

The Environment and Human Actions: The Implication of Plastics on the Conservation and Sustainability of the Environment.

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Outline

- Introduction
- The environment
- The interrelatedness and balancing cycles
- Human actions and the environment
- Plastic waste management
- Implication of plastics to the environment
- Way forward
- Conclusion

Introduction

- History and archeological data reveals that the environment has existed before humanity.
- The environment has continued to be the the resources provider to supporting lives.
- Since humanity understands that their survival depends on the environment, humanity over the years have consisted interacted with the environment with the intent to meet their needs.
- This **acquisition** and **conquest mentality** over the years as resulted to humanity exploiting the environment to meet their expansionist philosophy.

Introduction Cond'

- If we iterate, it would be obvious that the actions of the 21st century humanity with respect to the environment as compared to their protégés of the 15th century are worst.
- Undoubtedly, human action has transformed the environment positively and negatively depending on the action itself.
- Although the environment is created to support life on earth, but humanity have continued with practices that threatens the conservation of the environment.

Introduction cond'

- Deforestation, urbanization and industrialization are consequences of the conquest mindset of humanity with footprints such as climate change.
- As human action such as industrialization increases, it has led to the production of non-biodegradable waste such as plastics.
- This paper discusses the environment, human action, plastics, interrelatedness and how plastic waste affects the conversation and sustainability of the environment.

The environment

- Let me progressively address each of these concepts to buttress how these concepts relate to the environment.
- Most often to the layman when environment is mentioned, it is the most likely refers to the surrounding.
- The word environment is derived from a French word called “Enron” which meant surrounding.
- From the context of surrounding, it covers two critical elements called biotic and abiotic .



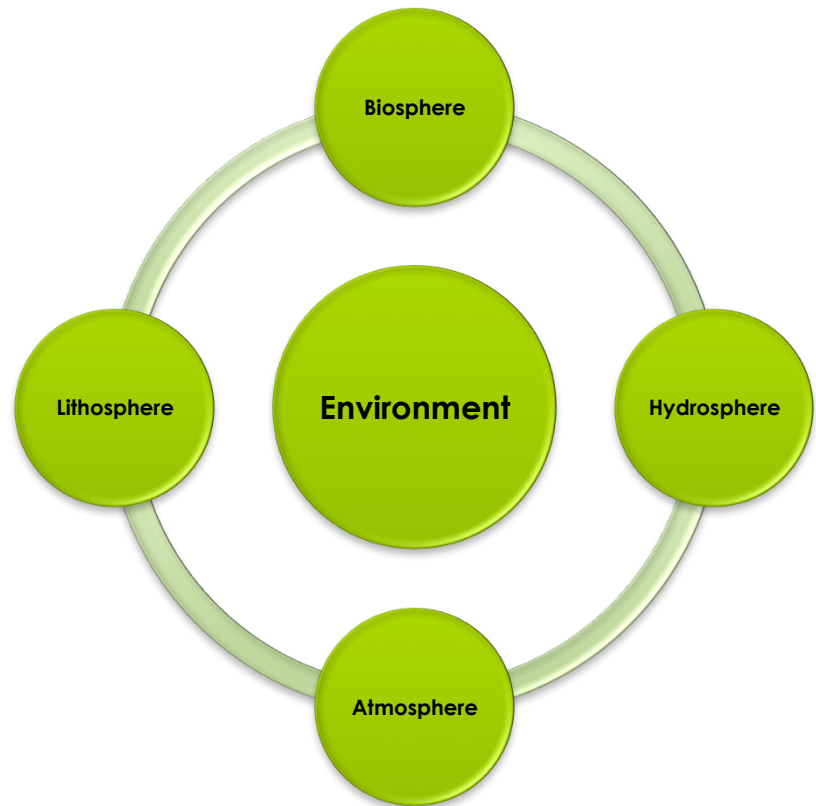
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The environment cond'

- The biotic representing all life that is, humans, animals, micros, plants etc. (Balasubramanian, 2008).
- Abiotic factors are air, light, water, soil etc.
- Classified the subsystem of the environment are the atmosphere, the hydrosphere, the lithosphere and the biosphere.
- These systems are constantly changing and the changes have the potential to affect humanity, likewise the actions of humanity affects the systems.

The environment cond'

- **Hydrosphere** is made up of all the waters in elements such as lakes, rivers, ponds, streams oceans etc.
- The **Lithosphere** consists of the constituents of the earth such as the soil, earth rocks, mountains etc.
- **Atmosphere** consist of the air that envelops the earth such as oxygen, carbon dioxide, etc. which protects the earth and the humans from the sun's harmful radiation.
- **Biosphere** as the entire living organism on the surface of the earth ranging from human beings, plants, microorganism and marine lives etc.

