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The Paths of Sustainable Development in West Africa

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ABSTRACT

Sustainable development has been a major problem in West Africa for quite time. Sustainable development requires institutions, policies, people, and effective partnership to carry out our common effort in nation building. The provision of new ideas will bring about success in West Africa. The provision of high degree of technology to allow the flow of new idea will bring profitable standard of production. Therefore many innovations are necessary and should be allowing proliferating to ensure the achievement of sustainable development. Invention is areas that most next be introduced to practice i.e. one most show the technical idea is visible and can be demonstrated. Industry analysis is a step that should be used as strategy to examine the external and internal futures in assisting the establishing of sustainable development in West Africa. This paper attempt to present the way forward.

Keywords : Social Development, Driving Forces, Economic Growth, Ecosystem Degradation Biological, Diversity Ozone Layer, Bio-Geo-Chemical Cycles, Decision- Making, Federal Government

I. INTRODUCTION

In recent years, an international consensus has emerged about the need for sustainable development Vicderman and Humiston[1994/2002]. Sustainability concerns have occupied a place on the global agenda since at least the 1980s Clark and Munn[1980]. Ever since then, sustainability has become a "high table" issue in international affairs, and on many regional, national and local agendas. Science and technology are increasingly recognized to be central to both the origins of sustainability challenges (i.e. freedom from want and the freedom of future generations to sustain their lives on the planet) and the prospects for successfully dealing with them. Sachs[2000].

One of the external assets of sustainable development in West Africa is external and internal assets of various countries to build up the upstream links to indigenous engineers and technologies. Clamp[2014]. The role of leaders should enhance how many individuals can provide ideas for new products or services. Another category is composed of upstream links to materials, components suppliers and sub-contractors. Governments should access appropriate links with individuals in best companies, institutions and research centers to sustain a long term two way commitments. This links will serve as a source of knowledge, experience and lessons to learn. It is also important to access the quality and configuration of competitors as well as efficacy of nation's tiers to competitors.

In other to enhance sustainable development, we must consider two key processes: The product and process generation process and technology process.

The implementation of nation's future technological access that used as input into the formal (product and process generation) both processes span the entire innovation circle from idea to commercialization. Maxwell[2011]:

- Including idea generation.
- Formulating and screening proposal.
- Cons-equal and detail development.
- Internal and external sales.

Sustainable development requires the co-operation of different people or sectors within the world(West Africa in perspective) using complimentary assets that involves information technology, distribution after sales services, field support, manufacturing and the creation between temporary and long term success.

In West Arica the focus should be on manufacturing capabilities. Production and innovation activities should always be a good standard to be considered. When assessing specific innovation countries in the World, we identify all the necessary capabilities that are needed to successfully develop, produce, market, distribute and maintain the product or service in the long run. Strategic partnership among West Africa countries should be an increasing common alternative.

Despite consensus about some of the aspects of sustainable development, the concept itself is still rather nebulous and ill defined. Many analysts define sustainable development as a development which meets present needs without compromising the ability of future generation to meets their needs Simmons, Lee, Clark, Rolston [1969,1993,1989 and 1994]. Though visions of sustainability vary across regions and circumstance, a broad international agreement has emerged that its goals should be to foster a transition toward development paths that meet human needs while perverting the earth's life support systems and alleviating hunger and poverty. This should be achieved through forms of governing that are empowering and also sensitive to the needs of future generation. According to the literature Simmons[1969], technology is the application of science and knowledge to the needs of man and society. Others Gore,World Commission on Environment and Development. Oaikhinan, Gaynor [1992, 1987, 2000, 1996] regard technology as combining inputs to produce desire outputs. The definition of technology suffices to play a central role in bringing about the increase to keep countries from famine, but only at the cost of significant environment degradation. Promoting transitions towards sustainability in the 21st century will require much more than improvement in the production and effective use of science and technology but the latter will be essential components of most solutions. The present paper examines the contributions of technology to sustainable development in West Africa.

