LAGOS MODEL UNITED NATIONS '22

BACKGROUND GUIDE

United Nations Environmental Assembly (UNEA)

Background Guide: United Nations Environmental Assembly (UNEA)

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LMUN 2022: The Seventh Session

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Letter from USG

Dear delegates,

Welcome to the Lagos Model United Nations 2022, the 7th session. It is my pleasure to welcome you all to this conference which allows individuals from different parts of the world to engage in recent international problems and create solutions. LMUN as an experience will improve your problem-solving skills, public speaking skills, teamwork, confidence, leadership skills, and life connections. LMUN will continue to be life-changing. I cannot wait for you to experience this too.

The staff for the United Nations Environmental Assembly (UNEA) are: **Ayooluwa Adekoje** (Under-Secretary-General); **Idowu Anuoluwapo** (Chair); **Olubanke Favour** (Vice-Chair); **Oladiran Peace** (Researcher); **Adetutu Racheal Ajayi** (Researcher).

Ayooluwa Adekoje is in his 4th year, studying law at the University of Lagos. His LMUN journey began in 2019, when he won the distinguished delegate award in the Assembly of African Union(AAU). In 2020, he won the outstanding delegate in the General Assembly. These experiences led to him serving as the vice chair of FAO in 2021. Ayooluwa is passionate about international relations, Tax and international law. **Anuoluwapo** is a Law student at the University of Lagos. She presently occupies the role of the Director of Research, ADR society, and also the Vice–President of LBVIP Internship. She won the Honourable Mention Award for the UN Women Committee at the LMUN 21. She enjoys discussions centred on Intellectual Property Rights, Entertainment Law and protecting and preserving the environment. **Favour** is a 400 Level Student Law Student at the University of Lagos. She won the Award of the Best position Paper in the UNEA committee at the LMUN conference 2021. She is a lover of MUNs and, asides from LMUN, has participated in the Youth International Summit Model United Nations. Asides from MUNs. Favour enjoys cooking, and reading African Literature. **Peace** is a 400 Level student of the Faculty of Law; she won the Best Position Paper Award at LMUN 2021. She is passionate about MUNs and sees it as an opportunity to attain not just personal development, but also improve society and attain the Sustainable Development Goals, especially those about climate change and food security as well as Environmental Rights. **Adetutu** will be functioning as the Researcher of United Nations Environment Assembly at the Lmun Conference 2022. She is an ardent lover and participant of MUNs. She has participated as a Rapporteur in the Youth International Summit Model United Nations.

UNEA's actions aim to create a coherent ecosystem of international environmental governance. It focuses on challenges ravaging the ecosystem and creates plausible solutions to preserve the planet and ensure a safer environment.

The topics to be discussed by the committee are:

I. The Depletion of Natural Resources: The need for Alternate Sources of Energy and Utility

II. The Management and Reduction of Waste in Urban Areas

The Background Guide will form the basis to begin your research on your topics at LMUN. Regardless, it is not to be a stand-in for undertaking the extensive research required of you as individuals. The Further Research, Annotated Bibliography and Bibliography will

serve you well and aid in your research. Additionally, the Delegate Prep Guide and the Rules of Procedure will provide you with guidance for the conduct expected and procedure of the conference. These documents are available on the LMUN website- www.lmun.ng.
Every delegate is expected to submit a position paper by a later communicated date after registration and assignment of country and committee, in accordance with the position paper guide which is on the LMUN website.
Any enquiries or concerns during your preparation for the committee or the conference should be directed to the USG at – usgdevelopment@lmun.ng.

We anticipate your presence at the conference!
Ayooluwa Adekoje
USG Development, LMUN 2022.

Abbreviations

SDG	Sustainable Development Goals
OPEC	Organization of Petroleum Exporting Countries
UNFCCC	United Nations Framework Convention on Climate Change
FAO	Food and Agricultural Organization
GHG	Greenhouse Gas Emissions
NUA	New Urban Agenda
NDC	Nationally Determined Contributions
ACHPR	African Charter on Human and People's Rights
IEA	International Energy Agency
LCA	Life Cycle Analysis
NESREA	National Environmental Standards Regulations and Enforcement Agency
MBT	Mechanical Biological Treatment
UN	United Nations
UNEP	United Nations Environmental Programme
UNEA	United Nations Environmental Assembly
NGO	Non-Governmental Organisation
USA	United States of America
UNGA	United Nations General Assembly
WMO	World Meteorological Organization
NRGF	National Resource Governance Framework

IUCN- International Union for the Conservation of Nature

COMMITTEE OVERVIEW

Introduction

The United Nations Environment Assembly (UNEA) is the most outstanding UN programme concerning environmental issues. The UNEA is the main governing body of the United Nations Environment Programme (UNEP). It was first established on the 5th of June 1972 and was reformed into the UNEA in June of 2012. The principal rationale behind establishing the UNEA was to create a coherent system of international environmental governance. However, with time, its scope has expanded to include poverty, health, and security of the earth's populace. The UNEA is the most prominent and distinguished body tasked with implementing the policies, goals, objectives, targets, and pledges of the environmental assembly; it also focuses on imminent challenges ravaging the ecosystem. The programme passes resolutions and tasks Member States to meet their pledges, as solutions to environmental issues can only be reached by the collaborative effort of member states and organisations. There is a mandate to make an impact on people and change their archaic narratives while projecting the importance of individual participation. Our environment has been plagued with waste, pollution, climate change, overpopulation, biodiversity, and several others. These issues, over time, were paid little or no attention, leading to further destruction of the planet with visible consequences. Undoubtedly, the UN does its best to address these issues. However, the lack of interest from significant stakeholders and member states and insufficient funds makes their efforts appear less impactful or futile.

At the United Nations Conference on Sustainable Development, also known as RIO+20, world leaders called for the reinstatement of an organised body in charge of environmental issues, which gave birth to the UNEA in June 2012.[1] The UN General Assembly resolution *67/213*[2] was established in accordance with the request and in March

[1] UNEP: UNEA Overview
[2] A/RES/67/213

2013, the UN General Assembly adopted resolution *67/251*[3], which changed the designation of the UNEP Governing Council to the UNEA of the UNEP.[4] The assembly engages in discussions such as identifying the environmental issues facing the world, addressing these issues, making decisions, coordinating responses to the already identified environmental issues, and providing workable solutions.[5] The UNEA also sets agendas and outlines objectives and long-term goals to circumvent whatever ills our inaction or disruptive actions can befall the environment and its inhabitants.

The Assembly operates closely with the United Nations Environmental Program[6] to address environmental challenges. The programme has had five sessions, with different areas of interest and subject matters that greatly influence the safety of the environment as well as its inhabitants. The first session took place from the 23rd-27th of June, 2014. The member parties focused on illegal trade in wildlife, financing the green economy, and the environmental rule of law[7]. During the third session on pollution, which was held on the 4th-6th of December, 2017, they proposed a clean planet pledge[8]. The most recent which is the fifth session, was held on 28th February-2nd March 2022, emphasised on the importance

of nature and the importance of preserving nature plays in achieving the Sustainable Development Goals pledge[9]. In addition, the World Environment Day[10] campaign is one of the strategies in place to encourage action and awareness in protecting our environment.The UNEA enjoys universal membership. Representatives of the 193 member states gather to agree on policies that address pressing environmental challenges.[11] The United Nations Environment Assembly is a structure which serves as a primary and informative resource to students, countries, continents, organisations interested in

[3] A/RES/67/251
[4] IISD, Earth Negotiations Bulletin - UNEA
[5] IMUNA, UNEA Committee
[6] UN Environment Programme, “About UNEP”
[7] IISD, SDG Knowledge Hub - First UNEA Session
[8] UN Environment Programme: Third Session of the UNEA
[9] UN Environment Programme: Fifth Session of the UNEA
[10] UN, World Environment Day
[11] UN Environment Programme, “About UNEP”

discussions on the environment, as well as those passionate about protecting the safety and continuity of life.

Governance, Structure, and Membership

The former Governing Council overseeing the UNEP was composed of 58 Member States. However, the United Nations Environment Assembly, with its universal membership, is now composed of 193 Member States with each Member State allowed one vote.[12] The UNEP Secretariat is in charge of supporting the UNEA. It consists of the President, three Vice Presidents, and a Rapporteur. It should be noted that a Bureau and its President lead the Assembly. This Bureau assists the President in the general conduct of the business of the UNEA. The Assembly elects the Bureau and its President for a period of two years, starting at the closure of the session at which they are elected and until the closure of the next regular session. The Bureau comprises ten Ministers of the Environment and other senior officials from member states representing each of the five UN regions.[13]

The UNEA sets the global environmental agenda in cooperation with UN institutions, and the Multilateral Environmental Agreement and the meetings of the Assembly are governed by its Rules of Procedure. The UNEA meets every two years in Nairobi, Kenya to set priorities for global environmental policies and develop international environmental law. The Committee of Permanent Representatives is the inter-sessional intergovernmental body of the Assembly. Accredited Permanent Representatives lead the Committee to the UN Environment Programme, accounting for 118 members. The Committee of Permanent Representatives was formally established as a subsidiary organ of the Governing Council (now the UN Environment Assembly) in May 1985. The Committee meets every quarter and is led by a five-member bureau elected for two years. The Committee of Permanent Representatives is in charge of preparing the meetings of the UN Environment Assembly, providing advice to the UNEA on policy matters, preparing

[12] Ibid
[13] Ibid

decisions for adoption by the UNEA and overseeing their implementation, and performing any other functions delegated to it by the UNEA.[14]

Mandate, Functions, and Powers

The United Nations Environment Assembly (UNEA) is the leading global environmental authority that sets the global environmental agenda, promotes the coherent implementation of the environmental dimension of sustainable development within the United Nations System, and serves as an authoritative advocate for the global environment.[15] Flowing from the adoption of General Assembly *Resolution 2997 (XXVII) of 1972* on "Institutional and financial arrangements for international environmental cooperation," the UN Environment was established and given a mandate to "promote international and regional environmental cooperation in the field of the environment and to recommend, as appropriate, policies to this end."[16] The assembly is also mandated to ensure the active participation of all relevant stakeholders in the governance of UNEP and promote a robust science-policy interface.[17] What drives the UNEA is the need for innovative solutions for environmental challenges and sustainable consumption and production, laying targets across the areas of environmental challenges concerning poverty and natural resources management, encompassing sustainable food systems, food security, and curbing losses in biodiversity; life-cycle approaches to resource efficiency, energy, chemicals, and waste management; and innovative sustainable business development during rapid changes in technology.

The core functions of UNEP and its governing body can be clustered into three functions. First, a scientific function to keep the world environment under review and identify emerging environmental problems with international significance. Second, a policy function to promote international cooperation, provide general policy guidance, and coordinate the environmental activities within the UN. Third, a catalytic role to stimulate

[14] UNEA: Permanent Representatives Overview
[15] UN Environment Programme, "About UNEP"
[16] General Assembly, Institutional and Financial Arrangements for International Environmental Co-operation (A/RES/2997(XXVII)), 1972
[17] UNEP: UNEA Overview

environmental cooperation, action, and policy implementation. These three functions form a cycle: science, policy, and the catalysis or promotion of action. They should be followed up by again reviewing the environmental situation and determining whether additional policies are needed.[18]

In addition, the specific functions of the UNEA include: promoting international cooperation and, where appropriate, policies in the field of the environment, providing policy guidance for the direction and coordination of the UN's work on the environment, reviewing the world's environmental situation to ensure that emerging global environmental problems are given appropriate and adequate consideration by governments, promoting the exchange of environmental knowledge and information and, as appropriate, the environmental work of the United Nations, reviewing the impact of national and international environmental policies and measures on developing countries, ensuring that environmental projects are compatible with the development plans and priorities of those countries, and annually reviewing and approving the utilisation of the financial resources of the Environment Fund.[19]

Through its ministerial declaration and resolutions, the Assembly provides leadership, catalyses intergovernmental action on the environment, and contributes to implementing the UN 2030 Agenda for Sustainable Development.[20]

Recent Sessions and Current Priorities

On the 28th-2nd of March 2022, the UNEA had its most recent session, which was tagged "Strengthening Actions for Nature to Achieve the Sustainable Development Goals."[21] It highlighted the role that nature plays in the everyday lifestyles of individuals. The UNEA recognizes that the world is currently facing threats to the environment and that it is a pressing challenge yet to be solved. However, with this session, the UN Member States,

[18] Franz Xaver Perrez, "The Role of the United Nations Environment Assembly in Emerging Issues of International Environmental Law", 2020
[19] UNEA Media Fact Sheet, 2014
[20] UN Convention on Combat Desertification, UNEA Overview.
[21] UN Environment Programme, 5th Session of the UN Environment Assembly (UNEA-5)

businesses, civil society, and significant stakeholders brainstormed to find a lasting solution to these issues. At the end of the session, conclusions were made on 14 resolutions in line with the theme. The first was to establish a negotiating committee charged with the mandate to forge an international, legally binding agreement to end plastic pollution among member states. The President of UNEA, Espen Barth Eide, acknowledged that plastic pollution is an epidemic and that this resolution was appropriate to solve the situation. In line with the COVID-19 pandemic aggravating the widespread use of plastics and disinfectant chemicals, the second resolution passed was to establish a comprehensive and ambitious science policy panel on the sound management of chemicals and waste and to prevent pollution.

