

Full Length Research Paper

Climate change and feminist environmentalism in the Niger Delta, Nigeria

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Received 20 April, 2015; Accepted 15 July, 2015

Feminist environmentalist debate explores possible linkages between women and environmental issues such as inequality. One of the most pressing global problem at the centre of this debate is climate change vulnerability. As the Intergovernmental Panel on Climate Change (IPCC) creates global policy awareness on the realities of climate change vulnerability, women in the poor coastal regions of the periphery societies such as the Niger Delta, Nigeria, prone to environmental degradation seem to be missing out. This subject matter has been of immense policy concern. The increase in recent decades of environmental disasters, deleterious effects of oil resource exploitation by the Multinational Corporations (MNCs), pollution, gas flaring, acid rain, sea level rise, ozone layer depletion, global warming and related pressures, provide the need to explore feminist environmental challenges. As all such problems manifest with divergent climate related implications, the most fundamental challenge they pose to women seem less talked about. Niger Delta women who are largely bread winners in most rural households are at risk as their subsistence relies heavily on the natural environment such as farming, fishing, petty trading, gathering of periwinkles, oysters, crayfish etc. To explore this dynamic, the study deployed a desk review of relevant secondary data to examine possible linkages between feminist environmentalism and climate change mitigation. Findings suggest that climate change, mitigation has been minimal. The paper made some policy recommendations.

Key words: Environmental security, climate change, women, development, Niger Delta

INTRODUCTION

The 1990s have often been dubbed “The Decade of the Environment.” Certainly the Earth Summit held in Rio de Janeiro in June 1992 brought the countries of the world together to address such issues as biodiversity, global warming, acid rain, pollution, deforestation and desertification, species endangerment, preservation of wilderness, and energy consumption to international attention

(Warren, 1996). Included among the various seminars and conferences-the global forum that constituted satellite meetings to the earth summit was a special seminar, “Ecofeminism: Gender, Development and the Environment,” hosted by the University of Rio de Janeiro. This satellite seminar explicitly focused on ecological feminism: It made visible crucial and often overlooked

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environmental concerns (Warren, 1996). Despite the proliferation of diverse scholarship in the field of climate change over the past two decades, quite a number of rural women in the poor and volatile coastal areas such as the Niger Delta region of Nigeria are left out in the agenda of environmental developmentalism. In recent decades, Niger Delta women who are among the vulnerable groups are experiencing the cost of climate change and environmental insecurity as the natural yields from healthy ecosystems such as food crops and fishes are in decline (Amadi, 2013).

The critical roles of the Niger Delta women have been amply explored (Onoge, 2002). There are gender socially assigned tasks and obligations in all societies. It is the women's task to provide for the upkeep of the family in the Niger Delta (Onoge, 2002; Emuedo and Emuedo, 2014). Women in upland areas engage in farming of food crops such as cassava, yam, maize, sweet potato, and in the past, cocoyam, while women in the riverine areas engage in fish and gather sea foods; periwinkles, oysters, snails, shrimps, and crayfish. Women are thus, —food producers, procurers and preparers (Okon, 2002; Emuedo and Emuedo, 2014). However, servile poverty, coupled with huge rise in women-headed households (Uchendu, 1995), and environmental degradation put women under undue pressure. Women are forced increasingly to play active financial role in their families and are becoming wage earners (Sudarkasa, 2005; Emuedo and Emuedo, 2014). As such, beyond the food needs of the family, women produce or gather more for sale to augment family income.

A number of studies have demonstrated environmental relapse in connection with Niger Delta women (Uchendu, 1995; Onoge, 2002; Okon, 2002; Amadi, 2013). Also some studies have attempted empirical or theoretical extrapolation of environmental feminism in climate change contexts as well as its implications (Onoge, 2002, UNDP, 2006; Amadi, 2013; Rocheleau et al., 2013).

Conversely, a key policy contribution of this literature, namely; the integration of women into global climate change dialogue, is undervalued. Development studies argue that the neglect of women results in a narrow conception of climate change vulnerability and does not account for the changing realities of global development policy discourse. Indeed, emphasis has been shifting in the literature from an exclusive focus on global climate change to a micro analysis of the concept to encompass human security (Mathews, 1989; UNDP, 1994; Klare, 1996). Nevertheless, it has been argued that this new focus often, as well, neglects the dynamics of women in the poor societies in its analysis (Amadi, 2013).

This paper argues that while climate change studies have taken different dimensions since the 1990s following the IPCC reports, policy framings on feminist environmentalism among the coastal areas have been elusive. The debate advanced in this literature argues from feminist environmental perspective and posits that major

causes of women's marginalization are the asymmetrical environmental resource consumption largely attributable to capitalist exploitation.

