

Sustainable Development In Africa: the Continent Confronts Issues Of Population, Development, Technology And Science

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Introduction

The frame of reference for humanity is the continent of Africa. Humankind has been able to trace his/her early beginnings to a place where early travelers to this wonderful continent of bountiful natural resources called the “dark continent”. The early explorers of Africa such as David Livingstone and Mongo Park traveled to Africa in those early 16th and 17th century when the continent was unknown to many in the Western world. Closely following the arrival of the early explorers in Africa were those interested in the resources of the continent such as minerals and slaves. A wave of missionaries from Western countries also descended upon Africa and the focus was to make Africans Christians and to civilize Africans. Missionary schools and churches emerge in Africa as a result of the arrival of Europeans on the continent. In 1885 the scramble for Africa truly began with the decision in Berlin to divide Africa as colonies of European countries. Hence the British, French, Belgian, Portuguese and German divided the continent among themselves. In modern day Africa, the languages of the colonial rulers are the official languages of many of the countries of Africa. The arrival of Europeans on the continent accelerated trade and opened up the continent. In order to export raw materials overseas, towns and cities were developed along the coastal areas of the continent. In the southern and eastern parts of the continent Europeans and Indians settled and built towns. The modernization of Africa emerged as a result of urbanization. Migration from the rural to urban areas began as a result of modernization or the new urban centers that were being created along the coast of Africa. The main reason why the early towns of Africa were founded along the coast is because raw materials from the hinterland could be easily exported to the Western world from the coastal ports. Transportation such as roads and railroad connected industrial sites to the coastal towns. Thus, sustainable development in Africa could be examined from historical and current perspectives. The stage for the rapid transformation of the continent of Africa was set by the arrival of Europeans and Arabs. The establishment of trading posts and later the discovery of minerals increased the rate of transformation. The African condition has been described by many scholars, students, and development experts in ways that imply that an urgent attention is needed to reverse the steady deteriorating economic, socio-political and environmental trends. It would be accurate to argue that the present day condition of the continent is deplorable. In past years, many editorials in the popular media have described Africa as a place that does not matter in global affairs but this year, Sister Joyce Weller’s article which appeared in

the Spring issue of Seton Institute Journal seems to capture the overall depth of poverty in most of the countries of Africa. In discussing the situation of Nigeria, she observes:

Contained in a world filled with constant innovation and life-changing technology is a largely invisible world in which innovation crawls and technology cannot begin to respond to the life-altering conditions of devastating poverty. In this world, hunger, disease and hopelessness are constants. Nigeria is a country of this second world. Its beautiful people yearn for opportunity and for health. They work arduously, against many odds, to provide the basic necessities for healthy living, but are challenged by the lack of resources and economic deprivations caused by war and corruption (p.1).

Given the deplorable situation in most of the African countries, it appears that there is a basic question that needs to be addressed when discussing the sustainable development on the continent. The question is: What needs to be sustained and why? Brian Atwood, the United States Agency for International Development (USAID) administrator, in 1992, once defined sustainable development as an attempt to bring durable solutions to difficult problems. In this light, the difficult problems of Africa must be confronted by durable solutions. Development on the continent is unsustainable because of population issues, unplanned and haphazard construction or urbanization, staggering economy, the lagging of technology and science on the continent. Unsustainable development has resulted in chaotic circumstances in the socio-cultural, political, economic and environmental systems. For some African countries that are well endowed with natural resources, the extraction, transportation, transformation or conversion, distribution, allocation and utilization of the natural resources have exacerbated the decline in the environmental, economic and social order.

Before proceeding to discuss sustainable development in Africa, it is useful to understand that there are no single definitions for sustainable development and that scholars, developers and planners have provided a whole host of perspectives, approaches and definitions depending on their training and backgrounds. Another reason for why there is no single definitions is because the social, political, economic, cultural and environment issues do not present a single problem but several and as such the challenges for societies are many. Sustainable development demands a new way of thinking in order to maintain a balance between development and conservation and to alleviate poverty and achieve equity within societies and between generations. Janet Welsh Brown (1996) in her chapter in Denis Pirages book entitled: Building Sustainable Societies: A Blue Print for Post – Industrial World provides a working definition of sustainability which this author finds informative in addressing the sustainability issues in Africa.

