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Manual on Community-based Floods and Drought Management in the Volta Basin

September 2022

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Economic and social development affect livelihoods and land-use planning and can potentially cause environmental degradation. As a result, natural disasters are becoming increasingly unpredictable and more intense in severity around the world. One of the lessons learned from these disasters was the raised awareness (of national and local governments, communities, and the private sector) of the importance of disaster risk mitigation through increased preparedness prior to the occurrence of disasters. Under the Associated Programme on Flood Management (a joint initiative of the World Meteorological Organization – WMO and the Global Water Partnership – GWP) together with the Volta Basin authority and other partners the Volta Flood and Drought Management Project – VFDM started in 2019. These agencies are collaborating to build capacity on flood and drought risk reduction, ensuring preparedness and enhancing resilience, starting at individual household level and spreading throughout to the entire community. We would like to express our appreciation to all stakeholders for helping to build disaster-resilient and sustainable communities.

The purpose of this publication is to provide tools and insights to reduce the vulnerability and enhance the capacity and participation of local communities by raising awareness in risk assessment and flood and drought preparedness planning, management, monitoring and early warning systems, and by integrating individual and community preparedness plans for emergency response. We aim for this community-based flood and drought management manual to become a useful tool for communities and for other flood and drought management organizations.

Obviously, we cannot guarantee that following the indications contained in this Manual can safeguard the communities of the Volta Basin from the harmful effects of floods and droughts, because these phenomena are often difficult to predict and can have an intensity that makes them ungovernable. Furthermore, the social and environmental contexts are very different and therefore every indication and suggestion must be applied taking into the specific context of its application. Finally, the resources available locally may not be adequate. Nonetheless, the manual provides principles and lines of action to refer to in different contexts, adapting intervention initiatives to local realities. For this purpose, there are also many examples and tools from which to take inspiration to intervene in case of need.

ABBREVIATION TABLE

- APFM = Associated Programme on Flood Management
- CBFM = Community-Based Flood Management
- CBFDM = Community-Based Flood and Drought Management
- CBFDMC = Community-Based Flood and Drought Management Committee
- CBMC = Community-Based risk (e.g., flood and/or drought) Management Committee
- CBO = Community-Based Organization
- CODESUR = Conseil Départemental de Secours d'Urgence et de Réhabilitation (Departmental Council for Emergency Relief and Rehabilitation) (Mali)
- DEWS = Drought Early Warning System
- DMC = Disaster Management Committee
- EWS = Early Warning System
- FEWS = Floods Early Warning System
- GFDRR = Global Facility for Disaster Reduction and Recovery
- GWP = Global Water Partnership
- IDMP = Integrated Drought Management Programme
- LGBTQ = Lesbian, Gay, Bisexual, Transgender, and Queer/Questioning
- NGO = Non-Governmental Organization
- PID = Participatory and Integrated Development
- PRA = Participatory Rural Appraisal
- RBO = River Basin Organizations
- RRA = Rapid Rural Appraisal
- SODEXAM = Société d'Exploitation et de Développement Aéroportuaire, Aeronautique et Météorologique (Airport, Aeronautical and Meteorological Operation and Development Company)
- VBA = Volta Basin Authority
- VFDM = Volta Flood and Drought Management Project
- WMO = World Meteorological Organization

1. INTRODUCTION

In the last 40 years, community participation has been – at least in principle – at the core of any development policy and emergency intervention involving people, based on the assumption that a "top-down" approach is not adequate for the implementation and long-term sustainability of interventions and their outcomes. In fact, if communities are involved in the designing and development of any solution have more chances of sustaining it for a longer period. Both development policy and disaster emergency intervention should be associated with a grassroots or bottom-up approach (see Chapter 2) together with a top-down approach. This is also true in any policy/intervention in floods and drought management. It is an important step towards enabling communities (and societal actors in general) to be recognized as protagonists in this context and to help themselves in this regard and sustain those efforts. Moreover, in the absence of participation at a community (i.e., collective) level, most of the activities are carried out at the individual or household level driven by individual necessity.

Such activities, therefore, are limited in their effectiveness and could be insufficient in the long run to protect individuals and the community at large from the adverse impacts of floods and drought. On the other hand, if the activities based on individual initiatives are pooled together and carried out in an organized manner at the community level, vulnerability, and risks due to floods and drought can be substantially reduced. It is a process whereby the communities concerned function and contribute to performing a predetermined activity as a cohesive group while recognizing and enhancing the differences within them. People/communities are no longer seen as recipients; rather, they have become critical stakeholders who have a major role to play in community floods management programs. Community involvement is more effective when people are fully conscious, empowered and trained. It is important, therefore, that people be provided with an opportunity to play a more active role and that the government or public officials facilitate and provide catalytic support for community-based flood-management programs.

1.1. The path followed in the preparation of this Manual and its objectives

In 2019, as part of the Associated Program on Flood Management (APFM), WMO together with the Volta Basin Authority (VBA) and GWP started the Volta Flood and Drought Management Project – VFDM, which has the overall objective of assisting national agencies in the six Volta Basin countries (Benin, Burkina Faso, Ivory Coast, Ghana, Mali, and Togo) to implement coordinated and joint measures to improve their existing floods and drought management plans at the regional, national and local levels, building on lessons learned from the past as well as current and ongoing projects related to disaster risk reduction and climate change adaptation. An important component of this project is community-based floods and drought management in the Volta Basin. It is within the framework of this component of the VFDM that this Manual has been designed by "connecting" the methodological and operational approaches of the APFM (with reference to the previously cited documents and projects) with the actual experience and "voices from the field" inherent in community-based floods and drought management activities in 6 sites in the Volta Basin (one for each of the Countries touched by this Basin, chosen according to the criteria illustrated in para. 1.2.).

This "connection" was possible on the basis of continuous interaction throughout a 10-month period (August 2021 to June 2022) between the authors of this document and the 6 groups conducting the community-based activities. The first "table of contents" of this document was presented to the local partners in the 6 Countries (as well as to WMO, VBA and GWP) in August 2021; thereafter the latter provided directly (or indirectly)[1] insights from the "voices from the field "of the people/groups involved, as well as descriptions of "practices" (and related materials) of community-based floods or drought management concretely implemented in the 6 sites. Finally, the first draft of this text was analyzed by the local partners and their comments and suggestions were incorporated.

This work was based on previous activities implemented by the APFM, given the great importance that the APFM[2] has always given to community-based interventions for a better governance of flood and drought management events at local, national, and regional levels. Indeed, as early as 2008, the APFM published a first document in this regard, Organizing Community Participation (APFM, 2008), and, ten years later, in 2017, a second document in the same series, Community-Based Flood Management (APFM, 2017). Many of the contents of these two publications are proposed again in this book (notably, in Chapters 2 and 3). Meanwhile, APFM has also promoted and implemented projects centered on community-based floods management (initially) and floods and drought management (later). The pilot project "Community-Based Flood Management (CBFM) Approaches in Thailand and Lao People's Democratic Republic" was conducted from June 2013 to March 2016 by APFM (in cooperation with the Asian Disaster Preparedness Center) to build self-help capacity and resilience in four flood-affected communities[3]. Other projects have also addressed this theme, including the Mexican National Flood Prevention Program in Mexico.

This document (like those previously developed under the APFM and cited above – but expanding the focus to include droughts) is intended to provide general and specific guidelines for effectively organizing/strengthening activities to ensure community participation at different levels of decision-making in floods and drought management. It is intended to address local leaders, but also the local communities as such, and disaster managers on how to organize/enhance people's participation/community activities and strengthen natural risk management at the local level. Some issues are also addressed to facilitate the creation of the institutional frameworks needed to strengthen community participation (and/or enhance existing networks). These are mainly related to the engagement of risk/disaster managers, NGOs and civil society at large, entrepreneurs and policymakers in harmonizing community activities with other development and natural disaster management policies.

This document, therefore, has a fourfold objective:

[1] K&I (author of this document) during the period in question, had about ten meetings with local partners with whom there was a continuous exchange of documents and information.

[2] And similarly, by the Integrated Drought Management Programme (IDMP), which is also a joint initiative of the World Meteorological Organization (WMO) and the Global Water Partnership (GWP).

[3] As part of this project, a booklet "VOICES FROM THE FIELD: Community-Based Approaches to Flood Management" inspired some of the cases cited in this book. See: https://www.floodmanagement.info/floodmanagement/wp-content/uploads/2020/08/Voices-from-the-Field-brochure-CBFM-project-in-Thailand-and-Lao-PDR_compressed.pdf .

a) To contribute, on the specific basis of the VFDM project, to further advance the APFM understanding of the community management of floods and drought
b) To highlight the activities implemented, experiences and results of the CBFDM in the Volta Basin countries under the framework of the VFDM project in this regard[4]
c) To make available to all those who, from different perspectives (local administrations, technical services, NGOs and civil society organizations, community leaders and communities, the world of scientific research, etc.) are involved in the daily management of floods and drought, a series of concepts, suggestions, and useful tools (we hope)
d) To scan how similar tools, methodologies, and implementation strategies can be applied in other communities of the Volta Basin region having similar needs in managing floods and drought events.

This document contains five chapters and some annexes.

- ✓ This first chapter, which includes the discussion of the criteria adopted for the selection of the 6 sites (presented below).
- ✓ Chapter 2 presents the context and principles of community-based floods and drought management.
- ✓ Enlarging somehow the scope of the previous chapter, chapter 3 introduces the multi-stakeholders approaches in flood and drought management.
- ✓ Chapter 4 illustrates community-based floods and drought management activities, based primarily (but not exclusively) on the 6 Volta Basin sites, following the "risk management cycle" (Floods and Drought Preparedness, Floods and Drought Response, Post-Floods and Post-Drought Recovery).
- ✓ Chapter 5 is dedicated to conclusions and recommendations.

In the annexes, some examples of useful instruments for community-based floods and drought management are presented.

1.2. Choosing Volta Basin communities for community-based floods and drought management

The selection of pilot areas or communities was based on the results of a community-level vulnerability, exposure to natural hazards and actual capacity mapping (VFDM, 2021) implemented in 60 pilot sites in the Volta Basin (15 in Burkina Faso and Ghana; 8 in Benin and Cote d'Ivoire; 7 in Mali and Togo). Based on the data collected, a community with one of the

[4] At the September 2022 timeframe, when this document was finalized, the VFDM went well beyond this timeframe.

highest indexes[5] of vulnerability and/or exposure to flooding and/or drought[6] was selected in each one of the 6 Volta Basin countries.

The table below lists the six sites (with the administrative division and the country of reference) as well as the names of the local partners responsible for community-based floods and drought management activities in the site.

Countries	Site	Administrative Division	Local Partner
BENIN	Tabota	Département de Atakora	Alpha Oméga
BURKINA FASO	Badara	Département de LA COMOE'	PNE BF – Programme National de l'Eau du Burkina Faso
COTE IVOIRE	Sangbalili	District de ZANZAN	LACIBES – La Colombe Ivoirienne pour le Bien-Etre social
GHANA	Kunkua	District de BONGO	ORGIIS – Organisation for Indigenous Initiative and Sustainability Ghana
MALI	Kandé Commune de Bakass	Région de MOPTI	DEMESSO/DELTA SURVIE
TOGO	Daoudé (Com-mune de Assoli)	Région de KARA	JVE – Jeunes Volontaires pour l'Environnement

[5] The vulnerability index in each of the 60 sites was calculated on the basis of information collected in the corresponding site relating to (i) inadequate housing, infrastructure (roads, WSS, electricity); (ii) health (malnutrition, illness, presence/quality of health services, availability of medicines); (iii) education (illiteracy, presence/quality of education services, children not in school to work); (iv) unemployment/inadequate employment; landless farmers; lack of income; migration; (v) crime/lack of security; (vi) conflicts (ethnic, religious, political, between farmers and herders); (vii) family fragility (e.g., large households, elderly living alone, etc.) (vii) gender gaps; (viii) poor functioning of public administration. Considering the frequency of these natural events over the past 5 years and over the past year; as well as their intensity calculated on the basis of damage to people, infrastructure and the ecosystem.

[6] Considering the frequency of these natural events during the last 5 years and during the last year; as well as their intensity calculated on the basis of damage to people, infrastructures and the ecosystem.

1.3. General profile of chosen communities in the Volta Basin region

Tabota – Benin

Tabota is in the municipality of Boukombé, in the department of Atacora, in the northwest of Benin. Gateway to Togo, by Nadoba (4 km) and Lama Kara (84 km) on the one hand, and Takpapiéni (4 km) on the other hand, Boukombé is located 54 km from Natitingou, the capital of the department and about 600 km from Cotonou.

Vast open plain resting largely on the Kandé-Boukombé area, bordered to the west by those of Buem and to the east by the last link of the Atacora chain, its vegetation and fauna composed of clear forest and savanna trees and shrubs (baobab, rônier, néré, shea, kapok, false mahogany, neem and tamarind) and a few antelopes (deer), monkeys, reptiles, small rodents and a variety of birds (francolins and wild guinea fowl) are suffering the horrors of the effects of climate change. Tabota have a dry Sudano-Guinean type climate with a rainy season of 5 months (mid-May to mid-October) and a dry season of 7 months (mid-October to mid-May). The town records rainfall that fluctuates between 1000 and 1200mm/year. Average temperatures are 27°C.

The inventory of natural resources reveals the existence of a wide range of resources within the municipality of Boukombé. These include sacred forests and groves, savannahs, lowlands, water bodies and streams, natural water sources, soils (cultivable land), fishery resources, mining resources (site /quarries), i.e., sand, gravel, clay, etc. There are also plantations carried out either by the State, or by the municipality, or by private persons.

Drought has a negative effect on agricultural crop yields, with yields depreciating by more than half in most cases. Observation of the landscape in Tabota clearly reveals aridification of the climate. As an effect, the social tension between farmers and breeders (herds of cattle and sheep graze outside the transhumance corridors which creates violent conflicts) but also between farmers in the sense that land pressure is very strong, fertile land being on the edge of watercourses, their area is very insufficient for the population. Other effects of the drought concern the reduced availability of food and adequate drinking water, the loss of agricultural production and livestock, the reduction of work opportunities and also severe heat waves. The crops give extremely low yields, and the river dries up completely.

Floods have a less harmful range. It is more about erosion and this phenomenon is recurrent and occurs every year (heavy runoff on the steep slopes of the mountains which causes the destruction of crops through significant soil erosion). Soil erosion with damage to existing crops on steep terrain is common and therefore occurs every year. Floods due to an overly rich rainy season and an overrun of the lowland retention capacities experience variable cycles. In the lowlands, a significant accumulation of water from the heights can cause the lowlands to overflow beyond the usual limits. Flooding and erosion do not affect inhabited areas but rather fields. When it comes to homes disheveled or destroyed by wind or rain, residents go to the homes of their families.

The houses are solid and built for the most part in Banco (rammed earth), in permanent materials with roofs either in thatch or in sheet metal. There are no slums.

Badara – Burkina Faso

The village of Badara is located in the department of Bama, more precisely in the province of Houet, region of Hauts-Bassins. It is about 25 km from Bobo Dioulasso. Its population was estimated at 3,097 inhabitants in 2019, of which 50.3% are female, 47% are children and 3% are elderly people. The climate is of the Sudanese type and its vegetation consists of savannah, village forest and wetland. On the socio-economic level, the population of Badara is essentially made up of Muslims. Agriculture is the main activity followed by trade. The village is characterized by informal settlements, shops/infrastructure, infrastructure in waterways, etc. Below, is the village map.

Source: PNF-BF-CBFDM Plan, June 2022

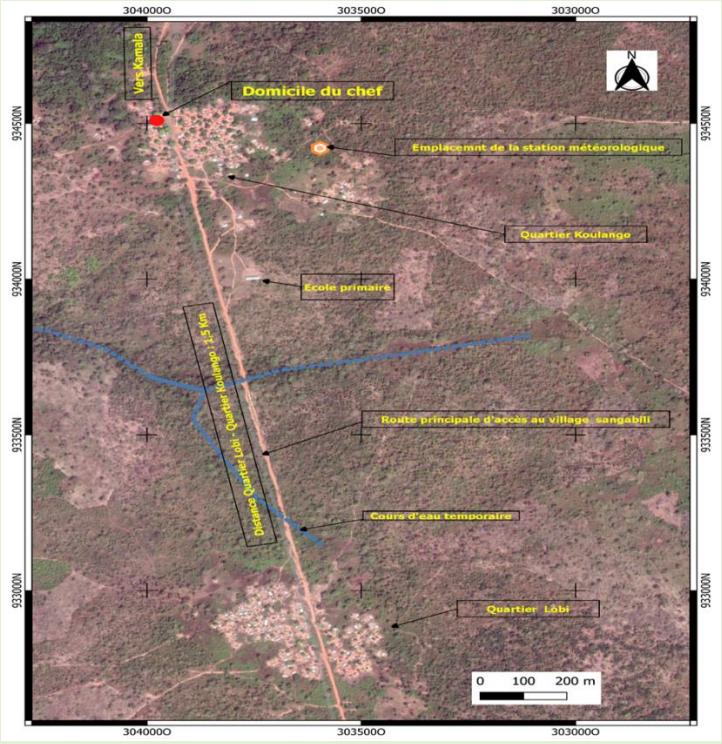
In the implementation of the VFDM project in Badara, the PNE-BF associated the prefecture of Bama, the commune of Bama as well as CODESUR. Thus, the Community Management Committee for Floods and Droughts which will be set up will work in perfect synergy with the departmental and municipal authorities as well as the members of CODESUR. In addition, for the implementation of the action plan, the committee will also work with all the decentralized services that have been associated with the initiative since the start of the VFDM project in Badara.

The village experienced its worst flooding in 1968. Overall, the village is fairly exposed to natural hazards (5.55/10), with a flood exposure of 3.91/10 and a drought exposure of 7.00/10 (VFDM, 2021). It follows from this assessment that it remains moderately vulnerable with an index of 4.8/10 marked by migration, informal settlements, and unemployment. Its ability to cope with floods and drought is medium-low with an Index of 3.6/10 characterized by limited resources, in particular shops/businesses and infrastructure located in the course. In addition, it should be noted that there is no alarm system in the event of floods or systems for the detection, monitoring and prevention of natural risks. The system that will therefore be implemented in the area is the first of its kind. Finally, it is important to note that the village of Badara is in a non-flood zone but suffers the consequences of flooding from the overflow of a tributaries of the Volta, in particular the Kou.

Sangabili Cote d'Ivoire

The village of Sangabili is located in the North-East in the national portion of the Volta basin in Ivory Coast precisely in the Gontougo region, in the Department of Bondoukou and is part of the Sub-Prefecture of Tagadi. It is 40 km from the town of Bondoukou and 42 km from the Volta River, which is difficult to access. Sangabili has a flat relief. The soils are ferralitic, alluvial and hydromorphic in places favorable to crop diversification. But we note a progressive degradation of these soils with the development of the phenomenon of gold panning upstream of Sangabili precisely in the village of Kordio. The vegetation in the Sangabili area is essentially made up of wooded and shrubby savannah with gallery forests that follow the waterways. Logging is highly practiced there. This village is covered by a four-season climatic zone, characterized by a long rainy season (May-July) and a long dry season (November-February). The harmattan is very harsh during the months of December and January. The hydrographic network is made up of a few streams that dry up throughout the dry season.

The community of Sangabili has 1047 inhabitants including 535 men and 512 women. There are two ethnic groups there, the Koulongo and the Lobis, there are also Fulani in the minority. The two major ethnic groups form two distinct neighbourhoods in the village. This village has three hydraulic pumps with a human motor of which only two of them work. It also has a small primary school with three classrooms. The main economic activities are agriculture and livestock farming, and they occupy more than 90% of the active population. Trade and charcoal production are also practiced in the village. The village has no health center and has difficulty accessing the mobile network.



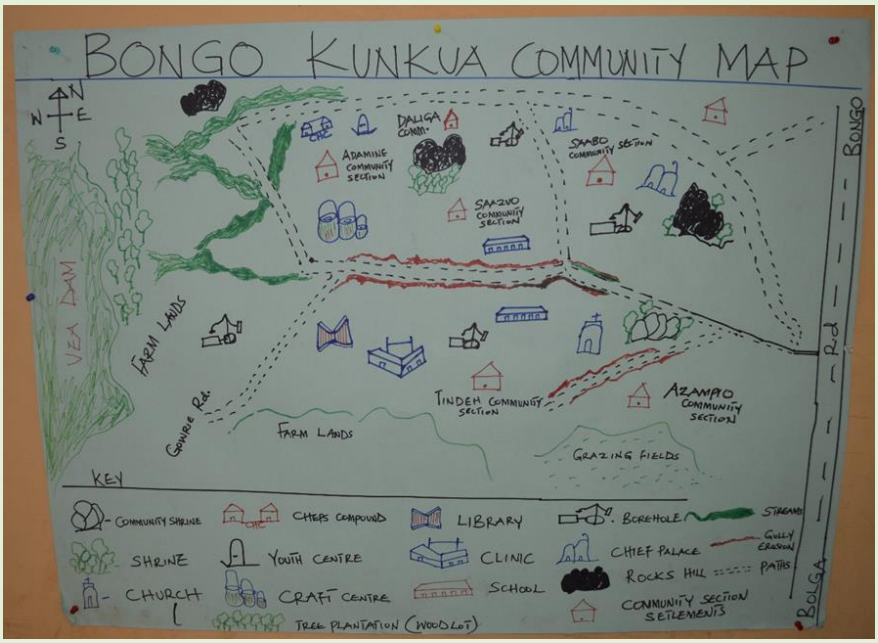
Source: Sangabili Community Sketched Map,2022 LA CIBES

The village of Sangabili is landlocked. The community suffers climate risks every year, however it has little awareness of the consequences and demonstrates a low level of knowledge in the management of floods and droughts. There is also a lack of training, preparation, and responses to climatic hazards. Apart from the agents of "Eaux et Forêt" who accompany them in the management of disasters linked to bush fires, no other institutional and functional mechanism helps them in the management of risks linked to climate change. The village of Sangabili is exposed to climatic risks such as floods, droughts, and extreme temperatures. Extreme temperatures and droughts are observed every year while floods have a return period of two years. The last flood in Sangabili was in 2020.

