

## CLIMATE CHANGE AND SUSTAINABLE AGRICULTURE IN AFRICA: A GENDERED, AGRARIAN PHILOSOPHICAL APPROACH

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### Abstract

*Africa is home to some of the world's most vulnerable populations. Despite contributing a negligible amount to the causal factors of global climate change, the African continent is disproportionately affected by its damaging effects, given the continent's widespread reliance on environmental produce. As such, Africa's agriculture and agricultural products are deleteriously affected by current changes in the environment, with particular emphasis on the extant reduction of water supply as well as erratic and extreme weather conditions. At the global level, efforts to mitigate the effects of climate change have resulted into various protocols and agreements, witness the Kyoto 1997 protocol. However, this paper contends that the policies contained in these protocols and agreements assented to by African parties cannot effectively address the challenges occasioned by climate change in the African agricultural space. The paper, therefore, emphasises the necessity of adopting a gendered approach to effective climate change mitigation policies. Such gendered approach lies within the purview of agrarian philosophy, a domain of philosophy concerned with the norms and values which drive/guide human interactions with the environment. Using this approach, this paper examines the imperative of decolonising Eurocentric approaches to climate change mitigation policies. It avers that sustainable development can only be achieved where proposed mitigation policies recognise and accommodate the facts that 1) indigenous agricultural practices derive from indigenous cultural beliefs and values; 2) the African agricultural space is predominantly made of small-holdings and 3) African women experience a higher rate of social vulnerability to climate change and its resultant effects and, must thus, be included/represented in mitigation/adaptation measures.*

**Keywords:** African agriculture, Agrarian philosophy, Climate change, Women.

### Introduction

The story is told of a Mogul emperor who decided to construct a new capital for his empire on the dry plains of northern India. This construction was carried out with the best materials, architects and workers, and the eventual result was a grand metropolis filled with the best structures and road networks. However,

fifteen (15) years after it was completed, residents abandoned the metropolis and founded smaller communities. The reason for the abandonment –the surrounding environment could no longer sustain such a large scale undertaking, and the metropolis had exhausted its water supply (Clarke, 1980). The lesson – plan according to the scale you have to work with.

In line with this lesson, this paper interrogates the challenge of climate change (CC) and its implications for sustainable agriculture in Africa. The African continent is currently experiencing a disproportionate percentage of the effects of climate change. Home to the world’s most vulnerable populations, it exhibits a high dependency on environment-related livelihoods. Thus, the damaging effects of climate change in the form of drastic weather changes, drought and other related phenomena has taken, and is taking, a larger toll on Africa and Africans than on persons on other continents.

Adopted global measures on mitigating and adapting to the effects of CC have been underpinned by western concepts and ideologies which posit humans as unique, superior entities meant to dominate nature. These measures have, however, failed at achieving their intended targets. This paper argues that their failure lies in the fact that they are not premised on African values, and as such cannot interrogate the intricacies of the African experience and from such, derive sustainable practices through which Africans can not only mitigate the effects of CC, but can also adapt and thrive. This paper, therefore, interrogates the challenge of CC and its implications for sustainable agriculture in Africa. It proposes the adoption of a gendered Agrarian Philosophy as a viable mode of achieving sustainable agriculture. To achieve its aims, it is divided into four sections.

The first section concerns itself with CC and mitigation policies. It presents an analysis of what CC is and how it has been approached. The second section examines the effects of CC on Africa, with emphasis on Africa’s agricultural sector. The third section highlights the essential nature of a decolonised approach to Africa’s agricultural development, while the last section exposes the notion of gendered Agrarian philosophy as a viable model towards Africa’s quest for sustainable agricultural development.

### **Climate Change and Responses**

CC is one of the most challenging threats to human existence. The United Nations defines it as long-term shifts in temperatures and weather patterns

which may be natural, such as through variations in the solar cycle, or anthropogenic (human-generated), such as the increase in carbon dioxide (burning fossil fuels). The latter anthropogenic factors are said to be the major drivers of climate change in the modern and contemporary settings (United Nations, n.d.). CC has occasioned significant changes in earth's ecosystems, including melting glaciers, rising sea levels and severe and disruptive climate events. Greenhouse gasses (GHG), including carbon dioxide, act as a blanket around the earth, trapping the sun's heat and causing warmer temperatures on earth. The impact of these raised temperatures include intense droughts, water scarcity, severe fires, rising sea levels, flooding, melting polar ice, catastrophic storms and declining biodiversity. The interconnected nature of earth's ecosystems also ensures that everyone and every life is affected, although some persons are more vulnerable than others.

