

Revisiting disasters in Cabo Verde: a historical review of droughts and food insecurity events to enable future climate resilience

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1. INTRODUCTION

Climate change is an urgent issue, primarily understood as a collective problem that demands individual actions. As a fact, the changing climate has a profound impact and significance for global sustainability and national development policy in short-, medium- and long-terms (Ferreira Costa, 2016). Climate change calls for new paths to sustainable development that take into account complex interplays between climate, technological, social, and ecological systems as a process, not as an outcome (Manyena, 2006; Olhoff and Schaer, 2010; Denton *et al.*, 2014). These approaches should integrate current and evolving understandings of climate change impact and consequences and conventional and alternative development pathways to meet the goals of sustainable development (Fleurbay *et al.*, 2014; IPCC, 2014; 2014a).

Billions of people, particularly those in developing countries, already face shortages of water and food, and more significant risks to health, assets, forced migration, and life as a result of climate change, and climate-driven conflict (Kummu *et al.*, 2016; Caniato *et al.*, 2017; FAO/

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IFAD/UNICEF/WFP/WHO, 2017; 2018; WWAP/UN-WATER, 2018). Moreover, climate change is expected to increase the magnitude and frequency of hydro-meteorological hazards in the coming decades –including extreme tropical storms, hurricane activity, and droughts–negatively affecting economic growth and development unprecedentedly (IPCC, 2013, 2014, 2014a, 2018; Carabine *et al.*, 2014).

On this subject, this study relies on the Components 1 and 2 of the Mainstreaming Adaptation and Disaster Reduction into Development (MADRID) program methodology (UNISDR, 2013; 2013a) to address essential factors that links disaster reduction and climate change adaptation mainstreaming into development in a country that combines several vulnerabilities and exposure factors –Cabo Verde (GoCV/MAHOT, 2013; GoCV, 2014-2015; GoCV, 2017; GFDRR, 2017). The primary objective of this study is to analyze and discuss gathered information regarding drought emergency events in Cabo Verde over the 20th century and the beginning of the 21st century to inform Disaster Risk Reduction (DRR) actions and Disaster Risk Management (DRM) decision-making process better. We propose the use of a global data set on disaster events –the EM-DAT –to contextualize drought events in the Sahel, specifically targeting Cabo Verde, making correlations with events of food insecurity in the country, by assessing the 2017-18 Cadre Harmonisé food security analysis. This approach intends to frame the observed impacts of climate change against historical government responses. The main goal is to inform DRR processes at different scales oriented towards actions to (i) identify vulnerabilities, and exposures to climate change impacts; (ii) assess opportunities for reducing risks; and, (iii) assess actions that are consistent with the goals of mainstreaming adaptation and risk management into sustainable development policies to achieve climate-resilient pathways. In this research, a critical factor in integrating disaster management and climate change adaptation and mitigation actions into policy development is the understanding of historical processes of decision making at different scales, as the decisions made in the past, and those the government and society make today are critical in shaping and ensuring the levels of future sustainability for everyone, both now and in the future (Wilbanks and Sathaye, 2007; Bizikova *et al.*, 2010; Ferreira Costa and Da Silva, 2013; Denton *et al.*, 2014; IPCC, 2018).

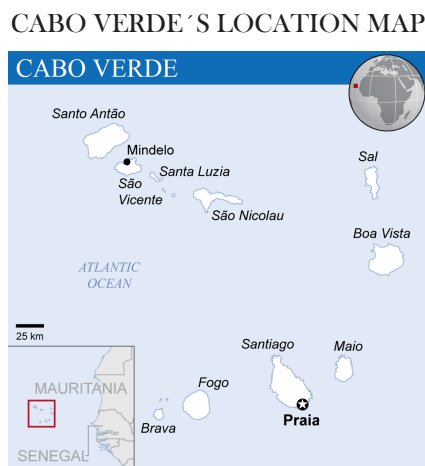
2. MATERIAL AND METHODS

2.1. Context and Study Area

This study focuses on a Sahelian archipelagic country, Cabo Verde. Although the paper presents its analysis and discussion in the global, regional, and continental perspectives when deemed necessary. Cabo Verde is at the confluence of two subregions marked by high exposure to risks and vulnerability –the Sahel and Small Island Developing States (SIDS). As a member of the Sahel, it presents peculiarities marked by low rates of human development, recurrent drought, high food prices, and market distortions (Bora *et al.*, 2011; Algamal, 2011; Simon *et al.*, 2012; Coutenier and Soubeyran, 2013; Hendrix, 2014; Porkka *et al.*, 2016; FAO/IFAD/UNICEF/WFP/WHO, 2018).

As a SIDS, it shares disproportionate challenges for sustainable development and heightened vulnerabilities for natural and environmental disasters aligned with socioeconomic, fiscal, and health issues. Cabo Verde, as a country in the mid-Atlantic, is made up of ten islands and nine islets located between latitudes 14° 28' N and 17° 12' N and longitudes 22° 40' W and 25° 22' W. The country is, approximately, 600 km far from the Senegal coast in West Africa (Figure 1) (GoCV, 2007).