Kunkua – Ghana

Kunkua is in the Bongo district. The Bongo District is one of the 13 districts in the Upper East Region. The Bongo District shares boundaries with Burkina Faso to the north, Kassena-Nankana East to the west, Bolgatanga Municipal to the southwest and Nabdam District to the southeast. The district lies within the Oncho-cerciasis-freed zone.

The mean monthly temperature is about 21°C. Very high temperatures of up to 40°C occur just before the onset of the single rainy season in June and low temperatures of about 12°C can be experienced in December when desiccating winds from the Sahara dry up the vegetation. During the dry season, ideal conditions are created for bushfires, which have become an annual phenomenon in the area. The district has an average of some 70 – rain days in a year with rainfall ranging between 600mm and 1400mm. The rains fall heavily within short periods, flooding the fields and eroding soils into rivers. However, the fields dry up soon after the rainy season. The Bongo District is predominantly rural, and it is characterized by large household sizes, high population density, and high fertility rates as found in other parts of the region.



Source: Bongo Kunkua Community Sketched Map, 2021 ORGIIS

The local economy consists of three major sectors: agriculture, service, and industry. Agriculture is the most dominant sector employing 72.2 per cent of the population in food crop farming, animal rearing and fishing. The source of income for many households is the sale of foodstuff, small ruminants, and poultry. The industrial sector employs 15.5 per cent whilst the service sector engages 12.3 per cent of the district's population of 15 years and older. Whereas a few women sell provisions, the majority are engaged in shea butter processing, groundnut oil extraction, Dawadawa processing, malt making, pito brewing as well as handicraft production. On the other hand, men are usually engaged in selling cattle, small ruminants, and poultry.

The district has one constituency, seven 7 Area Councils and 51 Unit Committees. To promote and ensure efficient and effective performance of its functions, in line with its mission, the Assembly is headed by the District Chief Executive who is nominated by the president and approved by a two-thirds majority of the Assembly Members present and voting.

Kandé – Mali

The village of Kandé is in the Commune of Bakass (Mopti region). It has about 1,600 inhabitants, composed mainly of Dafing, Dogon, Samogo, Peulh, Pana, Mossis, Bozo, Tamasheq. These populations live from agriculture, livestock, logging, fishing, and petty trade. The Dogons, Panas, Samogo and Dafing are mostly farmers, the Bozos live from fishing along the Sourou while the Peulhs and Tamasheqs practice extensive livestock farming. The average annual rainfall is 500mm/year. The vegetation is made up of wooded savannah and gallery forest along the arm of the river.

Agriculture is the dominant activity of the village. The crops grown are millet (dominant crop), sorghum, maize, rice, fonio, groundnuts, cowpea, wandzou, sesame and dah. The association of crops is practiced there at the base (millet cowpea dah etc.). Livestock farming consists mainly of cattle, sheep, goats, asines, horses, and poultry. The cattle are entrusted to the Fulani, who as soon as the first rains leave with the animals outside the cropping areas (in Samori). Trade is dominated by local products of animal and agricultural origin (raw or processed), manufactured products, wild products, forest products, fishing products and handicrafts.

The village of Kandé has a 1st cycle school with 3 classes but has no health structure. There is also a building for an agricultural apprenticeship center.

Source: Kande Community Sketched Map,2022 DEMESSO/DELTA SURVIE

Kandé has six neighborhoods that form a block on an elevation and two recessed neighborhoods in the floodplains. Two of the block's neighborhoods are also exposed because the flood waters hit them hard. Despite the ring dykes, homes, food and input granaries are affected by the floods; the two districts set back them, use dykes of great heights up to 1.80 m approximately because they are close to the bed. The track, the Human Motricity Pump and the village public store were badly affected during the floods. Populations are affected by the loss of agricultural, pastoral and fish production (fishermen go to places where the water is deeper and calmer). They are also affected by diseases such as vomiting, diarrhoea, malaria, and the appearance of pimples on the lips due to the consumption of water from the river.

Daoudé – Togo

The district of Daoudè is located in the prefecture of Assoli, Commune of Assoli, 24 km from Bafilo, capital of the prefecture. The prefecture of Assoli is in the south of the Kara Region. It is bordered to the north by the prefecture of Kozah, to the south by the prefecture of Tchaoudjo (Central Region), to the west by the prefecture of Bassar, and to the east by the Republic of Benin. It is made up of a plain, mountains and plateaus. The Assoli prefecture covers an area of 900.40 km^2 or 7.83% of the regional area.

The prefecture of Assoli is subject to a tropical climate of the Sudano-Guinean type characterized by the alternation of a dry season and a rainy season. The climate of the prefecture of Assoli is directly influenced by the atmospheric circulation which prevails in West Africa, a circulation characterized by the alternation of two air masses of opposite direction and character:

- The northeast trade wind or harmattan, which is dominant in the prefecture from November to February with an average maximum speed of 4.5 m/s in January.
- The southwest trade wind or monsoon, which is dominant from April to August; its maximum average speed is 4 m/s during April, May, and June

According to the last census dated 2010, the population of the canton is estimated at 5,892 inhabitants (RGPH4, 2010). The main ethnic groups found there are the Kabyè, the Lamba, the Nawda, the Fulani, the Kotokoli.

As for most of the Togolese population, the population of Daoudè is essentially agricultural. About 80% of the population practice agriculture (cassava and tomato production). The community practices other income-generating activities, such as the production of gari, the sale of firewood and charcoal.

In the canton of Daoudè, several services are in charge of Flood and Drought Management and any other risk. The main services are: the National Agency for Civil Protection, the Red Cross, the Town Hall. These services work in coordination. Thus, when there is a risk in the community, the focal points (neighborhood contacts and village notables) pass the alert to the village chief who in turn contacts the mayor. A toll-free number has been set up by the National Agency for Civil Protection for the management of emergencies and risks. So, when the alert is triggered, arrangements are made to support the population.

1.4. Impacts of flood and drought in the Volta Basin

The community-based mapping of vulnerability, exposure to natural hazards and actual capacities implemented in 2020 under the VFDM, discussed in Section 1.2., recorded, among other things, the impacts of these hazards at the local level as reported by communities. As mentioned, this exercise involved 60 pilot sites in the Volta Basin (15 in Burkina Faso and Ghana; 8 in Benin and Ivory Coast; 7 in Mali and Togo). Recurrent impacts are reported in the box below.

Impacts of floods and drought recorded in the Volta Basin

The impacts of floods and droughts have been treated together because the effects of these two hazards (in sites hit by both) may be "cumulative" and, above all, they have been indicated jointly in several instances. It is quite obvious that some of the effects recorded (e.g., desertification, which is reported in 7 sites) can be related to only one of these two hazards (VFDM, 2021).

Beyond desertification, below are the most frequently reported impacts, specifying the number of the 60 sites in which they were mentioned.

Economic impacts in the strict sense

Loss of agricultural production: 51
Loss of income, rights, and access to resources: 29
Loss of livestock: 28
Decreased work opportunities: 17
Decreased trade by women and market gardening: 7
Loss of forest heritage: livestock grazing: 7
Effects on heritage/other important archaeological, cultural, or historical sites: 3

Impacts on structures/infrastructure

Damage to/loss of housing: 29
Damage to/loss of roads: 28
Damage to/loss of infrastructure: 15
Damage to drinking water supply: 14
Damage to/loss of equipment: 11
Damage to/loss of property/decrease in value: 10
Damage to/loss of schools: 10

Social/socio-environnemental/socio-political impacts

Reduced availability of food and adequate nutrition: 26
Reduced availability of clean water: 17
Health effects: 16
Water pollution: 14
Decreased quality of habitat: 13
Loss of human lives, death of a family member: 13
Social tensions, serious conflicts in the community: 12
Reduced quality of life, standard of living, wealth: 11
Disruption of daily life, lifestyle (change of habits): 8
Increased stress, anxiety: 6
Personal safety problems, exposure to risks, crime: 6
Social desertification (abandonment, migration): 6
Change in attitude towards the local community, new forms of understanding with the neighborhood: 5
Institutional/political crises: 3
Cultural integrity (local culture, tradition, rituals): 3
Modified leisure opportunities: 3

Overall, we can observe:

a) That in 13 of the 60 sites in the Volta Basin the most serious effect (loss of human life) is reported
b) That the impacts recorded are very diverse: from damage/destruction of structures/infrastructure (these effects can be ascribed to floods) to losses in agriculture (which can be ascribed to both floods and drought); from the reduction of work opportunities to social tensions and institutional crises (that can be ascribed to any hazard)
c) That local communities, although to a lesser extent, are also aware of institutional, psychological, and cultural impacts
d) That impacts on local communities are generally significant, with 436 reported overall, or an average of more than 7 per site (although this varies widely from more than 15 impacts per site in Mali (and 13 in Burkina Faso) to 2 impacts per site in Togo)
e) That the subjects hit by the effects of floods and droughts are sometimes the communities as a whole; sometimes the public sector; sometimes economic actors; sometimes individuals
f) It is quite obvious that all the recorded impacts have/can have more or less direct/indirect effects on community participation and on community hazard management capacities.

Source: VFDM, 2021

2. CONTEXT: PEOPLE/COMMUNITY STRUCTURES AND PARTICIPATION

2.1. Community participation – some general principles and history

What is a participatory approach

As it is well explained in the documents, we have already quoted in the introduction[7], the impact of floods and droughts on a community is based, among other things, on the characteristics of the communities and their previous experiences.

Communities are usually composed of many societal actors more or less bonded to each other and which pursue more or less differentiated interests. We can find cohesive communities, but also cohesive groups inside non-cohesive communities (even with varying degrees of internal conflict). In the absence of organized community participation (even at the level of specific groups), most of the activities are carried out at the individual or household level, driven by individual/family needs. If activities based on individual/group initiatives are pooled (by the alignment of interests and mitigating potential conflicts) and carried out in an organized manner at the community level, vulnerability and risks arising from floods and drought can be substantially reduced.

A proper participatory approach starts from recognizing how people already participate or try to participate (rarely is this completely absent) and understanding how to facilitate, guide, and strengthen this process, thus adopting a true bottom-up approach. On the contrary all too often public officials and technicians "try" to teach people what "participation" is without recognizing the societal participatory processes already underway.

Some features of this approach could be shared decision-making and representation of all groups in the community (especially women, people with disabilities, the elderly, minorities, etc.), interdisciplinary collaboration, regular consultations, public hearings, transparency of decisions and actions, hearing people's opinions before, during and after the implementation of actions, avoiding coercion in human relations, sharing the management of activities with beneficiaries.

Several studies report that connectivity in the community (especially social capital) is an important positive factor in the ability of a community (social actors) to recover from a disaster. Social capital can be defined as "the networks, norms and social trust that facilitate coordination and cooperation for mutual benefit" (Putnam, 1995). Both the 2004 Indian Ocean tsunami and Hurricane Katrina demonstrated the value of a high level of social capital in providing resources for faster and more effective recovery after a crisis.

[7] Above all the document "Community-based flood management". A considerable part of the text of this §2. is taken from this document.

Brief history of participatory methods in development co-operation[8]

Participatory approaches are a product of long-lasting interaction between researchers, development workers, government agents and local populations.

The '70s

The history of participatory methods in development co-operation began in the late 1970s with the introduction of a new research approach called rapid rural appraisal (RRA), which immediately became popular with decision-makers in development agencies. Building on close collaboration with local populations, RRAs were designed to collect first-hand data from the local people about their perceptions of their local environment and living conditions in rural areas. RRAs were usually conducted as 1-3 day workshops with villagers in the field and facilitated by small teams of RRA specialists or researchers. The methods were specifically adapted to respond to local conditions. Thus, communication processes with illiterate persons not used to communication in abstract terms were carefully considered. Visualization, using locally comprehensible symbols and tools like mapping, diagramming, and ranking, were introduced. A limitation of RRA, however, was that the role of the local people was limited to providing information, while the power of decision-making about the use of this information remained in the hands of others.

The '80s

During the 1980s, NGOs operating at the grassroots level used RRA to come up with further fine-tuned approaches known as participatory rural appraisals (PRAs). PRAs use similar methods and tools as RRA, but the underlying philosophy and purpose changed. While RRAs aim at extracting information, often in a single event, PRAs were designed to follow more the concerns and interests of the people; PRA workshops were usually facilitated by a team of trained persons and could take several days (3–6). One of the most important PRA principles was the sharing of results of analysis, decisions, and planning efforts among the community members by open and public presentation during meetings. PRAs strongly supported and facilitated the introduction of more demand-responsive ways of managing development interaction, and process-oriented thinking. The latter led to sequential applications of PRA events and assisted follow-up. Thus, it built up rural people's capacities for analyzing their circumstances, their potential and their problems in order to actively decide on changes. PRA facilitators accepted more and more the role of learners.

The '90s

These shifts towards interactive mutual learning were then reflected in the new terminology of participatory learning and action in the early 1990s. Since the beginning of the 1990s, extended concepts of participatory processes and interaction have been developed, summarized under the name participatory and integrated development (PID). In order to overcome the casual application of participatory methods here and there, PID seeks to include workshops and their results in a broader, long-term frame of institutionalized activities. PID means offering facilitation support to locals (such as villages, communities, interest groups, associations, etc.) on a demand-responsive basis, and assisting them in having their interests represented. One example is achieving the integration of grassroots-level planning and action into local and regional planning approaches. This leads to a more sustainable and better-coordinated development process. In addition to this vertical integration, PID also tries to enhance horizontal integration – the collaboration of different agencies, sector organizations and different groups of stakeholders within a region.

Sources: APFM document "Community-Based Flood Management"

[8] This text is taken entirely from the APFM document "Community-Based Flood Management".

General principles for strengthening community participation[9]

Community participation has to match a community's needs in terms of:

- People Community factors
- Vulnerability and risk reduction (and resilience enhancement)
- Sustainability in activities for infrequent and recurrent events
- Establishing public–private partnerships, involving NGOs, private actors and other.

Community participation retains its effectiveness and efficiency by:

- Understanding societal actors and their actions
- Synergizing effects of limited financial and human resources
- Providing the best mix of community experience and technological knowledge
- Connecting individual requirements and government preparedness.

Community participation promotes building social capital through:

- Equitable access – a commitment to ensuring equal opportunity for all community
- members to participate in decisions
- Inclusiveness – a commitment to the development of participation strategies for all
- community members, especially those who, characteristically, do not participate
- Responsiveness – a commitment to listening and taking action in relation to the views,
- concerns and experiences of community members
- Integrity – a commitment to open, transparent, and accountable participation practices that enhance trust and confidence in the community.

Community participation ensures practicability for implementation through:

- Undertaking floods management at each stage (prevention, preparedness, response and
- recovery)
- Creating opportunities for training and drills as realistically as possible.

Sources: APFM document "Community-Based Flood Management"

Effective participation and community characteristics

Effective community participation is, of course, influenced by the social, economic, and cultural characteristics (often, as already mentioned, very diverse) of its members. Poverty, education, access to social services, livelihood profile, cultural beliefs, the status of weaker social groups, and the rights of minority and ethnic groups are some of the socioeconomic factors that influence community participation.

These factors also define the vulnerability and adaptive capacities of the community, coupling negative aspects (constraints related to people's exposure and stress and their weak socio-economic conditions); and positive aspects such as strengths related to their adaptive capacity. These long-term factors affect the ability (or inability) of communities or societies to absorb losses after disasters and to recover from the resulting damage. A community's vulnerability is characterized by two interacting forces: the external force, which is exposure to shock, stress, and risk; and the internal force, which is defenselessness (a lack of means to cope or be resilient[10]).

[9] This text is taken entirely from the APFM document "Community-Based Flood Management".

[10] An important factor in resilient communities is the strength of networks and social capital. Social capital refers to the quality of relationships between members of a community. The benefits of social capital become evident when communities face adversity, conflict or change. Communities with high levels of social capital will be better able to manage difficulties than communities with

It follows that these factors must be taken into account for successful community participation. This should help to highlight those actors who could contribute better (thus increasing community resilience as much as possible, with minor efforts), while not forgetting to build the capacity of less visible/active stakeholders (elderly, disabled, isolated, minorities, etc.), so that they can also be involved in community activities. In addition, it should be considered that lack of cohesion/high levels of conflict have negative effects. It is not a mere coincidence that the positive results of community activities are observed mainly in peaceful/cohesive societies.

An analytical discussion of this topic is contained in the APFM document Community-based flood management" (APFM, 2017). We will focus here only on the most salient aspects.

a) **Ethnic pluralism** is a common phenomenon and ethnicity can be considered when organizing and empowering ethnic groups to make their own contributions and claims with respect to hazards' management. Perceptions of risk and community participation have a cultural dimension and hence differ broadly between communities. There is a distinct relationship between ethnic homogeneity and social capital, mainly in terms of trust and participation. Similar considerations are valid in societies characterized by religious minority groups. Social tensions can be originated by differences in religious beliefs and ethnic heterogeneity, leading to conflict and political instability. In this context, the participation of communities may be hindered.
b) There is a strong correlation between **poverty**, unequal distribution of resources and community participation. People living in extreme poverty (Quaranta and Quinti, 2004) are less likely to join groups (the extremely poor, in addition to lack of resources, are characterized by a lack of identity and both imply a lack of agency); but this is not usually true for those who are not extremely poor, which makes organizing community activities more difficult. Building the capacity of people experiencing poverty is key to overcoming some of the barriers to participation. Moreover, poverty should be considered not only as a status but also as a dynamic process. In a territorial community, we can meet people who are not poor but suffer an impoverishment process (or social exclusion process) related to unemployment, lack of access to social services, lack of security, forms of institutional disorder, forms of discrimination, etc. On the other hand, we can meet people who, thanks to their agency (i.e., the orientation of individuals and organizations towards action), which is manifested in intentionality, plans, lifestyles, or forms of social mobilization (Quaranta and d'Andrea, 1996) and thanks to empowerment actions (through access to microcredit, capacity-building, etc.) gradually emerge from a status of poverty.
c) **Lack of skills**, resources, literacy, knowledge, levels of empowerment and social exclusion are among the underlying inequalities that can present a barrier against the participation in

low levels of social capital. This is likely due to the fact that these communities have higher levels of trust, cooperation and tolerance. There is no single way to build resilience and social capital. Each community needs to examine its particular issues, requirements and capacity and determine the best approach. Social capital can be built through a variety of groups in the community, including families, schools and other educational institutions, clubs and businesses. Communities must also consider the impact that government policies may have on their community, and programs must be sensitive to the needs and capacities of the community or group they plan to support (Cf. Drug Info, 2007: Building resilience and social capital in rural and remote communities. Facts and resources about alcohol and drugs. www.druginfo.adf.org.au/fact-sheets/building-resilience-and-social-capital-in-rural-and-remote-communities-webfact-sheet).

decision-making for people living in poverty. This can result in an imbalance in participatory structures and processes.

d) **Gender disparity** in decision-making authority in homes has a negative impact on the participation of women (the social, economic, and cultural aspects within a society often limit their participation in decision-making, even within their homes). Conversely, women, often, are also more sensitive to civic and societal issues and can have a greater willingness in community participation, also related to their deeper awareness of societal, microeconomic, and environmental aspects of everyday life affecting them and their families. Moreover, they can have strong social networks within the community. There is also a need to remember that gender issues differ widely according to the different geographical contexts. Furthermore, it has to be remembered that gender issues might also include LGBTQ (Lesbian, Gay, Bisexual, Transgender, and Queer or questioning) issues. This particularly reflects in social context where LGBTQ+ tend to have the least access to voice and representation in society.
e) **Elders** can hold a real decision-making power within a community and have a key role in restoring/maintaining the social network (HelpAge, 2005). Elders can therefore play a positive role in the active participation of citizens/actors. Therefore, their potential as both human resources and holders of knowledge should not be wasted but, on the contrary, enhanced. In any case it must be kept in mind that the status of elders differs widely, according to the different geographical contexts.
f) **Migrants** and **refugees** are often people who, on the one hand, lack access to land, housing and vital services and suffer from livelihood pressure as they face the day-to-day insecurity of work and finances. More particularly, they can suffer from social exclusion processes, worsened by a minor knowledge of the territory where they now live. On the other hand, it should be underlined that an important percentage of migrants and refugees are either qualified or highly qualified (Marta, 2009).
g) People who suffer **disadvantages** because of their disability, or weakness related to their health status (e.g., infected with human immunodeficiency virus) tend to have the least access to voice and representation in society. In dealing with community participation, special attention should be paid to avoid their exclusion (ILO, 2003).

In light of the socioeconomic factors explained earlier, the capacity of people to participate varies widely within the communities. Certain groups, because of poverty, ethnicity, religion, gender, age, or disability issues, lack representation for their specific needs and are excluded from decision-making. Nevertheless, their participation remains crucial to ensure that planning and activities are appropriate enough for meeting their needs, to benefit from their knowledge and experience and more generally to strengthen their integration within the community.

