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CLIMATE CHANGE POLICY AND ADMINISTRATION ISSUES IN AFRICA: AN AGENDA FOR RESEARCHING INTEGRATED CLIMATE CHANGE MITIGATION AND ADAPTATION AND SUSTAINABLE DEVELOPMENT PROGRAMMES AT MULTIPLE LEVELS AND MULTIPLE SECTORS

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Abstract: Climate change variability and change due to anthropogenic factors is widely recognized as one of the most serious challenges of our time. Yet the policies for addressing it is having little impact in Developing Countries (DCs). This problematic context is especially dire in the world's poorest and most vulnerable region: Africa. The article's objective is to highlight various points of overlap of Africa's sustainable development management with climate change and knowledge gaps calling for research, to strengthening sustainable development management. Based on a pluralist theory, this article describes various (sub)themes and disciplines whereby climate change/variability overlaps with Africa's sustainable development sectors thereby warranting research for filling existing knowledge gaps. The study objectives are accomplished by describing the research (sub)themes of climate change where they overlap with the sustainable development of several African countries (Nigeria, etc.) or can be adapted/replicated in others. Some (sub)themes deserving research attention include: poverty and vulnerability to climate change in Africa; vulnerability of the enormous populations of Africa's coastal cities and human settlements; violence, human security, vulnerability, gender differentials and socio-economic and political cultures; Africa's position in the world climate change debate (e.g. attitude/positions of African negotiators on the causes and the dichotomy of motives at the recent Copenhagen climate conference); educational preparedness of African countries to manage climate change; Agenda setting in climate change adaptation and mitigation; and, climate change, public policy/programme/project administration/implementation. Others are: partnership in addressing climate change in Africa; awareness raising on climate change problems by socio-economic groups, geographic peculiarities of the population; regional scales for addressing climate policy issues; the nature of climate change policies, programmes/projects; institutional frameworks for climate change; civil society and non-government organizations' success stories in climate change adaptation and mitigation; and integration of climate change adaptation and mitigation policy into the policies of conventional and emerging government and or mega corporation MDAs or divisions. I conclude the paper by summarizing the major points and recommending strategies that could improve climate policy.

Keywords: Africa, climate change, policy, research, sectors, sub-regions, Nigeria, impacts

BACKGROUND

Sustainable development literature profusely reports catastrophic extreme climate events (flooding, drought, etc.) occurring nearly everywhere across Africa

and whose impacts overwhelm the capacities of individual African countries to manage the enormous damage. These confirm previous predictions of climate scientists that Africa is the world's region most vulnerable to climate change. It was predicted that Africa would be particularly vulnerable to climate change due to the region's poverty, existing climate extremes (frequent serious droughts, inequitable land-use and land-use systems, primitive agricultural/farming systems including overdependence on rain-fed agricultural systems. Adaptation to climate change, beyond the level of traditional coping strategies, is currently not affordable by most African countries due to the current poor response capacity in terms of human, infrastructural and economic systems. Consequently, sectors such as agriculture and food security, coastal systems, human health, tourism and wildlife, human settlement, industry, and transportation would be particularly vulnerable (Stern, 2006; Watson, Zinyowere, Moss, Dokken, 1997).

Climate change impacts within individual African countries such as Nigeria –Africa's most populous and second largest economy – have starkly demonstrated the enormity of the problem. Flooding has nearly entirely ravaged most of the large national territory (923,788 square kilometers) with torrential rainfall beyond scales previously experienced in successive years in the last century, causing the deaths of many people and huge property losses in many parts of the country (Newswatch, 30 July, 2012: 20–1, Telegraph, 2012. CNN, 2012, etc.). Here, the popular literature also reports that the federal environment ministry has recently warned that 21 of the total of 31 states including the federal capital, Abuja, would shortly be at risk of flood (The Nation, 2012/08/21: 1, 4). The ongoing drought in East Africa has been described as one of the worst in half a century and threatens millions of human lives, not to mention damage to farms, among other resources. Yet some claim that most of these dangers could have been avoided if earlier warnings had been heeded by those concerned (PBS News hour, 2011–11 July). The management of climate risks around Africa prior to the late 2000s was documented (Hellmuth, Moorhead, Thomson, and Williams, 2007). The challenge is similar outside Africa.

Nigeria's National Television Authority (NTA) reports on 22nd July that several deaths were triggered by flooding of parts of China at a scale not seen in about three-quarter of a Century in the third week of July 2012 (DW, 2012), and worsening flooding in India. Other media reported official information released by India's government concerning cremation of hundreds of people who were killed by floods around the middle of 2013 while another nearly 6,000 remained missing –more realistically presumed dead although the authorities were understandably reluctant to so declare one month after devastating floods occurred in the country's northern state of Uttarakhand in the Asian country (Reuters, 2013- 27 June). Elsewhere, in the United States of America, prolonged drought was threatening to cause increases in the cost of food. New York Times reported that the USA Agriculture Department's announcement on 25 July, 2012 of

the likelihood of food price increases in 2013 arising from increasing costs of inputs (animal feed, etc.) triggered by ongoing drought that is growing worse (New York Times, 2012).