The paper posits that failing to understand the role of women in global climate change policies will always perpetuate women's vulnerability in climate change discourse, results ecological injustice and more so, runs counter to global clamor for environmental sustainability and gender transformation. The paper is divided into four sections which include; the methodology and theoretical framework, the history of the study area, a review of relevant literature, results and discussions, conclusion and policy recommendations.

THEORETICAL FRAMEWORK AND METHODOLOGY

The primary reason for the construction of a new approach to women and climate change studies centers on the fact that the analytic frameworks that have traditionally been employed to explain women and their vulnerability have simply been superficial when addressing environmental threats that take divergent forms outside existing cultural barriers. Such anthropogenic and natural environmental problems require novel and broader scholarly conceptualization within global climate change dialogue. Since both climate change and women (gender) are interrelated both should be mutually reinforcing in environmental and development discourse. This study provides a systemic exploration of the nexus between climate change and feminist environmentalism. It is a desk review which examines relevant theoretical and empirical data. It goes beyond these to advance the feminist environmental theoretical framework and assumptions to interrogate climate change and gender transformation. The feminist environmental debate argues that there is need for the removal of environmental obstacles and domination which undermine women's equality.

Many ecological feminist thinkers (Ruether, 1975; Griffin, 1978; Merchant, 1980, 1990; Gray 1981; King, 1981, 1983, 1989a; Plumwood 1986, 1991; Salleh 1984; Warren 1987, 1988, 1990; Warren, 1996; Rocheleau et al., 2013) have argued that, ultimately, historical and causal links between the dominations of women and of nature are located in conceptual structures of domination and in the way women and nature have been conceptualized, particularly in the Western intellectual tradition.

What unites the multiple branches of feminist environmentalism today is a belief in the fundamental connection between the oppression/domination of women/minorities and the oppression/domination of nonhuman nature (Urbanik, 2010). In essence, feminist environmentalists argue that one cannot eliminate human domination of other humans (e.g., sexism) without working to dismantle all forms of domination, including human domination of

the natural world.

For our purpose it is enough to argue that anthropogenic choices of men which have deleterious effects result environmental changes that pose threats to women known to be vulnerable. Feminist environmentalists posit that only when such environmental threats and insecurity triggers are addressed, women could assert some level of transformation in environmental security contexts. According to Ruether (1975);

Women must see that there can be no liberation for them and no solution to the ecological crisis within a society whose fundamental model of relationships continues to be one of domination. They must unite the demands of the women's movement with those of the ecological movement to envision a radical reshaping of the basic socioeconomic relations and the underlying values of this (modern industrial) society (p.204).

We have chosen this framework to understand the existential realities of the Niger Delta women in environmental contexts and for global policy discourse among the coastal areas and the wider periphery societies of the global South. Issues such as feminist environmentalism are important to developmental researchers and policy makers seeking for more equitable and sustainable resource use and possible gender mainstreaming in climate change vulnerability and mitigation.

History of study area

The Niger Delta is located in the Atlantic Coast of southern Nigeria where River Niger divides into numerous tributaries. It is the second largest delta in the world with a coastline spanning about 450 kilometers terminating at the Imo River entrance (Uyigwe and Agho, 2007). The region spans over 20,000 square kilometers and it has been described as the largest wetland in Africa and among the three largest in the world. About 2,370 square kilometres of the Niger Delta area consists of rivers, creeks and estuaries and while stagnant swamp covers about 8600 square kilometres (Uyigwe and Agho, 2007). The Niger Delta has areas of ecological zones such as Mangrove Forest and Coastal Vegetation, Freshwater Swamp Forest, Lowland Rain Forest, Derived Savannah, Montane Region.

The States are mainly made up of upland and riverine communities (except a few such as; Imo, Abia and parts of Ondo) which provide important terrain to explore climate change dynamics. Specifically oil exploitation and exploration by multinational oil companies take place in these states and provide need for in-depth extrapolation of feminist environmentalism. The riverine area, with a land surface between 2 and 5 metres above sea level, covers about 40 per cent of each state, while drier

uplands occupy the remainder. Most water channels in the freshwater zone are bordered by natural levees that provide the basis for settlements and agriculture. The upland area varies in height from 10 to 45 metres above mean sea level (msl), but the majority is below 30 metres above sea level. Its surface is interspersed by small ridges and shallow swamp basins, as well as by gently sloping terraces intersected by deep valleys that carry water intermittently (UNEP, 2011).

