ENGAGING LOCAL COMMUNITIES TO ENHANCE CLIMATE CHANGE MITIGATION AND ADAPTATION FOR SUSTAINABLE DEVELOPMENT

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Abstract

Climate change has come to stay and we can only look for ways to mitigate its impacts. Several approaches have been developed to address the causes, mitigate and adapt to climate change and its consequences. This paper discusses the engagement of grassroot communities as an approach to combat climate change. It addresses barriers to the successful engagement of these communities. We believe local communities possess knowledge of their environment that can tell us how to harness these environmental resources to adapt to climate change. Lots of processes are involved and lots of questions are to be answered. We explored the importance and ways of engaging the locals in decision making to mitigate climate change. The contemporary top-bottom approach is also compared with the engagement of local communities which is considered a bottom-top approach. These approaches have their merits and demerits in the decision-making process when formulating and implementing climate change mitigation and adaptation measures. Enlightenment of these local people can be improved by direct relationship and communication of opinions, to ensure that the problem of ignorance is solved by proper understanding from the side of these communities. Effective communication for resolving the problem of misinformation and misinterpretation by a larger percentage of the local communities, which is one of the major barriers to their engagement as key agent in combating climate change, is involved. It is vital to see them as important agents in combating climate change because most rural communities are at higher risk of this global threat.

Keywords: *Climate change, impacts, adaptation, sustainable development, local communities*

Introduction

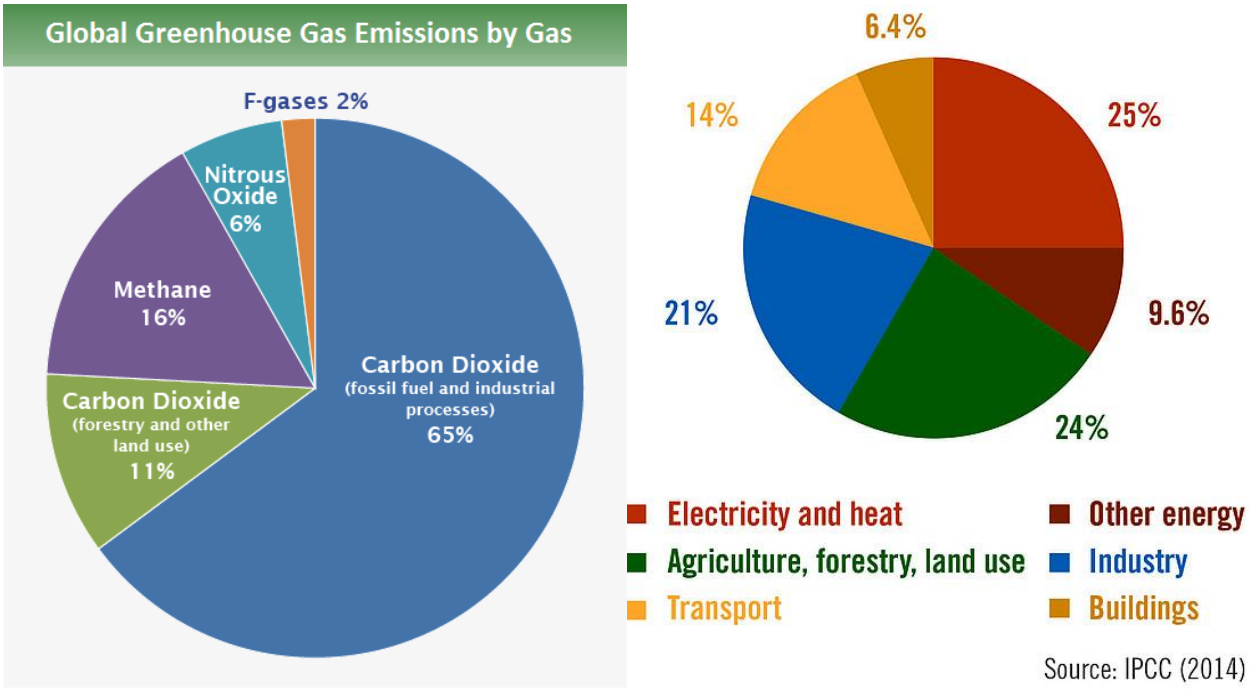
Erratic rainfall, increasing temperatures and a number of other environmental issues are rapidly emerging as one of the most serious global problems affecting many sectors in the world. These so-called environmental issues are all subsets of the biggest threat to life on Earth called Climate Change. According to United Nations, Climate Change refers to the long-term shifts in temperature and weather patterns and this can be caused by both natural and artificial events. These Natural causes includes the Earth's orbital changes, variation in solar radiation, volcanic eruptions, movement of crustal plates while the artificial causes are largely due to anthropogenic activities in terms of industrialization, changes in land use cover, deforestation, agricultural activities among the host of others. It is considered to be one of the most serious threats to sustainable development with adverse impact on environment, human health, food security, economic activities, natural resources and physical infrastructure. The impacts of climate change include severe weather conditions in terms of floods, storms, and drought, polluted air, species extinction among others. These impacts of climate change faced by different communities or regions varies depending on their geographical location, and are felt mostly by those whose means of survival is solely dependent on the resources provided by the environment otherwise known as Local Communities. The vulnerability of individuals and communities to climate change impacts is not simply dependent on the location of their settlements, but also by how those settlements are serviced, how effective and capable their local governments are and to what extent communities are able to cope with climate change impacts. The term "community" is most times loosely defined and as a matter of convenience, it is used to draw boundaries around people and links them to a particular location or territory (Agrawal & Gibson 19999; Flint *et al*. 2008; Blokland 2017), through the application of reductionist assumptions, which most times turns a spatially defined community into a homogenous group of people who share a set of norms and interests (Agrawal & Gibson 1999), the diversity of the target population and the complexity of social relations are on the whole disregarded. Thus, to accommodate diversities that may exist in the "notion" of community classification, it can be stated that a community can be homogenous or heterogenous. Homogeneous refers to a local community in which all that dwell in it hails from the same culture, ethnic group or ancestry which over the years their culture has been passed down to subsequent generations. Heterogeneous community refers to people from different cultures living in the same geographical location. A local community can also be located in rural areas or suburban areas.

