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Climate Volatility, Central African Republic

## **The Impact of Climate Volatility on Food Security in the Central African Republic**

The Central African Republic has significant potential to develop a strong infrastructure and agricultural base. However, its long history of instability and poverty have prevented it from achieving its potential. “Among the last areas of sub-Saharan Africa to be drawn into the world economy, its introduction into trade networks around the early 1700s fostered significant competition among its population.”<sup>i</sup> From pre-colonial conflict related to the slave trade, through the repression by the colonial government and into the post-colonial era’s problems with political instability, the Central African Republic has a history of ethnic and political violence that impacts food security in this region. In addition to its history of political instability, the Central African Republic unsurprisingly has significant problems in the areas of high mortality rate and low life expectancy from disease, an inadequate health care system, poor food security, low literacy, poor infrastructure, and armed conflicts resulting in many displaced people<sup>ii</sup>. “In 2021, there were over 1.4 million displaced people within CAR and in neighboring countries, including 632,240 internally displaced persons<sup>iii</sup>.” It is no wonder that the Central African Republic is listed as one of the worst countries in the world for food security. “The Central African Republic (C.A.R.) ranks second to last in the [2018 Human Development Index](#), with around 79 percent of the country’s 4.7 million population estimated to be living in poverty<sup>iv</sup>.”

The Central African Republic has an estimated population of 5,454,533 in 2022, with 43.1% of total population living in urban areas.<sup>v</sup> The government is a constitutional direct democracy in which all citizens 18 years and older elect a president, prime minister, and representatives of the National Assembly; however, this system has been disrupted by several coups and delayed elections in recent years<sup>vi</sup>. The country is a plateau with rolling hills and is part of the Congo River Basin<sup>vii</sup>. It has a moist savannah climate with monsoon rains during the rainy season and a dry season when the harmattan winds bring sandstorms<sup>viii</sup>. “Situated on a fertile plateau and abundant in water resources, [the Central African Republic] has considerable agricultural potential...[and] a wealth of mineral resources. However, due to the multifaceted challenges, relevant socio-economic development indicators in [the Central African Republic] show a bad standing with 71 percent of the population living under the international poverty line (USD 1.90 per day)<sup>ix</sup>.” Agriculture makes up 50% of the GDP and employs 80% of the rural population<sup>x</sup>. But while one-third of the land is suitable for farming, only 3% is under cultivation and while 50% of the land is suitable for grazing, only 15% of this area is used for that purpose<sup>xi</sup>. The main food crops are cassava, yams, groundnuts, taro, bananas, sugar cane, beef, maize, plantains and milk<sup>xii</sup>. “Cash crops include cotton, coffee, vegetables, oil palms and sugarcane. The country is mostly self-sufficient in basic foodstuffs, and agricultural diversification has been encouraged by the government. The livestock population includes cattle, sheep, goats, pigs, and poultry, most of which are kept for domestic consumption. Pond-raised tilapia and river fish also contribute substantial amounts of protein to the diet<sup>xiii</sup>.” The average farm size is 1.5 to 2 hectares and is cultivated using traditional methods with low productivity<sup>xiv</sup>.

A typical family in the Central African Republic lives in a one-room house. The houses are made of various materials depending on the region. In the forest area, people build houses out of small branches and leaves, while in the south, people live in wattle and daub houses with woven palm frond roofs. In the city, people generally live in mud brick houses with aluminum roofs<sup>xv</sup>. A typical meal includes cassava, rice, squash, pumpkin, and plantains served with sauce and grilled meat. Meat and fish dishes are called *maboke* and *soussou*. Okra and peanuts or peanut butter are also served in many dishes and popular drinks are beer, palm or banana wine, and ginger beer<sup>xvi</sup>. For people in rural areas, these foods are cultivated on their home farms or hunted and fished in nearby areas. For people in the urban areas, food is purchased at local markets. 80% of the rural population works in agriculture, while in the main city of Bangui, typical jobs include work in manufacturing, markets, government offices and banks, 62% of the population lives below the poverty line and earns an average salary of \$900 per year<sup>xvii</sup>. The Central African Republic has one of the lowest life expectancies in the world with an average life expectancy of 55 years.<sup>xviii</sup> In rural areas, only 47.5% of the rural population has access to improved drinking water and 12.4% have access to improved sanitation, compared to 83.9% of the urban population with access to improved drinking water and 53.8% with access to improved sanitation<sup>xix</sup>. Health care is also very limited, with 0.07 physicians per 1,000 people and 1 hospital bed per 1,000 people<sup>xx</sup>. Education makes up only 1.8% of the GDP with a literacy rate of only 37.4%<sup>xxi</sup>. 34% of people have mobile phones, but only 10% have access to the internet<sup>xxii</sup>. Most roads are unpaved, and markets are small and far apart. In addition to poor infrastructure, education and healthcare, population displacement due to political instability and violence has resulted in 5,702 refugees leaving the country and 652,036 displaced persons within the country<sup>xxiii</sup>.