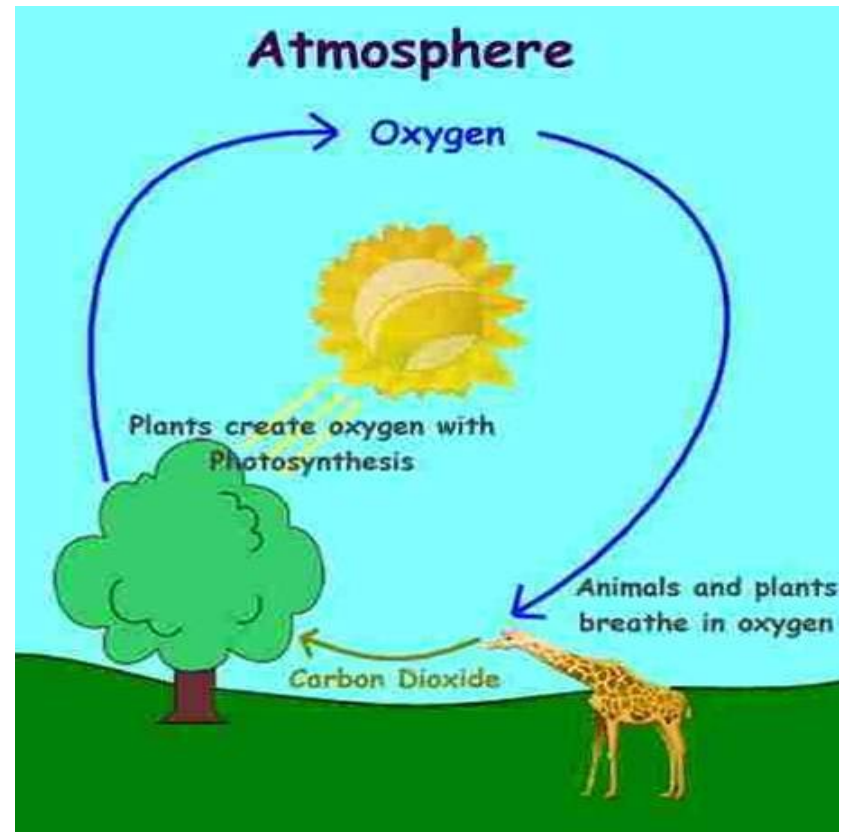


Interrelatedness and balancing cycles

- **The interconnectivity** and interrelatedness amongst the various systems of the environment cannot be over emphasized.
- It is apparent that the conversation of the environment depends on maintaining a balance within the subsystems.
- For example, the natural cycles principles: water cycle, carbon cycle oxygen and carbon dioxide cycle reveals that the environment is an interconnected unit.
- The natural cycles maintain the sustainability function of the environment.

Interrelatedness and balancing cycles cond'

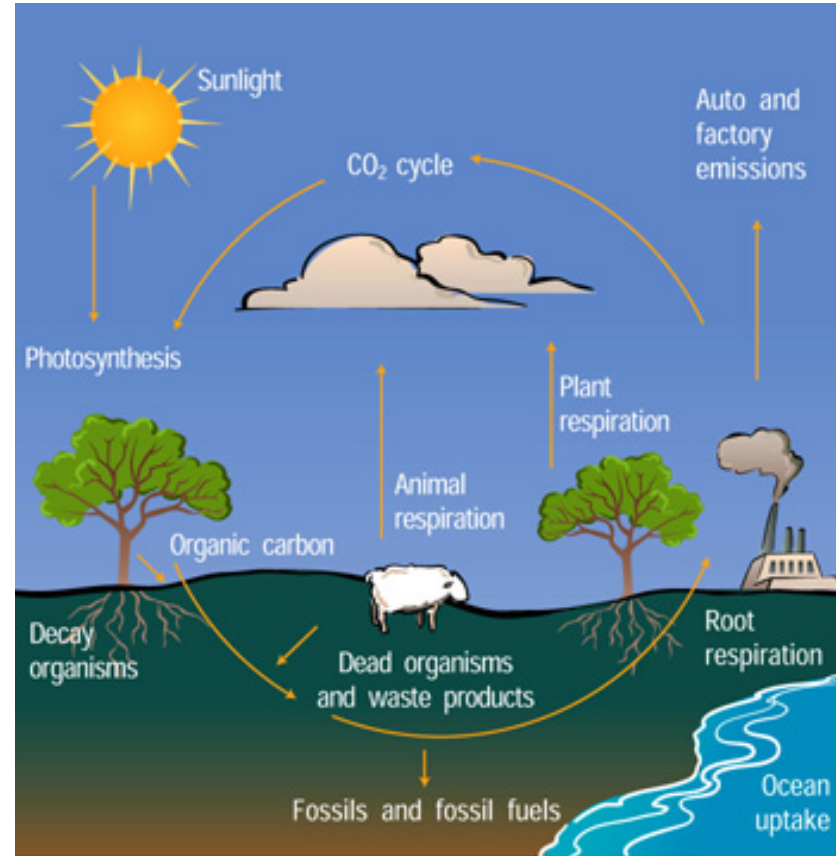
- **In oxygen and carbon dioxide cycle:**
- Plants use carbon dioxide in the air during photosynthesis and then exhale oxygen as waste.
- Humans and animals breathe in the oxygen generated by plants and breath out carbon dioxide as waste.
- Interrelatedness atmos., biosphere and litho.