For Peter Jackson, while CC must have begun decades ago, the first global notice paid to it was in 1949 when the UN held its scientific conference on conservation and utilisation of resources in New York (Jackson, 2007). At this time, emphasis was not on a conservation approach but on how to manage depleting environmental resources. However, by 1972, CC was placed on the front burner of UN deliberations when it held its first UN Conference on the Human Environment Stockholm, Sweden (also known as First Earth Summit). This summit adopted a declaration in which members countries were notified about activities that could exacerbate CC and proposals were made on monitoring and evaluating the environment and climatic changes. It was not until 1979 and 1980 that particular attention was paid to air pollution and the resultant damage to the ozone layer; leading to the adoption of the 1985 Vienna Convention for the Protection of the Ozone layer. By 1987, the UN Environmental Perspective to the Year 2000 and Beyond gave impetus to environmental issues by proposing national action and cooperation to highlight the relationship between development and the environment. In 1989, after much debate on global warming and the ozone layer's depletion, CC became a focal issue and at least 3 protocols/declarations were adopted that year, including the Helsinki Declaration on the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer. These were closely followed by UN Earth Summit's Rio Declaration and Agenda 21 which birthed the United Nations Framework Convention on Climate Change (UNFCCC).

From the above, responses to CC revolve around three foci: cutting emissions, adapting to climate impacts and financing required adjustments. At the global

level, frameworks and agreements to achieve these aims include the Sustainable Development Goals, the UN Framework Convention on Climate Change (operationalised by the Kyoto Protocol) and the Paris Agreement. These frameworks and agreements are domiciled at regional and local levels in form of policy statements, witness West Africa's not less than nineteen policy documents, all targeted at CC (Sorgho et al., 2020).

Criticisms of these frameworks, agreements and policy documents revolve around two major areas namely 1) their inefficiency and 2) their Euromerican basis. On the first area, Hanna Fekete et al. note, for example, that while the Paris Agreement projects a reduction of GHG emissions, the Agreement is not efficient to drive low emission targets (Fekete, et al., 2021, p. 1). While reviewing the extent to which these policies have been effective in reducing GHG emissions, Fekete et al. note that the implementation of policies and measures to support the drastic reduction of GHG emissions started only as recently as 2009 when the UNFCCC held its 15th conference. The review also found that developed countries are better positioned to effectively implement these policies in comparison to developing countries, although emergent developing countries like China seemed to be targeting more aggressive implementations in relation to their developed status.

Criticisms of the Kyoto Protocol also highlight this fact – that current global protocols remain inadequate tools for tackling CC. This Protocol has been criticised as inadequate for the following reasons:

1. There is no strict determination/delineation of environmental burdens. This is one of the major reasons for a defining feature of Global environmental politics – the North/South divide which borders on the inequalities and injustices resulting from CC impact. The Kyoto protocol does not recognise the Global North as being primarily responsible for the causative factors of CC whose impact is predominantly felt by the Global South.
2. The UNFCCC listed a stabilisation of greenhouse gasses in a manner that would reduce its harmful effects on the climate as one of its intended targets. However, the Kyoto protocol's targets on greenhouse gases emission fall short of this target.
3. The carbon dioxide (CO<sub>2</sub>) stabilisation targets in the framework convention on climate change (UNFCCC) 1992 are ambiguously worded to imply targets rather than legally binding commitments. While the Kyoto

protocol resolves this by making the targets legally binding, its notion of the praxis of banking emissions credits differ in ways that admit injustice in its requirements – where some countries in the global north can trade their unused allocations while countries in the global south are not allowed to do likewise (Kuik & Gupta, 1998).

The reader must note at this juncture that 1) this paper is not premised on the assumption that the global north refers to all the countries on earth's northern axis. Rather it utilises the term as a peace holder for developed Euromerican countries. In this wise it acknowledges the existence of countries within the geographical enclave of earth's northern hemisphere which belong to the Global South; and 2) it also does not rest on the assumptions that all developed countries have achieved a symmetrical level of development or that all countries of the Global South are at the same level of development.