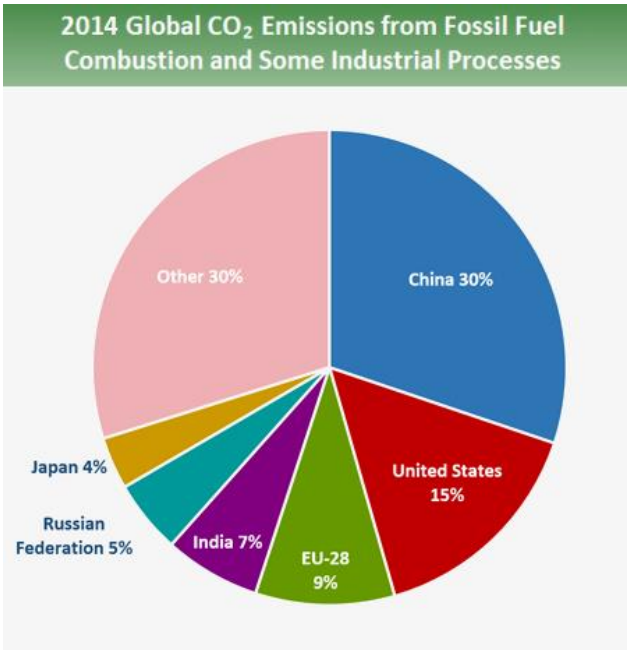
Usually, local communities are at the heart of those affected by climate change due to the fact that they live proximally to natural resources and depend on them directly for sustenance (Melillo, Jerry M. et al). As said by (Sebastian Bathiany, 2018) "those who contributes least to climate change are most affected by it" and this statement is found to be true. For rural dwellers whose occupation is majorly farming, obtaining maximum yield of their crop produce is dependent on suitable environmental factors

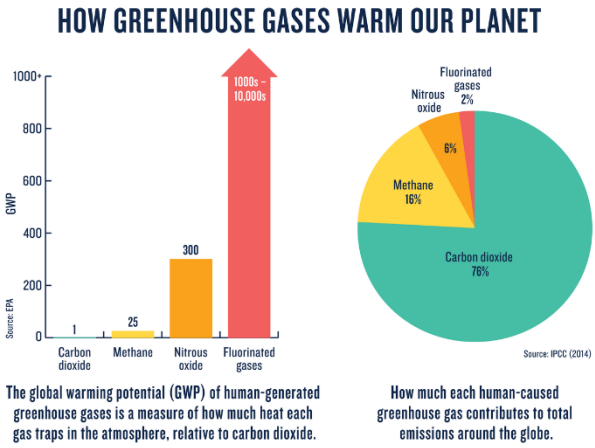
which includes: optimum temperature, rainfall, sunlight and suitable soil. Sadly, this has been altered as a result of climate change which has inadvertently caused a wide variation in climatic and weather patterns thereby making it difficult to predict these seasonal conditions which in turn reduced their crop productivity and yield causing a decline in food production (Agbola & Fayiga, 2016). Due to this decline, the economy of the country became affected. In 2021, between July and September agriculture accounts for 30% of the Gross Domestic Product which indicates an increase by about 6% point compared to the previous quarter thereby establishing it a major source of revenue generation for the country after oil (Statista, 2022), but as a result of this global threat, the generation of revenue from agriculture is being threatened. This, in no doubt, infers that, local communities are important frontiers that needs to be considered in developing strategies to curb the effects of climate change. Although, international bodies are making efforts to involve local communities in climate change related issues such as the project called Amazonas Originaria which helped Venezuelan indigenous families mitigate the degradation of the Amazon forest. However, over the years, the awareness level is still minimal thereby making most of them ignorant of it.