Surveys carried out in the course of developing the Niger Delta Master Plan (2005) shows that there are more males (54%) than females (46%) in the Niger Delta Region. Similarly, there are overwhelmingly more male (93%) heads of households than females (7%). However in most households women are the bread winners involved in direct mode of subsistence of the family. The Niger Delta Master Plan (2005) demonstrates that the traditional economic activities of the communities fall into two main categories: Land based type on the drier parts at the northern end of the Delta, which includes farming, fishing, collecting and processing palm fruits, as well as hunting. Water based type of economy at the southern parts of the Delta including fishing and trading, with a less diversified economy.

The history of environmental degradation and climate change implications dates around 1956 following the discovery of oil in commercial quantities in Oloibiri a community in Bayelsa State. Till date, women are confronted with a series of environmental hazards negatively affecting their daily subsistence which we seek to examine in this study.

The climate of the Niger Delta Region varies from the hot equatorial forest type in the southern lowlands to the humid tropical in the northern highlands and the cool montane type in the Obudu plateau area (Niger Delta Master Plan, 2005).

The wet season is relatively long, lasting between seven and eight months of the year, from the months of March to October. In the northern and north-western parts of the Niger Delta Region, the rains may be delayed by as much as four weeks, thereby extending the dry season which, in recent times, tends to last some four to five months. (Niger Delta Master Plan, 2005). There is usually a short break around August, otherwise termed the "August break". The dry season begins in late November and extends to February or early March, a period of approximately three months (Niger Delta Master Plan, 2005).

During the dry season, the northeast trade wind blowing over the Sahara Desert extends its dehydrating influence progressively towards the equator, reaching the southern coast of Nigeria in late December or early January. The period is known as the "Harmattan", which is more noticeable in some years than others. Mean annual rainfall ranges from over 4,000mm in the coastal towns of Bonny and Brass in Rivers and Bayelsa States respectively, and decreases inland to 3,000mm in the

mid-delta around Ahoada, Yenagoa and Warri in Rivers, Bayelsa and Delta States, respectively; and slightly less than 2,400mm in the northern parts of the region such as Imo and Abia States. In the north western portions including Edo and Ondo States, annual rainfall ranges from 1,500 2,000mm (Niger Delta Master Plan, 2005).

Temperatures are generally high in the region and fairly constant throughout the year. Average monthly maximum and minimum temperatures vary from 28oc to 33oc and 21oc to 23oc, respectively, increasing northward and westward. The warmest months are February, March and early April in most parts of the Niger Delta Region. The coolest months are June through to September during the peak of the wet season (Niger Delta Master Plan, 2005). There are nine states that made up the Niger Delta namely; Abia, Akwa Ibom, Bayelsa, Cross Rivers, Delta, Edo, Imo, Rivers, Ondo,

The choice of the Niger Delta women is informed by gender inequality, ecological injustice and the paradox of oil wealth and massive poverty as well as need for transformation of women. The concerns raised are necessary for any adequate environmental policy.

LITERATURE REVIEW

Some conceptual issues: Feminist environmentalism and climate change

Feminist environmentalism

Divergent connections between feminism and the environment, have generated different, sometimes competing, theoretical positions in all areas of feminist and environmental scholarship (Warren, 1996). The conceptual explorations suggest that the linkages between them could be complex considering the divergent uses the concepts could be subjected to. Harding (1986) argues that gender inequities are important to understand possible connections between feminism and environmentalism.

For instance the literature on the importance of gender mainstreaming in environmental and poverty eradication policies have been recognized in a wide range of global agreements and forums, including chapter 24 of Agenda 21 (United Nations Conference on Environment and Development, 1992; World Summit on Sustainable Development, 2002; the Beijing Platform for Action, 1995; the World Conference on Human Rights, 1993; the International Conference on Population and Development, 1994; the World Summit for Social Development, 1995; the Millennium Declaration, 2000; the Rio + 20 summit, 2012; UNEP, 2006).

Feminist environmentalists such as Agarwal (1992), Rocheleau et al., 2013, argue that women in poor rural societies such as India are victims of environmental degradation in quite gender specific terms. Similarly

Amadi (2013) demonstrates such predicaments in the volatile Niger Delta region. Warren (1996) recounts that the historical and empirical links suggest that social scientific data on women and the environment are relevant to the theoretical undertakings in many areas of philosophy. She argues that in ethics, for example, that the data on women and nature raises issues of anthropocentric and androcentric bias. She wonders whether mainstream normative ethical theories can generate an environmental ethic which is not male biased.

In epistemology, data on the "indigenous technical knowledge" suggests that women who globally constitute the main agricultural production force (e.g., at least 80 percent of the farmers in Africa are women) are underprivileged which raises issues about women's "epistemic privilege" about farming and forestry (Warren, 1996).