An exhaustive catalogue of extreme events (unusually heavy rain, flooding, drought, etc.) associated with climate variability and change is beyond the scope of this background. What requires immediate statement here is the historical variation in socio-economic, political, among other sectoral specifics between and within Africa and the rest of the world – especially the so called economically/industrially advanced nations, or Developed Countries. Although, this is a matter that has been elaborated conspicuously in the literature on climate change, we are yet to understand clearly the implications of Africa's historical socio-economic adversity – a life characterized by poverty, ignorance, solitude, brutishness, sickness – (Hobbes, 1651), to the mitigation and adaptation of climate change.

YAWNING KNOWLEDGE GAPS ABOUT AFRICA'S CLIMATE POLICY: THE URGENT NEED FOR MORE RESEARCH AND REPORTS

Africa's relative weakness in socio-economic, political, and other aspects – and by extension the environmental sector – compared to the rest of the world, has been built into the region's greater vulnerability (susceptibility of any place to disaster) to climate change. In his recent "Economics of Climate Change", Sir Nicholas Stern described the vulnerability of different parts of the world to climate change, placing Africa on top because of its well known socio-economic adversity (Stern, 2006). Large scale migration of people from their usual places of residence and operation has been projected as one consequence of the climate change phenomenon. Oxford University Professor Norman Myers projects that by the year 2050, when climate change could have taken hold, about 200 million people could have been displaced. Put differently, 1 in 45 of the world's people would have been displaced by climate change by 2050 (Brown, 2008: 8). Yet, climate change remains a challenge that is poorly known. The awareness of this catastrophic phenomenon was for long hampered by the irresponsibility of the elite – the perpetually present minority that influences the majority in most societies, nations, and communities.

One of the pioneering publications on climate change was contributed by the Swedish scientist Svante Arrhenius nearly two centuries ago – in the late Nineteenth Century, specifically in 1896. The article concentrated on the way atmospheric carbonic acid influenced temperature in that component of the tri-sectoral environmental system – whose other neighbours (the lithosphere and hydrosphere) were all traumatized by the build up of temperature afterwards (Arrhenius, 1896). Since that publication, during the heyday of neoliberal-capitalism, the

elite were busy implementing their anthropocentric schemes, thereby ignoring ecocentrism (Ingwe, Ikeji, 2009).

Therefore, the entire twentieth century, and parts of the nineteenth of course, could be described as “lost climate centuries”, because it was only in the early twenty-first Century that the Inter-Governmental Panel on Climate Change’s (IPCC) Fourth Report, underlining and unequivocally attributing climate change to humankind’s insatiable use of fossil fuels, and the experience of extreme weather events around the world forced governments, organizations and people to stop climate science denial, thereby acknowledging the reality of climate change. The latter challenge adds to the socio-economic, political and other circumstances of Africa to pose enormous policy challenges that call for urgent attention.

Some of the rather miserable socio-economic, political and ecological settings or contexts of Africa are well documented in the literature (c.f., Ingwe, Ikeji and Ojong, 2010; Ingwe, Okoro and Ukwai, 2009) and need not detain us here. Here, I hasten to point out some of the enormous knowledge gaps that we need to fill through research of manifold climate change-related aspects on a continent covering an area of area of about 30 million square kilometers, as well as the 57 countries within its territory and if possible about four of her islands remain under the control of colonial European powers (UNEP, 2007).

OBJECTIVES

The objective of this article is to highlight various aspects of sustainable development management where it overlaps with climate change and the knowledge gaps calling for further study and discourse to increase our understanding of the manifold issues pertinent for achieving sustainable development management goals. Specifically, I describe various themes and sub-themes of subjects whereby climate change and variability overlaps with sustainable development sectors in Africa that warrant further research to fill existing knowledge gaps.

In so doing, I organize the rest of this article into sections as follows. I present a theoretical framework showing the suitability of pluralism for understanding the manifold challenges/issues associated with climate change and sustainable development because of their various multidisciplinary and multiple-sectoral issues and their overlaps. Afterwards, I show that, being a relatively ignored policy subject in research circles – especially regarding people engaged in climate science denial, the method of description is suitable for highlighting the challenges associated with mitigating and adapting to the climate change debacle and its impacts in Africa. Then, I frame some – but by no means all – of the knowledge gaps and show how they could be addressed. Some of the major

sub-themes I highlight include poverty and vulnerability to climate change in Africa, Africa's position on the world climate change debate. Then, I urge academics to recall the attitude of African negotiators at the Copenhagen Climate Change Conference as well as the causes and burdens borne by Africans from the dichotomization of climate change issues.

I draw the attention of academics to the educational preparedness of African countries for managing climate change, agenda setting in climate change adaptation and mitigation policy; climate change, public policy/programme/project administration/implementation in Africa, partnership in addressing climate change in Africa, awareness raising on climate change problems by socio-economic groups, geographic peculiarities of the population, among other things. Other climate change policy issues that I feel require urgent research attention are the success stories in climate change adaptation and mitigation, how climate policy issues have been address by (sub)regional scales in Africa, the nature of climate change policies, programmes/projects on the continent, institutional frameworks for climate change, civil society and non-government organisations'



Fig. 1. Africa showing Sub-Saharan Africa

Source: Maps.com, 2003

involvement in climate change and the human settlement management and climate change in Africa. Owing to the variation in specialization of academics in the multiple disciplinary fragments related to climate-environmental science/management/studies, and so forth, I encourage the employment of creativity in identifying and elaborating (sub)themes deserving research attention. Finally, I make concluding remarks on this research agenda.