The issue of climate volatility and, specifically, flooding, is an important issue for the Central African Republic. The Chad River Basin and Congo River Basin are the source of many powerful rivers that provide surface water for the entire country<sup>xxiv</sup>. Three major dams provide hydroelectric power for the country. In addition, the country has monsoon rains during the rainy season that frequently result in flooding and crop loss. “The country’s southern tropical zone receives between 1500 and 1800 millimeters of rainfall per year. The Sudano-Guinean zone in the center of the country has a tropical moist climate, receiving about 1100–1500 millimeters of rainfall annually. The northern Sudano-Sahelian band receives between 800 and 1000 millimeters per year, and the dry Sahelian zone further north has erratic rainfall and frequent droughts. The water levels are declining, and surface water quality is rapidly deteriorating, suffering from pollution from human waste and serving as a vehicle for disease<sup>xxv</sup>.”

As climate change progresses, climate volatility has also worsened and resulted in more frequent floods and droughts. In October 2019, the country was hit with the worst flooding in two decades<sup>xxvi</sup>. Dozens of people were killed, and several hundreds of thousands were impacted by the flooding. The flooding impacted communities along the banks of the Oubangui River and as far away as the capital city of Bangui, where the only way to get around was by canoe<sup>xxvii</sup>. Bruno Yamkompanza, a local farmer, lost five hectares of sowing seeds, where he planted carrots, coleslaw, and cucumbers, to the floods in Bimbo, near Bangui<sup>xxviii</sup>. The flooding was due to changes in worldwide climate patterns. “A weather phenomenon known as a positive Indian Ocean Dipole has been linked to more extreme rainfall to east Africa. According to the Australian Bureau of Meteorology, the dipole’s positive phase this year has been the strongest for six decades, resulting in warmer sea temperatures in the western Indian Ocean region<sup>xxix</sup>.” Scientists predict that this phenomenon will become more frequent and severe in years to come. “There is evidence to suggest that [dipoles] are likely to increase in frequency, from once in about sixteen to seventeen years to once in six to seven years<sup>xxx</sup>.” In addition to the damage to structures and crops, contaminated water is also a way for diseases like cholera to spread. Marginalized populations like the displaced are especially impacted. “These men, women, boys and girls simply do not have a safety net to fall back onto when faced with additional shocks and

stresses, as has happened when these massive floods hit<sup>xxxii</sup>.” Urban populations are at risk as much as rural areas due to reliance on food produced in rural areas; crops are destroyed and any that are left are at risk of loss due to transportation challenges posed by floods and already poor infrastructure.

The Central African Republic is at the center of a perfect storm of problems, and there is no easy solution to its multiple problems. Any proposed solution to the flooding issue must bear in mind systemic problems like poor infrastructure, political instability, and hundreds of thousands of displaced persons. But while the obstacles are enormous, so is the potential of the Central African Republic. It is a country of significant resources, most of which have not yet been developed to their full potential. Much of its land is underused for agriculture and herding and the land that is under use is farmed in traditional, inefficient ways. One solution is to implement better techniques in farming and herding, with an emphasis on resilient crops and soil preservation techniques. Work has been going on in these areas for some time, but with slow or little progress. However, the lack of progress does not make this solution a poor one. New approaches with more participation and investment at the local level are needed to achieve this vital goal. Education about climate change and resiliency are vital if this solution is to succeed. An example of such an approach is the IFAD smallholder program announced in 2019. The \$29 million dollar project will target smallholders in areas impacted by flooding. “At least 50 per cent of the participants will be women, 30 per cent young people and 10 per cent heads of the most vulnerable households. The project aims to strengthen the production, processing and marketing of maize, cassava, groundnut, red beans, poultry, goats, sheep, and pigs. It will promote sustainable practices that help farmers adapt to climate change conditions, particularly to droughts and floods. Household members will also be trained in good dietary practices, nutrition, and hygiene. Increasing the availability of highly nutritious foods will be among project goals. In an attempt to reduce tensions and promote long-term sustainability, the project will also focus on encouraging dialogue between farmers growing crops and livestock producers. In addition, the project will establish 800 agricultural, agropastoral and market gardening groups while developing market gardens equipped with solar irrigation devices. Furthermore, twelve product warehouses and eight input storehouses will be constructed, and 450 young people will receive training in processing, marketing, or services within the value chains of selected crops and livestock<sup>xxxiii</sup>.”

