unep.

https://wedocs.unep.org/bitstream/handle/20.500.11822/34225/ElecVe.pdf?seque

nce=1&isAllowed=y

UNU. (n.d.). *About UNU.* Unu.

Topic B: Development of solutions for the future management of electronic waste in Asian countries

https://unu.edu/about

Other Sources

Basel, Rotterdam, Stockholm Conventions. (2022). *International E-Waste Day 2022 marks a new deal on e-waste under the Basel Convention.* https://www.brsmeas.org/MediaHub/News/NewsFeatures/InternationalEwasteDay2022/tabid/9327/language/en-US/Default.aspx#:~:text=Observed%20annually%20on%2014%20October,e%2Dwaste%20recycling%20among%20consumers.

Down to Earth. (2019, September 10). *Basel BAn Amendment becomes law.* https://www.downtoearth.org.in/waste/basel-ban-amendment-becomes-law-66651

Elytus. (2019). *E-waste & its negative effects on the Environment.* https://elytus.com/blog/e-waste-and-its-negative-effects-on-the-environment.html#:~:text=As%20mentioned%2C%20electronic%20waste%20contains,kidney%20and%20skeletal%20system%20damage.

Enviliance ASIA, EHS Info Service, FREE EDITION. (n.d.). *China WEEE.* https://enviliance.com/regions/east-asia/cn/cn-waste/cn-weee#:~:text=On%20February%2025%2C%202009%2C%20the,effect%20on%20January%201%2C%202011.

EPA, United States Environmental Protection Agency. (2023). *International E-Waste Management Network (IEMN).* https://www.epa.gov/international-cooperation/international-e-waste-management-network-iemn

Forti, V. (2020). *Observación mundial de los residuos electrónicos en 2020.* ITU. https://www.itu.int/dms_pub/itu-d/opb/gen/D-GEN-E_WASTE.01-2020-PDF-S.pdf

Heracles, J. (2018, November 25). *Overpopulation: effects.* Revistas club. https://revistas.ulcb.edu.pe/index.php/REVISTAULCB/article/view/117/109

International Environmental Partnership, (IEP). (n.d.). *Programs, International E-Waste Management Network.* https://www.iep-global.org/programs/international-e-waste-management-network/

IPEN, International Pollutants Elimination Network. (2024). *Basel Ban Amendment Guide.* https://ipen.org/documents/basel-ban-amendment-guide#:~:text=The%20Ban%20Amendment%2C%20adopted%20by,Liechtenstein%20to%20all%20other%20countries.

Khan, S. (2024, May 13.). *International E-Waste Day and Responsible Electronics Disposal.* E-waste Collection & Recycling Association.

https://ewcra.org/2024/05/13/international-e-waste-day-and-responsible-electronics-disposal/

Lehman, Lee & Xu. (n.d.). *Overview of the new China WEEE Regulations.* https://www.lehmanlaw.com/press-room/china-law-news/china-news/china-news-single-display-llx/article/5/overview-of.html

Lotzof, K. (n. d.). *What is e-waste and what can we do about it?* Natural Museum History. https://www.nhm.ac.uk/discover/what-is-ewaste-and-what-can-we-do-about-it.html

Ministerio del medio ambiente. (n.d.). *Convenio de Basilea.* https://economiacircular.mma.gob.cl/convenios-internacionales/convenio-de-basilea/

Resource Circulation Administration Ministry of Environment. (n.d.).
International E-Waste Management Network
*(IEMN).*https://www.reca.gov.tw/en/iemn

Woetzel L. & Seong J. (2021). *What is driving Asia's technological rise?* McKinsey Global Institute. https://www.mckinsey.com/mgi/overview/in-the-news/what-is-driving-asias-technological-rise

Topic B: Development of solutions for the future management of electronic waste in Asian countries

Zeldin, W. (2009, April 4.). *China: Regulations on Electronic Waste.* Library, Library of Congress. https://www.loc.gov/item/global-legal-monitor/2009-04-24/china-regulations-on-electronic-waste/

Acuerdo de Escaso. (2019), *Convenio de Basilea sobre el Control de los Movimientos Transfronterizos de los Deshechos Peligrosos y su Eliminación.* https://observatoriop10.cepal.org/es/tratado/convenio-basilea-control-movimientos-transfronterizos-deshechos-peligrosos-su-eliminacion#:~:text=El%20Convenio%20de%20Basilea%20sobre,de%20desarrollo%20provenientes%20del%20extranjero.

Topic B: Development of solutions for the future management of electronic waste in Asian countries

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