Brown argues that in order to achieve sustainability, there is a need to improve the quality of life of all in the society especially those who are at the greatest disadvantage. There is also a need to build a consensus through public participation and ensure that people have access to information in order to make good decision about resource extraction, planning, allocation and utilization (James 1996). In addressing the sustainability question in Africa, the following issues are central on the continent: (1)

Population Dynamics, Settlement and Resettlement, (2) Poverty Alleviation (3) Development and Environment Degradation and Protection (4) Technology - - Indigenous and Imported/Transfer (5) Science and Education (6) Development Assistance - - Foreign Aid (7) Policy and Practice of Sustainable Development.

Population Dynamics, Settlement and Resettlement

Every country in Africa is experiencing rapid rate of population growth in both the rural and urban centers. The population growth rate in many urban areas of Africa vary from 2.5% – 3.2% annually. This is due to two factors: the migration from the rural areas into the urban centers and of course, the increased birth rate. The overwhelming population explosion is causing a lot of problems in Africa. These problems have shown up in the cultural, economic, social and ecological systems. One of the root causes of Africa's present day problem is the population explosion. The issues surrounding failure of political system and civil wars, economic depression and unemployment, land-holding system, low standards of living and miserable urban slums, mass migration from rural to urban centers are exacerbated by rapid population explosion. It makes wrestling with other societal problems very cumbersome. In Africa, like many other developing areas of the world, the number of new births that survive have increased due to improved health care and as such, although infant mortality is still relatively high, because many young women are having babies, the children in Africa are pressing hard on the shrinking economies of the countries of the continent. The demographic forces of rapidly growing population are causing major problems for which there is no short term solution. Population pressure are problematic for sustainable development and population projections for countries of Africa contain hard messages that are difficult to accept. For instance, modern Africa's development is predicated upon Western ideas. The high rate of urbanization was set into motion when service jobs were created by colonial administrative procedures. The African ruling elite continued the process of conglomeration in the urban centers. As the rate of population continues to grow, the new populations look for jobs in urban areas where the government and business institutions are usually located. Thus the inability to deliver services and housing lead to declined quality of the environment as people establish unsanitary conditions and spontaneous housing. Urbanization in some African countries have been increasing at alarming rates. Except for countries that have experienced some sort of civil strife which has decreased population in Africa, most of the continent shows great population increases. A large number of African countries seem to be guided by a haphazard colonial legacy of planning style without an authentic African style. For several decades during and after colonial rule, Africa's economies and environments were being transformed and the social and ideological beliefs of the people were being modified to respond to Western ideas and needs. Africa found itself passing through the revolutions of politics, agriculture, technology, industry and society all at once. Decades of colonial rule brought Africa and Africans into the Western economies and the urbanization trends that have emerged on the continent have not kept pace with the exponential growth in population.

Life in the rural areas of Africa is becoming difficult as people see the urban areas as places where their dreams can be fulfilled. As long as people continue to perceive the cities and urban centers as places where their hopes and dreams can be achieved, there will continue to be the exodus from the rural areas to the urban centers. It should be pointed out, however, that the degree of migration varies from country to country. In many countries of Africa where the movement from rural to urban areas has escalated to massive proportions, shanty towns have emerged in the peri-urban areas (outskirts of major towns and cities). As the towns and cities are unable to provide services such as water, sanitation, electricity, school, fire, roads, and telecommunication, these settlements become deplorable places for human habitation. The informal settlement also occurs with major urban areas where people create shelter out of unacceptable building materials. The materials used for construction do not meet building codes/standards and violate city and town ordinances. Such constructions are not sustainable. As the planning and development agencies which are usually run by the local and federal governments begin to crack down on such unauthorized constructions, and more organized patterns of development take hold, the informal settlers become displaced. These individuals usually move to another undeveloped public land and begin their unauthorized occupation of another publicly owned land again. Thus exacerbating the problems associated with unsustainable development.