Another solution is the development of micro hydropower projects. Studies are already underway for micro hydropower plants in the Central African Republic. “Four projects, with a combine installed capacity of around 2MW, are designed to provide affordable, sustainable and stable power to rural communities<sup>xxxiii</sup>.” Harnessing the power of the rivers will provide more electricity to rural areas and improve every aspect of life in those areas. This new hydropower would also allow low-income communities access to amenities like the internet, cellphones, and electrically powered equipment that would increase quality of life and improve education and outreach. Improved access to electricity would lead to the development of better schools and access to the internet. These schools could also be places where farmers could meet with aid workers to learn better farming techniques and skills to deal with climate change that would increase food output for these communities. Access to electricity would also allow farmers the ability to process, distribute and market their crops on a larger scale and thus increase their income. With reliable sources of electricity, communities would build crop processing centers, allowing the local communities to process their crops rather than sending them out of the country for processing. This would create jobs and give farmers higher prices for their crops in the international market. Access to internet would also allow farmers early notice to flood warnings via the internet and the resources to access national or international aid. However, these projects must be performed in ways that will not further damage the ecosystems along the rivers. Given the country’s extensive history of political instability and violence, any proposed solutions

should involve “neutral” outside parties like NGOs as well as participation at the local level. Education and community investment in the process are vital if the proposals are to succeed. They will require significant financial input, government support and ongoing technical support by international agencies, but the potential to improve rural areas makes these obstacles worth the effort.

“Resiliency” is a word that is used more and more in connection with climate change solutions, and it is the key to success for any projects in the Central African Republic. Not only must resilient crops and techniques be introduced, but also resilient communities with the infrastructure and inclusive social networks that will create lasting change.

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<sup>i</sup> <https://www.cia.gov/the-world-factbook/countries/central-african-republic/>

<sup>ii</sup> id

<sup>iii</sup> <https://www.wfp.org/countries/central-african-republic>

<sup>iv</sup> id

<sup>v</sup> <https://www.cia.gov/the-world-factbook/countries/central-african-republic/>

<sup>vi</sup> id

<sup>vii</sup> <https://www.britannica.com/place/Central-African-Republic>

<sup>viii</sup> id

<sup>ix</sup> <https://www.wfp.org/countries/central-african-republic>

<sup>x</sup> <https://www.ifad.org/en/web/operations/w/country/central-african-republic>

<sup>xi</sup> <https://www.land-links.org/country-profile/central-african-republic/#land>

<sup>xii</sup> <https://www.cia.gov/the-world-factbook/countries/central-african-republic/>

<sup>xiii</sup> <https://www.britannica.com/place/Central-African-Republic/Economy>

<sup>xiv</sup> <https://www.land-links.org/country-profile/central-african-republic/#land>

<sup>xv</sup> <https://www.britannica.com/place/Central-African-Republic/Health-and-welfare>

<sup>xvi</sup> id

<sup>xvii</sup> <https://www.cia.gov/the-world-factbook/countries/central-african-republic/>

<sup>xviii</sup> id

<sup>xix</sup> id

<sup>xx</sup> id

<sup>xxi</sup> id

<sup>xxii</sup> id

<sup>xxiii</sup> id

<sup>xxiv</sup> <https://www.land-links.org/country-profile/central-african-republic/#freshwater>

<sup>xxv</sup> id

<sup>xxvi</sup> <https://time.com/5753900/flooding-central-african-republic/>

<sup>xxvii</sup> id

<sup>xxviii</sup> id

<sup>xxix</sup> id

<sup>xxx</sup> id

<sup>xxxi</sup> id

<sup>xxxii</sup> <https://www.ifad.org/en/web/latest/-/news/central-african-republic-and-ifad-to-promote-smallholder-farmers-resilience-to-climate-change>

<sup>xxxiii</sup> <https://www.hydropower-dams.com/news/studies-sought-for-micro-hydro-projects-in-central-african-republic/>

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Bibliography:

“Central African Republic and IFAD to Promote Smallholder Farmers' Resilience to Climate Change.” *IFAD*, <https://www.ifad.org/en/web/latest/-/news/central-african-republic-and-ifad-to-promote-smallholder-farmers-resilience-to-climate-change>.

“Central African Republic.” *Encyclopædia Britannica*, Encyclopædia Britannica, Inc., <https://www.britannica.com/place/Central-African-Republic>.

“Central African Republic.” *IFAD*, <https://www.ifad.org/en/web/operations/w/country/central-african-republic>.

“Central African Republic.” *LandLinks*, 14 Apr. 2021, <https://www.land-links.org/country-profile/central-african-republic/#land>.

“Central African Republic: World Food Programme.” *UN World Food Programme*, <https://www.wfp.org/countries/central-african-republic>.

*Central Intelligence Agency*, Central Intelligence Agency, <https://www.cia.gov/the-world-factbook/countries/central-african-republic/>.

Haynes, Suyin. “How Flooding Is Devastating the Central African Republic.” *Time*, Time, 24 Dec. 2019, <https://time.com/5753900/flooding-central-african-republic/>.

“Studies Sought for Micro Hydro Projects in Central African Republic.” *Hydropower & Dams International*, <https://www.hydropower-dams.com/news/studies-sought-for-micro-hydro-projects-in-central-african-republic/>.