



## **Perceptive policy process for inclusive agricultural extension services for climate change adaptation and mitigation in Nigeria**

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### **Abstract**

The peak of international interest in the environment and sustainable development reached at the 1992 United Nations Conference on Environment and Development in Rio, Brazil was followed up in the 2001 Copenhagen Climate Change Summit in December, 2001 and 2002 World Summit on Sustainable Development in South Africa. Declarations from all the global summits have commonly emphasized sustainable and collective efforts to protect the environment. However, policy makers in Africa are finding it difficult to entrench viable policies to address development issues via emerging climate change phenomena. They are sceptical of the effectiveness of available mitigation and adaptation strategies. They fear specifically that strategies on carbon trading will impoverish African values, inhibit commercialization and market competition. This paper critically examines aspects of public policy formulation in view of the international provisions on climate change mitigation and adaptation. The analysis of policy process and implementation via relevant contexts clarifies issues considered depressing by indigenous people about climate change. The paper identifies stringent factors for consideration while drafting policies on climate change issues in Nigeria for development communication experts to implement sustainable climate change adaptation and mitigation campaigns through inclusive and consultative communication strategies. Finally, the paper recommends steps to be taken for effectual implementation of such policies in Nigeria.

**Key Words:** *adaptation, mitigation, development, communication and policy*

## Introduction

### *Understanding Policy*

There is no simple understanding of 'policy' (sometimes referred to as 'public policy'); perhaps, the reason many people, including governments and policy makers usually claim little or no understanding of it and how it perfectly works. Many would say policy has little effect on their lives; others maintain it has no significant relevance to their work. An average African may not accept the relevance of a policy that allows 11 African countries to apply for funding consideration under the Global Agriculture Food Security Programme (GAFSP) in 2010 while the consideration for the fund will start in April 2011, and based on available fund (see <http://www.worldbank.org/gafsp> for detail). These kinds of argument have literarily misdirected the policy efforts of government, corporate bodies, academics and research institutions in the applications of socio-economic measures in Africa. That everything we do is a public policy design is a piece of evidence difficult to suppress when discussing good governance and human development.

According to Torjman (2005), public policy affects the food we eat – how it is harvested, where it is distributed and sold, and how much we pay. It controls the way in which we clean and monitor the safety of our water supply. Recently, it has begun to set limits on air emissions too. For years now, the Nigerian government at all levels has been issuing warnings of poor air quality more than doing anything significant to clean it up or stem the trend of bad and antecedent unfriendly environmental behaviours. Transportation, agriculture, commerce, manufacturing, telecommunication,

pharmacy, medicine, engineering, military and many other activities are regulated by public policy either through licensing or other rules. Policy, whichever way, determines the components of Nigeria's tax regime – which combines income, sales and payroll taxes – and their respective levels. These are only a few examples of how public policy affects us both overwhelmingly and pervasively. It influences virtually every aspect of our lives.

### **Policy Typology**

This paper discusses the concept of policy from a general perspective. It does not focus upon one specific area or programme so much in the process of policy development. Early in the introduction, several angles to arguments on policy, most importantly the legislation, programme and practices governing the *substantive* aspects of a country's work plan were identified. This dimension of policy, i.e. 'substantive' includes, for example, income security, employment initiatives and agriculture while another typology focuses largely upon *directorial procedures* (for instance, the collection of statistical information and the evaluation of complex state and local government structures). Substantive and directorial policy can be further classified as perpendicular or parallel. The former refers to a policy developed within a country or an organization that has full responsibility for its implementation. Perpendicular policy is the normal or traditional way in which policy decisions are made within a single organizational structure starting with broad overarching policy, sometimes called “corporate” or “framework” policy. For instance a decision made at the federal level to guide subsequent decisions throughout a country

exemplifies perpendicular policy. There is also at the regional level, a regional or “strategic” policy, which translates national decisions in operational plans within specific context of actions. In the submissions of Smith (2003), the regional policy (which may equally be called 'local' is made specific enough to guide operational decision-making. Smith further explains that parallel policy-making, by contrast, is developed by two or more institutions, each of which has the ability or mandate to deal with only one dimension of a given situation.