The third criticism of the Kyoto Protocol leads us to the second area of concern, the Euromerican basis of mitigation and adaptation measures. Global discourse on CC is primarily focused on its impact on the Global North, with little attention paid to its effects on the Global South, Africa in particular. Of particular concern to this work is the fact that many of the proposed mitigation and adaptation measures are primarily formulated premised on the notion of the long term risks/effects of climatic change (Redclift & Sage, 1998). This underpinning is a resultant effect of the Global North's preoccupation with equity in intergenerational effects, with emphasis on mitigating the effects of CC on future generations in opposition to the Global South's preoccupation with intragenerational concerns on how to mitigate the effects of CC for the current generation (Redclift & Sage, 1998, pp. 502-3).

While we cannot deny that CC has occasioned global environmental changes, we must equally acknowledge that the Global South is more adversely affected than the Global North. However, in current global climate discourse, disagreements on how to handle the challenge posed by CC between the Global North and South has resulted into what is now known as the North-South divide. This divide is an 'impasse' that seems to exist between the Global North, populated by industrialised and postindustrialised institutions and the Global South, populated by developing countries. Of particular, contentious concern is the fact that the Global North accounts for a significant amount of global emissions, both past and present, for example, the US and 27 EU countries are jointly responsible for 47 percent of global CO<sub>2</sub> emissions, while Africa, home to the largest

population of Global South countries, barely accounts for 3 percent. Thus, when countries in the Global North argue that developing countries in the Global South must adopt emissions standards which are at par with those adopted by developed countries of the Global North, developing countries of the Global South argue that such unfair requirements aids the Global North by positioning them at a comparative advantage. Developing countries argue that the proposition is acceptable only where developed countries transfer to the Global South the enabling technology and financial assistance to reach a symmetrical level of development with the North.

Thus, as Sina Ulgen holds, questions on injustice and equity remain at the core of the debate on the responsibility for CC and mitigation measures for its effects respectively (Ulgen, 2021). In terms of equity, the Global South argues that the Global North's demand on reduction of greenhouse gases emissions is unjust. Such injustice stems from the asymmetry of the respective contributions of the Global North and South to cumulative carbon dioxide emissions and burdens and costs of mitigating and adapting to CC. While the Global North accounts for a greater part of current emissions, the Global South is only projected to achieve the 'peak' level of emissions in not less than a decade in the future, although with currently increasing amounts of emissions in their quests to become as industrialised as developed countries. This fact is a pointer to the fact that the Global North should be allotted more of the burdens and costs of CC mitigation and adaptation. Unfortunately, these countries (Global North) not only advocate that all nations should share equally in the burdens and costs of mitigation, they also experience minimal contemporary effects resulting from CC. Countries in the Global South share an unfair, more significant burden of the effects of CC. This is particularly so in the case of the effects felt as environmental shocks, given their huge dependency on environmental produce for sustenance and trades.

The discourse (and divide) on CC thus revolves around the concerns of equity and justice - equity in the sense that developing countries of the Global South have not only contributed minimally to climate change, but should be allowed to increase their contributions, given the essential nature of these contributions in their quest for economic development (these countries depend heavily on fossil fuels in their development strides). Equity demands that these countries be allowed the opportunities previously utilised by developed countries in order to achieve similar levels of development as developed countries have attained. Justice comes to bear where countries are held responsible for their contributions

to CC to the degree which they contributed and must bear the burdens and costs of mitigating and adapting to it based on degree of responsibility for occasioning it.

In the Global South, the exploitation of environmental resources is seen as an essential path to economic development. Thus, the environmental degradation occasioned by the effects of climate change has had grave, dramatic consequences for the economic development of global south countries. This is further exacerbated by the Global North's subsidisation policies which enable them to produce and sell environmental produce at prices that are not sustainable to Global South producers who thus, experience declining returns from investment in the environment. This accounts for why countries from the Global South emphasise the intrageneration mitigation measures of CC (Redclift & Sage, 1998, p. 506).

### *Environmental Philosophy*

It is necessary at this point to identify that an appraisal of the impact of CC mitigation/adaptation policies in Africa denotes a fundamental philosophical understanding of agriculture. This section presents such an understanding by conceptualising agriculture as a concern of environmental philosophy.

