

# ENVIRONMENTAL EDUCATION STRATEGIES IN CURBING GLOBAL CHANGES FOR SUSTAINABLE DEVELOPMENT IN NIGERIA

BY

**KOBANI, Doreen Ph.D**

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**WAMI, Chinweike Kevin Ph.D**

Department of Adult Education and Community Development, Faculty of Education, Rivers State University, Nkpolu – Oroworukwo, Port Harcourt.

## Abstract

*This paper is an exploration of Environmental education strategies in curbing Global changes for sustainable development. Global changes refer to various global situations interpreted in global challenges which range from social, economic, cultural, political to environmental spheres such as climate change, pollution, peace and conflict, science and technology, energy, clean water, status of women and so on. However, this paper focuses on global changes from an environmental perspective. Education is a fulcrum on which the social, economic and environmental aspects of sustainable development stand as it can enhance employment prospects, improve health, conserve and stabilize the ecosystem and help grow active citizens. Sustainability in all ramifications is becoming a real challenge globally especially in the area of Environmental Education in connection with tackling global changes. Communities need a lot of information and innovation in order to develop new knowledge, new technologies, new methods and approaches, new lifestyles and new projects to cope with global changes. This paper however, observed that, environmental education is facing a lot of hurdles which have impeded its capacity to effectively tackle the challenges of global changes such as: Lack of public funding and privatization and commercialization of education and marginalization of adult non formal education. Therefore, the paper recommended that: apart from sustained and proper funding of environmental education, there should be intensified and sustained advocacy, sensitization and mobilization of all stake holders to support environmental and Non-Formal Education in this country which has the role of raising in citizens the consciousness of the impact of imbibing deliberate positive lifestyles and behaviour which can be used for conservation of energy which in turn affects climate, poverty level and development generally.*

**Key words:** Environmental education, Environmental Education Strategies, Global Changes, Sustainable Development, Pollution, Global warming.

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## Introduction

The environment is a surrounding. To an environmentalist, environment comprises the land, water, air and other physical structures observable around an organism or a group of organisms. But from an ecological viewpoint, environment is simply an ecosystem (Olaniran, Akpan, Ikpeme and Udofia 1995). As time progresses and activities of man continues, the environment has never remained the same but changes in line with man's activities and ways of life. Similarly, Ndukwe (2000) stated that environment is a description of physical matter, being the air, the land, the water, natural resources, flora and fauna and the cultural heritage (being items of archaeological, historical, artistic, and scientific interest). it could also be a description of a non-physical sense of surroundings and perceptions. Man's relationship with his environment is unique. According to Fadeiye (2001), the influence of the environment on man could be observed in his pattern of settlement, his type of occupation, the type of transportation system, his mode of dressing, his consumption habit, shelter, mode of worship (religion), the time he rests or sleeps and a lot of other activities of man are being determined by his physical environment. The environmental changes ranging from ecological problems like damage to natural habitat, the conservation of flora and fauna and problems such as emission of dangerous gasses into the atmosphere that adversely affect man's health.

According to Duarte (2012) Global changes is the impact of human activity on the key processes that govern the functioning of the biosphere. These include, but are not limited to, the climate system, the stability of the

stratospheric ozone layer, the cycles of elements and materials essential for life (biogenic materials), such as nitrogen, carbon, phosphorus or water, and the balance and distribution of species and ecosystems. Global changes are complex processes; many interconnected factors can be regarded as either causes or consequences. There is controversy about several aspects, particularly those that have economic, social and political implications. Collectively, these changes impact on society leading to economic losses, migrations, conflicts, risks to human health and lives, compromise water and food security, loss of ecosystem services, reduced resilience of human societies, and a decline of the environmental basis of our well-being. Since the late 1970s, attention has been focused on stratospheric ozone depletion, which is leading to increased ultraviolet (UV) radiation of the biosphere, and on accumulation of atmospheric greenhouse gases, which many authorities believe to be inducing global warming. Ozone depletion and global warming and their accompanying effects both on human health as well as the environment which range from contamination with pesticides and toxic chemicals and damage to aquatic ecosystems, agriculture, certain kinds of vegetation, and building materials due to acidic deposition, and so on. Like ozone depletion and global warming, these features are associated with industrial development and energy use, especially fossil fuel combustion and dispersal into the air, water and soil of industrial products and toxic wastes. Other features of global change are depleted supplies of arable land, fresh water, and renewable and non-renewable resources, and species extinction that reduce biodiversity. Other forms of global changes as interpreted as global challenges include peace and conflict, science and technology, energy, clean water, status of women, population and resources, democratization, and so on. Adult education, especially non-formal adult education, contributes to the individual as well as collective development of societies in many ways. Firstly, adult education provides knowledge, skills and competences that can be used both in professional and private life. Secondly, it promotes transversal and generic skills, i.e., social skills, communication skills, analytical skills etc., sometimes also called “life skills”. Newer concepts of civic education or global citizenship education within adult education (among many other similar concepts) draw on the idea of education as a tool for empowerment. Adult education can trigger sustainable development on various levels – the social, economic, and even ecological level.

