

THE UNIVERSITY OF ZAMBIA

SCHOOL OF HUMANITIES & SOCIAL SCIENCES

DEPARTMENT OF DEVELOPMENT STUDIES
DEV 1150: INTRODUCTION TO DEVELOPMENT STUDIES

LECTURE HANDOUT


TOPIC: *ENVIRONMENT & DEVELOPMENT*

Prepared by J. NCHUNGO
Email: nchungo5josephat@gmail.com
Cell: 0978999263


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OUTLINE

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 2. What Environment is
 3. Types of environment
 4. Environment and Development Nexus
 5. Major Environmental Issues
 6. Int'l Environmental Agreements
 7. Remedy to Environmental Concerns
 8. Conclusion
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1. INTRO

- ❑ The concept of Environment is very crucial in that, it is through it that life is supported
 - ❑ Nearly everything you can talk about directly or indirectly comes from the environment
 - ❑ The foregoing makes it difficult to talk about or plan for development [Development Planning] without mentioning the environmental implications.
 - ❑ Environment is one of the critical dimensions of development (as earlier discussed in this course)
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- ❑ Most discussions about the environment are usually said within the context of social and economic development
 - ❑ Furthermore, we discuss environment in relation to population because the two have a symbiotic relationship (they mutually reinforce each other).
 - ❑ The purpose of this lecture is to define what Environment is, its types , functions and the nexus to development and then conclude.
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2. WHAT ENVIRONMENT IS

- The surrounding within which both living and non-living things exist and interact.
- It is commonly used to refer to the earth's surface
- environment goes beyond the earth's surface to include the earth's inner side (core or mantle) and the earth's outside (atmosphere).

3. TYPES OF ENVIRONMENT

There are many types of environment but for the purposes of this discussion, we shall dwell on the following;

- Physical Environment** – naturally occurring such as rivers, lakes, mountains, air etc and all organisms that live in it.

- Within the physical environment, we find three (3) forms as follows;



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- ✓ **Atmosphere** – contains gases such as oxygen, hydrogen, nitrogen (a combination of which form air).
- ✓ **Hydrosphere** – which is a wet environment that consists of water and covers most of the earth's surface
- ✓ **Geosphere** – contains hills, mountains, valleys etc

- ☐ **Man-made environment** – this is the environment created by man's activities such as building cities, bridges, underground or underwater buildings and other artificial things

4. ENVIRONMENT AND DEVELOPMENT NEXUS

The nexus between environment and development can be talked about in terms of its support to the existence of mankind both bio-socially and economically;

- ❑ **General Life Support** - The environment contains ingredients essential for life, health and human welfare. Such include:
 - ✓ Food produced or harvested from nature ;
 - ✓ Oxygen supply
 - ✓ Greenhouse gases (methane, nitrous oxide, Chlorofluorocarbons, water vapour, Ozone etc) in the atmosphere give us the current warm temperatures that keep the earth habitable.

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- ❑ **Supply of Raw Materials** - The environment provides the raw materials that are physical inputs used up in our production and consumption processes. Most raw materials used in the production processes are derived from the environment
- ❑ **Absorption of Waste Products** -The environment performs the '**sink-function**' i.e. assimilates waste materials e.g. Fumes and residues from industrial processes end up in the atmosphere, soil or water systems; Households also produce waste (garbage) which is thrown into the environment.
- ❑ **Aesthetic value/scenic beauty** - The environment provides aesthetic value to mankind and is the main driver of tourism development.



5. MAJOR ENVIRONMENTAL ISSUES

As human beings try to use the environment, they in the process create negative impacts on the environment and its habitants in the following ways;


- ❑ **Air and water pollution** – the air and water are being polluted from industrial fumes and toxic substances released in the air and water as by-products (wastes).
- ✓ Air pollutants (sulphuric by-products and related) have risks of causing acidic rains which may destroy crops (vegetation), corrode buildings.
- ✓ The pollutant released in the water equally changes the pH (potential of hydrogen ions) of water from neutral (pH 7) to either acidity (pH below 7) or alkalinity (pH above 7). These have an ultimate adverse impact on fauna (animal life) and flora (plant life).
- ✓ There are clear examples of this in Zambia's major mining and manufacturing hubs like Copperbelt , North-western, Central (Kabwe in particular) and Lusaka provinces.