Nature-based solutions were implemented to protect, conserve, restore, sustainably use, and manage ecosystems. Other Resolutions are: (I) Resolution on Enhancing Circular Economy as a contribution to achieving sustainable consumption and production. (II) Resolution on Sustainable Lake Management. (III) Resolution on Biodiversity and Health. (IV) Resolution on Animal Welfare, Environment, and Sustainable Development Nexus. (V) Resolution on Sustainable Nitrogen Management. (VI)Resolution on Sustainable and Resilient Infrastructure. (VII) Resolution on Environmental Aspects of Minerals and Metals Management. (VIII) Resolution on the Future of the Global Environment Outlook. (IX) Resolution on the Equitable Geographical Distribution.

The UNEA is dedicated to ensuring a safe environment for the populace, and organising sessions is one way through which they have done so. This fifth session of the UNEA, which held on the 28th of February to the 2nd of March, 2022, took place online. It was preceded by another special session on the 3rd-4th of March 2022 and was dedicated to commemorating the 50th anniversary of the creation of the United Nations Environment Programme in 1972.[22]

[22] UN Environment Programme, 5th Session of the UN Environment Assembly (UNEA-5)

Conclusion

UNEA, in conjunction with other committees under the UN and organisations, has been working towards ensuring a safer and more sustainable environment for all, as the incessant threats on the planet are becoming alarming. This has been done by organising sessions, implementing resolutions, and setting basic guidelines and policies in line with their mandate. Hence, for the actions put in place to be effective, there is a need for harnessed support and efforts from member states, NGOs, and individuals to ensure that we leave a safe and secure environment for future generations to come.

Annotated Bibliography

UNEA and UNEP's About page, available at UNEP - UN Environment Programme (accessed 20 May 2022).

This should serve as the starting point for anyone interested in gaining more information about the environment and understanding the United Nations' constant and consistent policies in addressing environmental issues. It also provides basic knowledge of the members' formation, history, and governance.

5th Session of the United Nations Environment Assembly available at, Fifth session of the United Nations Environment Assembly | Environment Assembly (unep.org) (accessed 20 May 2022).

This is the most recent UN Environment Assembly Session which took place from 28 February – 2 March 2022. The theme for this session was "Strengthening Actions for Nature to Achieve the Sustainable Development Goals," which highlighted the important role nature plays in our lives and in social, economic, and environmental sustainable development.

The Overview of the UNEA's plans for the 2030 Agenda, available at "Delivering on the environmental dimensions of the 2030 Agenda" Information note of the Executive Director (accessed 16 January 2021).

An insight into the UNEA's plans for the 2030 Agenda and how they relate to the Sustainable Development Goals(SDGs) can be found in the linked article. This will provide the delegates with a better understanding of the assembly's long-term goals and how it intends to contribute to the overall success of the 2030 agenda.

UNEA Resolutions and Decisions from UNEA-5 available at Resolutions And Decisions UNEA 5.2 (accessed 23 May 2022).

This page provides all the necessary details regarding the Resolutions adopted at the recent UNEA session. The session outcomes, resolutions, reports, and Ministerial Declarations are all available to delegates. Each of these publications will provide information about the assembly's and the various nations' present goals.

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UNEA, Media Fact sheet: Healthy Environment, Healthy People, available at

Our Ref: JM/RKS/DCPI-5-6 (unep.org) (accessed May 2022).

UNEA, “Rules of Procedures” available at https://www.unep.org/environmentassembly/un-environment-assembly-rules-procedure (accessed June 2022).

UNEP, “About the UN Environment Assembly” available at http://www.unep.org/environmentassembly/about-un-environment-assembly (accessed June 2022).

UNEP, “Committee of Permanent Representatives: Overview” available at https://www.unep.org/cpr (accessed June 2022).

UNEP, Partnerships for the “Delivering on 2030 Agenda” available at https://sustainabledevelopment.un.org/partnerships/unea (accessed May 15 2022).

UNEP, “Secretariat Of Governing Bodies And Stakeholders” available at, https://www.unep.org/environmentassembly/sgbs (accessed June 2022).

The Depletion Of Natural Resources: The Need For Alternate Sources Of Energy And Utility

"*Without natural resources, life itself is impossible. From birth to death, natural resources are transformed for human use to feed, clothe, shelter, and transport. Upon them, we depend on every material necessity, comfort, convenience, and protection in our lives. Without abundant resources, prosperity is out of reach.*" - ***Gifford Pinchot, former governor of Pennsylvania*.**

Introduction

Natural resources have been in existence right from the beginning of time, and their value cannot be overemphasised. They are materials derived from the earth, used to support life and meet people's needs. Without natural resources, the world as it is would not survive or function optimally. Examples of natural resources include Oil, Natural Gas, and Coal, and other products that act as fossil fuels for machinery and daily activities. Trees are also used to make paper and furniture and maybe a fuel source. Diamonds and gold are major components in making jewellery and have historically been used as currency. Iron ore, cobalt, manganese, and chromium are used to make steel products and parts of large machinery. These are just a few that show the importance of natural resources to the populace. From general knowledge, it is worthy of note that natural resources can be classified into two; renewable and non-renewable resources. Renewable resources can be replenished almost at the same rate as they're being used. The rate at which such resources are depleted is low due to their nature. However, if not properly conserved, the result can be permanent damage of the earth. The wind, water, sun, and trees fall under this category. Non-renewable resources, on the other hand, are those whose regeneration

takes more time, making depletion more likely to occur. Fossil fuels like oil and natural gas fall under this category, and once mined and used, such resources are gone forever.[23]

The classification of natural resources reveals a significant challenge: depletion. As the world uses these products, they grow increasingly extinct by the day. Also, as much as the extraction and use of these resources are beneficial in the running of daily activities, the long-term effects they have had on the planet are another major problem. Pollution, ecosystem destruction, biodiversity loss, and volatile climate change are just the tip of the iceberg of the long term effects we are going to face. In recent times, we have experienced a rise in ocean temperatures, droughts, wildfires, storms, abnormal climates such as warm winters and cool summers which could lead to a catastrophic effect on the production of food, amongst other shortages on production. These negative effects are projected to affect everyone, regardless of their location or societal status. For this reason, the collaboration of the international community in making a conscious and deliberate effort to save this planet would go a long way.

The industrial revolution has had a massive influence on the depletion of natural resources.[24] While the quality of life of individuals can be said to have experienced significant increase, the earth has borne the brunt of this occurrence. As technology and education has advanced, the need for raw materials has increased. Currently, the quest for the continuous use of these resources without finding ways to replenish them is the primary reason behind the depletion of natural resources. In 2014, World Bank statistics showed that most countries were losing natural resources fast without gaining much in human resource capital or gross wealth.[25] Also, it stated that fossil fuels provide 66% of energy. Just in 2022, four months into the year, the world has in total extracted over 20 billion tons of resources from Earth[26]. Even though it is being used to the advantage of the populace, the danger that lies ahead is unmatched.

[23] South Carolina Department of Health and Environmental Control, Office of Solid Waste Reduction and Recycling: FYI - Natural Resources
[24] EcoMENA: The Environmental Impacts of Industrialization
[25] Down To Earth: Cost of growth - Global Natural Resources
[26] The World Counts: Depletion of Natural Resources

Water, which is a major natural resource, has been predicted by the Food and Agricultural Organization (FAO) of the United Nations to be unavailable to 1.8 billion people by 2025[27]. This is because even though the Earth is made up of 70% water, only 2.5% is freshwater that is drinkable[28]. Coal also comes up on the list as it is one of the most used fossil fuels and a non-renewable energy source. It has also been predicted to be extracted to its peak between 2025 to 2048. The BP Statistical Review of World Energy estimated that in 2010, there were 188.8 million tons of oil left in the oil reserves, which means that if current demands continue at this pace, it will only take 46.2 years for the supply to meet the world demands. For gas, it will only take 58.6 years for the same result.[29]

The UN Environment's Global Resources Outlook, in its findings after examining the trend in natural resources, stated the following:

1. The extraction and processing of materials, fuels, and food contribute to over half of total global greenhouse gas emissions and over 90% of biodiversity loss and water stress.
2. Resource extraction has more than tripled since 1970, including a fivefold increase in non-metallic minerals and a 45% increase in fossil fuel use.
3. By 2060, global material use could double to 190 billion tonnes (from 92 billion), while greenhouse gas emissions could increase by 43%[30].

All these statistics show that in no time if nothing is done to resolve the depletion of natural resources, planet earth and its populace are in danger of extinction. The UNEA has called for a change in energy sources, from fossil fuels to more renewable sources of energy like wind and hydro power, biomass, solar energy, hydroelectricity and more. The UN Environment Acting Director, Joyce Msuya, has stated that "Nature makes human development possible but our relentless demand for the earth's resources is accelerating

[27] Food and Agriculture Organisation: Water Scarcity
[28] Ibid
[29] BP's Statistical Review of World Energy
[30] Global Business Coalition - UNEP IRP Global Resources Outlook 2019

extinction rates and devastating the world's ecosystems"[31]. This statement only emphasizes the situation at hand therefore, we, as individuals, need to make strategic efforts to ensure that we don't lose the planet through our actions.

International and Regional Framework

As stated earlier, non-renewable natural resources are depleting on a daily basis, and the effects are being felt in various parts of the world. A plethora of international instruments recognize the need for the protection of the planet and also the use of renewable sources of energy as alternatives to the current environmental issues. Therefore, in line with such, *Principle 3 of the Stockholm Declaration* provides that "the capacity of the earth to produce vital renewable resources must be maintained and, wherever practicable, restored or improved." *Principle 4* states that "The non-renewable resources of the earth must be employed in such a way as to guard against the danger of their future exhaustion and to ensure that benefits from such employment are shared by all mankind".[32]

In the same light, *Article 6 of the United Nations Convention on Climate Change (UNFCCC)* urges state parties to educate, train, and encourage public awareness of climate change and its effect on the environment[33]. *The 1992 Rio Summit,* proclaimed under *Principle 7* that "States shall cooperate in a spirit of global partnership to conserve, protect, and restore the health and integrity of the Earth's ecosystem"[34]. *The International Energy Agency (IEA),* is also an international body charged with providing authoritative analysis, data, policy recommendations, and real-world solutions to help countries provide secure and sustainable energy for all[35]. In the same light, *the Renewable Energy and Energy Efficiency Partnership* develops innovative, efficient financing mechanisms to advance market readiness for clean energy services in low- and middle-income

[31] IISD, "The Sustainable Use of Natural Resources: The Governance Challenge"
[32] United Nations, "Declaration of the United Nations Conference on the Human Environment Stockholm, 16 June 1972"
[33] United Nations Framework Convention on Climate Change, May 9, 1992
[34] 1992 Rio Declaration on Environment and Development, A/CONF.151/26 (vol. I)
[35] The International Energy Agency: Mission

countries[36]. Also, *the World Council for Renewable Energy* was created with the major aim of sensitising the public about renewable energy and how it can be used on a global scale. They have a common goal, which is to transition to a 100 percent of renewable energy supply in the future.[37]There's *the Paris Agreement*, which is a legally binding international treaty on climate change that centres on limiting global warming to well below 2 degrees, preferably to 1.5 degrees Celsius, compared to pre-industrial levels[38]. Also in line with this, there is the *UN General Assembly Resolution 70/1 (A/RES/70/1)* which touches on supporting the Paris agreement.