While adult education promotes learning and training in order to acquire and update skills, knowledge and competences, the SDGs are a global framework to tackle common challenges for development. However, when approaching the idea of adult education, the close connection and inter-linkage of the two policy fields become visible: non-formal adult education has other purposes besides providing skills, knowledge and competences. Social inclusion, the promotion of active citizenship, health and personal well-being are among the most prevalent objectives. Non-formal adult education also aims to enlarge the choices that people make in their personal and professional lives. Adult learning contributes to the achievement of all SDGs by building the foundations of change in the social, political, economic, ecological and cultural spheres.

### **Sustainable Development**

Sustainability has relatively gained a wide range of discussion in recent times in development literature and among development experts. However, Tammemagi (1999) observed that it has received wider acceptability and has become the cornerstone of many development policies. Thus, as noted by Onokerhoraye (1995) we now hear social sustainability, cultural sustainability political sustainability, environmental sustainability and economic sustainability. The ideal of sustainable development started in the 1970s when government of many nations began to recognize that environmental problems were beginning to threaten the globe. This concern according to Tammemagi (1999) was first articulated in the United Nations Conference on Human Environment held in Stockholm in 1972. From this conference, the World Commission on Environment Development was established with a mandate to examine the influence of development on the environment (Kobani and Mba, 2021).

It was in the report of this commission titled “Our common Future” released in 1987 that the term “sustainable development was first used. 'Our Common Future', also known as the Brundtland Report stated: 'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Kobani and Alozie, 2016). In a general term, sustainable development therefore means to conserve, reserve, use and manage resources and undergo the process of development in such a way that what we do to improve life and living standard today does not compromise future use of resources and improvement in life and living standards. Jhinga (2004) noted that the aim of sustainable development is the creation of sustainable improvement in the quality of life for all the people. The essence of sustainable development is well summarized by the World Commission on Environment and Development (1987) as the exploitation of resources, the direction of investments, the orientation of technological development and institutional changes are all in harmony and enhance both current and future potential to meet human needs and aspirations. The concern of sustainable development in improving life and living standard and its emphasis on meeting human needs makes it a very useful tool in community development.

Whereas the effects of human activity on these processes may appear to be independent, these changes are connected by a common driver: the combination of the growth of human population, now exceeding 7 billion people, and the increased per capita consumption of resources, including water, energy, biogenic and synthetic materials, land, and biodiversity (Carlos, 2012). Carlos (2012) further stated estimates indicate that since 1986 the total demand of resources by humanity exceeded the surface available to deliver them, indicating that human consumption of resources is based on the use of non-renewable resources, such as fossil water in deep aquifers or fossil fuels, and is, therefore, not sustainable.

The use of resources in excess of the capacity of the Earth System to replenish them leads to changes in the Earth System, including anthropogenic climate change, increased Ultraviolet B (UVB) radiation resulting from the decline in stratospheric ozone, changes in the water cycle and land use, eutrophication of coastal and continental aquatic ecosystems, loss of biodiversity, desertification, and an overall decline in the quality of air, water and soil. These changes, in turn, interact with one another, and affect the patterns of resource use by humans, creating feedback and blurring the path of cause and effect. UV-B has harmful effects on a wide range of biological systems. It causes DNA damage proportional to the intensity and duration of exposure; small, delicate organisms suffer more damage than large robust species, such as humans.

