

# INNOVATIVE APPROACHES TO COMBAT CLIMATE INSECURITY IN AFRICA

## Introduction

Security is a major issue in contemporary society dominated by a form of globalization which poses new transnational and, indeed, global threats thereby making the traditional approach to security obsolete. The conceptualization of the *Copenhagen interpretation*<sup>1</sup>, ensured that security matters were distinguished from political ones. Thus, we have moved from climate change-induced « natural risks » (worsening of extreme meteorological phenomena) to a social expression of the phenomenon through its consequences on human security<sup>2</sup>. In this regard and in view of the threats climate change poses to human security, either on its own or in combination with other factors, a cause-effect relationship can be established between climate and human security. Climate insecurity is the combination of several factors, particularly economic, environmental, security and demographic concerns, which affect human security in its entirety. In fact, the climate crisis poses an imminent existential threat to mankind.

Extreme meteorological phenomena like increasingly frequent and intense periods of drought, heatwaves as well as other phenomena caused by climate change have devastating effects on the economies of Africa<sup>3</sup>. These effects are felt throughout the continent, as experienced in 2019 when high-impact phenomena – *Idai* and *Kenneth* tropical cyclones – struck and caused serious devastation in Malawi, Mozambique and Zimbabwe. However, Africa is the continent which has made the least contribution to accumulated emissions of greenhouse gases (less than 4 % of global emissions, compared to 12%, 16% and 25% for the European Union, the United States and China respectively). Nevertheless, the Continent is disproportionately affected by the ravages of the climate crisis. This crisis unleashes incalculable cyclical consequences on all sectors, particularly the economy (poor economic growth), the health system (which is already faltering), agriculture, infrastructure, etc. This is a timely reminder that there is a need for concerted global action to combat climate change which is affecting all the regions of the world.

---

<sup>1</sup> J. Barnett , Global warming and security of country atolls, Macmillan Brown Center for Pacific Studies , 2002, P.29

<sup>2</sup> WATSON T.R, (2001), Time for Climate Surprises climatiques in courrier de la planète n°61, P.06-09

<sup>3</sup> <https://www.un.org/fr/un-chronicle/vers-une-afrique-prosp%C3%A8re-et-r%C3%A9siliente-aux-changements-climatiques>

Consequently, the climate crisis is undermining the ability of many African countries to attain one of the United Nations Sustainable Development Goals and aspirations of Agenda 2063 of the African Union<sup>4</sup>, particularly Aspiration 7: "*An Africa as a Strong, United and Influential Global Player and Partner*". This is due to several consequences of climate change which are actually related: repercussion of climate change on GDP; effect on national budgets; impacts on livelihoods and cost of adaptation. To this end, «climate change is definitely a global phenomenon, but it is at the local and regional levels that it is felt, and for which reason measures should be taken to adapt to it and to mitigate its effects»<sup>5</sup>. As a result of this, it is necessary to develop suitable local and regional responses.

As evidenced by the high rate of ratification of the Paris Agreement by 90% of African countries and the approval of its objectives, climate-related activities have indeed been carried out on the continent. At the local level, resolutions were passed in order to address the climate challenges to ensure the development of the Continent. Nevertheless, Africa continues to bear the brunt of climate change, for which reason its agricultural production capacity, economic growth and natural resources are seriously undermined.

Measures taken at the global level are inadequate because all the world powers have not made the climate issue a priority. The Nationally Determined Contributions (NDCs) by various African countries to ensure the protection of the climate under the Paris Agreement are nowhere near the level required to limit the rise in temperatures for a more sustainable growth. Thus, what measures should be taken to combat climate insecurity in Africa? Climate insecurity in Africa can be dealt with through the promotion of environmental intelligence (1), formulation of a harmonized policy setting the global vision for climate action together with a long term strategy and national plans of action (2), development of adaptation and mitigation measures (3), strengthening of meteorological and climate information service (4) and strengthening of the multi-hazard early warning systems (5).