Role of the International System

The international system, in recognition of the impending disaster caused as a result of the use of fossil fuels, has taken up roles to aid a faster transition towards cleaner energy. One of the ways in which this has been executed is through the creation of bodies to address the various areas surrounding the issue. The Intergovernmental Panel on Climate Change (IPPC) is a body saddled with the responsibility of evaluating and analysing climate change and projecting the scientific perspective on the possible impacts on the environment and other socio-economic realisations. It was established by the United Nations Environmental Programme (UNEP) in conjunction with the World Meteorological Organisation(WMO). The IPPC has a Special Report on Renewable Energy Sources and Climate Change which outlines the various potential options and their respective roles in this transition process.[39] The Sustainable Development Goal 7 of the UN 2030 agenda has set up standards and goals global players should adhere to. This includes increasing the allotment of renewable energy as well as access to it. The policy actions taken in this regard have proven useful as their effects are being felt in various countries around the world, especially in Sub-Saharan Africa. Access to electricity and renewable energy has been greatly enhanced in developing countries.[40]

[36] Renewable Energy and Energy Efficiency Partnership: About
[37] Devex: World Council for Renewable Energy
[38] Paris Agreement to the United Nations Framework Convention on Climate Change
[39] The Intergovernmental Panel on Climate Change: Reports
[40] Sustainable Development Goals - Energy

The United Nations Framework Convention on Climate Change (UNFCCC) has a total of 197 countries that have ratified its convention. Its mandate is based on combating dangerous human interference with the climate system.[41] A recent partnership with the International Renewable Energy Agency and Sustainable Energy for All has propagated the gospel of the need for alternate sources of energy aside from fossil fuels. Recently, through the SDG action Twitter profile, the convention posted a call to reverse the possible curse lying ahead of the addiction to fossil fuels and a personal evaluation aimed at breaking the addiction cycle[42].

New Energy for America was a plan devised by former US president Barack Obama, and current president Joe Biden to invest in renewable energy sources. An investment of over $150 billion has been put in place for the next decade to catalyse private efforts to build for a clean energy future. Specifically, the plan is for renewable energy to supply 25% of the country's energy by 2025.[43] Germany has been ranked as one of the best countries in the world for saving energy. They have one of the lowest energy intensities due to the fact that about 15 years ago, german policy makers agreed to gradually wean off fossil fuels and nuclear energy in the country and by doing so, the use of coal and oil has been greatly reduced which has contributed to the reduction in climate change and global warming.[44]

In Italy, according to its national energy plan, there should be an increase in renewable power generation from all renewable sources to 26% of all electricity produced by 2020 and it will cover 17% of its total energy consumption.[45] Reports show that in 2014, 38.2% of the national electric energy usage came from renewable sources. Italy has on a fast track abandoned nuclear power which on the long run is beneficial to the world as a whole and not just them.[46]

[41] UNFCCC: Process and meetings
[42] @SDGaction on Twitter
[43] US Department of Energy - Barack Obama And Joe Biden: New Energy For America
[44] Extreme Low Energy: The Most Energy Efficient Countries In The World
[45] The International Energy Agency: Italy
[46] Ibid

The Intergovernmental Forum on Mining, Minerals, Metals, and Sustainable Development, an initiative of the 2002 World Summit Conference in 2002, has amongst its testimonials the conversion of mining sites to available spaces for renewable energy.[47] DESERTEC is an organisation focused on the gathering and generating of power from sources with abundant renewable sources of energy. It also promotes the production of renewable energy in deserts.[48] The National Resource Governance Framework (NRGF), is a product of the International Union for the Conservation of Nature (IUCN), focused on the importance and relevance of natural resource governance, the most practical alternatives to natural resources to reduce depletion and the enhancement of ecosystems and biodiversity.[49] The United Nations Climate Change Conference is an offspring of the United Nations. Recently one of the goals of the COP 26 was to restore and protect ecosystems, and achieve some set out targets including phasing out the use of coal, restricting deforestation, encouraging the switch to electric vehicles and encouraging investments in renewable energy.[50]

It is noteworthy, that there has been a lot of conscious and strategic action devised to curtail the depletion of natural resources, especially in the developed world, which has resulted in a search for suitable and beneficial alternatives. While the initiatives, policies, pledges, tasks, and strategies already in place by international and regional bodies are demonstrations of good effort, more action must be taken in saving the environment.

The Depletion of Natural Resources

As already established, natural resources are central to human wellbeing. Human beings cannot live without the clean air we breathe, the plants we eat, or the water we drink. We need natural resources to put roofs over our heads and heat up our homes. We need them to go about our daily routine, survive and to thrive. A healthy planet is an essential requirement and key enabler for sustainable development in which economic, social, and

[47] Intergovernmental Forum on Mining, Minerals, Metals, and Sustainable Development
[48] DESERTEC, “About Desertec”
[49] International Union for Conservation of Nature: Natural Resource Governance Framework
[50] UN Climate Change Conference, UK 2021 - COP26 Goals

environmental objectives are met through an integrated approach. A vision for planetary sustainability for people, prosperity and equity requires addressing the issue of the loss of natural resources, by taking action in three interlinked and mutually strategic objectives: climate stability, living in harmony with nature, and achieving a pollution-free planet.[51]

There are various causes of the depletion of natural resources. These include: unsustainable farming practices, mining, deforestation, overpopulation, overconsumption, technological and industrial development and consumption of fossil fuels.[52] As we move further in the topic, some of these pressing factors will be explained and there will be preferable solutions listed as the issue of depletion of natural resources is one that needs to be addressed in the present day.

Depletable natural resources are those that cannot be renewed or regenerated, including fossil fuels, minerals, non replenishable aquifers and more.[53] Fossil fuels are non renewable sources of energy formed from decomposed carbon based organisms. They create carbon enriched deposits that are extracted and burned for energy in addition, Coal, Oil and Gas make up this classification. Currently, they provide for 80% of the world's energy. Due to factors such as an increasing global population, higher rates of consumption as against the low level of renewal, wastage of bad unhealthy practices. The levels of natural resource degradation are also increasing. Consequently, the world's eco-footprint is estimated to be one and a half times the ability of the earth to sustainably provide each individual with enough resources that meet their consumption levels.[54] Since time immemorial, the energy sector has been disintegrated by the use and consumption of fossil fuels. The overreliance on fossil fuels regardless of the negative impact on the ecosystem and living beings is alarming. Fossil fuels are used for heating, transportation, generating electricity, and production of products used in our daily life. However when

[51] Sustainable Development Goals Knowledge Platform, "UNEA".
[52] World Counts - Depletion of Natural Resources
[53] W. Van Dieren (ed.), Taking Nature Into Account.
[54] Conserve Energy Future, "What is the Depletion of Natural Resources?"

burned, they release huge amounts of carbon dioxide and greenhouse gases into the air which in effect cause global warming and climate change. For clarification, Global warming is the gradual increase in the overall temperature of the earth's atmosphere generally attributed to the greenhouse effect caused by increased levels of carbon dioxide, CFCs, and other pollutants.[55] Also, Climate change is the change in global or regional climate patterns, in particular a change apparent from the mid to late 20th century onwards and attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels.[56]

From the above definition, it is clear that fossil fuels have a symbiotic relationship with climate change and global warming. Currently, the average global temperature has increased by 1°C. Warming above 1.5°C risks further sea level rise, extreme weather, biodiversity loss and species extinction and we can not ignore the fact that it's already happening[57.] Ocean Acidification which makes the acidity level in oceans increase is a rapidly rising phenomenon due to the carbon dioxide emitted from fossil fuels. The increased acidity makes it harder for marine organisms to build shells and coral skeletons, and threatens the overall health of the oceans and waterways we have. In recent times, it has increased by 30% thereby posing serious threats to marine life, and the marine industry that relies upon it.[58]

The burning up of fossil fuels has also contributed to the incessant natural disasters all over the world[59]. Climate change has caused global sea level rises which is causing more flooding and destruction of lives and property. In 2020, global sea level set a new record high—91.3 mm (3.6 inches) above 1993 levels which isn't encouraging[60]. Fossil fuels produce hazardous air pollutants, including sulphur dioxide, nitrogen oxides, particulate

[55] "Global Warming" Oxford Dictionary.
[56] "Climate Change" Oxford Dictionary.
[57] Client Earth - Fossil fuels and Climate Change
[58] National Oceanic and Atmospheric Administration, "Ocean Desertification"
[59] Environmental and Energy Institute - Climate, Environmental, and Health Impacts of Fossil Fuels
[60] NOAA Climate.gov - Climate Change: Global Sea Level

matter, carbon monoxide, and mercury, all of which are harmful to the environment and human health. Also, from oil spills to fracking fluids, fossil fuels cause water pollution and it adds up to the impending danger of water scarcity which has been briefed on earlier. Over 99 percent of plastics are made from fossil fuels. Globally, 300 million tons of plastic waste are produced each year, 14 million tons of which end up in the ocean, killing wildlife and polluting the food chain[61]. This depicts that in almost every aspect of life, the impact of fossil fuels is negative. There has been a clarion call by environmental activists and members of the UN to save our earth and desist from these activities.

The Intergovernmental Panel on Climate Change (IPCC) has found that emissions from fossil fuels are the dominant cause of global warming. In 2018, 89% of global CO2 emissions came from fossil fuels and industry[62]. Coal in particular, has more impurities than any other fossil fuel as it is responsible for over 0.3C of the 1C increase in global average temperatures. The IPCC has warned that fossil fuel emissions must be halved within 11 years if global warming is to be limited to 1.5°C above pre-industrial levels.[63] Therefore, in order to provide a sustainable environment for the populace and avoid the depletion of natural resources, there's a need to adopt the use of renewable sources of energy as mentioned earlier.

Farming practices: Management and Sustainability of our Lands

After the "Industrial and Green Revolution" of the 20th century, the demand for more agricultural products increased. The benefits that humans have realised from agriculture have been immense because without food noone would survive. Today, agriculture feeds over six billion people, and recent decades have seen significant increases in the productivity of agriculture with the introduction of new varieties and production methods.[64] Increased production of agricultural goods at the expense of other ecosystem

[61] International Union for Conservation of Nature: Marine plastic pollution
[62] The Intergovernmental Panel on Climate Change: Reports
[63] Ibid
[64] Tilman, D., Cassman, K., Matson, P. *et al.* Agricultural sustainability and intensive production practices. *Nature* 418, 671–677 (2002)

services have resulted in global and local environmental changes that have significant impacts on human health and well-being[65]. In 2016, The World Bank figures show that 700 million hectares (1.7 billion acres) was used to plant corn, rice, wheat, and other cereal grains.[66] Agricultural growth has experienced a deficiency due to ecological factors, making farmers resort to techniques and modifications that increase their outputs, while indirectly destroying the environment. Climate Change has also played a major role in distorting the process of agriculture and it's affecting the environment negatively. It is for this reason and so many others that farmers take on practices that do not favour the ecosystem in the long run. In many countries, agricultural expansion has accelerated the depletion of natural resource stocks, deteriorated environmental quality, and encroached on sensitive ecosystem habitats[67]. There is no doubt that agricultural productivity has taken a huge downfall due to environmental degradation. For example, there are reports of significant losses due to soil erosion of up to 40 percent in the former USSR, 25 percent in the United States, 30 percent in Haiti, and 25 percent in Nigeria[68].

Intensive agriculture practices like irrigation, chemical fertiliser application, and livestock grazing are some of the techniques used by farmers to cope with the deficiency caused by ecological factors. However, these practices can generate greenhouse gas emissions and lead to water depletion and pollution, land degradation, and loss of biodiversity. This means that on the long run, alternatives like this don't favour the environment. Agricultural expansion encroaches on forested areas, wetland habitats and desert communities. Once habitat is lost, tilling and irrigation of the land depletes soil nutrients and erodes topsoil. Supplemental nutrients can be introduced to enhance soil productivity, but excess nutrients can leach through the soil, contaminate underground aquifers, and erode the quality of surface water systems[69].

[65] Foley, J.A., Defries, R., Asner, G.A., *et al*. Global Consequences of Land Use. *Science* 309, 570-574 (2005)
[66] National Geographic: Environmental Impacts of Agricultural Modifications
[67] FAO, "Agricultural Productivity and Natural Resource Depletion" by Lee D.J., and Zepeda L.
[68] Walman, M.G., "Soil erosion and crop productivity: A worldwide perspective". (2005)
[69] FAO, "Agricultural Productivity and Natural Resource Depletion" by Lee D.J., and Zepeda L.

Irrigation is the artificial application of water to land[70]. It is also the artificial application of water to the soil through various systems of tubes, pumps, and sprays. Irrigation is usually used in areas where rainfall is irregular or dry times or drought is expected[71]. Irrigation has proven to be important as studies show that the productivity of irrigated land is more than the un-irrigated land. In fact, crop yields everywhere in the developing world are consistently higher in irrigated areas than in rainfed areas[72]. Also, growth of plants and crops require a sufficient amount of rain and rain fed farming isn't reliable due to the uncertainty of rainfall. Thus, the need for irrigation for the proper development of crops.

One major risk in irrigation practice is the contamination of water. Research shows that 70% of human freshwater is used in agriculture through various irrigation schemes to the extent that professionals envision that by 2050, water extraction may skyrocket to 15%.[73] Due to this discovery, farmers and researchers are dreading the consequences of irrigation such as the depletion of aquifers, river systems, groundwater, water logged areas, salt accumulation on soil, an increase in water population, and change in rainfall patterns to mention a few.