### **Effects of Global changes on Human Health**

Global warming: 2011-2020 was the warmest decade recorded, with global average temperature reaching 1.1°C above pre-industrial levels in 2019. Human-induced global warming is presently increasing at a rate of 0.2°C per decade. An increase of 2°C compared to the temperature in pre-industrial times is associated with serious negative impacts on the natural environment and human health and wellbeing including a much higher risk that dangerous and possibly catastrophic changes in the global environment will occur. For this reason, the international community has recognised the need to keep warming well below 2°C and pursue efforts to limit it to 1.5°C.

Immunosuppression: Induction of Immunosuppression by UV radiation has been demonstrated in animals and humans. This is independent of skin pigmentation, so all people everywhere are at risk from potential adverse effects on the immune system, including increased incidence and severity of infectious disease and enhanced risk of malignant changes.

Dermatological Effects (Cancer): Acute exposure to UV-B causes sunburn; chronic exposure leads to loss of elasticity and accelerated aging of the skin. Some fair-complexioned persons experience photo-allergy, which can be severe. The most serious effect of UV-B is the enhanced risk of malignant, melanoma and nonmelanoma skin cancer. Increased risk of other malignancies, e.g. cancer of the lip and salivary glands and intra-ocular melanoma, is uncertain. The relationship of UV radiation to cancer is discussed in detail in a current International Agency for Research on Cancer monograph, which concludes that there is convincing evidence for a causal relationship of malignant melanoma and non-melanoma skin cancer to UV radiation. Case-control studies suggest a higher risk of malignant melanoma related to a few episodes of acute sunburn, especially in childhood, than to prolonged low-level exposure with tanning. Cancer registry statistics demonstrate that the incidence rates of malignant melanoma have been rising and the age at onset has been declining for some years. Many, if not all, of these trends are almost certainly attributable to the popularity of sunbathing, rather than to exposure to rising concentrations of UV radiation; incidence rates can be expected to rise even more, perhaps rapidly, under the influence of higher concentrations of UV radiation. Mortality rates, however, have remained unchanged or have declined; this probably reflects early detection and efficacious treatment. This study may not be complete if the cause and effects of black soot in Rivers State is not mentioned. Studies have documented various effects of air pollution in Rivers State, notably acid rain and more recently, soot pollution (Chuks, 2015; Nduka and Orisakwe, 2010; Yakubu, 2018).

The fine particles in soot particulate matter (PM<sub>2.5</sub>) pose peculiar health challenges. When inhaled, the size of these fine particles enables them to penetrate deep into bronchiolar tissue causing oxidative stress and pulmonary inflammation, and possible deoxyribonucleic acid damage (Niranjan and Thakur, 2017; Valavanidis et al., 2013). Short-term effects of these are irritation of the eyes, nose and throat, cough, chest tightness, wheezing, dyspnea and acute exacerbation of asthma, while long-term effects include arrhythmias and lung cancer among others (EPA, 2017; Niranjan and Thakur, 2017). A study in England reported that residents of an air polluted town perceived that the pollution had worsened allergies, asthma, bronchitis and lung cancer (Howel et al., 2003). Similarly, common health complaints related to air pollution as reported in the Niger Delta region are difficulty in breathing, cough, exacerbation of asthma, and skin disorders (Godson, 2011; Obafemi and Eludoyin, 2012). These documented adverse health effects from exposure to soot establishes it as a major environmental risk to human health. Even with the existence of environmental laws and regulations like the Constitution of the Federal Republic of Nigeria, the National Oil Spill Detection and Response Agency

(NOSDRA) Act (2006), Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN) and National Environment Standards and Regulation Enforcement Agency (NESREA) Act of 2007, poor monitoring and regulatory control of the oil industry have contributed to an increase in environmental pollution (Sam et al., 2017).

Ocular damage: Ultraviolet radiation increases the risk of post-capsular and nuclear cataract and probably macular degeneration. Pterygium also occurs more frequently. Whether these effects are directly caused by UV radiation or by the combined effects of sunlight, heat, and dust is uncertain. Many other factors contribute to the risk of cataract formation; the role of UV radiation requires more careful risk assessment. A sustained 10% decrease in atmospheric ozone has been estimated to increase the risk of cataract by 5% per annum (1.6-1.75 million additional cases worldwide). The risk of malignant melanoma has increased by 10%, and the risk of nonmelanoma skin cancer by 26%.