II. METHODS AND MATERIAL

The Pillars of Sustainable Development

When we talk of sustainable development, we are talking about the means to unlock human potential through economics development based on sound economic policy, social development based on investment in health, education and environment. Sustainable development requires institution, policies, people, and effective partnership to carry out our common effort in nation building David[2013]. All these can be obtained in an inclusive connected equitable, prudent and secure manner Gaynor[1996].

Inclusiveness impulse human development over time and space. An understanding of the human dimensions of sustainability must encompass the "driving forces" of anthropogenic global environmental change: population change, economic growth, technological change, political and economic institutions, and attitudes and beliefs Gladwin[1995]. Sustainability thus goes beyond ecological efficiency to also include social sufficiency; it goes beyond the "natural step" to include social and economic steps.

Connectivity embraces ecological, social and economic interdependence. Sustainability demands an understanding of the "World's problem" as systematically interconnected and interdependent.

The concept of sustainable development is based on the recognition that a nation cannot reach's its economic goals without also achieving social and environmental goals. That is universal education and employment opportunity, universal health and reproductive care, equitable access to and distribution of resources, stable populations, and a sustained natural resources base.

Efforts aimed only towards ecological health and integrity in the absence of effort to alleviate poverty, stabilize population and counteracted by global ecosystem degradation and socio-political instability induced by the poverty- population nexus. Stern[1992].
Equity suggests intergenerational and interspecies fairness. Fair distribution of resources and property rights, both within and between generations, is a central dimension of nearly all conceptions of sustainable

development. Some people place special emphasis on the needs of the least advantages in society. Few people address human obligations regarding the non-human world. Gaynor[1996]. The absence of objective criteria pushed the study of sustainability towards that of a normative science where rules will be worked out over time via a competition of beliefs and moral debates. Sustainability at a minimum means that human activities should not shift cost out or appropriate the property or resources right of, other human interests, today or tomorrow, without proper compensation.

Most definitions of sustainable development call for keeping life- supporting ecosystems and interrelated Socio-economic systems resilient, for avoiding irreversibility, and for keeping the scale and impact of human activities within regenerative and carrying capacities. Most analysis call for prudence and humility in the pursuit of sustainable development, given the massive uncertainly and unpredictability, non-linear interaction between system components, unknown thresholds, and complex dynamics in ecological and social systems. Costanza[1993]. This constraint demands precaution, pre-emptive safeguards, reversible actions, safety margins, and preparation for perpetual surprise.

Sustainable development is generically a human-centered construct, aimed at ensuring "a safe, healthy, high quality of life for current and future generations". There is a number of overlapping boundary conditions that must be fulfilled in support of the goal. Sustainability mandates describes no net loss of:

- Ecosystem and social system health (i.e. capacities of natural and social system to resiliently provide essential life support services to humanity).
- Critical natural capital (i.e. stocks of irreplaceable natural assets such as biological, diversity, the ozone layer and bio-geo-chemical cycles).
- Self- organization (i.e. capacity of living systems to carry out self-renewal, self-maintenance and self-transformation, which provide the context for all human activity).
- Carrying capacity (i.e., long-run capacities of biological and social systems to support physical scales of human enterprise).
- Human freedom (i.e. civil society, with democracy and full realization of human rights in day-to-day living dependent on participation, accountability, reciprocity and transparency).
- The fulfillment of basic human needs.

The Contribution of Science and Technology(S & T)

There are numerous ways in which S &T has already contributed to sustainable development around the World. For example, scientific measurement and analysis identified the social, economic and environment dangers associated with global changes in the climate and Ozone layer. Dasgupta[1995]. The consultative Group On International Agriculture Research (CGIAR) has designed and implemented regional crop breeding and testing systems which incorporate a mix of farmer practices, indigenous knowledge of crops, and modern breeding methods. Dobriansky and Clamp[2002 and 2014]. In Mexico, the national Commission on Bio-diversity (CANOBIO) has built a GIS- based data system for their country and this system has enhances their self-assessment capacity on bio-diversity for use by their citizens, firms and other stakeholder , providing a range of decision-support services. Clark[2004]. Also, in Jordan, multitude of successful efforts is the modern science that can restore degraded land system to the state in which they support both nature and society.