Source: <https://www.smores.com/6k7zg-carbon-dioxide-oxygen-cycle>

Interrelatedness and balancing cycles cond'

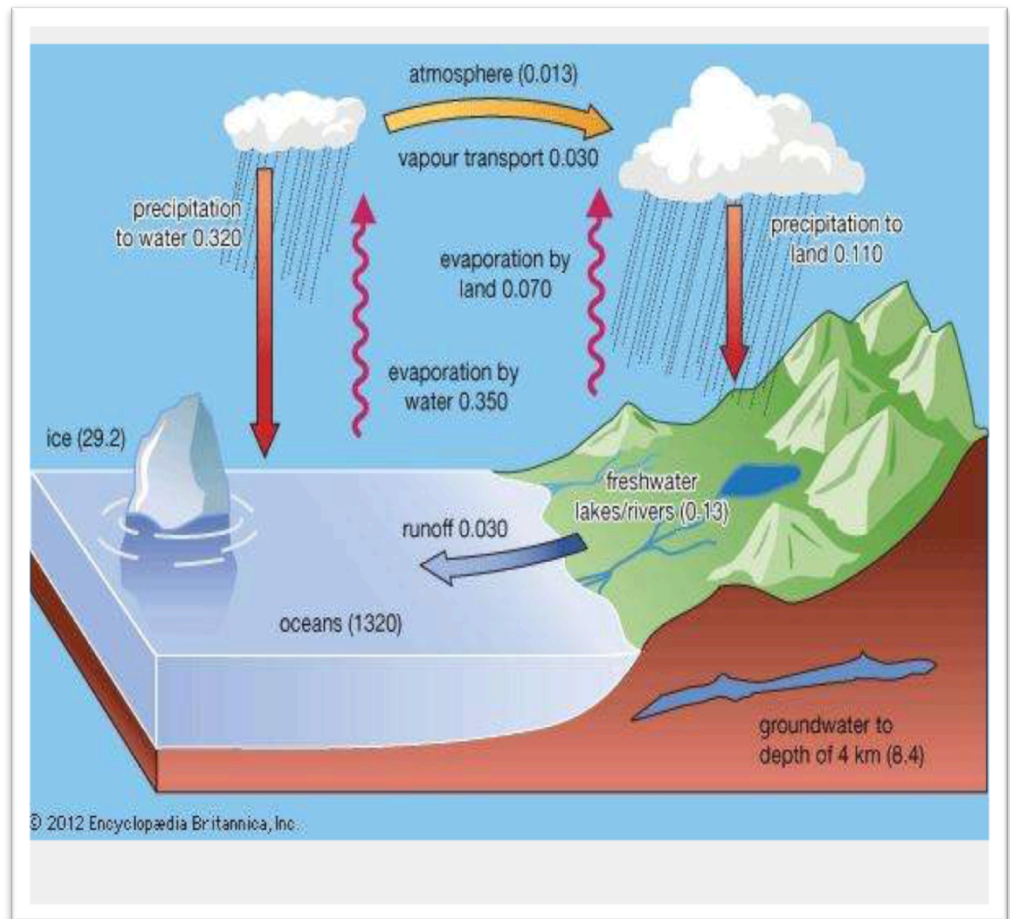
- **Carbon cycle:**
- Carbon is the basic component of all the elements of the environment.
- Carbon is found in the ocean, air, fossil fuel human, plant, **root respiration**, and even **rocks**.
- This reveals that carbon does not stay still in the earth; it is always on the move.
- interrelatedness



Source: <https://eo.ucar.edu/kids/green/cycles6.htm>

Interrelatedness and balancing cycles cond'

- **Water cycle:**
- Evaporation,
- Vaporization,
- Condensation,
- Precipitation,
- Run offs,
- Underground discharges/percolation.
- Reservoirs/Retention time.
- Connectivity and balance.



Source: Encyclopedia Britannica, Incorporated

Human actions and the environment

- Over the years, the conquest mentality of humanity has driven humanity to undertake several initiatives that continue to cause environment degradation.
- Just to mention a few of these human action are **urbanization**, **deforestation** and **industrialization**.