2.2 Community participation – some specifics in relation to floods and drought management

Community participation is based, in the first place, on the general principles outlined in Section 2.1. However, this participation must be conceived not only in each (territorial) context, which of course has its specificities, but also considering the scope of the activities to be carried out.

In our specific case, this is floods and drought management, for which at least the following four aspects must be taken into consideration.

Community Participation and Perception of floods and drought

A **first** aspect that arises concerns the **"perception"** and nature of floods and drought on the part of communities.

Drought is an extreme and recurrent climatic event that affects the livelihoods of millions of people worldwide and is considered the most serious natural disaster in economic, social, and environmental terms (Miniki, 2009). Drought is the natural hazard that affects the maximum number of people in the world, causing devastating effects. Drying up of water resources, crop failures, increased food prices, poor health, losses and mortality of livestock production and lower livestock prices are the most immediate effects of drought perceived by farmers. The effects of drought weaken the income of agrarian households, lead to poor nutrition, and decrease risk absorption capacity, thereby increasing the vulnerability of the community (Udmale et al., 2014)

In a study of farmers' perceptions of drought, drought is defined as a natural disaster. Most farmers indicated crop failure, drying up of water resources, loss of livestock, starvation, poor human and animal health, increase in food prices, and decline in livestock prices as the main effects of drought. In addition, more than 85% of farmers indicated the effects of drought on household food security, choice in food preference, malnutrition, human and animal health, loss of livestock, unemployment, and reduced household income as moderate or significant (Menghistu et al., 2018).

Floods are also generally perceived as destructive natural events (loss of life and property, loss of livelihoods, reduced purchasing, and production power, impeded economic growth and development, mass migration, psychosocial effects, etc.). Nevertheless, it should be noted that floods can bring benefits to communities living in a floodplain. These benefits include groundwater recharge, soil fertility, creation of fertile ground for fish, and removal of contaminants and pollutants. In particular, freshwater flooding plays an important role in rejuvenating ecosystems in river basins and is a key factor in maintaining floodplain biodiversity, increasing biomass, and improving fisheries and agriculture[11].

[11] In the past, communities thrived on periodic flooding along the Tigris and Euphrates, Nile, Indus, Ganges, and Yellow River, among others. See WMO, 2006.

Floods influence the way communities live. In many flood-prone areas around the world, people have adopted a lifestyle of "living with floods". Communities that experience regular floods risks are more susceptible to floods than those living in areas in which they are less frequent.

Individuals' perceptions of the potential for future floods and droughts are influenced by their previous experience with these hazards. In particular, elders have the longest historical memory and can recall, better than other community members (especially recent immigrants or youth), the characteristics of floods or droughts that have hit the area or that they have experienced in the past. They have a higher perception and awareness than those without such experience (WMO, 2017). While collective understanding of risk is often lacking in communities where severe natural hazards are comparatively less frequent, much higher levels of awareness and understanding are evident where these events are more frequent. Gaining experience is a long process that also involves cultural adaptation. It facilitates effective participation in the management of these hazards.

Community participation and different types of floods and droughts

A **second** issue to consider is the **heterogeneity of both floods and droughts**.

There are different types of floods (e.g., riverine floods, flash floods, mudflow[12] and landslides, coastal floods/tsunamis, urban floods). A description of these different types of floods is beyond the scope of this document. Nevertheless, it should be considered that their impacts on communities may differ. For example, the consequences of flash floods may be more severe compared to those of riverine floods because of the high velocity and force of the water and the erosive power with which floods occur, the high load of sediment and debris, and the limited time generally available for evacuation (WMO, 2012b). Awareness and preparedness (and thus participation) at the community and household level are particularly critical in the case of flash floods. On the other hand, due to the high population density, the high heterogeneity of social groups, and the dynamic nature of the population in urban areas, in the case of urban floods, mobilizing community participation requires additional efforts to ensure true representation and participation of affected communities (WMO, 2012).

Differences exist also among droughts and, as in the case of floods, going into this matter, is beyond the scope of this tool. We should just highlight that meteorological drought is defined based on the number of days with precipitation below a specified threshold, while agricultural drought is focused on precipitation shortages, differences between actual and potential evapotranspiration, soil water deficits, reduced groundwater, or reservoir levels, and so forth. Finally, hydrological drought is associated with the effects of periods of precipitation shortfalls on surface or subsurface water supply (i.e., streamflow, reservoir and lake levels, groundwater). All these kinds of droughts can cause a socioeconomic drought, which occurs when the demand for

[12] Flow of dirt and debris that occurs after intense rainfall or snowmelt, volcanic eruptions, earthquakes, and severe wildfires. Typically, a flow may start after a heavy rainstorm and accelerate as it proceeds. As the slide accelerates, the liquid mud picks up everything in its path, including rocks, boulders, houses, trees, and cars. The flow grows, accumulating more debris before reaching a plain and causing great damage to life and property.

an economic good, such as water, forage, food grains, fish, and hydroelectric power, exceeds supply as a result of a weather-related shortfall in the water supply (Wilhite and Glantz, 1985).

An extreme effect of droughts is desertification, which, however, may also depend on other factors that change over time and vary from place to place. These include, beyond droughts, population size pressure; political (such as political, ethnic, religious conflicts) and socio-economic factors (such as abandonment/closure of mining activities or de-industrialization; unsustainable land use patterns and practices; as well as other processes related to climate change (beyond droughts, e.g., frequent coastal flooding). Beyond environmental degradation, desertification can therefore be considered as a social phenomenon that consists in the abandonment of a territory by the communities that used to inhabit it (or by a significant part of the population) as a result of both climatic events and social, economic and political events (Quinti, 2014). (Social) desertification profoundly affects the possibilities of effective community management of droughts.

Understanding these factors (both drought-related and flood-related) is therefore essential for organizing community participation in drought and floods management activities.

Intensity and variety of floods and drought impacts and community involvement

A **third** aspect that needs to be addressed in order to frame the specifics of community involvement in floods and drought management concerns **the impacts of these two families of hazards.**

A flood, as well as a drought, can cause the loss of millions of dollars' worth of property and pose a significant threat to human life and safety. Floods and drought impact businesses, people, the public sector, and, as far as floods are concerned, infrastructure as well (such as roads and bridges). It also causes serious deterioration of the surrounding environment and ecosystem. Such impacts have a great influence on the social and economic welfare of people. Incidences of disasters, caused by these natural hazards, further aggravate existing segregation in societies and vulnerabilities of individuals or groups and greatly influence community willingness and capacity to participate in social life (floods and drought management included).

The following four elements help to clarify the context in which these natural hazards could have an impact (see §1.4.):

i. *Social structure* (ethnic, class, religion, language, majority and minority groups)
ii. *Cultural arrangements* (family and cultural structure, hierarchy, common behavior, beliefs, and cultural practices)
iii. *Socioeconomic well-being* (sources of livelihood, seasonal and otherwise, employment and labor, the quality of public service facilities and housing, agricultural productivity, relevance of weak groups)
iv. *Spatial characteristics* (location of agricultural land, location of housing, public service facilities, agricultural land) (Abarquez and Murshed, 2004).

A **fourth** aspect to be addressed is the **specific impact on community participation** in relation to floods and drought management of (among others) some of the **social, economic, and cultural factors** considered at the end of Section 2.1. (Poverty; marginal areas; gender; elders; migrants and refugees; people with disabilities and other disadvantaged groups; and indigenous knowledge).

i. **Eradication/mitigation of extreme poverty as part of floods and drought management strategies** is necessary for the effective participation of communities/people in risk management activities. In general (Burton, Soussan, and Hammill, 2003), the poorest segments of society are more vulnerable because of their low adaptive capacities and because they live closer to vulnerable areas (e.g., on hill slopes and near riverbanks). The poorest generally pay less attention to floods risk (WMO, 2017), as they prefer not to invest in resilience measures in a home they do not own, especially when threatened with eviction. Homeowners tend to pay more attention to floods risk, but not when they do not live in the at-risk home/property and are not directly exposed to flooding. In this case, the tenants of the at-risk home are particularly vulnerable and need to be prepared for an emergency situation.

ii. **Marginal areas**, such as informal settlements and remote locations, are often populated by economically disadvantaged groups and vulnerable social groups (minorities, ethnic groups, etc.). These groups may be particularly vulnerable to floods and droughts due to factors such as spatial location (e.g., near riverbanks), underdeveloped infrastructure and basic facilities, environmental degradation, lack of knowledge about hazards and/or fatalistic attitudes about hazards. Development in marginal areas occurs mainly in an unorganized and dispersed manner, which disrupts community participation and social networks.

iii. Marginal areas (especially if affected by hazards such as drought or flooding) may also face the problem of out-migration, which compromises the development of community activities. Such conditions can disrupt community organization and the development of local preparedness/mitigation measures (WMO, 2011).

iv. On the one hand, **women** are more affected by **floods and drought** (as well as from other "disasters") and suffer from exclusion processes; on the other, they are more sensitive and more likely to participate. Women are also more sensitive to natural and human risks due to their higher capacity to understand the social and economic impacts and their deeper awareness of societal, microeconomic, and environmental aspects of everyday life affecting them and their families. Women have skills that can make them "keys to hazard prevention". In many societies, they manage and use natural resources on a daily basis and can draw from them in emergencies, such as food preservation. In addition, they are often important "risk communicators" as they have a central role in the family (looking after children, the elderly, etc.). Their social networks (see §2.1) provide them with information

about the people in the community who are in need or who can help in emergencies. Women are also more likely than men to pay attention to emergency warnings and are more safety conscious. They have informal health-care skills and experience (ICIMOD, 2007) in treating physical and mental conditions and often formal/informal professional qualifications that can be important for disaster preparedness, response, and recovery (health care, teaching, counselling, etc.). Women are often more resilient than men and this can have a positive impact on the participation of women in floods and drought management activities. Finally, many women-led organizations around the world show the potential of women in disaster preparedness, response, and recovery (World Bank, 2015).

v. The status of **elders** in disaster management is ambiguous. On the one hand, elders are more affected by natural disasters. After a disaster, many lose their homes (HelpAge, 2005) because they lack the appropriate documentation for their property (either it has been lost during the disaster or it was not required when their families settled on the land). This has a negative impact on the participation of elders in disaster management activities. Moreover, elders often live among people with a lower level of education and could represent a "burden" in any activity related to disaster management. On the other hand, elders often hold the better "historical memory" within a community, which may also include past floods, their consequences and management. Thus, their knowledge can be more than valuable and should be passed down to younger members of the community.

vi. **Natural disasters** can further isolate people who suffer **disadvantages** due to their **disability** or **health-related weakness** in traditional communities. These people are also likely to be least able to contribute to, and benefit from, hazard-risk management and development activities, while they need specific support and face extra challenges during emergency times related to their disabilities or living environment (Handicap International, 2005).

vii. **Indigenous knowledge** is the set of traditional coping strategies that have helped many communities survive natural calamities for centuries. People living in drought- and flood-prone areas have used indigenous knowledge to cope with disasters for hundreds of years. There are many examples of communities that have adapted their way of life to cope with drought and floods while also reaping economic and social benefits (in the case of the latter). Indigenous communities living in flood- and drought-prone areas make extensive use of their traditional knowledge to predict natural disasters. The increase in natural disasters and the communities affected by them, despite the implementation of risk management practices, clearly indicates a gap between practice and policy. By using information from the domain of indigenous knowledge and local coping capacities, this gap can be bridged, providing not only better floods and drought management (reducing costs, among other things), but also enhanced community participation.

Floods and indigenous knowledge: examples from West Africa

In Togo, the community of Daoudé relies on the calls or behavior of certain animals to anticipate floods and droughts. For example, a particular call of the turtledove announces the dry season, or the migration of the cattle egret, which announces the rainy season. On the other hand, the toad's croaking, together with the appearance of certain plants, such as Tchantchamassi and Kodonozou (in the local language), herald an abundance of rain (see more details later in Chapter 4., §4.1.).

In Benin, in the community of Tabota, a survey was conducted at the local level on indigenous knowledge of floods and drought occurrence. Among the signs of drought occurrence, the following ones were recorded: the early foliage of Cassia siamea; the presence of fog from May to July; the abundant appearance of locusts and caterpillars during May and June (see more details later in Chapter 4., §4.1.).

In Nigeria, the movement of the Sabutu or lagbaja (a variety of crab) is considered a signal of impending floods. When crabs migrate from brackish water to the sea, it is a sign of a "rain flood" (warm flood) and when crabs move from the sea to the creeks, it is taken as a sign of a "cold" floods (ocean flood) (Olyseyi et al., 2011). Similarly, in India, unusual animal behavior, such as birds and chickens climbing to higher ground, ants, frogs, and snakes emerging from their natural homes, and birds crawling in unusual ways, is used as a sign of impending floods or other natural calamities (WMO, 2004).

Other indigenous coping mechanisms include the use of rafts. Indeed, it is quite common for people to use rafts made of banana trunks for travel, including on flooded roads and for floating cultivation of fast-growing vegetables/agricultural products, with the entire planting and cultivation cycle linked to the rise and fall of rivers.

Advantages and disadvantages of community participation

The participatory process has been recognized as an essential element of community-based risk management, which helps to build a culture of safety and ensure sustainable development. It addresses the specific local needs of vulnerable communities by realizing the full potential of local resources and capacities. It aims to actively engage residents in all stages of floods risk management activities (as will be discussed further in Chapter 4). The following points (see box) attempt to summarize the main potential benefits that can result from community participation in floods risk management (but they can also apply to drought risk management). We can distinguish two categories of benefits: the first is more related to the individuals involved in the process and the second is more correlated to the benefit to the overall process or outcome. Beyond multiple benefits, community participation can also involve social costs, such as those mentioned in the following box (Evers, 2012).

Advantages and disadvantages of community participation

Benefits to individuals

- More transparent and informed decision-making
- Better control of decisions and their implementation and the possibility of controlling information and management on the part of experts; and strengthening the capacity to develop information and provide well-informed advice
- Reduction of the media's monopoly on persuasion and influence
- Empowerment of the public – participants can learn to express their interests, thereby gaining influence
- Participants can improve their ability to cope with floods and drought through a learning process

Benefits to the process

- Expansion of stakeholders' (and citizens') scope for action through learning processes, reflection, and consideration of issues in a broader context
- Learning and social experience – if participation leads to a constructive dialogue with all parties involved, then the general public, public administrations and experts can learn from each other's awareness of floods and drought risks
- Development of a shared vision as a basis for long-term perspectives
- Fewer disputes, misunderstandings, delays and more effective implementation and monitoring, which can ultimately lead to the most cost-effective solutions
- Raising public awareness of environmental issues, as well as the local environmental situation
- Use of different types of knowledge (regional, local, historical, social), experiences and projects of different stakeholders, which improves the quality of plans, measures, and projects
- Legitimization of decisions, public acceptance, commitment, and support for decision-making processes
- The assumption of responsibility by citizens not only for decisions but also for the implementation and realization of measures (unpaid involvement can also have a financial side)

Potential risks and drawbacks of community participation

- Potential costs
- Loss of time (delays in decisions "justified" by the need to consult the social actors concerned)
- Risk of losing control of the process on the part of the authorities concerned
- Community domination by certain individuals or institutions
- Identification of unworkable solutions/outcomes
- Exclusivity of processes (exclusion of important stakeholders)
- Potential conflicts that could lead to "dead ends"

2.3. How to organize community participation

What is a Community Floods and/or Drought Management Committee

Community institutions (such as the Committees) are the main vehicles for carrying out community-based drought and floods management activities. The structure and territorial coverage of such institutions vary from one community to another. Mostly, they are comprised of several people with a division of roles and responsibilities (chairperson, secretary and treasurer are among the common types of officers in a community-based drought and/or floods risk management committee). Depending upon the needs and capabilities of the community, they coordinate the participation of community members and foster drought and flood-preparedness. They also devise and implement drought and floods responses, community trust-fund management (including common stockpiling of emergency response tools and supplies), and wider community resilience programs or community development initiatives (WMO, 2005).

Community-based drought and/or floods risk management committees help to increase the effectiveness of community-based early warning systems for drought, e.g., drought early warning systems/DEWS (Wilhite and Svoboda, 2000), floods, e.g., floods early warning systems/FEWS (ICIMOD, 2014) or both. It is an integrated system of tools and plans to detect and respond to emergencies that are prepared and managed by the communities. The objectives of community-based early warning systems are to manage hazards by providing early warnings. In the case of

floods, it is important to adopt a basin approach that entails warning to downstream communities and to enhance cooperation between upstream and downstream communities in the sharing of floods information.

Community-based FEWS and DEWS are implemented in at-risk communities to enhance the capacity of local people to withstand the adverse effects of flooding or drought.

The functions of the Community Floods and/or Drought Management Committees

Committees perform various functions such as:

- ✓ Identification of risks to communities
- ✓ Assessment of needs and capabilities of the community
- ✓ Provision of equipment and supplies for emergency situations
- ✓ Awareness-raising
- ✓ Information dissemination and capacity-building
- ✓ Networking, monitoring, and reporting
- ✓ Establishment of institutional building and linkages
- ✓ Planning and interface with government institutions for risk management (preparedness, prevention also for trying to moderate its intensity and negative effects, rescue, etc.)
- ✓ Conducting simulations/drills to facilitate effective evacuation (in case of flood)
- ✓ Development of linkages with other communities and external development partners (including the private sector)
- ✓ Monitoring, evaluation, and record-keeping working groups
- ✓ Management of information for future reference
- ✓ Resource mobilization.

In many Committees, task forces are formed to facilitate the accomplishment of specific community activities.

Composition of Committees

Any committees formed should include local leaders, women, representatives of ethnic groups, representatives of local leaders, agriculture/health officials, teachers, youth, and representatives of local NGOs and CBOs. They should include all stakeholders in a representative manner. They may benefit, in an advisory capacity, from the presence of local representatives of relevant ministries, local government, the elders, etc., who can provide advice and facilitate linkages to technical and funding sources as needed. This issue should be taken into account in the broader context of the multi-stakeholders approach that is at the core of the next Chapter of this tool.

3. MULTI-STAKEHOLDER APPROACH IN THE FLOOD AND DROUGHT MANAGEMENT

In relation to what has been said in the previous chapter (in particular regarding the creation and composition of the Committees – see §2.3.), it is appropriate to review what "institutions" (in fact, "organizations") may exist (depending on the specific context) at the community level.

Local institutions and community participation

Community institutions (in a broader sense) aim to facilitate dialogue and negotiations between various stakeholders (WMO, 2006). They act as intermediaries between communities and local, regional, and national authorities, and between communities and external development agencies and implementing organizations (such as national or international NGOs). Taking a broader view, all these actors represent actual and potential "stakeholders".

The following are prominent examples of institutions that may exist in a community (Haider, 2009) (see box):

Which institutions in a community

Association: a group of people, often from different family groups, who work together for a common purpose and have visibility mainly through their involvement in a specific sector (such as farmers', youth, widows' and parents' associations). Associations facilitate self-help, mutual help, solidarity and cooperation. They usually have clearly delineated structures, roles and rules within which group members operate. Associations are sometimes established to operate and maintain a facility constructed with public and/or private funds, with resources mobilized from members of the Association.
Cooperative: an autonomous, voluntary association of people who work together for mutual economic, social or cultural benefits through a jointly owned and democratically controlled enterprise.
Civic organization: a type of organization whose official goal is to improve neighborhoods through volunteer work by its members (such as the community-based risk management committees mentioned above). Among civic organizations, common interest groups comprise members of the community that come together to achieve a common purpose.
NGOs: local organizations or referring to their community partners.
Community-based organizations (CBO): organizations that should ideally be representative of the community (membership-based) but therefore tend to vary considerably in size and focus. CBOs may focus on a specific sector or on several sectors. They may also include the local arm of one or more NGOs. Among CBOs, village development committees (or district development committees in urban areas) are organizations for the collective governance of village (or district) development. The above-mentioned entities (committees) can also be considered as CBOs. Among CBOs.
Village leader: an official, traditional, or informal leader at the local level. Formal leaders include the communal chief and the local administration. Traditional leaders are usually people revered for their religious or spiritual attributes. Informal leaders exert influence because of their wealth, special skills or charisma. Formal and traditional leaders play a key role in local political, social, religious and welfare activities.
Micro-finance institutions (MFIs): community-level common interest groups specialized in savings and lending.
Disaster management committees (DMCs): deal (also) with hazards at the local level (village level, e.g., community-based DEWS/FEWS[13].
Other organizations: Professional learning organizations; Senior citizen groups; Community colleges; Youth groups such as boy scouts; Religious groups.

[13] In this regard, we can point out the presence of a Disaster Management Committee (or equivalent) in 22 of the 60 sites in the Volta Basin where a community mapping of vulnerability, exposure to natural hazards and real capacities was carried out in 2020 within the framework of the VFDM discussed in §1.2. (6 in Togo; 5 in Burkina Faso, Ghana and Mali; 1 in Ivory Coast).

The local "institutions" mentioned in the box, in a community-based flood and drought management perspective, are supposed to dialogue with the public authorities (in our case at the local level) and, in particular, with the technical services (e.g., meteorology, energy, civil protection, environment, hydrology, agriculture, health, etc.). Community-based management thus corresponds to a "multi-stakeholder" approach.

In river basins, there are often also management bodies called river basin organizations (RBOs). These bodies can be very important. They aim to ensure coordination between different government institutions at different levels (from local to national). They provide an interface between different stakeholders to share basin benefits and concerns; ensure greater stakeholder participation in planning, implementation, and evaluation of activities; and facilitate information and knowledge sharing and capacity building among key stakeholders, without duplicating administrative and community governance structures (WMO, 2006).