Furthermore, International initiatives such as the Intergovernmental Panel on Climate Change (IPCC), United Nations Framework Convention on Climate Change (UNFCCC), The Paris Agreement spends time formulating policies on greenhouse gas emissions, climate change adaptation and mitigation strategies and climate financing. These policies when formulated are passed on to the governments who in turn force this policies down on the masses. Nonetheless, the local communities are important players in renewable natural resource management which is a key factor in climate change mitigation and adaptation; involving local communities in combating climate change will commensurate the efforts exhibited by the international bodies which means that; involving them will widen their knowledge on how the environment works, enable their involvement in setting policies to curb climate change, and proffer solutions which in turn would be a source of benefit to their well-being.
According to Indigenous People and Climate Change: from Victims to Change Agents through Work (TLO 2016), "local communities are essential to the success of policies and measures directed towards mitigating and adapting to climate change". Likewise, the Rio+20 Outcome Document of 2012 emphasized the importance of local communities in the achievement of sustainable development through developing strategies on how to curb the menacing effect of climate change in conjunction with the importance of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) in carrying out these strategies for sustainable development. This highlights climate change as not just an environmental issue but also a social issue as its impacts is faced locally by people within a particular geographical location, besides, the adaptation and mitigation strategies used by communities depends on the resources available and joint decisions made by the members of the communities. It therefore becomes expedient to examine the roles, barriers and solutions entailing the engagement of local communities in combating climate change.

The pie chart below gives a breakdown of climate statistics







Synergy between Climate Change and Sustainable Development

Climate Change have significant impact on economic development, natural resources, and poverty alleviation, to overcome this problem, it became an integral part of Sustainable Development. It is essential for climate change to be curbed, as it is a major constraint to the development of any country. There is a dual relationship between the two concepts, on one hand, climate change affects natural systems and human living conditions on the other hand, sustainable development influences the GHG emissions causing climate change and vulnerability. (IPCC Fourth Assessment Report: Climate Change, 2007)

In the United Nations Conference on Sustainable Development called the Rio+20 Conference (held in Rio De Janeiro in June 2012), the 2030 Agenda for Sustainable Development was developed, where the Member states expressed their commitment to protect the planet from degradation and to take urgent action on Climate Change which is "one of the greatest challenges of this time" and how its adverse impacts may reduce the ability of all countries to achieve Sustainable Development. This led to the launching of the 17 Goals, of which SDG 13 aims to " take urgent action to combat climate change and its impact" with the UNFCC primary international forum to negotiate global response to Climate Change (Katowice Climate Change Conference COP24, Katowice, Poland, 2018)

Engaging the Local Communities through Awareness

Less energy is geared towards the education and awareness of the masses found in local communities compared to the energy pumped into carrying out researches that aids the formulation of policies which are used by international initiatives such as UNFCC, Cancun Agreement, Paris agreement among the host of others in developing strategies in climate change mitigation and adaptation measures thus leaving the former in the dark concerning the phenomenon called Climate change.

Research has shown that more than 6 out of 10 Nigerians' never heard about climate change and this was buttressed by (Odjugo P.A Ovuyovwiroye 2013) on a research he conducted on the analysis of climate change awareness in Nigeria. He stated that 25% of the respondent have no knowledge about climate change, 52% had little knowledge of climate change and 22% had adequate knowledge on climate change while stressing the fact that the percentage of those that are aware about climate change are mainly from the urban areas than the rural area with a statistic of 34% from the urban area and 9% from the rural areas. From this, we can cull out that a larger percentage of individuals found in the rural communities lacks awareness about climate change. The little fraction of the rural dwellers that are aware about climate change confirmed their sources to be mainly from the radio while the urban dwellers had their sources from television, radio presentations, newspapers, newsletters, journals and leaflets. Furthermore, from the statistics explained above, it can be deduced that climate change awareness is quite lacking in the rural areas and they need more enlightenment to improve their knowledge base on climate change.

