A publication of

ADDC

The Italian Association of Chemical Engineering Online at www.cetjournal.it

VOL. 107, 2023

Guest Editors: Petar S. Varbanov, Bohong Wang, Petro Kapustenko Copyright © 2023, AIDIC Servizi S.r.l. ISBN 979-12-81206-07-6; ISSN 2283-9216

DOI: 10.3303/CET23107038

### Sustainable Development in the Sahel Region

Júlia Szőke\*, Kata D. Jankovits

Széchenyi István University, Győr, Hungary szokej@sze.hu

Scientists from various fields have long examined the factors contributing to sustainable development in Africa. The paper investigates the topic of sustainable development focusing on a very special part of Africa, the Sahel region, which is an ecoclimatic and biogeographic region of Africa facing many challenges. Consequently, the secondary research to be presented in this paper aims to review some projects and actions taken by various organizations, like the United Nations and the African Union, that stimulate sustainable development in the Sahel region. Accordingly, it focuses on a few of those projects and actions, which, on the one hand, enable sustainable agriculture, the reduction of malnutrition and food insecurity, and water usage combined with latrine construction, and which, on the other hand, enhance natural resource management and increasing resilience to climate change. The paper concludes with some remarks regarding the efficacy of these projects and actions from the viewpoint of sustainability, and finds that even though these projects and actions are of significance, there is still a long road ahead to reach sustainable development in the Sahel region.

#### 1. Introduction

Sustainability and sustainable development have been two of the most urgent topics in the field of economic and social affairs for a few decades, which led to the adoption of the 2030 Agenda for Sustainable Development by the United Nations (UN) in 2015 (United Nations, 2015a). Although UN Sustainable Development Goals require action by all countries, sustainable development has become exceptionally crucial in the less developed parts of the world, especially in Africa. Therefore, much attention has been paid to international and regional organizations in this regard. Particularly, because African governments have launched several strategies to achieve sustainable development (Mokrani, 2022), but they seem to fail in achieving it (Ahenkan and Osei-Kojo, 2014).

Thus, the present paper reviews a few projects and actions taken by various international and regional organizations, as well as non-governmental ones that contribute to sustainable development in a special part of Africa, the Sahel region. It also tries to fill a research gap, as the sustainable development of the Sahel has been less researched in Hungary. The research is based on secondary data as the aim is to showcase some actions and programmes which enable sustainable development, especially sustainable agriculture to reduce malnutrition and food insecurity, appropriate water usage, and resilience to climate change. Therefore, the sources of information chosen for this paper are scientific books and articles, as well as materials and other documents published on the websites of various international, regional, and non-governmental organizations, including those of the United Nations, the African Union, and the Sahel G5, for instance.

The reason for putting the emphasis on sustainable agriculture, the reduction of food insecurity, and appropriate water usage, as well as increased resilience to climate change in this paper is that the Sahel region is one of the most climate-affected regions in the world (Savoy and Norris, 2022). The Sahel is experiencing a 1.5 times greater increase in the temperature than the rest of the world. The region experiences unpredictable rainfall, and rainy seasons are getting shorter, while floods are happening more frequently. Agricultural productivity, the amount of pastureland that is available and the size of significant water bodies are all being affected by climate conditions. Around 65 percent of the cultivable land in the Sahel is thought to be degraded (United Nations, 2021a). Therefore, due to climate change, the region faces broader instability and the inefficiency of traditional agropastoral patterns. These combined with improper land use and a rapidly increasing population – with a population of over 300 million, which is expected to double by 2050 (Jones, 2023) – resulted in more people

competing for diminishing water resources (Savoy and Norris, 2022). Moreover, the Sahel region has been facing a food insecurity crisis with 20 million people at risk and nearly 5 million children at risk of acute malnutrition. All these have called for the action of various organizations.

Based on the above, the paper first reviews actions taken by international organizations in order based on their geographic scope, and then by non-governmental ones. Thus, the review begins with actions taken by the only universal organization, the United Nations, and then it focuses on an international think tank that involves the UN and other international organizations. After that the paper presents some actions taken by the regional organization of Africa, and finally some programmes executed by non-governmental organizations.