In a recent study, Emuedo and Emuedo (2014) demonstrate how vulnerable and poor groups in the Niger Delta such as women are prone to environmental hazards. They observe that poorer people are easily susceptible to changes in the environment, mostly because social, political and economic exclusion means they almost always have fewer choices about where they live. They bear the brunt of natural hazards, biodiversity loss and the depletion of forests, pollution (air, water and soil), and the negative impacts of industrial activities, as they impact on their potential for food security. Akpofure (2008) identifies salient environmental problems arising from oil spill and its hazards including air, water and soil pollution.

Warren (1996) reports that on a more personal and everyday level, some grassroots women's groups have explicitly stated that our first environment is our bodies, calling for a more integrative approach to health, environment, and family planning in development, welfare and environment programmes.

Socialist feminist such as Fraser (1987) explores the political needs and services in social welfare programs in the United States. The historical and theoretical links show that within the social sciences, women and the environment are two key relevant and interrelated subject matters.

Harding (1986) identifies five elements of feminist critique of science namely; inequity of participation and power in science as usual; abuse and misuse of science on and about women; assumptions of value-free objectivity and universality in science; use of culturally embedded, gendered metaphors in scientific explanation and interpretation; and development of alternative ways of knowing and ways of learning based on everyday life, women's experience, and explicit statement of values.

Ecofeminism and other feminist critiques of environmental management paradigms have raised questions of gender, power, and paradigms of economic development (Merchant, 1981; Hynes, 1992; Seager, 1990; Shiva, 1988).

Warren (1996) re-echoes that recent literature on gendered resource rights in development studies has tended to focus on ownership and use rights in land, trees, water, wildlife, and other rural resources. Similarly, Shiva (1988) explores the importance of gender in natural resource extraction and development.

A review of the literature suggests that feminist environmentalism has in recent times become an influential pedagogical tool to explore climate change vulnerability and constraints it poses to women. This is explored from natural and anthropogenic dimensions and includes challenges such as inequitable and deleterious natural resource exploitation. However, since the industrial revolution, anthropogenic greenhouse gas emissions are pushing this effect farther than any time in recorded history (IPCC, 2001).

Climate change

The term climate change conveys some urgency which demands scholarly attention. Traditional perspectives envision that climate change is caused by two key factors namely; anthropogenic and natural. The Intergovernmental Panel on Climate Change (IPCC), a body set up in 1988 by the World Meteorological Organization (WMO) and the United Nations Environmental Program to provide authoritative information about climate change phenomenon, produced enough evidence in their first report in 1990 to show that climate change is a reality.

IPCC (2007) Fourth Assessment Report (AR4) gave the most current and acceptable definition of climate change, which states that; "climate change is a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and /or the variability of its properties, and that persists for an extended period typically decades or longer.

Vulnerability to climate change is the degree to which geophysical, biological and socioeconomic system are susceptible to, and unable to cope with, adverse impacts of climate change, including climate variability and extremes (IPCC, 2007).

The Intergovernmental Panel on Climate Change (IPCC) describes climate change as any change overtime, whether due to natural variability or as a result of intense human activities (IPCC, 1990).

The climate system is a complex, interactive system consisting of the atmosphere, land surface, snow and ice, oceans and other bodies of water, and living things. The atmospheric component of the climate system most obviously characterizes climate; climate is often defined as 'average weather' (Awosika et al., 1992; Le Treut et al., 2007).

As a relatively new concept, climate change is widely used to describe the complexity of interrelated threats associated with changes in the climate, such as genocide, out migration, and the displacement of populations.

However, as the degree of environmental threats and degradation which affects women increases, climate change policy discourse requires corresponding urgent attention.

Climate change has resulted in a number of insecurity challenges. The most pressing of these challenges is environmental as human life largely depends on the environment. One of such vulnerabilities is flood disaster such as the 2012 experience in the region. Floods are known to cause substantial damage through degradation of soil, destruction of crops, property, human life and livestock (Amadi, 2013). This underscores a number of environmental insecurity as Chalecki (2002) reintegrates environmental security challenges into the climate change debate.

Climate change induced environmental insecurity is now a common place in the Niger Delta, hence the volatility of the region. Environmental security (ecological security or a myriad of other terms) reflects the ability of a nation or a society to withstand environmental asset scarcity, environmental risks or adverse changes, or environment-related tensions or conflicts (Amadi and Ogonor, 2015)

For instance, the environmental challenges in Bonny Island in the Niger Delta results from the continual exploration and exploitation of natural resources which has gradually degraded the ecosystem primarily from economic motives (Lekwort et al., 2014).