Environmental philosophy evolved in the 1970's as a reaction to environmental challenges of CC (Mathews, 2014, p. 544). Its primary emphasis was on the anthropocentric approach to nature. Such anthropocentric approaches were underpinned by a refusal to accept humanity's dependence on nature. Much of modern philosophy emphasised the supremacy of mind over matter, inadvertently promoting the supremacy of humans over nature. Given that CC presented humanity with the impacts of its exploitation of nature, questions relating to such impact cropped up. Such questions sought to answer how human lives and experiences were the only important considerations, with emphasis on the 'unique' moral status attributed to humans. Environmental philosophy thus began as the application of ethical and political theories in efforts at answering these fundamental questions. The application of ethical theories led to the realisation that self-interest, human or western, should not be the overriding influence on environmental issues.

Ethics is itself premised on an assumption that we are considerate of people's conduct and interests. When applied to environmental issues, this suggests that humans should recognise non-human living things, with respect to how human

actions and interactions with the environment affect the wellbeing of these non-humans (Attfield, 2014). The realm of moral concern should, therefore, be one that also extends to include future human and non-human generations, encompassing “animals, plants, ecosystems and even rivers, mountains and glaciers” (Brennan & Lo, 2010, p. 7).

Environmental philosophy can, therefore, be defined as a branch of philosophy that studies the moral relationship between humans, non-humans and the environment. CC, in the light of its causative factors stemming from human interaction with the environment, is thus a fundamental point in discourse in environmental philosophy.

Agriculture also occupies a unique space in the realm of environmental philosophy. It is a contentious practice which is viewed as justifiable by some philosophers, while others denounce it as contradictory to nature and environmental philosophy (Wolf, 2018). This denouncement is justified on the basis of agriculture’s parochial restriction of pieces of nature (land), and the conduction of a biotic cleansing on such restricted parts of nature in order to benefit the human population. The latter critique is typically leveled at modern industrial agriculture, with its monocultural nature and a lackadaisical approach to the welfare of natural biodiversity that are not of immediate benefit to humankind.

In response to such criticisms, sustainable agriculture is held up as a more viable alternative to conventional agriculture, the modern industrial monocultural mode which is held to exacerbate environmental challenges. Sustainable agriculture involves plural and heterogeneous approaches to agriculture, all of which constitute a critique of conventional agriculture as unsuitable and environmentally damaging. Sustainable agriculture downplays the role of technology in agriculture, hyping instead, natural practices which minimise environmental impact. It also utilises biological and mechanical measures to wage war against pests rather than chemical warfare and its resultant multiplier effects. It is usually conceptualised as small-scale agriculture with the primary aim of the immediate community’s sustenance. This latter fact is widely critiqued by proponents of the conventional system in the light of its inadequacies in maximising farm product yield.

### **Africa, Agriculture and Climate Change**

Africa occupies a particularly vulnerable position in issues relating to CC. Classified variously as comprised of Third World, Developing and Global South countries, Africa's population is heavily dependent on environmental resources. Given this essential nature of the exploitation of environmental resources on the African continent, agricultural production remains the primary occupation of African countries and thus, CC portends one of the most challenging threats to Africa and Africans (Ncube et al., 2011).

For Jean-Claude Devèze, two-thirds of sub-Saharan Africa's population live in rural communities of around 2000 inhabitants. These rural communities' main occupation is agriculture-related activities (Devèze, 2011, p. 1). Africa thus has a preponderance of land systems which are local, contextual means of adapting to local environments, with emphasis on environmental resources. Africa's population is also projected to grow by an additional 1 billion by 2020 (Losch, 2011, pp. 35-6). Thus, this portends a growing need for food, positioning agriculture as an essential sector in Africa.

To state this more precisely, Africa's labor force is predominantly involved in subsistence agricultural production, with a ratio of 54 percent of the labor force involved in agricultural production (Shimeles, Verdier-Chouchane, & Boly, 2018, p. 1). This explains why Africa is so adversely affected by the impact of CC, especially when CC is portended to occasion a significant reduction in Africa's water supply, an essential factor in agricultural production, resulting in increased risks in the agriculture sector and heightened food insecurity (Ray, 2021).

Given CC's threat to human flourishing, with particular emphasis on Africa which largely depends on agriculture and is thus, significantly affected by it, Africa is not only confronted with the effects of CC in its immediacy, it is also faced with the possibility of unimaginable future consequences. As earlier noted, Africa's contributions to global CC accounts for only 2-3 percent, a negligible percentage. However, given that 1) poor persons are disproportionately affected by CC, especially as they are most likely to depend on their environment for their sustenance and lack the resources to alleviate the effects of CC; and 2) Africa has the largest population of persons classified as poor, persons surviving on less than 2 dollars per day, Africa is fully cognisant of the significant risks of CC. This is particularly evident in African countries' participation in global CC negotiations and their signing of the 2015 Paris Agreement.