Parallel or incorporated policy is created between parts of an organization or among organizational components that are similar in hierarchical position e.g the Regional Arrangement in the United Nations which defines the relationship of the General Assembly and the Security Council for Managing Global Crisis. (see the UN Charter for details). In Fitzpatrick (2000), parallel management of policy is explained as one way to ensure that the Federal Government acts as a vibrant, cohesive and coherent national institution. Today, governments in developing countries are focusing their efforts upon horizontal policy-making in recognition of the intricacy of the objectives they seek to achieve within the mandates of two or more departments, jurisdictions or non-governmental organizations. Areas of common interest include, for example, climate change, traditional issues and the range of concerns rooted in development communication. Collaborative arrangements are driven partly by the pressure to enhance performance and achieve measurable improvements in service delivery. In the last nine years, Nigeria has witnessed rigorous public sector reforms which have led to the creation or expansion of a string of

agencies among which is the Public Procurement Office (PPO) for efficient public service delivery to strengthen and modernize public sector management. Meanwhile, the *raison d'être* for analysts to consistently require for even-handedness policies in these two areas stem from the pressures from state and local governments which sometimes have overwhelmed federal presence leading to duplication of regimes especially in data collection and tax systems.

In 2003, the Tanzanian government signed an agreement with International Fund for Agricultural Development (IFAD) as a key building block in the formulation of the new Tanzania Country Strategy Opportunities Paper (COSOP) to articulate the medium-term (3-5 years) strategic framework and investment options of the Fund in Tanzania- (IFAD's Office of Evaluation 2001/2002). Ironically, in 1997, the poverty level and infrastructural needs for the regions were extremely different, requiring long term regional policy focuses in an inclusive manner. An instance of public policy misdirection from one of our African brothers, so to speak!

Policy can also be reactive or proactive. Reactive policy is a response to a concern or crisis that must be instantaneously addressed – health emergencies and environmental disasters are two examples. Proactive policy, by contrast, is introduced and pursued through deliberate choice. The national skills and learning agenda for the reformation of the Niger Delta Ex-Militants exemplifies these approaches. On the emerging trends in public policy especially on environment, Smith (2003) proposed yet another way to categorize policies: those that are currently on the

public agenda and those that are not.

Issues already on the public policy agenda (e.g. health care, security or education) often have high profile. Formal amendment to the existing arrangement is usually done every fiscal year. If an issue is not currently or never has been 'alive' on the public agenda, then we must make a case for its importance and raise awareness about the implications. This usually involves gathering evidence that supports the relevance of the policy. Relevant evidence includes, for example, research findings, evaluation data and results from focused groups. While the federal government actively promotes the concept of 'evidence-based decision-making for research institutes in Nigeria, its policy responses often lag behind in using their reports and evidences appropriately. *SPORE* number 152 of April-May 2011 reports that the International Institute of Tropical Agriculture (IITA) has been managing a programme (Strengthening Capacity for Yam Research-for-Development in Central and Western Africa) since 2010 to tackle food security in the two regions through research works to preserve more than 3,000 tissue samples due to climate change problem.

This initiative, involving 13 research institutes from six countries including Nigeria, Benin, Ghana, Togo, Cote d'Ivoire and Cameroon needs a strong regional inclusive advocacy policy to help achieve the IITA objectives. According to the report, at least 60 million people eat yam as part of their diet daily in these regions. Or else this effort may go down the drain just like some of our National Development Plans from 1960. Public policy is a broad concept with several dimensions. The dimensions must be