### **1- Culture of environmental intelligence**

The evolution of environmental intelligence is largely explained by the unpredictable, complex and unstable nature of environmental phenomena with security implications. Thus, surprise

---

4 OMM Volume 1253, State of Climate in Africa, 2019, P.25

5 P. Taalas, in OMM Volume 1253, State of Climate in Africa, 2019, P.02

could wreck considerable havoc over time. To this effect, the provision of relevant information by an effective surveillance system to ensure that good decisions are taken and strategies developed is a major competitive advantage.

Africa is smarting under the scourge of natural risks and disasters at all levels. This is largely due to the poor capacity to react to extreme situations which often stretch its resilience. The culture of environmental intelligence is a complete approach insofar as it takes all aspects into account, particularly the anticipatory, responsive and preventive aspects. In other words, it is the observation and analysis of the environment followed by the well-targeted dissemination of selected and processed information which will be useful for strategic decision-making. In concrete terms, the culture of environmental intelligence should be revitalized in the communities and countries already using it by paying particular attention to the sharing of best practices in the areas of forecasting, risk management, anticipation and cooperation with other countries and communities.

For anticipatory purposes, it is a combination of robust data (economic, environmental, security, social, demographic, infrastructural and other vulnerabilities) in order to provide specific information on the type of vulnerability at the local or regional levels. This means that scenarios should be developed by combining data from all the sectors. For preventive purposes, it will enable policy makers in African countries to take consistent operational and strategic decisions which are in tune with the local climatic realities and the felt differential impacts.

Finally, for responsive purposes, the availability of weighted data will ensure that there is an effective and efficient response to high-impact situations. Environmental intelligence is a simple and effective monitoring tool which will ensure that the common asset (the environment) is secured and that the effects of a possible environmental risk are mitigated.

## **2- A harmonized climate policy**

According to the projections for the average scenarios (RCP4.5) presented in the Fifth IPCC Evaluation Report, vast regions of Africa will be hotter by more than 2°C by the last two decades of this century, compared to the average annual temperature of the end of the 20<sup>th</sup> century<sup>6</sup>. This

---

<sup>6</sup> <http://www.ipcc.ch/report/ar5/wg3/>

will have more dire effects on water resources, health, agriculture and food security<sup>7</sup>. Owing to the variety of vulnerabilities prevailing in this region, this calls for timely continent-wide action to confront the situation. It should be observed that Africa's climate policy has a few gaps characterized by the inadequacy<sup>8</sup> of contributions determined at the national level under the Paris Agreement. The first series of African NDCs is facing a few major weaknesses mainly because they were hastily formulated from limited information with little or no inter-sectoral consultations, not to talk of consultations with the other stakeholders such as the private sector, the labour front and the communities; it is also because they often presumed that financing will come from international sources to ensure their implementation<sup>9</sup>.

With this observation, it is clear that there is a need to formulate an effective policy to set a clear and specific vision of climate action in Africa by improving the content of nationally determined contributions under the Paris Agreement. This is a sure way to attain the United Nations sustainable development goals by 2030 and those of Agenda 2063 of the African Union. The formulation of policy cannot be effective without a clear long-term strategy. To recap, only Benin and South Africa have developed a long-term strategy. It goes without saying that this shortcoming is a hindrance to continent-wide concerted climate action. Thus, it is necessary to develop long-term strategies with specific scenarios in order to forestall high-impact phenomena.

In addition, it is true that African governments have formulated their own climate policies based on national plans and in accordance with the requirements of the United Nations Framework Convention on Climate Change, but these plans have proved to be obsolete in the face of the recent high-impact cyclical events which occurred on the continent in 2019. To this end, the formulation of National Action Plans should take lessons drawn from recent experiences into account. It is a matter of optimizing human and material resources, as well as quantifying relevant competencies and conflicting priorities in order to develop fully integrated climate strategies.

---

<sup>7</sup> Environnement, B. P., & N'Djamena, T. (2021). Impact of climate change and insecurity in the Chadian segment of Lake Chad. *Afrique SCIENCE*, 18(1), 172-185, P. 10

<sup>8</sup> Ibid, WMO Volume 1253, State of climate in Africa, 2019.