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- ❑ **Biodiversity loss** – this is the extinction of some species (fauna and flora) due to climatic changes caused by human activity on the environment.

 - ✓ For instance, some species may migrate from one region to another when the environment is not favourable for their survival.

 - ✓ Just like human beings (homo sapiens) migrate from one country to another in search for greener pastures (causing a biodiversity loss called ‘brain drain’) so do other species on the earth.

 - ✓ In some cases, some animals (carnivorous [feed on other animals]/herbivorous [feed on vegetation] /omnivorous [feed on both vegetation and animals]) may prey on other animals if they run out of food options that form the normal ecosystem on the environment causing biodiversity imbalance or even loss on the preyed animals.
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- ✓ This is why every development project (e.g. mining project, manufacturing hub etc) must be assessed in terms of its impact on the same through what we call;
- ✓ Environmental Impact Assessment (EIA) –impact on the environment ; and
- ✓ Social Impact Assessment (SEA) – impact on the wellbeing of people including those likely to be displaced by the undertaking.
- ✓ In Zambia, most of the EIA/SEA are carried out by The Zambia Environmental Management Agency (ZEMA), Zambia’s agency responsible for environmental regulation as established through The Environmental Management Act number 12 of 2011.

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- ❑ **Climate change** – this is a long term shift in the weather pattern. Due to the emission of toxic gases in the air, the ozone layer (O_3) which helps to trap the sun's excessive harmful ultra-violet rays from hitting the earth's surface gets depleted causing excessive changes in weather patterns.
- ✓ When this is prolonged, the resultant is climate change which also leads to biodiversity loss. Having consistent rainfall during (previously) dry seasons or having no or little rainfall during rain seasons is an example of climate change.
- ✓ The ozone layer (O_3) in the atmosphere protects us from harmful ultraviolet radiation from the sun and also prevents the heat trapped on the earth from escaping into the space.

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- ✓ However, prolonged excessive heat causes global warming. Greenhouse gases keeps this temperature in balance through green house effect.
- ❑ **Anthropogenic emissions** from burning fossil fuels, agriculture and bush clearing are increasing the amount of artificial greenhouses gases in the atmosphere (more than the naturally occurring gases) causing them to trap more heat from escaping into the atmosphere or even deplete the ozone layer allowing more heat from the sun than necessary to reach the earth's surface leading to rise in the earth's temperatures (global warming).

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- ❑ **Deforestation** – this is the excessive cutting down of vegetation for economic reasons such as farming ('chitemene'/extensive farming) or charcoal burning.
- ✓ Most developing countries especially in Africa are still grappling with this problem because a large proportion of the population, most of whom live in rural areas, still directly depend on the environment for their livelihoods.
- ✓ There is now increasing awareness of deforestation and it is being countered through afforestation, which is the process of planting trees.



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- ❑ **Endangered species** - these are species which in the near future are likely to go extinct because of loss of habitat due to environmental changes or highly poached by poachers for various economic reasons.
- ✓ Sustainable development calls for the preservation of species so that future generations may also see them.
- ✓ But most species are being endangered so rapidly that they are becoming more extinct and this adversely affects future generations. Some of Zambia's endangered species include rhinos, Cheetah, African wild dog etc.
- ✓ There are also birds and plants that are endangered.

6. INTERNATIONAL ENVIRONMENTAL AGREEMENTS

The following are some of the international agreements/protocols on the environment;

- ❑ Convention on International Trade in Endangered Species of wild fauna and flora (**CITES**) - is an international agreement which was signed in 1973 in Geneva (Switzerland) and entered into force in 1975. It aims at regulating or restricting trade in certain fauna and flora that are likely to go extinct globally or regionally. It is administered by the United Nations Environment Programme (UNEP), a United Nations (UN) Agency.
- ❑ United Nations Framework Convention on Climate Change (**UNFCCC**) – was signed in Rio de Janeiro (Brazil) in 1992 by nearly 150 countries who unanimously recognised the potential threats climate change was likely to pose on the future of world environment and economic development and hence the need for concerted efforts to stabilise greenhouse gases in the atmosphere as a primary focus.