Evidence abound worldwide on a range of S& T based activities that, if vigorously pursued over the next five years, could yield tangible improvement in local and regional sustainability. Some of these activities involve the creation of new knowledge, others the better and more widespread application of knowledge that already exists. Which specific activity merit the highest priority in West Africa, should be decided through consultation with affected stakeholders struggling with sustainable development action programmes. Nonetheless, the following examples suggest the range of contributions that could reasonably be expected from the S &T community over near term. National Research Council[1996]:

- Advances in the ability to forecast anomalous climate conditions some months in advance have raised the prospect of significantly reducing the vulnerability by food and water systems to drought. Initial experience in Peru and elsewhere makes it clear that realizing this potential requires parallel

development of integrated application and use programmes.

- Some "eco-labeling" and other certification programmes have begun to have and impact on consumer choice, for example, in European purchases of tropical hardwoods.
- It has become increasingly clear that shaping more sustainable practices in a globalizing world often requires an integrated view of system in which production and consumption may occur half a world apart. Pilot analyses of aquaculture system in Thailand have shown that such integrated assessment can open up a much order and potentially more effective and equitable range of options for society.
- Much of the innovation required for transition to sustainability will take place in grassroots organization and small enterprise that are small to own their R& D laboratories. Work in India shows the enormous potential on providing modest public support of networking and R & D centers to amplify the impact of such enterprises.
- The expected doubling of the great challenges and greatest opportunities, for a transition towards has profound implications for governance and policy. The S & T community can bring data sets, visualization, and scenario developments techniques help catalyze interactions among researchers and agents of change from different regions.

For each success story about S & T to promote sustainable development, there are many missed opportunities and outright failures. We still do not have reliable baseline data on the state of the earth's ecosystem and bio-diversity to match the progress of the last decades in documenting the state of human development. There are threats to sustainable development where S & T might make a contribution but simply have not been mobilize to the task at hand.

Much knowledge remains untapped due to the failure of education system around the world to encourage an awareness of ecological relationships and a regard for experimental learning in those whose experience and behaviors will be central to any transition toward sustainability.

There is much potentially use of S & T that is laboriously produced but never applied. There are too few scientist and engineers working on sustainability issues in West Africa, too little institutional capacity to carry out the needed work, and not nearly enough financial support for the magnitude of the task at hand. Until and unless these constraints are relaxed, the contribution of S & T to a sustainable transition will remain far below its potential.

Strategies for Sustainable Development

The precondition for sustainable development is good governance, including popular participation in decision-making. West Africa Government must give the necessary assistance for the promotion of competitive selections and strengthening of the judicial systems.

The need for improved governance, improved links to the global market, greater public and private sector development, more investment in people, and management of natural resources to benefit the present and future generations should be the central concern of the governments.

Government policy should translate into solid gains for sustainable development via a range of partnership bringing the skills of the private sector resources. Particular attention should be paid to the following factors. Greg [2013]:

Partnership for Just Domestic Governance

Reliable and productive governance is required both government-to-government and public-private partnerships. Therefore, good domestic governance is fundamental to sustainable development. Good governance means effective and democratic institutions, including an independent and fair judiciary and respect for the rule of law; sound monetary, fiscal and trade policies that promote economic growth, social development, and environmental protection; and a role for all members of civil society to participate in transparent decision-making.

Good governance is important at the local level, where people can participate in problem solving. Local participation has been particularly productive in resource stewardship in Indonesia. In the words of U. S Undersecretary of State, "self-governing people,

prepared to participate in an open world market place, are the very foundation of sustainable development, and that begins with good governance" Pita[2012].