PLURALISM THEORY

The pluralism theoretical perspective is concerned with causation that involves diverse influences – or factors – associated with the way phenomena usually occur. Other uses of pluralism include connotations with a view of behavior. Some radical opinions in politics and philosophy argue that Marxist materialist monism believe in the multiplicity of factors leading to substantial opposition to this approach and the legally determined interpretation of societal development, an extension for denoting a doctrine pertaining to diverse cultural, ideological, radical, national, class, gender, among other characteristics of ideas, the contradiction of class theory and challenge to state-centrism arising from pressure arising from a diversity of factors within the political environment at different levels (national or international). Therefore, pluralism theory encompasses all the foregoing points of view has been applied to analyse domestic politics and international political systems as an alternative to the Marxist class perspective. Some suggest that the theory (pluralism) not only provides a framework (doctrine) for opposing Marxism but also offers an alternative for understanding the multiplicity of factors actually existing in society, thereby imbuing it with varying degrees dynamism. The division of society into various social classes and the flourishing of modern electoral democracy, which was accepted by several revolutionaries before the “cold war”, has been used to illustrate the relevance of pluralism in society. Pluralism was frequently used during the era of the “cold war” by the opposing schools of thought to absolutise their own “truths” (Igwe, 2005).

Lincoln Allison suggests that pluralism has been used in philosophical theories and systems of thought that appreciate the influence of, or involve, more than one ultimate principle, contrasted to those with “monist” characteristics. It was used in the United States to legitimize or rationalize the country’s constitution by various ethno-cultural groups (African Americans, Jewish Americans, Indian Americans, and so on) instead of the delusive hope that such ethnic diversity would disappear through some action. The term is used literally to refer to the belief in the coexistence of more than one entity, belief system, viewpoint and other things. The contemporary meaning of the term to connote the formation of modern society by diverse groups has been shown to be the

major political essence of pluralism. The diversity of groups contrasts with the dominance of society by an elitist ruling class. Here, the horizontal distinction of society is more important than the vertical. The elites ignore and manipulate other constituents of society such as communities, villages, trade unions, churches and religious groups, among others (Allison, 2003). The rejection by some sociologists of what other sociologists perceived to be the prolonged hegemony of positivist orthodoxy (i.e. the use of only one approach to social research), founded on a unified philosophy and methodology of social sciences in the 1970s, led to agitation by scholars for pluralism (diversification of theory and method) in the subject. In place of pluralism, researchers promoted a research approach that allowed many styles and methods. Some earlier works perceived as hegemonic positivist orthodoxy (also, methodological exclusiveness) were contributed by two eminent sociologists: Talcott Parsons (who was notable for developing theories of functionalism), while “abstracted empiricism” was attributed to Paul Lazarsfeld. Phenomenological and structuralist sociologies were created in conjunction with the splitting of Marxism into neo-Marxist factions, as well as philosophical relativism. The terms epistemological pluralism or epistemological anomie have been used to describe the multiplicity of theories of knowledge or paradigms competing with positivist orthodoxy in sociological studies. One justification of pluralism argues that natural scientists have frequently altered their research methods when necessary, instead of sticking ‘slavishly’ to existing – but ineffective – theories and methods. Epistemological anarchy (i.e. application of various research methods and theories) in sociological research was increasingly promoted as a means of salvaging research from the tyranny of positivist orthodoxy. However, it is argued that claims that a hegemonic positivist orthodoxy was institutionalized in sociology was debunked by asserting that the desired methodological pluralism already existed prior to the scholarly ‘rebellion’ i.e. agitation for pluralism in the 1970s. This argument points towards the application of several philosophical and methodological alternatives (among which were Marxism, idealism, symbolic interactionism, to name but a few, prior to the ‘rebellion’ of the 1970s (Scott and Marshall, 2005: 405; Lazarsfeld, Berelson and Gaudet, 1988 [1944]; Lazarsfeld and Katz, 1955; Feyerabend, 1988; Parsons, 1951; Parsons and Shills, 1951 1951); Parsons, 1966), Parsons, 1971; and Lazarsfeld, and Katz, 1955).

Pluralism theory is relevant to this study for several reasons. Its underlying philosophy, versatility, and amenability to application in most of the social sciences (politics, philosophy, sociology, among others), make it match the multidimensionality of urbanization and the manifold sectors underlying it. Moreover, the view that it reflects the real life existence of a multiplicity of factors, make it amenable to adoption in this study, concerned with elucidating on the multi-disciplinary and multi-sectoral economic, social and political ideas involved in sustainable development in Africa (Ingwe, Ikeji and Ojong, 2010).

Recently, it has been demonstrated that challenges bordering on effective management of environments that are by and large poorly known require the employment of rational-comprehensiveness as a policy that provides a foundation for the employment of geo-spatial information science/technology (Ingwe, Odu, Ojong and Angiating, 2012). Therefore, poor information and knowledge on urban environmental quality and socio-economic conditions in Africa presents cases for rationalism (Igwe, 2005). The persistence of squalid and poor urban environments in Africa nearly 50 years after political independence suggests the implementation of incrementalist policies in sectors related to these challenges in individual nation-states of SSA and throughout nearly the whole region present cases for applying the theory of incrementalism. The doctrine of neoliberalism promises to facilitate explanation of politico-economic and cultural variations in study variables (Ingwe, Okoro and Ijim-Agbor, 2012; Ingwe, Ikeji and Mbotto, 2010; Ingwe, Odu, Ojong and Angiating, 2012, among others).