There are several environmental problems from the activities of the oil multinational corporations leading to discharge of increased volume of toxic effluents which have exacerbated the incidence of pollution and contamination of both surface and ground water by harmful gas, contamination of soil by oil spills and leaks, increased deforestation as well as environmental degradation stemming from gas flaring (UNEP, 2011; Lekwort et al., 2014). Climate change also has the potential for internal displacement such as flooding (Amadi and Ogonor 2015), decline in food crop production (Amadi, 2013).

Climate is usually described in terms of the mean and variability of temperature, precipitation and wind over a period of time, ranging from months to millions of years (the classical period is 30 years). The climate system evolves in time under the influence of its own internal dynamics and due to changes in external factors that affect climate (called 'forcings'). External forces include natural phenomena such as volcanic eruptions and solar variations, as well as human-induced changes in atmospheric composition (Le Treut et al., 2007). Solar radiation powers the climate system. There are three fundamental ways to change the radiation balance of the Earth: 1) by changing the incoming solar radiation (e.g., by changes in Earth's orbit or in the Sun itself); 2) by changing the fraction of solar radiation that is reflected (called albedo'; e.g., by changes in cloud cover, atmospheric particles or vegetation); and 3) by altering

the longwave radiation from Earth back towards space (e.g., by changing greenhouse gas concentrations) (Le Treut et al., 2007).

Climate, in turn, responds directly to such changes, as well as indirectly, through a variety of feedback mechanisms. In the Niger Delta, the pervasive livelihood insecurity precipitated by the oil and gas extraction on the entire Niger Delta environment remains a major challenge to initiating and attaining a livelihood system across the region (Emuedo and Emuedo, 2014).

Debates to conceptualize climate change in gender contexts have been varied and complex (Tuana, 2013). Women and environment raise some concerns about human anthropogenic choices arguing on possible reconciliation of men's activities with women's environmental transformation (Waren, 1996).

Since the IPCC First Assessment Report in 1990 realities of climate change vulnerability have more than ever become relevant as increasing evidence of anthropogenic influences on climate change has been preponderant both in the global North and South (Amadi, 2013). The poor societies cannot afford to withstand environmental pressure as they are mostly affected (Homer Dixon, 1991).

UNEP (2006) recounts that the Multilateral Environmental Agreements on Climate Change, Biodiversity, and Desertification, and also the Commission on Sustainable Development, have had limited success in integrating and implementing gender equity as a cross-cutting issue. While the United Nations Convention to Combat Desertification in those countries experiencing serious drought and/or desertification, particularly in Africa is uniquely inclusive of a gender approach.

The gender perspective of Agenda 21 has been unevenly upheld throughout most of the convention texts and implementation mechanisms. This was further reflected in the 2012 UN Rio +20 report, *The Future We Want*. A renewed momentum towards gender mainstreaming is needed for all of these decision-making bodies.

Correspondingly, the IPCC has made increasingly more definitive statements about human impacts on climate (IPCC, 2007). This takes a number of dimensions and effects as humans interact with the environment. Growing debates have stimulated a wide variety of climate change research. The results of most of these researches have refined but not significantly redirected the main scientific conclusions from the sequence of IPCC assessments. This thinking is held by the proponents of revisionism "the dominant theoretical tradition" in development studies theory.

UNDP (1994) emphasizes "redefining security from a human dimension" with emphasis on the legitimate concerns of ordinary people who sought security in their daily lives and posits that for many of such people, security symbolized protection from the threat of diseases, hunger, unemployment, crime, social conflict, political

repression and environmental hazards. While most engagement with women and climate change have been selective and limited, women make up a large number of poor people in communities that are highly dependent on local natural resources for their livelihood and are disproportionately vulnerable to and affected by climate change. Women's limited access to resources and decision-making processes increases their vulnerability to climate change.

Additionally, women in rural areas in developing countries have greater responsibility for household water supply, energy for cooking and heating, and for food security. Thus, women are negatively affected by drought, uncertain rainfall and deforestation. Again, because of their roles, unequal access to resources and limited mobility, women in many contexts are disproportionately affected by natural disasters, such as floods, fires and coastal erosion.

In 1992, 100 Heads of states met in Rio de Janeiro, Brazil, and signed the United Nation Framework Convention on climate change, Convention on Biological Diversity, Rio Declaration and the forest principles (UN, 1998). The 1997 Kyoto Protocol complements the framework convention. The main thrust of the protocol is that 37 industrial countries are expected to reduce greenhouse gases emissions by 5% by 2012 (UN, 1998). It has three implementation mechanisms:

1. The clean development mechanism
2. Joint implementation
3. Emissions trading (UN, 1998).

Central challenge at global climate change mitigation has been capitalist environmental exploitation including environmental commodification which results deleterious environmental use as the poor societies suffer the deleterious effects.