River Basin Management Organizations (RBOs)

There are several types of RBOs: basin commissions, basin directorates, basin associations or councils and corporations. Within transboundary rivers, RBOs are sometimes established to promote cooperation and resolve potential conflicts. Many were originally created to address specific technical issues, but once the benefits of cooperation became clear to stakeholders, their mandates were often expanded. FBOs can also be interstate, such as the Volta Basin Authority.

Institutions at the local level, of course, influence people's participation. From a quantitative[14] point of view, the more people (in absolute and percentage terms) are involved in these institutions, the easier it will be to involve people (or to strengthen their involvement) in drought/floods management at the different stages (prevention and preparedness; response; recovery – see §4.1., 4.2. and 4.3.). From a qualitative point of view, of course, one has to consider the quality of these institutions, which may or may not exist anyway, depending on the different contexts, as already mentioned. Those that do exist may exist only "on paper" and may not, in fact, play any role; others may be characterized by a lack of effectiveness; others may be "individual" with only a seemingly large number of members; others may be characterized by corruption/lack of transparency, confrontational and/or discriminatory approaches (and therefore best not to benefit from their contribution), etc. Many others, of course, can be high-quality and effective groups. The quality of individual involvement in these organizations must be taken into account in order to valorize each contribution, however modest and limited in time.

Multi-stakeholder approach at the community level

Considering a large number of institutions, leads us to mention the multi-stakeholder approach, some important characteristics of which are mentioned in the box below.

[14] In this regard, we can point out the presence of groups such as NGOs, religious groups, women's associations, cooperatives or farmers' or herders' associations, etc., in 41 of the 60 sites in the Volta Basin where community mapping of vulnerability, exposure to natural hazards and real capacities was carried out in 2020 within the framework of the VFDM mentioned in §1.2. (In 12 out of 15 in Ghana; in 9 out of 15 in Burkina Faso; in 7 out of 8 in Benin; in 6 out of 7 in Togo; in 5 out of 7 in Mali; in 2 out of 8 in Ivory Coast).

"Multi-stakeholder" participation is important, to:

- Improve coordination and collaboration
- Ensure implementation of basin flood management plans with full public support.
- Ensure sustainability of plans and related decisions
- Build consensus and public support for flood management options
- Enlist the commitment of stakeholders
- Strengthen the resilience of flood-prone communities
- Provide all stakeholders, including the general public, with every opportunity to share their views and influence outcomes, ensuring that culture, language, etc. are respected.

Source: "Building Knowledge and Awareness on Flood Management" – presentation made in Antigua by WMO and K&I on July 12, 2022

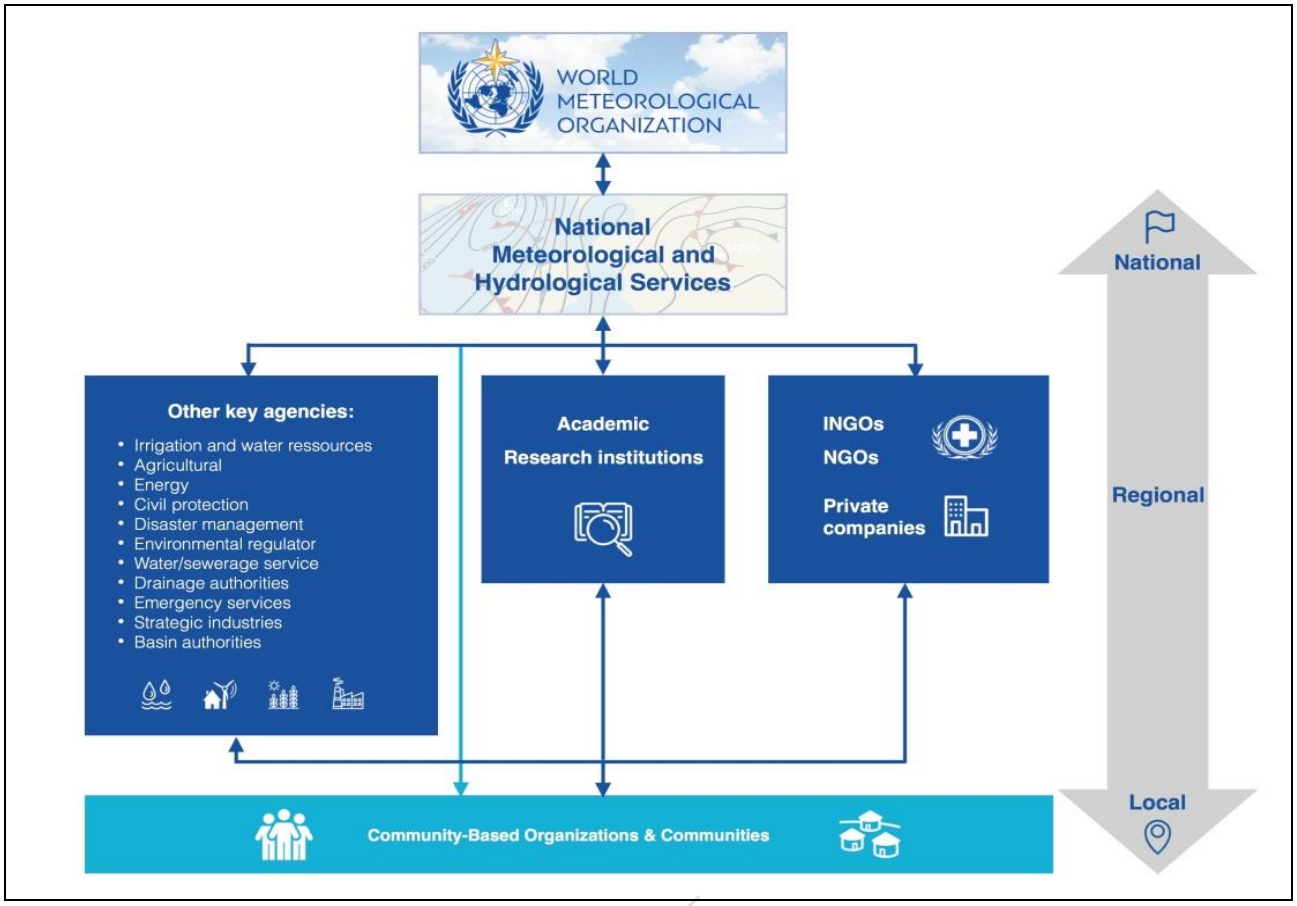
Community institutions that work effectively play a central role in carrying out many types of floods management activities (Abarquez and Murshed, 2004) by performing several functions, such as: Coordinating and facilitating individual efforts; Creating synergies and reducing program operating costs; Building solidarity and improving the effectiveness of cooperation within communities; Providing a platform for consensus-building and conflict prevention, thereby building local social capital; Complementing national and local government efforts; Harmonizing risk management efforts with other development activities.

Community members typically need to perform-and are already performing-different activities at different stages of risk reduction. In addition, understanding the role of community participation in each phase of disaster risk reduction (prevention and preparedness; response; and recovery) is equally important to the success and sustainability of these activities.

A point-by-point analysis of what can happen in each of the three phases in community-based floods and drought management will be made in the Chapter 4, drawing as much as possible on specific experiences in the Volta Basin.

Multi-stakeholder approach: some general features

Since this Tool concerns Community-based flood and drought management, we have so far dealt with the multi-stakeholder approach at the local level. It should be noted that such an approach is appropriate (or rather necessary) even at higher levels (regional, national, international, and even at the river basin level), as shown in the figure below.



Source: APFM, Social aspects and stakeholder involvement in integrated flood management. Community-based flood management in Thailand, WMO 2017

At any level, a multi-stakeholder approach:

- Facilitate the involvement of all stakeholders in the dialogue/ decision-making process, providing all stakeholders, including the public, with full opportunities to share their views and influence the outcome.
- Allow decentralization of decision-making with appropriate mechanisms
- Design an optimal mix of bottom-up and top-down approaches and build stakeholders commitment
- Operationalize effective conflict resolution mechanisms and build consensus and public support on the flood (and drought) management options
- Ensure implementation of basin flood management plans with full public support
- Ensure sustainability of plans and associated decisions
- Build resilience of flood-prone/drought-prone communities.

4. COMMUNITY FLOODS AND DROUGHT MANAGEMENT ACTIVITIES

Community floods and drought management activities can be divided into the three phases of the risk management cycle that have been codified, over time, based on experiences around the world and reflection on those experiences (APFM, 2017).

The three phases, in our case, are:

- Floods and drought preparedness (which also includes prevention activities)
- Floods and drought response
- Post-floods and post-drought recovery.

In this chapter the three phases are illustrated based on the experiences already gained by APFM (2017) and the results of the fieldwork done during this project in 6 sites in the Volta Basin (see Chapters 1 and 2), highlighting, among other things, the role – actual and potential – of the already mentioned community drought and/or floods risk management committees. Given the type of experiences made in the VFDM project, the "Voices from the Field" mentioned in this section are more unbalanced on the "preparedness" and "response" side, as opposed to the post-disaster "recovery" side.

4.1. Floods and drought preparedness

Floods and drought preparedness at the community and household level is critical (APFM, 2017). In the case of flash floods, in particular, these events are extremely rapid and intense and require an effective community response within a very short time frame.

In this regard, the formation of community risk management committees is a fundamental and preliminary activity. This activity must include specific steps to formalize the existence and ensure the proper functioning of the committees. An example of committee formation activities is the one tested in Badara (Burkina Faso) within the framework of VFDM.

Voices from the field #1

Establishment of the Community-Based Floods and Drought Management Committee (CBFDMC) in Badara (Burkina Faso)

The establishment of the community floods and drought management committee is, at the site level, a very important action in the sense of ownership and sustainability of the project's achievements. This implementation could be divided into two main phases:

Phase 1: Rapid appraisal of the problem of community management of floods and drought in Badara

This phase is divided into two steps, namely the inventory of floods and drought management in Badara and the proposal of a roadmap for the implementation of the CBFDMC.

1. Status of floods and drought management in Badara

The participatory inventory will identify all the institutional and community actors and resource persons who can significantly influence the process of concerted management of floods and droughts in the Badara site's area of influence. This identification will focus not only on physical assets and areas at risk of floods and drought, but also on existing institutional and community arrangements for the management of hydrometeorological disasters. The inventory will be done through the collection, analysis and processing of data complementary to those of the mapping study already carried out in 2020 under the VFDM program and will be based on tools to be published and administered to the various stakeholders and which will lead to a summary document with recommendations for action for the implementation of CBFDMC actions, especially early warning (EWS) at the level of Badara, with the gender issue in the background.

2. Proposal and validation of a roadmap for the implementation of the CBFDMC

A roadmap for setting up the committee will be drawn up by the local partner and validated by the local actors. This roadmap will be made available to the implementing partner who will facilitate its implementation for the operationalization of the management committee. This roadmap will outline the steps and actions to be taken to set up the community floods and drought management committee.

Phase 2: Establishment of the CBFDMC

1. Preparation of statutory documents

The functioning of the CBFDMC will be governed by statutory documents that will set the rules and legal procedures. The documents to be drawn up will be based on the legal framework governing the decentralized disaster management system in Burkina Faso. They will be drawn up considering the issue of linkage to the existing system, and the Badara town hall is the communal guarantor. At this stage a participatory process will be carried out for drafting the proposed decree of creation and the internal regulations of the committee. To do this, a drafting committee will be responsible for drafting the act of creation and internal regulations. These constitutive texts will be examined and validated by all the actors in general assemblies before the constitutive general assembly.

2. Organization of local stakeholder assemblies

The stakeholders involved in floods and drought management are diverse and must be identified, mobilized, and involved in the management committee at the community level. It is therefore important to hold local assemblies bringing together the various socio-economic, professional, and religious groups to share more information and knowledge on the issue of community floods and drought management in order to guide the selection of committee members under the aegis of the Bama Town Hall. These actors will be involved through representatives (delegates) who will be

identified by the groups of actors themselves and mandated to participate in the constituent general assembly.

3. Organization of the Constituent General Assembly of the Community-Based Flood and Drought Management Committee

The constituent general assembly is the framework for the official setting up of the community floods and drought management committee through the installation of its members who will be invited to the general assembly of the CBFDMC. The invitation to participate in the general assembly contains indications for the establishment of a name list of the representatives of the groups and denominations representing the constituent GA, with their complete address. This consolidated list, which will be transmitted in advance to the town hall and the local partner, will serve as a basis for convening the members of the general assembly. The general assembly examines and adopts the texts establishing the CBFDMC and sets up the other organs such as the executive board of the Community-Based Floods and Drought Management Committee at local level. With the support of the local partner and the town hall of Badara, the elected office will be in charge of setting up, filing and following up the dossier for the creation of the CBFDMC with the competent administrative authority.

Source: VFDM, Pilot Project. Community-based flood and drought management, Site: Badara, Commune of Bama, Province of Houet, Implementation methodology, November 2021

Preparation, like the following phases, requires actions that are both "operational" (organization, mobilization of resources, rules, etc.) and "cognitive" (information gathering and mapping, awareness raising, training, communication, etc.)[15].

The preparedness phase, in particular, includes a series of prevention activities-where community management committees can play a critical role-to:

- ✓ Analyze the current situation of existing vulnerabilities and risks
- ✓ Disseminate a shared awareness of these risks
- ✓ Prepare an operational management plan for these risks
- ✓ Deploy structures and capacities to deal with these risks.

Analyze the current situation of existing vulnerabilities and risks

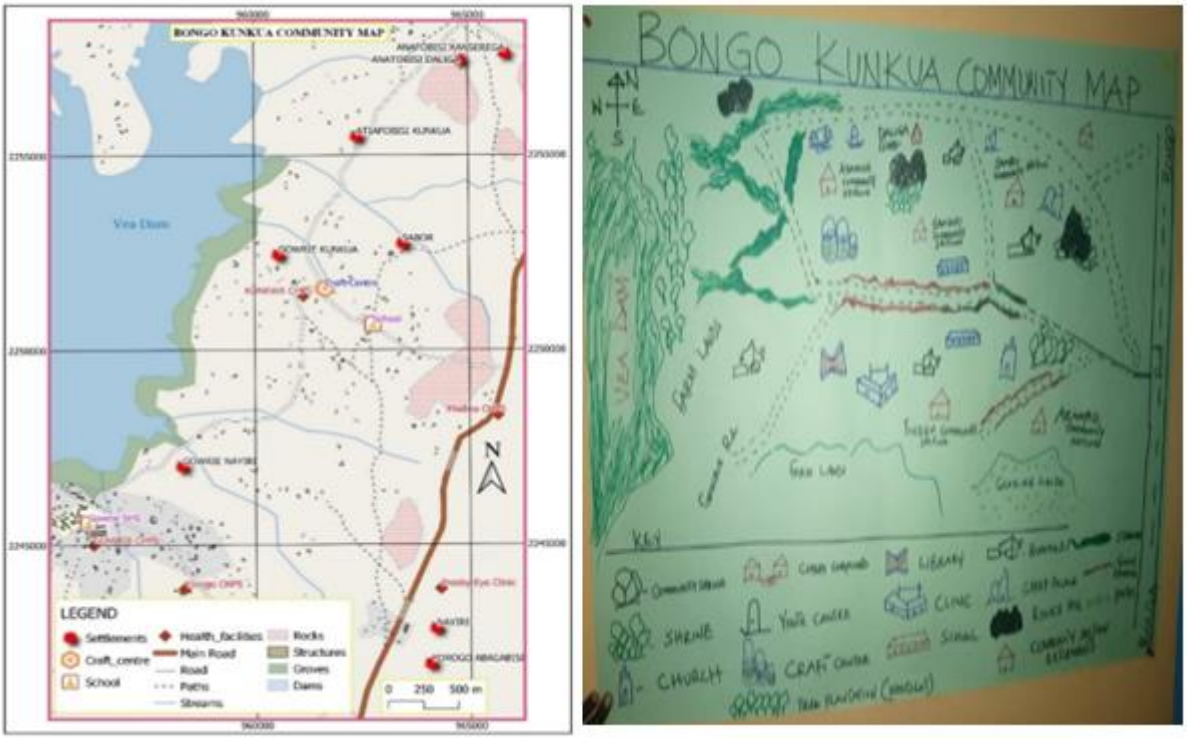
The first basic preparedness activity is to analyze at the community level the current situation of vulnerabilities and risks related to floods and droughts that exist in specific locations. This analysis is the basis for a common awareness of the risks (see next point) and for any subsequent capacity building and preparedness, response, or recovery intervention.

At the heart of every risk analysis is a mapping of vulnerabilities, and (if possible) solutions. As shown in the Kunkua (Ghana) floods experience, this mapping can include places at risk, the most important infrastructure and services to be protected, and the homes of the most vulnerable people.

[15] On the distinction between "operational" and "cognitive" aspects of human experience, see Quaranta, 1986.

Voices from the field #2
Participatory Mapping in Kunkua (Ghana)

"The community actors were guided to sketch and include community key features to the map. That also includes the floods prone areas of the community, as well as houses who live vulnerable people (Disabled people, elderly people, etc. who, in the event of a disaster, must be rescued). A digitized map is accompanied with the community sketched map."



Source: ORGIIS, Field Survey, 2021, Kunkua

This type of mapping, of course, is all the more useful insofar as it is "co-produced" by all the actors of the community: In this regard, it is essential to value popular or indigenous knowledge, i.e., the information that inhabitants hold, for biographical reasons and experience (e.g., the elderly), for their role in the community (e.g., village chiefs), for professional reasons (e.g., firefighters or forest rangers), and expertise (e.g., agronomists, engineers, hydrologists, etc.).

Normally, by talking to local people, traditional forms or techniques of floods and drought risk prediction can be identified, which are based on the observation of nature. For example, during the project's fieldwork in Mali and Togo, the behavior or calls of certain animals, or the appearance or growth of certain plants were mentioned by local community members in this regard.

Voices from the field #3

Local techniques for drought and floods forecasting in Daoudé (Togo)

"The implementation of the field activities also provides an opportunity to exchange with the communities, especially the elders. These elders have shared with us local techniques for drought and floods forecasting. For example, the community of Daoudé relies on the calls of certain animals to determine floods and droughts. For example, the call of the turtledove announces the dry season, as well as the brightness of the sun (intense yellow), or the cattle egret, which by its migration period announces the rainy season. On the other hand, the toad's croaking and the appearance of certain plants, such as Tchantchamassi and Kodonozou (in the local language), herald an abundance of rain (as already stated in §2.2). However, these predictions would become difficult nowadays because of the disappearance of certain species."

Indicators	Images	Message
Animals		
Cattle Egret		With its migration period announces the rainy season
Turtledove		By the type of cooing announces a dry season
Sun		By its particular brightness of a strong yellowish color announces a dry season
Moutoudou Bird (local language)	Not available	By a certain behavior announces an abundance of rain
Fadou Bird (local language)	Not available	By a special call announces an abundance of rain
Toad		By the kind of croaking announces an abundance of rain
Plants		
Tchantchamassi (local language)	Not available	By its appearance announces an abundance of rain
Kodonozou (local language)	Not available	By its appearance announces an abundance of rain

Source: Staff sheet JVE, n.d.

Voices from the field #4

Natural flood risk prediction: some examples from Kandé (Mali)

"The inhabitants of Kandé foresee flooding by the following signs:

- Germination of an aquatic plant (KOKOUN in Dafin)
- Grass on the river plains is growing
- Water flow is visible by deposits of stem or grass on the water takes speed; for example, a dugout canoe installed or parked at the edge of the river, floats in the water after a very short time (less than one day)
- The attitude of the fish that chop a well-known grass species at the riverbank shows that the water is going to do some damage
- The rise in height of the kokoun (a type of grass) also shows that the water will do damage.

Even if the rainfall is low, if these signs are visible, it shows that it will have a flood, so these signs alert us."

Source: DEMESSO/DELTA SURVIE, Note "Flood and drought control activities in Sourou" – Kandé, n.d.

Local historical knowledge can also provide fundamental information on aspects such as, for example, the types of damage that disasters produce to houses, infrastructure, fields, and nurseries (see below an example from Mali).

Voices from the field #5

Floods damage – examples in Sourou-Kandé (Mali)

According to the accounts of the communities in Sorou-Kandé, the types of damage caused by floods are mainly the following:

- "The damage caused by the breakage of the dyke first affected the market garden nurseries, corn, sorghum, sesame, millet, and peanut fields.
- Dwellings (fence walls, houses, attics)
- Flooding killed several species (at least six species of trees)
- The floods caused some grass species to germinate but killed several other species before and after
- Fishermen's camps are in the water for the duration of the flood".

Source: DEMESSO/DELTA SURVIE note on "Natural flood risk forecasts", 2022

This preliminary analysis can also be integrated by identifying endogenous flood prevention/adaptation measures and endogenous drought prevention/adaptation measures.

Below are the results of a survey for the formulation of the Community Floods and Drought Management Plan in Tabota (Benin). In the framework of this activity, the signs of occurrence of floods and droughts that are codified by traditional experience were detected. At the same time, endogenous measures, more or less effective, traditionally used to cope with floods and to adapt to droughts, were identified.

Voices from the field #6

Endogenous knowledge and measures about floods and droughts in Tabota (Bénin)

As part of the development of the Community Floods and Drought Management Plan in Tabota (Benin), a survey was conducted at the local level on endogenous knowledge of floods and drought occurrence. This activity was carried out in December 2021.

A data collection form was developed and 27 people were surveyed, including 6 women. The results obtained are presented in the table below.