articulated in a comprehensible and cogent consultative communication way to bring out the meaning of the term. In a nutshell, public policy seeks to achieve a desired goal considered to be in the best interest of all members of a society. Examples would include clean air, clean water, good health, high employment, an innovative economy, active trade, high educational attainment, decent and affordable housing, minimal levels of poverty, improved literacy, low crime and a socially cohesive society, to name a few. These examples do not imply that all public policies encapsulate the entire population. Sometimes policies deemed to promote the public interest target only a certain group. Crime prevention policies are in place, for instance, to control the behaviour of offenders. For instance, public health policies may require the forced treatment of individuals with active tuberculosis. The intent is to protect all members of the society but by focusing upon a selected few through inclusive communication strategy that will make every member of the community to participate by encouraging the victims. In general, 'participation' was interpreted differently by different people at different levels, thus, it requires the development of a consistent notion of participation where standards and expectations were sketched out and understood from the outset as an even-handed partnership for the rural people to become active agents of change. This paper is intends to address several policy concerns as a way of helping African and Nigerian governments steer a positive path towards the formulation of public policies for better understanding and adoption of the international provisions on climate change mitigation and adaptation for responsive agricultural, industrial and economic

practices by utilising an inclusive and consultative communication strategy/extension services.

### **Methodology**

The paper relied on literature from many sources (literature review).

### **Objectives**

- I. To explain the concepts and processes of public policy and establish the reality of its operation.
- I. To confirm observations on similar issues from many sources with examples.
- II. To re-establish some submissions on why public policy in Africa has always failed at the implementation stage.
- III. To argue and propose for inclusive communication as one of the strategies in extension service for solving climate change issues in Africa.

### **Results**

The paper was able to establish what policy process should be in terms of communication cum extension services on sustainable climate change adaptation and mitigation strategies. Presently, Africa and other developing nations seem not to have properly addressed the relativity of the required fundamentals for adaptation and mitigation policy. The benefits of carbon credit, clean development mechanism, etc, have been communicated more than the effects of likely paradigm shift on the systems of the local people and their revered socio-cultural and economic arrangements. Substantially, the international provisions on adaptation and mitigation require high level of enlightenment and fast infrastructural development to integrate

the entire population into the new world of the phenomenon. Experimentally, indigenous and disadvantaged people have not been really included in policy system in Africa as critical factors. Participation has not shifted away from been a process devoid of the underlying operational principle that underpins all activities to empower the people and support to acquire the skills, knowledge and experience for greater responsibility and ownership of development programmes. The types of policy and policy perspective discussed in this paper are not new but they point to the fact that policy formulation is usually hectic but also requires firmness for effective operation. This paper has therefore positioned the advocacy for inclusive communication strategy in policy formulation on adaption and mitigation on climate change with a mandatory clause for skill acquisition on strategic communication for extension agents accordingly.

### **Discussion**

#### *The Politics of Climate Change*

'Climate', in the words of Albritton and Marie-Filho (2001) can change over a period of time ranging from months to thousands or millions of years. The classical time period for change is 30 years, as defined by the World Meteorological Organization. The climate change may be due to natural causes, e.g., changes in the sun's output; nitrous oxide (a powerful greenhouse gas produced by soil cultivation practices, especially the use of commercial and organic fertilizers, fossil fuel combustion, nitric acid production, and biomass burning) or due to human activities. Climate change has become a threat to development and poverty reduction in the

poorest and most vulnerable regions of the world. Curbing the impacts of climate change requires adaptation and mitigation strategies. In 2005, under the UK's presidency, the G8 Plan of Action concluded an agreement to assist developing countries adapt to climate change. That was more of a political statement and an attempt to beat down the issue of climate change by presenting the picture in developing countries as most awful.

While this submission may not force its acceptance on any nation, it implicitly presents the United Kingdom and the G8 Plan of Action as something critically essential for every nation to absorb, or better as a strategy by the UK to gain the control seat in international struggles for global solutions to climate change. While the impacts of climate change are already being experienced across the globe, the Inter-Governmental Panel on Climate Change (IPCC) concluded (as reported by the Parliamentary Office of Science and Technology, *PostNote* of 2006), that human activity (primarily related to fossil fuel consumption) was largely responsible. While climate change affects everyone, it is expected to have disproportionate effect on those living in poverty in developing countries, even though a critical overview of this report cannot substantially find Africa guilty of consuming the highest volume of fossil fuel not even for commercial agriculture.