The exponential population growth has been a major problem for land use and the quality of the environment. The population increase in Africa translates into a need for more land for agricultural production. It means that the savannas and forests are exposed to human conversion as people try to farm the land. Africa is a continent where the majority of the people (up to 65%) are farmers and land is of great importance to agriculture. But as the number of people who cultivate the land increases, the environmental degradation increases. Slash and burn agriculture and rotational agriculture require large acreage of land and over the years the number of cultivators has been on the rise. The increase in poverty in most African countries has led to the increase in the number of people who have turned to the land as a source of sustenance. In many parts of Africa, there is an aggressive attempt to increase agricultural output through the use of machinery, chemically based fertilizers, herbicides, fungicides and improved seeds. Mechanized agriculture and the use of chemically based substances have negative ecological impacts on the natural systems. If population is not stabilized, the social, ecological and economic systems of the continent will continue to decline. The most discussed of the problematic areas of development is human population explosion. Economists, anthropologists, sociologists, and natural scientists have debated and discussed their understandings of problems induced as a result of population growth.

The majority of the Africa's population does not receive adequate education. Illiteracy is a major problem which hinders development. Countries that have invested significant percentage of their Gross National Product (GNP) into directing education development of their societies have benefited enormously from such an investment. These countries have been able to encourage private interest in education planning in order to improve the quality of education and also to make available choices for

different education opportunities. This problem of not being able to provide adequate and decent education to the people of Africa represents a serious impediment to sustaining African societies. Children below the age of fifteen represent the largest group of uneducated and a potential problem for the future of the continent as a whole. A creative population is an educated one. The rapid population explosion indicates that more and more Africans will grow up undereducated.

Poverty Alleviation

Africa entered the 21st century as the world's poorest region despite the gains that were made by some of its countries in the second half of the 1990s. The per capita income before independence is higher than today's per capita income in many African countries. There is no question that many of the world's absolute poor can be found in Africa and that there is a maldistribution or unequal distribution of incomes, assets and access to essential services across the continent. Poverty on the continent has continued because Africa's position in global economy has been dead last, export shares in commodities or prime products has been declining, the economy has not been diversified into new businesses as in secondary and tertiary industries. It is even more dangerous as we move forward in the information technology age to see Africa lagging behind. Africa's poverty in global context will continue unless important economic reforms, improvement in macroeconomic management, liberalization of markets and trade and privatization are made top priority by African governments. It should be pointed out that in countries where economic reforms have been implemented and where the rule of law and civil peace have been sustained, there have been slight improvements in the economic growth and poverty has decreased slightly. The long periods of economic downturn has been exacerbated by poor planning, deteriorated capacity of governments, weakened institutions and inadequate transportation routes which constitute a major part of the infrastructure. The countries of Africa must devise policies which can keep the number of poor from increasing and Africa must invest in its people in order to sustain rapid growth. Development programs which invest in people can accelerate poverty reduction. The inability of people to meet or satisfy their basic needs must not be taken lightly and as such in order to deal with the problem of poverty in Africa, one must understand it. Although a large number of people in Africa live in poverty, policy analysts have found it difficult to define what exactly constitutes poverty. However, the emerging consensus among scholars seem to attempt to define poverty by characterizing it as "the inability of individuals, households or entire communities to command sufficient resources to satisfy a socially acceptable minimum standard of living" (May 2000:3). Although experience with poverty vary across the continent of Africa, many scholars of development would argue that elements of poverty generally includes the following: Food insecurity, unemployment/poorly paid jobs, poor housing conditions with no indoor plumbing, large number households which are headed by females, dependence of firewood as major domestic energy source, no electricity, poor sanitary conditions, and low educational achievement. It must be pointed out that those who constitute the majority of the poor in Africa are women and children. Understanding

the elements of poverty is the first step toward alleviating the dismal conditions and sustaining the people and their communities.