Source

<https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcQaUWI12DLd3jcBspXVqY8Y1gYUfl2uNszDyCHD8livohzAGWoi>

Human action and the environ. cond'

- **Urbanization** is an act of migration where people move to locations with better potential for food, cloths, jobs, shelter etc.
- According to the United Nations projections about 60% of the world population would live in urban areas by 2025.
- Utility, road, shelter, food etc.
- Additional landmass to have more space leading to **deforestation**.
- Interdependence between urbanites and natural cycles.
- Relationship between resources capacity and environmental degradation.

Human action and the environ. cond'

- **Deforestation** is a permanent destruction of the forest to fulfill the needs of humanity.
- **Causes:** Housing and other landmass requirement due to urbanization.
- **Causes:** Fuel
- **Causes:** Resources to feed urbanites.
- **Effects:** Ecosystem in balance, less photosynthesis, less soil respiration, distortion of carbon formation, affects the oxygen and carbon dioxide cycle. Ultimately causes climate change.



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Human action and the environ. cond'

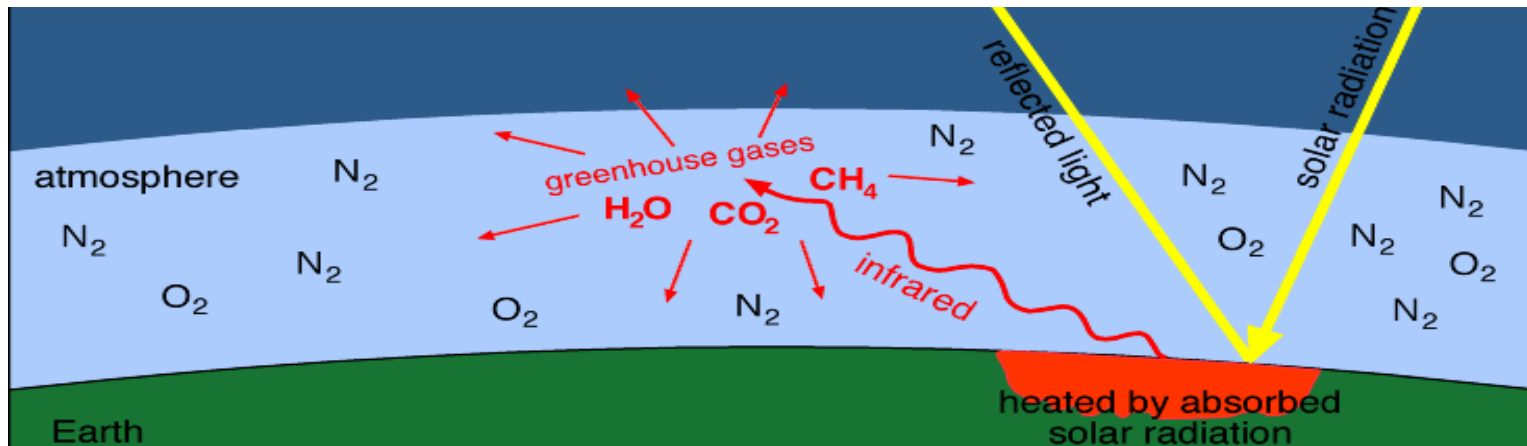
- **Industrialization** is the development in a wider scale.
- Employment and goods and services.
- Utilization of natural and human resources.
- Generation material waste.
- Emission harmful gases.



Source: https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcQPzDkDcaXyovY5N_LI7TGWw70e_AAFqtF35GRQsNNpStG7CY50

Human action and the environ. cond'

- **Industrialization:** Generation of green house gases (GHG).
- 289 parts per million increase in CO₂ before the industrial revolution to over 360 parts per million and rising.
- Earth temperature control and GHG.
- Global warming and **Arrhenius**.
- Rising in sea level due ocean temperature increase.



Source: <http://www.columbia.edu/~vjd1/greenhouse.htm>

Human action and the environ. cond'

- **Acid rain** is another adverse effect of industrialization.
- Sulfur and nitrogen oxides produced from burning fossil fuel combine with rain.
- **Effect:** Aquatic lives in lakes and rivers.