Further analysis of the report in Table 1 submitted that global average surface temperature has increased by  $0.6^{\circ}\text{C}$  ( $\pm 0.2^{\circ}\text{C}$ ) over the 20th century, and predicted to increase by 1.4 to  $5.8^{\circ}\text{C}$  between 1990 and 2100. These changes are leading to environmental impacts such as a global average sea level rise of 10 to

20cm over the last 100 years. From the foregoing, it is logical that the impacts of climate change are not strictly African or continental but a global hassle that demands collective responsibility and attention. But is there a real global solution in place? The answer has always been yes on paper and for academic purposes, while in reality; available mechanisms, including communication processes, have been embedded with high level international politics.

Agriculture in Sub-Saharan Africa, of which up to 90% is rain-fed, accounts for 70% of regional employment and 35% of gross national product. In Europe and United States of America, industrial activities account for more than 60% of the gross national product. Consequently, as African livelihoods are affected by climate change, so are Europeans and Americans because their industrial activities are environmentally sensitive too. It is more politically true that only the poorest inhabitants of developing countries, especially those in the Least Developed Countries (LDCs) have low adaptive capability. Yes, countries like Bangladesh and Haiti have experienced serious flood cases killing many people, but United States of America and the United Kingdom have suffered similar fate since 2003. In August 2007, the Organization for Economic Co-operation and Development (OECD) reported that the risk of serious climate change impacts required urgent action to significantly reduce green house gas (GHG) emissions in the coming decades. There is increasing evidence that the overall benefits of strong and early action to reduce GHG emissions outweigh the costs. Developing countries may not have concretely dealt with this area but the developed nations have equally faltered in

their obligations to establish approachable world solutions. The world failed to reach a tangible pact on climate change issue in Copenhagen few years ago, basically for individualistic preference for one solution against another among world leaders. Since the early 1990s, most industrialised nations and many developing countries have implemented climate change-related policies with increasing level of high politics. Stabilising GHG concentrations in the atmosphere at a relatively stringent level is said to be achievable at costs of less than one-tenth of a percent of gross domestic product (GDP) growth per annum, or less than a 3% loss in GDP by 2030. These are the figures indicated in the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report and supported by recent (2010) OECD estimates.

These relatively low-cost estimates of reducing GHG emissions assumed widespread use of economically efficient market-based policy instruments, such as carbon taxes and emissions trading, and broad participation in mitigation efforts across the world. There are likely costs of action where countries opt for less efficient policies, such as prioritising the use of regulatory laws. In the former, high politics and diplomacy play major role for its success while in the latter, viable regulatory agencies must be put in place for effective implementation of regulatory policies. Many African countries including Nigeria lack such formidable agencies in real term. Several policy instruments like carbon or energy taxes, the removal of environmentally harmful subsidies, tradable permit schemes and the project-based flexibility mechanisms of the Kyoto Protocol to the United Nations

Framework Convention on Climate Change (UNFCCC) can help check the rate of GHG emissions. While many countries have applied one or more of these instruments to some extent, the communication process has left out the real people that will be affected by these policies. Increasingly, countries are looking at options for linking the existing or proposed schemes. From the OECD *Policy Brief-2007* pointer, countries have also participated in the two project-based market mechanisms established under the Kyoto Protocol – the Clean Development Mechanism (CDM) and Joint Implementation (JI). These mechanisms allow firms in industrialised countries to earn emission credits by investing in emission reduction projects in other countries.

#### **Carbon Trading and Legal Framework**

*PostNote* (2006) observed that developing countries, to varying degrees, lack social, technical and financial resources to cope with impacts of climate change. A number of funds to support adaptation were set up in 2001 during the International Bonn-Marrakech Agreements in which UNFCCC funds include the *Least Developed Countries Fund* and *Special Climate Change Fund*. The UK Department for International Development (DfID) has contributed £20 million within three years to these funds. Nigeria, through the Federal Ministry of the Environment in 2010 put in place a carbon trading awareness campaign to sensitize the entire nation on investment opportunity in carbon market but there was no tangible environmental law to back up such adventure. Strong environmental law is a necessary first step towards an economically efficient and environmentally effective climate change

policy. The policy should integrate all areas of public policy, particularly economic and social policies. This means addressing possible conflicts and defining trade-offs between policy objectives, as well as classifying and fortifying policies with potential “co-benefits” through consultative communication.

