CLIMAFRI Newsletter Vol. 2

December 2020

Dear Readers,

The year 2020 was exceptional for all of us. CLIMAFRI – planned as a participatory research project on transboundary flood risk management – was also heavily challenged by travel restrictions due to the global COVID-19 pandemic. However, the project elaborates on risks, and with this we learn about coping strategies and how to adapt to changing situations.

In this newsletter, we look back on a year that was nevertheless productive, outcome oriented and full of new experiences. Our highlight in 2020 was the virtual stakeholder workshop. Over the course of two weeks, the CLIMAFRI team and stakeholders from Benin and Togo exchanged virtually and managed to continue the participatory research approach as initially envisionned. This virtual format was cost-efficient and even more integrative, because all partners could actively participate and interact. The workshop series brought results that might not have been obtained through the "traditional" way of data collection. All this was possible due to high involvement and preparation from all partners, the application of efficient tools, great facilitation through African partners and strong commitment and enthusiasm from participating stakeholders.

We would like to take this opportunity to say THANK YOU to everyone who is part of this journey and we are excited to establish a transboundary community of experts with CLIMAFRI to advance sustainable flood risk management in the Mono basin.

Best holiday wishes and looking forward to continuing to collaborate with you in 2021!

Prof. Dr. Julien Adounkpe
UAC-WASCAL Benin

Prof. Dr. Komi Agboka
UL-WASCAL Togo

Dr. Yvonne Walz
UNU-EHS

CLIMAFRI

Implementing **CLIM**ate-sensitive **A**daptation strategies to reduce **F**lood **RI**sk in the transboundary Lower Mono River catchment in Togo and Benin

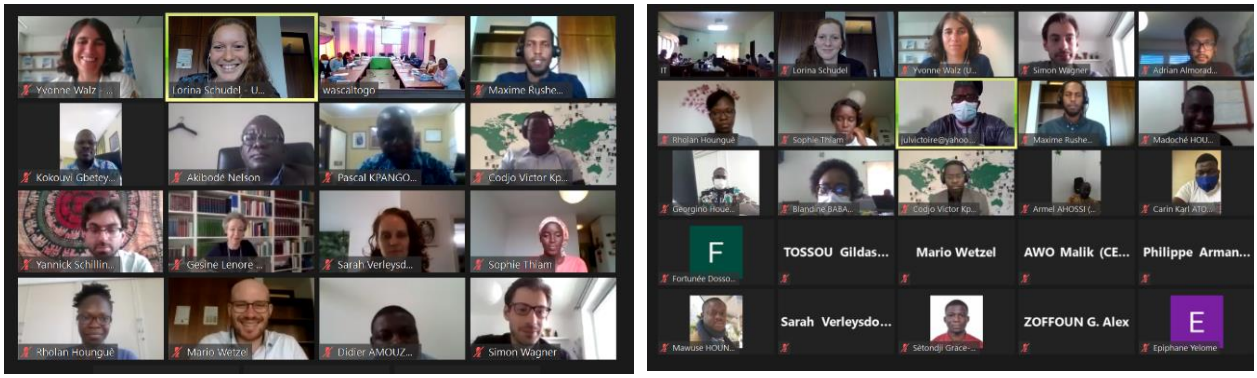
In this Newsletter

Virtual Workshop Series

Participatory Research in the Time of COVID-19

The year 2020 brought on many challenges and the need to be creative. This was certainly true for CLIMAFRI, which has the aim to conduct participatory research. Several workshops and a field survey were planned –activities that were not possible due to the travel restrictions in the context of the COVID-19 pandemic. In order to continue the participatory research aim, the CLIMAFRI consortium came together and jointly organized a two week long virtual workshop.

Under the facilitation of WASCAL (West African Science Service Center on Climate Change and Adapted Land Use), the workshops took place from 17-21 August in Lomé, Togo and from 24-28 August in Abomey-Calavi, Benin. At each workshop, up to 15 stakeholders from NGOs, government, civil society and research participated either in-person at the premises of WASCAL or via Zoom. Each day was dedicated to a thematic session organized by the German CLIMAFRI partners who led the sessions via Zoom and used a diverse range of tools to make the sessions interactive, despite the virtual setting. Some of these tools are introduced in the next article of this newsletter, including examples of how they were applied.



Screenshots from the virtual workshop on Zoom. Left: Togo, Right: Benin

The sessions included the validation and prioritization of indicators used for assessing flood risk, the prioritization of adaptation measures and mapping of flood hotspots, discussions on existing risk-sharing mechanisms, the building of an actor-network and reflection of communication strategies, the validation of an impact chain to understand root-causes of flood risk and a joint brainstorming on actors, resources, dynamics and interactions (ARDI) in the context of flood risk in the Lower Mono basin.