A fertiliser is a natural or synthetic, chemical based substance containing one or more nutrients essential for enhancement of plant growth and soil fertility. Most of the chemical fertilisers used are the NPK(Nitrogen, Phosphorus and Potassium) enriched ones[74]. Chemical Fertiliser application is a substance applied to soils or directly into plants to provide nutrients optimal for their growth and development."[75] Chemical fertilisers can dramatically increase yield and turn otherwise poor soil into productive land as they are specifically designed to support particular plants. It sufficiently provides the amount of nutrients needed by the plant and they're very cost effective.

[70] "Irrigation", Britannica
[71] CDC, "Other Uses and Types of Water - Types of Agricultural Water Use"
[72] Hussain, I. and Hanjra, M.A., Irrigation and poverty alleviation: review of the empirical evidence. *Irrigation and drainage*, *53*(1), 1-15, 2004
[73] National Geographic: "Environmental Impacts of Agricultural Modifications"
[74] The Fact Factor, "Chemical Fertilizers"
[75] Toppr, Biology: "Fertilizers"

However, as much as chemical fertilisers are important, it has some adverse effects on the environment which cannot also be overlooked. The disproportionate usage of it can cause soil acidification and soil crust which can reduce soil nutrient levels and affect microorganisms living in the soil. They are highly soluble in water thereby not properly enriching the soil as they mostly leach away into groundwater. When this happens, it contaminates the water itself. The excess nitrogen used in crop fertilisation can contribute to the release of greenhouse gases such as carbon dioxide and nitrous oxide into the atmosphere. Also, there has been increasing concern based on the fact that continuous use of chemical fertilisers on soil deplete the soil of essential nutrients. It can be deduced from this that too much of chemical fertilisers destroys the soil and crops itself [76].

Eutrophication is a major problem mostly caused by the excess use of chemical fertilisers when it seeps into water bodies. It is the process in which a water body becomes overly enriched with nutrients, leading to plentiful growth of simple plant life. Eutrophication is considered to be a serious environmental concern since it often results in the deterioration of water quality and the depletion of dissolved oxygen in water bodies. Eutrophic waters can eventually become “dead zones” that are incapable of supporting life.[77] Therefore in order to use chemical fertilisers, there is need for extensive research to be done on whether indeed it’s the best option for the production of plants and food crops.

Livestock Grazing is the practice of allowing livestock to directly consume the growing forage, grasses, legumes, and forbs, in a pasture or rangeland.[78] For many centuries, the act of grazing has been a predominant style in feeding livestock and unarguably one of the healthiest and easiest ways. Grazing systems supply about 9 percent of the world's

[76] Ibid
[77] Byjus, “Eutrophication?”
[78] Oregon State University, National Forage & Grasslands Curriculum: “Discuss the role of grazing in a pasture-livestock system”.

production of beef and about 30 percent of the world's production of sheep and goat meat[79]. In areas where land is in excess, this style is encouraged as it mostly causes less harm than good. Livestock grazing causes direct removal of biomass that acts as fuel for bushfires. This is so because when these animals graze on the open fields, in instances where a wildfire occurs, there will be little or no damage done as the fire can't spread evenly due to the lack of grasses. This is undoubtedly a good thing because reports on the destruction of lives and properties will be at its bare minimum. It also promotes the rapid growth of plants and shrubs and this is done when the livestock use their hooves in dispersing seeds. Also, while grazing it is most likely that these animals defecate and in doing so, their waste acts upon the soil as organic manure which is essential in the growth and development of plants. Grazing also causes trampling on the grasses by the animals and indirectly it is beneficial to the soil in many ways such as tillering of the land, breaking up hard soil crusts and seed germination [80]. It provides good nutrition and other benefits to the animal and can lead to more productive forage growth.

Despite the fact that livestock grazing has proven to be effective and efficient to the environment, it has also had adverse effects on the land which cannot also be overlooked. It has been estimated that 680 million hectares of rangeland have become degraded since 1945[81] and that 73 percent of the world's 4.5 billion hectares of rangeland is moderately or severely degraded[82]. Overgrazing is as a result of prolonged grazing by livestock animals and it contributes to the loss of valuable plant species. In some scenarios, it substitutes these species with less herbaceous ones thereby making animal biodiversity take longer regenerative cycles. Livestock grazing has been proven to also cause soil erosion through the continuous trampling of land, shortage of food, deforestation, human and livestock death and global warming.

[79] FAO, "Livestock grazing systems & the environment"
[80] Ibid
[81] Bridges, E.M. and Oldeman, L.R., Global assessment of human-induced soil degradation. *Arid soil research and rehabilitation*, *13*(4), 319-325, 1999
[82] Dregne, H.E., "Human activities and soil degradation." *Semiarid lands and deserts: soil resource and reclamation,* 335-359, 1991

Sustainable Agricultural Practices has proven to be the way forward in the long run as it conserves resources and minimises ecological damage while improving farm profitability. There are several ways in which it can be implemented and some instances are: I) Planting crops in a rotating form to promote soil health. II) Planting cover crops to prevent having bare soil during off seasons. III) Reducing tillage practices to enhance soil and reduce erosion tendencies. IV) Adopting water management systems that use less water, such as drip irrigation. V) Adopting sustainable waste management systems, such as composting manure and applying it to soil in lieu of chemical fertilisers[83].

From all these, it can be concluded that despite the numerous benefits of intensive agricultural practices like the few explained above, the disadvantages seem to weigh more. Remedies like the ones listed are urgently needed to be put in place in order to ensure the sustainability of the planet for the future generation to come as the intensive practices aren't built to last, because it squanders and degrades the resources it depends on.

Mining: The Perks of 'Going for Gold'

Mining is the process of extracting useful materials from the earth, like coal, gold, and iron ore. The process of mining has been in existence since the prehistoric age, and its benefits from time to time are innumerable. Fossil fuels are not left out of the category of resources that are mined[84] as oils are extracted with giant drilling machines from the earth's core. The mining of these natural resources over the years has proven to be of great advantage in the area of raw materials for building construction, technologies such as mobile phones, machinery, etc. However, it is pertinent to note that the adverse effects of mining outweigh the benefits, hence the need to eliminate the whole process of mining or, for a start, curtail the act itself.

[83] As You Sow, "Sustainable Agriculture: A Healthy Solution to the Problems of Industrial Agriculture"
[84] National Geographic: Mining

Some of the detrimental environmental effects of mining include biodiversity loss, air, water, and land pollution, as well as depletion of the natural resources being mined.[85] Biodiversity is the variety of living species on earth, which range from plants to animals. Biodiversity loss comes when there is a major decline in the variety of living things and it is mainly due to human activities such as mining, land use, and climate change.[86] In a UN report, scientists explained that over one million species living on the face of the earth are on the brink of extinction.[87] From this it can be deduced that time is of the essence in saving the planet as mining of the earth's resources is just one of many activities that are contributing to biodiversity loss.

The effects of mining on the air occur when toxic waste and particles get mixed up with wind and become airborne, thereby causing significant danger to human health.[88] Water pollution is a common phenomenon in mining areas, and due to this, life within those places tends to be tiresome and hazardous. Water supplies are compromised, and this makes the treated water available come at exorbitant prices. Therefore, the poor and average individuals have little or no access to safe water for human consumption and agricultural use. Acid mine drainage is the primary source of water pollution from mining, and it occurs when toxic waste or liquid seeps from mines and waste rock piles into streams, rivers, and groundwater. It leads to potential health issues and the killing of aquatic organisms. When it comes to land, mining makes the area devalued. This occurs when the landscape has lots of open pits, erosion, piles of waste rocks, and contamination of the soil.

In the 17th century, the industrial revolution saw large-scale exploration of natural resources and the practice has been gradually growing, leading to a steady depletion of natural resources. In addition to the advancements in technology, development, and

[85] World Atlas: What Is The Environmental Impact Of The Mining Industry?
[86] European Parliament - "Biodiversity Loss: What Is Causing It And Why Is It A Concern"
[87] UN News: World is 'on notice' as major UN report shows one million species face extinction
[88] Western Mining Action Network: Environmental Impacts of Mining

research in the contemporary era; exploitation of minerals has become easier, and humans are digging deeper to access different ores. Consequently, the increased exploitation of different minerals has led to some of them entering into a production decline. Minerals such as gasoline, copper, and zinc production are estimated to decline in the next 20 years.[89] Plus, oil mining continues to rise due to the upsurge in the number of engines that use petroleum, thereby magnifying its depletion. The peak oil theory[90] supports this fact by putting forward that there will come a time when the globe will experience uncertainties on alternative means of fuels owing to the overharvesting of petroleum.

There are several ways through which mining can be made sustainable for the environment, the issue is how determined are individuals and mining companies when it comes to making mining less harmful. One of such ways is the use of low impact mining techniques. There are new techniques used in mining of natural resources like in situ leaching, which makes mining possible but with a less environmental impact. It is advisable to adopt this technique instead of the common traditional mining techniques like open pit and underground mining which have severely damaged the environment for good.

Another way through which mining can be sustainable is in the reuse of mining materials. On most occasions, there is waste accumulated from mining activities and when their operations cease, the waste is either left at the abandoned site or improperly disposed thereby causing environmental degradation. Common waste products on mining sites are railings, rocks and wastewater. Most of these waste products from mining can be reused and in doing so there's less wastage and environmental damage. One major setback to the actualisation of this is that there is little or no information on how to go about it therefore, it is advised that state government and mining companies pay attention to it by

[89] Conserve Energy Future, "What is the Depletion of Natural Resources?"
[90] Conserve Energy Future, "What is Peak Oil?"

sensitising the public and if possible set up a research program with the aim of reusing waste from mining .

The shutting down of illegal mining sites is also another way through which mining can be sustainable. In South Africa, it has been estimated that around 14,000 people are currently involved in illegal mining[91]. Also, before 2010, most mines in China were completely unregulated when it came to the environment and the shortcomings it was bringing to surrounding Chinese areas[92]. Illegal mining sites have contributed to the degradation of the environment as it is done without proper regulations and safety standards put in place. In most scenarios, it takes place on properties not suited for large scale mining. Therefore, there's a need for permanent shutting down of these mines. The use of eco-friendly equipment, rehabilitation of old mines can also serve as ways through which harmful mining practices can be curtailed and there is sustainability of the environment.

Deforestation: Effects on the Ecosystem

Deforestation, as its name implies, is the clearing, destroying, or removal of trees through deliberate, natural, or accidental means. It can occur in any area densely populated by trees and other plant life. The World Bank reported that the net loss of global forest between 1990 and 2016 was 1.3 million square kilometres.[93] On the same note, tropical deforestation is estimated to occur at a rate of 2.9% percent annually, especially in Latin America.[94] Human beings and large corporations are cutting down trees to make space for residential complexes and industries, which is affecting the environment adversely. Through deforestation, the planet not only loses trees but also thousands of animals and great plant biodiversity due to the destruction of their natural habitats.

[91] Mineral Councils, South Africa, "Illegal MIning On The Rise"
[92] Mining Digital, "Top 10 Ways to Make Mines More Environmentally Friendly"
[93] World Bank Blogs: Five Forest Figures for the International Day of Forests
[94] National Center for Biotechnology Information, "Tropical Forest Cover Change In The 1990s And Options For Future Monitoring"

The effects that spring up from these occurrences are not farfetched. For example, poor farming practices, deforestation, and pollution could lead to sources of water depletion due to contamination, wastage, and the destruction of natural water catchment areas. As of today, approximately one billion people lack access to clean water because of the effects of these human activities. Water shortages further contribute to famine and food insecurity. In addition to water depletion, there is also a decline in the availability of oil. The world has proven oil reserves equivalent to 46.6 times its annual consumption levels. This means it has about 47 years of oil left (at current consumption levels and excluding unproven reserves).[95] According to a 2019 Geological Survey of Finland report, the world average decline rate on post-peak production is **5 to 7%**, meaning that oil production could plummet to half its current volume in the next 10 to 14 years.[96] Furthermore, Verisk Maplecroft, an England based global risk and strategic consulting firm, reported that countries that had failed to diversify their economies away from fossil fuels will face a "slow-motion wave of political instability."[97] The firm mentioned that countries like Algeria, Chad, Iraq, and Nigeria will be among the first countries to experience political instability as oil producers have begun to feel the effects of a transition to low carbon energy production. There is no doubt that further effects will include the high cost of living in developing countries, and uncertainty in the transport sector.