Over the years, rural farmers rely on indigenous knowledge in predicting seasonal patterns in order to adjust their agricultural practices to suit these patterns. However, the tide has turned against their favor due to the turbulence caused by climate change limiting the accuracy of their prediction. In other to curb this, they need to be enlightened about climate change so as to mitigate

its rampaging effect. Enlightening these people will be of utmost benefit in the aspect of decision making for their farming activities, conservation of their natural resources among others. In recent times, Farmers tend to use a combination of meteorological information and indigenous knowledge in their seasonal forecasting, as they primarily rely on indigenous knowledge but are also open to receiving scientific forecasts (Mapfumo et al., 2015; Orlove et al., 2010; Roudier et al., 2014). This trajectory of change highlights how farmers in a study conducted in West Africa more than a decade ago entirely relied on their experience and intuition to make decisions on their farms in a given season (Hansen, 2002) to currently where they make use of a combination of indigenous and modern forecasts in parts of southern Africa (Mapfumo et al., 2015). Climate information appears to be particularly important and in many cases a prerequisite for coping and adapting to the negative impacts of climate variability and change, given that most of the rural livelihoods in southern Africa depend on climate and environmental dynamics (Goddard et al., 2010). What is emerging from a number of studies is that farmers tend to make decisions on farming practices based on potential evidence of climate occurrences, particularly in relation to rainfall patterns (Goddard et al., 2010; Mapfumo et al., 2015; Roudier et al., 2014). Studies further highlight that farmer crop management strategies (planting time, weeding, fertilizing, application of pesticides) are shaped by predictive climate information, particularly rainfall related forecasts (Moeletsi et al., 2013; Roudier et al., 2014).

Causes of the lack of climate change awareness hindering the active engagement of local communities

The causes can be summarized into three distinct yet interwoven parts, which are; lack of amenities, religious beliefs and ignorance. Lack of social amenities in terms of electricity is a major challenge in rural communities. A minor sect of the rural communities has access to electricity and majority of those that have electricity do not possess television, leaving those without electricity to depend on their radio. As a result of this deficiency in information, the rate of ignorance about climate change became a wide gap among rural communities and this gap needs to be breached. It is worthy of note that most elements of delivering information, the media-print or electronic media depend on a power source to disseminate information. These power source can either be electricity, fossil fuels or simple batteries, but these are deficient in rural areas. Thus, putting them in the dark. The only way they have access to information is through community gossips or when they meet at local gatherings such as local market.

Lastly, the strong mythical and superstitious belief of the local people stands as an obstacle for them to believe in the effects of climate change. Although, they are well aware of the changes in climatic and weather patterns, they never attribute these changes to climate change. Rather, they believe these changes are a result of the reoccurring and unpardonable acts of man towards God. These acts include; man's greed for wealth, human trafficking, corruption from the government, kidnapping and money rituals. They hold on to their belief that God needs to be appeased for these changes to be abated.

How do we resolve this issue?

We must understand that creating awareness or enlightenment of our local communities is way beyond carrying placards and organizing rallies parading the streets. Although, this helps in the promotion of publicity but it does not actually inform them about what is needed to know. Most of the inhabitants of these local communities are not literates, a higher percentage of the people in local communities are illiterates; they can neither read nor write. How then can they read or interpret what is on a placard or a poster? Most times, when campaigns/rallies take place, these rural dwellers are fascinated and might show enthusiasm in joining in the fun fare (as they see it) rather than finding out what exactly is the campaign for. Perhaps, they get a literate to give a detailed explanation about what the rally is set to achieve, the person who receives the first-hand information may exaggerate or subtract as he passes it down to others, this process goes on and eventually may lead to misinterpretation of the original information reaching the larger proportion of the local people.

One approach that can be adopted to solving this is direct relationship, connection and interaction with the community head or a respectable figure that the members of the community hold in high esteem, also known as Opinion Leaders. Throughout the diffusion of information process, there is evidence that not all individuals exert an equal amount of influence over all individuals. Opinion Leaders have the most influence during the evaluation stage of the innovation-decision process (Rogers, 1976). In addition, opinion leaders have a set of characteristics that set them apart from their followers and other individuals. They typically have greater exposure to the mass media, more cosmopolitan, greater contact with change agents, more social experience and exposure, higher socioeconomic status, and are more innovative. The opinion leaders don't necessarily have to be the ruling leader in the community, it can be individuals within the community that have influence on the people in the community. Such a person together with the existing stakeholders in the community will know how to pass information across to the locals on climate change. . .