In line with the pursuits of CC mitigation and adaptation measures, Africa also operates within the framework of the following: the African Ministerial Conference on the Environment (AMCON), the 2011 ClimeDev and the Africa Climate Change Strategy, all of which purportedly give a holistic, fresh African take on CC mitigation measures by building the resilience of the African continent to the impact of CC and ensuring that CC mitigation policies are inclusive/integrated in developmental policies (United Nations, 2020, p. 7). These are in addition to various policies that have been drafted as measures to mitigate/counter its effects. These policies identify agriculture as a focal point, not only in terms of its vulnerability to CC, but also on the part of its capacity to adapt to CC and thus, its potential as an area of possibilities (Sorgho et al., 2020).

Of all the policies that have been formulated as mitigation measures to CC, the Green Revolution stands out as one of the most, if not the most drastic measure. As noted earlier, the first measures taken to alleviate the effects of climatic change were predominantly focused on how to maximise depleting environmental resources in this area of agriculture. The Green Revolution focused on “managing and slowing the exit from agriculture and at the same time diminishing food costs” (Losch, 2011, p. 52). While the Green Revolution worked in Asian and Latin American developing countries, the reverse was the case in African countries. Dawson et al attribute its failure in Africa to the fact that in Asian and Latin American countries, the Green Revolution-backed policies encouraged small-scale agriculture holdings. These holdings not only enjoyed initial massive public investments, they also enjoyed price guarantees from their governments, thus, ensuring that small holders were encouraged to go into agriculture and measures were put in place to sustain and secure such undertakings.

However, in African countries the emphasis was on adherence to the conditionalities imposed by the Brexton Woods institutions, with particular emphasis on the structural adjustment policies which constrained government from investing in agriculture or insisted on minimal government involvement in the sector. In Africa, this resulted in volatile produce prices. Small holders were forced to sell their produce in competitive markets where farmers from developed countries (where mechanised farming enabled a large volume of produce at lower prices) also sold their produce. This, coupled with African realities of high density and dependency on agriculture, ensured the failure of Green Revolution in Africa. The Green Revolution policies presented drastic, radical changes to Africa’s social and agricultural practices, leading to drastic

food insecurity and increase in poverty rates. Dawson et al (2016, p. 205) enumerate the inadequacies of Green Revolution policies in Africa as intricately linked to their failure to:

1. Capture relevant indices in rural areas pertinent to agriculture, as an example, how agricultural policies both alleviate and exacerbate poverty levels dependent on the level of material wellbeing enjoyed by a populace;
2. Consider the relativity in people's priorities, with some prioritising food security over other concerns and others not doing so;
3. Consider that policy effects are as diverse as affected peoples, thus, policies must be structured/enhanced to meet the needs of varying persons to accommodate a diversity of solutions.

Using the Kyoto Protocol and the Green Revolution policies as a reference point, it is evident that existing mitigation/adaptation measures remain inadequate tools for effective CC mitigation/adaptation. This is more so in respect of African agriculture, in the face of rising food insecurity. Thus, it is necessary to consider other measures which can help Africa attain sustainable agriculture in the face of the challenging nature of CC.

Factors to consider in the attempt to determine what works for Africa include how to ensure that mitigation measures alleviate food insecurity in the face of increasing global prices and subsistent agriculture; how these measures can reconcile different nationalities competing for depleting natural resources and how Africa's agricultural future can compete against larger, industrialised and subsidised agriculture. We must also note that while agriculture is majorly run as a mechanised phenomenon in the Global North, Africa's agriculture sector is predominantly small-scale. Little wonder then, that global policies are not as effective in Africa as they are in other parts of the world.

### **A Decolonised Approach to Africa's Agriculture**

As Jonathan Chimakonam and Munamoto Chemhuru (2022, p. 21) note, the environment has always occupied a central position in African philosophy reflections. Traditional African belief systems have generally encouraged respectful interactions with nature, including to the extent of placing limits on exploitative activities on the environment. In African worldviews, humans are not binarily opposed to nature; the human and other living things are all essential parts of nature, interconnected. The land assumes a sacred value/regard, as one to be valued and respected and not exploited. Thus,

Africans do not conceive of themselves as beings meant to control and dominate nature; rather they conceptualise themselves as being credited with the care for nature.