In 2007, IPCC released a report of the work of 2,500 scientists from more than 130 countries, noting that human activity most likely has been the primary cause of global warming since 1950 (IPCC, 2007). They reported that this resulted from years of accumulated greenhouse gases emission; of the gases carbon dioxide (CO₂) is principal culprit. Greenhouse gases are able to absorb and radiate heat. Some are naturally occurring (like CO₂, water vapor, methane, ozone and nitrous oxide, etc), others emanate from industrial processes (such as hydrofluorocarbons, perfluorocarbons, chlorofluorocarbon, etc (IPCC, 2007).

The problem of climate change raises difficult issues of science, environmental security and economic implications. While the economic and social issues have been analyzed in great deal, the question of environment and security has received comparatively little attention. Today, the Niger Delta environment has changed and continues to change rapidly. Oil and gas activities have infringed on the people and their environment, leading to

the opening up of previously pristine ecosystems. This has resulted in alteration of habitats, biodiversity loss, deforestation and pollution (UNEP, 2011; Amadi and Ogonor, 2015). While natural hazards are responsible for some impacts on the environment, oil activities have no doubt aggravated the situation. A World Bank report (1990) observed that the oil industry in the Niger Delta has both an urban and a rural presence, as oil wells are located throughout the rural areas. However more critical are the increasing degradation of the environment.

Additionally, it is advocated that women should be involved in the decision-making process at all levels, in all spheres including the economic and environmental realm (UNEP, 2006). Women, have been traditionally excluded from these positions and even in key positions in environmental issues (UNEP, 2006). Conversely, feminists point to the need for women to be involved beyond the local. While both of these are laudable and arguably necessary, anti-revisionists uphold an inadvertent risk that gender will be essentialized and that the present hierarchy of the sexes will remain entrenched (Romaniuk, 2009).

The nexus of climate change and environmental security among the Niger Delta women has remained a non-policy issue. This does not provide the much anticipated environmental transformation and climate change mitigation and adaptation strategies as gender inequality has remained a key issue in gender studies in the Niger Delta. The theory on women transformation in relation to climate change from whatever conceptualization requires more policy drive beyond the understanding that women are most vulnerable. Importantly, existing literature has not provided a comprehensive nexus between Niger Delta women and climate change mitigation strategies since the emergence in 1956 of commercial crude oil exploration by Western multinational corporations and more importantly, the return to democratic rule in 1999 in Nigeria, the post 2012 Niger Delta flooding and increasing environmental concern, repeated incidence of gas flaring and oil spill and essentially greater population of Niger Delta women are peasants who subsist from tilling the soil (Amadi, 2013).

The conceptual explorations reveal that despite occasional major paradigm shifts, the majority of theoretical insights on feminist environmentalism tend to emerge incrementally as a result of repeated failed attempts to accelerate feminist transformation. Therefore, because almost every new advance is based on the research and understanding that has gone before, the theoretical and empirical evaluation of climate change seems not to have transformed the superficial understanding of the importance of women in climate change discourse. This theory lag is important to researchers and policy makers who seek to unravel the importance of women in climate change mitigation issues.

RESULTS AND DISCUSSION

As argued, feminist environmental policy has been minimal in development discourse in the Niger Delta region like most periphery societies where women are marginalized in policy discourse. A number of environmental issues are found to be central in feminist environmentalism.

Results provide theoretical evidence that point to vulnerability of climate change. Akinro et al. (2008) show that increasing ocean temperature cause thermal expansion of the oceans and in combination with melt water from land based ice, this is causing sea level rise. They contend that sea level rose during the 20th century by 0.17m. By 2100, sea level is expected to rise between 0.18 and 0.59m.

The Intergovernmental Panel on Climate Change has linked the rise in sea level to climate change. Between 1960 and 1970, a mean sea level rise of 0.462m was recorded along the Nigerian coastal water (IPCC, 1990). The inundation arising from the rise in sea level will increase problems of floods, intrusion of sea-water into fresh water sources and ecosystems, destroying such stabilizing systems as mangroves, and affecting agriculture, fisheries and general livelihoods. Coastal vegetation, especially the mangroves, have been lost to coastal erosion.

According to the report of the UNFCCC (2001), a number of environmental challenges accompany climate change as follows;

- a) The global surface temperature has increased over the 20th century by at least 0.60C.
 - b) Satellite data show that snow cover has decreased by about 10% since the 1960-attributable to the melting effect of temperature increases.
 - c) Glacial ice in the polar region is melting leading sea level rise.
 - d) Global average sea level has risen and ocean heat content increased.
- Tide gauge data show that global average sea level rise between 0.1 and 0.2 meters during the 20th century.
- e) Moisture concern -too much and little elsewhere. The changes in the timing of rainfall and run-off could complicate efforts to ensure clean water for growing populations especially in the developing world.
 - f) Warming temperature could aid spreading vector-borne diseases like malaria. World Health Organization estimates that in 2006 alone, more than 150,000 people died as a result of direct and indirect climate change impacts.
 - g) While food productivity is projected to rise in the temperate region where now barren cold lands would warm enough to bear crops, crop yields in the tropic are likely to drop. Meanwhile tropical lands are homes to hundreds of millions of subsistence farmers and poor

populations.

h) It is projected that climate change between now and 2050 may cause the extinction of as many as 37% of all species (UNFCCC, 2001).