METHODS AND DATA

The method of description has been applied in this study. This method was preferred because of the reports in the literature that it has several advantages. For example, description is suitable for studies on subjects that have received scant attention by researchers. In this regard, climate change policy issues in Africa have, by and large, been ignored. Description therefore, provides a means of starting discourses that are capable of highlighting aspects of challenges in ways that can raise them to the pedestal of higher visibility of both other researchers and also policy makers. Description is amenable to the use of simple quantitative analyses, if necessary thereby producing preliminary information as well as hypotheses that can facilitate further studies that might warrant the use of more sophisticated quantitative techniques (Ogunniyi, 1992; Isangedighi, Joshua, Asim, and Ekuri, 2004). Data were obtained from multiple primary and secondary sources. Primary data include the literature, author's experience comprising extensive participation in climate change discourses, observations of public policy-speak and discourses, knowledge and affectation for over forty years by public policy analysts working in universities and numerous employments and extensive education in the social sciences. Moreover, extensive review of secondary data sources including popular literature and desk research were undertaken. Although I have used familiar examples and situations in Nigeria to illustrate some of the points that require making, my approach and interests are easily replicable or applicable – with adaptations – to other African states.

Framing the theme and sub-themes for studying and discussing climate change policy issues in Africa

Climate change has become very well known in pedestrian and academic discourse as one of the most important challenges facing the world. The destructive or cataclysmic impacts of climate variability and change, namely the increasing frequency of extreme weather events such as flooding or drought, among others, are wreaking havoc in different parts of the world. The media has been replete with reports of enormous damage done to lives and property by extreme climate events in parts of our immediate localities, sub-national region, Africa and elsewhere around the world. The menace keeps challenging the capacity of governments, corporations, communities, non-governmental and civil society organizations to dispense administrative duties usually organized under different sectors of the society and polity. While we know the foregoing at a rather general level, there is scope for understanding and explaining specific aspects of the aforementioned problem at particular sectors and the nature, magnitude and intricacies of the challenges and solutions being formulated and implemented by individual governments and their ministries, departments and agencies at various levels or scales.

The climate change issue calls on academic researchers in the multiple disciplinary fragments and fields of the social sciences and humanities, including the nexus of policy and administration, to demonstrate their capacity to interrogate issues at the points where they intersect with climate change, science, politics, economics and societal aspects with myriad aspects of policy and administration at multiple levels – be they at the local, sub-national region, national or supra-national region, such as Africa, Asia, the Americas and Europe, among others. Therefore, academics are encouraged to explore climate change inter-relationships with policy/administration along (but not restricted to) the sub-themes that follow.

POVERTY AND VULNERABILITY TO CLIMATE CHANGE IN AFRICA

Evidence showing that Africa and Africans have borne poverty far more than its counterparts (i.e. other regions of the world) has been well documented. For example, Richard Ingwe and colleagues report that Africa's several socio-economic conditions are poorer than those of other regions or continents (see, Ingwe, Okoro and Ukwai, 2009). These various dimensions of poverty, especially those that bear heavily on the environment and or human behaviour in man's interaction with the environment determine the vulnerability of regions that specific peoples inhabit to climate change. This various vulnerabilities of regions to climate change have variously been indicated in the literature. In the "(E)conomics of Climate Change", Sir Nicholas Stern declares that Africa is one of the regions of the world that is most vulnerable to climate change (Stern, 2006).

This information or knowledge has been presented mostly at an average and rather general level about Africa. How the intensity, nature, and magnitude of vulnerability varies by country on the continent, is poorly known and understood.

VULNERABILITY OF ENORMOUS POPULATIONS OF AFRICA'S COASTAL CITIES AND HUMAN SETTLEMENTS

Before addressing the assessment of vulnerability to climate change impacts specifically, it is apposite to briefly note some efforts aimed at improving assessments of vulnerability of populations susceptible to disasters generally within the past decade. It is noteworthy that in a recent proposal for a theoretical framework for disaster vulnerability assessment required for management/planning of natural disaster(s) in mega cities globally, it is acknowledged that geographic information systems (GIS), which have emphasized datasets highlighting aspects of the physical environment, population size/demographics at risk and selected economic dimensions of the latter, but ignored or downplayed social dimensions that are equally vitally important, deserve inclusion in the modeling of vulnerability. Consequently, improvement of reliability in socially sensitive vulnerability modeling is being pioneered by a consortium of three US and Japanese universities by including data on marginalized populations, such as homeless and other “special needs” communities (Uitto, 1998: 7). These things, among other documentation in the literature, of course, must be drawn upon to address the situation in Africa, regarding disasters generally and climate change impacts in particular.