To Chimakonam and Chemhuru, this accounts for why many contemporary African philosophers in the area of environmental philosophy expose and interrogate African belief systems that postulate harmonious interactions between humans and their environment. It is therefore problematic to note that in spite of its environmentally friendly ethical traditions, Africa remains the worst affected continent in terms of environmental degradation. Chimakonam and Chemhuru identify the causative factors of this environmental degradation as (a) the fact that majority of Africans live in rural areas where their only source of sustenance is their environment; (b) the exploitative, extraverted and extractive industrial activities of various local and transnational companies.

While the environmental benefits derived from (a) can be achieved in a sustainable manner such that rural living becomes beneficial to Africa; (b) cannot be done in a sustainable manner and remains the most significant factor responsible for the deterioration of the African environment.

Modern, exploitative, extraverted and extractive industrial agricultural practices involve the adoption and implementation of industrialised farming methods to improve productivity and achieve competitiveness. However, this response derives from a top-bottom approach, one that holds that industrialised, large-scale farming is how Africa can overcome its differences on the global stage. It advocates for the usage of technologies to improve produce yields for impactful participation in world markets. This response has however been labeled as Eurocentric, given its fundamental underpinning of the adoption of western frameworks of agricultural developments as a prerequisite for a resultant economic success. This underpinning rests on the assumption that western models are better and preferable to African ones (Boogaard, 2019, pp. 274-5).

Another response to mitigating Africa's environmental degradation through agricultural practices relies on a bottom-top approach. This approach holds that organic farming is a more tenable and sustainable option, particularly in the face of environmental degradation occasioned by industrialised farming. However, the downside of this approach, as noted earlier, is the low volume of productivity it engenders. It is therefore necessary to arrive at an approach which reduces environmental degradation and results in a high level of productivity. This is found in endogenous approaches which root agricultural practices in

African values and Philosophies. This work notes that 'endogenous' in this sense implies an integration of indigenous and foreign frameworks.

It is essential to recognise that agricultural sustainability rests on the integration of measures that would ensure that current and future needs are met in relation to environmental sustainability and human sustenance. This leads to the question on how Africa can achieve such sustainability. In this research, I argue that agrarian philosophy satisfies the necessary requirements for sustainable agriculture in Africa. However, I note that agrarian philosophy alone is not a sufficient requirement. It must be adopted hand in glove with the recognition of women's agency in African agriculture. The next section would consider this in more details.

### **Gendered, African, Agrarian Philosophy**

Given the advocacy for an integrated approach to sustainable environmental protection in relation to agriculture, it becomes essential to examine foundational indigenous philosophical frameworks utilised to guide decision making with regards to land use. This is known as agrarianism. Agrarian philosophy is the reflection on these indigenous frameworks and how they guide people in their accessing and utilisation of environmental resources. It is an aspect of environmental ethics contingent on human interaction with nature. As Paul B. Thompson (2008, 528) avers, it is a branch of philosophy that investigates how "norms, values, and social institutions emerge from human beings' interactions with nature in the form of material subsistence practices such as obtaining food, clothing and shelter."

Philosophical frameworks underpin human interactions with their environment and its usage. These frameworks vary between societies dependent on prevalent historical, technological and economic realities. These realities dictate indigenous measures and methods of extracting subsistence from nature. Such indigenous approaches to agriculture have hitherto been denounced as inadequate, with emphasis on the low volume of productivity. However, an integrated approach to African agriculture implies that global, homogenous approaches to mitigating CC in the agriculture sector must be integrated with indigenous approaches. These global, homogenous approaches are premised on the assumption that CC is a global problem; however, while the phenomenon is global, its causes and effects are localised/individualised (Sovacool & Brown, 2009, p. 318).

To justify this integrated, agrarian approach, this work draws from Benjamin K. Sovacool and Marilyn A. Brown's 2009 article on CC. Here, the duo enumerate the four spatial scales through which CC could effectively be addressed as Global, Regional, Large areas (including small nations) and Local. Sovacool and Brown note that previous approaches have concentrated on singular scales, for example, environmental protection activists who tackle CC from the local and grassroots level, or economists and political scientists who advocate for global measures.