Collectively, these changes impact on society leading to economic losses, migrations, conflicts, risks to human health and lives, compromise water and food security, loss of ecosystem services, reduced resilience of human societies, and a decline of the environmental basis of our well-being. Simple, linear thinking can lead, potentially, to major errors in addressing global change. For instance, the belief that climate change results from use of fossil fuels led to the promotion of biofuels. Yet, large scale production of biofuels is currently the main driver of deforestation in tropical countries which competes with crops for fertile land and water and requires increased application of fertilizer and chemicals to protect the crops, thereby generating added impacts on the climate system - from emissions of green-house gases from deforestation and NO<sub>2</sub> emissions from fertilized soils, and fuelling other components of global change. The complexity of this web of interactions defies the capacity of science to predict the outcome of these simultaneous changes with the associated interactions and synergies, and requires an approach based on complex system analyses and the consideration of non-linear responses and threshold effects.

Ultimately, however, the root of these processes relies on our patterns of consumption of resources, which we can manage, at least at the individual level. Our power to mitigate global changes relies on the options we exert every day as consumers to a large extent.

### **Pollution**

The word pollution has various meanings. However, under Nigerian law, Section 41 of the Federal Environmental Protection Agency Act Cap.F10 Laws of the Federation (2002) defines 'pollution' to mean:

“Man-made or man aided alterations of chemical, physical or biological quality of the environment to the extent that is detrimental to that environment or beyond acceptable limits.”

In the specific case of oil pollution, it could be said that oil pollution occurs when the above happens as a result of, or in the course of the extraction, storage or transportation of petroleum oil. It can be seen as the release of contaminants or pollutants associated with the extraction of crude oil into the environment.

Three main sources of oil pollution in the Niger Delta region of Nigeria have been identified as: Oil spills, gas flares and effluent and waste discharges.

### **Environmental Education**

Environmental awareness is to understand the fragility of our environment and the importance of its protection. Promoting environmental awareness is an easy way to become an environmental steward and participate in creating a brighter future for our children. The basic objective of environmental education is to promote environmental awareness among all sections of the society and to mobilize people's participation for preservation and conservation of environment (Adelagan, 2006). It is designed to achieve the following objectives:

1. To promote environmental awareness among all sections of the society
2. To spread environment education, especially in the non-formal system among different sections of the society
3. To facilitate development of education/training materials and aid in the formal education sector
4. To promote environment education through existing education/scientific/research Institutions
5. To ensure training and manpower development for environment education, awareness and training.
6. To encourage non-governmental organizations, mass media and other concerned organizations for promoting awareness about environmental issues among the people at all levels.
7. To use different media including films, audio, visual and print, theatre, drama, advertisements, hoarding posters, seminars, workshops, competitions, meetings and so on for messages concerning environment and awareness and

8. To mobilize people's participation for preservation and conservation of environment (Saka in Kobani and Alozie, 2016).

### **Environmental Education Strategies**

The following are opportunities and benefits of environmental education that can serve as environmental education strategies:

#### **1. Active citizenship and democracy**

People who participate in adult education also participate more in the community by voting, working as volunteers or taking active roles in the community. Adult education is the tool for developing critical thinking.

#### **2. Health and well-being**

Adults who participate in learning activities have a healthier lifestyle and enjoy life more. Adult education contributes to personal development and self-realization. The health of our society depends on lifelong learning.

#### **3. Life Skills, Professionalism for Individuals**

Adult education transforms lives. It provides new job opportunities, creates pathways for further learning, activates adult artistic passions and builds new social networks.

#### **4. Social affiliation, equity and gender equality**

Adult education supports greater social mobility and equalizes social inequalities. Adult education brings together people from different paths and stages of life. This contributes to democracy and social peace.

#### **5. Employment, Industry and work**

Workplace learning is one of the main drivers for adult participation in lifelong learning. Adult education increases innovation and productivity among employees, entrepreneurs and volunteers – making companies more successful.

#### **6. Digitalisation and Technology**

Adult education helps close the digital gap and gives individuals digital expertise. This is the key to personal development, employment, social inclusion, and active citizenship.