Investing in People

Equitable opportunities for people to develop their potential are a clear indicator of just governance. An educated, healthy society is more able to be productive, reduce poverty, and protect natural resources. Strengthening basic education should be primary goal of all arms of government in Nigeria. The federal government should put in place key components for fostering public private partnerships between academic institutions. Similarly, both the state and federal governments should help higher institutions in Nigeria to acquire information and communications technologies for education and teacher preparation programmes, particularly as a way to reach remote communities.

Education holds great promise for the success of Nigeria. Our youths should be made to understand that knowledge is not the same as wisdom. Therefore, one cannot but ponder why our universities do not have sustainable development topics on their curricula. We have fled too far from our origins, where perhaps, the churches played too large a role in what was taught and got overly upset when we taught things they did not like. Our higher institutions find themselves almost paralyzed by the multiplicity of cultures and values and religions. As we steadily become a more diverse people. As they struggle to be politically correct or avoid the risk of offending any group or persuasion, they end up rather doing nothing at all.

Grasping the nettle in this 21st Century is by no means a trivial task or one easily undertaken. Our universities and polytechnics should know that the problems (i.e. civil war, poverty, plague, education in disorder, massive illiteracy and ignorance) posed to human kind today requires a cooperation between human beings as a condition of their survival. Providing solutions to these problems certainly go beyond the traditional curriculum for even a humanities graduate much less a science graduate. That traditional curriculum needs to be changed.

We need to educate the leaders of tomorrow to understand all aspects of sustainable development. Overcrowding, inadequate housing, inadequate access to clean water and sanitation, growing amounts of uncollected waste, and deteriorating air quality are already serious problems in our cities and may worsen substantially if effective and timely training programmes are not developed.

Mobilizing Partnership for Sustainable Development

Our major problem in West Africa is less one of not knowing what to do than of not having the human, institutional and financial resources required to respond to sustainable development challenges. This conference includes people who do know what to do, and who have the capacity to do it. What has been lacking, really, are the resources. And with financial resources continually to be in short supply, there will have to be a special emphasis on innovative strategies for mobilizing financial resources and ensuring effective planning and management. Our emphasis should be mobilizing resources for sustainable development. That is effective land-use planning to provide an adequate environmental infrastructure of water, sanitation, drainage and solid-waste management; a sound social infrastructure that can deliver an adequate level of health care, education, and other essential services and can alleviate hunger and homelessness; and energy-efficient and nationally accessible transport systems.

These key areas cannot be fostered, of course without financial resources, but financial resources will continue to be difficult to come by and, in any event, will not by them be sufficient to enable cities in Nigeria to make transition to sustainability. Even with a World Bank ten times as large as the current capacity of the bank, the financial resources are not enough to do the job Strong(1994). The answer is to device more effective ways to mobilize the human and financial resources of communities themselves for planning, developing, and managing their own communities. This strategy will require new institutional mechanisms and programmers to give people the necessary skill levels to build sustainable communities, and to make available the information and the facilities necessary to allow people to play an active role in building a sustainable future for their own communities.

The mechanisms and modalities for this broadly based community involvement will necessarily vary according to the cultural and social dynamic and institutional structures of each community. But in all cases, the involvement must be real; it cannot just be lip services, symbolic must be transparent, democratic, and equitable. And this, in many situations, is not that easy to achieve. Leadership from the highest political levels of the communities is of course essential.

Building the Capacity of Community

The ingredients for addressing the tough challenges facing rural communities in Nigeria are numerous. The essential one include access to sound social technological research, the application of such research in guiding local discussions and debates, and access to proactive leaders and citizens who are willing to implement bold strategies for placing rural communities on the track to long-term economic, social and environmental sustainability. Capacity building is a set of goals and processes that enable individuals, communities, and institutions to increase their ability to address sustainable development issues. Two important goals of capacity building are self-reliance and self-determination.

Communities must address a wide variety of issues to deal with current stresses (e.g. economic conditions and natural disasters); plan for their future; and acquire/create the human, fiscal, political and physical resources to achieve community goals. Higher institutions in Nigeria should organize timely workshops and conferences on current and emerging rural communities development topics this will certainly helps rural communities respond effectively to the complex environmental and social issues they face.