Results show that issues of feminist environmentalism, climate change mitigation and adaptation into development planning have been superficial in gender contexts especially in the periphery societies such as Niger Delta. Being mostly uneducated and poor, women rely on diverse forms of survival strategies with agriculture accounting for their main source of income and about 90% of family food needs (Emuedo and Emuedo, 2014).

Indeed, in both rural and urban areas, the vast majority of the poor have individual household and community survival strategies that include myriad activities and a number of other mechanisms for coping in times of crisis (Emuedo and Emuedo, 2014).

Findings from UNEP reports suggest that oil exploration, production and processing represent prime sources of exposure to petroleum hydrocarbons. This has been a central source of insecurity to Niger Delta women. Hydrocarbon pollution of soil can occur in several ways, from natural seepage of hydrocarbons in areas where petroleum is found in shallow reservoirs, to accidental spillage of crude oil on the ground (UNEP, 2011).

UNEP (2011) further shows that oil spills can affect wildlife, both aquatic and terrestrial, in many ways. The severity of damage will depend on the type(s) of hydrocarbon involved, the quantity spilled, the temperature at the time of the incident, and the season....A number of studies have provided similar results (Opukri and Ibaba, 2008; Kadafa, 2012; Amadi, 2013; Emedo and Emedo, 2014).

Uyigue and Agho (2007) observe that the most important environmental problem facing the Niger Delta is coastal erosion. Although the World Bank has rated coastal erosion as needing moderate attention in the region, it is the most important impact of sea level rise in the region and should be given high priority attention.

Zabbey (2011) and Amadi (2013) predicted some farming and fisheries challenges the Delta people experience due to sea level rise and soaring flooding. Settlements in the coastal region have been uprooted by coastal erosion. In some places, especially in Forcados, some oil wells have been lost to the ocean due to erosion (Uyigue and Agho, 2007; Amadi, 2013).

The UNFCCC (1994) posits that climate change means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods. While environmental security as discussed encompasses a wide range of anthropogenic and natural occurrences that pose threat to the natural environment. Subsequent conventions have built on these challenges such as the

UNFCCC (1999). The 2010 Cancún agreements state that future global warming should be limited to below 2.0 °C (3.6 °F) relative to the pre-industrial level (King et al., 2011).

Despite the global conventions there have been incidences of sea level rise in the region, coastal erosion and flooding which submerges houses by overflown river banks resulting displacement and turbidity of the farmlands and negative effects on migrant fisherman (Amadi, 2013). In the 2012 flood disaster, three persons were reported to have lost their lives with over 400,000 persons displaced in 220 communities. The Head of Public Relations of NEMA, revealed that 35,126 internally Displaced Persons (IDPs) were registered in six affected local government areas of Bayelsa State (Amadi, 2013).

Similarly, Ibeanu (1998) observes that environmental pressure results in the displacement of people, who normally are a very visible group, conspicuous in their isolation and appalling material conditions, tends to be concealed by the Nigerian state. He contends that the reason for their neglect is because governments have a penchant for downplaying the magnitude of population displacement generally, and internal population displacement in particular. In few cases where they reluctantly admit the existence of displaced people, they tend to announce low numbers, make pretenses of providing assistance, and quickly claim the successful resettlement affected people (Ibeanu, 1998).

UNEP (2011) shows that in Ogoni (an ethnic nationality in Rivers state) remote sensing revealed the rapid proliferation in the past two years of artisanal refining, whereby crude oil is distilled in makeshift facilities.

Environmental degradation has given rise to massive poverty. UNDP (2006) describes the region as suffering from administrative neglect, crumbling social infrastructure and services, high unemployment, social deprivation, abject poverty, filth and squalor, and endemic conflict. The majority of the people of the Niger Delta do not have adequate access to clean water or health-care. Their poverty, in contrast with the wealth generated by oil, has become one of the world's starkest and most disturbing examples of the "resource curse" (Amadi and Alapiki, 2014).