#### **7. Migration and demographic change**

Language and community education and intercultural learning create inclusive societies and cultures. Seniors who teach are more active, healthier, and work longer. Intergenerational learning enables the older and younger to benefit from each other's knowledge.

#### **8. Sustainability**

Adult education provides the skills, information, debate forum and creativity to develop new approaches that are necessary for sustainable development. A paradigm shift is only possible through critical, conscious, and innovative citizens.

#### **9. Adult education and international Collaborations**

Adult education contributes to the most important European and international strategies in growth, employment, innovation, equity, social cohesion, active citizenship, poverty reduction, climate change, internal market, migration, peace and more.

We have now seen that Europe has a number of challenges where adult education will be an important part of the solution. Adult learning is not only beneficial to the individual but also to society as a whole and economies. Through adult education, we can create a more innovative, equal, and sustainable society where people have the

skills and knowledge needed to live and work healthy and productive. As well as take an active part in cultural and civic activities throughout their lives.

In other words, adult education is an indispensable key that we need to address the challenges that Europe has today and will have for years to come.

### **Some other Strategies for the Implementation of Environmental Education**

According to Sumiani in Kobani and Alozie (2016) the objectives of environmental education can be realized in the implementation of the following programmes:

#### **a. Public Environmental Awareness and Education**

Action can be taken in a variety of areas to increase environmental awareness and education. Some of these categories are: environmental legal rights and responsibilities and associated consequences, use of the media, awareness raising campaigns, incorporation of environmental issues in mainstream education, increasing awareness and education in target groups and encouragement of public participation in environmental matters.

#### **b. Working with the Media**

The print, broadcast, and internet media can be a powerful ally in educating the public on environmental matters. In order to perform this role effectively, it is often necessary for the community and Government to work with the media (and sometimes educate the media). This is often done informally, through regular briefings and information centres.

#### **c. Educating Community and Traditional Leaders**

Traditional, religious and local community leaders can play an influential or even decisive role in how people act. This is particularly true in rural areas. Education of these leaders can assist in facilitating the implementation of environmental awareness. In working with such leaders, particular attention may need to be paid to issues of:

**Language:** Educational materials may be more accessible if they are in the local language. Translation can greatly increase the costs, but it may be necessary to consider whether limited translation might make the material functionally accessible.

**Literacy:** Posters, radio presentations and other approaches may be advisable if the local population (or leaders) have limited literacy.

**Clarity and Plain Language:** The materials should be easily understood, particularly if they are written in what may be person's second or third language. This means short sentences, simple words, and active verbs are preferred to high sounding ones.

#### **d. Celebrities in Media Campaigns**

As in any advertisement or public awareness campaign, the involvement of people that are well-known and respected public figures and effective use of the media can be a potent way of increasing understanding of the importance of environmental issues and enforcement. Newspaper, television, radio, magazines and other media can be used to quickly reach a large number of people.

#### **e. Focusing on Environmental Awareness**

Awareness-raising campaigns are often most successful when they are targeted at specific groups because information can be tailored to the activities, needs and challenges of the group. Additionally, involving organisations and communities in environmental protection and enforcement can create a sense of stewardship towards the environment, ease hardship through the collaboration and provide a forum for new ideas and greater participation Sumiani in Kobani and Alozie, 2016).

### **Challenges faced by Environmental Adult Education in the wake of Global changes**

Lack of public funding and privatisation and commercialisation of the adult education sector is increasingly affected by cuts in government budgets, leaving adult education programmes and providers ill-funded. At the same time, privatisation, and commercialisation of education, have become more important in the past few years. Private (profit-oriented) education providers make programmes less accessible as they often require high fees for course enrolment, therefore excluding those from more disadvantaged backgrounds. Experience shows that private service providers in adult education tend to offer education services of lower quality than public

services, often employing low-paid Facilitators and cutting on costs wherever they can, also not offering in-service training, upgrading and so on. Marginalisation of non-formal adult education as a result of the economic crises, most policymaking in adult education shifted its focus to Vocational Education and Training (VET). The argument for VET is often made in reference to the large numbers of the unemployed in the country on the one hand, and the many vacancies for specialised jobs on the other hand. Up-skilling and reskilling for employability is a priority not only for the institutions, but also governments at national level. Non-formal adult education has stepped to the background, despite recent studies such as the BELL study that have shown that learning in its many forms can lead to individual and societal well-being and prosperity. The direct correlation between cause and result is not as evident for non-formal adult education as for the VET sector, which means that short-term policy planning prefers to invest in VET.

