



Simon Wagner
**The Potential Role of Insurance
in Flood Adaptation – A Case
Study of the Transboundary
Lower Mono River Basin (LMRB)
Shared Between Togo and Benin**

TCHÉBILÉ

Discussion
Paper Series AUGUST 2022

The Potential Role of Insurance in Flood Adaptation – A Case Study of the Transboundary Lower Mono River Basin (LMRB) Shared Between Togo and Benin

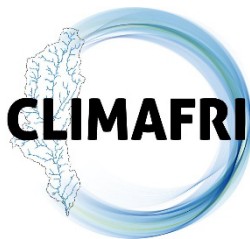
A Discussion Paper

Author: Simon Wagner (MCII)

Munich Climate Insurance Initiative 2022

This paper is based on the input and feedback of many different people. Thanks goes to: Dr. Sophie Thiam, Nadège Dossoumou, Prof. Dr. Jakob Rhyner, Dr. Maxime Souvignet, Michael Zissener, Dr. Michael Hagenlocher and Sönke Kreft

The research presented herein has been commissioned by the Munich Climate Insurance Initiative (MCII) and is supported with funding from the German Federal Ministry of Education and Research (BMBF) within the CLIMAFRI project (grant number 01LZ1710A-E). MCII is solely responsible for the content of this publication.



 **MCII** | **Munich Climate Insurance Initiative**

Background on CLIMAFRI:

Heavy rains and resulting flood events are natural hazards that have devastating consequences on human life and livelihoods. This is also the case in the Mono River Basin in Benin and Togo. Overuse of natural resources, incomplete knowledge about the interrelations between flood effects, as well as a lack of resource management, create a need for intervention in this area. The objective of the CLIMAFRI project is to develop adaptation strategies for sustainable flood risk and environmental resource management in the cross-border catchment area of the Lower Mono River in collaboration with local stakeholders. The project aims at the implementation of a functional and usable river basin information system at the local authority. This is accompanied by a catalogue of possible customization options and a set of insurance conclusions as an option for risk transfer. The project results should help to enable the region to reduce the negative consequences of climate change that it faces and to promote sustainable development through the sustainable use of local natural resources.

Background on Ph.D. research:

This research was conducted within a Ph.D. project, carried out by Simon Wagner affiliated with the Munich Climate Insurance Initiative (MCII) and the University of Bonn. The research aimed at supporting a scoping study of flood insurance in the Lower Mono River basin by assessing the topic in a broader manner without directly focusing on one type of flood impacts.

The collection of data was carried out in the form of two workshops conducted online and separately with Togolese (n=11) and Beninese (n=14) stakeholders. Invited stakeholders included: Ministries, disaster management authorities, volunteer-based organizations, NGOs, Nangbeto Dam/Mono Basin authorities, community majors, research institutions, and the GIZ. Moreover, 16 semi-structured interviews were carried out with residents in affected villages. The questions in both data collection phases elaborated the flood impacts that put people into a position of financial need, as well as their existing strategies to address them. Those two data collection activities laid the foundation for the subsequently performed household survey. The survey was drafted and performed in close cooperation as a common project with Dr. Sophie Thiam from the Center for Development Research (ZEF) and Nadège Dossoumou from the West African Science Service Centre on Climate Change and Adapted Land Use (WASCAL). Among others, the survey data set contains information from 744 interviewed households from 24 villages (Figure 1) on household characteristics, flood experiences, risk perception, impacts, financial coping mechanisms, experience with and perception of insurance, and

the willingness to buy a potential product. In parallel, a survey of Togolese and Beninese insurance companies (21 in total) was carried out to inquire about the past, present and potential future engagement of the insurance sector in offering flood-related coverage. The research outcomes are published in the scientific journal articles that are either already submitted for publication or currently being drafted (see list of references).