Signs of floods occurrence	Signs of drought occurrence	Endogenous measures identified for floods	Endogenous measures to adapt to draught
• Strong frequency of a wind blowing from North to South • Migration of wild ducks • Long duration of heat from February to May • Long duration of the harmattan (November to February) • The late foliage of Cassia siamea • Abundance of fish (name not yet identified) in reservoirs	• Early end of rains • Early drying up of water reservoirs • The early foliage of Cassia siamea • Presence of fog from May to July • Abundant appearance of locusts and caterpillars during May and June	• Cultivation of short-cycle agricultural products, e.g., Fonio, small millet, small beans, (70 days) • Predominance of the cultivation of moisture-resistant agricultural products (rice, yams, taro potatoes, etc.) • Avoid making fields on water streams • Hasten seeding	• Growing heat-resistant crops (Millet, Vandzou, Sorghum, Maize) • Growing long-cycle crops (Millet, Vandzou, Sorghum, 3-month-old maize, etc.) • Make sacrifices to attract rain • Growing short cycle crops in the lowlands • Suspension of certain less important ceremonies (initiations or funerals) to save food

Source: Alpha-Oméga, Synthesis of activities December 2021-January 2022 (Site of Tabota, Bénin)

All these types of information are valuable to better understand the local context and communities' approaches to risk, and thus to develop adequate and appropriate measures.

Disseminating a shared awareness

Promoting and supporting community awareness of floods and droughts is an essential aspect of the work of organizations such as community floods and drought risk management committees. To this end, based on the risk analysis activities carried out, it is important to organize awareness meetings in local communities.

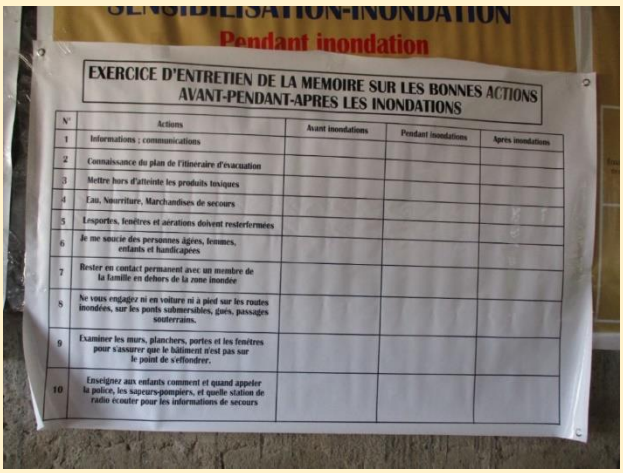
On the basis of the field activity by the VFDM project partners, the main contents of these meetings can be identified, which can be, among others:

- ✓ The chronological phases of floods and drought risk management (before, during, after – which corresponds to the three phases considered in this paragraph) and their main characteristics
- ✓ The existing risks for people (especially vulnerable ones), infrastructures, housing, cultivations, etc.

- ✓ The organization of human and material resources
- ✓ Empowerment of personnel (role of the various local actors)
- ✓ Activities to be carried out at the community level during the three phases mentioned above
- ✓ Behavior to be adopted and possible sanctions
- ✓ The instruments to be used
- ✓ Monitoring and follow-up procedures
- ✓ The methods of communication and contact with actors outside the locality (authorities, relief organizations, parents, etc.)
- ✓ Training needs
- ✓ Prioritization of activities
- ✓ Risk management planning.

Particular attention should be paid to the methods and tools for learning and the active participation of participants in the development of content, for example, using charts for memorization. Below are a few examples of the awareness-raising activity carried out in Ivory Coast, within the framework of the VFDM project.

Floods and drought awareness materials in Sangabili (Ivory Coast)



Source: NGO LACIBES, 2022

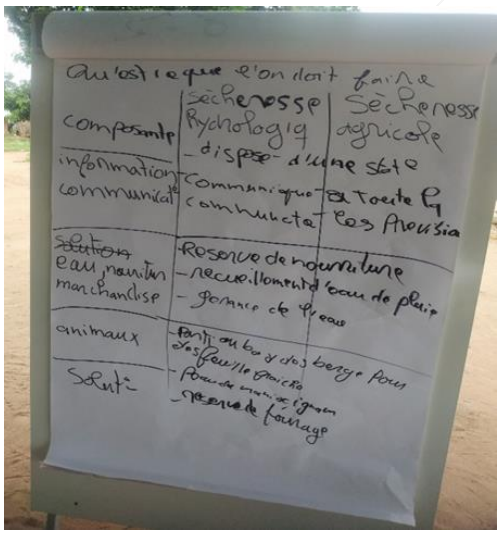
Regarding flood preparedness/prevention, here are, for example, the indications suggested during the activities carried out in Ivory Coast by the VFDM Project:

- ✓ Find out about the history of flooding in your community and whether you live in an area prone to flooding
- ✓ Check the weather forecast and information bulletins
- ✓ Carry flashlights, a first aid kit, food, emergency water, sturdy shoes, essential medicines, cash, credit cards and identification
- ✓ Refer to the local emergency management office for the evacuation plan and route
- ✓ Install check valves in the sewer lines of your buildings to prevent flood waters from backing up
- ✓ Ask a relative or friend outside the community to serve as a “family contact”
- ✓ Teach children which radio station to listen to for emergency information.

Voices from the field #7

Awareness raising activity and training on drought risk management in Sangabili (Ivory Coast)

"This activity took place with the whole community including the members of the CBFDMC. The objective was to present several actions and techniques to be undertaken in order to better manage the risks of droughts. During this meeting, several measures to be taken before, during and after droughts were indicated to them. This activity was done in an interactive way between the project team and the community of Sangabili. Based on the actions that were indicated to them, information and experience sharing contributed to the success of the session. A table with different components according to the type of drought was submitted to them. This table made it possible to identify, in a succinct manner, the actions to be taken according to the components presented. The objective was to ensure their level of understanding of the different actions to be carried out for a better management of drought risks."



Source: NGO LACIBES, 2022

Awareness Sheet – Before Droughts, Sangabili (Cote d'Ivoire)

- ✓ Prohibit the use of fire by farmers as a tool for clearing and conquering arable land
- ✓ Use available water carefully and avoid wasting it
- ✓ To store all the water that nature offers us
- ✓ Prohibit the use of fire by hunters to flush out game
- ✓ Prohibit the use of fire for the collection of non-wood products such as honey and palm wine
- ✓ Severely punish negligent acts such as throwing cigarette butts in these areas
- ✓ Increase crops in anticipation of a poor harvest and provide fodder reserves for animals
- ✓ Institutionalize the drought risk management system
- ✓ Improve the technical capacity of producers and users of climate information to increase the use of climate monitoring and prediction products in drought risk management and environmental management
- ✓ Promote the acquisition of satellite data for climate forecasting
- ✓ Develop and archive national and regional climate databases
- ✓ Adopt an eco-citizen behavior

Source: NGO LACIBES, "Sangabili community flood and drought risk awareness guide"

Awareness-raising can be followed by signposting activities at critical locations in the area, as a form of exercise and engagement of participants (see also the paragraph on monitoring below). This type of activity is difficult, but it can help to strengthen and render effective community participation, making prevention a factor in people's daily lives.

An important aspect is the dissemination of information and knowledge to other community members who were unable to attend the awareness sessions (acting as "ambassadors").

Voice from the field #8

Stories from some of the knowledge and awareness-raising session (participants from Kunkua – Ghana)

"I am Asumbela Maurice a community Volunteer, I did not even know about how we can manage floods and drought, but until I gained knowledge and understanding of community prepared to floods and drought management, I am very happy and well informed on measures of mitigating floods and drought in our communities.

I also had experience during the floods and Drought management training safety tips for floods and measure to that influence drought.

I will be a game changer of the narratives of floods and drought by contributing to problems of floods and drought in my community."

"Mr Atanga Ernest is my name, and I am a religious leader in the community and a member of the CFDMC, I have gained knowledge of first aid in CRP, managing injured persons, etc. to help assist patience recover before proper medical care.
I am taking this knowledge to the church congregation, my family to also impact knowledge to my fellows and any person in the community that needs my service.
This training will help not only during floods and drought but also if any person injured during farming, construction in the community.
This training is a good experience, and I am very ready to serve my community anytime!"

Source: ORGIIS, Field notes, February 2022

It should be noted that even if people are aware of floods risks soon after major floods, this awareness may decrease over time. This may require periodic reinforcement activities, such as visits by trainers/coaches or subsequent training sessions.

Deploying structures and capacities / Early warning systems

To complete the preparedness framework, it is important to set up adequate structures and capacities at the community level to deal with possible and foreseeable risks of floods or droughts.

In terms of structures, this means creating (see the initial part of Para. 4.1.) and/or strengthening management, coordination, and monitoring community committees, with a minimum of means and equipment necessary for the different types of activities.

In terms of skills, it is important to plan capacity-building activities, including specific training, as well as ad hoc exercises, in addition to initial awareness-raising activities. As the experience of the VFDM in Benin has shown, for example, these activities can be addressed to both individuals and groups with specific functions (administration, communication and animation, gender aspects, hygiene, economic activities, etc.).

Voices from the field #9

Capacity building activities in Tabota (Bénin)

Based on a training needs assessment, both individual and community capacity building activities were implemented in Tabota.

Update on training needs

- Module 1: Role and responsibility of CBFDMC members
- Module 2: Administrative and associative management of the committee
- Module 3: Communication and facilitation techniques
- Module 4: Concept of climate change
- Module 5: Concept of GENDER and its consideration in the implementation of initiatives Module

During the two-day training session, thematic commissions will be set up:

- ✓ Behavior Change Communication Commission
- ✓ Basic Hygiene and Sanitation Commission
- ✓ Environmental Protection Commission
- ✓ Commission for the Promotion of Income Generating Activities
- ✓ EWS (Early Warning System)

A continuous reinforcement plan will be developed and training on the different themes will be conducted throughout the implementation of the activities.

Source: Alpha-Oméga, Synthesis of activities December 2021-January 2022 (Site de Tabota, Bénin)

In the Volta Basin project, specific training concerned, among other things, first-aid and was accompanied by the supply of first aid equipment. As an example, the experience of Kunkua, in Ghana, is described in the box below.

Voices from the field #10

First-aid training and availability of first-aid kits in Kunkua (Ghana)

"First aid aims to preserve life, prevent the situation from getting worse and promote recovery. This training was conducted on 16th March 2022. Thanks to this training, people should be more cautious in putting themselves in danger and subsequently be another casualty for the emergency services to deal with. People should assess the situation, and make sure there are no threats to you before you step in. Moreover, people should not be in danger and try to stop the situation from becoming worse by removing any obvious dangers and act as quickly as possible to stop the casualty's condition from worsening. The First Aid practical training covered: i) The priorities of treatment (Primary survey – Airway → Breathing); ii) Cardio Pulmonary Resuscitation; iii) Treatment of head injuries; iv) Burns and scalds; v) Dislocations; vi) Drowning; vii) Collapsed lung / sucking chest wound; viii) Wounds and bleeding; ix) Stroke; x) How the body responds to hypoxia; xi) Choking; xii) Anaphylactic shock; xiii) Asthma; xiv) First Aid Kits functions."

Source: ORGIIS, Field notes, February 2022

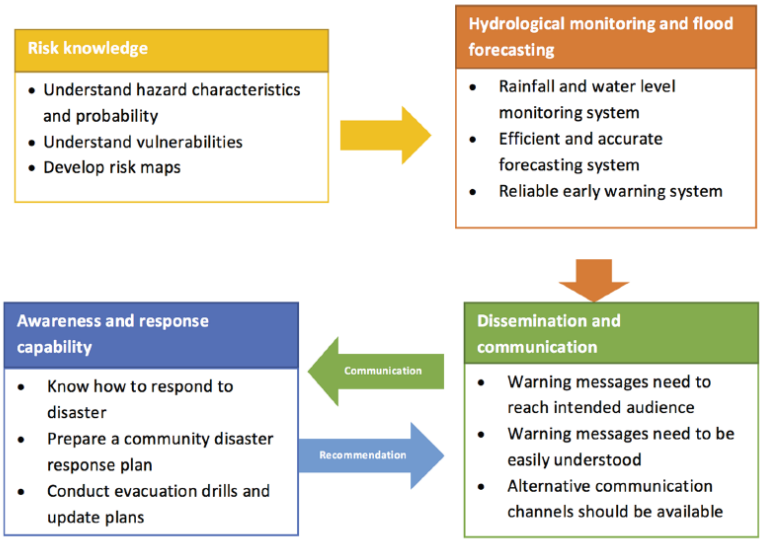
At the same time, permanent observation, monitoring, and early warning systems (which we have already mentioned several times) must be created.

End-to-end early warning system

An end-to-end Early Warning System integrates data collection, monitoring, forecasting, and warning dissemination. It addresses the early warning problem from its inception (monitoring the situation/gathering the necessary data), its elaboration to produce a forecast and, consequently, the dissemination of an alert to the relevant stakeholders, as well as the support to decision making. It is composed of four fundamental elements.

1. **Knowledge of risk**: An early warning system is only effective if the local community understands the nature of the risk. Data and disaster profiles should be systematically collected and analyzed as part of a risk assessment. In addition, local residents must be able to understand and agree with the responsible agencies to access information on risk profiles, vulnerabilities and elements at risk.
2. **Meteorological/hydrological monitoring and hazard forecasting**: These are important for analyzing the situation before hazards occur, in order to provide early warning to communities. The accuracy of the floods situation assessment for early warning depends on the quality of the information and the forecasting system. Therefore, it is important to have up-to-date information and good forecasting capabilities (or good communication channels at the local level to receive it from a central authority) for early warning systems to function effectively.
3. **Dissemination and communication**: any early warning information disseminated to at-risk communities must be easy to understand. Details of announcements should be sufficient for people to know how to prepare. Early warning communication channels should be established by the relevant agencies and should inform communities prior to any event so that they can prepare and avoid confusion. In addition, alternative communication channels must be established to ensure that information will reach local residents.
4. **Awareness and responsiveness**: communities must not only pay attention to early warning messages but also know how to take appropriate action to manage disasters. Improving community knowledge through training on early warning systems will improve the capacity to respond effectively to disasters and protect themselves from disasters. For example, communities should develop disaster response plans and conduct regular simulation exercises to respond to disasters.

The end-to-end early warning system is shown in the following figure



Source: APFM, Social aspects and stakeholders involvement in integrated flood management. Community-based flood management in Thailand, WMO 2017

The development of early warning systems should follow a principle of linking training and monitoring; this has been experimented with by the VFDM project, among others, in Ghana (see testimony below).

Voices from the field #11

Link between training and monitoring in Kunkua (Ghana)

The community-based activities implemented in the Kunkua village, Bongo district of Ghana provided opportunity for me to learn various aspects of floods and drought management. I am happy to be part of village committee now and will be involved in capacity development activities and decision-making. Also, the local meteorological station data and warning from the project EWS will provide daily and weekly bulletins which will help us to take timely decisions on harvesting and drying of millet crops.

Ms Asakibila Erica, Kunkua village, Bongo district, Ghana.

Indeed, continuously updated information must be available to all actors dealing with risks at the local level. This information, especially in the case of floods, may concern aspects such as the last water level at a particular point in the river, blocked sewers and ditches, inaccessible areas, etc.

There are many tools that can be installed that have a usefulness in the context of an early warning system. We can mention first loudspeakers and amplifiers installed in Sangabili, as reported in the box below.

Voices from the field #12
Loudspeakers in Sangabili (Cote d'Ivoire)

"The project team on site in Sangabili on March 16th, 2022, proceeded to the presentation and delivery of the early warning system equipment (4 loudspeakers) to the community. The importance and role of this equipment in preventing the risk of floods and droughts was explained to the whole community. These loudspeakers allow the dissemination of climate information throughout the village in order to prevent and avoid the loss of human life, goods and services and also to reduce the material and economic impacts of the risks of floods and droughts."

Source: VFDM, NGO La Cibes, Activity report – Sangabili pilot site (Ivory Coast), April 2022

Safety/level markings are a second important tool to better manage community safety, as was tried in Ivory Coast during the VFDM (see report below). Floods signs can primarily indicate flooding possibilities, floods levels, evacuation routes and destination fields.

Voices from the field #13
Safety Marking in Sangabili (Cote d'Ivoire)

"In order to protect the community from the risk of flooding, a safety marking was made. This safety marking was done with the help of different colored paint (Yellow-Orange-Red) which calls for vigilance for a safe evacuation. Three markers were installed in the community of Sangabili at the level of flooded surfaces.

Each marker has a designated person who will report the water level to the head of the CBFDM committee during times of flooding. Explanations regarding the interpretation of these colors were again given to the community prior to the start of the marking. The yellow color was applied at 60 cm (2 feet) from the ground and communicates information on the progression of flooding, at this yellow level the phenomenon is relatively dangerous. Then the orange color between 60 and 120 cm (2 to 4 feet) the phenomenon is dangerous and extensive, at this level people can safely evacuate to safer ground or to a predetermined evacuation center.

Rescue personnel may be able to recover people safely. Red, more than 120 cm (4 feet), symbolizes a dangerous phenomenon of exceptional intensity. At this level people who refused to evacuate earlier, during this red stage cannot be rescued by rescuers using trucks."



Source: VFDM, NGO La Cibes, Activity report – Sangabili pilot site (Ivory Coast), May 2022

Further flooding level markings examples from other countries (Thailand and Laos) are shown in the boxes below.

Flooding level markings from Thailand and Laos

Flood Marks

Flood marks were put on the electricity poles along Talad Kao community.

Flood Record

2014 – No flood

2013 – Worst flood in Prachinburi

- 9 October 2013: water level 11.99 m.
- 27 September 2013: water level 11.81 m.

2012 – Flooding in Kabinburi

- 23 September 2012 (highest level)

Remark: Critical level for Talad Kao is 8.50 m.

"Flood in 2013 reached to this level of Kabinburi HydroMet Station. It was the most severe flood I have ever experienced in Kabinburi."

Flood marks

Flood mark plates were given to pilot communities to mark flood level happening each year in the community.

"This flood mark plate is useful for the village to remember the historic floods occurred and also help raisng awareness in the village. The community members can use color spray to mark flood level at different locations such as electric poles, houses and buildings. Before constructing new buildings, at least they should think that in the past flood reached upto this level."

Ms. Somvath Keokhamphoui, Project Officer,
Asian Disaster Preparedness Center (ADPC), Vientiane Office

Source: "VOICES FROM THE FIELD: Community-Based Approaches to Flood Management"[16]

Construction activities (e.g., dykes) are also required in some cases, as was found during the VFDM project in Mali (see below).

Voices from the field #14
Local solutions for floods control – small dykes

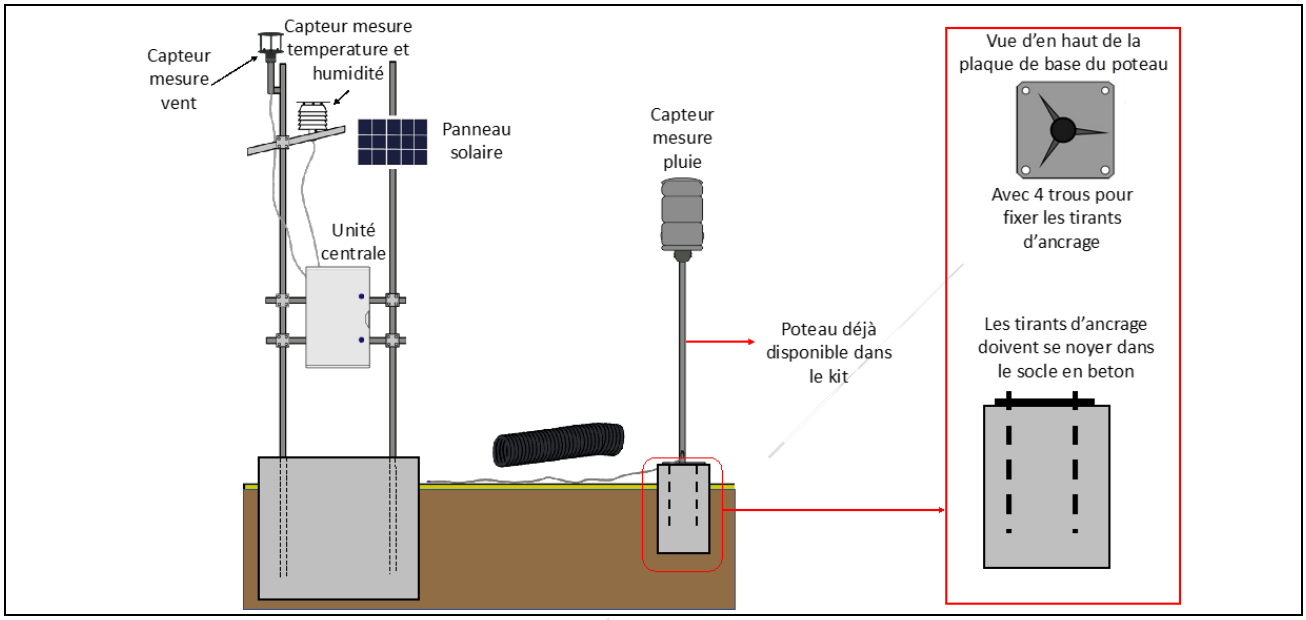
"Construction of dikes with a maximum height of 1.20 m and a minimum of 0.60 m over a length of 1 to 2 km, although motorized pumps are often used to draw water that seeps under the dike, this water is discharged into the mainstream.

The dike is built with earth, rods, and wood; often they are empty bags that are filled with earth or sand to bar, this is the best formula, and it is difficult."