As diverse the topics might have been, throughout the whole week the participants stayed focused and worked together on the aim of reducing flood risk in the Lower Mono Basin. Most of the participants have been part of the CLIMAFRI project since its kick-off workshop in 2019 and do not only know the project well, but are also part of the "CLIMAFRI-community" in their respective countries. Working together intensely for a whole week has only fostered this community feeling. The plan for 2021 will now be to bring the two country groups together and create a transboundary community of stakeholders.

An important element to make this workshop a success was that stakeholders in Togo and Benin had the possibility to attend the workshop physically at the WASCAL premises. There, WASCAL colleagues did an amazing job in facilitating and moderating the workshop, including ensuring social distancing. Additional equipment and infrastructure (for example microphones, additional internet bandwidth) made it possible to reduce any technical disruptions to a minimum during these weeks. The very detailed preparation of the workshop sessions by project partners and the use of virtual tools together with the great enthusiasm and team spirit of stakeholders produced results that might not have been derived if the research had been carried out in a "traditional" way. The final evaluation showed that this virtual workshop was overall a great success, but nevertheless, in person meetings are considered to be essential as soon as the situation of the pandemic allows.

Tools for virtual participation

During the virtual workshop series, a diverse set of tools was used to foster virtual participation of stakeholders. Four of these tools, which enabled the generation of results in an efficient and transparent way, will be introduced below. Please find a short general overview of the tool in the blue box as well as a short description of how they were used during the virtual workshop series.

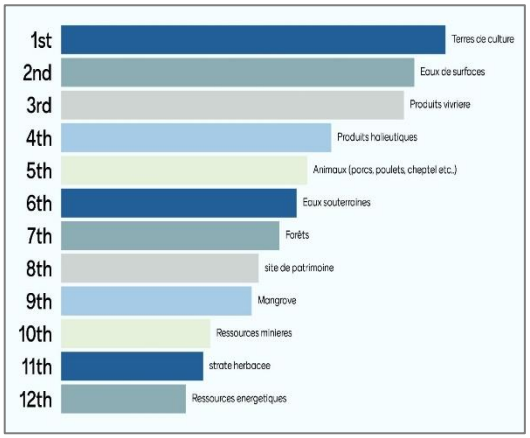
Mentimeter

Description: Mentimeter is a software for real time survey, polls and voting. It also helps to create interactives and innovative presentations.

Link: www.mentimeter.com: to create a poll
www.menti.com: to participate in a poll

Pricing: Annual license price ranges from 0 to 260 Euros respectively for the free and Pro version.

During the workshop, Mentimeter was used to rank the different actors, resources and dynamics in relation to flood risk identified in both Benin and Togo. It was also used for the presentation and discussion of the results.



Screenshot of Menti during the ZEF workshop, showing the resources most affected by flood in Togo
Source: Dr. Sophie Thiam, ZEF

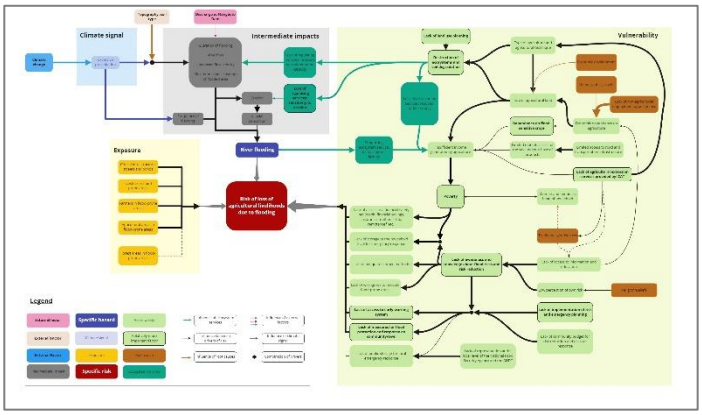
Miro

Description: Online whiteboard, allows collaborative work on projects with a variety of functions for project management, graphs/charts

Link: https://miro.com/

Pricing: Free trial with limited functionality / pricing for other license products upon request

During the Workshop, Miro was used to show the Impact Chain to the participants and to guide the discussion based on the Miro chart. The chart was updated in real time, allowing the participants to see the outcome of their inputs instantly and (dis)agree/comment on the results.