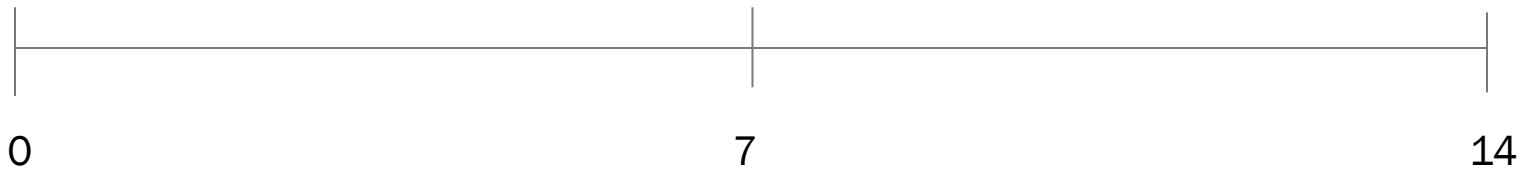
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- ❑ **Kyoto protocol** – this is an international agreement adopted in Kyoto, Japan in 1997 and became international law in 2005. It aims at reducing carbon dioxide emissions and other greenhouse gases
- ❑ **Paris Agreement** – came into force in 2016 whose aim was to keep global temperature rise below 2 (two) degree Celsius through mandatory reporting of emissions, new technology framework and global five year review mechanism.



7.REMEDY TO ENVIRONMENTAL CONCERNS

- ❑ Mining and manufacturing firms must be strongly monitored, evaluated and sanctioned in default
- ❑ Industrial by-products mainly come in three states of matter: Solid, Liquid and Gas
- ❑ Their toxicity lies on a pH (power of Hydrogen Ions) scale of **0** to **14**.



where by

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- ❑ 7 is an indication of neutrality (e.g water); closer to 0 is an indication of acidity (e.g. Sulphur) ; closer to 14 is an indication of alkalinity (e.g potassium)
- ❑ Before disposing off matter, substances must be tested in terms if their level of alkalinity or acidity
- ❑ Once this is done, they can be neutralised by adding the necessary chemical elements

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- ❑ This can make substances less toxic for nature (environment). Infact, some by-products with the correct pH can be used as bases and fertiliser supplements for crops instead of them being harmful.
- ❑ Certain by-products like metals and plastics should be recycled (re-used).
- ❑ Food-related waste products should be used as feed for animals such as pigs, ducks, chickens etc thus promoting an inter-industry linkage between manufacturing and agriculture rather than letting them litter the surrounding as garbage



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- ❑ There should be a radical change in mind-set towards the environment through environmental awareness (Rwanda has already set a very good example in Africa: anyone standing next to a littered place should be answerable for that litter).
 - ❑ More trees should be planted to counter deforestation
 - ❑ Environmental cleanliness should be a lifestyle and this can be achieved by inculcating this concept as early as possible (e.g. in primary schools).
 - ❑ More designated points for waste disposal must be placed and correctly disposed off by the relevant authorities
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8. CONCLUSION

- ❑ Environment is an important dimension of development
- ❑ It provides food and raw materials for our industries
- ❑ With the growing population in developing countries, there is too much pressure exerted on the environment leading to a lot of environmental ills.
- ❑ There is need to strengthen policies on environmental protection especially in developing countries to strike a balance between growing demands from population and environment



QUESTIONS FOR DISCUSSIONS

1. Take a quick survey of Lusaka city and identify place(s) with environmental concerns. Analyse the causes and effects of the same and suggest possible novel solutions.
2. Zambia has been a mono-economy since independence. Discuss the impact mining activities have had on the environment in the mining zones of Copperbelt and Northwestern provinces. How can we strike a balance between the environment and development in that regard?
3. You are a Development Planner and have been tasked to produce an Environmental Impact Assessment preliminary report by the Ministry of National Development Planning of the Republic of Zambia on the possibility of constructing a heavy mining plant in the Kafue National Park deemed to transform the Zambian economy into an Upper Middle Income country. Highlight key things that would be of concern to you in national interest.

END

THANKS