Source: DEMESSO/DELTA SURVIE, note "Flood and drought fighting activities in Sourou – Kandé", n.d.

[16] The booklet Voices from the field is available at: https://www.floodmanagement.info/floodmanagement/wp-content/uploads/2020/08/Voices-from-the-Field-brochure-CBFM-project-in-Thailand-and-Lao-PDR_compressed.pdf

Finally, local Hydro-meteorological stations to gather real time observations on rainfall or water levels can be installed, as expected in all the sites of the Volta Basin involved in the VFDM. Meteo stations allow to measure: i) rainfall; ii) temperature; iii) humidity; iv) wind speed. Through a telephone line, all the recorded data are transmitted to a remote data center which processes them and transmits them to the meteorological offices, which should also process them as a function of possible alerts to the communities. Furthermore, through periodic bulletins and specific dissemination activities, the data will (once everything is up and running) returned to the communities. In the figure below there is a diagram of the installed meteorological stations.



Source: CIMA Research Foundation – Note « Station Installation: Operational Aspects". April 2022

Voices from the field #15

Reception of meteorological equipment in Sangabili (Cote d'Ivoire)

"On the morning of Friday April 15, 2022, the project team responsible for implementing the project as well as the various focal points of the partner structures went to the Bondoukou prefecture for the official presentation of the meteorological equipment to the authorities. After the discussion, presentation of equipment, and family photo taking, the whole delegation went to the village of Sangabili. Upon the arrival to Sangabili, civilities were followed by the presentation of the members of the delegation to the community of Sangabili and vice versa. The chief of the village, his notables as well as the committee of CBFDM presented themselves in turn. Finally, the meteorological equipment was symbolically handed over to the community on the site dedicated to the installation".

Source: VFDM, NGO La Cibes, Activity Report – Sangabili pilote site (Ivory Coast), April 2022

Prepare a community-based flood and drought management plan

Another fundamental step in risk management is the development of a risk management plan for both floods and drought. This activity is facilitated by the existence of a Community Floods and/or Drought Management Committee within the community.

The Plan is an indispensable tool for analyzing the possible impact of identified risks and for ensuring that adequate interventions are identified and implemented in advance. The existence of such a plan, naturally accompanied by the necessary material and human resources, is essential in the prevention phase and to ensure, thereafter, a more effective response in the management of risks.

The risk management plan may include at least four main components (IASC, 2007):

1. Preparation
2. Analysis
3. Planning the response
4. Follow-up and continuation of the process.

Based on the analysis and awareness-raising activities already mentioned, any plan should contain indications of how, when and who should carry out any activity, and should also include a prioritization of those activities to be carried out that is shared by community members. According to the experience of the VFDM project in Benin (see example below), this prioritization should include a presentation of the:

- ✓ Existing risks (e.g., effects of flooding, spread of disease, etc.)
- ✓ Solutions (e.g., mobilizing public awareness, fighting open defecation, etc.)
- ✓ Activities to be conducted (e.g., awareness raising, hygiene promotion, etc.)
- ✓ Sub-activities that detail the activities, identifying concrete operations.

In a risk management plan, one has to consider aspects such as:

- ✓ The persons in charge of the activities/sub-activities
- ✓ The phases of the risk management
- ✓ The procedures to be followed according to the phases (training; mobilization; communication; protection of people, animals, fields, and infrastructures; rescue; follow-up; restoration of services, support to people, reconstruction, etc.)
- ✓ Harmonization of the actions of all actors, from the local community to the national and international levels
- ✓ Mobilization of resources.

It is useful to also consider experiences elsewhere, such as the APFM program in Thailand (APFM, 2006), where the following suggestions were made about developing a community floods risk plan.

Main points of a community floods risk management plan: suggestions from a program in Thailand

- Define objectives.
- Assess the community context (location, geography, population, livelihoods, income, location, risk profile, seasonal calendar, hazard calendar, etc.).
- Prepare a community map (risk areas, safe areas, and evacuation routes).
- Establish a disaster prevention and mitigation committee with a structure, roles, and responsibilities – the community should discuss and agree on its own structure, depending on its needs.
- Implement steps consistent with the phases of disaster risk management (pre-disaster, during disaster, and post-disaster) and identify the people responsible for each phase.
- Provide an index consisting of an early warning structure, a list of people in the community, especially vulnerable groups (infants, the elderly, people with disabilities, chronically ill or pregnant women), who should be the first priority for receiving disaster assistance, a list of tools, equipment, vehicles and resources that can be used in disaster management, and a list of emergency telephone numbers.

The community must discuss and agree on how to prioritize solutions to reduce floods risk. This will lead to the creation of community disaster projects that can become an integral part of community development planning in the future.

Source: APFM, Social aspects and stakeholders involvement in integrated flood management. Community-based flood management in Thailand, WMO 2017

On the same "wavelength", during the implementation of the VFDM, the WMO provided the partners responsible for the community-based flood and drought management pilot projects in the six countries of the Volta Basin with the indications reported in Annex D.

A plan of this kind can be developed at different levels, involving different actors depending on the case: from that of a single family to that of a community (neighborhood or village), to the levels of a municipality, a district, a province or a region, and finally national or international.

In this context, links must be established or consolidated between local communities, humanitarian organizations and responsible government agencies.

The plan may consider only floods and/or drought management or, since risk management is part of a larger framework for environmental and social sustainability, it may take a broader view. This is what was done in the pilot projects in all the six countries of the Volta Basin.

The last step in the preparation of the Plan is the validation session of the activities identified with the various actors of the community. In Tabota (Benin), for example, a simplified outline was initially adopted, and the report was finally validated in a meeting with the members of the CBFDM Committee (see photos below[17]).

[17] Source: Alpha-Oméga, Synthesis of activities December 2021-January 2022 (Site of Tabota, Benin)


Unfolding of the validation session of the activities in Tabota


Creation of the community map of Tabota

Preparedness activity at the household and village community level should also be harmonized with that at higher levels (municipality, district, province, region, country, etc.) (see box below).

Flood preparedness activities at various levels (WMP,2006)

1. Individual or household level

- ✓ Know the risks: drowning, water-borne diseases, electrocution, poisonous animals
- ✓ Prepare for the specific needs of each family member (e.g., install protective railings around house to protect children from falling into the water and to provide support for the elderly)
- ✓ Scout for safe areas and know how to get there
- ✓ Know what to do and who is responsible for what when a warning is received
- ✓ Know whom to contact in case of emergency
- ✓ Know where the family members are most of the time, how to contact them, and where they should evacuate in case of emergency
- ✓ Keep life jackets, buoys, or tires ready for use
- ✓ Keep a first aid kit ready for use
- ✓ Store clean water and food in a safe place
- ✓ Disconnect gas and electricity supply
- ✓ Listen to daily floods forecasts
- ✓ Move valuable items to higher ground
- ✓ Get ready for evacuation
- ✓ Protect livestock

2. Community or village level

- ✓ Identify and maintain safe havens, safe areas and temporary shelters
- ✓ Put up signs on routs or alternate routes leading to safe areas

- ✓ Inform the public of the location of safe areas and the shortest routes leading to them
- ✓ Have all important contacts ready: district or provincial and national emergency lines; and have a focal point in the village
- ✓ Make arrangements for the set-up of teams in charge of health issues, damage and needs assessment
- ✓ Set up community volunteers teams for a 24 hour floods watch
- ✓ Improve or keep communication channels open to disseminate warnings
- ✓ Distribute information throughout the community

3. Municipality, district, province and national levels

- ✓ Determine roles and responsibility of each agency during response, relief, and recovery phases
- ✓ Prepare maps (floods risk/inundation vulnerability maps, resource maps) to provide essential information and data on current situation and to plan for assistance in those areas
- ✓ Make sure that critical roads are built up to a certain height – to enable access to safe areas for flood-affected communities and to ensure continuous transportation critical for floods relief
- ✓ Implement public awareness activities to create a proactive and prepared society, which can cope effectively hazards and their aftermaths
- ✓ Educate the public on what to do and what not to prevent harmful activities in the floodplain
- ✓ Educate the public on environmental management, water resource use, and land-use planning
- ✓ Stockpile relief goods in safe areas
- ✓ Prepare resource inventories: how much is available locally and how much is needed from outside
- ✓ Plan resource mobilization
- ✓ Set up emergency teams (for example health, search, and rescue teams)
- ✓ Plan to assist in emergency response at the local level
- ✓ Conduct drills for emergency teams and population living in flood-prone areas (including schools)
- ✓ Make sure that communication channels to the community are functioning well
- ✓ Issue orders for various agencies and organizations to get prepared
- ✓ Inspect floods mitigation infrastructure for example, dikes, levees and floodwalls)
- ✓ Disseminate public safety information through the establishment of early warning systems
- ✓ Specify the source and actions to be taken immediately after receiving warnings

Source: WMO, 2006 and APFM, 2017

Simulation exercises or drills to test the CBFDM plan developed for the community with the involvement of stakeholders

The CBFDM Plan, as has already been said, must be developed with a strong involvement of the communities and of all the actors who must or can play a role in relation to the various planned activities. Particular attention must be paid to all the activities that must be carried out when a hazard occurs or is expected to occur in a short time.

For this reason, specific drills / simulations must be carried out in each community to verify if all the actors (in particular, all the members of the CBDFM Committee) are aware of their roles and responsibilities and are actually able to act accordingly in due time. In this way drills and simulations allow to identify any shortcomings and overlapping.

Starting from the results of drills / simulations it may be appropriate i) to make corrections to the CBFDM plan; ii) to carry out specific capacity-building activities (to fill any capacity gaps) and awareness-raising (to manage any information / awareness gaps). All this in order to ensure, as far as possible, that each actor (in particular the members of the Committee) are aware of and effectively able to carry out their role and to exercise their responsibilities in the event of a disaster.

Preparation phase
Summary of key points

During the preparation phase, the following activities appear important:

- Establishment and operation of a CBFDM Committee (CBMC, NGOs, LA, TS)
- Mapping the risks and the material and human resources available to identify the dangers already noted in the past (or potential), the vulnerability of the various places and the capacities, also endogenous, to face them (CBMC, NGOs, LA, TS)
- The development of a seasonal calendar, including probable natural disasters, their frequency of occurrence and certain variables related to economic activities, types of crops, diseases, security level, etc. (CBMC, NGOs, TS)
- Identification of the poorest and most vulnerable people and areas (CBMC, NGOs, LA)
- Community validation of mapping data through group consultation (CBMC, NGOs)
- Shared awareness of risks and possible solutions (CBMC, NGOs)
- Identification/consolidation of endogenous floods prevention and/or adaptation measures and endogenous drought prevention and/or adaptation measures (CBMC, NGOs)
- Discussion group/brainstorming to develop and adopt a community response plan (CBMC, NGOs, TS)
- Formal adoption of a risk management plan (CBMC, LA, NGOs)
- The development and implementation of capacity building and training activities, including field exercises (CBMC, NGOs, TS)
- Awareness meetings and distribution of awareness tools (CBMC, NGOs)
- Set-up and operation of Early Warning Systems and related tools (CBMC, NGOs, TS)
- Further capacity-building activities (e.g., related to EWS, to first-aid training and, more generally, to CBFDM – also to improve effectiveness) (NGOs, TS)
- Implementation of simulation exercises/drills (CBMC, NGOs, LA, TS)
- Periodic monitoring and evaluation (NGOs, TS)
- Decision-making meetings also to improve collaboration/cooperation, effectiveness, and sustainability (NGOs, LA, CBMC, TS)

For each activity listed above we indicated in brackets the acronym of the actor(s) they are addressed to. More specifically:
CBMC → addressed to Community-Based risk (flood and/or drought) Management Committees
NGOs → addressed to local agencies (NGOs or others), which assist/support the community
LA → addressed to local authorities
TS → addressed to technical services (e.g., meteorology, energy, civil protection, environment, hydrology, agriculture, health, etc.)

4.2. Floods and drought response

An immediate and effective community response capacity is essential to deal with floods and droughts as they occur. Obviously, this responsiveness depends on how (and whether) the preparedness phase has been carried out and whether a management committee is actually operational.

The effectiveness of the emergency response is based on this preparatory work that is meant to enable each actor (in particular, the members of the Committee) to be aware of and effectively able to carry out their role and exercise their responsibilities for responding to the emergency. Such work can reduce suffering and loss both during and after a calamitous event, and also reduce the dependence of communities on emergency aid.

This is important because community members are often the first responders and have the greatest chance of saving lives and providing support in the hours and days immediately following a hazardous event. No one better than local residents and communities can identify their immediate needs, organize activities, coordinate with the response of official authorities, and provide effective support and solidarity to victims.

As noted in the APFM document on flooding (APFM, 2017), in general, during this response phase, the activities that a community needs to undertake are primarily the monitoring of events, the implementation of emergency plans, and laying the groundwork for the recovery activities that will follow.

Some further guidance is provided below on activities during and/or immediately after a floods or drought that were suggested during the VFDM field activities.

Managing people's behaviors

A community management committee, when a risk materializes, must ensure that individuals and families behave correctly in relation to the situation.

With regard to the response phase during a flood, here are some examples of what was suggested during the activities carried out in Ivory Coast by the VFDM Project:

- ✓ Listen to the authorities' instructions (from the media, social networks, etc.)
- ✓ Do not travel through affected infrastructures (underpass, etc.)
- ✓ Close doors and windows
- ✓ Close the main gas valve
- ✓ Secure toxic products
- ✓ Do not go down the stairs to the basement and take refuge in high places
- ✓ Take care of the most vulnerable people
- ✓ Have a safety kit available (with radio, flashlights, non-perishable food, drinking water, medication, etc.).

Source: NGO LACIBES, 2022

Regarding the phase immediately after a flood, the same source provides indications such as:

- ✓ Waiting for permission from the authorities to enter homes
- ✓ Help the weaker neighbors
- ✓ Beware of poisonous snakes when entering houses
- ✓ Establish electricity on a dry system
- ✓ Check and repair damage to water and sewage pipes.

Source: NGO LACIBES, 2022

In the previously mentioned APFM program in Thailand (APFM, 2017), guidelines have been developed on these aspects. They are comparable to those mentioned above and can be integrated. In this respect, you can refer to the scheme presented in the following sub-section “Operationalizing the risk management plan” (floods safety tips).

During and after floods: some recommendations from a CBFM program in Thailand

During floods

During floods, communities should not panic, but prepare for all circumstances and follow these guidelines and recommendations:

- ✓ Turn off electrical connections in homes and turn off gas
- ✓ Stay in a reinforced building on ground that is above any previous floods level
- ✓ Stay warm and be aware of communicable diseases spread by floods waters
- ✓ Drink boiled water and eat hot, well-cooked food
- ✓ Collect garbage and food scraps in a bag for disposal when the water level recedes to avoid the spread of any communicable disease
- ✓ Do not swim in floods waters
- ✓ Beware of poisonous insects and animals such as centipedes, snakes, scorpions, etc.
- ✓ Do not drive vehicles on flooded roads
- ✓ Monitor the situation closely and check for updates from the government or TDG
- ✓ Be prepared for evacuation and follow government suggestions
- ✓ Vulnerable groups have priority for evacuation before flooding occurs
- ✓ Prioritize personal safety over personal belongings

After the floods

After water levels have dropped, communities should begin repairs and follow the guidelines and recommendations below:

- ✓ Clean up homes and roads and repair anything affected by the disaster to the extent possible
- ✓ Check outlets, power lines and appliances to make sure they are safe and working properly
- ✓ Bury dead animals immediately
- ✓ Avoid entering hazardous areas— Soyez conscient des maladies transmissibles, buvez de l'eau propre et mangez des aliments bien cuits
- ✓ Contact government agencies, municipal office, district office, provincial office, volunteers and disaster prevention/mitigation agencies if assistance is needed

Source: APFM, Social aspects and stakeholders involvement in integrated flood management. Community-based flood management in Thailand, WMO 2017

During the experimentation on the field in Ivory Coast, indications were formulated for the phase during drought episodes (see below).

Awareness sheet: During drought episodes, Sangabili (Cote d'Ivoire)

- ✓ Grow drought-resistant species
- ✓ Diversify the animal husbandry with different animals and with different reproduction cycles and grazing habits
- ✓ Eliminate water loss by immediately repairing leaking pipes and ensuring that all faucets are closed
- ✓ Develop a vision and strategy for land development in these vulnerable areas
- ✓ Facilitate conflict management initiatives at the local community level
- ✓ Set up a provisional fund to help farmers
- ✓ Facilitate the availability of information held by SODEXAM to all social classes

Source: NGO LACIBES, "Guide to raising awareness of flood and drought risks in the Sangabili community", n.d.

Source: People in northern Ghana struggle to find water amid drought Uploaded by: Al Jazeera English, May 6, 2021, ORGIIS

Operationalize the risk management plan

In the crisis phase, it is necessary to operationalize the risk management plan mentioned in the previous paragraph. The community management committees are called upon to activate the people of the community according to the tasks and roles assigned to them and to mobilize the resources made available, in a transparent manner.

An essential part of this plan is the communication of events related to the crisis by public institutions (e.g., the dissemination of warnings), which must accompany the relay of the alert, the instructions for behavior, the evolution of the situation and after the announcement of the end of the alert and the support measures for victims. At this level, management committees can collaborate in the development, dissemination, and interpretation of messages useful for crisis management, for example by using social networks, such as Twitter, WhatsApp, etc., as well as traditional forms of word-of-mouth transmission (Mezzana and Batongue, 2020).

An example of crisis communication used in VFDM activities in Ghana is reported below.

Source: https://www.bernama.com/ar/infographics/index.php?v=4610, ORGIIS

Protection of Critical Infrastructure

A fundamental type of action in the response phase, especially in the case of floods, is the protection of critical infrastructure. This means that community management committees must mobilize trained and committed local people, and any equipment that may be available, to secure structures such as dikes and retention ponds. The goal is to ensure that these structures remain as undamaged as possible.

Potential damage such as landslides and riverbank erosion must also be addressed, for example by sandbagging or the temporary placement of earth, wood, or other floods barriers.

Evacuation operations – Set-up of an evacuation center / safe shelters

Normally, on the basis of risk management plans (whether at the village, neighborhood, city, provincial or other level), risk management committees are called upon to identify, with the communities concerned, safe routes and areas where people affected by disasters can be evacuated.

This is particularly true in the case of floods, whereas in the case of droughts the problem is less immediate and more in the medium term if the drought persists, making it too difficult/impossible to live in a given area.

In the critical phase, it is necessary to remind the community of the contents of the Plan and to update it quickly, especially in case of sudden changes (in case of floods) or obstacles that require a modification of the routes or sites where people can evacuate.

At the same time, it is necessary to move people away from basic facilities, such as hospitals or clinics, schools, markets, industrial sites, bridges, or individual houses, while giving priority to the most vulnerable individuals. In this regard, it is essential that the plan contains a section that mentions which houses are inhabited by the most vulnerable people and where they are located (see Annex C)[18].

In this frame, an evacuation center should be set-up. The evacuation center must consist in a building (or a set of buildings) located outside the areas that could be flooded (this must be established on the basis of the historical memory inherent to the previous floods, as well as on the basis of rational criteria). As far as possible, these buildings must be large enough to accommodate the people of the community who will go there and be equipped with toilets, access to drinking water, electricity, etc. The location of the evacuation center must have been communicated in advance (e.g., within the implementation of awareness-raising activities) to community members. Alternatively (better: complementarily), in risk management plans, community management committees should identify safe shelters in advance, as well as evacuation routes to clearly marked shelters.

Here the role of the management committees and volunteers is fundamental, both for the updating of useful information and for the evacuation operations (supervision, support, transport, information passing, etc.).

Response and Evacuation Committee in Kunkua (Ghana)

In this regard, as part of the Community-Based Management activities implemented in Kunkua a response and evacuation Committee was set-up, implementing these functions:

- ✓ Grow drought-resistant species
- ✓ First visit the people which are vulnerable or affected and move them to safe grounds
- ✓ Help them to move their properties and livestock from their houses
- ✓ Make sure all persons are safe and coordinate with the First Aid committee to provide accidents treatment and save a life
- ✓ Make sure evacuation center has all the facilities needed for people, for example, electricity, food, water, toilets etc.

Source: ORGIIS, Field notes, February 2022

[18] Some projects involve marking (painting) these homes. Such marking has actually been carried out at times. We consider such activity dangerous because any marking infringes on people's fundamental rights and could be used for purposes quite different from the adequate response to floods and drought (e.g., generating violent actions). Any marking also carries a stigma.

Food security – protection and health care

A sensitive issue is the distribution of aid to disaster victims. During the emergency phase, food supplies will also have to be provided. If you have an evacuation center, as far as possible, it must also have been equipped with food, at least for the first need (considering, moreover, that hazards such as drought and flood often involve the destruction or degradation of important quantities of agricultural products and livestock and, therefore, food).

The same applies to protection and health care activities in relation to which, beyond the competent health authorities (see "Emergency relief and assistance" below), the members of the Committee will have to play a role also thanks to the first-aid capacity building and related toolkit from which they benefited during the preparedness phase. In this regard, the responsibility and authority of organizations (such as management committees) and local community members, trained in the preparedness phase, must be established, and communicated in advance.

Community kitchen during flood situations (Thailand)

Mrs Nungrutai Singken is a housewife with regular work in agriculture. During the 2013 flood, she observed the community volunteers and TAO officials supporting people caught in the flood and helping them to move in and out of the community by boat. She recognized their good work and prepared meals for the volunteers who were working day and night. During the CBFM project, she agreed to become a member of the CBFM committee and proactively took on the responsibility of providing food to those responding to floods. She says there are other women who are also interested in contributing in similar ways. The role and responsibilities of community women are important during flood situations; they provide assistance with health and hygiene, food security and safe drinking water, among others.

