

Climate Change: Implication for Library and Information Professionals

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Abstract

This study examined global warming and its implication for library and information professionals. The problems associated with global warming were identified and solutions proffered. It concludes that the issue of climate change adaptation should also be addressed through international cooperation and Libraries should include global warming in user-education programs during orientation programme for fresh students in the Nigerian Universities, global warming should be one of the points of emphasis and libraries should recycle their old papers, rather than resorting to burning or discarding them to avoid fossil being emitted to the atmosphere.

Keyword: *Global Warming, Greenhouse gas, Green Library; Climate Change, Fossil Fuels*

1. Introduction

Climate change is the defining human development is ultimately about expanding human potential and enlarging human freedom. It is about people developing the capacities that empower them to make choices and to lead lives that they value (UNDP, 2007). Climate change threatens to erode human freedom and limit choice.

Climate change is now scientifically established fact. Today, we are witnessing at firsthand what could be the onset of major human development reversal in our life time. The exact impact of greenhouse gas emission is not easy to forecast and there is a lot of uncertainty in the science when it comes to predictive capability. But we now know enough to recognize that there are high risks, potentially catastrophic ones, including the melting ice sheets on green land and the West Antarctic and changes in the course of Gulf Stream that would bring about drastic climatic change. Climate change is already affecting some of the poorest and most vulnerable communities around the world. A world-wide 30 centigrade increase (compared to pre0industrial temperatures) over the coming decades would result in a range of localized increases that could reach twice as high in some locations. The effect is increased droughts, extreme weather events, tropical storms and seal level rises on large parts of Africa. On many small island states and coastal zones will be inflicted. But some of the world's poorest people, the consequences could be apocalyptic (Human Development Report, 2007/2008).

In the long run, climate change is a massive threat to human development and in some places it is already under running the international community's extreme poverty and efforts to reduce other consequences violent conflicts, insufficient resources, lack of coordination and weak policies continue to slow down development progress, particularly in Africa (Human Development Report 2007/2008). How the world deals with climate change today will have a direct bearing on human development prospects of a large section of humanity. Failure will consign the poorest 40 percent of the world's population- some 2.6 billion people to a future of diminished opportunity. Thus, governments and non-governmental organizations (NGOs) both locally, nationally and internationally are quickly looking at the effects of climate change on sundry aspects of life with view to mitigating and solving them.

This provides the motivation for the author of this paper to address the implication of Global Warming on the Library and Information Professionals. If climate change has effects on agriculture, business and the entire national economy, it must also have serious effect on library and information materials, services and the personnel.

2. Objectives of the Study

The Study has the Following Objectives:

1. To create awareness and sensitize information professionals on Global Warming.
2. To examine the implication of global warming on library and information professionals.
3. To suggest ways to combat the effects of climate change on library and information service.

3. Literature Review

3.1 The concept of global warming

The term Global Warming refers, to the observation that the atmosphere near the earth's surface is warming. This warming is one of many kinds of climate change the Earth has gone through in the past and will continue to go through in the future (NOAA Satellite and Information Services, 2008).

Increase in the global average surface temperature resulting from enhancement of the greenhouse effect, primarily in air pollution. In 2007 the UN Inter governmental panel on climate change forecasted that by 2010 global average surface temperatures would increase 3.2 – 7.20 F (1.8 – 4.0C), depending on a range of scenarios for green house gas emissions, and stated that it was 90 percent certain that most of the warming observed over the previous half century could be attributed to green house gas emissions produced by human activities (i.e industrial processes and transportation). Gases created through human industrial and agricultural practices (primarily carbon dioxide from burning fossil fuels and wood, as well

as methane, nitrous oxide, and chloro-fluoro carbons) increase the heat-reflecting potential of the atmosphere, thereby raising the planet's average temperature.

Global warming is when the earth heats up (the temperature rises). It happens when green house gases (carbon dioxide, water vapor, nitrous oxide, and methane) trap heat and light form the sun in the earth's atmosphere, which increases the temperature. This hurts many people, animals and plants. Many cannot take the changes, so they die. (National Climate Data Centre, 2008, Google Business, 2006).

3.2 Why is Global Warming Important?

Temperature increases will have significant impacts on human activities, including where we can live, what food we can grow, how and where we can grow food, and organisms we consider pests can thrive. To be prepared for the effects of these potentials impacts we need to know how much the earth is warming, how long the Earth has been warming, and what has caused the warming. Answers to these questions will not only provide us with a better basis for making decision related to issues such as water resources and agricultural planning, it will also enable us to take precautions on the aspects it affects our profession.

3.3 What are the green house Effects?

The greenhouse gases effect is when the temperature rises because the sun's heat and light is trapped in the earth's atmosphere. This is like when heat is trapped in a car. On a very hot day, the car gets hotter when it is out in the parking lot. This is because the heat and light from the sun can get into the car, by going through the atmosphere, but it can't get out. As a result, the temperature rises (World Almanac, 2000).