Exemplary result of workshop outcome in Miro
Source: Mario Wetzel, UNU-EHS

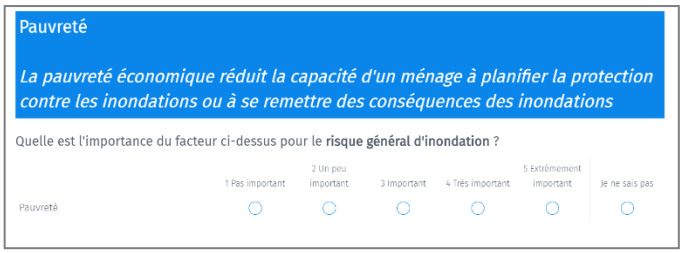
QuestionPro

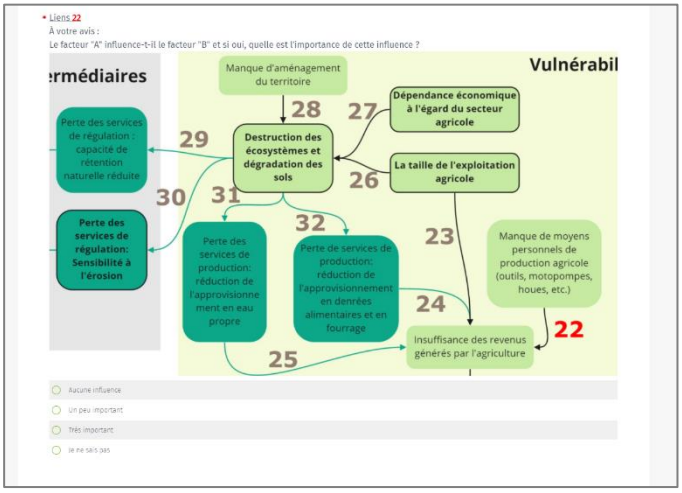
Description: Online surveys with direct feedback and results, variety of different question types

Link: https://www.questionpro.com/

Pricing: Free 14-day trial; different license-levels; Research Edition (RE) starting at 2,000 USD/year; RE for students 1000 USD/year

During the Workshop, QuestionPro was used several times to conduct surveys with a direct evaluation of the results. We used it to weigh indicators for the indicator-based risk assessment using a Likert scale, as well as for the evaluation of the impact chain. For this, a single-choice type of question was combined with screenshots. In this way, participants were able to evaluate different aspects of the CLIMAFRI impact chain.





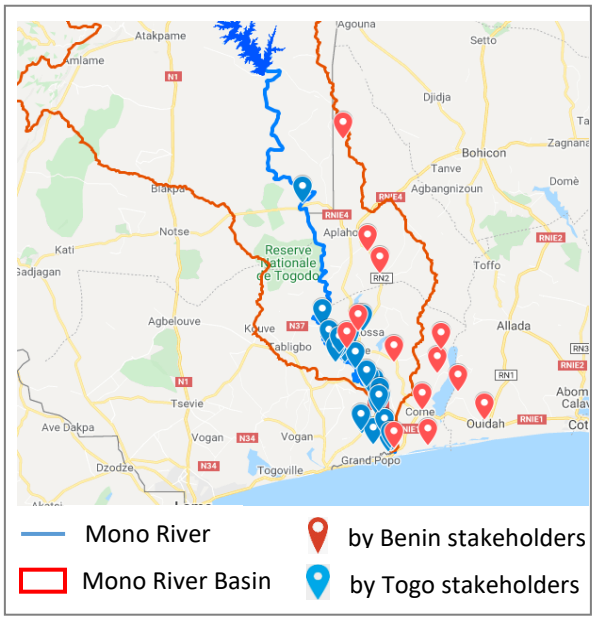
Example of survey question in combination with screenshots in QuestionPro, Source: Mario Wetzel, UNU-EHS

Google web-mapping tool

Description: Online platform to map flood hotspots in the Lower Mono River

Link: http://www.ewa.uni-bonn.de/climafri/hotspotsmap/en/

Hosted by: Working Group Eco-Hydrology and Water Resource Management, Department of Geography, University of Bonn



The Google based platform for flood hotspots mapping was developed to engage stakeholders in the flood mapping process in the Lower Mono River basin. The aim was to work together with them to comprehensively identify areas exposed to flooding (hotspots) in the Lower Mono River, based on their expertise and local knowledge. The results of this exercise will support the construction of the flood hazard model and the validation of its outputs.