The sustainable improvements of the quality of life in Africa means that all levels of governments and private citizen must do everything to enable economic growth and to improve human development. The poor in Africa can be assisted by enhancing their capabilities to have access to resources. This could be done through dissemination of information, education and by representation of their interest where it matters. The impediments that obstruct people's access to opportunities must be identified and removed. Such issues deal with lack of transportation, lack of knowledge about institutions that offer help to the poor. The inequity in African society can also be addressed through a redistribution effort which allocates economic resources to areas that are economically depressed. Activities that individuals and communities should be engaged in so as to sustain their livelihoods and communities must be encouraged by governments and businesses. Small businesses should be encouraged through small loans and grants by governments and the growing private sector must be involved in the development strategy of African countries. The private sector must be encouraged or given the incentive to grow and expand its economic activities through diversification.

Development and Environmental Degradation

Africa, for centuries, has been endowed with a great amount of natural resources. These resources have direct and indirect values. The direct values are (1) Consumption use value and (2) Productive use value which is basically commercial. The indirect value of Africa's natural resources consists of (1) Non – consumptive use (2) Option value which is the opportunity available for the future and (3) Existence value which is the value of ethical findings.

The development process transforms the natural habitats into different environment for the purposes that benefit man in the short run but if careful planning does not accompany development the consequences are usually catastrophic. Land use activities such as agriculture, housing construction, transportation, industrialization e.g. extraction of mineral or oil, and commercialization are normally undertaken in order to improve the lifestyle of human. However, these activities have serious consequences if not carefully planned and implemented. The environmental problems that most directly affect Africa can be classified as follows: (1) Loss of tropical forests and other habitats critical for biological diversity (2) Unsustainable agricultural practices (3) Environmentally unsound energy production and use. This is mainly because of the dependence on firewood as the main source of energy. (4) Urban industrial pollution is due to the location of light industries and sometimes heavy industries in major urban centers. The crowdedness of the urban centers exacerbates the problem. (5) Contamination of rivers and other sources of water through human actions.

Every country in Africa faces the dilemma of undertaking development without a careful and thorough planning for the long term consequences of haphazard development. Every development project interacts with human and natural environment and as such environmental parameters are affected by

such development and the extent of each kind of interaction is governed by the details of the project and the environment. Imagine a transportation route construction through the forest, savanna and desert regions of Africa, the impacts in each region or biological system will vary and the wild life affected will be different. Thus each African country has its own level of environment concerns which may be oriented toward the human or social environment or natural resources. Both humans and wildlife along with their habitats or environments are paying the price for poorly planned development projects. Once forest and savannas have been cut down for development purposes, human population grows in surrounding areas because access to the land is created by development. Urban forests and meadows close to major African towns and cities where wild animals once lived unnoticed are being replaced by different housing types. The problem of wild animal conflict with humans becomes exacerbated as the range for the animals becomes reduced due to human encroachment. This is the case in countries such as Ghana, Kenya and Zimbabwe where elephants wonder into farms and destroy crops and in a few instances have attacked humans. The main problem for wild animals is that development robs and dissects their habitats (homes). There is no doubt that every road built or right-of-way breaks up the continuity of wooded areas, so wild areas get broken up. In many countries of Africa, the reduced range for the animals have left them vulnerable to poachers as they come in contact with humans. What then are the roles of planners and scientists in tackling the problem of biological diversity decline and the, plight of wildlife? It is their responsibility to ensure that projects do not violate the local environmental values and that the long-term needs of the countries are not sacrificed for short tem return. It is their role to inform and educate policy makers and the public in general about the significant roles wildlife play in peoples life. It is paramount to conserve wild habitats because of the free services that they provide people – they provide natural resources and they absorb the waste that humans generate as a result of development activities. These two functions of the environments are being destroyed by excessive, and irrational development.