Our planet absorbs radiant energy from the sun and emits some of that energy back to space. The term greenhouse effect describes how water vapor, carbon dioxide, and other greenhouse gases in the atmosphere alter the return of energy to space, and in turn, change the temperature at the Earth's Surface. These greenhouse gases absorb some of the energy that is emitted from the Earth's surface, preventing this energy from being lost to space. As a result, the lower atmosphere warms and sends some of this energy back to the Earth's surface. When the energy is recycled in this way, the earth's surface warms (National Climatic Data center, 2008). Although the greenhouse effect makes the earth able to have people living on it, if there is too many gases, the earth can get unusually warmer, and many plant, animals and people will die. They will die because there would be less food (crops like corn, wheat and other vegetables and fruits). (National Climate Data Centre, 2008, Think quest, 2008).

3.4 What are Green House Gases?

Greenhouse gases are gases in the Earth's atmosphere that collects heat and light from the sun. With too many greenhouse gases in the air, the earth's atmosphere will become too hot which lead to catastrophic effect on human, plants and animals.

Greenhouse gases occur naturally in the earth atmosphere, but are also being added by human activities. This happens primarily through the burning of fossil fuels, such as coal, oil and natural gas, which releases carbon dioxide to the atmosphere. Many scientists have now concluded that global warming can be explained by a human caused enhancement of the greenhouse effect (National Climate and Data Center, 2008; and United States Environmental Protection agency, 2001).

4. Global Warming and the Environment

Global warming is affecting many parts of the world. Global warming makes the sea to rise, and when the sea rises, the water covers many low land islands. This is a big problem for many of the plants, animals and people on islands. The water covers the plants and causes some of them to die. When plants and animals die, people lose two sources of food, plant food and animal food. People may also lose their homes. As a result, they would also have to leave the area of die.

The oceans are affected by global warming in other ways as well. With the oceans getting heated up, it is harming and killing algae on the ocean. An alga is a producer that we can see floating on top of the water. Algae produces food for other animals through photosynthesis, and serves as food to many consumers in the ocean such as small fishes, crabs, whales and many other animals. When the alga is destroyed as a result of too much heat, it has a spiral effect on other animals in the sea, and consequently, man is affected. Global warming does not only affect plants and animals in the sea, it is also destroying many big forests. The pollution and causes global warming is linked to acid rain. Acid rain gradually destroys almost everything it touches. Global warming is linked to acid rain. Acid rain gradually destroys almost everything it touches. Global warming is also causing many more fires that wipe out whole forests. Some plants and trees leaves can be so dry that they catch on fire. One of the biggest dilemmas concerning Global Warming is the cutting down of the rainforest for any reason. Plants naturally absorb carbon dioxide and give off oxygen in the process of photosynthesis, so the CO₂ is taken out of the atmosphere. We are cutting down forests, which reduce the number of trees that will take CO₂ out of the atmosphere, and also the CO₂ in the trees is released.

4.1 Consequences of Global Warming

The following are identified consequences of global warming upon the Earth:

- It will change weather patterns. Where precipitation is greater than evaporation, there will be floods; while where evaporation is greater than precipitation, there will be droughts.
- Alters the oceans. The entire ecosystem of the North Sea is in a state of collapse, "record sea temperatures are killing off the plankton on which all life in the sea depends, because they underpin the entire marine food chain. Fish stocks and sea bird population have slumped".

- It will change Ecosystem and Habitat. In addition to habitat loss from urban sprawl and pollution, warming will also be a major factor. A quarter of all species of plants and land animals, or more than a million in all, could be driven to extinction". Massive extinction has accrued five times during the earth's history. The last one was the extinction of the dinosaurs, 65 million years ago. Scientists are calling what is occurring now, the Sixth Mass Extinction.
- Public Health Issue. Warming will increase the spread of infectious disease, heat, stress and also malnutrition because of its impact on agriculture. A heat wave in Europe killed an estimated 35,000 people.
- It will cause Ice to melt and seas to Rise. The ice sheets in the two poles and Greenland, and in mountain glaciers around the world, are melting. The result is that the sea level has begun to rise at a measurable and alarming rate.
- Scientists also say that the extreme weather phenomena such as floods, droughts, heat waves, cyclones and dissipation being experienced in different parts of the globe are among the far reaching consequences of climate change (Abutu, 2009).
- Creates Abrupt Warming. Available evidence suggests that abrupt climate changes are not only possible but likely in the future, potentially with large impacts on ecosystems and societies.
- Creates Abrupt Cooling which is equally catastrophic. (Eco Bridge, 2009).

4.2 The Library and Climate Change

Libraries all over the world have several factors justifying their existence. Libraries can be learning –Centre, information providers, cultural institutions, guardians of a cultural heritage as well as architecturally exciting monuments that together with museums, religious centers and other significant buildings make up an important part of a city's profile (Cullhed, 2005).