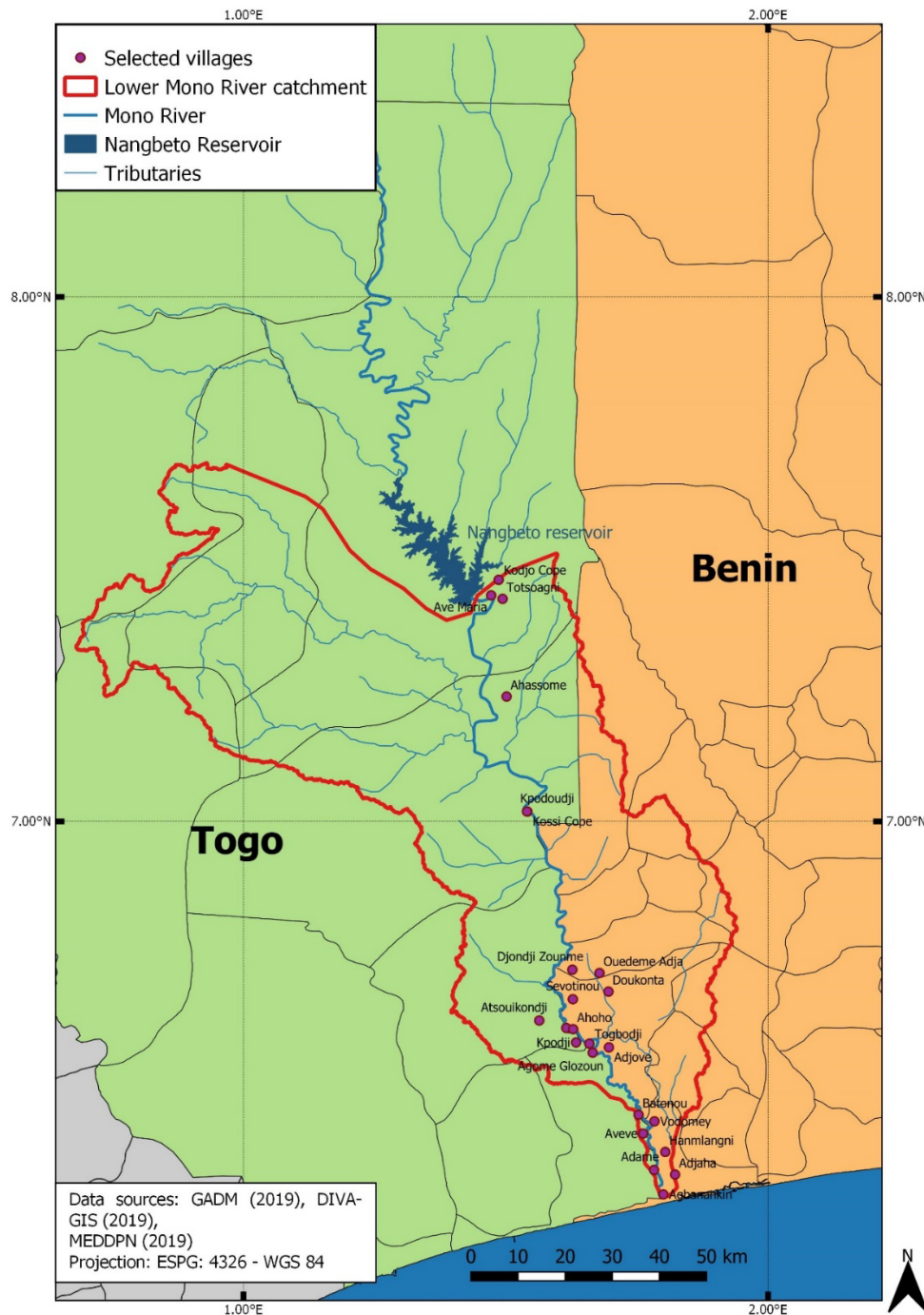


Figure 1: Location of study area with selected villages for data collection [1]

Set of Conclusions:

As the main policy-relevant outcome a set of conclusions for insurance and risk transfer was produced. It aims to summarize the main outcomes of the research and to package them into useable information for policy makers and researchers:

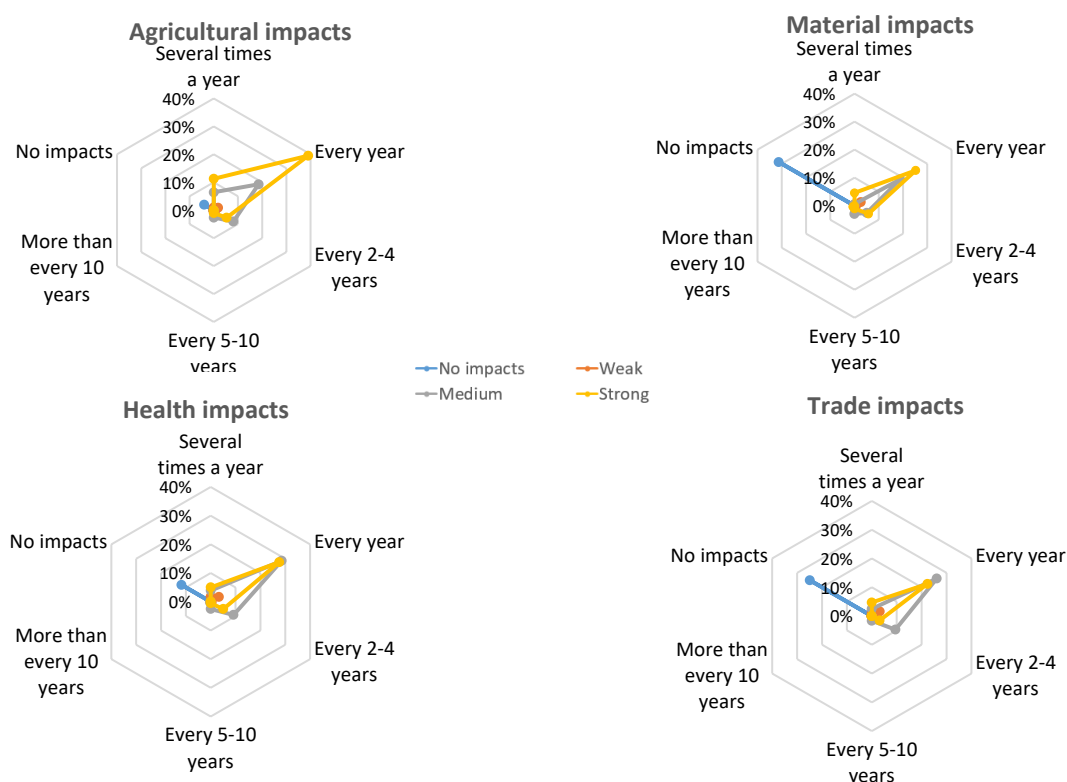
1. Under current conditions, a flood insurance mechanism most likely will not be financially viable, and significant investments in adaptation measures are first necessary.

The research activities have yielded four broad categories of flood impacts that put households at risk in a position of financial need:

- **Agricultural impacts:** lost investments through loss and destruction of crops and plantations, loss of livestock
- **Material impacts:** Repair and replacement cost for damage or destruction of residential houses and personal material belongings
- **Health impacts:** Sickness and subsequent payment for medical care
- **Trade impacts:** lost income from damaged stored products for sale, lack of market access & affected marketplaces

However, as shown below (Figure 2), the flood impacts currently occur almost on a yearly basis for the majority of households in medium to strong intensity.

Figure 2: The frequency and severity of flood impacts with financial implications [1]



Based on those insights, the following conclusion was formulated:

As flood impacts with financial implications show, there is an insurable interest. Impacts on agriculture, material goods, health, and commerce, in particular, have financial implications for the public. However, the frequency and severity of these impacts are currently too high. Thus, the number one priority is the implementation of sustainable adaptation measures that reduce the frequency and severity of the damage. A conventional market approach to flood insurance is most likely not feasible at current average frequency and severity levels. For a (market-based) risk transfer mechanism to be feasible in the future, current risk levels must be further reduced by adaptive strategies.