Here, it is noteworthy that Africa is one of the world's regions phenomenally afflicted by urbanization of poverty involving emergence of large populations experiencing high rhythms of demographic change and, by extension, rapid urbanization (rate of conversion of hitherto non-urbanised areas in urbanized places) within the past decades (Ingwe, 2012a). Although, some initial steps have been taken to report on the vulnerability of African cities (Bull-Kamanga, Diagne, Lavell, Lerise, MacGregor, Maskrey, Meshack, Pelling, Reid, Satterthwaite, Songsore, Westgate, and Yitambe, 2003), only a few have focused on vulnerability of African coastal areas at micro-scale – contrasted to macro-scales- even within one nation. It is only for a few African countries or a few major cities (or sectors of cities in them), such as for Africa's premier mega-city (Lagos, Nigeria, with a population of nearly 18 million when the national census of housing and population was conducted in 2006), some studies of vulnerability have been reported (Adelekan, 2010: 433–450). Other studies have reported on the vulnerability of Nigeria's coastal cities (Lagos and Port Harcourt) – where

over 21 million people, representing about 21% of Nigeria's total population in 2006, reside (Ekanade, Ayanlade, and Orimoogunje, 2008: 1). For us to move Africa beyond its previous position of poverty and vulnerability to climate change, there is a need for information and knowledge on the sub-regional, national and sub-national scales of vulnerabilities to strengthen the construction of resilience systems and frameworks across these levels. The few studies reporting on parts of Nigeria in terms of the foregoing are by no means sufficient to meet the envisaged information/knowledge required for the enormous tasks ahead. Therefore, the information/knowledge required from academics of African countries that are yet to receive baseline studies is greater and can only be imagined at this juncture.

VIOLENCE, HUMAN SECURITY, VULNERABILITY, GENDER DIFFERENTIALS AND SOCIO-ECONOMIC AND POLITICAL CULTURES

The inter-relationships between violence, human security and climate change is the subject of a book whose 61 chapters were contributed by activists and scholars from various regions of the world. Despite the book's large size, and the various issues covered in it (Scheffran, Brzoka, Brauch, Link, Schilling, 2012), there are several other matters related to violence, human security, and climate change in Africa yet to be discussed. A great deal of vulnerability to climate change arises from the culture of specific regions. Specifically, the vulnerability of either men or women arises from the way the culture of the region uses politics and the associated socio-economic and ecological instruments to short-change or do injustice to either the men or women of the region (read: nation, state/province, local government area or province, depending on the categories or labels given in the region). Put differently, we are agreeing that, just as we have learnt from the energy demand/supply sector, that inadequacy of energy supplies in particular places provokes different responses or imposes different burdens and responsibilities on women compared to men, the advent of climate change – especially its impacts is not gender neutral. For example, the emergence of massive out-migration of people from one place to others brings about different burdens on gender divisions. In the same way, resource shortages arising from climate change provokes wars, among other forms of fierce contests for scarce resources. Prior to climate change discourse, we know that various forms of discomfort – to put it most mildly – have been associated with wars. Women's sexual and reproductive rights, as well as a multitude of other human/civil rights are challenged or trampled upon. Wars have been associated with rape and the dehumanizing treatment of different gender categories, to mention but a few.

The literature reveals that these challenges are manifested across Africa. Scholars of migration report that the decision of people to migrate is different for men and women. The almost ubiquitous and varied forms of discrimination against women and girls, by way of denying them ownership of property – especially land, depriving them of rights of inheritance, denying them rights of education, among other discriminatory practices, are responsible for the increasing decisions of women (and girls) to migrate. However, describing this movement as migration is to hide the real experience, the outcomes have been grimmer. These women and girls become victims of human trafficking for “sex work” – another euphemism. Sex work actually replicates the experiences of women who have to inhabit war-torn regions, namely, rape, among other dehumanizing treatments. (Tacoli and Mabala, 2010). The foregoing provides scope for scholarly studies on the inducement of challenges by climate change that place either men or women at discomfort arising from their gender and the insensitivity of policy-makers to their plight.

Research questions in this regard might include: To what extent has recent drought in East Africa caused harsher living conditions on women relative to men within the same locales? Put differently: What greater burdens are women and girls of regions highly susceptible to flooding in coastal Africa being subjected to (relative to men of specific areas) that could be attributed to climate change? What should proactive policy consider as part of preparations for future livable environment(s) for the affected gender? Of course, drought brings about trauma for men of areas where they have become accustomed to privileges that are not usually enjoyed by women!

AFRICA'S POSITION IN THE WORLD CLIMATE CHANGE DEBATE: RECALLING THE COPENHAGEN ATTITUDE OF AFRICAN NEGOTIATORS AND THE CAUSES OF THE DICHOTOMY ON BURDEN BEARING

Most of the global discourse on climate change concerns the triggers of climate variability and change paying little attention to Africa and the developing world, which bears a disproportionately underserved burden of the catastrophe. What equity issues are peculiar to Africa? Which ones pertain to other regions exhibiting similar characteristics to Africa? To what extent are common grounds being found between Africa and the rest of the developing world? To what extent is Africa forming frameworks that are capable of addressing the challenges posed by climate change to Africa and other stakeholders involved in managing catastrophes or formulating coping strategies?