#### 2. The United Nations and its actions

The United Nations worked out a Support Plan for the Sahel countries in 2018, as shown in Figure 1. The Support Plan aims at stepping up efforts to hasten shared prosperity and long-lasting peace in the region.



Figure 1: The Sahel region (World Atlas, 2021)

The Support Plan, which covers the years 2018 through 2030, aims at assisting in putting the African Union Agenda 2063 and the 2030 Agenda for Sustainable Development (United Nations, 2015a) into action (United Nations, 2018). The six priority areas that are the bases of the support plan are the following: cross-border cooperation for stability and development, preventing and resolving conflicts, promoting inclusive and equitable growth, building resilience to climate change, promoting access to renewable energy, empowering women and youth for peace and development in the Sahel (United Nations, 2018). The next part will discuss building resilience to climate change and promoting access to renewable energy in detail.

## 2.1 Building resilience to climate change, improving management of natural resources, and decreasing malnutrition and food insecurity

The objective of this priority area of the Support Plan is to build institutional and individual resilience to shocks and vulnerabilities to climate change, which will aid in the implementation of nationally determined contributions and ensure food security for all Sahelians. To reach its aims, it focuses on three steps: (1) through regional programs like the Climate-Smart Agriculture and Resilient Pastoralism Program, it aims at building rural women's as well as their communities' resilience to the effects of climate change and also at empowering them and contributing to social cohesion, (2) to prevent and manage disputes between farmers and pastoralists, it wants to encourage land use planning and better management of the land and water resources, (3) it aims at supporting national efforts to safeguard marine and coastal ecosystems, with a focus on infrastructure for effective fish stock management and monitoring, control, and surveillance of illicit fishing (United Nations, 2018). One of the actions belonging to this priority area is the 'One million cisterns for the Sahel' initiative by the Food and Agriculture Organization of the United Nations (henceforth FAO), which puts in place rainwater collecting and storage system in arid or semi-arid regions of six countries (e.g. Burkina Faso, Chad) heavily affected by climate change. This way vulnerable communities are provided with access to safe drinking water and water for agricultural production and their food and nutrition security is improved as well as their resilience (Food and Agriculture Organization, 2018).

Another program is a flagship program of UN Women on women's economic empowerment through climate resilient agriculture. As a result of this program, ten thousand women were trained to processing shea products and taking part in the onion and potato value chains and in organic farming (United Nations Office for West Africa and the Sahel, 2020).

In 2019 World Food Programme also launched an integrated resilience programme to restore degraded ecosystems, and improve nutrition, inter alia. The programme includes school feeding, nutrition assistance, farmer support, for instance, and affects two million people in the region (United Nations Office for West Africa and the Sahel, 2020).

#### 2.2 Promoting access to renewable energy

The objective of this priority area is to increase on-grid and off-grid alternatives to enable access to reasonably priced, environmentally friendly, and trustworthy energy services that can support both economic growth and essential services. In order to significantly enhance the Sahel's energy mix, improved access to inexpensive, clean, sustainable, and dependable energy services is the first priority. It is also essential to assist Member States creating policies that encourage private investment in renewable energy sources and the development of energy efficiency. Another crucial element is to support the growth of micro and small business in the installation, upkeep, and maintenance of renewable energy facilities. This includes assisting newly established small- and medium-sized enterprises (SMEs) with energy efficiency and creating enabling economic environments for long-term sustainable operations. In order to boost food yield, lower post-harvest loss, and encourage food processing, it is imperative that food production value chain must be supported by clean and sustainable energy production. This includes agriculture, fisheries, and pastoralism (United Nations, 2018). One of the most important actions regarding renewable energy is the United Nations Development Programme's (UNDP) 'A regeneration' offer, which is a 3.6 billion USD programme focusing on governance, renewable energy, and youth. From the viewpoint of renewable energy, it means that UNDP is going to work with partners to provide access to clean and affordable energy to 150 million people in the Sahel, that means to half of the current population. This is indispensable as less than 50 percent of the population in the region have access to electricity (United Nations Development Programme, 2021), which makes this action a very effective one. In addition, the UN's vision is that everyone in the Sahel will have access to energy by 2030 as there are huge potentials of renewable energy sources in the region (United Nations, 2020).