<sup>9</sup> African Development Bank: GAP ANALYSIS REPORT: African Nationally Determined Contributions (NDCs)

### **3- Strengthening of existing adaptative capacities and holistic responses to environmental migration**

Since it is characterized by a very diverse population, rich natural resources and the fact that majority of its population depend on these resources to meet their needs, Africa is seriously concerned about adaptation to climate<sup>10</sup>. In Africa, farmers, stockbreeders and fishers have developed a rich knowledge and deep flexibility with regard to adaptation to environmental fluctuations. However, poverty, the worsening health situation, the debt burden, lack of diversification of African economies and the deterioration of trade are serious obstacles to the development of the Continent. Thus, the climate issue is a very serious matter in Africa where diverse climate types are found: from the equatorial humid type, through the seasonal semi-arid and arid systems, to the Mediterranean climate. This climatic diversity, which has been characterized by high average annual temperatures for a few decades now and poor rainfall variables in many of its regions, determines the seasonal and annual rainfall patterns. This makes it very sensitive to minor changes in the global climate. With its numerous devastating crises, including the food crisis, Africa's climate adaptation<sup>11</sup> should involve an increase in agricultural productivity<sup>12</sup>, development of the basis for a rational and sustainable exploitation of natural resources and the eventual development of a diversified, efficient, dynamic and prosperous economy which is less dependent on the vagaries of the climate. To this end, an integrated approach to adaptation would be effective. The adaptation projects and programmes should be part of a holistic development strategy which seeks to ensure social progress and economic prosperity. Consequently, adaptation measures should be contextualized. They should be implemented through simple activities which include the fight against deforestation, mechanization of farming practices and investment in clean energy for sustainable agriculture.

The United Nations Food and Agriculture Organization (FAO) is therefore of the view that through value addition techniques, an increase in productivity in the agricultural sector, which employs more than 60% of Africa's population, should reduce poverty by between two and four

---

<sup>10</sup> DORSOUMA. AL.H, REQUIER DES-JARDINS Mélanie (2008) ; Climate Variability, desertification and biodiversity in Africa : adapting, an integrated approach; P.08

<sup>11</sup> **Ibid**

<sup>12</sup> Zaouaq, K. (2020). Adaptation to climate change and the fight against food insecurity in West Africa. Sustainable Africa 2030, (7), pp-68.

times quicker than the growth of any other sector.<sup>13</sup> For example, effective solar energy-fed micro-irrigation can increase the income of a farming concern by five to ten times, increase yields by 300 %, reduce water consumption by 90 % and, at the same time, reduce carbon emissions by producing up to 250 kW of clean energy<sup>14</sup>.

On the whole, the distribution of funds allocated for climate action is quite inequitable at the global level. Africa receives only 3% of the global fund; US\$19 billion is released to the continent annually<sup>15</sup>. Accreditation/certification is paramount among the several reasons behind this situation. It is one of the requirements for access to green funds dedicated to the funding of projects aimed at fighting global warming and its consequences. Very few African countries have received certification because they lack the required capacity to handle bankable projects. It goes without saying that this hinders climate action. Although the provisions of the Principle of Common but Differentiated Responsibility under the Paris Agreement are clear, there is a mismatch between funds allocated for mitigation (90%) and the provision made for adaptation (10%). This requires the political will of African states to change the approach to global climate governance in the area of financing.

Furthermore, it has been demonstrated incontrovertibly that the African continent is experiencing a multi-faceted environmental change with its trail of problems like extreme heat waves, droughts and desertification which are influencing both the internal and external migration of its people. Although certain areas are particularly affected by desertification and drought, floods, coastal erosion and a rise in the sea level are, among others, the main factors threatening the protection of the global agricultural system<sup>16</sup>. In a situation in which people basically depend on natural resources for their livelihood and food security, environmental degradation has a complex impact on their invulnerability and resilience<sup>17</sup>. Since individuals/households are

---

<sup>13</sup> One hundred and twenty-ninth session, (2020), Follow-up report on the assessment of the contribution of FAO to the integrated management of natural resources for sustainable agriculture (OS 2), P.15

<sup>14</sup><http://www.sunculture.com/index.php/products/>, <http://www.sunculture.com>

<sup>15</sup>WEIKMAN Romain, (2016) Ethical Dimensions of the allocation of international financing to adaptation to climate change, **P. 19**.