Figure 1



Source: Based on OCHA/ReliefWeb, 2013

In the Region of the Sahel, all recent decades commenced in the early 1970s, have witnessed reports on drought and famine, which is seen by many authors to be both widespread and persistent, having a significant impact on development (Agnew and Chappel, 2000; Hall *et al.*, 2014; Masih *et al.*, 2014; Miyan, 2015). Besides, a combination of factors including violent extremism, abject poverty, demographic explosion, high food prices, low agricultural production, as well as the inability of affected households to recover from the incessant food and nutrition crisis, exacerbated the region's vulnerability posing immense challenges for 150 million people across the Sahel (Bora *et al.*, 2010; Porkka *et al.*, 2016; OCHA, 2013; 2017; 2018). In this sense, conflict and recurrent drought events have been acting in combination as the primary drivers of social and environmental instability, working in tandem to frequently maintain more than 23 million people food insecure in the whole of the West Africa (OCHA, 2017; 2018). Although, the coronavirus crisis has changed the current status of food insecurity in the region, as for June-August 2018, over 10.6 million people were in phase Crisis and above (Cadre Harmonisé phase 3, 4 and 5) of the projected food insecurity situation in the West side of Sahel (FAO, 2018). In Cabo Verde alone, estimates showed about 68,810 people facing different levels of food and nutrition deprivation in 2017; within an expected worst-case scenario of 139,000 people affected by food insecurity by the end of 2018 (GoCV, 2017/2018). Droughts are a regular event and a frequent cause of crisis at the national level in Cabo Verde. These events are usually unnoticed abroad, due to several factors such as limited appeal and influence in comparison to the needs of neighboring countries in regional and international terms.

Additionally, a wide range of market, fiscal, and socioeconomic asymmetries, along with a diverse range of disasters events, further expose the country to highly probable adverse consequences of global changes, especially climate change, which threatens the population and the country's long-term economic growth and recent development gains. In recent years, Cabo Verde has suffered from:

- Extreme rainfall events that have led to several floods across the country including those in São Nicolau (2009), Boavista (2012),

São Miguel (2013, with damages estimated at US\$2.6 million), and Santo Antão (2016, with damages estimated at US\$7 million) (GoCV, 2016).

- A volcanic eruption in 2014-15, on the island of “Fogo”, which displaced all 994 people living in the caldera, and resulted in damages and losses estimated at US\$28 million.
- Hurricane Fred, in 2015, which caused damages estimated at US\$2.5 million; and finally,
- An extreme drought event in 2017-18 that might have affected up to 70,000 people (13 percent of the population), according to Government’s estimates (GFDRR, 2017; Escudero and Reid, 2018).

2.2. Data and Methods

Cabo Verde is located at the confluence of the Sahelian region while presenting archipelagic territoriality. It is in a unique position to support the contextualization of the critical role of mitigation and adaptation into development in the developing world. The country represents an excellent case study to analyze key-factors that pose critical challenges to governance and political systems in a highly vulnerable and exposed portion of the globe. In this sense, the paper drew some attention to the complexities of analyzing countries grouped in different regions that present high levels of socioeconomic, market, fiscal, and environmental diversity. Since for Africa, many regional studies focus on the Sahel subregion and the Small Island Developing States (SIDS) individually; and, there is an increasing interest in studies inquiring about the problems that are already being displayed on the productive capacity of many territories as a result of the increment in the frequency and intensity of climatic events –especially in developing island states. The paper expects to further contribute to the understanding of how to manage available mechanisms for critical thinking and political decision-making processes to respond to climate change impacts on the agrarian economy of drought-affected areas.

For this reason, we expect to contribute some knowledge about the scale and historical perspectives of these problems, defining a line of work framed within the disciplinary areas established by Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA), especially concerning agriculture, agrarian policy, and food insecurity. Moreover, since there is little literature crossing the analysis between these two regions, which share a lopsided amount of challenges and risks in the search for climate-resilient development, the understanding of climate-related impacts on livelihoods and society – primarily due to drought events – remains challenging to describe and quantify. Studies on this matter are undoubtedly needed, especially to report on the broader context of the Sustainable Development Goals (SDGs) –SDG1; SDG2; SDG6; SDG11; SDG13; and, SDG16–, under the 2030 Agenda (UNISDR, 2019).

In this regard, the study undertook an extensive review of academic and grey literature to describe social, fiscal, and economic aspects of risk, vulnerability, and resilience in the country. The present study asseverates that the understanding gained from a detailed analysis of ongoing disaster and emergency events, as well as government, civil society, and stakeholders’ responses and behaviors, offers enormous possibilities to carry out better disaster reduction and risk management planning in the future. It supports improved actions to mitigate (un-)expected impacts of natural hazards and human-induced hazards, as well as the identification of adaptation and disaster reduction mainstreaming opportunities into development policy as a manner to enable climate-resilient pathways.

This study relies on Components 1 and 2 of the Mainstreaming Adaptation and Disaster Reduction into Development (MADRiD) Program methodology (UNISDR, 2013). It seeks to address DRR national political commitments aimed at reviewing the recurrence of drought events and its impacts in Cabo Verde, covering the 1900-2018 period.

We collected the primary data and information from official government sources regarding drought response, and the most recent risk governance framework created to support the 2017-18 drought emer-

gency, and the national strategy on risk reduction. Besides, we assessed the EM-DAT database, and the 2017-18 Cadre Harmonisé Food Security Analysis for the Sahel, with a particular focus on Cabo Verde, along with more than 100 peer-reviewed individual journals and search engines, donor reports and international organization's reports (HDI, GFDRR, IPCC, OCHA, WHO, WMO, WORLD BANK, UNISDR) to understand and describe the historical challenges the country/region faces concerning drought events. We initially skimmed the biography from over 100 articles searched from relevant international journals. As expected, the list of reviewed material is not exhaustive, though an effort was performed to conduct comprehensive analysis.