# 3. World Water Council's Dakar Declaration: A 'Blue Deal' for water security and sanitation for peace and development

World Water Council is an international think tank – encompassing the UN and other international organizations – the aim of which is to mobilize action on critical water issues at all levels (World Water Council, 2021). It held its 9<sup>th</sup> World Water Forum in Dakar in 2022 where the Dakar Declaration was accepted, its ten main pillars were being discussed and the stakeholders called upon the international community to:

- · guarantee the right to water and sanitation for all,
- · ensure availability of the resources and resilience,
- · ensure adequate funding,
- · ensure inclusive water governance,
- enhance cooperation (Dakar Declaration, 2022).

To guarantee the right to water and sanitation for all means they suggest accelerating the pace at which everyone has access to clean water and sanitary facilities within the proper legal frameworks, and mobilize all actors by using integrated and inclusive initiatives. Another important aspect is to encourage the efficient application of international humanitarian law that guarantee the protection of water and sewage infrastructure that are essential during times of conflict (Dakar Declaration, 2022).

The next point is to ensure availability of the resources and resilience. Firstly, they highlight the importance of implementing sustainable management strategies to protect ecosystems and water resources while ensuring their resilience to climate change and population pressures. To encourage change toward more sustainable and ethical production and consumption practices, they hope to increase awareness of these challenges. Additionally, they want to safeguard wetlands, encourage the preservation of conventional water systems, and encourage the recycling and reuse of treated water (Dakar Declaration, 2022).

The third important aspect is to ensure adequate funding. The first piece of advice under this point was to mobilize sufficient public financial resources along with development partnerships to invest in infrastructures for water and sanitation and to promote "blue" and "green" jobs, particularly for young people, women and rural communities. They also recommend supporting creative finance methods and private sector involvement in water and sanitation. Additionally, they stress the significance of supporting the successful implementation of the Addis Ababa Action Agenda on Financing for Development (United Nations, 2015b), particularly through

investments in infrastructure for water and sanitation. Finally, they promote global financing approaches to encourage increased funding for water sanitation (Dakar Declaration, 2022).

The fourth pillar is to ensure inclusive water governance. Here, the idea to promote diverse and concerted management strategies, as well as transparent, effective and inclusive water and sanitation management services at the appropriate level has risen. Additionally, they support the implementation of integrated management plans for the wise, equitable, and sustainable use of water resources, promoting a balance between socioeconomic development, resources quality preservation, and the preservation and conservation of ecosystems. They believe it is critical to encourage more alignment between water policies and those pertaining to, among other things, agriculture, rural development, health, biodiversity, energy, and industry. Finally, for a more sustainable management of water resources and habitats, it is critical to design water-related public policies based on knowledge, encourage innovations, and create and build the capacities of all categories of stakeholders (Dakar Declaration, 2022).

The last aspect is to enhance cooperation, as it is vital to give water issues special consideration in bilateral and multilateral cooperation, particularly at sub-regional, regional, and international levels. Supporting basin groups' initiatives for equitable, sustainable, and integrated water resources management is crucial. Enhancing mutually instrumental cooperation and coalition in the management of transboundary basins, particularly aquifer basins, is another important factor. This can be done, in part, by encouraging the sharing of knowledge, expertise, and best practices. Lastly, in the true spirit of hydro-diplomacy, to make cooperation, coordination, and dialogue the cornerstone of dispute settlement (Dakar Declaration, 2022).

The forum, as well as the declaration, recognized the need to hasten progress towards global water goals and create a more water-secure future, especially in the Sahel region, consequently, an initiative called 'Continental Africa Water Investment Programme' to narrow the continent's water investment gap by leveraging 30 billion USD annually for climate-resilient water and sanitation investments benefitting 250 million people was implemented (Global Water Partnership, 2022).