Source: "VOICES FROM THE FIELD: Community-Based Approaches to Flood Management" [19]

Within this framework, priorities and procedures must be established to support particularly vulnerable categories of the population, such as children, the elderly, pregnant women and the disabled.

Source: "VOICES FROM THE FIELD: Community-Based Approaches to Flood Management"[20]

[19] The booklet Voices from the field is available at: https://www.floodmanagement.info/floodmanagement/wp-content/uploads/2020/08/Voices-from-the-Field-brochure-CBFM-project-in-Thailand-and-Lao-PDR_compressed.pdf
[20] Ibidem.

Monitoring

From the onset of a crisis (whether floods or drought) and throughout its duration, continuous monitoring – normally by the central or decentralized agency responsible for forecasting and warning – is also required at the local community level.

Critical operations during a crisis require such a monitoring system, which should be provided locally by a community organization, such as a crisis management committee.

This includes operations such as alerts, evacuation of vulnerable people, setting up rescue teams, communication about the situation and the steps to be taken, etc.

In this phase, the plan, once operationalized, must also be evaluated to see what works and what does not. This activity is therefore essential for the development of future interventions.

Rapid assessment of damage

In the most severe cases, which require a massive response from the authorities, it is essential that community management committees have local staff trained to quickly assess the damage and consequently the urgent needs.

These needs may include such aspects as medical assistance, epidemiological surveillance, provision of shelter and clothing, provision of clean water and food, waste management, psychological and spiritual support.

To facilitate this assessment and request, forms should be produced by (or made available to) local officials responsible for this component.

An example of a damage assessment (especially for agriculture, livestock, commerce, and infrastructure) is provided below, based on the experience of the VFDM project in Mali.

Voices from the field #16

Assessment of floods damage in Kandé (Mali)

"(...) In case of flooding, millet, sesame, peanuts, groundnuts, beans do not yield any more, farmers suffer, animals have difficulties to find places to graze, houses made of banco collapse, finally animals remain without finding food. The shepherds are not able to lead the herds to the right place, the place where the animals live causes serious problems because the place is full of water, the animals can get diseases in this untreated water. The houses fall down because they can no longer resist the pressure of the rain, the population can no longer move because there are no roads, and everyone walks on foot.

Every year, houses collapse, sheds are blown away by strong winds, trees fall down, and tree branches are often blown onto the houses.

Example 1

In 2020, with the flood, people lost all their seedlings for onions that were stored in the house. More than 100 people lost their market gardening nursery. Each could harvest at least 50 bags of onion of 50 kg at the harvest at the rate of 20,000 F CFA, a total value of 1,000,000 F CFA loss per farmer. Unfortunately, in this flood, the farmers lost all their onion seedlings. This loss of seedlings, whose production per harvest is estimated at 100,000 F CFA per farmer, has not been reimbursed.

Example 2

Also in 2020, the road Kandé – Pissa was occupied by water following a flood. The distance between the two villages is 62 km. Trucks were no longer able to transport goods to Kandé due to the degradation of the road linking the villages. The movements are limited, people had difficulty accessing the other village. During this time of flooding, goods were blocked in Pissa, and only motorcycles were able to bring goods with difficulty. This flooding situation totally disrupted the local economy and destroyed local development."

Source: Note on "Flooding and drought in the villages of Sourou / Volta: Case of the village of Kandé in Mali", May 2022

Emergency relief and assistance

During any kind of disaster, human and material resources must be available and mobilized to deal with emergency relief and assistance, including that from higher levels, such as the national or possibly international level.

Personnel must be trained within the community under the responsibility of the community risk management committees and include a group of people with local technical knowledge, language skills, and basic notions of medical assistance.

This group should, of course, be equipped with rescue equipment and other means of response. The support of this local personnel to rescuers coming from outside is also a facilitating factor, for example by providing information, manpower, food, etc.

In this regard, it is important to establish, from the planning phase, and to mobilize in the critical response phase, a strong network between local communities, humanitarian organizations and responsible government agencies to ensure rapid, coordinated, and effective relief assistance.

Response phase
Summary of key points

During the response phase, the following activities are important. They are facilitated by the establishment and operation of community management committees (for floods and/or drought):

- Operationalizing the risk management plan, assigning responsibilities, and mobilizing available resources (CBMC, NGOs, LA, TS)
- Evaluation of the operation of the plan during implementation (NGOs, TS)
- Collaboration with the authorities in the implementation of a crisis communication (CBMC, NGOs, LA, TS)
- Coordination of critical infrastructure protection (CBMC, LA, TS)
- Support and securing the most vulnerable members of the community (CBMC)
- Coordination and adaptation of possible evacuation operations (CBMC, LA, TS)
- Identification and management of shelters/evacuation center for affected people; provide food security, protection, and health care (CBMC, LA)
- The implementation of a monitoring of the interventions in progress (NGOs, TS)
- Rapid assessment of damage and related relief needs (CBMC, NGOs, LA, TS)
- Activation and/or support of rescue and emergency assistance systems (NGOs, LA, TS)

For each activity listed above we indicated in brackets the acronym of the actor(s) they are addressed to. More specifically:
CBMC → addressed to Community-Based risk (flood and/or drought) Management Committees
NGOs → addressed to local agencies (NGOs or others), which assist/support the community
LA → addressed to local authorities
TS → addressed to technical services (e.g., meteorology, energy, civil protection, environment, hydrology, agriculture, health, etc.)

4.3. Post-floods and post-drought recovery

In the third phase, post-disaster recovery, the role of the local community is essential, as a bridge between the population and the national and international agencies involved in relief and reconstruction (APFM, 2017). Floods/Drought recovery means coming back to pre-existing state in the community where life is functioning as normal.

The good execution of the previous two phases can ensure the success of this third phase: at the time of the post-crisis knowing how to act will facilitate and accelerate the return to normalcy and compensate in some way the affected communities.

The recovery phase, in the particular case of floods, involves three types of activities, where community management committees can play an important role:

i. Restoration – restoring essential services (electricity, communication, and transportation) disrupted by the floods
ii. Rehabilitation – restoring a "normalcy" of people's conditions, e.g., care for the physical and psychological rehabilitation of affected individuals or communities
iii. Reconstruction – the repair and construction of an asset, for example, the replacement of buildings and infrastructure that have been destroyed.

The first two types of activities can be considered forms of "early recovery," which must be managed in a way that ensures community ownership and sustainability.

This encompasses the restoration of basic services, livelihood systems, transitional housing, governance, security and rule of law, environment, and other dimensions, including the eventual reintegration of displaced populations.

Reconstruction activity involves the involvement of the local community, for a better reconstruction process, otherwise the community could suffer recurrent damage of a greater magnitude. At this level, the principle of "build back better", i.e., to rebuild better than before the disaster, is fundamental. The concept was first introduced in the response to the Indian Ocean tsunami disaster in 2004. Improved structural design, land use planning, social and economic recovery, and community consultation are the main thrusts of this principle, while community ownership of recovery activities is one of its core elements (Mannakkara and Wilkinson, 2014).

In this rebuilding phase, community risk management committees may, as appropriate, play a role in:

- ✓ Collecting and managing information on needs and required interventions
- ✓ Supporting programs to rehabilitate the living conditions of community members
- ✓ Support for housing and infrastructure repair or construction (e.g., through awareness raising, mobilization of local resources, monitoring of activities, etc.).

Reconstruction is a fundamental phase even in the case of drought. As shown by the field experience in Ivory Coast within the framework of the VFDM project, reconstruction must have a basis of knowledge and mutual learning and must also include specific actions in terms of water resources and infrastructure management and land management.

Voices from the field #17

Awareness sheet – After drought episodes, Sangabili (Cote d'Ivoire)

- ✓ Learn good lessons about the capacities that need to be developed to deal with these situations
- ✓ Avoiding the waste of water resources
- ✓ Adopt a good water resources management policy
- ✓ Avoiding deforestation and land degradation
- ✓ Change lifestyles that depend only on natural resources (e.g., use of domestic butane gas instead of firewood) Important contacts (SODEFOR, ONPC, MCHU, MINEEF, ORSEC PLAN, SODEXAM, CNLCF)

Source: NGO LACIBES, "Guide to raising awareness of flood and drought risks in the Sangabili community", n.d.

This third phase can also provide the basis for the sustainability of disaster activities. Under an APFM program in Thailand and Laos (2013-2016), for example, such activities include:

- ✓ Additional disaster risk reduction support activities with pilot test communities and other flood-prone communities
- ✓ Follow-up of implementation, monitoring of achievements, sharing of lessons learned, and support to communities
- ✓ Involvement of other community resources
- ✓ Livelihood activities including disaster risk reduction/climate change adaptation.

The third phase entails also the updating the CBFDM plan, based on actual flood/drought experiences to improve future management of flood and drought events. Much more than during a simulation / drill, during a crisis (unfortunately real) we shall be able to understand if the CBFDM Plan has actually included the right activities (and the correct methods for their implementation) or if, vice versa, there are shortcomings and which ones. During the real crisis it will also be possible to verify if the roles and responsibilities have been distributed correctly and if the various actors have exercised them correctly and with the right awareness or if, even here, it is necessary to insert changes and / or, vice versa, implement further awareness raising and capacity-building activities.

Finally, lessons learned and experiences at the community level after flood or drought events should be shared among the members of the Committee, the various stakeholders and the whole community. Better than anything else, well-formalized and communicated lessons learned contribute to awareness raising.

Recovery phase
Summary of key points

During the recovery phase, the following activities appear important. They are facilitated by the institution and operationalization of community management committees (for floods and/or drought):

- Restoration of essential services (also through the collection and collation of information on needs) (CBMC, LA, TS)
- Rehabilitation of living conditions of the inhabitants (e.g., by mobilizing and providing human resource support) (CBMC, LA, TS)
- Repair or construction of housing and infrastructure (e.g., through awareness raising, mobilization of local resources, monitoring of activities, etc.) (CBMC, LA, TS)
- Revision of the CBFGM Plan (CBMC, NGO)
- Mutual learning of lessons based on disaster experience (CBMC, NGOs, LA, TS)
- Developing and sharing strategies for soil and infrastructure conservation and for land use planning as a whole (CBMC, LA)
- The recovery of a full and satisfactory relationship between local communities and their territory (CBMC, LA)
- Periodic monitoring and evaluation (NGOs, TS)
- Decision-making meetings also to improve collaboration/cooperation, effectiveness, and sustainability (NGOs, LA, CBMC, TS)
- The launching of a program for the sustainability of activities (CBMC, NGOs, LA)

For each activity listed above we indicated in brackets the acronym of the actor(s) they are addressed to. More specifically:
CBMC → addressed to Community-Based risk (flood and/or drought) Management Committees
NGOs → addressed to local agencies (NGOs or others), which assist/support the community
LA → addressed to local authorities
TS → addressed to technical services (e.g., meteorology, energy, civil protection, environment, hydrology, agriculture, health, etc.)

5. CONCLUSIONS AND RECOMMENDATIONS

The overall objective of community participation in drought and flood management is to involve all stakeholders affected by the occurrence of these hazards and the (often adverse) consequences that follow. A multi-stakeholder approach is much more likely to save lives and reduce damages by taking advantage of the fact that, as much as possible, everyone is actively involved, everyone's efforts are pooled, potential conflicts are reduced. The few examples reported in this document, drawn from the concrete experience of some communities in the Volta Basin (and in other regions of the world) show that such an approach is possible. Multi-stakeholder management contributes to reducing the vulnerability of the communities concerned and to increasing their resilience and, in this context, their capacity to reduce the negative impacts of floods and drought.

In view of all the above, flood and drought management is not the business of one person or one family but rather a concerted management of the entire village or even the entire hinterland. This management must be done in concert with the village, communal and even regional authorities (concerned technical services and administration), given (very often) the extent of the territory and the risks incurred if everyone does not take part in the decisions and strict observance of the rules of conduct and instructions.

Community participation is a complex process, and its implementation can hardly be perfect, especially at the beginning. Only gradually can a "multi-stakeholder" approach take hold. Through dialogue between the parties, awareness raising activities, capacity building of the different actors and also the definition of shared "rules of the game", such as those formalized in a Statute or Rules of Procedure of a local Community Flood and/or Drought Management Committee (or any other equivalent local institution) and/or through the "co-design" of a Community Flood and/or Drought Management Plan, with the determination of the roles and responsibilities of each one. The continuity of activities and the efforts of all actors can then increase the resilience of communities by making them more resistant to hazards and by bringing their vulnerability factors under control as much as possible.

The development and implementation of community-based flood and drought management activities involves addressing the following issues.

- The community-based approach is fundamental and essential to each stage of the risk management cycle (see Chapter 4), i.e., prevention/preparedness, response, and recovery. This approach seeks to maximize benefits through its integration with related development activities in the territory as a whole.
- Socio-economic factors, such as poverty, livelihood profile, cultural beliefs, status of weaker social groups, and rights of minority and ethnic groups, influence a community's willingness and ability to participate.
- The effectiveness and efficiency of community management is linked to the level and quality of social cohesion.

- The possible measures to be implemented must be designed (among other factors, see above) according to the needs of the community.
- The specific characteristics of the community management approach to be developed depend, of course, on the local context, including (see above) socio-economic factors, social cohesion, and community needs.
- A few elements are, however, key in any circumstances:
    - The establishment of a committee (or equivalent institution) for flood and/or drought management or the enhancement of an existing institution in this regard
    - Access to disaster risk reduction information
    - Access to community-managed resources
    - Integrated understanding and assessment of hazards and associated risks
    - Existence (or preparation) of a Community Flood and/or Drought Management Plan
    - Implementation of the measures set out in this plan, which should, in any case, include the establishment/existence of early warning systems at the community level
    - The availability of sufficient financial and human resources for the implementation of the measures set out in the Plan (in a more general sense of disaster risk reduction measures).

In a nutshell, strategic approaches to organizing community participation incorporate six perspectives:

1. Maximizing resources through the integrated use of local knowledge
2. An effective participatory process with a clear understanding of the expected role of each stakeholder and their degree of involvement
3. Motivation of stakeholders through a shared vision
4. The development of a sense of ownership
5. Socio-economic incentives; and
6. Institutionalizing community-based approaches to link the community horizontally to other communities and vertically to government and private funding mechanisms[21].

Finally, community and “multi-stakeholder” management of floods and droughts (as of any other hazard) should increase the capacity to put it, as much as possible, “under control” and in the most efficient way possible[22].

[21] «Community based flood management», https://www.floodmanagement.info/community-based-flood-management/

[22] In this regard, an approach based on the connection between "hazards", "social regimes" and "risks" is proposed in the APFM document "Risk perception and social impact assessment in integrated flood management" (https://www.floodmanagement.info/publications/tools/Tool_25_Perception_du_risque_et_evaluation_d_impact_social_dans_la_gestion_integree_des_crues.pdf). Hazards are defined as events or processes that are potentially beyond the control of individuals, communities, or social groups. Social regimes are the set of norms, institutions, policies, and other regulatory structures that, taken together, frame and support social actors in their function as "hazard managers." Thanks to these social regimes, too, a hazard is transformed into a risk; we can therefore say that the risk is a hazard that has been socially managed, or even controlled, by its knowledge and its understanding. This knowledge can help anticipate it, identify it, and activate measures to mitigate it (see Quaranta and d’Andrea, 1996).

The above list of issues can hardly be considered exhaustive. But above all, community-based management of natural hazards and social risks (in this document applied in particular to floods and droughts) is a dynamic approach about which, every day, something new is learned, as shown by the pages above which report, among other things, the results and achievements of community-based management experiments that were started in 2021 and are still ongoing (at the time of writing) This document will therefore evolve over the next few years.

Finally, as suggested by one of the VFDM partners working continuously in community-based flood and drought management, it is worth bearing in mind that people have always dealt with floods and droughts “in their own way”. What such a document can do for them is to support and focus their efforts so that they no longer work on their own, but rather join their efforts together, in the most effective way possible, in order to significantly reduce the risks and damages.

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ANNEXES

Annex A – Key Steps for Community Floods Management

The three phases of the risk management cycle

FLOODS

1. Preparedness

A
Management

Establish community flood (and other hazard) risk management committees

B
Analysis

Analyze the risk situation, identify vulnerabilities and opportunities

C
Awareness raising

Sensitize and engage the population in defining vulnerabilities and opportunities

D
Planification

Develop a management plan including: Preparation; Analysis; Response planning; Process

E
Structure/Capacity

Establish adequate structures and capabilities to deal with potential and foreseeable risks

2. Response

A.
Behaviors

The Committee must ensure that individuals behave appropriately in relation to the situation

B
Implementation

Implement the management plan by assigning roles and responsibilities and mobilizing resources

C
Protection

Mobilize human and material resources to protect critical infrastructures

D
Evacuation

Facilitate the evacuation of the people through the routes and procedures identified in the

E
Provide shelters

Move the population to the shelters indicated in the plan and assist the victims

F
Monitoring

Monitor the crisis throughout its duration

G
Evaluation

Assess the damage in order to request appropriate intervention from the authorities

H
Network

Mobilize the support network, provided by the plan, to ensure rapid and coordinated relief

3. Recovery

A
Restoring

Restore essential services disrupted by flood

B
Rehabilitation

Re-establish "normalcy" to the physical and psychological conditions of those affected

C
Reconstruction

Repair and reconstruction of damaged or destroyed property and infrastructure

D
Improving

Hold meetings to share experiences and improve the plan for better management in future

Annex B – Key Steps for Community Drought Management

1. Preparedness

A
Management

Establish community drought (and other hazard) risk management committees

B
Analysis

Analyze the risk situation, identify vulnerabilities and opportunities

C
Awareness raising

Sensitize and engage the population in defining vulnerabilities and opportunities

D
Planification

Develop a management plan including: Preparation; Analysis; Response planning; Process

E
Structure/Capacity

Establish adequate structures and capabilities to deal with potential and foreseeable risks

F
Prevention

Take drought prevention measures (crop differentiation; water storage, etc.)

2. Reponses

A
Behaviors

The Committee must ensure that individuals behave appropriately in relation to the situation

B
Implementation

Implement the management plan by assigning roles and responsibilities and mobilizing resources

C
Protection

Mobilize human and material resources to protect critical infrastructures

D
Monitoring

Monitor the crisis throughout its duration

E
Evaluation

Assess the damage in order to request appropriate intervention from the authorities

F
Network

Mobilize the support network, foreseen in the plan, to guarantee the necessary assistance (funds,

3. Recovery

A
Restoring

Restore essential services disrupted by drought

B
Rehabilitation

Re-establish "normalcy" to the physical and psychological conditions of those affected

C
Reconstruction

Repair and reconstruction of damaged or destroyed property and infrastructure

D
Improving

Hold meetings to share experiences and improve the plan for better management in future

The three phases of the risk management cycle

DROUGHT

Annex C – Risk, vulnerabilities, and capacities tool

FIELD STUDY ON THE MULTIDIMENSIONAL FACTORS OF VULNERABILITY AND RISKS IN THE AREAS OF THE VOLTA RIVER BASIN EXPOSED TO VARIOUS HYDRO-METEOROLOGICAL HAZARDS (FLOODS AND DROUGHTS)

The below tool and the related guidelines for the community consultations have been prepared by CERFE in joint consultation of WMO and CIMA Research Foundation. It will be shared with the Project Management Team, National Partners and local researchers and also be demonstrated in 5 pilot communities in Burkina Faso and Ghana. Then, final versions will be drafted.

Questionnaires for the focus groups and for the individual interviews to key persons

The questionnaire should be filled in on the basis of the available information collected through:

- Answers to interviews to key informants (KI)
- Answers obtained through a focus groups (FG)
- Reliable data collected through documents or direct observation (DO)

In the following we indicate, for each issue or group of issues, what is the source that we consider as the most appropriate (if KI, FG or DO). Such indications should be freely applied in relation to each place.