<sup>16</sup> (2007), GEMENNE François, BLOCHER Julia et al ; Geo-Eco-Trop, Special Issue, Climate Change, natural disasters and displacement of populations in West Africa, P.317

<sup>17</sup> Leardini, M., & Sarolea, S. Climate Refugees, P. 5

affected by the same climate-related threats, their vulnerability and probability to migrate are influenced by their dependence on natural resources, socio-economic status and demographic characteristics<sup>18</sup>. In view of these differences, policies should be implemented to meet the specific needs of local populations. They should be apprised of current and future environmental changes. Environmental mobility cannot be considered as a strictly rational behaviour based on real vulnerability. To deal with this phenomenon, steps should be taken at the continental level to:

- Build reception facilities and introduce mechanisms to protect migrants and persons displaced as a result of climatic factors;
- Promote the freedom of movement by relying on the work of regional institutions;
- Put in place a regional framework<sup>19</sup> which should formulate a practical cooperation policy on the challenges posed by transborder development; and
- Introduce planned relocation programmes for people exposed to the consequences of climate change after a preliminary study of displacements.

This phenomenon would be remedied if decision-makers could access reliable data from an effective system.

#### **4- Strengthening of Meteorological and Climate Information Service**

According to the 2019 report<sup>20</sup> on the state of climate services, Africa and small developing island states have the most serious capacity gaps in the area of climate services. 41% of African countries provide basic level services or less.

Despite the fact that it represents a fifth of the total surface area of the planet's land mass, Africa has the least developed land observation network among all the continents because its deteriorating network covers only one eighth of the minimum density required by the World Meteorological Organization; only 22% of the stations meet all the data communication

---

18 Dufoulon, S. (2013). Anger of the Times and Climate Refugees: for a sociological approach. Vertigo- the environmental science electronic review.

AFIFI T., 2008. The impact of environmental problems on migration in the Republic of Niger. Paper presented in the Environment, Forced Migration and Social Vulnerability Conference, Bonn, Germany, 9–11 October 2008. UN University Institute for the Environment and Human Security.

<sup>19</sup> CHARRIÈRE, F. & FRESIA, M., 2008. West Africa as a migration and protection area. UNHCR, Geneva, Switzerland, 48 p.

<sup>20</sup> WMO Volume 1253, State of the Climate in Africa, 2019 ; P.28

requirements set by the Global Climate Observation System (compared to 57% in 2011)<sup>21</sup>. Indeed, it is clear that no action or decision can be productive without prior knowledge of the environment through the use of data.

To this end, a key element for defining options for adaptation, mitigation and assessment of vulnerability costs is the development of a knowledge management system on which relevant actions must be based. Indeed, the implementation of the three Rio agreements<sup>22</sup> depends on the availability of reliable data and natural resource monitoring, observation and assessment systems. Countries must make the necessary efforts to equip themselves with the appropriate natural resource observation, monitoring and surveillance systems and to commence a brainstorming process on data access, sharing and leveraging as well as the long-term financing of data collection and processing. This is in spite of efforts made by several national and international institutions to set up systems for collecting and processing data on desertification, drought and climate. The obvious lack of relevant scientific data to inform decision-making processes remains a major constraint<sup>23</sup>. However, rather than being a handicap, the lack of this type of data should provide an opportunity to strengthen existing instruments and to promote the introduction of efficient data collection and processing procedures that will ensure the transparency of information. Consequently, it will be beneficial to strengthen African institutions and organizations in the area of data. These include the African Centre for Meteorology Applications to Development (ACMAD), ICPAC (Climate Prediction and Applications Center), etc.

#### **5- Strengthening of multi-hazard early warning systems**

According to the 2019 Climate Report, several high-impact phenomena hit the African continent in 2019. They destroyed or damaged vital segments within communities and among the populations, thereby creating problems relating to food security, displacement of populations, health as well as protection of persons and livelihoods. For example, after the devastation wrecked by tropical cyclone Idai, gaps revealed in Mozambique's early warning system ranged from the inefficiency of the multi-hazard early warning system to the use of terms that the

---

21 World Meteorological Organization, 2019: 2019 State of Climate Services: Agriculture and Food Security (WMO-No. 1242), Geneva, [https://library.wmo.int/doc\\_num.php?explnum\\_id=10089](https://library.wmo.int/doc_num.php?explnum_id=10089)

<sup>22</sup> Dinku, Tufa. 2018. Availability and use of climate data in Africa: challenges and obstacles. ICT Update (87) 14.