A library is always a storage space for library materials and a working place for both personnel and patrons. To be able to effectively perform its functions as a safe storage space for information, it is necessary to surround the collections with technical systems which will protect the materials from damage and chemical breakdown that otherwise would make the materials inaccessible in a near or distant future. Preservation is therefore a core issue for that information for the future. National Libraries Universities, public libraries as well as special libraries have this responsibility.

Crucial factors for a successful protection of a library collection are for example, proper care and handling, practical conservation treatments and digitization, or other means of duplicating. A disaster plan is essential, and, the perhaps the most effective means of slowing down the chemical deterioration is storage of materials that are to be kept for use both now and future, in climatically controlled Stacks. Chemical breakdown is considered to be double per every 10 (ten) degrees 0C, and low temperature storage is therefore ideal. High levels of

humidity can cause mould in both the high and low temperature cause mould in both the high and low temperature range which has to be kept under control. In a hot and dry climate, desiccation can cause significant distortion in certain materials such as vellum. Thus, in cognizance of the difficulties involved in climate control, IFLA guidelines states “in general, the library materials should be stored and used in stable condition such are not too hot, too dry, and not too damp”. (IFLA, 2015).

4.3 Energy and Libraries

During the heat wave in Europe in the summer of 2003, technical systems were strained on the breaking point in libraries and other institutions in the cultural sector, which are dependent on an even preservation climate for the safe guarding of their collections (Culled, 2005). Building such as the museum of modern art in Vienna, with its black basalt stone façade, and the Bibliotheque Nationale in Paris with its glass towers, both had problems keeping the temperature within reasonable levels. Within the European commission Fifth framework for research, which was completed in November, 2004, the issues of buildings of buildings and sustainable energy solutions were addressed within the CUBART – Project or the European Architecture with integrated Renewable and Real Time user feedback. The innovative energy system contains the following elements:

- A highly insulated envelope
- Effective solar shading which uses natural elements such as trees and roof overhangs as well as shading by louvers run by photovoltaic cells.
- A low rate of natural air infiltration
- An exposed internal concrete construction, which retains the heat,
- An efficient low-pressure mechanical ventilation system
- An electrically powered heat pump for heating via the air and thermostatically controlled perimeter radiators.
- During the summer, it cools the building, making further air conditioning and refrigerating unnecessary.
- Excess energy can be exported to adjacent buildings
- The energy is 100% renewable
- Compact fluorescent lighting, occupancy sensors and sun-shading devices are also used to improve energy efficiency.

4.4 Adaptation and Mitigation

Adaptation to global warming consists of initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change. According to the former chief Scientific Adviser to the UK Government, David King, as cited by Wikipedia (2009), it is likely that adaptation to global warming is inevitable as it is unlikely that levels of greenhouse gases can be kept low enough to avoid a projected temperature rise of 20 c.

Climate change mitigation is about transforming the way that we produce and use energy. It is about living within the bounds of ecological sustainability (Human Development Report 2007/2008). Extremes, variability, and rates of change are key features in addressing vulnerability and adaptation to climate change. The ability of human systems to adapt to and cope with climate change generally depends on such factors as wealth, technology, education, information, skills, infrastructure, and access to resources, management capacities and sociopolitical will.

Adaptation to climate change is necessary principally for two reasons:

- (i) It is a strategy to compliment climate change mitigation efforts because it is sure that all climate change can be mitigated.
- (ii) Adaptation has the potential to reduce adverse impacts of climate change and to enhance beneficial impacts. There is potential for more advantaged and less advantage countries to enhance and/or acquire adaptive capabilities.

5. The Way Forward

In the context of libraries and information centers following key points are to be adhered to help in contributing reduce the carbon emissions:

- Libraries should include global warming in user-education programs. During orientation programme for fresh students in the Universities, global warming should be one of the points of emphasis.
- Libraries should recycle their old papers, rather than resorting to burning or discarding them to avoid fossil being emitted to the atmosphere.
- Libraries should check weather alerts and warnings from the Weather Service stations and disseminate information to help individuals, communities and business plan for and reduce the effects of extreme events.
- Libraries and their management should ensure that their staff work in an air conditioned environment in order to avoid heat wave and stay healthy. This presupposes that all the necessary infrastructures should be in place.
- In time of power outages, staff should stay out of extremely hot office and take fresh air outside, take plenty of fluids, wear light clothing, etc.
- More pragmatic approach should be given to awareness campaign on global warming by the government both at federal, state and local levels.
- Awareness campaign should be carried to schools, market places and motor parks with emphasis on the role of individuals at mitigating the effects of climate change.
- At school level, young people should be encouraged to be involved through formation of Climate Change Clubs, societies, etc.
- To further drive home the message on global warming, programmes should be regularly organized in both radio and television programmes in local languages of various ethnic groups.

- As part of the government's effort at combating global warming effects, environmental sanitation exercise which is observed monthly should be given legislative backing to achieve the much desired result.

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