-> Instead of risk transfer, it might also be worth exploring the extension of social protection mechanisms to flood-related losses. It should also be explored whether these efforts can be coupled with existing engagements with mechanisms such as the African Risk Capacity (ARC) and FONCAT (Benin), and to consider creating a prevention fund to complement post-disaster activities.

-> In the event that insurance product development is pursued after the implementation of these measures, it could be explored whether companies could engage in supporting a prevention fund that supports risk-reduction measures.

2. Some mechanisms (e.g., cooperatives, savings groups) show a significant association with a shortened financial recovery time and could be harnessed in a potential risk transfer mechanism

The means that the population at risk has access to deal with the financial implications of flood impacts were researched. The findings show that the largest share of the population is dealing with the financial implications through their own means (47.2%) by using their savings, selling assets, or seeking alternative income-generating activities. Other frequently mentioned options were governmental support (37.8%), NGO support (30.2%), cooperatives (24.8%), and credits from savings groups (23.6%). A classification of the measures into risk transfer, emergency support, risk retention, and external sources showed a major thrust on emergency response and risk retention. In contrast, risk transfer, particularly insurance, played a rather subordinate role in dealing with the financial implications of flood impacts [1].

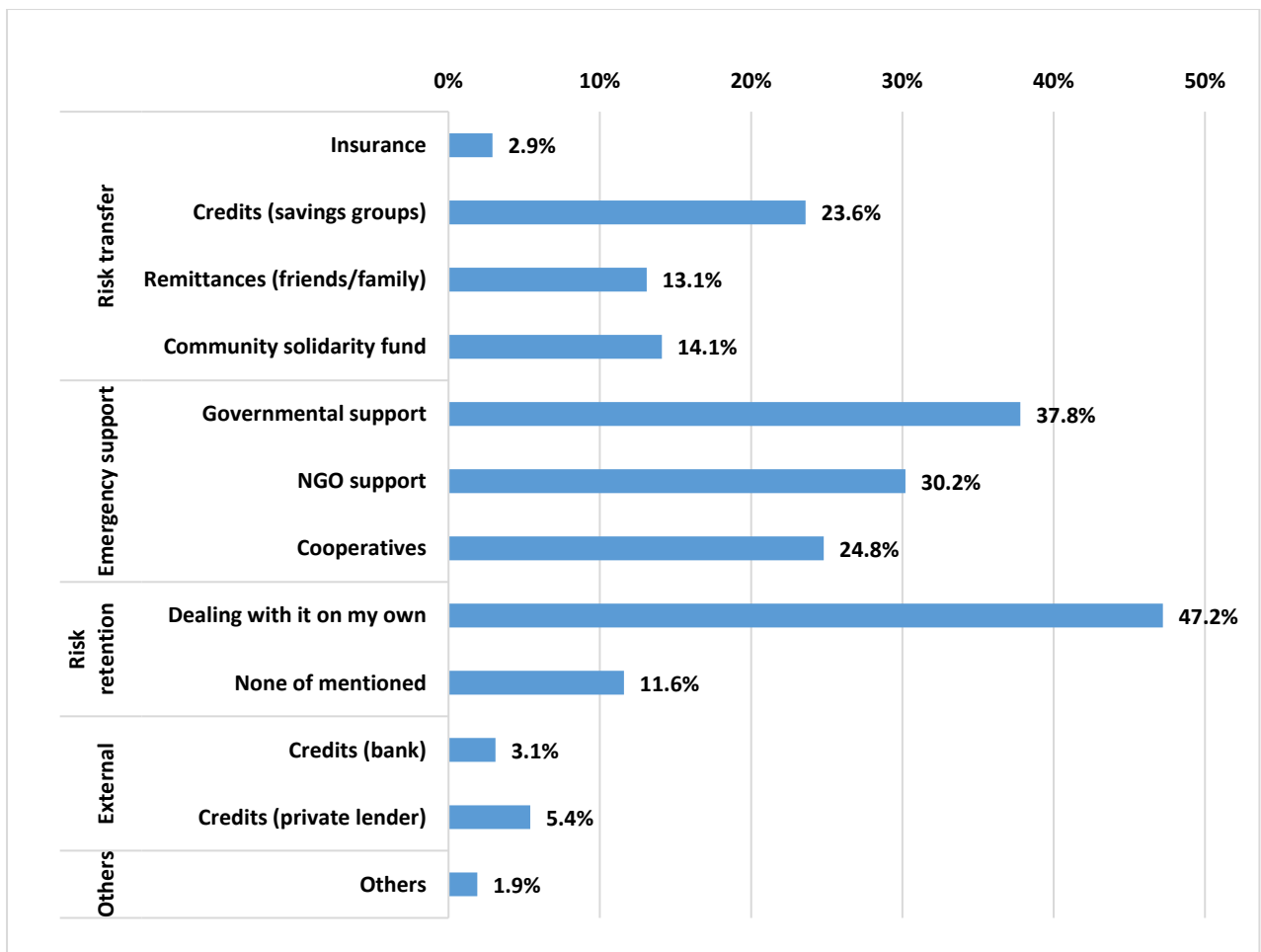


Figure 3: Access to means for financial coping in times of flooding among the population [1]

Figure 4 (below) shows the analysis of the association between access to those means and the duration of the financial recovery time. It highlights that having access to credits from savings groups and support from cooperatives was significantly associated with a shortened financial recovery time. This finding points towards those options being quite established among and close to the communities at risk. Even though those groups were not formed to assist their members in times of flooding, they were found to do so in the observed cases. The groups could be of high relevance in the case of designing a formal risk transfer mechanism to act as potential components of a scheme due to their abovementioned role in financial recovery and closeness to and familiarity with the communities at risk. It could be worth exploring if those existing options could be integrated into a formal mechanism covering a wider area. However, more qualitative research will be needed to provide more insights into the exact role of cooperatives and savings groups in alleviating the financial implications of flood impacts [1].