EDUCATIONAL PREPAREDNESS OF AFRICAN COUNTRIES TO MANAGE CLIMATE CHANGE

Having mentioned the information and knowledge requirements for tackling climate change, the tasks associated with producing these development inputs stand out starkly. What are the specific neoliberalistic features (Sekler, 2009) of Africa (its sub-regions, nations and sub-regions) pertaining to the education sector generally and other disciplinary fragments in the nexus of climate, environment, ecology, among others? The consideration of education as a solution for climate change problems has been documented (UNESCO, 2012; Goodman, Dankelman, Mannathoko, and Hodge, 2012).

Education and knowledge equip societies generally with the capacity to address challenges. Here, this sub-theme overlaps with the capacity of Africa to address not only the equity issues outlined earlier, but also challenges in the nexus of building resilience to climate change, as well as emancipating Africa from the strangleholds of socio-economic adversity and political domination by foreigners, which as history records has been the burden of the continent. One dimension of this sub-theme is to examine climate change policies and programmes/projects of African nations' ministries responsible for education, their university commissions or regulatory agencies for tertiary and lifelong education. The point being made here is that the enormity of climate change challenges that we are seeing and reading of ought to affect other development policies including that of education. This is the link that needs to be made in articles being invited here.

AGENDA SETTING IN CLIMATE CHANGE ADAPTATION AND MITIGATION

This section attempts to understand the extent to which policy makers appreciate climate change as a sustainable development challenge, thereby incorporating it into the development agenda. Here, I elaborate on how climate policy agenda setting could be outlined in Nigeria. While this concentrates on Nigeria, the same approach could be applied elsewhere in Africa. Therefore, this theme could be examined on the spatial scales constituted by various political and administrative entities (the 36 states, Federal Capital Territory – Abuja, 774 Local Government Areas, and the Federal Government of Nigeria, and six geo-political zones forming Nigeria). Naturally, such a scholarly endeavour might involve comparing the awareness of policy makers in an appropriately determined number of the sub-national entities, or the situation in Nigeria with those of other countries. It might also involve comparing the ranking of policy

makers' attitudes towards climate change and other sustainable development programmes. There are other challenges pertaining to the disposition of decision makers towards climate science, regarding their belief in the science or otherwise and, by extension, how such dispositions affect the climate policy spheres of the particular entity. What is the relative balance between 'voices' representing climate science denial and climate science believers in the policy-making arena?

CLIMATE CHANGE, PUBLIC POLICY/PROGRAMME/PROJECT ADMINISTRATION/IMPLEMENTATION

Budget implementation in Nigeria has recently become a very important issue in development-speak. It has been frequently reported that policy and programmes implementation have lagged behind Nigeria's federal budgets in the past several years. Although this might have happened since post-independent Nigeria (i.e. counting from 1st October 1960, when independence from the British colonial masters was achieved), the corrupt practices associated with the delay in this programme's implementation only came to public awareness after the Yar'Adua administration declared that it was illegal for government officials to fail to return unspent budgetary funds to public coffers, shortly after his inauguration in May, 2007 (Ingwe, 2012). Moreover, disclosures on the extent of implementation of programmes has become regularly published in issues of Nigeria's popular literature (various national dailies and newsmagazines from 2007 to the present). Most relevant to this research agenda is the relationship between the habitual delays in implementation of programmes and climate change policy implementation. Significant in this regard is the urgency of mitigating and adapting to climate change as rapidly as possible as a means of averting or reducing its deleterious consequences.

There is a need to examine the way education sectors deal with the climate change challenge as their response to societal problems. For example, have national university systems responded by creating educational and community service policies and programmes either individually or together with other systems? Has there been regrettable lethargy and apathy towards the challenge? What is the nature of leadership or climate change innovation? Who are the champions of the national, sub-regional, and sub-national, etc., response to climate change? Usually, pioneers of any phenomenon stimulate others to copy or emulate through some kind of waves in the spatial processes of diffusion described in Torsten Hägerstrand's classic works (Hägerstrand, 1967, 1952, 1967 [1953], & with Hannerberg, 1957; Pred, 1981, 1977; Cliff, Pred, & Hägerstrand, 1992). Could this be happening at the national or sub-regional level? A description of

such a phenomenon is capable of enlightening audiences that could turn out to be supportive if impressed. It should be interesting to rate or place on a ranking the climate change initiatives of the Institute of Public Policy and Administration (IPPA), University of Calabar and its collaboration with other Committees and organs of the institution.

PARTNERSHIP IN ADDRESSING CLIMATE CHANGE IN AFRICA

The value of partnership to development worldwide was emphasized by former British Minister (Ingwe, 2009). To what extent are partnerships being undertaken to address climate change on the continent? As a region that has been attracting foreign nations in search of natural resources to exploit for the development of their homelands, to what extent have nation-states of various types (advanced, emerging and under-developed) joined Africa in the quest for solutions to climate change and its impacts on this beleaguered region? Recently, it was reported that all manner of rich countries, multi-national corporations (MNCs) – a.k.a. trans-national corporations (TNCs) had launched a “(N)ew scramble for Africa” by buying up large tracts of Africa’s land in order to grow food for their home-countries that were embattled due to different dynamic relationships between humans, physical factors and land, among other things (Ingwe, Okoro, Ukwai, 2009). To what extent is the African continent pressurised by being made to bear the brunt of the impacts of climate change in other parts of the world? What reciprocal actions have been put in place by advanced countries and other entities that have launched an offensive on Africa’s land, to compensate for Africa’s burden?