### Recommendations

Apart from sustained and proper funding of adult education, there should be intensified and sustained advocacy, sensitization and mobilization of all stake holders to come and support Adult and Non-Formal Education in the country as a means to managing and controlling global changes.

In 2015, world leaders signed a major treaty called the Paris agreement, to put these solutions into practice. The main ways to stop climate change are to pressure government and business to:

- **Keep fossil fuels in the ground.** Fossil fuels include coal, oil and gas – and the more that are extracted and burned, the worse climate change will get. All countries need to move their economies away from fossil fuels as soon as possible.
- **Invest in renewable energy.** Changing our main energy sources to clean and renewable energy is the best way to stop using fossil fuels. These include technologies like solar, wind, wave, tidal and geothermal power.
- **Switch to sustainable transport.** Petrol and diesel vehicles, planes and ships use fossil fuels. Reducing car use, switching to electric vehicles and minimising plane travel will not only help stop climate change, but it will also reduce air pollution too.
- **Help us keep our homes cosy.** Homes shouldn't be draughty and cold – it is a waste of money, and miserable in the winter. The government can help households heat our homes in a green way – such as by insulating walls and roofs and switching away from oil or gas boilers to heat pumps.
- **Improve farming and encourage vegan diets.** One of the best ways for individuals to help stop climate change is by reducing their meat and dairy consumption, or by going fully vegan. Businesses and food retailers can improve farming practices and provide more plant-based products to help people make the shift.
- **Restore nature to absorb more carbon.** The natural world is very good at cleaning up our emissions, but we need to look after it. Planting trees in the right places or giving land back to nature through 'rewilding' schemes is a good place to start. This is because photosynthesising plants draw down carbon dioxide as they grow, locking it away in soils.
- **Protect forests.** Forests are crucial in the fight against climate change and protecting them is an important climate solution. Cutting down forests on an industrial scale destroys giant trees which could be sucking up huge amounts of carbon. Yet companies destroy forests to make way for animal farming, soya or palm oil plantations. Governments can stop them by making better laws.
- **Protect the oceans.** Oceans also absorb large amounts of carbon dioxide from the atmosphere, which helps to keep our climate stable. But many are overfished, used for oil and gas drilling or threatened by deep sea mining. Protecting oceans and the life in them is ultimately a way to protect ourselves from climate change.
- **Reduce how much people consume.** Our transport, fashion, food and other lifestyle choices all have different impacts on the climate. This is often by design – fashion and technology companies, for example, will release far more products than are realistically needed. But while reducing consumption of these products might be hard, it is most certainly worth it. Reducing overall consumption in more wealthy countries can help put less strain on the planet.
- **Reduce plastic.** Plastic is made from oil, and the process of extracting, refining and turning oil into plastic (or even polyester, for clothing) is surprisingly carbon-intensive. It does not break down quickly in nature, so a lot of plastic is burned, which contributes to emissions. Demand for plastic is rising so quickly that creating and disposing of plastics will account for 17% of the global carbon budget by 2050 (this is the emissions count we need to stay within according to the Paris agreement).

### Conclusion

Climate change is one of the most serious threats to human existence today on our planet. Fortunately, there are plenty of solutions to climate change. Core to all climate change solutions is reducing greenhouse gas emissions, which must get to zero as soon as possible.

Because both forests and oceans play vitally important roles in regulating our climate, increasing the natural ability of forests and oceans to absorb carbon dioxide can also help stop global warming. To work, all of these solutions need strong international cooperation between governments and businesses, including the most polluting sectors.

Individuals can also play a part by making better choices about where they get their energy, how they travel, and what food they eat. But the best way for anyone to help stop climate change is to take collective action. This

means pressuring governments and corporations to change their policies and business practices. Governments want to be re-elected. And businesses cannot survive without customers. Demanding action from them is a powerful way to make change happen and environmental education is the vehicle for the much-needed change in this regard when it comes to fostering in the citizens and the society at large the right attitudes, skills and behaviours to deal with global changes. However, it must first tackle the hurdles that stand in its path.

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