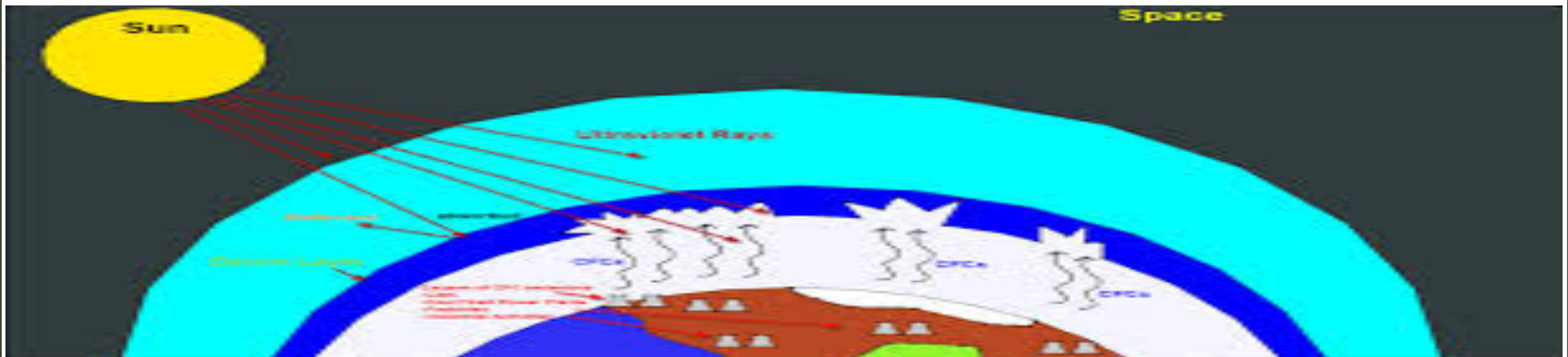


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Human action and the environment

- **Ozone layer depletion: Industrialization:**
- Generation of chlorofluorocarbon (CFC)
- CFC disintegrate under UV into chlorine atom, chlorine atom breaks up ozone molecules.
- Exposing the earth to harmful radiation.



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Plastic waste management

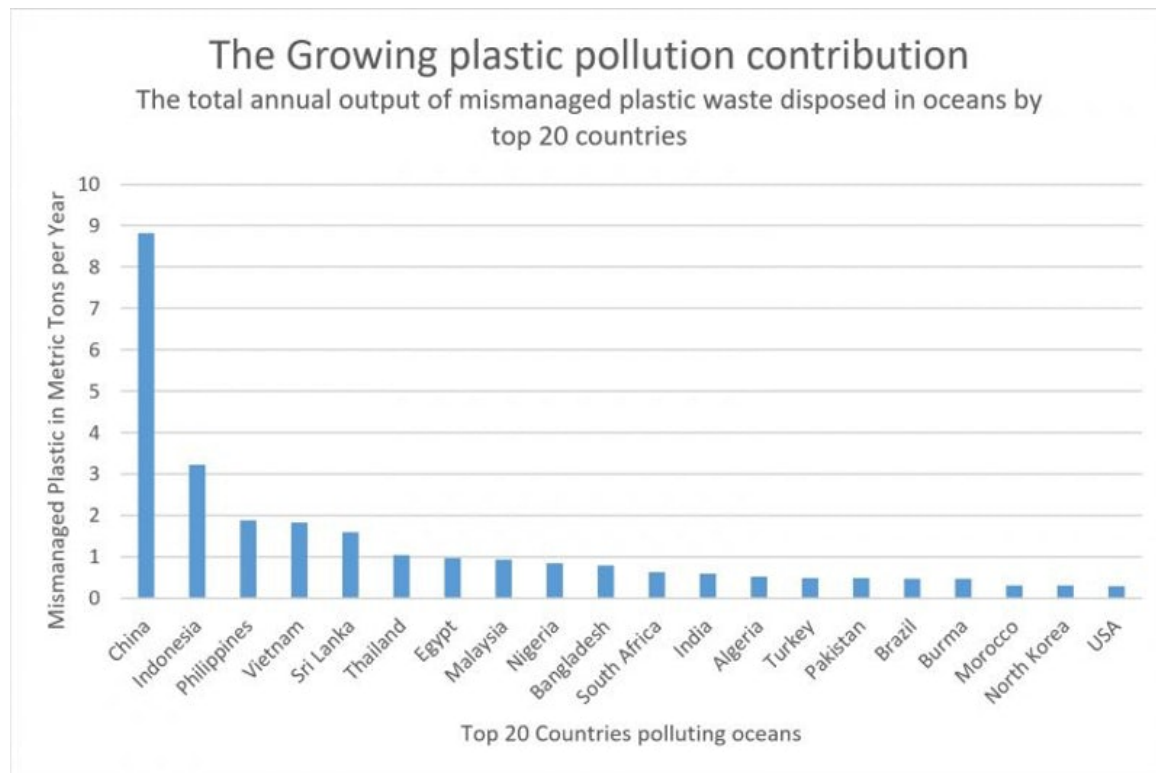
- **In recent times**, not only the emission of the additional green house gases (GHG), waste management has become a growing concern.
- Particularly, plastic has attracted a wide use in the society because of the urbanization and industrialization.
- Industrialization has created a live style where plastics have become part human existence in the contemporary society.
- In 1950 it was about .05 million tones and now increased to about 260 million tones today (Plastics Europe, 2008).