CODE:

Country: _____

Administrative division – First level: _____

Administrative division – Second level: _____

Administrative division – Third level: _____

Village or Neighborhood: _____

(*in case of an urban neighborhood*) Town/City: _____

GPS coordinates: Latitude _____ Longitude _____

FOCUS GROUP'S (FG) LEADER: _____

DATE OF THE MEETING OF THE FG: /__/__/__/__/__/__/ DURATION: _____

PARTICIPANTS IN THE FOCUS GROUP (FG)	
Profession or position (for which they participants have been included in the *discussion group*) and gender disaggregated data	
Profession or position	*Gender*

KEY INFORMANTS (KI)	
Profession or position (for which they have been selected for the interview) and gender disaggregated data	
Profession or position	*Gender*

A. POPOULATION AND TERRITORY FEATURES (DO)					
1. Number of families/households	N.	6. Elderly population (60 years old or more) (N or %)			
2. Total Population	N.	7. Number (or %) of youths (10-18 years old)			
3. Number (or %) of men		7.1. Youths general status (in %)			
4. Number (or %) of women		Studying	Working	Unemployed	
5. Number (or %) of children (0-9 years old)					

(Only for rural areas)

8. Distance from the Capital town of the first administrative level (DO)	Km: Name of the city:		
9. Distance from the nearest town (DO)	Km: Name of the city:		
10. The road to the nearest town is asphalted (DO)	Yes	No	Partially
11. Current state of the road (DO)	Good	Fairly good	Bad
12. Is the road always usable (KI)?	Yes	Yes, except in exceptional circumstances	Only in some periods of the year (please, specify the number of months) _____
13. Annual average rainfall (in millimetres) (DO or KI)			

B. HAZARDS / CLIMATE CHANGES (FG)

According to you, what are the main hazards and climate changes that affect this site (your community) and/or affected it during the last 10/30 years? (Open – examples can be provided: e.g., pandemic, earthquakes, forest fires, landslides, drought, flood, heat waves, storms/strong wind, crop pests, vehicular / industrial pollution, livestock disease, irrigation problems)

_____

_____

_____

_____

	Never happened	Extraor-dinary event	Quite frequent event (up to 2 cases for year)	Very frequent event (more than 2 cases for year)	Number of events during the last 5 years
14. Drought	°	•	••	•••	XXXXX
14.1. (*if the answer is different from Never Happened*) Please describe the impacts/effect of the drought in the areas concerned in the last 5 years (see the reference list in the annex)					
15. Fires of the forest in the area	°	•	••	•••	
16. Strong winds	°	•	••	•••	
16.1. Coastal erosion	°	•	••	•••	XXXXX
17. Floods	°	•	••	•••	
17.1. (*if the answer is different from Never Happened*) Please describe the impacts/effect of the flood in the areas concerned in the last 5 years (see the reference list in the annex, and consider also the major ecosystem threats)					

17.1. How many times a year does the community experience a flood last year?	n.
17.3. How many times a year does the community experience a flood in the last five years?	n.
17.4. When the worst flood (i.e., the largest flood in size) occurred that the community remembers?	year

(To be completed in correspondence with the mapping work) (DO)

M/O (*)	Exposure affected	Denomination in Google My Maps	Frequent Flood	Worst case Flood
	example	*household 1 – P11*	-	*X*
O	cluster of houses (polygons)			
M	households with more than 10 occupants (points)			
O	households with many children (5 or more) (points)			
O	households with elders (points)			
O	agriculture fields (polygons)			
	infrastructure			
M	1. hospitals (points)			
M	2. shelters (points)			
M	3. schools (points)			
M	4. rural tracks			
O	5. others			

(*) M = Mandatory question; O = Optional question

C. VULNERABILITY

C.1. HABITAT, TRACKS AND ENVIRONMENTAL ASPECTS (FG)

	Absent	Rare	Moderately frequent	Frequent	% or abs
18. Houses built in inappropriate places (e.g., banks of rivers, hillsides presenting risks of landslides)	°	•	••	•••	%
19. Informal settlements (basic houses, i.e., built with walls or roof of cardboard, straw, flat or other precarious materials; presence of slums, etc.)	°	•	••	•••	%
19.1. Whether houses are located in different clusters within the community? _____					

	Absent	Rare	Moderately frequent	Frequent	% or abs
20. Houses with livestock's (cow, chickens, goats etc.)	°	•	••	•••	%
21. Houses without latrines	°	•	••	•••	%
22. Houses without access to drinking water (water point more than 400 meters walk in rural areas; without water point indoors in urban areas)	°	•	••	•••	%
23. Use of climate-smart building plans *(urban sites)*	°	•	••	•••	XXXX
24. On-site access to electric power	°	•	••	•••	XXXX
25. On site presence of drainage system	°	•	••	•••	XXXX
26. Deforestation in the area (Please, specify the number of cubic meters cut such as firewood, charcoal, etc.)	°	•	••	•••	n.
27. Areas subject to pollution (landfills of household waste and / or open sewers, polluted rivers, excessive use of phytosanitary products, industrial settlements, carbonization sites)	°	•	••	•••	XXXX
27.1.Please, specify the type of pollution _____					
28. Poor road conditions	°	•	••	•••	XXXX
29. Number of new fields created per year through permits granted by foresters _____					
30. Evolution of the supply and demand of water for multiple uses in the basins _____					
30.2. What types of ecosystems do we find in your area? *Example: Forests, savannahs, riparian forests, grasslands, sacred forests, wetlands, etc.* _____					
30.2. What services/benefits do you get from these ecosystems? Explain how if possible. *Example: flood protection, food, water, wood, spiritual, etc.* _____					

C.2. HEALTH (KI)

	Absent	Rare	Moderately frequent	Frequent	% or abs
31. Cases of sexually transmitted diseases STDs and AIDS	°	•	••	•••	abs
32. Cases of diseases linked to unhealthy environment (malaria, water-borne diseases and acute respiratory diseases) and to climate change	°	•	••	•••	%
33. People with physical and mental disabilities	°	•	••	•••	%
34. Cases of children malnutrition	°	•	••	•••	n.
35. Cases of psychosocial conditions post disaster	°	•	••	•••	n.
	Absent	Inadequate	Partially adequate	Adequate	Distance
36. Access to health centers (health posts)	°	•	••	•••	Km
37. Access to pro-pharmacy, pharmacies, or dispensary	°	•	••	•••	Km
38. Access to hospitals having an emergency service	°	•	••	•••	Km
39. Availability of essential drugs in hospitals, pro-pharmacies, and pharmacies (in the site)	°	•	••	•••	XXXXX

C.3. EMPLOYMENT AND MIGRATIONS (FG)

	Absent	Rare	Moderately frequent	Frequent	% or abs
40. Unemployment	°	•	••	•••	%

	Absent	Rare	Moderately frequent	Frequent	% or abs
41. Importance of migration in the rest of the country or abroad for working reasons	○	•	••	•••	abs
42. People who work in the nearby town	○	•	••	•••	abs
43. Families of farmers without land or families farming on other people's land	○	•	••	•••	%
44. Importance of migration in the village/town	○	•	••	•••	%
44.1. Impact of climate change on jobs and socio-economic activities _____					
44.2. Impact of climate change on migration _____					

C.4. EDUCATION (KI)

	Absent	Rare	Moderately frequent	Frequent	% or abs
45. People (over 14 years old) in the site who can neither read nor write	○	•	••	•••	%
46. Women (over 14 years old) in the site who can neither read nor write	○	•	••	•••	%
47. Children not attending school to work (0-9 years old)	○	•	••	•••	%
	Absent	Inadequate	Partially adequate	Adequate	Km
48. Access to primary school (and distance)	○	•	••	•••	
49. Access to high school (and distance)	○	•	••	•••	
49.1. Schools closing problems in the rainy season _____					
50. Access to vocational training centers and to literacy centers (presence and distance)	○	•	••	•••	Km
51. Availability of teaching equipment and provision of teaching materials, etc.	○	•	••	•••	XXXXX

C.5. CRIMINALITY – SECURITY (FG)

	Absent	Rare	Moderately frequent	Frequent	
52. Juvenile delinquency	○	•	••	•••	XXXXX
53. Corruption	○	•	••	•••	XXXXX
54. Crimes, robberies, intimidations	○	•	••	•••	XXXXX
55. Looting	○	•	••	•••	XXXXX
55.1. How many police stations are present? _____ 55.2. How many social institutions (beyond schools and health centers) are present? _____					

C.6. POPULATION (KI)

	Absent	Rare	Moderately frequent	Frequent	% or abs
56. Large household (10 or more members)	○	•	••	•••	%
57. Household with many children (5 or more)	○	•	••	•••	%
58. Household widows	○	•	••	•••	abs
59. Orphans without assistance	○	•	••	•••	abs
60. Elderly people living alone	○	•	••	•••	abs
61. Youths (18-25 years)	○	•	••	•••	abs

C.7. GENDER (FG)

	Absent	Rare	Moderately frequent	Frequent	% or abs
62. Local women in local public administration at all levels and in Committees (% in relation to all positions)	◦	•	••	•••	%
63. Local women in the disaster management committee (if there)	◦	•	••	•••	%
64. Tendency not to enroll little girls in school	◦	•	••	•••	XXXX
65. female head of household (single)	◦	•	••	•••	%
65.1. Women's level of access to land, financial services, quality agricultural seeds, etc.	◦	•	••	•••	%

C.8. COMMUNICATION (KI)

	Absent	Rare	Moderately frequent	Frequent	% or Abs
66. Television and radio in private homes	◦	•	••	•••	%
67. PCs in private homes	◦	•	••	•••	%
68. Mobile phones	◦	•	••	•••	%
69. Internet mobile connections (3G, 4G, etc.)	◦	•	••	•••	%
70. How warnings are currently issued and broadcasted in the community (e.g., which means of communication are used, for example: loudspeaker, mobile phone, word of mouth)? _____					
70.1. Existence of radio broadcasts on CC, agricultural campaigns, post-harvest advice _____					

C.9. PUBLIC ADMINISTRATION (KI)

	Absent	Rare	Moderately frequent	Frequent	% or Abs
71. Civil registration	◦	•	••	•••	%
	Absent	Inadequate	Partially adequate	Adequate	Distance
72. Accessibility to local administrative offices (distance, opening days, etc.)	◦	•	••	•••	Km

C.10 CULTURAL AND POLITICAL ASPECTS (FG)

	Absent	Rare	Moderately frequent	Frequent	
73. Forms of ethnic and linguistic discrimination (in education, access to employment, remuneration, services and culture)	◦	•	••	•••	XXXXX
74. Religious cultural conflicts	◦	•	••	•••	XXXXX
75. Conflicts between "professional" groups or on land (farmers, fisherman, stockbreeders, particularly in relation to the exploitation of natural resources, etc.)	◦	•	••	•••	XXXXX
76. Political conflicts	◦	•	••	•••	XXXXX

D. POVERTY AND ECONOMIC FACTORS (EXPOSURE) (FG)

	Abs or %	
77. How many individuals dependent on agricultural as their primary source of income or self-consumption	Abs	%
78. How many families in the site do not have permanent housing or live in makeshift housing?	Abs	%
79. How many families on the site do not eat usually at least twice a day?	Abs	%
80. How many families in the site have no form of income?	Abs	%

81. How many families in the site have no form of access to any kind of financial services?	Abs	%
82. Value of livestock	Number of animals Type of livestock	

	Yes	No	%
83. In the last 2 years, has there been a decrease in agricultural production (crop) (rural site) due to flood/drought?	°	°	%
84. In the last 2 years, has there been a decrease in the number of animals (rural site) due to flood/drought?	°	°	%
85. In the last 2 years, has there been a decrease in the number of companies and/or a significant decrease in their turnover due to flood/drought?	°	°	%
86. In the last 2 years, has there been a significant decrease in tourism (if relevant to the site) due to flood/drought?	°	°	%

E. CAPACITIES

E.1 CIVIL SOCIETY (DO/KI)

Are there in the site:	Yes	No	(if Yes) Number	Are they involved in the prevention and management of natural hazards?	How often do they meet?**
87. Village development committee	°	°		Yes No	1 2 3 4 5
88. National or local NGOs	°	°		Yes No	1 2 3 4 5
89. International NGOs	°	°		Yes No	1 2 3 4 5
90. Development projects	°	°		Yes No	1 2 3 4 5
91. (*if yes*) If appropriate, please specify names or acronyms of the projects active in the prevention and management of natural hazards					

Are there in the site:	Yes	No	(if Yes) Number	Are they involved in the prevention and management of natural hazards?	How often do they meet?**
92. Mutual aid groups and micro-credit groups	°	°		Yes No	1 2 3 4 5
93. Churches and religious congregations	°	°		Yes No	1 2 3 4 5
94. Farmers' or stockbreeders' cooperatives or associations	°	°		Yes No	1 2 3 4 5
95. Women's associations	°	°		Yes No	1 2 3 4 5
96. Associations for the protection and assistance to vulnerable groups (elderly, disabled, etc.)	°	°		Yes No	1 2 3 4 5
97. Other (*please specify*) _____	°	°		Yes No	1 2 3 4 5

** To be reported: 1 if daily; 2 if more than once a week; 3 if once a week; 4 if more than once a month; 5 if once a month or less or occasionally (without a fixed periodicity)

E.2. TERRITORIAL FACTORS (DO/KI)

(IN THE SITE) AVAILABILITY OF:	Yes	No	Number
98. Presence of a Disaster Management Committee (please specify the number of members)	°	°	n.
96.1. (*If Yes*) Who are the members of such Committee (please specify their profession / qualification)			
99. Recognized presence of a traditional/religious leadership	°	°	XXXXXXX
97.1. (*if Yes*) Specify which kind of leadership			
100. Bank counters or micro-finance institutions (DO)	°	°	n.
101. Shops for retail sale (DO)	°	°	n.
102. Petty shops (KI/DO)	°	°	n.

(IN THE SITE) AVAILABILITY OF:	Yes	No	Number
103. Markets (DO)	°	°	Periodicity
104. Enterprises (of all types, including groups of agricultural producers) (KI)	°	°	n.
104.1. (*If more than 0, please specify*) Overall turnover			
105. Hospitals/health centres (KI/DO)	°	°	n.
106. Schools (KI/DO)	°	°	n.
107. Systems for detection, monitoring and prevention of natural hazards such as drought and floods (KI)	°	°	
107.1. (*If Yes, please specify*) Quality of performance (very good, good, medium, bad, very bad)			
108. Alarm system in case of possible flooding (KI)	°	°	
108.1. (*If Yes, please specify*) Quality of performance (very good, good, medium, bad, very bad)			
109. Infrastructure in watercourses (dams, banks, reservoirs, etc.) (DO/KI)	°	°	n.
110. Rural tracks (DO)	°	°	Status*:
111. Gutters/ridges (gutters) (DO)	°	°	n.
112. Water wells not equipped (DO/KI)	°	°	n.
113. Water wells with pump (manual or motor) (DO/KI)	°	°	n.
114. Generating sets (DO/KI)	°	°	n.
115. Predominant sectors of activity of the population (*please specify*) (KI)			

* The condition of the rural tracks could be: good; fair; bad.

E.3. QUALIFIED HUMAN RESOURCES (DO/KI)

PRESENCE OF:	Yes	No	Number
116. Medical doctors	°	°	n.
117. Other health workers (nurses, pharmacists, midwives, etc.)	°	°	n.
118. Agronomists	°	°	n.
119. Engineers	°	°	n.
120. Hydrologist	°	°	n.
121. Traditional practitioners (traditional doctors)	°	°	n.
122. Civil protection	°	°	XXXXXXX
123. Police	°	°	XXXXXXX
124. Fire-fighters (less than 10 km away)	°	°	XXXXXXX
125. Forestry Corps, or equivalent	°	°	XXXXXXX

	Absent	Rare	Moderately frequent	Frequent	% or abs
126. Persons with a higher or university degree	°	•	••	•••	abs
127. Presence of teaching staff (number, training/qualification)	°	•	••	•••	n.

E.4. OTHER CAPACITIES (FG)

	Absent	Not appropriate at all	Not very appropriate	Very appropriate
128. Increasing awareness of the local population about the vulnerability of the area (i.e., participation to activities on environmental/natural risks at least once in the last 12 months)	°	•	••	•••

	Yes	No
129. Existence systems for collecting historical memory (e.g., documents, records of the tales and accounts of the elderly, or other) of previous natural disasters (and the degree of use of such systems by public officials and technicians)	◦	◦
129.1. (if yes) please describe _____		

	Absent	Low	Medium	High	
130. Assess the knowledge and awareness level of citizens related to hazards	◦	•	••	•••	XXXX

ANNEX
Possible effects of floods and/or droughts

- Death, death of a family member
- Reduced availability of food and adequate nutrition
- Reduced availability of drinking water
- Health effects
- Increased stress, anxiety, alienation, apathy, depression
- Current personal safety issues, exposure to risk, crime
- Damage/loss of properties/decrease in value
- Damage/loss of dwellings
- Damage/loss of infrastructure
  - Sewers
  - Routes
  - Drinking water supply
  - Electricity network
- Damage/loss of service
  - Health Services
  - Schools
  - Social Services
- Damage/loss of equipment
- Loss of cultural heritage and other important archaeological or historical sites
- Loss of income, rights to and access to resources
- Reduction of: quality of life, standard of living, wealth
- Loss of agricultural production
- Loss of livestock
- Fires
- Reduced work opportunities
- Reduction in the amount of water for industries
- Damage/loss of the forest heritage
- Other forms of worsening economic situation
- Disruption of: daily life, lifestyles (change of habits)
- Cultural integrity (maintenance of local culture, tradition, rituals)
- Change of attitude towards the local community, understanding with the neighbourhood
- Modified leisure opportunities
- Decrease in the quality of the habitat
- Institutional/political crises
- Social tensions, serious conflict or dissension within the community
- Landslide
- Water pollution
- Desertification (in the strict sense)
- Social desertification (population abandonment; mass migration)
- Sandstorms
- Heat waves

Annex D – CBFDM plan template

Community Flood and Drought Management Plan (CFDMP)-Template

Partners of the project

Community profile

i. Community Profile (Socio, economic, demographic, geographic, critical infrastructures, key resources)
ii. District Administrative Set up
iii. Village map

Hazards, Vulnerabilities, Capacities and Risks

Planners need to visualize various situations based on the community profile and exposure to hazards. Analysis of situation will lead to prioritization of hazard and risks and define training, equipment and exercise requirements.

A hazard, vulnerabilities, capacities and risk analysis determines:

1. What hazards can occur in the community
2. How often is it likely to occur
3. What damage it is likely to cause
4. How is it likely to affect the community or part of the community
5. How vulnerable is the district to each hazard
6. what are the risks and capacities of the community to face the hazards

Mitigation and prevention measures

prevention consists of actions that reduce risk from natural or manmade disaster incidents. It is required to list and elaborate all types of measures (like – housing codes, land-use plans, floodplain management, etc.) – planned and implemented by the community or districts as a part of prevention measures

Preparedness measures

What are preparedness measures available for facing the hazards?

Response measures

What are response measures in place for any emergency situation?
Evacuation location, access route, etc.

Responsibilities of stakeholders

What are the responsibilities of community-based committees, community individuals, local administration, disaster management agencies or volunteers etc.

Standard Operating procedure and checklist during emergency

What are the steps to be taken in case of emergency?

Emergency contact details

Emergency contacts of committee head, hospital, district administration authority, disaster management, NGO etc.

Procedure and Methodology for Monitoring, Evaluation, Updation and Maintenance of CBFDM

How to regular review the CBFDM and update it based on experience, lesson learned, good practices etc.

Annexes

Annex E – Table with general list of activities on CBFDM

A. Preparation phase		
1	Establishment and operation of a CBFDM Committee	(CBMC, NGOs, LA, TS)
2	Mapping the risks and the material and human resources available to identify the dangers already noted in the past (or potential), the vulnerability of the various places and the capacities, also endogenous, to face them	(CBMC, NGOs, LA, TS)
3	The development of a seasonal calendar, including probable natural disasters, their frequency of occurrence and certain variables related to economic activities, types of crops, diseases, security level, etc.	(CBMC, NGOs, TS)
4	Identification of the poorest and most vulnerable people and areas	(CBMC, NGOs, LA)
5	Community validation of mapping data through group consultation	(CBMC, NGOs)
6	Shared awareness of risks and possible solutions	(CBMC, NGOs)
7	Identification/consolidation of endogenous floods prevention and/or adaptation measures and endogenous drought prevention and/or adaptation measures	(CBMC, NGOs)
8	Discussion group/brainstorming to develop and adopt a community response plan	(CBMC, NGOs, TS)
9	Formal adoption of a risk management plan	(CBMC, LA, NGOs)
10	The development and implementation of capacity building and training activities, including field exercises	(CBMC, NGOs, TS)
11	Awareness meetings and distribution of awareness tools	(CBMC, NGOs)
12	Set-up and operation of Early Warning Systems and related tools	(CBMC, NGOs, TS)
13	Further capacity-building activities (e.g., related to EWS, to first-aid training and, more generally, to CBFDM – also to improve effectiveness)	(NGOs, TS)
14	Implementation of simulation exercises/drills	(CBMC, NGOs, LA, TS)
15	Periodic monitoring and evaluation	(NGOs, TS)
16	Decision-making meetings also to improve collaboration/cooperation, effectiveness, and sustainability	(NGOs, LA, CBMC, TS)
B. Response phase		
1	Operationalizing the risk management plan, assigning responsibilities, and mobilizing available resources	(CBMC, NGOs, LA, TS)
2	Evaluation of the operation of the plan during implementation	(NGOs, TS)
3	Collaboration with the authorities in the implementation of a crisis communication	(CBMC, NGOs, LA, TS)
4	Coordination of critical infrastructure protection	(CBMC, LA, TS)
5	Support and securing the most vulnerable members of the community	(CBMC)
6	Coordination and adaptation of possible evacuation operations	(CBMC, LA, TS)
7	Identification and management of shelters/evacuation center for affected people; provide food security, protection, and health care	(CBMC, LA)
8	The implementation of a monitoring of the interventions in progress	(NGOs, TS)
9	Rapid assessment of damage and related relief needs	(CBMC, NGOs, LA, TS)
10	Activation and/or support of rescue and emergency assistance systems	(NGOs, LA, TS)
C. Recovery phase		
1	Restoration of essential services	(CBMC, LA, TS)
2	Rehabilitation of living conditions of the inhabitants	(CBMC, LA, TS)
3	Repair or construction of housing and infrastructure	(CBMC, LA, TS)
4	Revision of the CBFGM Plan	(CBMC, NGO)
5	Mutual learning of lessons based on disaster experience	(CBMC, NGOs, LA, TS)
6	Developing and sharing strategies for soil and infrastructure conservation and for land use planning as a whole	(CBMC, LA)
7	The recovery of a full and satisfactory relationship between local communities and their territory	CBMC, LA)
8	Periodic monitoring and evaluation	(NGOs, TS)
9	Decision-making meetings also to improve collaboration/cooperation, effectiveness, and sustainability	(NGOs, LA, CBMC, TS)
10	The launching of a program for the sustainability of activities	(CBMC, NGOs, LA)