Generally speaking, it is the contention of this author that the development efforts on the continent of Africa has significantly impacted the human environment and health, water quality, soil, conservation efforts, air quality and endangered species. It is indeed a shame to see how development and people's actions have caused the decline of the biological diversity on the continent of Africa. The term as it has been used in this article refers to all species of plants, animals and micro-organisms and the ecosystems and ecological processes of which they are parts. It is used here as an umbrella term for the degree of nature's variety including both number and frequency of ecosystems, species or genes in a given assemblage. In examining the plight of wildlife in Africa, it is useful to consider biodiversity at three levels. (1) Genetic Diversity (2) Species Diversity and (3) Ecosystem Diversity. The genetic diversity of a place is the sum total of the genetic information contained in the genes of plants, animals and micro-organisms that inhabit the place. It is the opinion of this author that the genetic diversity of many places in Africa have been drastically impacted by human action and as such the world as a whole has lost the tremendous scientific information that would have been useful to mankind. Take for

example the destruction of monkeys in many parts of Africa. Figure 1 shows wildlife (monkeys included) caught and killed in the wild and sold as bush meat in urban areas. This type of behavior does not help the biodiversity situation on the continent.



Figure 1: Monkey and other wildlife sold at Lagos/Ikeja Nigeria (1996) (The Author on the right)
The different species of animals and plants play integral and significant roles of the balance that must exist in life on earth in order to maintain an environment that would provide a sustainable existence for humankind. The extinction of species without a careful understanding of their importance in the intricate balance of life threatens human existence. Hence conservation is imperative. Perhaps the importance of biodiversity on earth is best driven home by Charles Bergman (2001: B15) in his article in The Chronicle of Higher Education where he makes the following observation:

Beyond the exhilaration of seeing a wild jaguar, one gesture that all my colleagues and I made toward the animal grabbed my imagination. It happened after we lowered the tranquilized cat to the ground. With the animal asleep, the professionals swung into actions, weighting it, measuring it, and taking samples of blood, fur, and parasites. Then they fitted the jaguar with a radio collar. I helped hold the jaguar, photographed it, and took notes. Each of us stopped what we were doing at some point to reach out and touch the sleeping jaguar. It was a simple and reverent gesture of contact, feeling the animal's strongly muscled body, stroking his magnificent, spotted fur. The jaguar was a powerful, living presence. For over 20 years, I have written about wildlife in books and national magazines. I have been privileged to see and study some of the most wonderful wild creatures in the world. Yet touching the jaguar was the experience of a lifetime. Since my return to the United States, I have often found myself evoking that deeply satisfying moment, in which a touch conveyed the meaning and value of a lifetime.

It does stand to reason that preservation and conservation must be aggressively pursued so that humankind would continue to benefit from the world's biological diversity. It must be pointed out that

species diversity refers to the variety of living organism on earth. The African continent is home to a large percentage of the world's species diversity which must be protected. Unfortunately the distorted development efforts which has gripped the continent has resulted in the decline of the ecosystem diversity. Ecosystem diversity refers to the variety of habitats, biotic communities and ecological processes in the biosphere as well as the tremendous diversity within the ecosystems in terms of the habitat differences and variety of ecological processes. Haphazard development throughout Africa has resulted in the destruction of forests, savannas, wetlands, ponds and other ecosystems which provide food, shelter and material for medicine and clothing for Africans. Efforts to reverse the declining must continue and policies must be put in place for conservation. Two institutions that are making efforts toward maintaining ecosystems diversity in Africa are International Institute for Tropical Agriculture (IITA) and the Nigerian Institute of Social and Economic Research (NISER). Both institutions are based in Nigeria and they are providing solid operational research to promote rational development and environmental protection while ensuring that successful and sustainable development takes place in Africa. It is imperative to understand that because the ecosystem cycle nutrients such as nitrates, carbon, phosphates and so on, it is important to maintain the ecosystems in healthy conditions. Both IITA and NISER are attempting to do so in their research. IITA for instance has plant nurseries which provide seedlings to farms and provides extension advise. NISER provides economic development advise to governments and non – governmental organizations (see figures 2, and 3).