Furthermore, the harsh effects of activities such as deforestation are not far-fetched. Deforestation can affect the global change of energy not only through the micrometeorological processes but also by increasing the concentration of carbon dioxide in the atmosphere because carbon dioxide absorbs thermal infrared radiation in the atmosphere. Moreover, deforestation can lead to an increase in the albedo of the land surface, which affects the radiation budget of the region. Deforestation affects wind flows,

[95] Worldometer - World Oil Statistics
[96] Simon Michaux, "Oil from a Critical Raw Material Perspective", accessed December 22, 2019.
[97] Elliot Smith, "Oil nations tipped for political instability if the world moves away from fossil fuels", CNBC (26 March, 2021)

water vapour flows, and solar energy absorption, thus clearly influencing local and global climate. Deforestation on lowland plains moves cloud formation and rainfall to higher elevations. Deforestation disrupts normal weather patterns, creating hotter and drier weather, thus increasing drought and desertification, crop failures, melting of the polar ice caps, coastal flooding, and displacement of major vegetation regimes. In the dry forest zones, land degradation has become an increasingly serious problem, resulting in extreme cases of desertification. Desertification is the consequence of extremes in climatic variation and unsustainable land use practices, including overcutting of forest cover.[98]

As the name entails, the act of deforestation is targeted at forests in predominant territories because they occupy a vast area of land. The Southern American continent, especially the country of Brazil, hosts the famous Amazon rainforest which consists of a large number of animal and plant species, trees and wildlife. It is situated on the Amazon River Basin and is the world's largest rainforest possessing roughly about 40% of the continent. So far, just under 20% of the Amazon rainforest has been cleared since 1950 and this poses potential danger to the populace[99].The rainforest over the years has had several environmental and human threats ranging from mechanised agriculture, livestock grazing, mining, climate change and the worst of all deforestation[100]

Over the years, there has been intensified efforts by governments and individuals to terminate the act of deforestation and cushion the existing consequences of it. In Brazil, there was a steady decline in deforestation from the early 2000's to the mid 2010's. This was because the government and environmental led organisations stood their stance on the conservation of nature and the rainforest for future generations. However, with the rise of new governments and private institutions, the legislation protecting the rainforest

[98] Chakravarty, Sumit et al. "Deforestation: Causes, Effects and Control Strategies." Global Perspectives on Sustainable Forest Management (2012).
[99] Mongabay, Deforestation in the Amazon
[100] Mongabay, The Amazon Rainforest

began to decline. We can see how rapidly this happened with the Temer and Bolsonaro Administrations when they dismantled environmental regulations, reduced environmental law enforcement, stripped conservation areas and indigenous territories of protections, and encouraged a wide range of industries (mining, logging, agribusiness) to expand extraction and conversion in the Amazon[101]. Deforestation especially in the rainforests tends to distort a lot of natural cycles such as water and nutrient cycles, it also sets the pace for water pollution, soil erosion, loss of biodiversity and climate change.[102]

It has been reported that approximately 1.1 million hectares (2.7 million acres) were deforested in the Brazilian Amazon last year, the highest since 2017. Also in the Amazonian regions of Peru and Colombia, there has been significant deforestation, which was not the case before. Bolivia has also suffered the second-worst deforestation of any Amazon country in the region last year, with 161,000 hectares (397,000 acres) [103]. In lieu of this, it is obvious that there is a need for a long lasting solution to the issue of deforestation among the tropical regions so as to save the planet from environmental degradation. It is pertinent to note that the Amazon Rainforest isn't the only rainforest being threatened by deforestation. The Congo, Australasia, Sundaland, and Indo-Burma rainforests are also victims of the incessant activities that deplete natural resources. There is an outcry for an end to deforestation and practices that adversely affect the rainforest as statistics show the speedy rate at which the world is losing the rainforests to these activities.

When we stop to think of the way forward, we should note that natural resource use relates to all three dimensions of sustainability: social justice, environmental health, and economic development. The sustainable use of natural resources strives for balance between these dimensions: maintaining the long-term use of resources while maximising social benefits and minimising environmental impacts[104]. One way forward is to foster

[101] Ibid
[102] Internet Geography Net,The Effects of Deforestation in the Amazon
[103] Mongabay, Satellite Data New Insight on Causes of Amazon Forest Loss
[104] The Sustainable Use of Natural Resources: The Governance Challenge by Bansard J, Schröder M, 2021.

sustainable resource governance. A vast array of norms, institutions, and actors influence decisions on natural resources, which is why this will be a major method to reduce the depletion of natural resources. A plethora of national legislation, intergovernmental agreements, regional organisations, certification mechanisms, corporate codes of conduct, and multistakeholder partnerships create a complex web of rules affecting how natural resources are used and benefits therefrom are distributed.

Conclusion

The world needs to seek alternative sources of energy so as to completely stop or reduce the depletion of natural resources. In doing so, there needs to be the garnered support of individuals, countries, and organisations charged with the mandate to make an impact on the planet. Without that, it will be next to impossible to achieve the aim for which this paper is written.

Further Research

What is the way forward with the reduction in the use of natural resources? What alternatives can be proposed in order to put a stop to the various causes of depletion of natural resources highlighted above? Should there be policies put in place for the punishment of those carrying out these actions? How can the national governments of each country contribute to ensuring a safer environment? Highlight the ways in which this has been carried out currently. Is the impact a positive or negative effect where it was implemented?

Scope of Research and Resources for Background Guide

The research on this topic will be curated from international laws, treaties, conventions, articles, journals, and policies concerning the depletion of natural resources as its effects have been greatly felt all around the world. Writings from scholars in this field will also be put to good use.

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This report made by the Environmental and Energy Study Institute contains the various impacts of fossil fuels on our environment. It describes the climate externalities, environmental externalities, and health externalities. Furthermore, it also includes a few policy mechanisms proposed to reduce these fossil fuel externalities.

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UN, Stockholm Declaration (1972), available at United Nations Conference on the Human Environment, Stockholm 1972 | United Nations (accessed May 2022).

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The Management and Reduction of Waste in Urban Areas

*Solutions begin with small steps individuals can take to alter the way our cities function. We must reduce the amount of waste we produce and, at the same time, start seeing it as a valuable resource that can be reused and recycled, including for energy****. - Antonio Guterres, UN Secretary-General***

INTRODUCTION

Waste in ordinary parlance connotes the by-product or end result of a cycle of production. For most people involved in the production or creation cycle, the goal is achieving or creating that which is needed, and most times the leftover materials are discarded. However, this neglect has led to the creation of problems for the environment. For a long time, there has been little or no attention to how waste could be properly discarded or put into good use and this has compounded our problems in the environment. Sadly, we are not the only victims of this human error, omission, or ignorance. These inadequate systems of waste disposal in the environment have affected our climate, animals, plants, and health, and they have all been victims sharing this collateral damage. In addition, climate change and the loss of biodiversity is referred to as the greatest threat to humanity and existence.[105]

An urban area is referred to as a developed area of human settlement characterised by the nature of infrastructure development, non- agricultural jobs, industries and sums up the landmarks representing economic advancement, technological integrations, basically hosting the creme de la creme. In the last century, urban areas have experienced rapid growth, expansion and integration as there has been a higher consumption rate and increased demands for both products and services. Cities consume 80% of world energy and contribute to about 70% of greenhouse emissions.[106] As great contributors, there must be conscious and concrete plans aimed at curtailing the negative impact on the ecosystem. There is an urge to combine efforts, by putting both social and technical

[105] UNESCO: "World in 2030" Survey Report
[106] International Solid Waste Association - New Publication on the Future of the Waste Management Sector

innovations together and shift the ideology of wasteful to wasteless[107]. For many urban areas, it has been established that constraining greenhouse gases like methane, carbon dioxide, and nitrous oxide wasn't leading to negative economic impact or regressiveness of any form, instead projecting an opportunity to welcome fresh, unconventional ideas. Waste prevention and recycling are the tools utilised to manage waste such as converting landfill gas to electricity, like the Exelon Solution, the BIN - E solution sorts and compresses waste in order to make recycling easier.[108] The negative effects of waste on our environment as well as on our health and on living organisms in their various habitats cannot be overstated. For a long time, this has been a problem for a long time. Therefore, it's quite surprising how this is a subject matter we are still battling. There has been discussion on making alternative provisions on products to enable them to easily be recycled, and cultivating proper waste disposal mechanisms. This is a subject matter central to a lot of international policies, pledges, and calls to action. Waste is said to be divided into subgroups ranging from hazardous to chemical to municipal, also referred to as solid waste landfills.[109]

The 1st Monday of October is crowned World Habitat Day.[110] This recognition was made to serve as a reminder and call to action on how a change in our actions could circumvent the imminent danger ahead. There has also been a clamour for job creation being used as a tactic in managing waste, minimization of waste, and subsidies on recycled products, among other innovations in order to reach the goals set in SDG 11 which focus on sustainable cities and communities. Additionally, target 11.6 is aimed specifically at paying special attention to air quality and municipal and other waste management issues[111].

[107] Breathe Life,"UNEA 4: The World Needs To Improve Waste Management For Pollution Free Planet
[108] Sensa Networks, "4 Innovative Solutions to Urban Waste Management Issues
[109] US Environmental Protection Agency, "Wastes"
[110] Sustainable Development Goals Hub, "UN Urges Tackling Waste Management on World Habitat Day"
[111] International Centre for the Study of the Preservation and Restoration of Cultural Property - SDG 11.6: Reduce the Environmental Impact of Cities

There is no doubt that waste will remain in our environment as long as humans continue to go about their activities. At the Johannesburg Plan of Implementation (JPOI, 2002)[112] Member States renewed their commitment to the sound management of wastes. They also placed priority on waste prevention and minimization, reuse and recycling, and environmentally sound disposal facilities, together with encouraging small-scale waste-recycling initiatives that would support urban waste management and also provide income-generating opportunities, with international support for developing countries. While the production of goods and services cannot be prohibited, environmental waste cannot be completely eliminated. This is the backdrop that makes management and reduction of waste in urban areas necessary.

International and Regional Frameworks

The *UDHR*, also known as the *Universal Declaration of Human Right,* serves as a Watershed document , projecting a standard *of achi*evement representing diverse cultural and legal perspectives. *Article 25* states that Everyone has the right to a standard of living adequate for their health[113].

The *Vienna Convention,* also known as the *Vienna Convention for the Protection of the Ozone Layer* was adopted in 1985. The Vienna convention states that extensive use of chemicals for refrigeration and air conditioning, hair spray, combustibles, and pesticides has eroded the ozone layer and encourages the adoption of practices that strive to prevent the negative effects of ultraviolet radiation.[114]

The Basel Convention, also known as the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal,*[115] was adopted in

[112] Johannesburg Declaration on Sustainable Development and Plan of Implementation of the World Summit on Sustainable Development: The final text of agreements negotiated by governments at the World Summit on Sustainable Development, 26 August-4 September 2002, Johannesburg, South Africa.
[113] United Nations, Universal Declaration of Human Rights
[114] Vienna Convention for the Protection of the Ozone Layer
[115] 1673 U.N.T.S. 126

1989. This convention seeks to protect human health and the environment against the unfavourable effects as a result of the generation, movement, and improper disposal of waste. In Article 4, different obligations are spelt out for the State Parties to the convention. The Convention also states that all state parties ensure that there is a reduction of hazardous wastes created within their territory, that these wastes are properly disposed of, and that there is cooperation between territories where the proper disposal of hazardous wastes occurs. In addition, the Convention regulates the transboundary movements of these wastes.

The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972, also known as *(the London Convention)* is the primary law concerned with the disposal of waste at sea[116]. The main objective of the London Convention is to prevent the indiscriminate disposal at sea of wastes that could be liable to create hazards to human health, harm living resources, and marine life, damage amenities, or interfere with other legitimate uses of the sea. The Convention consists of 22 articles and three annexes. *Article I* provides that state parties should endeavour to take steps to prevent the pollution of the sea by the dumping of waste and other matters that are liable to create hazards to human health. Article IV also states that, following the provisions of this Convention, state parties shall prohibit the dumping of any waste or other matter in whatever form or condition, except as otherwise specified in the three annexes. The annexes contain the different kinds of hazardous wastes and the permission required to dispose of those wastes in the marine environment, although some waste is completely banned from being disposed of in the marine environment. *Annex I* contains substances that should not be disposed of in the marine environment because they are the most harmful substances. These substances include organohalogen compounds, mercury and mercury compounds, cadmium and cadmium substances, persistent plastics and other persistent materials, crude oil or fuel oil taken for the purpose of dumping radioactive wastes, etc.

[116] International Maritime Organization, London Convention and Protocol

Annex II contains substances that require special permission to be disposed of in marine environments. They include materials like arsenic compounds, lead, nickel, beryllium, pesticides, and by-products not included in *Annex I*, scrap metals liable to sink into the sea bottom, etc. The substances in *Annex III* can only be disposed of in marine environments when there is general permission to do so.