<sup>23</sup> Ibid



population does not understand (for example, 50 mm of rain or 150 km/h); or lack of effective disaster management plans, particularly city evacuation plans, etc.

According to the World Meteorological Organization (WMO), more than 80% of least developed countries and many small developing island states only have basic early warning systems, while many African countries have inadequate meteorological observation networks which are supposed to serve as the foundation of warning systems<sup>24</sup>. There is an urgent need to improve the management of the impact of phenomena arising on the continent.

The prevention and anticipation of the effects of climate change as well as a brainstorming process over the adaptation of the people are critical for the operationalization of early warning systems. In fact, hydrometeorological forecasting and early warning should be improved by focusing on the risks associated with droughts and floods. The warning system for agriculture, food security and civil protection should be prioritized.

It is therefore urgent to design observation networks at the sub national level with all the existing resources and to train technicians so that the mechanisms are well understood.

Inadequate understanding of risks at the institutional, community and individual level due to a lack of several tools: hazard mapping (for example, flood maps across the country), exposure and vulnerability assessment, effective planning of land use and compliance with the rules for effective flood plain management are some of the gaps in Mozambique's early warning system.

Finally, mention should be made of the fact that results and the publication of same are centralized (annual publication of daily rainfall records and monthly publication of the data of official and associated climatological stations).

## **Conclusion**

Climate insecurity is a combination of several economic, environmental, security and demographic factors in particular which impact on human security in its entirety. Thus, the effects of climate change on peace and human security are now well-established and unequivocal. We should remember that climate change has real consequences in fragile and less

---

<sup>24</sup> World Meteorological Organization in Brief, 2009

resilient regions. The impacts are more pronounced in these regions because of their vulnerabilities.

With this in mind, and in addition to international solutions, home-grown solutions are required to fight climate insecurity on the continent. The fight against climate insecurity cannot be waged effectively without reliable information and data. It is also necessary to formulate a harmonized policy setting out the overall climate action vision together with a long-term strategy and national action plans, adaptation and mitigation measures, multi-hazard early warning systems, etc. In a nutshell, the knowledge and anticipation of risks will help to overcome climate insecurity and mitigate its effects in regions which are highly vulnerable to the vagaries of the weather.

### **Bibliographic References**

- AHOUEGAN, M.B.D., DJABY, B., OZER, P., HOUNTONDI, Y.C., THIRY, A. & DE LONGUEVILLE, F., 2014. Adaptation and resilience of rural populations in the face of natural disasters in Sub-Saharan Africa. Case of the 2010 floods in the Zagnanado commune, Benin. In A., BALLOUCHE & A.N., TAÏBI (Eds.), Water, Environment and Land Use. A research work for the territories; P.10. Presses de l'Université d'Angers, Angers, France, 265-278.
- AFIFI T., 2008. The impact of environmental problems on migration in the Republic of Niger. Paper presented in the Environment, Forced Migration and Social Vulnerability Conference, Bonn, Germany, 9–11 October 2008. UN University Institute for the Environment and Human Security.
- Bambara, D., Bilgo, A., Hien, E., Masse, D., Thiombiano, A., & Hien, V. (2013). Rural perceptions of climate change and its socio-environmental consequences in Tougou and Donsin. Sahelian and Sudano-Sahelian climates of Burkina Faso. *Agricultural Research Bulletin of Benin*, 74, 8-16.
- C. Benson, E. Et, et. Clay, Understanding the socio-economic and financial impact of natural disasters, International Bank for Reconstruction and Development, 2004.
- CHARRIÈRE, F. & FRESIA, M., 2008. West Africa as a migration and protection area. UNHCR, Geneva, Switzerland, 48 p.
- DORSOUMA. AL.H, REQUIER DES-JARDINS Mélanie (2008) ; Climate variability, desertification and biodiversity in Africa: adapting, an integrated approach P.15