We analyzed a global data set on disaster events from the EM-DAT website (<http://www.emdat.be/database>) for the 1900-2018 period to provide country/regional/continental level estimates on drought events, people killed and affected and economic damage to substantiate the findings of this study. Additionally, we draw upon the 2017-18 Cadre Harmonisé food security analysis for Sahel (<http://www.ipcinfo.org/ipcinfo-website/where-what/cadre-harmonise-in-west-africa-and-the-sahel/en/>) to depict the situation in the country and put the national government response into an international context. The Harmonized Framework for Identification and Analysis of Areas at Risk of and Populations Affected by Food and Nutrition Insecurity in the Sahel and West Africa, known as "Cadre Harmonisé" (CH), served as a framework to assess food and nutrition insecurity on an objective and consensual basis. The purpose of the use of the CH was to help us to contextualize the food crisis further and, where appropriate, identify affected populations and appropriate government responses and measures that improved food and nutrition security. We made use of a set of tools and procedures of the CH for classifying the nature and severity of current and projected food and nutrition insecurity situation to draw on a consensual analytical framework and classification of food insecurity severity scale. This research followed four conceptual models commonly used by national, regional, and global mechanisms when analyzing risk and vulnerability: (i) Risk = f (Hazard, Vulnerability), according to the UNISDR's definition of risk and disasters. To draw reliable information on the country risk profile;

(ii) Sustainable Livelihoods Framework; (iii) The UNICEF Nutrition Conceptual Framework; and, (iv) The four dimensions of food security (availability, access, utilization, and stability). The CH, therefore, served as an integrated analytical framework built on a scientific consensus to support the best use of secondary data from official government agricultural surveys and market monitoring –namely food consumption surveys, nutrition surveys, the Household Economy Approach (HEA).

3. RESULTS AND DISCUSSION

3.1. Review of Disaster Events Over the 1900-2018 Period

Cabo Verde, an archipelagic country of volcanic origin in the Atlantic coast of the Sahel subregion, is characterized by a dry tropical climate with two distinct climatic seasons –a long dry season and a temporal and spatially concentrated rainy season. The country presents a highly sensitive environmental system and a high degree of fragility and vulnerability in front of the occurrence of extreme natural phenomena, especially the high likelihood of droughts –typically between November and June. Besides, the relatively high population density in some islands, inadequacy of infrastructure and limited institutional capacity, as well as lack of natural resources, work in tandem to increase the impacts of recurrent drought events in large portions of the territory (GoCV, 2007; GoCV/MAHOT, 2013) (Table 1).

Table 1

PERCENTAGE OF GEOGRAPHICAL DISTRIBUTION AND CLASSES OF SUSCEPTIBILITY OF OCCURRENCE OF DROUGHT IN CABO VERDE, PER ISLAND

Risk	Boavista	Brava	Fogo	Maio	Sal	Santiago	Santo Antão	São Nicolau	São Vicente	Cabo Verde
Low	0	0	0	0	0	12.7	7.1	0	0	5.1
Moderate	0	20	0	0	0	31.8	12.8	11.6	0	17
High	100	80	100	100	100	55.5	80.1	88.4	100	77.9

Source: Comprehensive National Hazard Profile of Cabo Verde. Final Report. November 2014

Since the 1970s, Cabo Verde, as well as the whole of the Sahel region, reported several episodes of drought. For Cabo Verde, the registers indicate that the main events occurred between 1968 and 1973, another in 1977, followed by extreme events between 1981 and 1983, when the precipitation levels recorded were 50 to 70% lower than the median precipitation of the previous period (1941-90). According to the EM-DAT Cabo Verde, droughts represented the most recurrent type of event affecting the archipelago between 1900 and 2018 (Table 2).

Table 2

NATURAL HAZARD EVENTS IN CABO VERDE (1900-2018)

Disaster Type	Disaster Subtype	Events Count	Total Deaths	Total Affected	Total Damage ('000 US\$)
Drought	Drought	10	85000	40000	-
Flood	Riverine flood	1	3	150	-
Storm	Tropical cyclone	3	41	7722	4100
Insect infestation	Locust	2	0	-	-
Epidemic	Bacterial disease	1	245	12344	-
Epidemic	Viral disease	1	6	20147	-
Volcanic activity	Ashfall	1	0	6306	-
Volcanic activity	Lava flow	1	0	2500	-

Source: Adapted from EM-DAT: The Emergency Events Database - Université Catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium. Created on February 13, 2019.

From a chronologic and temporal perspective, a succession of drought events marked the 20th century (Table 3).

Besides, the registers associate the events of drought with the events of the food crisis in the country. Santo Antão and Santiago, are the islands with the most significant number of reported incidents (> 10 events), followed by Boa Vista, Maio, and Fogo (between 6 to 10 reported events) (GoCV, 2017). Due to such a clear correlation, this research has thoroughly analyzed the events of drought and food insecurity together.