Ambitious climate change policies can be detrimental to sectoral competitiveness if a number of factors such as probable effectiveness, potential cost, resources required for implementation, political context and community support are not considered. Indeed, carbon or energy taxes in Nigeria may affect the competitiveness of energy-intensive sectors (such as aluminium, steel, or cement) if competitors in other countries are not similarly taxed. It must be understood that policy directives derive as well from obligations, such as international covenants, to which member countries have made a commitment. Nigeria and many African countries are signatories, for example, to the *UN Universal Declaration of Human Rights* (1948), the *International Covenant on Economic, Social and Cultural Rights* (1966) and the *International Covenant on Civil and Political Rights* (1966). Through their signatures, nations commit themselves to bring legislation, policies and practices into line with these obligations (Oyebode 2011). These documents, at least in theory, are supposed to act as drivers, though action often lags far behind in domesticating them because of the high politics involved especially in many policies with significant climate co-benefits in agriculture and waste management. Policies to reduce environmentally harmful agricultural subsidies, or at least to redirect the subsidies to support

environmentally friendly forms of agricultural production, can help to further reduce GHG emissions. Regrettably Nigeria has not been able to put in place adequate domestic laws that would enhance the workability of many of these international conventions or bilateral agreement especially the ones to help the nation grow through technical and scientific co-operations Oyebode (2011).

### **Policy Trust and People's Voice**

While governments are the primary formulators of public policy, there is the growing recognition of the need to engage the potential targets of citizens, more generally, in the discussion of options. Citizens are fanatical to ensure their voices are heard in the formulation of public policy which is one of the functions of 'policy dialogue' - to provide community members with a strategy to involve in grassroots mobilization, to talk directly with government representatives about communities' issues and how governments can help address them. In developing countries, large amounts of total GHG emissions come from deforestation and forest degradation. Moreover, studies suggest that reducing emissions from deforestation in developing countries is a cost-effective option relative to GHG mitigation in other sectors with multiple benefits. Policy options and positive incentives are needed to reduce emissions from deforestation, as well as to enhance the uptake of CO<sub>2</sub> by forests. But government especially in Africa will face stiff opposition from local people over the control of their forest for global problem not really caused by them alone. *Africa Talks Climate*, a major research and communications initiative launched in partnership with the British



Council, has gathered the experiences and perspectives of over a thousand African citizens from DR Congo, Ethiopia, Ghana, Kenya, Nigeria, Senegal, South Africa, Sudan, Tanzania and Uganda. Their comments and insights demonstrate that African publics have very little awareness that climatic change is being caused by the generation of greenhouse gases in the industrialised world and by other factors for which Africa is, as a continent, least responsible. It is crucial that information and communication needs of those most affected by climate change be essential in international strategic responses to the issue. This research argues that African citizens both need and have the right to information on how human-induced climate change will impact on their lives and how they can adapt. For instance, an April-May 2011 edition of *SPORE* detailed that the World Bank has assigned USD 34, 000 for the purchase of carbon credits from Humbo Community Based Forest Management in Southern Ethiopia. The scheme is to help local members make a living from trading carbon instead of firewood. In Guinea Bissau, the government has pledged to increase protected areas from 15% to 45% of its territory over the next two years in order to carry out the Convention on Biological Diversity. In Nigeria there is an agreement between Nigeria and Niger to manage the over 1,000km of their neighbouring borders in a Sensitive Ecosystem Management Initiative. In Madagascar, local fishers in 2007 as a means of checking over fishing in the lakes of the country introduced regulatory procedures and organized wide public awareness regarding the importance of respecting spawning season. The first example is a typical international initiative that may meet serious

governments' officials without involving the local inhabitants of the borders. Meanwhile, the Madagascan fishers may be saving their trade rather than the environment if there is no strong framework in place to improve the lakes condition for regular and sustainable fishing.