Also, another approach is the participation and involvement of local community members in the communication process, decision strategy and implementation on how they can collectively combat climate change. It is not enough for people to know about climate change in order to be engaged, they also need to care about it, be motivated and be able to take action. It is imperative for effective communication and participation of all stakeholders be carried out for the local communities' strategies to be productive. This strategy should be all round inclusive; provision of necessary information for proper understanding among all important stakeholders to make sure that everyone is involved in the decision-making at household, local and global level. This can be achieved through roundtable discussion, dialogue, debate, public meetings, stakeholder forums / advisory groups, submissions and comments on district/regional plans and community workshop (Barth et al). Environmental solutions that come alive by engaging local communities are most likely to be successful compared to policies made by environmental offices and international initiatives. When community dwellers are involved in decision making, they feel more involved and have a sense of belonging to the whole

concept rather than ideas that seems imposed on them. This will also make the proposing stakeholders penetrate the community easily and make the process of implementation smooth especially when emphasis is made on incentivization and improving their standard of living. To ensure proper implementation and substantial result of solutions, there should be effective communication between stakeholders and the locals to ensure both parties understand what is at stake and avoid assumptions. The locals are most times not used to technological approach of solving problems, therefore, stakeholders should ensure their proposals are done in simple, understandable form to ensure their comprehension of the proposed invention. This will enable the locals to consecutively give their advice at every stage of implementation as they have better indigenous knowledge of the locality and will be the guardian of the invention afterwards.Although, members of local communities devise means of coping with climate crisis based on indigenous knowledge, the methods are not so effective because what the local people have been using is also becoming unreliable due to climate change. . For example, Coffee cultivation in Uganda was not common until the 1940s, and so the habit of observing the flowering of the coffee tree as a sign for the onset of the rain must have developed after this time (Orlove et al., 2010). Signs that there will be rains in a few weeks include the flowering of trees, especially coffee trees in Uganda (Orlove et al., 2010). Hence, the shifting of tree fruiting patterns is likely to render this indicator less reliable. Integration of indigenous knowledge and scientific seasonal forecast seems to be a key possible thrust to reduce vulnerability, enhance resilience of indigenous communities and increase their adaptive capacity. The indigenous knowledge provides a crucial foundation for community-based adaptation and mitigation actions if successful synchronized with relevant skills and science-based innovations e.g., planting of tree species that are flood tolerant at specific sites and at the same time will still be able to serve the local communities benefits e.g., fodder for livestock, edible fruits and seeds, etc.

Lastly, international bodies should adopt a bottom-top approach by having direct relationship with the local communities, this way, they can understand the issues of climate change each locality is facing and track their progress which will in turn help the organisational bodies to document their strategies which can serve as models for other communities. Before the popularization of making use of community-led initiatives which is a bottom-top approach, contemporary policy implementation which most times involves impractical technologies encourages little or no consultation of the community, which results in ideas being enforced on them was the major trend of combating climate change- top bottom approach. Compared to this top-bottom approach, community-led initiatives create room for understanding the impacts of climate change, consultation with the community, reduction in risk of failure of policy implementation and increased trust between proposing stakeholders and the locals. According to Bulkeley et al. 2013; Holland 2017, the 'bottom up' approach which involves decision being agreed upon first by the local communities before going up to the government was recommended instead of the usual 'top-bottom' approach because government policies are imposed without considering the specificities of place, use of indigenous knowledge and little to no consultation of the locals which creates resistance in local communities who should be part of the decision making. A method only outweighs the other depending on the situation and community to be penetrated. However, both methods can still be combined for the greater cause of combating climate change. The incorporation of local knowledge with the scientific method on the issues relating to climate change has helped over the years according to various research in restoring the planetary health such as rehabilitation of lost habitat, prevention of siltation in water bodies and so on, thus, reducing the risks that climate change can bring, not only on the present generation but also on the future generation.

Conclusion

Engagement of local community as a major means of combating climate can never be a wrong approach because of their invaluable contribution to the society and even to the global world at large. Appropriate approach and strategies in enlightening the local communities as highlighted in this paper should be adopted to eradicate the menace of ignorance, misinformation and superstitious belief about climate change. Effective communication with the stakeholders of the community such as the opinion leaders will go a long way in reaching out to the members of the community and ensuring their unflinching participation in the decision making process. Likewise, international bodies should strongly recognize every local community, their request, suggestions, inputs, and contributions as this might be put together to help in their policy formulation and serve as models for future reference.

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