Source: <https://encrypted-tbn0.gstatic.com/images?q=tbn:AND9GcRb836UwvZRg15bgzVTCNZv5VM2fF0xaG2X9Mme1ktkcVyVH6Cd5w>

Plastic waste management cond'

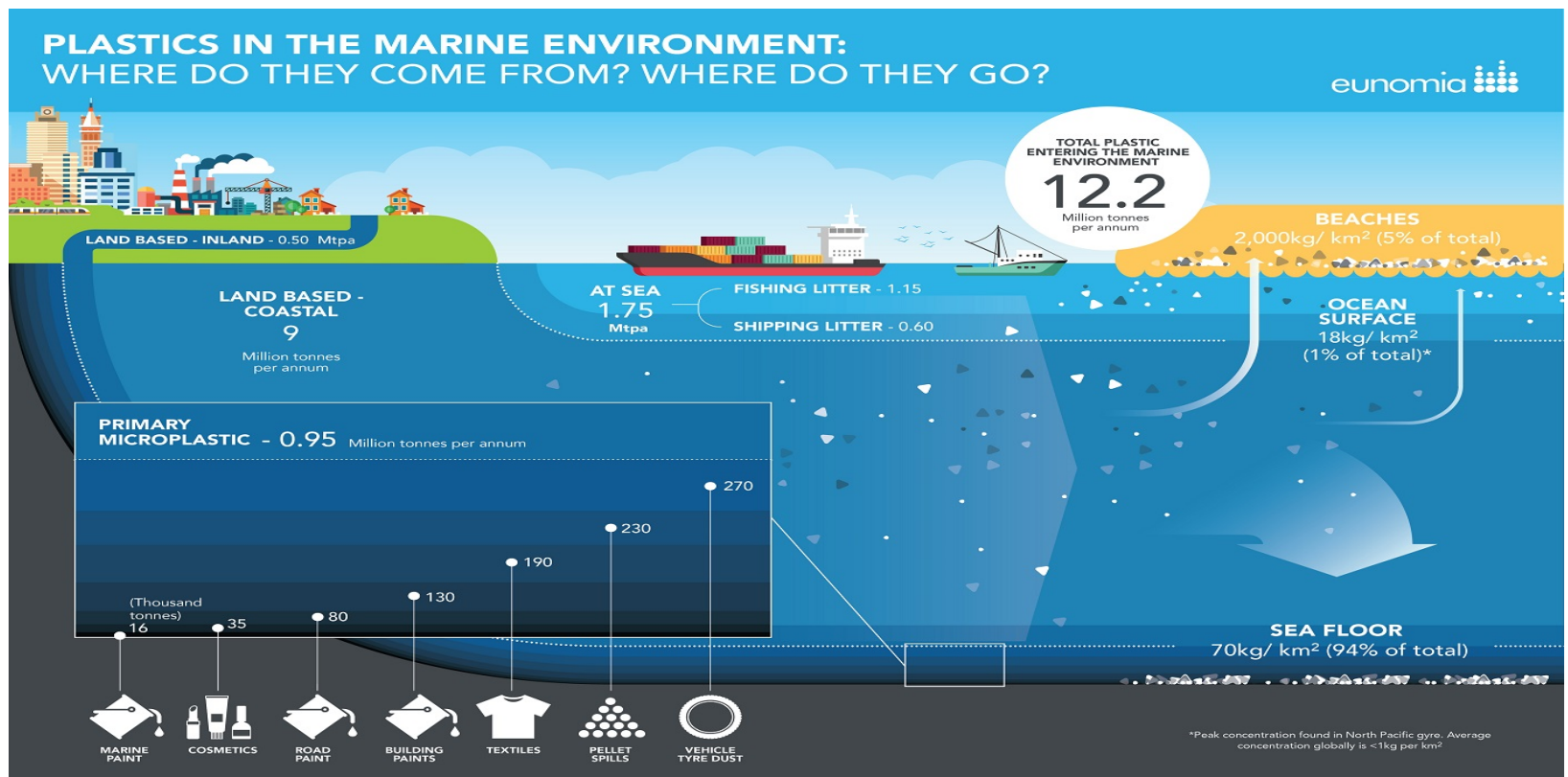
Mismanagement of plastic waste



Source: <https://images.newrepublic.com/57ef6f22a87081099a1e7c7d8d0232aff89b52e7.jpeg?w=768>

Plastic waste management cond'

- 12.2 million tons found its way to the ocean.



Source: <https://www.eunomia.co.uk/wp-content/uploads/2016/05/Eunomia-Marine-Litter-MED.jpg>

Implication of plastics in the ocean cond'

- Humanities activities such as industrialization and the associated plastic waste management has led to environmental degradation.
- According to studies plastic pollution affects 700 marine species and about 100 million marines mammals from plastic polution(Henn, n.d).
- How do plastics cause this havoc?