Figure 2: A Group of Scientists from America and Nigeria at IITA (Ibadan, Nigeria)



Figure 3: Research Field at IITA (Ibadan, Nigeria). Efforts to assist biodiversity on the continent.

Technology - - Indigenous and Transfer

Scientists must look for basic causes of environmental, social and economic problems in order to provide solutions. As far as sustainable development is concerned part of the solution must come from the application of appropriate technology. Appropriate technology, it is argued in this article, is two fold. On the one hand, some advance technology is useful in the effort to sustain development in Africa. Economic development can be expedited through the use of modern technology in the collaboration with advanced countries of the world. Win-win circumstances can be achieved on the continent of Africa whereby investors in economic development can make profit and the economies of African countries can be stabilized and made to grow. Information technology can certainly help in conducting research and surveys germane to positive economic growth, environmental and natural resource conservation. Advances in technology have improved the life of man on earth. Different kinds of research to be useful in the study of the biological life in Africa and these in making the resources of the continent better available to humans. The transfer of Western technology to Africa cannot be done in a sweeping manner but must follow a case-by-case or country-by-country basis whereby the appropriateness of technology is central to development. One must avoid a situation whereby a technology brought into Africa destroys the social, economic and/or environmental conditions of the continent. This has been the problem in the past whereby projects funded by institutions such as the World Bank and International Monetary Fund (IMF) and some United States Agency for International Development (USAID) have been problematic in Africa. Indigenous knowledge systems which are based on local traditions and ways of life sometimes provide the key to the success of development. The roles of paramount leaders, chiefs and elders of African communities are sometimes the key to

sustainable development. This is so because there are cultural norms and traditions which must be taken into account in development or in collaborative efforts.

Science and Education

The marginalization of Africa has been exacerbated by the poor educational opportunities and standards all across the continent. This poses a multifaceted development challenge for African governments and peoples. Science and education can play important roles in the development by enabling the process of resource extraction to be more environmentally sensitive, by enabling developer to understand the necessity to balance development with conservation practices, by developing the capacity of the people of Africa to fend for themselves and determine their own destinies. Education will enable Africans to play significant roles in the era of globalization and education based on information technology will assist in the economic development of the continent. It must be understood that all the above development success would only happen in a tranquil society where the rule of law prevails. A highly educated society encourages democratic government. Thus it is argued in this article that if the governments of African countries invest in their people through education, conflicts will be minimized and governance will improve. Countries such as Ghana, Uganda, South Africa, Kenya, Uganda and Senegal are examples of countries where slow but steady democracies are being put in place through improvement in education. Education can assist in the process of political participation of multiethnic societies and as such enable the government to last and sustain the economic development efforts.

Development Assistance

In the past, development assistance from donor countries have not been in the best interests of African countries. Recent development assistance to Africa is focused on creating win-win situations. Managerial and technical training for Africans are important in the sustainable development of the continent. Development assistance can help in efforts to improve governance and in resolving conflicts. The United States of America is assisting African countries in this area. Examples of such assistance are in West Africa where the U.S. is providing training to a group of West African countries collectively called ECOMOG which consists of military from Nigeria and other West African countries for maintenance of peace and order in Liberia and Sierra Leone. The underlying premise in such assistance is that resolving conflict is the most basic ingredient for faster and sustainable development. Assistance must increase competition and diversification of the economy so that consumers can benefit from cheap prices for goods and jobs will be created by secondary and tertiary economies. Development assistance must also focus on the training of teachers and the establishment of institutions.

Policy and Practice of Sustainable Development

There are many issues that one has to address when dealing with matters concerning policy and the practice of sustainable development. Because of the training of this author, the focus of this article has been on the interface of development and the environment. However as the reader would soon discover, from reading the article, there is arguable the admission that there is much more to sustainable development than just the development and environment debate.