How do the partnerships reflect a good mixture of stakeholders expected to be involved in sustainable development? In other words, what is the proportion (or weighted strengths) of the various stakeholders involved, such as the public sector (represented by a specific African State) and/or a part of it, such as a sub-national region (province/state, LGA or district, as the case may be) engaging in partnerships with businesses, sub-national communities (among other stakeholders) towards addressing climate change? This research aspect could be approached from either the perspective of adaptation, mitigation or a combination of both while managing the degree of details involved. What have been the nature, structure, and other characteristics of climate change partnerships by country, within countries, across countries? What intra-national partnerships are common in specific sub-regions? What are the drivers of specific types of partnerships on climate change?

AWARENESS RAISING ON CLIMATE CHANGE PROBLEMS BY SOCIO-ECONOMIC GROUPS, GEOGRAPHIC PECULIARITIES OF THE POPULATION, AMONG OTHERS

Climate science denial might have persisted for about two centuries or longer since the first publications on the subject. For the avoidance of doubt, it was evident that only after the Inter-Governmental Panel on Climate Change (IPCC) released its Fourth Report, which stated in unequivocal terms that climate change is a consequence of humanity's habit of over-relying on fossil fuels (IPCC, 2007), did all manner of individuals and organizations and countries begin to shift from their hitherto climate science denial habits towards acknowledging the reality of this catastrophic event. Moreover, late in the same year, Africa was to suffer a nearly total affliction by climate change, when in the latter half of the year, a record 18 or so African countries were flooded almost simultaneously. This calamity left most African Ministers of environment or related sectors begging for the assistance of advanced nations in order to manage the challenges associated with climate change and extreme weather events (flooding and drought, among other things, associated with the disaster).

Arising from the foregoing, it is important to map awareness-raising policy, programmes and projects on climate, their variability and change. It is also important to assess how these target various stake-holders, groups, communities, regions, and so forth. For example, farmers are direct recipients of the consequences of climate change because the science, art and technology of producing raw materials for food and other inputs for industrial manufacturing, relies heavily on the weather, whose variability and change over the centuries is described as climate change. Therefore, in Africa, where agriculture has hardly progressed beyond peasantry (rurality of operation, small-holdings, inadequacy of input – including shortage of information on weather, credit, crop and animal varieties, among other things), how have national and sub-national policies addressed these challenges across Africa? It is likely to be fruitful and elucidatory to compare awareness-raising on climate change with those focusing on other issues such as HIV/AIDS, Malaria (which is influenced by climate change, and so forth).

REGIONAL SCALES FOR ADDRESSING CLIMATE POLICY ISSUES

The term region is certainly one that has incontrovertibly geographic roots. One of its most elucidatory usages was attributed to EG Taylor, who applied it in connection with a place characterized by internal homogeneity in terms of content of natural and/or cultural features. It might also be a political creation of

rulers (as in Nigeria – where the creation of federal states and local governments areas were undertaken by dictators from 1967–75 (Gowon), 1976 (1975–6) Murtala Muhammad, from 1983–5 (Buhari/Idiagbon), 1985–1993 (IB Babangida), 1993–96 (Sani Abacha), 1999–2007 (Obasanjo), 2007–2011 (Yar’ Adua), and 2011–present (Jonathan).

Of course, the term region can be applied at various scales: i.e. from the sub-national, national, to supra-national scales. In the latter regard, we speak of (the climate change issues of) an African region by bringing together the challenges of this subject in all 53 countries of the continent. It is also a region, when we discuss climate change challenges of West Africa (a sub-region) as one region – when this stands alone. Then of course, we are still doing a regional analysis when studying this problem either at a national scale – as for Nigeria comprising its 36 states and federal capital (Abuja) or one of its six geo-political zones, or one of its 36 states, or some of its 774 Local Government Areas. Other good combinations and adaptations of the foregoing spatial scales are possible. However, how such studies are designed and implemented remains the prerogative of the scholar or student. It needs not be arrogated by a call for joining an important research agenda – as being proposed here.

THE NATURE CLIMATE CHANGE POLICIES, PROGRAMMES/PROJECTS

Mitigation and adaptation are two broad aspects of climate change policy, programmes and projects. These sub-themes could be approached in terms of which better deserves attention: is a specific region emphasizing adaptation over and above mitigation and why is such being done? Beyond that, there are issues pertaining to the particular form of mitigation (such as the massive implementation of renewable energy technologies or RETs) e.g. solar panels – as was done by Arnold Schwarzenegger, former Governor of California in the famous Solar (panel) Olympics in the USA, or the establishment of the Bielefeld Stadium in Germany with solar panels as roofing sheets. Is the policy tilted towards solar energy? Why should this happen in defiance of a wide range of other RETs? In Nigeria’s Cross River State (one of the 36 federal states that prides itself on hosting about 36 per cent of Nigeria’s total forest resources), why is the bid to create carbon credits under the famous UN programme, reducing emissions from deforestation and forest degradation (REDD), failing to institutionalize a sustainable biomass energy special policy in the sub-national region? Is it the consequence of ignorance, laziness of the policy-making framework of the sub-region, or the legacy of fossil-fuel ‘culture’? What is the nature of climate change mitigation and adaptation policies in other leading forestry states that follow Cross River State?