Insights from Field Work in 2020

While many activities in 2020 needed to take place virtually, some research nevertheless took place in person on the ground. CLIMAFRI PhD Student Nadège Dossoumou is preparing for her doctoral field research, which will take place in early 2021 and gives us here a little insight.

Nadège Parkoo, Master Student in CLIMAFRI, completed her fieldwork in the form of role-playing games in October 2020 and shares some of her experiences and results. These two examples add to our experience from the virtual stakeholder workshop that the team in the target region is essential to keep the project up and running in times of a global pandemic.

Survey Preparation

By: Ibiyêni Paula Nadège DOSSOUMOU, PhD student (WASCAL Togo)
Contributor: Sophie Thiam (ZEF)

In order to meet the objectives of my PhD research, I organized an exploratory fieldtrip to identify and visit the villages, estimate the sample size, meet the local authorities and the focal points from the different prefectures selected in the Mono River catchment. At the same time, I used this opportunity to test the questionnaire for the planned household survey in the catchment.

In my case study, data will be collected to explore household-level decision making in the context of flood risk and identify what are the factors that make them vulnerable and contribute to the flood risk. For good quality data collection during field work, it is important to conduct several preliminary steps, including the preparation of the questionnaire, the identification of the structure that guides the data collection, meetings and discussions with the local assistant to present the work and then a pre-survey for testing the questionnaire with a small number of households. This last step is extremely relevant before the survey itself can be rolled out, because it helps to ensure that the respondents understand the questions and for us to make any necessary corrections and changes on the questionnaire.

In the context of COVID-19, I need to conduct the field work considering the social distancing and hygiene regulations. This comes with additional costs in terms of transportation and material for precautions (gel, mask, etc.). But these steps are necessary given the circumstances. Moreover, the COVID-19 situation adds more uncertainty to the field work.

Conducting Role Playing Games in the Lower Mono Basin

By: Nadège Essi PARKOO, Master Student (University of Lomé and ZEF)

My master thesis has the title: *Understanding the social responses to flood risk in the Lower Mono River catchment (Togo and Benin): A soft system approach.* In order to understand the social response of the local population to flood risk in the Lower Mono basin the approach used in this study is role-playing games.[1]

Role Playing Agbanakin, Togo

Role playing in Adjové, Benin

[1] Villamor and Badmos, 2016. Grazing game: A learning tool for adaptive management in response to climate variability in semiarid areas of Ghana. Ecology and Society 21: 39.

As a first step, the ARDI (Actors, Resources, Dynamics, and Interactions) method[2] was applied to identify the individual components and resulting mental models. This was done with focus group discussions with the local population (50 people in Togo) in July and then virtually during the virtual stakeholder workshop series in August with stakeholders from Togo and Benin (see the first article of this newsletter). As a second step, the implementation of the role-playing game took place in September and October in two communities in Togo (Agbanikin, Batonou) and three in Benin (Adjové, Hanmlagni and Huegbo) (with 81 people).

Through the role-playing game, preferred adaptation strategies used in the Lower Mono River basin were identified. It became evident, that the means used by the local population to increase their resilience to flood risk are often ineffective. Role-playing showed that flood management in the basin will require both material and financial investment. An example for this is the housing sector: The strategy adopted by the local population before the game was the reinforcement of mud houses with sand and wood. After the game, they would choose the construction of cement houses which is more expensive but also more effective. The preferred sectors for adaptation investment would be housing, agriculture, livestock and transport. According to the local population's perception, these sectors are the most vulnerable while at the same time offering many adaptation possibilities.

House damaged by flood in Hanmalagni, Benin

Reinforcement to walls of houses as adaptation measures, Hanmalagni, Benin

[2] Etienne et al. 2012. ARDI: a co-construction method for participatory modeling in natural resources management. Ecology and Society, 16

New CLIMAFRI Students

Several young and highly motivated researchers are conducting their PhD studies or master thesis with the CLIMAFRI project. All of them will extensively work in the region and will be a key group of the CLIMAFRI team.

PhD Students

Ibiyêni Paula Nadège DOSSOUMOU – WASCAL Program (University of Lomé) and ZEF

PhD Topic: Modeling of flood risk and households' decision making to climate change by using an Agent Based Model in the Lower Mono basin, Togo- Benin

Flooding is one of the major and frequent disasters in Benin and Togo, especially in the Lower Mono River basin, which affects most of the natural resources and communities' livelihoods. Adaptive strategies are required and needed for helping the communities to cope with flood risk, which is likely to increase in the future. In order to examine this topic, my PhD study will apply an Agent Based Model (ABM) to investigate how flood risk and adaptation will evolve over time and how climate change and decision making/adaptation measures from households and governments will affect the future extent of flooding. It is interesting to use ABM based on the socio-hydrology theory since it allows us to analyze the dynamic link between flood and human behavior and capture the dynamics of individual responses of households.