Policy makers in Africa and institutions such as the Organization of African Unity (OAU), the United Nations, the World Bank, IMF, donor countries and non-governmental organizations now concede that a holistic approach to sustainable development is necessary in Africa in order to address the continent's multifaceted development problems. The approach must embrace concerns of macroeconomic policy and trade; government, regulation and corruption; social safety nets; health; education; transportation and communication; environment; rural and urban sectors; gender and poverty (World Bank 2000).

Generally, it must be made clear that the policies for sustainable development are of two types: (1) Those that build on positive links between the environment and (2) Those that break the negative links. In the first case, efforts that increase or enable income growth would definitely sustain African communities. In the second case, policies should discourage subsidies that encourage indiscriminate use of finite resources, chemically based substances and fertilizers for agriculture and deforestation/logging activity.

Sustainable development policy must focus on the efficient use of both renewable and non-renewable resources and the environment. One of the main reasons multinationals like to operate in Africa is because they do not have to practice environmentally sound methods of extraction of natural resources or they do not have to worry about the environmental pollution that their operations cause in the region where they operate. An example of such a case is the operation of Exxon/Mobil and Shell oil companies in Akwa Ibom State of Nigeria. It is suspected that the offshore drilling by Exxon/Mobil has led to the pollution of the coastal environment of many communities in Akwa Ibom State of Nigeria. The ecological system have been devastated and the poverty problem of the region has been exacerbated. The pollution problem due to oil spills is also suspected to be causing health problems to the inhabitants of the region. In some parts of the state of Akwa Ibom, abandoned oil wells have become death traps for farmers, hunters and children. These oil wells are said to have been operated by Shell Oil Company. In the rainy season when the rainwaters cover the abandoned wells, farmers, hunters and children cannot determine the location of the wells and they fall into the wells and die. Development should not lead to the demise of people. The adverse effects of development projects or resource use must be adequately addressed. Sustainable development in Africa cannot be practiced in isolation. Sustainable development in the region must address global environmental challenges such as the population problem, deforestation problem and desertification problem. Regional environmental initiatives must be in concert with global strategies. For instance, Africa must seek appropriate policy

reform to address conservation matters. The protection of wildlife such as elephants, rhinos, and the big cats can be in collaboration with Western institutions. The protection of threatened ecosystems can benefit from knowledge from American institutions such as Yale and Duke Universities. Duke University has a proven track record in Madagascar Republic. Policy must focus on building a capacity for sustainable development task to be carried out. Training, education and technical exchange policies can enhance the abilities of Africans to manage their resources effectively and efficiently. The process for building partnerships can be furthered by policies which spell out specific lines of collaboration which are beneficial to the international community and the host country. The Kakum national park of Ghana is a prime example of a win-win situation where the USAID and Conservation International (CI) worked with the Government of Ghana to design a park that serves the needs of Ghanaians and provides international tourists and scientists opportunities for recreation and research. Sustainable development on the continent has been difficult because of the lack of openness and accountability in public offices. The crux of the problem in Africa has been corruption. There has to be a sincere effort to eradicate corruption in public and private offices. This will go a long way in enabling responsible governance to take place. However, this author warns that the standard and policies established in each country must be realistic and consistent with the monitoring and enforcement capacity and administrative traditions of each country.

Overall it is the recommendation of this author that the operational objectives of sustainable development in Africa must do the following (1) Revive growth in the region (2) Change the quality of economic growth in a positive direction (3) Meet the basic need of Africans by providing jobs, energy, water and adequate sanitation (4) Balance population growth with the carrying capacity of available resources (5) Orient technology to be appropriately transferred and incorporate indigenous knowledge into the sustainable strategy of the continent (6) Balance economic development with environmental realities (7) Incorporate international partnership into sustainable development on the continent and (8) Ensure that development embraces a truly participatory process.

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