#### 4. The African Union and its actions

Having reviewed the actions of two international organizations with global scope, the paper now presents projects carried out by the African Union, which is the international organization of Africa with a regional scope launched in 2002, as it has much to do regarding the sustainable development of the Sahel region.

#### 4.1 Agenda 2063: The Africa We Want

Its plan called 'Agenda 2063: The Africa We Want' aims at achieving inclusive and sustainable development, as well as Pan-Africanism over a 50-year period (African Union, 2015). The aspirations, among others, include modern agriculture for increased production and productivity to ensure food security and Africa's unique and valued ecosystem with climate-resilient economies and communities (Agenda 2063, 2015). The Agenda envisages a modern and productive agriculture using science, technology, and innovation, moreover, hand hoe will be banished by 2025. In addition, blue/ocean economy will contribute to sustainable economic growth to a great extent, enhancing food security this way. Africa will also take part in global efforts for climate change alleviation to support sustainable development in the continent. Last, but not least, Africa will use and manage water resources in an equitable and sustainable way (Agenda 2063, 2015).

The Agenda also identifies flagship programmes which can increase the Africa's sustainable development (Agenda 2063, 2015). The Agenda describes a total of 15 flagship programmes out of which two fall under the scope of the paper. One of them is the 'Formulation of an African Commodities Strategy' which aims that the continent actively use its own natural resources to ensure economic development and resilience, reducing this way Africa's exposure to international value chains. The strategy and its action plan were adopted in 2021 (African Union, 2022). The other programme is the 'Implementation of The Grand Inga Dam Project' as the dam is expected to generate 43,200 MW of power to support current regional power pools as well as to enable transformation to modern sources of energy and guarantee access of all Africans to clean and reasonably priced electricity (Flagship Projects of Agenda 2063, 2013). As of February 2022, the Inga Law to facilitate the implementation of the programme has been signed and has been waiting for ratification (African Union, 2022).

#### 4.2 The African Union Strategy for the Sahel Region

In addition to the Agenda 2063, the African Union is also active in other ways regarding the sustainable development of the Sahel region. The most important action taken in this regard was that in 2014 it accepted 'The African Union Strategy for the Sahel Region' which describes three main issues – governance, security, and development – and the priority areas linked to them. One priority area of the 'development' issue is agricultural and pastoral development and support to the resilience of populations (The African Union Strategy for the Sahel Region, 2014). This priority area identified two main challenges: (1) the imbalance between natural

resources and (2) the constantly increasing needs of populations. To overcome these challenges, the strategy suggests to implement the following actions among others (The African Union Strategy for the Sahel Region, 2014):

- implement programmes and project contributing to economic growth through the development of the agricultural sector to improve food security, including the implementation of the Comprehensive African Agricultural Development Programme,
- strengthen the resilience to rural livelihoods in semi-arid areas of the Sahel through the effective implementation of the Strategic Plan of African Union-Semi-Arid Food Grain Research and Development,
- · support the preservation and the sustainable management of the Sahelian ecosystem,
- · implement the 'Great Green Wall for the Sahara and the Sahel' effectively,
- support the modernisation of livestock.

Out of these actions, a noteworthy one is the 'Great Green Wall for the Sahara and the Sahel' initiative which aims to restore degraded landscapes and transform the population's life from more than 8 billion USD. It is being implemented across 22 African countries to restore 100 million hectares of degraded land, confiscate 250 million tons of carbon and create 10 million green jobs by 2030 (Great Green Wall Initiative, 2007).