Source: <http://www.onegreenplanet.org/animalsandnature/marine-animals-are-dying-because-of-our-plastic-trash/>

Implication of plastics in the ocean cond'

- Let us evaluate from the perspective of plastic composition and its functions in the ocean.
- A study revealed that plastics exposed to the radiation of the sun consequently produce green house gases such as methane, ethylene etc (Waters, 2018).
- Climate change consequences due to GHG.

Implication of plastics in the ocean cond'

- What about the effect of its composition?
- Additives to plastics such as Bisphenol -A and phthalates are toxin to humans and animals (Nordqvist,2017).
- Marine lives eat plastic particles.



Source: <http://www.onegreenplanet.org/animalsandnature/marine-animals-are-dying-because-of-our-plastic-trash/>

Implication of plastics in the ocean cond'

- Marine poisoning is also at the microscopic level.
- Studies found that plankton, specifically the zooplankton ingest micro-plastics (Nagel, 2015).
- These first level of the marine food chain can not digest the micro-plastic and they it excrete it as faecal pellets in the ocean (University of Exeter, 2015).
- As the faecal pellets sinks to the ocean, it distributes carbon, nutrient and plastics to the various layers of the water in the ocean (University of Exeter, 2015).
- It is estimated that Humpback whale ingest roughly 300,000 micro-plastic particles (Nagel, 2015).



Source:https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcQ2el1TrDgeU7X_c-Y2OFV28rAfwuxumDqacyz8Q8QBgkDdqOgn

Implication of plastics in the ocean cond'

The poisonous micro-plastics are been circulated in the ocean. How do we know that? **Earth conveyor belt**: The **thermo-haline** circulation.

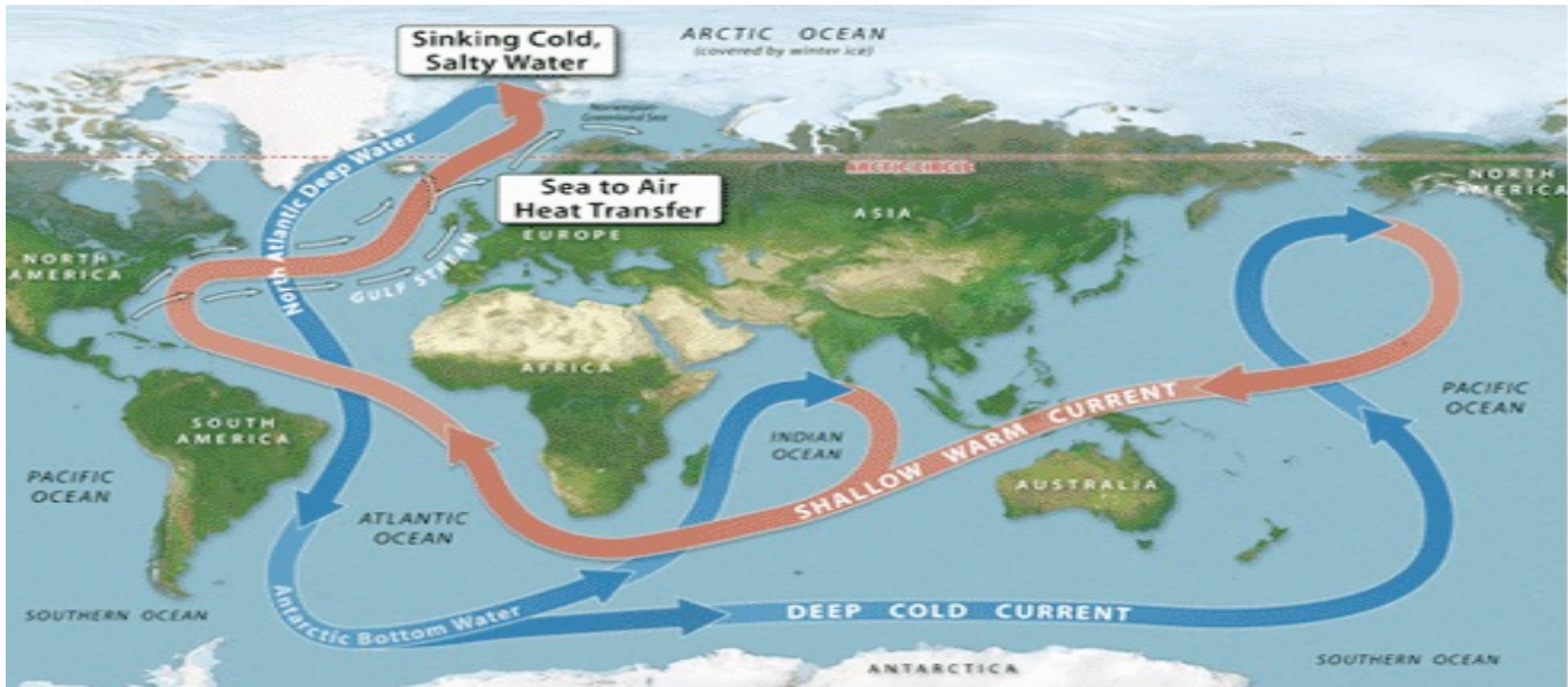


Diagram illustrating the major surface and deep water circulation components of the ocean that combine to form the **Global Conveyor Belt**