Table 3

**DETAILED NATURAL HAZARDS EVENTS DEATH TOLL
AND AFFECTED PEOPLE IN CABO VERDE (1900-2018)**

Year	Disaster	Occurrence	Total Deaths ¹	Injured	Affected ²	Homeless	Total Affected ³	Total Damage (US\$)
1900	Drought	1	11000					
1910	Drought	1						
1920	Drought	1	24000					
1940	Drought	1	20000					
1946	Drought	1	30000					
1972	Drought	1						
1982	Drought	1						
1992	Drought	1						
1998	Drought	1			10000		10000	
2002	Drought	1			30000		30000	

1. Disaster mortality is a critical outcome that can be employed to measure the effectiveness of Disaster Risk Management (DRM) strategies at reducing the impact of disasters. However, while disaster mortality seems to be one of the most straightforward outcomes to monitor, obtaining accurate data is challenging (Green *et al.*, 2019). Due to the absence of historical death registries in many countries, estimation rather than measurement is sometimes used, especially in large scale disasters, which account for a significant proportion of global mortality (UNISDR, 2017a). Mortality is assessed by calculating crude death rates, which requires two types of data: population data and death data. How disaster deaths are defined depends on the definition of a hazard nature (single, sequential or combined; multi-hazard; biological, environmental; geological, hydrometeorological, and technological), a disaster type (small-scale; large-scale; frequent and infrequent; slow-onset; and sudden-onset) (UNISDR, 2017), as well as the definition of a disaster death. In this research, we adopted the EM-DAT definition - "Number of people who lost their lives because the event happened". The mortality definitions range from being very broad in their scope, as per the EM-DAT definition (CRED, 2017). Indicators: (i) Number of deaths and missing persons attributed to disasters, per 100,000 population; (ii) Number of deaths attributed to disasters, per 100,000 population; and, (iii) Number of missing persons attributed to disasters, per 100,000 population (UNISDR, 2017a).
2. People can be affected directly or indirectly. Affected people may experience short-term or long-term consequences to their lives, livelihoods, or health and in the economic, physical, social, cultural, and environmental assets." Directly affected: People who have suffered an injury, illness, or other health effects; who were evacuated, displaced, relocated; or have suffered direct damage to their livelihoods, economic, physical, social, cultural, and environmental assets. Indirectly affected: People who have suffered consequences, other than or in addition to direct effects, over time due to disruption or changes in the economy, critical infrastructures, essential services, commerce, work or social, health, and physiological consequences. Indicators: (i) Number of directly affected people attributed to disasters, per 100,000 population. (ii) The number of injured or ill people attributed to disasters, per 100,000 population; (iii) Number of people whose damaged dwellings were attributed to disasters; (iv) Number of people whose destroyed dwellings were correlated to disasters; and, (v) Number of people whose livelihoods were disrupted or destroyed, attributed to disasters (UNISDR, 2017a).
3. Sum of Affected, Injured, and Homeless totals.

Table 3

DETAILED NATURAL HAZARDS EVENTS DEATH TOLL
AND AFFECTED PEOPLE IN CABO VERDE (1900-2018)

Year	Disaster	Occurrence	Total Deaths ¹	Injured	Affected ²	Homeless	Total Affected ³	Total Damage (US\$)
1994	Epidemic	1	245		12344		12344	
2009	Epidemic ⁴	1	6		20147		20147	
2009	Flood	1	3		150		150	
1988	Insect infestation	1						
2004	Insect infestation	1						
1982	Storm	1	3	122	2100		2222	3000
1984	Storm	1	29		5500		5500	
2015	Storm	1	9					1100
1995	Volcanic activity	1		6	1300	5000	6306	
2014	Volcanic activity	1			2500		2500	

Source: Adapted from EM-DAT: The Emergency Events Database - Université Catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium. Created on February 13, 2019. Blank spaces indicate No Available Data.

Table 4

ASSOCIATED DISRUPTION AND LOCATION OF DROUGHT
DISASTER EVENTS IN CABO VERDE (1900-2018)

Start Date	End Date	Location (Islands)	Associated Disruption	Affected
1900	1900	Countrywide	Famine	
1910	1914			
1920	1920	Countrywide	Famine	
1940	1944	São Nicolau, Fogo, Santiago	Famine	
1946	1946	Countrywide	Famine	

4. Epidemics: Dengue (2009-2010); and, Zika (2014-2015) Around 20,000 affected by the disease and 6 human casualties during dengue outbreak and 560 population affected by Zika and 11 cases of babies born with microcephaly). The last event is not incorporated in the EM-DAT to date.

Table 4

**ASSOCIATED DISRUPTION AND LOCATION OF DROUGHT
DISASTER EVENTS IN CABO VERDE (1900-2018)**

Start Date	End Date	Location (Islands)	Associated Disruption	Affected
1972	1975		Famine	
1982	1985			
1992	1992			
1998	1998		Food Shortage	10000
2002	2002	Santiago, Santo Antão Provinces	Food Shortage	30000

Source: Adapted from EM-DAT: The Emergency Events Database - Université Catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium. Created on February 13, 2019. Blank spaces indicate No Available Data.

Drought is the most significant event with the most substantial impacts in Cabo Verde. Although, official registers point to other kinds of events impacting the country, such as (i) Volcanic eruptions in Fogo Islands: 2014-2015, with no casualties but with considerable localized impacts in human development. Droughts are the main drivers of macro-economic impact for the country with relevant local economic impact, as well as negative political impact; (ii) Flash Floods: São Nicolau (2009); Boavista (2012); São Miguel (2013); Santo Antão (2016), with significant impacts in infrastructure -road, bridges, and rural infrastructure (check-dams, dikes, among others), and rural livelihoods (farms, wells and pumps, irrigation systems, among others). Despite the frequent occurrence of disaster events, the government faces constraints related to limited institutional capacity, which result in the lack of comprehensive assessments to assess total disaster effects, losses, and damages to date. Albeit the government is capable of only partially reporting on damages, when it comes to droughts, the situation seems to be slightly worse. This type of event often affects rural livelihoods cumulatively, especially in Santo Antão, Santiago e Fogo islands, intensely affecting rural, isolated communities living out of family husbandry exploration and survival agriculture practice. Historically, the government had not conducted assessments to quantify damage and losses caused by drought events in the country; they work primarily with estimates and count on the support of international organizations and partners (Table 5).