Torjman and Leviten-Reid (2003) admonished a need to consider inputs from the voluntary and private sectors – in the formulation of public policies. They want governments to work effectively with other sectors and open up the policy process through comprehensive community initiatives. These comprehensive initiatives would explicitly encourage partnering and collaborative arrangements by recognizing the value of inputs from diverse networks and areas of expertise. In order to participate, local bodies should involve representatives from at least four key sectors, namely, business, government, the voluntary sector and people living in poverty. In this way, people living in poverty are not seen as targets or subjects of various climate change adaptation and mitigation, rather, they are given active roles in the creation and application of these interventions. Their involvement ensures the relevance of the measures.

According to Isabela Masinde an ecologist and climate change expert from Kenya, “carbon projects are very expensive and they take a long time to implement. The idea of selling carbon sounds alien to most community members...[with the problem of land ownership], farmers are encroaching on reserved forests.” Therefore, everybody must be engaged in climate change issues for better understanding of the situation. Even with this step taken, the policy

process should determine from a range of options how best to reach the specified objectives. This is often difficult and contentious when selecting the most appropriate course to achieve this goal. While the end may be clear, the means may be hotly contested. If a community with acute water shortage requires water borehole, there may be disagreement as to the extent of labour obligation for the provision of the borehole because only a minority would deny that public interest for water is paramount in this instance. Considerable thought, discussion, consultation (some would say not sufficient or genuine) and research typically precede any major public decision. In contrast to the usual way in which actions are rationalized, the means – when it comes to public policy – must justify the ends. This is where government efforts in developing countries tail off.

The introduction of adaptation and mitigation measures into African system usually focuses the target of the advanced countries at the detriment of relative country needs. If emissions were to be reduced to zero, it would take decades to centuries for stock levels to decline significantly.”). Interventions should substantially improve local people employability potential probably in extension services. Policy formulation should not end once a preferred route to the desired outcome has been selected. Typically, considerable design work should be done after the approach has been identified to mainstream climate change adaptation into all relevant areas of public policy as a long-term process to include awareness-raising, integration into sectoral planning and implementation of specific adaptation options. Integrating climate change risks requires more flexible, preventive and

forward-looking approaches, and will involve legal, institutional and policy changes. For example, climate change adaptation could be facilitated through greater use of market-based instruments such as efficient insurance cover for properties which may require versatile legal work which in many cases in Africa never terminates.

### **Gap Bridging Through Inclusive Communication and Extension Services**

A University of Melbourne Counselling Service paper, (2005), defines inclusive communication as an exchange where all parties are entitled to respect and the opportunity to express themselves. Inclusive communication, it states “recognises that people communicate differently and encourages the use of a variety of techniques”. Charles Goldman (1991) explained that inclusive communication is a strategy to help communicators reach people with disability in the same way they will do when communicating with normal people: As often as not, how we say things is just as important as what we say. Our body language and facial expressions are sometimes more important than the words used. This, he concluded, 'is inclusive communication.' If we agree that underserved people are tangible part of our society, then it is undisputable that they be carried along in public policy on climate change. They are, sometimes, more susceptible to the effects of climate change because of their impairments.

Hence, policy on mitigation and adaptation should prioritise inclusive communication to take away some of the fears of local physically challenged people. If we accept Goldemberg *et al.*, (1996) analysis that the valuation of costs and benefits using the willingness to pay

as a measure of value should be a criterion for accepting or rejecting proposals for policy formulation on mitigation and adaptation then we are excluding a very vital component of our society. The valuation of costs and benefits of climate change is difficult because some climate change impacts are difficult to assign values e.g., ecosystems and human health, thus, people with health challenges must be included in the communication process for effective mitigation or adaptation. Meanwhile, DeCanio, (2007) fears it may be impossible to know the preferences of future generations, which affect the valuation of costs and benefits. The standard criterion of the compensation principle encapsulating inclusive communication may serve as an alternative. According to the compensation principle, so long as those benefitting from a particular project compensate the losers, and there is still something left over, then the result is an unambiguous gain in welfare. DeCanio (2007) again raised the alarm that one of the mechanisms for compensation (mitigation) cannot solve the problem of exclusion of certain groups. Mitigation he says “might benefit future generations at the expense of current generations, but there is no way future generations can compensate current generations for the costs of mitigation.” On the other hand, (Goldemberg *et al.*, 1996) cautions that future generations ought not to bear most of the costs of climate change, or else compensation to them would not be possible. Such transfer for compensation would exist between regions and populations. If, for example, some countries were to benefit from future climate change to the detriment of others, it is not guaranteed that the winners would