The *Stockholm Convention on Persistent Organic Pollutants*, also known as the *Stockholm Convention*, addresses toxic wastes that are persistent and transported through water, air, and migration.[117] The objective of the Convention is to protect human health and the environment from the harmful effects of organic pollutants, especially on women and, through them, future generations, and the need to take measures to prevent adverse effects caused by persistent organic pollutants at all stages of their life cycle. It contains 30 articles and 7 annexes. *Article III* (intentional production) and *V* (unintentional production) state the measures to be taken to achieve those objectives. The seven annexes address different aspects, but *Annex A* and *B* deal with products that should be completely eliminated and products that should be restricted, respectively.

Roles of the International System

The waste issue has been ongoing for years and is currently one that needs urgent attention. The UN has implemented various programs and policies to combat inappropriate waste disposal. For example, there is World Habitat Day which is celebrated annually on the first Monday of October with a mandate for addressing global waste management challenges. This Holiday was created by the United Nations Human Settlement Programme (UN-Habitat) on the First of October 2018. The UN-Habitat has stated that there is a need to "make small adjustments into our consumption styles." This way, there is a great reduction in waste. UN-Habitat supports cities to improve their waste management practices by implementing community-based waste management

[117] Stockholm Convention, Overview.

collection, and recycling, and by helping cities to design cost-effective systems to collect and dispose of garbage. The Waste Wise Cities Campaign is a strategy of the United Nations Habitat in partnership with The Ministry of Environment Japan[118] and the United Nations Environment on tackling Marine Litter. The strategy aims at addressing the increasing global waste management crisis and also promoting a reliable and dependable system of managing solid waste[119].

There is no doubt that waste from homes, markets, businesses and institutions is thrown on the streets, in drains, dumped next to communities or openly burnt. Not only does this make these cities an eyesore and unattractive to tourists and investors, it also leads to flooding, air and water pollution, diseases as well as respiratory and other health problems. At the end of this cycle, the urban poor are the most affected as 3 billion people lack access to controlled waste disposal facilities globally[120]. Many waste management operations account for a significant proportion of city budgets, but financing for waste management remains inadequate. However, cities can effectively tackle the waste management problem when regarding waste as a resource, contributing also to reducing global GreenHouse Gas emissions and local air pollution. To be successful, cities must deal with their waste management issues in their context, while also seeking expertise from other cities that have been able to tackle the issue of pollution.

There is also the African Clean Cities Platform (ACCP) which addresses the issue of solid waste management rocking african countries[121]. It was established in April 2017 with the initiatives of the Ministry of the Environment of Japan, the Japan International Cooperation Agency (JICA), the United Nations Environment Program (UNEP) and the United Nations Human Settlement Plan (UN-Habitat) and City of Yokohama, and currently 65 cities in 37 countries in Africa are participants[122]. This platform was created to share knowledge on waste and its management, together with promoting the Sustainable

[118] UN Habitat, “Waste Management”
[119] UN Habitat, “Waste Wise Cities”
[120] Ibid
[121] African Clean Cities Platform
[122] Ibid, “About”

Development Goals (SDGs) on waste management in Africa with the end result of African countries realizing clean and healthy cities. This is because in many African countries, waste management policy is given a low priority. Consequently, the government's lack budgets, competent staff, equipment, and facilities to work on the waste management issue, leaving them with insufficient operation and disposal problems. According to the United Nations World Urbanization Prospects, Africa's urban population was about 588 million in 2018 which is 43% of Africa's total population and it is predicted to triple by 2050[123]. Compared to Asian cities, which has about 50% of its population living in urban areas[124]. Sustainable generation of funding for maintaining hygiene in cities is difficult in African countries where average incomes are relatively low.

In addition, there is also the 'polluter pays' principle which is a simple principle based on common sense. Here, the polluter — and this could be the actors or the activity causing the pollution — should pay to right the wrong. This could entail cleaning up the polluted area or covering the health costs of the people affected[125]. It admonishes the stakeholders in urban areas, and cities to be responsible for their waste management strategy and see to it that they have a higher mandate, due to the high rate of waste produced daily. In some countries, the idea of waste management is linked to the creation of jobs, and some others enforce the recycling of products and get paid per kilo whenever they recycle. This principle has been applied in the form of taxes, fines and other measures, such as quotas for pollutant emissions and the Environmental Liability Directive[126].

Under the Sustainable Development Goals, SDG 11 which focuses on sustainable cities and communities, aims to make cities and human settlements inclusive, safe, resilient and sustainable[127]. It also focuses on reducing the adverse per capita environmental impact of cities, including paying special attention to air quality, municipal, and other waste

[123] UN Department of Economic and Social Affairs, "2018 Revision of World Urbanization Prospects"
[124] Ibid
[125] European Environment Agency, "Does the Polluter Pay?"
[126] Ibid
[127] UN Department of Economic and Social Affairs, "Sustainable Development: Goal 11"

management issues[128]. So far in 2022, the global average municipal solid waste (MSW) collection rate in cities is at 82%, and the average MSW managed in controlled facilities in cities is 55%. This has been made possible by the SDG stakeholders and the policies that have been put in place to make this progress[129]. In line with this goal, SDG 12 is geared towards responsible consumption and production, and also includes targets concentrated on environmentally sound management of all waste through prevention, reduction, recycling, reuse, and reduction of food waste[130]. Research has shown that the proportion of food lost globally after harvest on farm, transport, storage, wholesale, and processing levels, is estimated at 13.3% in 2020, with no visible trend since 2016, suggesting that structural patterns of food losses have not changed. At the regional level, sub-Saharan Africa has the highest losses at 21.4%, with food being lost in large quantities between the farm and retail levels. In addition to food loss, it is estimated that 931 million tonnes of food, or 17% of total food available to consumers in 2019, was wasted at household, food service and retail level[131]. These statistics show the amount of work that has to be put into reducing waste and how they can be put to effective use in urban areas.

Furthermore, the Paris Agreement on Climate Change, which is a legally binding international treaty on climate change, states that countries are to update their Nationally Determined Contributions (NDCs) every five years[132]. These contributions should include actions on waste management as part of efforts to reduce Greenhouse Gas Emissions (GHGs). Grounded in sound analysis and data, the best NDCs help countries begin a transformative shift to development that is greener and more sustainable. They also guide needed shifts in different sectors of the economy and provide an opportunity for reworking how a society produces and consumes. Most importantly, they support greater social inclusion, through specific benefits for women, youth and indigenous communities.

[128] Ibid, Goal 11.6
[129] Report of the Secretary-General, Progress towards the Sustainable Development Goals- E/2022
[130]UN Department of Economic and Social Affairs, “Sustainable Development: Goal 12”
[131]Report of the Secretary-General, Progress towards the Sustainable Development Goals- E/2022
[132] UN Climate Action, “All About NDCs”

Some countries now make links between NDCs and their national development plans, including those to achieve the Sustainable Development Goals[133].

The New Urban Agenda (NUA) is also committed to environmentally sound management and minimizing all waste, as it is intended as a resource for different actors in multiple levels of government, civil society organizations, the private sector and all who reside in urban spaces of the world[134]. Furthermore, it highlights linkages between sustainable urbanization and job creation, livelihood opportunities and improved quality of life, and it insists on incorporation of all these sectors in every urban development or renewal policy. In addition, it works as an accelerator of the Sustainable Development Goals (SDGs), especially SDG 11, which is making cities and human settlements inclusive, safe, resilient and sustainable, to provide a comprehensive framework to guide and track urbanization around the globe. Cognizant of the fact that 95 per cent of the urban growth will be in the developing world, Sustainable Development Goal 11 sets targets and defines indicators to measure progress and growth[135].

The Waste Framework Directive, is a set up of the EU waste management cycle, establishing a 5-step procedure regulating the management and disposal of waste[136]. It requires that waste be managed without endangering human health and harming the environment, without risk to water, air, soil, plants or animals, without causing a nuisance through noise or odours, and without adversely affecting the countryside or places of special interest. This directive also establishes concepts and definitions related to waste management, including recycling and recovery. Besides this, it outlines when waste should be considered a secondary raw material, allowing stakeholders to distinguish between waste and by-products. It lays out waste management principles, requiring that waste be managed without endangering human health or the environment, with an emphasis on waste prevention[137].

[133] Ibid
[134] UN Habitat, “The New Urban Agenda Illustrated”
[135] Ibid
[136] European Commission, “Waste Framework Directive”
[137] Assent, “What is the Waste Framework Directive?”

The Management of Waste in Urban Areas: The Impact of Overpopulation

Population growth plays a significant role in environmental damage and its effects on society. The current population of the Earth is almost 7.6 billion people and growing. It is projected to reach over 8 billion by 2025, 9 billion by 2040, and 11 billion by 2100[138]. The population is growing rapidly, far outpacing the ability of our planet to support it, given the current human practices. With rapid population growth and urbanisation, annual waste generation is expected to increase by 70% from 2016 to 3.40 billion tons in 2050[139]. Compared to those in developed nations, residents in developing countries, especially the urban poor, are more severely impacted by unsustainably managed waste. Over 90% of waste in low-income countries is often disposed of in unregulated dumps or openly burned[140]. These practices create serious health, safety, and environmental consequences.

Poorly managed waste serves as a breeding ground for disease vectors, contributes to global climate change through methane generation, and can even promote urban violence. Managing waste properly is essential for building sustainable and livable cities, but it remains a challenge for many developing countries and cities. There have been references to limitations such as the lack of technical expertise or human resources coupled with the required experience to manage waste, insufficiency of financial support and limited funds allocated to waste management, in some environments the area waste is deposited is inaccessible by certain modes of transportation making it difficult for waste collection . Also the inadequate legislations or Regulations enforcing the proper regulation of waste [141]. Effective waste management is expensive, often comprising 20%–50% of municipal budgets[142]. Thus, operating this essential municipal service requires integrated systems that are efficient, sustainable, and socially supported. As global population growth increases rapidly, the consumption of resources for material goods is

[138] The World Bank, “Solid Waste Management”
[139] Ibid
[140] Ibid
[141] Sustainability Television , “Why is Waste Management Challenging in Developing Countries”.
[142] Ibid

skyrocketing. It is expected that close to 70 percent of the global population will be living in urban areas by 2050[143].

Solid waste landfills in and around cities are available on land for those in the city. We cannot have a sustainable planet without stabilising the population. As human populations grow, human demands for resources like water, land, trees, and energy also grow.[144] According to Daniel Hoornweg, an Associate Professor in the Faculty of Energy Systems and Nuclear Science at the University of Ontario Institute of Technology, Canada, population growth and urbanisation will outpace waste reduction in the world without drastic action. As the world's population grows and becomes more urban and affluent, waste production has risen tenfold. By 2025 it will double again[145]. Rubbish is being generated faster than other environmental pollutants, including greenhouse gases. Plastic clogs the world's oceans and rivers, causing flooding in developing-world cities. Great attention to consumption and improvement in waste management is needed in rapidly urbanising regions in developing countries, especially in Africa. Through increased education, equality, and targeted economic development, as in the sustainability scenario we evaluated,[146] the global population could stabilise below eight billion by 2075, and urban populations shortly thereafter. Such a path reflects a move towards a society with greater urban density and less overall material consumption.[147]

Also needed is a widespread application of 'industrial ecology' - designing industrial and urban systems to conserve materials. This begins with studies of the urban metabolism - material and energy flow in cities. The Urban Metabolism Approach [148]is applied to assess the prevention of waste as well as the development of the strategies in place to address

[143] UN, Department of Economic and Social Affairs: News, "68% of the world population projected to live in urban areas by 2050, says UN"
[144] Population Media Center, "PMC Works to Stabilize Global Population"
[145] Hoornweg, D. & Bhada-Tata, P. *What a Waste: A Global Review of Solid Waste Management* (World Bank, 2012).
[146] Kriegler, E. Glob. Environ. Change 22, 807–822 (2012)
[147] International Solid Waste Association: Globalization and Waste Management (2012)
[148] Urban-Waste.EU: Urban Metabolism

waste management. This approach also considers the overlooked issue of tourism and their contribution to improper waste disposal and management. The post pandemic era has experienced a rise in tourism, especially urban tourism, with more tourists visiting urban cities, coupled with the high rise of negative impact on the environment and the influence of improper waste management in the cities by the visitors. The European Environmental Agency assessed that tourism contributes annually, about 35 million tonnes of solid waste [149]globally waste and 7% of waste water pollution in the Mediterranean.[150] Including Tourists as an assessment of waste creation would have a great impact on how it's being reduced and managed.