Table 5

RECENT DISASTER EVENTS IN CABO VERDE WITH ESTIMATED DAMAGES AND AFFECTED PEOPLE (2009-2018)

Year	Type of Event	Hazard Event	Location	Estimated Damages (US\$)	Affected People
2009	Hydrological	Flood	São Nicolau		
2012	Hydrological	Flood	Boa Vista	2.6 Million	
2013	Hydrological	Flood	São Miguel		
2016	Hydrological	Flood	Santo Antão	7 Million	
2015	Meteorological	Storm	Countrywide	2.5 Million	
2014-15	Geophysical	Volcanic Eruption	Fogo	28 Million (75.5% Damage & 24.5% Losses); Productive sector (50%); Housing, social sectors & infrastructure (37%).	994
2013/2014/2015	Climatological	Drought	Santo Antão, Santiago, Fogo	No assessment conducted to quantify damage and losses.	
2017-18	Climatological	Drought	Countrywide (Santiago, Santo Antão)	No assessment conducted to quantify damage and losses.	68.810 to 139.000

Source: GoCV, 2014-15; GoCV, 2017; GFDRR, 2017; Escudero and Reid, 2018

The country and the entire region are usually suffering long-term impacts on the reduction of food access and availability as a result of the disruption of agricultural livelihoods and food production due to recurrent drought events (Caniato *et al.*, 2017; Chatzoupoulos *et al.*, 2019; UNISDR, 2019). At the same time, the impacts of droughts and extreme temperatures are commonly poorly reported, Cabo Verde included, reinforcing a typical pattern found in low and lower-middle-income countries. Both government and civil society have limited capacity to collect, analyze, and utilize the data and information on the real effects of disaster events and their impacts on the social tissue and national economy due

to methodological difficulties in registering deaths and the severe consequences caused by droughts and extreme temperatures. In this regard, these recurrent droughts acted as reducing factors of agricultural productivity, limiting the sustainability of livelihoods over time. However, it is tough to precise how much reduction had taken place over the years. The registers indicated that droughts caused most of the food crises in the 20th century and at the beginning of the 21st century. Also, drought events have contributed to an acceleration of rural exodus and migration (both among islands and internationally). As a result, the country has been facing increasing challenges related to rapid and unplanned urbanization (GoCV, 2017).

3.2. Food Insecurity

The Harmonized Framework for Identification and Analysis of Areas at Risk and Populations Affected by Food and Nutrition Insecurity in the Sahel and West Africa –known as “Cadre Harmonisé” (CH) –, served as a framework to assess food and nutrition insecurity on an objective and consensual basis in the region, and to simulate the projected situation in 2018 (Table 6). The CH was essential to depict the situation in the country and put the government response into context, with particular references to other countries, in given regions, as available.

Table 6

THE FOOD INSECURITY SITUATION (OCTOBER-DECEMBER 2017),
AND PROJECTED FOOD INSECURITY SITUATION (JUNE-AUGUST 2018)
IN SELECTED COUNTRIES OF THE SAHEL AND SIDS (GUINEA BISSAU
AND CABO VERDE)

Country	Total Population	Affected Zones	Population - Phase 1	Population - Phase 2	Population - Phase 3	Population - Phase 4	Population - Phase 5	Population Phases 3 to 5
Burkina Faso								
2017	20139442	45	18070988	1935554	132899			132899
2018	20139442	45	16887417	2631631	597297	23097		620394
Cabo Verde (SIDS)								
2017	537661	22	411925	97251	27842	644		28486
2018	537661	22	398475	102500	35466	1220		36686

Table 6

**THE FOOD INSECURITY SITUATION (OCTOBER-DECEMBER 2017),
AND PROJECTED FOOD INSECURITY SITUATION (JUNE-AUGUST 2018)
IN SELECTED COUNTRIES OF THE SAHEL AND SIDS (GUINEA BISSAU
AND CABO VERDE)**

Country	Total Population	Affected Zones	Population - Phase 1	Population - Phase 2	Population - Phase 3	Population - Phase 4	Population - Phase 5	Population Phases 3 to 5
Guinea Bissau (SIDS)								
2017	1195097	8	953699	198235	43163			43163
2018	1195097	8	986301	183914	24882			24882
Mali								
2017	18876001	55	16107388	2477873	290740			290740
2018	18876001	55	14783107	3298151	775171	19572		794743
Mauritania								
2017	3893774	13	2664339	850812	378623			378623
2018	3893774	13	2332494	959048	568458	33774		602232
Niger⁵								
2017	21330894	75	17577972	3161298	295713	5270		301433
2018	21330894	75	16102044	4432354	774089	22407		796496
Nigeria⁶								
2017	99339348	108	81903242	14277924	2701278	455058	1846	3158182
2018	99339348	108	76069999	18464161	3990118	802535	12536	4805189
Senegal								
2017	12663562	42	9856399	2510475	296687			296687
2018	12663562	42	8896128	3219217	540487	7731		548217

Source: CILSS, 2017; 2017a; 2017b

The Government of Cabo Verde stated that in the 2017-2018 period, the agricultural production was abysmal due to previous dry years, and to a widespread drought event across the country. Overall agricultural production was practically nil, and the official data registered the pasture

5. Niger's total population: 21.6 Million people (World Bank, 2017) - The difference in population accounting is because the CH methodology only accounts for the population in areas that meet the methodological prerequisites, and in this case, totals a population of 21.3 Million people (CH, 2017).