The duo aver that while policies can be implemented on these scales simultaneously, resultant effects/impacts differ scale to scale and thus, CC is best tackled in a manner that ensures that all scales benefit (Sovacool & Brown, 2009, p. 320). They, therefore, recommend the integration of global, regional and local approaches to enjoy the benefits derivable from these scales. These benefits include: Diversity (multiple local actors can encourage innovation and competition), Flexibility (more variability and flexibility) and Accountability (best suited for regulation) at the local level; Uniformity (efficient standardisation), Unified set of indicators (provision of accurate information to make informed decisions/policies) and Spillover effects (barriers to reactions against local CC restrictive policies) at the global level (Sovacool & Brown, 2009, pp. 320-23).

### *The Gender Issue*

Women make up a large number of Africa's most vulnerable population. They also play a central role in Africa's agricultural sector, constituting slightly more than half of the total population of Africans in agriculture and accounting for approximately half of the sector's labour forces (Njobe, Oct 21-23, 2015). A more recent survey notes that 62% of all women are involved in agriculture (Kamau-Rutenberg, 2018). Their impact on the agricultural sector can be measured both in direct and indirect terms. They are not only involved in farming activities, they also play a vital role in the transportation, marketing and processing of agricultural produce. Despite these facts, women face harder, more strenuous constraints in accessing agricultural productive resources. These resources include access to land, financial services, infrastructure, information, training and technology.

Arising from this the Food and Agriculture Organisation (FAO) notes the existence of a significant gender gap in agriculture, one where women cannot access and/or control a similar level of productive resources as men do (F.A.O.,

2011). As an example, the 2012 Montpellier Panel reports that despite women in agriculture accounting for half of the sector's labour force, they own only 1% of land and receive approximately 7% of extension services (The Montpellier Panel, 2012). As such, most women in agriculture typically own small pieces of land on which they typically practice subsistent, rain-fed agriculture. Those who do not own any land contribute to the agricultural sector as part of the manual labour on majority of all farms where mechanisation is rare and where they perform the least desirable work.

On the whole, CC affects women more than men, not only in Africa, but also globally. Africa, as earlier noted, is home to the largest population of vulnerable persons, vulnerable in their strong dependency on environment-based resources. Women are doubly vulnerable given their significant involvement in subsistence farming. With CC, women are hard hit in areas related to their very survival; witness the extra effort to access water resources by women who live in regions which are experiencing droughts consequently on global warming.

Of import to this work is that while African women are more adversely affected by the effects on CC and are more poorly equipped to handle it, their positioning and ability to adapt to changing conditions are essential qualities in the struggle to achieve sustainable agriculture in the light of the challenges posed by it. This quality, however, remains stifled in the face of gender schemas which persist in making women dependent on their male relatives by restricting their access to productive resources. It is inconceivable that in the face of Africa's frantic quest for relevance and competitiveness on the global field, it continues to relegate approximately half of its productive force in the above manner. Women have proven that they are a significant force in the agricultural sector, yet, due to the varying constraints, they hardly account for one-fifth of Africans responsible for formulating policies for agriculture development. This limitation robs Africa of women's innovative and problem solving skills, their insights and their perspectives.

This work, therefore, joins the advocacy for the integration of women in Africa's quest for robust and sustainable agriculture. It adds to existing literature in its advocacy that the gender factor be incorporated into the agrarian philosophical framework it deems best suitable to achieve sustainable agriculture in Africa. The agrarian philosophical framework derives from indigenous approaches to the environment, many of which deny land rights to women. Such indigenous approaches can be revised to grant women these rights, especially in the light of

the fact that this will leverage on women's traditional strengths in the area of adapting to the impact of CC. These strengths derive from women's possession of the knowledge of indigenous plant varieties and their nutritional and medicinal values as well as other resources of adapting to adverse environmental changes.

## Conclusion

The agricultural sector is highly heterogeneous in its structures. CC mitigation/adaptation measures must recognise this nature and present approaches that are also heterogeneous. This work has identified agrarian philosophy as such a heterogeneous approach. It has also advocated for the integration of the gender factor within this approach. Africa's quest for development involves sustainable agriculture, which in turn involves an integration of global and local approaches, premised on indigenous philosophical frameworks. Where these frameworks reject women as viable agents in local agricultural practices, the integration of global practices implies that they can and should be revised to accommodate women and the enormous potential they portend to sustainable agriculture in Africa.

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