- Dinku, Tufa. 2018. Availability and use of climate data in Africa: challenges and obstacles. *ICT Update* (87) 14
- Dufoulon, S. (2013). Anger of the Times and Climate Refugees: for a sociological approach. *Vertigo- environmental science electronic review*.
- GEMENNE François, BLOCHER Julia et al (2007), *Geo-Eco-Trop Special Edition, Change*
- J. Barnett, *Climate warming and security of country atolls*, Macmillan Brown Center for Pacific Studies, 2002.
- Kouadio, B. H., Kouamé, K. F., Saley, B. M., Biémi, J., & Ibrahima, T. (2007). Climate insecurity and georisks in Côte d'Ivoire: study of the water erosion of soil in the semi-mountainous region of Man (Western Côte d'Ivoire). *Science et changements planétaires/Sécheresse*, 18(1), 29-37.
- Kane, A. H. (2019). Analysis of the role of insurance in the resilience of vulnerable populations to climate shocks and food insecurity: Case of the Fatick region in Senegal (Doctoral dissertation, Université de Liège, Belgique).
- Hallegatte, S., & Théry, D. (2007). Have the future economic impacts of climate change been underrated? *Economic policy review*, 117(4), 507-522.
- Leardini, M., & Sarolea, S. *Climate Refugees*.
- Nkuzimana, L. (2015). Climate change and the insecurity of potable water in Africa – Which policies for which risks? *Hegel*, (3), 241-242.
- Norrant-Romand, C. (2013). Hachimi Sanni Yaya, Mohamed Behnassi: Climate change, energy crisis and food insecurity: The world in search of a face. Canada/Québec, Presses de l'Université de Laval, 2011, 350 pages. *Territory in movement Journal of geography and planning*, (17-18).
- O. Simonett, *Potential impacts of climate warming: case studies on climate change*, GRID-Genève, 1989.
- Quenault, B. (2009). Climate change and multiple security risks. Serfati C. (éd.), *A political economy of security*, symp. *Hommes et Société*, Khartala, Paris, 181-194.
- ROYAL, S. (2016). *SECURITY AND CLIMATE*.
- S. Bettencourt, *Integration of adaptation to climate change in the economies of the Pacific Islands*, Documents of the World Forum on sustainable development, pp. 11-12, 2004.
- Vaucelle, S., & Younsa Harouna, H. (2018). Living with water insecurity in a Sahelian town: adaptation strategies of households in Niamey (Niger).
- Wanneau, K. (2011). *Securing climate change*. S. La Branche (directed by), *Climate change: from meta-risk to meta-governance*, Paris, Tec & Doc, 103-127.
- Watson, RT, Zinowera, MC and Moss, RH (1996). *Climate change 1995. Impacts, adaptation and mitigation of climate change: scientific and technical analysis*.

- WATSON T.R, (2001), Times of Climate Surprises in courrier de la planète n°61, P.06-09
- Zaouaq, K. (2020). Adaptation to climate change and the fight against food insecurity in West Africa. Sustainable Africa 2030, (7), pp-68.
- African Development Bank: GAP ANALYSIS REPORT: African Nationally Determined Contributions (NDCs), natural disasters and displacement of populations in West Africa P.317;
- International Panel on climate change, Climate change 2014: Impacts, adaptation, and vulnerability, chapter 22, Working Group II Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, p. 1206.

### **On-line References**

- <https://www.un.org/fr/un-chronicle/vers-une-afrique-prosp%C3%A8re-et-r%C3%A9siliente-aux-changements-climatiques>
- <https://www.un.org/fr/un-chronicle/vers-une-afrique-prosp%C3%A8re-et-r%C3%A9siliente-aux-changements-climatiques>
- <http://www.sunculture.com/index.php/products/>,
- <http://www.sunculture.com/>
- [https://library.wmo.int/doc\\_num.phpexplnum\\_id=10089](https://library.wmo.int/doc_num.phpexplnum_id=10089)
- [https://library.wmo.int/doc\\_num.php?explnum\\_id=10089](https://library.wmo.int/doc_num.php?explnum_id=10089)