#### 5. Latrine construction and hygiene kit distribution, actions taken by NGOs

Nigeria Joint Response, whose lead organization is the famous non-governmental organization, Save the Children, provides emergency humanitarian assistance in northeast Nigeria which faces many humanitarian challenges (Nigeria Joint Response, 2021). Due to the Boko Haram insurgency in 2009, many people have been displaced (Nigeria Joint Response, 2021), usually to camps. In these camps and camp-like environments, overcrowding raises the danger of waterborne and airborne disease epidemics. In response to this challenge, many non-governmental organizations, including World Vision, Save the Children Nigeria as well as Nigeria Joint Response provided life-saving water, sanitation, and hygiene (WASH) interventions in the northeastern and central local government areas (Nigeria Joint Response Case Study, 2021), in accordance with the UN's Humanitarian Response Strategy 2019–2021 for Nigeria (United Nations, 2019). Pilot projects are needed to carry out to see if these interventions are efficient in promoting appropriate water usage and thus in reaching sustainable development.

#### 6. Conclusions

The paper investigated sustainable development in the Sahel region which is heavily affected by the consequences of climate change, like rising temperature. This results in the inefficiency of current and traditional forms of agriculture, which leads to food insecurity, malnutrition, and humanitarian crises. Although the African countries have launched several strategies to achieve sustainable development, they have not yet reached their aims. So, international, regional, and non-governmental organizations try to overcome these challenges. The paper reviewed plans and actions launched by the most important intergovernmental organization, the United Nations. It was found that despite the UN's engagement in the Sahel encompasses many areas, there

is still a lot to be done in this area, for example, related to women empowerment and resilience programme to restore degraded ecosystems. Nevertheless, it must be pointed out that the programmes of the UN were found to be highly effective, especially related to providing access to clean and affordable energy to 150 million people, which is half of the current population. A declaration of another intergovernmental organization was presented, which sounds good in theory, but actions related to it are yet to come. Some strategies and actions taken by the regional organization of Africa were also revealed. The ideas again were found to be very ambitious, so much work need to be done to reach the aims. Finally, a project of a non-governmental organization was introduced, which requires future implementation to efficiently contribute to sustainable development in the Sahel region. All in all, it can be stated that even though these projects and actions are of significance, they are only the first steps taken, and there is still a long road ahead to reach sustainable development in the Sahel region. To be more effective, further work of policy-makers should focus on the smaller scale needs of the Sahel region and on projects that reach a larger share of the population, instead of creating and drafting comprehensive, but overambitious plans. Researchers may provide assistance in this attempt by carrying out impact analyses of the programmes implemented so far or by finding out about the most urgent needs of the region so that actions

#### References

targeting these needs could be implemented.

African Union, 2015, Agenda 2063: The Africa We Want <au.int/en/agenda2063/overview> accessed 23.07.2023.