INSTITUTIONAL FRAMEWORKS FOR CLIMATE CHANGE

The break of climate change has caused national governments to undertake various institutional framing of organizations, ministries, departments and agencies charged with responsibilities of addressing its challenges. Descriptions of how these institutional responses have been undertaken at various levels of government in particular countries can provide a basis for fruitful discourses thereby enlightening audiences seeking lessons from successful models or cases. It might be that certain patterns of institutionalization of climate change responses have emerged in specific sub-regions of Africa (ECOWAS, SADC, EAC, North Africa, etc.). It is being theoretically proposed that the supra-nationalisation of development management that was pioneered by Western Europe, in the form of the European Union (EU) and its European Commission (EC) before spreading across the world, might be creating a homogeneity of policies in the environmental and related sector (Ingwe, 2012). Is it possible to find this kind of patterning of framework taking place in Africa's sub-regions' responses to climate change in their institutionalization efforts?

CIVIL SOCIETY AND NON-GOVERNMENT ORGANISATIONS' INVOLVEMENT IN CLIMATE CHANGE

The distinctive contributions of civil society to sustainable development have been acknowledged in general terms (WRI, UNDP, UNEP and World Bank, 2003). Its contribution to climate change is an important aspect of that. From the significant role of the IPCC mentioned earlier, to several others. The recent documentation of "(S)outhern voices on climate policy choices" provides insights into various contributions of southern civil society to manage the climate crisis. Apart from informing on civil society-initiatives on climate change advocacy at international and regional levels, and their influence on national governments as well as holding the latter accountable, and supporting implementation of policies and programmes, it points out how civil society has given praise when that was warranted, made a fuss when required. Moreover, civil society has had to push new climate issues to the visibility of policy stakeholders, mobilized required response(s), stood on the side of vulnerable populations, assessed local-level advocacy, altered the modus operandi of donors and also influenced businesses (Reid, Ampomah, Prera, Rabbani and Zvigata, 2012). However, these pertain to the global South. We need to know about the specific issues in Africa.

HUMAN SETTLEMENT MANAGEMENT AND CLIMATE CHANGE

Manifold aspects of human beings' culture overlap with climate change issues in the nexus of resilience of regions or planning and management of human settlements. Some of these include regulation and preparation of land for building houses or residential areas, workplaces, factories and recreational grounds, among others. Other overlaps of settlement management and climate change concern building quality – including energy requirements, whether the design to use energy is sustainable or otherwise, and quantity of energy used. Energy efficiency technologies, among other things, have become major criteria of settlement and building design and architecture in numerous countries. How much of the new energy sustainable technologies (describing renewable and efficient energy varieties) are being massively promoted and implemented by African countries – at the scales of regions and individual countries? What is the nature and depth of special policies addressing these issues or aspects of sustainable development? To what extent are ministries, departments and agencies of African governments integrating policies on public works, electricity and general energy supply, building, and related issues to climate change mitigation and adaptation?

SUCCESS STORIES IN CLIMATE CHANGE ADAPTATION AND MITIGATION

Evaluation of climate change adaptation and mitigation policies (programmes and projects) across Africa might reveal some spectacular success stories as well as failures. What specifically have particular African states done right or wrong? What lessons are being learned or have already been learned from the design and implementation of climate change adaptation and mitigation programmes/projects?

INTEGRATION OF CLIMATE CHANGE ADAPTATION AND MITIGATION POLICY INTO THOSE (POLICIES) OF CONVENTIONAL AND EMERGING GOVERNMENT AND OR MEGA CORPORATION MDAS OR DIVISIONS

A new model of sustainable development management – described as climate (change) policy integration – has emerged in the recent and ongoing era of climate variability and change. This new model of development management emphasizes that integration of climate (change) issues into other sectoral issues

is urgent and imperative as a means of coping with the multiple and enormous impacts of climate change. It is poorly understood the extent to which this sustainable development management model (climate policy) integration is either being promoted or implemented, or both, across Africa. Reports on the year of adoption, champions of climate policy integration in specific countries of Africa, or within its sub-regions have occurred will reveal the achievements or otherwise of climate policy on the continent.

CONCLUSION

In 2009 or thereabouts, extreme weather events – especially flooding – highly resembling those earlier predicted to come with climate change, affected a record 18 African countries. This flooding left the affected countries nearly helpless and trying to grapple with the emergency situation it created. Two years earlier, the IPCC had released its Fourth Report that stated unequivocally that climate change resulted from the terrible habits of humankind, namely the insatiable quest for and overuse of fossil-fuels (IPCC, 2007). Prior to those recent years, the world had been seized by climate science skeptics (people who denied the credibility of climate change and the vast scientific evidence that had been generated since Arrhenius's publication of the link between atmospheric properties and fossil fuel burning. Prolonged climate science denial has led to delays in addressing the challenge. With the recent shift from denial to acceptance of climate science and the enormity of the realization of climate change impacts in Africa, policy ought to shift accordingly. In the foregoing, I outline some of the key aspects that audiences might need to seek to understand what governments and non-government organizations have done, and are doing, to respond to the catastrophic phenomenon that threatens the sustainability of our planet: the Earth and life on it – including humankind.

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Summary