6. Nigeria's total population: 190.8 Million people (World Bank, 2017) - The difference in population accounting is because the CH methodology only accounts for the population in areas that meet the methodological prerequisites, and in this case, totals a population of 99.3 Million people (CH, 2017).

situation in deficit. However, the level of available products in the market oscillated between normal to regular in 2017 due to imports. The supply of cereals, legumes, and tubers was lower than in the previous year in most of the municipalities –a reasonable indication of nutritional deficit. Given the current unfavorable conditions (post-harvest), some municipalities in the country found themselves in a situation of food and nutrition insecurity already in 2017, although the situation in the country varied. In this regard, the Cadre Harmonisé classification of municipalities of Cabo Verde under current and expected levels of food insecurity for the period 2017-2018 showed that no municipality was listed in phase 4 (Emergency) and phase 5 (Famine) either in the current situation or projected (despite a minimal number of inhabitants under these phases– 644 people in Phase 4, in 2017; and, 1220, in 2018).

Nonetheless, in the 2017 current situation, five (5) municipalities were classified in Phase 3 (Crisis), with an expected increase to nine (9) municipalities in 2018. In its turn, the number of municipalities under Phase 2 (Under Pressure), revealed eight (8) municipalities in this phase in 2017. While in the 2018 projected situation, only six (6) municipalities should be under pressure (Table 7) (GoCV/FAO/CILSS, 2016; 2017). Next, in Table 8, we can observe the numbers describing the situation in 2017 as well as the expected deterioration of food security levels, which was presumed to drag many more municipalities into a more profound crisis by the end of 2018 (June- August 2018) (GoCV, 2017; GoCV/FAO/CILSS, 2016; 2017).

Table 7

EXPECTED EVOLUTION IN THE NUMBER OF MUNICIPALITIES
ON PHASES 2 TO 3 OF FOOD INSECURITY IN CABO VERDE - CURRENT
(2017) AND PROJECTED (2018)

Cadre Harmonisé Phases	Affected Municipalities in 2017	Municipalities	Affected Municipalities in 2018	Municipalities
1 - Minimum	9		7	
2 – Under Pressure	8	Ribeira Grande, Paul, Porto Novo, Tarrafal de Santiago, Santa Catarina, São Miguel Santa Catarina, Maio.	6	Ribeira Brava, Tarrafal De São Nicolau, Santa Catarina de Santiago, São Miguel, e Fogo.

Table 7

EXPECTED EVOLUTION IN THE NUMBER OF MUNICIPALITIES ON PHASES 2 TO 3 OF FOOD INSECURITY IN CABO VERDE - CURRENT (2017) AND PROJECTED (2018)

Cadre Harminosé Phases	Affected Municipalities in 2017	Municipalities	Affected Municipalities in 2018	Municipalities
3 - Crisis	5	Ribeira Grande de Santiago, Santa Cruz, São Domingos, São Lourenço dos Órgãos, São Salvador do Mundo.	9	Ribeira Grande de Santiago, Santa Cruz, São Domingos, São Lourenço dos Órgãos, São Salvador do Mundo, Tarrafal, Ribeira Grande, Paul, and Porto Novo.
4 – Emergency	0		0	
5 - Famine	0		0	
Total	22		22	

Source: GoCV, 2017; GoCV/FAO/CILSS, 2016; 2017

Table 8

THE SITUATION OF FOOD AND NUTRITION SECURITY IN CABO VERDE -OCTOBER-DECEMBER 2017 AND PROJECTED JUNE-AUGUST 2018

Number of People	October-December, 2017		June-August, 2018	
In Phases 3 to 5 of the CH (Absolute –Thousands –and Percentage)	28486 (5,3%)		36686 (6,8%)	
	Municipality	Number of Affected People	Municipality	Number of Affected People
In the areas most affected requiring immediate action to save their lives and protect livelihoods	Ribeira Grande de Santiago	1692	Ribeira Grande de Santiago	1777
	São Domingos	2962	São Domingos	3103
	Santa Cruz	6024	Santa Cruz	6547
	São Lourenço dos Órgãos	1688	São Lourenço dos Órgãos	1828
	São Salvador do Mundo	1726	São Salvador do Mundo	1813
			Ribeira Grande	3269
			Porto Novo	3609
			Paúl	1308
		Tarrafal de Santiago	1008	