Environmental pollution has gradually eaten into the environment because of series of oil exploration and exploitation, other related gas activities etc, have corroded the air quality, water and land. (Lekwot et al., 2014). They further observe that there is a considerable amount of dredging and filling of the water ways, siltation, erosion, spills which have led to acidification of water bodies, discharge of huge amounts of production water containing significant quantities of hydrocarbons, leaks from old corroded and poorly maintained pipelines, oil in gas flares.

There are also abandoned offshore rigs, refinery effluent and toxic sludge which has in turn damaged forests and agricultural land (Lekwot et al., 2014). While

gas flaring has technically been illegal in Nigeria since 1984, the government sometimes grants exemptions to oil companies, and fines for flaring are criticized as being too light to act as a deterrent. . Nigeria flares 17.2 billion³ m of natural gas per year in conjunction with the exploration of crude oil in the Niger Delta (Global Gas Flaring Reduction, 2002).

According to GGFR (2002), this high level of gas flaring is equal to approximately one quarter of the current power consumption of the African continent (GGFR, 2002). Currently 56.6 million m³ of associated gas is flared every day in Nigeria (Gerth and Labaton 2004). Nigeria has the world's highest level of gas flaring, and it flares 16 percent of the world's total associated gas (GGFR. 2002). Due to a lack of utilized infrastructure, approximately 76 percent of associated gas is flared in Nigeria, compared 8 percent in Alberta, Canada (Africa News Service, 2003; Watts, 2001).

A 2012 report by IRIN a humanitarian news and analysis organization, shows that in the Niger Delta, where most of the flaring takes places, residents living near gas flares complain of respiratory problems, skin rashes and eye irritations, as well as damage to agriculture due to acid rain. They are also forced to live with constant noise, heat and light that can lead to sleep deprivation which can degenerate into systemic insomnia. Since flaring involves carbon dioxide and sulphur outputs, in the longer term the heart and lungs can be affected leading to bronchitis, silicosis, sulphur poisoning of the blood, and cardiac complications (IRIN, 2012).

Problems of the rural women further manifests in the poor confidence in government on environmental laws and policies. The federal government rarely considers rural women and feminist environmental challenges in their policy decisions especially in relation to issues such as climate change. Further investigation should be directed at the assessment of women and climate change vulnerability by adopting effective mitigation strategies such as rural women climate change alliance and awareness which are participatory models. This essentially means that government and policy makers should expedite action to meet the needs of rural Niger Delta women in this regard as flooding of low-lying areas in the Niger Delta region has been observed.

Conclusion

What we have attempted to do here is to advocate for novel policy discourse on feminist environmentalism to mitigate climate change vulnerability. Poor policy discourse in this direction vitiates the status of women and intensifies their vulnerability to climate change and disempowerment from their mode of subsistence. Existing policy documents such as the Niger Delta Master Plan did not meaningfully prioritize feminist environmentalism. No singular policy document till data has provided

plausible policy statements on Niger Delta women's environmental emancipation. At the post 2012 flooding, a number of studies argued for more environmentally friendly policies to advance the cause of the volatile region (Amadi, 2013). Policy framing in this direction has been minimal.

At the global level, the Millennium Development Goals (MDGs) cannot be achieved in isolation. It is not possible to achieve environmental sustainability (Goal 7) while poverty (Goal 1) and inequities between men and women (Goal 3) continue to exist (UNEP, 2006).

To date, many efforts to mainstream gender have been limited to minimalist and short-term technical interventions that have failed to challenge inequitable power structures. Gender disparities remain among the deepest and most pervasive of all inequalities. Key stakeholders in crude oil exploitation in the Niger delta such as the Western multinational oil corporations should be made to adopt green strategies in oil extraction.

The present Gender Plan of Action could be broadened and refocused to prioritize issues of feminist environmentalism; however, to mainstream gender comprehensively requires bottom top approach through rural women network and alliances on climate change and women's vulnerability. Thus, in implementing the Gender Plan of Action, pro -environmental specialized agencies such as UNEP should be instrumental to support and provide more radical strategies for climate change mitigation.

Gender continues to be "one of the world's strongest markers for disadvantage" and reducing inequality would be instrumental in making progress towards achieving the Millennium Development Goals (UNDP, 2005; UNEP, 2006). Such inequalities span all sectors and are equally pervasive in the environmental sector.

Feminist environmental awareness should be created and implemented both at the global and sub global levels .At country levels, salient indicators should be developed to measure the level of compliance to environmental feminist model in natural resource and environmental consumption to check oil spill, pollution and similar deleterious environmental effects which affects women.

Importantly, gender-environment experts and civil society organizations (CSOs) should be deployed in the rural areas to integrate and enlighten the poor women into the global agenda for ecological justice and equity as integral components of sustainable development.

Conflict of Interests

The authors have not declared any conflict of interests.

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