The United Nations Environment Research states that by 2050 and project an increase of about 251% in solid waste disposal , this canvasses the need for mainstreaming tourism ,and sustainability in order for the benefits of tourism to be fully actualized.[151] This in line with the SDG 11, Target 11.6 makes provisions to reduce the adverse environmental impact on cities by paying special attention to the air quality as well as municipal as well as waste management[152]. The planet is already straining from the impacts of today's waste, and we are on a path to more than triple quantities. Through a move towards stable or declining populations, denser and better-managed cities consuming fewer resources, and greater equity and use of technology, we can bring peak waste forward and down. The environmental, economic, and social benefits would be enormous.[153]

Proper Disposal of Waste in Urban Areas: The Role of Legislations

In major cities of the world, one will notice that there is a constant migration from rural to urban areas. One major consequence of this unavoidable human activity is the improper disposal of waste in these areas. Developed countries like Germany use advanced

[149]European Commission, Best environmental Management Practice in the Tourism Sector
[150] UNEP, Manual for water and waste management : "What the Tourism Industry can do to improve its Performance".
[151] UNEP, Tourism
[152] UNEP, Sustainable Development Goal 11
[153] Hoornweg, D., Bhada-Tata, P. & Kennedy, C. Environment: Waste production must peak this century. *Nature* 502, 615–617 (2013).

management techniques like enhanced resolution and mobile sorting that are proving to be very helpful in reducing the waste as well as creating a higher probability of recycling and reuse. The enhanced resolution and mobile sorting acts as an efficient and helpful resource tool to make waste disposal and recycling easy, it also separates waste in landfills or dumpsites by breaking them down into various categories eligible for whatever process. For some, the waste to energy combustion involves the disintegration of solid waste thermally and the production of various sources of energy such as electricity.[154] This mode of technological advancement provides an alternative source of renewable energy in a world with limited and challenging fossil reserves, and solid waste is considered a source of renewable energy because it contains a large amount of biological and renewable materials.[155]

The use of such techniques allowed an increase in the level of recycling to 62% in 2010, and a reduction of landfilling to almost 0% at that time.[156] It is acclaimed that at the global level there is an expected rise of the machine waste sorters to reach $12.26 billion by 2026, measured at the rate of 19% CAGR[157]. This has been made possible by the adequate laws put in place to run a waste-free country such as *The Independent Waste Disposal Act of 1972*, The *Waste Avoidance and Management Act of 1986* and *The German Packaging Ordinance of 1991*.[158] Some initiatives charged at proper disposal of waste have been inaugurated subsequently. The first initiative was taken in 1993, followed up in 2001 and 2002, and was fully implemented in 2005. This initiative has been a boom in the development of mechanical biological treatment plants (MBTs) that redirect the biodegradable material to fermentation and composting plants for the production of biogas. This is also the case in the Netherlands where the principle of 'Lansnik's ladder'

[154] Srivastava R: Waste Management: Developed and Developing Countries. International Journal of Science and Research, ISSN (Online): 2319-7064 (2013)
[155] Scott Madden Management Consultants: Waste-to-Energy Technology
[156] Srivastava R: Waste Management: Developed and Developing Countries. International Journal of Science and Research, ISSN (Online): 2319-7064 (2013)
[157] Market Data Forecast: "Waste Sorting Robots Market"
[158] Federal Ministry For The Environment, Nature Conservation, Nuclear Safety And Consumer Protection. German Waste Legislation And Sustainable Development: Development Of Waste Legislation In Germany Towards A Sustainable Closed Substance Cycle

(proposed in 1994) follows the avoidance as well as recovery of valuable components from waste. In addition to this, more than 35 waste categories were banned by 1995, and a landfill tax was introduced that increased the recycling rate from 45% to 50% from 2001 to 2009.[159] Thermal waste incineration has also been followed in the Netherlands since 1919 due to its dependency on accommodating variations in composition and calorific value of MSW. By 2012, the Netherlands established 12 incineration plants that helped 50,000 households in Amsterdam attain 25% of their heat requirements from waste incineration[160].

The negative impact of improper waste disposal, leads to waste ending up on roadsides and empty plots of lands, gutters being clogged, foul smells and a possible degradation of wildlife habitats, also pest, bacteria and infection surge[161]. This has resulted in climate change, health hazards, and also a negative impact on infrastructure, annually 2.12 billion tons of waste is generated[162]. Third world countries have been the most affected by improper waste management disposal, under the terms of Global Waste Trade, also referred to as Toxic Colonialism. This is an act whereby hazardous waste owned by developed countries are sold to poorer or third world countries. For example, in 1988, Nigeria discovered an illegal dumping of 3,880 tonnes of toxic and hazardous waste in Koko, a small village which is five miles from the coast in the former state of Bendel, Nigeria. This dumping was done by Gian Franco Raffaelli, an Italian businessman on behalf of an Italian company[163]. This led to the formation of the Federal Environmental Protection Agency (FEPA), 1988. This legislation was created and charged with the administration and enforcement of environmental law. In addition, the government enacted the Harmful Waste (Special Criminal Provisions) Act, 1988, to deal specifically with illegal dumping of

[159] Srivastava R: Waste Management: Developed and Developing Countries. International Journal of Science and Research, ISSN (Online): 2319-7064 (2013)
[160] Ibid
[161] Paul's Rubbish Removal, "10 Negative Effects of Waste Disposal You Should Avoid"
[162] World Waste Facts
[163] Ogbodo, Dr. S. Gozie (2009) "Environmental Protection in Nigeria: Two Decades After the Koko Incident," *Annual Survey of International & Comparative Law*: Vol. 15 : Iss. 1 , Article 2.

harmful waste[164]. Two decades later, FEPA which was the primary environmental protection law in Nigeria was repealed on July 30, 2007, by the National environmental standards and regulations enforcement agency (NESREA) Act[165] because of the vacuum in the effectiveness of environmental laws, standards and regulations in the country. This new legislation enables the agency to enforce compliance with laws, guidelines, policies and standards of environmental matters. Examples of these standards include the federal water quality standards and air quality standards. In addition, it coordinates and liaises with stakeholders within and outside Nigeria on matters of environmental standards, regulations and enforcement. These relevant stakeholders includes the organized private sector, environmental groups at both national and international levels and other ministries and parastatals[166].

Also, in August 2006, a Panama-registered cargo tanker, known as Probo Koala, chartered by Trafigura, a Singapore-incorporated multinational commodity trading company, dumped over 500 cubic meters of highly toxic waste in Abidjan. According to official estimates, 15 people died, 69 people were hospitalized and over 108,000 others sought medical treatment after the '*Probo Koala* incident.[167]. Also, there are other examples of dumping sites for hazardous waste in other parts of the world. For instance, the town of Guiyu in the Guangdong province in China happens to be on the largest waste dumps for electronics[168]. In this town, about 5,000 workshops in the village recycle 15,000 tonnes of waste daily including hard drives, mobile phones, computer screens and computers shipped in from around the world[169]. Others include Bantar Gebang landfill in Jakarta, Indonesia which produces over 7100 tonnes of waste daily[170]. For over 30 years in this city, scavengers – including young children – usually scour through massive heaps of garbage

[164]Suleiman, R.M, Raimi, M.O, Sawyerr, H.O, (2019) "A Deep Dive into the Review of National Environmental Standards and Regulations Enforcement Agency (NESREA) Act," *International Research of Journal of Applied Sciences*: Vol. 1 : Iss. 4 , Page 108-125.
[165] S.I. (I) of National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, 2007
[166] Muhammed, T.L.,(2014). "Review of NESREA act 2007 and regulations 2009-2011: A new dawn in environmental compliance and enforcement in Nigeria". Law, Environ. Dev. J., 8: 118-138
[167] UN News, "Côte d'Ivoire: 10 years on, survivors of toxic waste dumping 'remain in the dark."
[168] Thomson Reuters Foundation News, "World's largest electronics waste dump in China"
[169] Ibid
[170] Environmental Justice Atlas, "Bantar Gebang Jakarta landfill, Indonesia"

to look for cardboard, plastic, wood, and even bones to earn a living[171]. There is also the Deh Jam Chakro dumping site which is a vast 500 acres of landfill an hour and a half outside of Karachi, Pakistan's metropolis[172]. In addition, the Agbogbloshie dump for E-waste in Accra Ghana, is a result of the world's increasing demand for electronic equipment as consumers continually upgrade their devices and throw out the older ones. A significant fraction of this electronic waste is sent, often illegally, from the West to developing countries across Africa and Asia[173].

The UNEP, in a bid to prevent these incidents such as 'Koko' and 'Probo Koala' from happening again, and to regulate the shipment and disposal of hazardous waste – as established in the Basel Convention and Bamako Convention – gathered the African States for the second Conference of the Parties (COP2) to the Bamako Convention[174]. This conference took place from 30 January to 1 February, 2018 in Abidjan, Côte d'Ivoire, where African countries reaffirmed their political commitment to implementing the Bamako Convention and achieving the sound management of chemicals and wastes, and the SDGs[175]. This convention was initially negotiated by 12 nations of the African Union and came into force in 1998[176]. Furthermore, it is a response to Article 11 of the Basel convention which encourages parties to enter into bilateral, multilateral and regional agreements on Hazardous Waste to help achieve the objectives of the convention[177]. It also came about due to, (i) the failure of the Basel Convention to prohibit trade of hazardous waste to less developed countries (LDCs); and (ii) the realization that many developed nations were exporting toxic wastes to Africa (Examples include the Koko case in Nigeria and Probo Koala case in Ivory Coast)[178]. This Convention covers more wastes than the Basel Convention as it not only includes radioactive wastes but also considers any toxic,

[171] Natalie Colarossi, "Photos reveal a harrowing look at Indonesia's 'trash mountain,' where thousands of poor families make a living by picking through heaps of rotting garbage", Insider (Apr 29, 2020)
[172] Abeera Kamram, "Deh Jam Chakro"
[173] Bloomberg, "The Toxic Effects of Electronic Waste in Accra, Ghana"
[174] UNEP, "Bamako Convention: Preventing Africa from becoming a dumping ground for toxic wastes".
[175] IISD, "Bamako COP Affirms Commitment to Pollution-Free Africa"
[176] UNEP, "Bamako Convention"
[177] Ibid
[178] Ibid

poisonous, explosive, corrosive, flammable, ecotoxic and infectious wastes. Other products also covered under the Convention as waste include those that have been severely restricted or have been subject of prohibitions[179].

For a country to improve in proper waste disposal, there has to be a system in place that covers the collection, sorting, processing, recycling, and reusing of materials that would otherwise be considered useless. Countries that are signatories to and have ratified the *African Charter on Human and Peoples Rights (ACHPR)*, have a responsibility placed on their governments to maintain a healthy environment which is also a constitutional right[180]. This is where rudimentary frameworks for waste disposal come in the form of municipal, environmental laws, and judicial remedies. It is no doubt that the non-enforcement, non-justiciability of laws, and poor access to judicial remedies have resulted in the near-total failure of responsible municipal authorities to execute their mandate thus leading to an appalling state of affairs in the management of municipal solid waste in most countries battling improper waste disposal, or countries who haven't fully harnessed the management style or techniques for their waste disposal strategy. There is also the International Organization for Standardization ISO 14000 Family Environmental Management, which is tasked with the role of assisting individuals and institutions with environmental management systems.

The United Nations has a waste management policy, which is directed at waste produced at field missions on waste management as well as the implementation of waste management processes. Waste here includes both solid waste and liquid waste[181]. The paragraph D7, states the Director of Mission will institute procedures to ensure that the waste management activities are in line with the United Nations Policy and Waste management plan. The European Landfill directive regulates landfill aimed at reducing

[179] Ibid
[180] Article 16, African Charter on Human and Peoples' Rights
[181] UN Peacekeeping Capability Readiness System: Waste Management Policy for UN Field Missions

the negative impacts of pollution, and the lack of a proper waste disposal mechanism, this is a law regulating waste disposal. Some of the Laws include that landfill facilities must not accept tyres, or liquid or flammable waste or waste from hospitals and veterinary practices. And only treated waste can be landfilled. Countries within the EU are required to send reports every three years.[182] The Energy and Environment Partnership Trust Fund Africa, an initiative of the Nordic Development Fund. models in countries across South and East Africa, have a compilation of countries legislations regulating e-waste.[183]

The 3Rs and Their Impact on the Waste Industry

For most people their introduction or first encounter with environmental activism is backed up by the big "R'. It meant diverse but well articulated solutions, growing up realizing the R system was more than a tripartite fun theme song, picking up plastics in a park with green t-shirts and disposal gloves to match the ecosystem aesthetic. The 3rs symbolises the three most practical steps of grading waste management. The first 'R' stands for Reduce: it involves taking actions aimed at cutting down on the amount of waste generated .[184] It symbolises a pinnacle reflecting a conscious change, it is the primary and the most effective step. The best step at managing waste is simply not to produce it at all.This campaign proposes buying goods in bulk,avoiding over packaged products especially the ones packed with materials which are difficult to recycle. Choosing durable alternatives over disposable. Donating used or old electronics, clothes, fixing instead of discarding.