- African Union, 2013, Flagship Projects of Agenda 2063 <au.int/en/agenda2063/flagship-projects> accessed 24.07.2023.
- African Union, 2022, Second Continental Report on the Implementation of Agenda 2063 <au.int/sites/default/files/documents/41480-doc-
  - 2nd\_Continental\_Progress\_Report\_on\_Agenda\_2063\_English.pdf> accessed 30.07.2023.
- African Union, 2014, The African Union Strategy for the Sahel Region <a href="www.peaceau.org/uploads/auc-psc-449.au-strategu-for-sahel-region-11-august-2014.pdf">www.peaceau.org/uploads/auc-psc-449.au-strategu-for-sahel-region-11-august-2014.pdf</a>> accessed 30.07.2023.
- Ahenkan A., Osei-Kojo A., 2014, Achieving sustainable development in Africa: Progress, challenges and prospects, International Journal of Development and Sustainability, 1, 162–176.
- Dakar Declaration, 2022, 9<sup>th</sup> World Water Forum <www.worldwaterforum9.org/en/practical-information/dakar-declaration> accessed 04.11.2022.
- Food and Agriculture Organization, 2018, One million cisterns for the Sahel initiative <a href="https://www.fao.org/3/ca0882en/CA0882EN.pdf">www.fao.org/3/ca0882en/CA0882EN.pdf</a> accessed 13.07.2023.
- Global Water Partnership, 2022, Turning talk into action: GWP at World Water Forum 9 <a href="https://www.gwp.org/en/About/more/news/2022/turning-talk-into-action-gwp-at-world-water-forum-9/">https://www.gwp.org/en/About/more/news/2022/turning-talk-into-action-gwp-at-world-water-forum-9/</a> accessed 20 07 2023
- Great Green Wall Initiative, 2007, <www.unccd.int/our-work/ggwi> accessed 30.07.2023.
- Jones M., 2023, The Sahel Faces 3 Issues: Climate, Conflict, & Overpopulation <a href="https://www.visionofhumanity.org/challenges-facing-the-sahel-climate-conflict-and-overpopulation/">https://www.visionofhumanity.org/challenges-facing-the-sahel-climate-conflict-and-overpopulation/</a> accessed 20.09.2023.
- Mokrani T., 2022, The role of natural gas in the South African energy mix, Chemical Engineering Transactions, 96, 211–216.
- Nigeria Joint Response, 2021, <a href="https://dutchrelief.org/nigeria-joint-response-3/">dutchrelief.org/nigeria-joint-response-3/</a> accessed 3.05.2023.
- Nigeria Joint Response Case Study, 2021, Latrine Construction and Hygiene Kit Distribution <resourcecentre.savethechildren.net/pdf/latrine-construction-hygiene-kit-distribution-WASH-2021.pdf/> accessed 3.05.2023.
- Savoy C.M., Norris A., 2022, Supporting water programming in the Sahel, Center for Strategic and International Studies, <www.csis.org/analysis/supporting-water-programming-sahel> accessed 13.10.2022.
- United Nations, 2015a, Transforming our world: the 2030 Agenda for Sustainable Development <documents-dds-ny.un.org/doc/UNDOC/GEN/N15/291/89/PDF/N1529189.pdf?OpenElement> accessed 20.09.2023.
- United Nations, 2015b, Addis Ababa Action Agenda of the Third International Conference on Financing for Development. Third International Conference, Financing for Development <a href="mailto:sustainabledevelopment.un.org/content/documents/2051AAAA\_Outcome.pdf">sustainabledevelopment.un.org/content/documents/2051AAAA\_Outcome.pdf</a> accessed 1.11.2022.
- United Nations, 2018, UN Support Plan for the Sahel. Working together for a prosperous and peaceful Sahel <a href="https://www.un.org/africarenewal/sites/www.un.org.africarenewal/files/English%20Summary%20Report\_0.pdf">https://www.un.org/africarenewal/sites/www.un.org.africarenewal/files/English%20Summary%20Report\_0.pdf</a> accessed 31.10.2022.
- United Nations, 2019, Nigeria Humanitarian Response Strategy 2019-2021 < reliefweb.int/report/nigeria/nigeria-humanitarian-response-strategy-2019-2021-january-2019-december-2021-december> accessed 2.11.2022.
- United Nations, 2021a, Human Rights, Climate Change and Migration in the Sahel <a href="https://www.ohchr.org/sites/default/files/2021-11/HR-climate-change-migration-Sahel.pdf">www.ohchr.org/sites/default/files/2021-11/HR-climate-change-migration-Sahel.pdf</a> accessed 30.10.2022.
- United Nations Development Programme, 2021, UNDP launches Sahel Offer, seeking largest joint commitment to regenerate the region <www.undp.org/press-releases/undp-launches-sahel-offer-seeking-largest-joint-commitment-regenerate-region> accessed 20.07.2023.
- United Nations Office for West Africa and the Sahel, 2020, The Sahel, priority of the United Nations <unowas.unmissions.org/sites/default/files/unowas\_magazine\_n10eng-onlne.pdf> accessed 14.07.2023.
- World Atlas, 2021, Sahel of Africa <a href="https://www.worldatlas.com/regions/sahel-of-africa.html">www.worldatlas.com/regions/sahel-of-africa.html</a> accessed 20.09.2023. World Water Council, 2021, <a href="https://www.worldwatercouncil.org/en">www.worldwatercouncil.org/en</a> accessed 03.07.2023.