Community services, infrastructure, local leadership and engaged citizens are important assets to communities seeking to direct their future. Institutions of higher education play and critical role in sustainable development. They provide baccalaureate and graduate education for agricultural procedures, natural resources professionals, and community leaders. Communities are unlikely to achieve life goals without life long learning opportunities for their people. The development of technologies and the resulting human and environmental impacts are occurring at unprecedented levels. It is critical that individuals and the communities and institutions, to which they belong, engage in lifelong learning. Our higher institutions should encourage distant learning among rural populace by providing programmers in sustainability projects (e.g. sustainable agriculture education). This will help them build strong, vibrant communities through the following activities:

- Community planning and action
- Building local talents and resources
- Leadership development and expanded civic involvement
- Partnership among farm and non-farm sectors
- Labour force enhancement and workplace development
- Viable economic development strategies
- Timely research on elements that promote strong communities.

Balance use of Natural Resources

Nigeria is endowed with rich natural resources, and promoting sound cultural, economic and ecological uses of these resources is of paramount importance Oaikhinan(2000). Engineering institutions should be engaged in a variety of strategies that enhance the environment, including:

- Sound growth and land-use planning
- Public issues education and dialogue
- Protection of community-based drinking water
- Water resource management
- Wildlife risk management

Furthermore, higher education should provide standard tools for monitoring, managing, and transforming problems into sustainable solutions. Harvard University is managing the International Initiative on S & T for sustainability National Research Council (1996). This initiative is an open network of people and institutions dedicated to understanding the links between environment and development and fostering the infusion of S & T in decision making.

The West Africa Government should put in place strategies that promote equitable economic growth; resource sustainability; social development and resource stewardship in tandem. These strategies should be lined with capacity building and local empowerment;

encourage community-based approaches that include historically disadvantaged groups such as women; conduct information and communications campaigns; and support creative financing, including debt reduction and loan guarantees.

III. CONCLUSION

Perhaps, the strongest message to emerge from this paper is that if we are to contribute more effectively to sustainable development, we must resist the temptation to simply continue our present practices and agendas under new labels. Sustainable development is an active, often contested, social endeavor in which the stake are high, knowledge is seldom natural, and s & T is rarely accessible to all stakeholders. S & T for sustainable development therefore needs to be clear about what goals – and whose goals – it is trying to advance.

The Nigerian Government should make clear to its environment and to the decision-making community that the purpose of sustainable development is for achieving social goals, soling problems, empowering people and promoting social learning. This is necessary because S & T needs to contribute to solutions for sustainable development… not just to the identification of problems. Society generally acknowledges the important role of S & T in calling attention to potential problems resulting from the interactions between human development and the environment. But society and its leaders are generally receptive to warnings about dangers ahead when those warning are accomplished by practical guidance on how the dangers might be averted. For it to be more valued and supported by society, the S & T community needs to devote substantially more effort to helping particular decision makers solve particular sustainable development problems.

In considering effective paths of sustainable development, West Africa will provides a forum of innovation by being one of the requirements for the successful entrepreneurs in quests are:

1) Pre-project Tag, including inside and outside research/development communities' o what may be of interest to the firms and networking ideas with peers.
2) Project Possibilities: What could be useful to all consumers.
3) Initiation of the Project: Managing the idea with market places in the World in general.
4) Execution: Managing the innovative projects.
5) Outcome Evaluation: Evaluating the development of the innovation.
6) Project Transfer: Transferring the development to the next point for further work project.

We must effect a significant shift in the inertia that is literally continuing to propel our civilization in an unsustainable direction; and the nodal points of that process that clearly in the cities. Every day, every hour, every moment that we lose is a moment that will exact a heavy price on our future, making it fare more difficult to make that change of course that is so essential. We must break the current inertia and set ourselves squarely on a new path towards a sustainable future.

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