Modeste Spéro TOKPON – WASCAL Program (University of Abomey-Calavi)

PhD Topic: Flood risk reduction through multi-models' flood forecasting and exploration of early warning system setting on the transboundary catchment of Lower Mono in Benin and Togo

The various measures to prevent flooding taken in recent years, especially in Benin after the historic floods of 2010, have shown their limits, either because of the absence of a good case design, or the lack of reliable studies in the field. Flood dynamics are changing and flood risk is increasing due to demographic growth, human activities such as deforestation and constructions and especially due to climate variability.

Master Students

Nadège Essi PARKOO – University of Lomé and ZEF

Title of M.Sc. Thesis: Understanding the social responses of flood risks in the Lower Mono River catchment (Togo and Benin): a soft system approach.

This study explores the social responses to flood risks of riparian populations (Togo and Benin) in the Lower Mono River basin through a participatory approach, including a series of experimental game exercises (role-playing), discussion groups and workshops with the populations and different stakeholders. The role-playing enabled participants to dynamically conceptualize future possibilities arising from the instability of the floods and to improve their capacity to adapt and anticipate, with a view to selecting the best adaptation options. This study is an opportunity to contribute to the development of my home village, which is located in the Mono River basin.

Mario Wetzel – UNU EHS

Title of M.Sc. Thesis: Towards a dynamic assessment of flood risk for agricultural livelihoods in the Lower Mono River basin: Evaluating the potential of integrating participatory impact chains with Bayesian Network Modelling

River flooding is a frequent phenomenon in the Lower Mono River basin and associated to a variety of highly dynamic socio-environmental processes and uncertainties. This thesis aims to respond to these issues by integrating participatory impact chains with Bayesian Network modelling. The participatory development of impact chains aids to identify key dynamics in the context of flood risk. In addition, Bayesian Networks have the potential to account for uncertainty and can still operate in data scarce environments. As a result, this thesis may serve as a starting point for further improvement of dynamic risk assessments in the future.

Outlook 2021

January 2021

Fieldwork

CLIMAFRI PhD student Nadège Dossoumou will do field research in the Lower Mono Basin to conduct household surveys and measure agricultural plots.

Adaptation Workshop

A virtual stakeholder workshop on identification of scenarios and adaptation measures will take place in January.

January 2021

March 2021

Intermediate Results

... will be presented and disussed at a transboundary virtual stakeholder workshop.

MBA Agreement

Agreement, which specifies detailed planning of implementation of CLIMAFRI outputs with Mono River Basin Authority (MBA) will be completed

First CLIMAFRI Publications

In 2021, first publications coming from the CLIMAFI team are expected to be peer reviewed and published.

Training of Trainers

In the second half of 2021 a training of trainers workshop will be conducted.

Relevant Links & Documents

- Peer reviewed article by Amoussou et al. (2020): Dynamics and modelling of floods in the river basin of Mono in Nangbeto, Togo/Benin https://www.tandfonline.com/doi/full/10.1080/02626667.2013.871015
- Website Article on CLIMAFRI virtual workshop series: https://ehs.unu.edu/news/news/virtual-stakeholder-engagement-in-togo-and-benin-participatory-research-continues-in-times-of-covid-19.html
- 5 Facts about Mangroves: https://ehs.unu.edu/news/news/five-facts-on-mangroves.html

Project Overview

CLIMAFRI Project Summary

The overall objective of the CLIMAFRI project is to co-develop and co-implement adaptation strategies for sustainable management of flood risk and natural resources in the transboundary Mono River Catchment. The specific scientific and technical objective of the consortium is to collaboratively establish the River Basin Information System through the integration of science-based data with information and knowledge from local stakeholders and communities. To achieve the sustainable implementation of the River Basin Information System, it is a key objective of CLIMAFRI to train professional staff on multiple scientific and technical aspects during the process of establishing the information system and to embed the information system within the responsible authority(ies) in the (transboundary) region.

Project Partners

German:

- Björnsen Consulting Engineers GmbH,
- Center for Development Research,
- United Nations University – EHS,
- University of Bayreuth,
- University of Bonn,

African:

- Ministry of Environment, Sustainable Development and Nature Protection (Togo),
- Ministry of Living Environment and Sustainable Development (Benin),
- Université d'Abomey Calavi,
- Université de Lomé,
- WASCAL

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