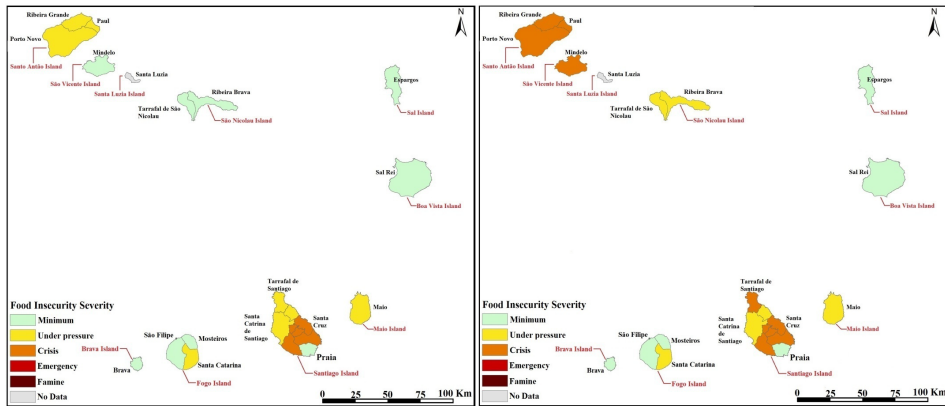
Source: CILSS, 2017

The causes of food insecurity in Cabo Verde are historically correlated to climate shocks, particularly drought and its consequences, which results in the lack of agricultural production in the most affected areas. Besides, the low filling of dams compromised irrigated and off-season farming, which most producers depend considerably all over the year. Also, crop pests have significantly affected maize production. To complicate further, money transfers from expatriates have fallen significantly in the period, profoundly affecting the poor and impoverished families (GoCV, 2017; GoCV/FAO/CILSS, 2016; 2017). Data from the Household Expenditure and Income Survey (IDRF, 2015) show that about 24.2% of the Cabo Verdean population lives below the “poverty line” and 9.2% live in extreme poverty. The poverty rate is higher in rural areas than in urban areas. In rural areas, the primary sector plays a crucial socioeconomic role, helping to create bonds and social cohesion among the communities –a balance that may be negatively affected or lost during the crisis. Agriculture employs 22% of the country’s active population, and this figure reaches 82% in rural areas (INE, 2015). Considering the current scenario of lack of rainfall, reflecting both the scarcity of agri-food products and rising prices, the state of food and nutritional insecurity of families is considerably worsened, thus reducing economic access to food. According to the data from the Economic Analysis of Families, the islands of Santiago and Santo Antão are the most affected historically. Figure 2 summarizes the 2017 and expected 2018 situation regarding food insecurity in the country.

The information generated by the Harmonized Framework estimated that in the period from June to August 2018, about 68,810 people could be in the under-pressure phase and that 3,648 people could be in the crisis phase. Besides, the GoCV (2017) reported that the recharging of groundwater is not happening adequately, and wells started to be gone dry in 2014. Rainfed farmland yielded little crops; livestock –especially cattle –had to be slaughtered before they die of hunger, resulting in surplus and price fall of meat; dairy farms’ production dropped, and prices of all other agricultural products other than meat went up due to a shortage of local supply. As a consequence, the government of Cabo Verde expected the entire population to be severely affected, particularly the rural population, whose livelihood relies on agriculture.

Figure 2

FOOD INSECURITY SEVERITY SCALE (OCTOBER-DECEMBER 2017)
 -LEFT. PROJECTED FOOD INSECURITY SEVERITY SCALE
 (JUNE AUGUST 2018) -RIGHT. (NAME OF MUNICIPALITIES IN
 BLACK; NAME OF ISLANDS IN RED)



Source: Adapted from CILSS, 2017

3.3. Opportunity Space for Climate Resilient Pathways

Resilient recovery is challenging independently of the disaster type and size. On this subject, ineffective responses to recurrent disaster events over the years, and the lack of human and institutional capacity to respond to the impacts of extreme climate events can exacerbate risks and hinders sustainable development. These factors can limit the reach of measures aimed at building resilience and improve the adaptive capacity of communities, including the closing of channels and appropriate support for the development and advocacy of local DRR and CCA mechanisms and their integration into development planning and policies.

The building of climate resilience requires climate change adaptation and disaster risk reduction, as well as agile management to be mainstreamed effectively into short-, medium- and long-term policies, programs, and practices. To achieve it, governments must expand their Disaster Risk Reduction (DRR) knowledge base to address the need of vulnerable populations and critical economic sectors to establish national and regional long-term

strategies to cope with disasters, emergencies, and global environmental changes. Besides, governments and the civil society must adopt new approaches to sustainable development that consider complex interactions between climate, technological, social, and ecological systems as a process, reflecting local needs, historical patterns, and national circumstances.

As per Cabo Verde, the research recognized numerous hurdles, such as: (i) weak institutions and lack of human and institutional capacity, (ii) lack of tailored risk-informed sectoral strategies; and, (iii) political inaction regarding drought management and response as the main factors characterizing the national drought risk management in the analyzed period. These factors acted synergistically to undermine previous and current national development efforts, setting the basis for future setbacks considering climate change is expected to increase the magnitude and frequency of hydro-meteorological hazards in the world –including tropical storms, hurricane activity, and droughts –negatively affecting social cohesion, economic growth, and development.

3.4. Final considerations and next steps

This study drew attention to the need to maintain long-term vision and investments, with a focus on sectoral planning processes and development policies integrated with DRR and the obligation to respond to climate change as a way of maintaining socio-economic gains. The research identified the necessity to reinforce national efforts to enhance the recognition of an improved understanding of full territorial, social, and climatic dynamics, combined with the appropriation of the historical consideration of extreme climate events on the territory and society, to inform the establishment of a sustained high-level political commitment towards the integration of DRR, CCA, and an agile management approach into design thinking, decision-making processes, planning, and its implementation. It could encourage human resources investments and institutional capacity development to generate timely and reliable information on disaster risk. Besides, the necessity of updated sectoral policies and plans, taking into account the accumulated impacts of natural events on the economy and society, remains a priority to government and civil society to address emerging challenges

and structural bottlenecks, setting realistic goals, and taking appropriate and effective measures to reduce risk (current and the future) as part of national development strategies. In this regard, we advocate for further studies to assess the continuity and evolution of the Caboverdian drought and disaster preparedness and response framework implementation.