Concerning social acceptability, waste treatment is regarded by some as a continuous burden. As can be expected, economically developing countries generally focus on recycling and reuse (mostly through the informal sector) and disposal in uncontrolled disposal sites. In industrialised countries, whatever the choice of waste treatment is, those responsible for waste management face the NIMBY (Not In My Backyard) syndrome.

[182] European Commission, "Landfill waste"
[183] Energy and Environment Partnership Trust Fund for Africa, "Recycling Legislation And Facilities
[184] Green Coast " The 3Rs of Waste Management"

Pereira reported that applying waste prevention in Portugal is essential due to adverse public opinion towards landfilling and incineration[185]. Also, Carabas-Hütter and Winistörfer recommended that a social compatibility analysis (SCA) be performed in conjunction with an LCA (life cycle analysis[186]. 3Rs offer environmentally friendly alternatives to deal with the growing generation of wastes and its related impact on human health, the economy, and the natural ecosystem. The concerted application of the 3Rs in every type of waste generator can make substantial contributions to meeting all of the pillars of sustainability in several regions around the world. Reduction or minimization involves all actions aimed at decreasing the amount of waste production. Waste reduction, after prevention, is one of the most essential strategies to achieve sustainable development. Waste reduction can be carried out by conducting life-cycle analyses or very thorough mass or material balances. These analyses and balances have been used in various sectors and at any scale – for instance, in a manufacturing plant or in a single-family dwelling. There are a variety of benefits that can be gained from trying to achieve waste prevention. Two important benefits include economic and environmental benefits. For instance, a comprehensive waste prevention plan in a manufacturing plant would lead to savings in the use of feedstock as well as a reduction in waste generation.

The strategy that follows reduction is reuse. In theory, the strategy of reuse would be applied once all possibilities for reduction have been exhausted. The concept of reuse is the process of “reusing” an item or material that has been discarded, but the reuse must be in its original state either in the same manner for which it was designed or in a new manner but without any physical or chemical modifications. This strategy, although it has various applications and can lead to substantial savings, has some limitations in particular those related to public health and sanitation. On the other hand, reuse offers a great number of social, economical, and environmental benefits as long as the reuse programs

[185] Pereira F.J.M.A., Coelho C.A., Effect of the new Portuguese municipal waste recycling policy on landfill space requirements, vol. 5, p. 9, 1997.
[186] Carabas-Hütter V., Winistörfer H., Tools needed for sustainability evaluation: the social compatibility analysis (SCA). volume 5, p. 531, 2001

are well-thought-out. Reuse was practiced several years ago around the world in various situations. However, in many countries like Chile, Turkey, Mexico, Greece, and Israel, the labor costs, fads, and other factors led to the abandonment of this practice[187]. The application of this concept can also result in a meaningful reduction in the production of raw materials, the generation of employment, and, of course, a decrease in the number of materials discarded in a landfill or partially destroyed in a thermal conversion facility. Care must be observed in the reuse of certain items as they are related to safety, durability, and performance guarantees. Examples that should be followed under most circumstances include the repair of furniture and electrical and electronic appliances. In this particular case, properly trained individuals would earn decent wages, would contribute to resource conservation, and help in the reduction of waste placed in landfills or in thermal treatment facilities. Following the hierarchy, Recycling is the last but most definitely not the least or most underrated step, after reuse and recycling.

Recycling discarded materials is the process whereby the materials are recovered and processed so that they can be converted into new products. In the recycling option, the recovered item or material can be processed either physically or chemically to salvage the valuable components or materials. This option has been the most widely used strategy for the treatment of solid waste around the world. Recycling and thermal treatment are certainly the widest treatment methods used in industrialised countries, while different methods of low-technology recycling are the most common methods of treatment in developing countries. Most developing countries Like Gambia, India, Ghana, Togo, and Tanzania carry out recycling through their informal sector and it involves different stages such as storage, collection, and final disposal. On the other hand countries like Sweden boasting as one of the most successful recycling rates, the wastes are separated into different colored bags, sorted for easier recycling and the waste which cannot be recycled undergo the process of being burned in plants which converts their waste into energy. In

[187] Luis F. Diaz, The 3Rs as the Basis for Sustainable Waste Management: Moving Towards Zero Waste, 2011

Africa, Zhauns being the leading machine supplier, has created an innovative machine which converts waste tyres into rubber floor tiles and has the capacity to recycle about 250 kilograms of tyres within an hour.[188]

There is also a Biodiesel Machine, upon recycling converts used cooking oil into biodiesel . This machine breaks the cycle of product wastage by putting it into good use, biodiesel not only serves as a replacement for diesel fuel , it is also a certified cleaning agent for shoreline contamination and generates electricity.[189] Resource Recovery is a component of recycling ,it highlights the Integrated Waste Management system mission, restating recycling isn't just about the financial returns made from the sale of end us products but also the preservation and protection of landfill management by avoiding the improper disposal of recyclables and the negative impacts on the environment[190]. This energy serves as a source of electricity. Japan Makes the Tokyo Olympic games out of recycled metals[191]. Recently, Adidas launched a sneaker line and sportswear collaboration made from recycled materials.[192] In addition, in some locations, recycling serves both as an environmental tool but also an instrument for economic development , facilitating the employment of 15 million people worldwide.[193] It produces an average of 10 times more jobs than trash and reusing, creating about 30 times more jobs than landfills[194]. The outputs from recycling activities feed a variety of industries around the world such as the paper and steel industries[195].

The Principle of the 3Rs and Urban Sustainability: Urban cities and communities play a focal role in waste reduction , management and waste eradication. The rapid rate of urbanization and modernised social behaviour has resulted in doubling the amount of

[188] Zhauns,"Recycling in Africa"
[189] Enrg.io, "Top 15 Unexpected Uses for Biodiesel"
[190] Resol,"Waste Recycling in Developing Countries in Africa"
[191] OpenMind BBVA, "5 Recycling Lessons From Different Countries in the World"
[192] Yahoo, Summer Sustainability 'Adidas turns Plastic'
[193] Compare Camp, "Economic Impacts of Recycling"
[194] Ecocycle Solution Hub,"Zero waste Creates 10 times more job than trash"
[195] Luis F. Diaz, The 3Rs as the Basis for Sustainable Waste Management: Moving Towards Zero Waste, 2011

waste generation. With more than 4.3 billion people, over half of the world's population residing in urban settings[196]. It is estimated that about 100 Million people could be pushed into poverty if there aren't any direct and proactive steps taken in Urban areas to address climate impacts as a result of these underestimated negative impacts of mismanaged waste.[197] Applying the 3rs in an urban settlement requires the hybrid approach , combining educating and corporate social responsibility. Educating organisations, institutions, companies in urban areas about proper waste management is more complex than underdeveloped communities. For underdeveloped communities the focus is on downstream solutions, concentrating more on waste collecting and disposals, leaving out resource efficiency.Urban areas would adopt the upstream which provides for increased resource efficiency, resource saving measures, reducing waste generation by opting for eco friendly designs and products and reorganised production processes known as Industrial Symbiosis.[198] Industrial Symbiosis is the exchange of waste resources and end-by products between companies who do not usually engage in resource exchange .[199] Corporate Social Responsibility depicts a company's level of attentiveness to social and environmental issues, and involves a wide range of activities, ranging from leveraging partnerships or collaborations to fundraising to school competitions on innovative ideas aimed at tackling waste management. Partnering with waste management companies, The city of Panama partnered with Recicla Por tu Futoro (Recycle for your Future) for improving recyclable end-use products and creating green points in the city. In Milan, the Food Policy Hot Pot was a partnership between Milan, Private Food Companies and 20 SMEs focusing on new solutions to food waste, recycling methods , and green procurement. Toyama city partnered with the Nippon Foundation NGO titled "The Change for the Blues Project", this partnership is directed at stopping the flow of waste into the ocean. Plastic Pollution and Marine Debris has been added to the Elementary

[196] UN, World Urbanization Prospects Database
[197] World Bank.org " Managing the impact of Climate Change on Poverty"
[198] UN,Sustainable Development " The 3Rs and Resource Efficiency as the Basis for Sustainable Waste Management "
[199] MDPI, Urban Strategies Enabling Industrial and Urban Symbiosis: The Case of Slovenia

School Curriculum and Three trips to the beach for clearing of waste for the 3R school project. .[200]

Conclusion

Acknowledging the existence of waste in different countries and the effect of those waste on the world at large, countries are expected to focus on managing the disposal of waste in their various countries through the use of waste reduction methods that work for each country. This is because the reduction of waste is very important when we consider the effect of waste on the climatic conditions of the world. The universal nature of UNEA demonstrates that environmental sustainability is a universal agenda and that the international community recognizes that challenges are best addressed when the world joins forces.

Further Research

What alternatives can be proposed to drastically reduce the production of waste? What is the way forward when it comes to the proper disposal of waste? Will these reduce the land degradation that comes with landfilling? What are the long-term methods that exist to ensure waste management? Which other long-term impacts of improper waste disposal exist? How can the Governments of countries contribute to ensuring a safer environment? Highlight ways in which this has been carried out currently. Is the impact a positive or negative effect where it was implemented?

Scope of Research and Resources for Background Guide

The research on this topic will be curated from international laws, treaties, conventions, articles, journals, and policies made concerning waste and its management as this is a major global issue in the world. Writings from scholars in this field will also be put to good use.

[200] Resilient Cities Network: Approaching Urban Waste Management through a Resilience Lens

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Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (imo.org) (accessed 20 May 2022).

This Convention is also known as the "London Convention", and it is one of the first global conventions to protect the marine environment from human activities and has been in force since 1975. Its objective is to promote the effective control of all sources of marine pollution and to take all practicable steps to prevent pollution of the sea by dumping of wastes and other matter.

European Environment Agency, Polluter Pay Principle
Interview — Does the polluter pay? — European Environment Agency (europa.eu)
(accessed June 2022).

This is a principle of International Environmental Law , directed at reducing green house gas emissions. The Producer of the pollution bears the cost of managing the prevention of possible damage to both human health and the ecosystem.

Library, the African Clean Cities Platform
https://africancleancities.org/library/ (accessed June 2022).

The library of the African Clean Cities Platform contains everything you need to know about waste in Africa. It contains articles like "Basics of Municipal Solid Waste", "Guide for Environmental Education on Solid Waste Management" and other teaching materials for primary school students and teachers.

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The Stockholm Convention is a global treaty that aims to protect human health and the environment from the effects of persistent organic pollutants (POPs). It currently regulates 29 POPs, requires parties to restrict trade in these substances, adopt a range of control measures to reduce and, where feasible, eliminate the release of POPs. This Convention requires countries to develop national action plans to address releases and to apply "Best Available Techniques" to control unintentionally produced POPs.

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The Sustainable Development Goals (SDGs), also known as the Global Goals, are made of 17 goals adopted by the United Nations in 2015. It serves as a universal call to action to end poverty, hunger, AIDS, discrimination against women and girls, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity. It explains everything that involves waste, climate change and sustainable communities in Goals 11 and 12.

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Vienna Convention for the Protection of the Ozone Layer (un.org) (accessed May 2022).

> *The Vienna Convention is a framework agreement in which States agree to cooperate in relevant research and scientific assessments of the ozone problem, exchange information, and adopt "appropriate measures" to prevent activities that harm the ozone layer. The obligations are general and contain no specific limits on chemicals that deplete the ozone layer.*

US Dept State, "The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal"
Basel Convention on Hazardous Wastes - United States Department of State

> *This Convention relates to transboundary waste. It extends beyond hazardous waste, and goes further to speak on transboundary hazardous waste. It seeks to stem the effects of hazardous wastes by reducing the production, encouraging proper management, and encouraging proper disposal of such wastes. The Convention also prohibits the transboundary movement of such hazardous wastes.*

UNEA - 4, RESOLUTION UNEP/EA.4/RES.7
https://wedocs.unep.org/bitstream/handle/20.500.11822/28472/English.pdf?sequence=3&isAllowed=y

> *This document, which was made during the UNEA's fourth session, describes the resolution for the environmentally sound management of waste, innovative solutions for environmental challenges and sustainable consumption and production. It also emphasizes the co-benefits of a sound waste management policy in areas such as greenhouse gas emissions reduction, improving human health, food management and the protection of the marine environment.*

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