Credit: [The M Factory](#) © [Smithsonian Institution](#)

Implication of plastics in the ocean cond'

- What is the consequences of this continuous circulation of plastics poison?
- Marine food chain and human food poisoning.
- Studies revealed that Bisphenol-A a chemical used in making plastics has the effect of even affecting the generations of those that consumed it.
- Bisphenol-A consumption has the potential to affect the human hormone system, reproduction system, risk of cancer and behavioral disorder (Nordqvist,2017).
- Potential for marine lives extinction.



Source: https://as2.ftcdn.net/jpg/01/95/08/51/500_F_195085193_qVTaDTPAOtuS7HDc7g9XNpOWQixZjH7P.jpg

Implication of plastics in the ocean cond'

- Marine lives, ocean temperature and climate change.
- Additional GHG and ocean acidification.
- Could the loss of marine live affect the earth conveyor belt sequence and speed?
- In balance in natural cycles.
- Looming doom not visible to humanity.
- Conservation and sustainability, how?



Source: https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcTH4lzEGOAckTiwpTXdnycd_W2xtOsZaFgFxlHg19gv63xAV5vUIA

Conservation and sustainability

- Is conservation and sustainability of the environment at risk? Definitely, yes.
- How?
- **What is Conversation:** With plastics, can the Natural cycles (O_2 , Co_2 , H_2O , C) be maintained?
- **What is Sustainability:** Can the environment consistently provide its support to humanity?

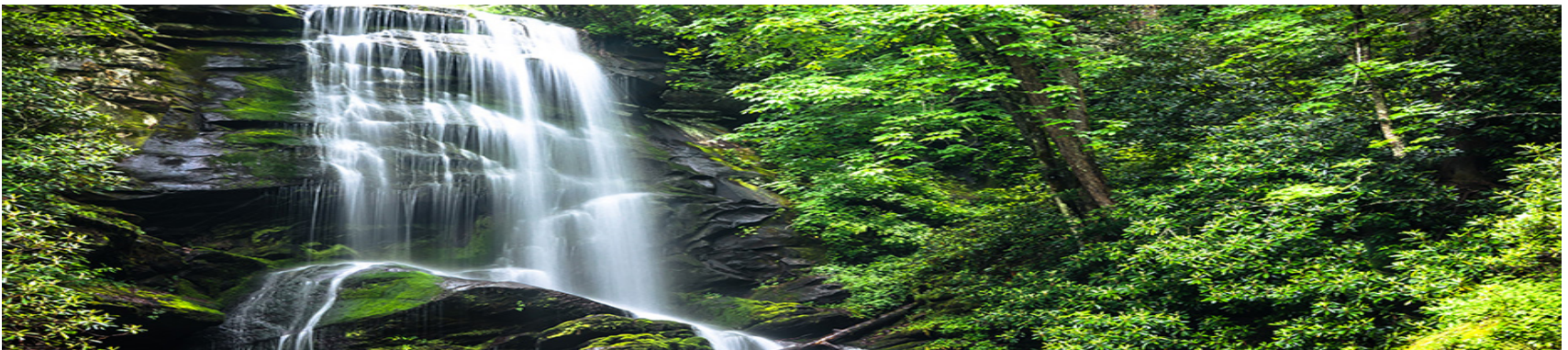
What is the way forward?

- Reuse where applicable, e.g. go with your shopping or grocery bag to shops.
- Dispose by recycling.
- Use water dispenser instead of disposable bottles.
- At beach adopt the principle “leave with what you came with.”
- Reduce the use of plastic bags.



What is the way forward cond'?

- There is need to rethink in terms of how we use plastics.
- Re-engine plastic in terms of the material of construction to avoid the use of toxin chemicals like Biphenol A (BPA).
- We need altitudinal change in terms of how we use plastic, more especially the concept of one time use.



Source: <https://blogs.cdc.gov/publichealthmatters/2017/04/whats-in-an-environment/>

Conclusion

- It is obvious that if we do have a sustainable means of managing plastics and we continually flood our oceans with plastic, the conservation and the ability of the environment to sustain us will be at risk.
- In sum, it is absolutely necessary that we should reconsider the design, production, use, and behavior towards plastic and that must change knowing that by 2025 an additional 33 billion tones of plastics would be exposed to the environment (Gomez, 2018).



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Thank you for listening.

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