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NOTES

i Cabo Verde has mobilized 10.2 million euros from the international community for the Emergency Program for Mitigating Drought and the Bad Agricultural Year of 2017/2018 Campaign (EPM-DA), the largest share, 7 million euros, was provided by the European Union. In addition to the European Union, the program includes contributions from the African Development Bank individually and in partnership with FAO (2.2 M€), Luxembourg (500 M€), Italy (300 M€) and Belgium (170 M€), Spain (50 M€), and the United States (42 M€), as well as 100 million Escudos (906 M€) from the Cape Verdean State Budget for 2018. The measures of the emergency program for the drought in Cabo Verde consumed, in the first six months, 48.3% of the 10.2 Million Euros made available by the international partners, with nearly 60% of the planned measures implemented, according to official data (GoCV, 2017/2018; PLATAFORMA, 2018).

ii MADRID Program Methodology has three main components. (i) Mainstreaming DRR into development planning processes at the national and local levels –this includes the review of long-term visions, medium-term development planning, physical planning, public investment programming, annual planning, and national budgetary processes, among others. (ii) Mainstreaming DRR into the development planning processes of sectors (agriculture, education, health, housing, infrastructure, and financial services) –this component continues to focus on sectoral development planning processes to mainstream DRR. Examples include using the information on disaster risk in sector policies and plans and accordingly adopting measures to reduce risk (current and future). Both, as part of sectoral development strategies and sectoral program and projects; and, (iii) Capacity development for mainstreaming DRR into development through training, which is not considered in this study although we recognize the importance of building capacity at the national level.

iii The potential loss of life, injury, or destroyed or damaged assets that could occur to a system, society, or a community in a specific period, determined probabilistically as a function of hazard, exposure, vulnerability, and capacity. The definition of disaster risk reflects the concept of hazardous events and disasters as the outcome of continuously present conditions of risk. Disaster risk comprises different types of potential losses, which are often difficult to quantify.

iv Nevertheless, with the knowledge of the common hazards and the patterns of population and socioeconomic dynamics, disaster risks can be assessed and mapped, in broad terms at least. It is essential to consider the social and economic contexts in which disaster risks occur and that people do not necessarily share the same perceptions of risk and their underlying risk factors (UNISDR, 2017).

v A severe disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability, and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts (UNISDR, 2017).

ABSTRACT

Revisiting disasters in Cabo Verde: a historical review of droughts and food insecurity events to enable future climate resilience

The links between sustainable development, risk reduction, and climate adaptation and mitigation are cross-cutting and complex. In this qualitative research, we carry out a historical review and compilation of information related to disaster events that occurred between 1900 and 2018 in a Sahelian archipelago country, Cabo Verde. We analyze and discuss the information collected on drought emergency events that occurred during the 20th and the beginning of the 21st century, informing Disaster Risk Reduction (DRR) actions and decision-making processes better. The document evaluates the Global Disaster Database (EM-DAT) and the Cadre Harmonisé 2017-18 Food Security Analysis to characterize observed impacts of climate change and droughts on food security at the country level. It clarifies factors that affect the productive capacity of many territories, especially in developing countries. It increases the DRR knowledge base by capturing issues that have emerged from national efforts, and the ways of managing mechanisms for political decision-making to mitigate climate change impacts on the agrarian economy of affected zones.

KEYWORDS: Disaster Risk Reduction, Risk Governance, Social Impacts & Social Resilience, Agrarian Economy, The SAHEL, SIDS,

JEL CODES: R580 Regional Development Planning and Policy; Q01 Sustainable Development, Q54 Natural Disaster and Their Management,

RESUMEN

Revisitando los desastres en Cabo Verde: una revisión histórica de sequías y eventos de inseguridad alimentaria para habilitar la resiliencia futura del clima

Los vínculos entre desarrollo sostenible, reducción de riesgos y adaptación y mitigación climática son transversales y complejos. En esta investigación cualitativa, llevamos a cabo una revisión histórica y una recopilación de información relacionada con una secuencia extrema de eventos que ocurrieron entre 1900 y 2018 en un país archipelágico del Sahel, Cabo Verde. El objetivo principal del estudio es analizar y discutir la información recopilada sobre los eventos de emergencia de sequía durante el siglo XX y principios del XXI, para informar mejor las acciones y los procesos de toma de decisiones. El documento evalúa el EM-DAT Database y el Cadre Harmonisé 2017-18 Food Security Analysis para caracterizar los impactos observados del cambio climático y las sequías en la seguridad alimentaria a nivel de país y aclarar los problemas que afectan la capacidad productiva de muchos territorios, especialmente en países en desarrollo. Busca aumentar la base de conocimiento para la Reducción del Riesgo de Desastres (RRD) al capturar los problemas que han surgido de los esfuerzos nacionales y los mecanismos para la toma de decisiones políticas para mitigar los impactos del cambio climático en la economía agraria de las zonas afectadas.

PALABRAS CLAVE: Reducción del Riesgo de Desastres, Gobernanza del riesgo, Impactos Sociales y Resiliencia Social, Economía Agraria, El SAHEL, Los PEIDS

Códigos JEL: R580 Planificación y política de desarrollo regional, Q01, Q54