compensate the losers. It is then logical for one to say that climate change adaptation and mitigation are games of chance! Halsnæs *et al.*, (2007) suggest that the concept of cost-benefit analysis is an acceptable risk- meaning that the benefits of a climate policy would outweigh the costs of the formulation.

The standard rule used by public and private decision makers is that a risk will be acceptable if the expected net present value is positive. This decisive factor has been justified on the basis that a policy's benefits and costs have known probabilities and that economic agents (people and organizations) can diversify their own risk through insurance and other markets. In practice, it is difficult implementing necessary policies to diversify climate change risks. Toth *et al.*, (2001) stated that the large uncertainties over the potential impacts of climate change, and the costs and benefits of actions taken in response to climate change are two fundamental problems. Though Barker *et al.* (2007a) explained that considerations in a risk-based approach might include, for example, the potential for low-probability, worst-case climate change impacts, Goldemberg *et al.* (1996) clarified that sequential decision making on climate change, over time, could be revised in the light of improved information. This is particularly important with respect to development communication as a strategy for behavioural change due to the long-term nature of climate change. In this way, all stakeholders will view the problem from the potential irreversibility of future climate change impacts (e.g., damages to ecosystems) against the irreversibility of making investments in efforts to reduce emissions. Resilient and

adaptive strategies are two suggested related decision-making management strategies by CCSP (2009) that might be appealing when faced with high uncertainty. Resilient strategy helps identify a range of possible future circumstances and then choose approaches that work well across all the range while adaptive one assists in choosing plans that can be improved as more is learned. Logically, because of the flexible nature of inclusive communication to absorb emerging socio-cultural and political issues, it seems the best communication alternative for agricultural extension service in Africa in general and Nigeria in particular.

**Recommendations**

(a) African countries, especially Nigeria should accept the challenges of climate change as 'generational' and therefore put in place policy that will transcend the regime of any ruling government.

Nigeria should clearly specify and make it mandatory that inclusive.

(b) Communication skills are prerequisite for extension service

agent performance.

(c) Inclusion of the local people should be done not only on the paper but on the field where communities are engaged on advocacy programmes.

The Federal Government should intensify efforts to make it a constitutional requirement for states.

(d) Extension workers to keep them abreast of the ever changing nature of the demands of climate change issues from national and international perspectives.

Government should put in place viable mechanisms to check corruption in the management of adaptation and mitigation strategies at all levels so that benefits from system like carbon trading will be felt at household level and local governments to put in place environmental laws and harmonise same for easier reference and adjudication by extension agents.

(e) Federal Government should invest more on the training and re-training of

(d) Government should hasten up the development of infrastructures and develop alternative livelihood for communities where CDM projects are

Environmental Impacts	Socio-Economic Resources and Sectors Affected
<ul style="list-style-type: none"> <li>• Changes in rainfall patterns</li> <li>• Increased frequency and severity of: Floods , Droughts , Storms /Heat waves</li> <li>• Changes in growing seasons and regions</li> <li>• Changes in water quality and quantity</li> <li>• Sea level rise</li> <li>• Glacial melt</li> </ul>	<ul style="list-style-type: none"> <li>• Water resources</li> <li>• Agriculture and forestry</li> <li>• Food security</li> <li>• Human health</li> <li>• Infrastructure (e.g. transport)</li> <li>• Settlements: displacement and loss of livelihood</li> <li>• Coastal management</li> <li>• Industry and energy</li> <li>• Disaster response and recovery plans</li> </ul>

**Table 1: climate Change Impacts in Developing Countries IPCC Third Assessment Report 2001.**

Adapted : ([www.parliament.uk/post](http://www.parliament.uk/post))

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