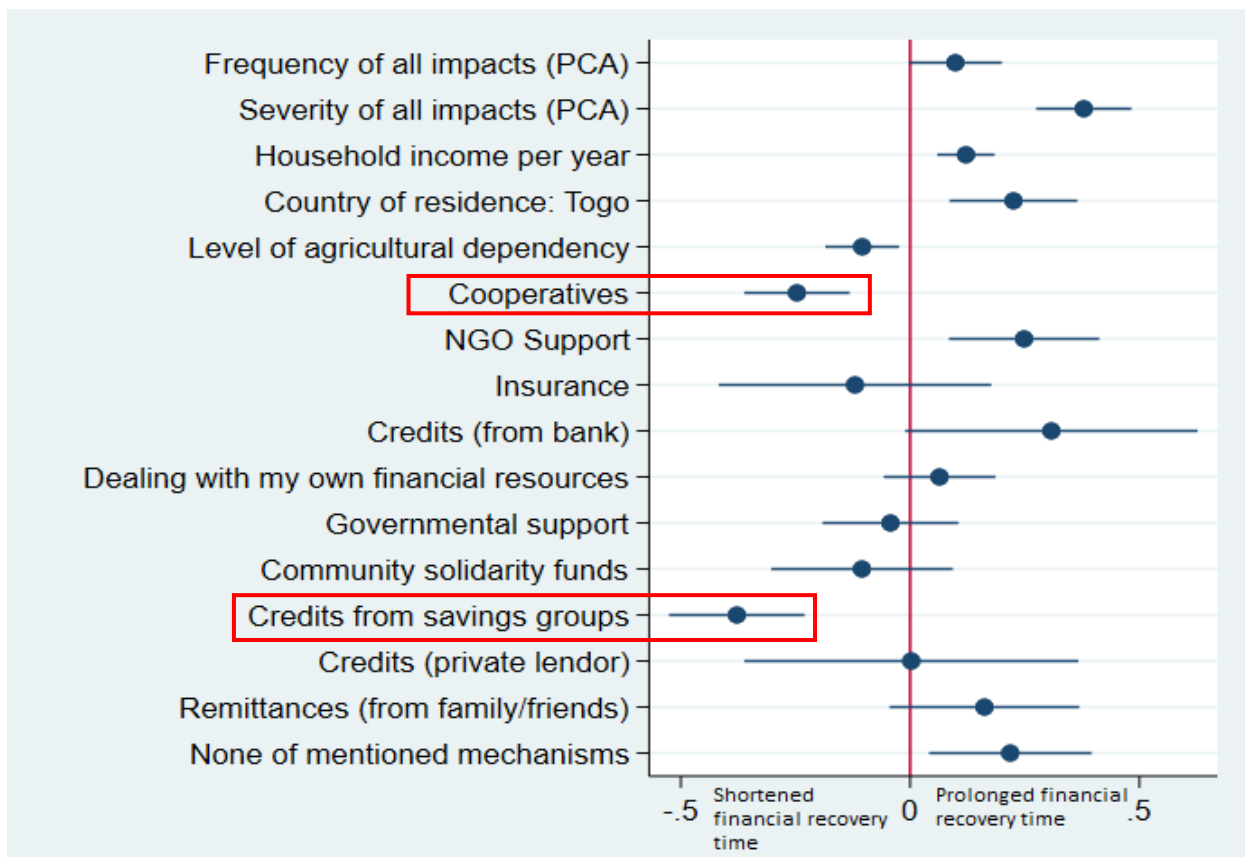


Figure 4: Association between access to means and financial recovery time [1]

Based on those insights, the following conclusion was formulated:

Current strategies of financial recovery are not sustainable for communities of the basin. A large portion of the population has their financial assets steadily eroded by floods, having to use their own resources to cope with the impacts of floods. There appears to be a significant association between access to cooperative support or credit from savings groups and a shorter recovery time. However, it should be kept in mind that these groups were not formed for the purpose of providing assistance during floods. Apart from government and NGO assistance, the most desired option for dealing with the financial implications of flood impacts were cooperatives, community solidarity funds, and savings group credits.

-> A potential risk transfer mechanism could rely on mechanisms that are close to the communities and with which they are more familiar (especially savings groups or cooperatives). One can explore whether savings can be coupled with insurance at the meso (group) level for groups like cooperatives, savings groups or community funds.

-> Ways for the government and NGOs to support these groups should be explored, and their membership should be increased rather than creating new networks. It also needs to be clarified whether there are

community members who are excluded from these groups but who could benefit from their presence. Further qualitative research could also explore the exact functioning and conditions of cooperatives and savings groups in the financial recovery. Besides, it could attempt to illustrate whether there are ways to increase the effectiveness and equity of these groups.

-> In addition, it could be explored whether those groups could also be leveraged as a way to increase risk awareness and work on prevention, preparedness, response, and recovery measures.

3. Beninese and Togolese non-life insurance companies have a certain level of interest in venturing into offering coverage for flood-related damages. Yet, they pointed out several hurdles that need to be overcome to engage in offering flood-related products, such as more reliable data, more flood risk-related research, and governmental support

In order to assess the situation in the insurance sector, a questionnaire was circulated among Togolese and Beninese insurance companies (Non-Life and Life). The questionnaire was initially circulated in an online format via email and LinkedIn and, in the end, completed by two field assistants who approached the companies in person due to a sparse turnout with the online approach. The questions asked basically addressed the past, present, and potential future engagement of the Togolese and Beninese insurance sectors to cover flood-related damages (Figure 5). Out of 26 contacted companies in both countries altogether, 21 companies then ended up filling out the questionnaire (9 from Togo, 12 from Benin; out of which: 6 Life companies, 12 Non-Life companies, and 3 both Life & Non-Life) [2].

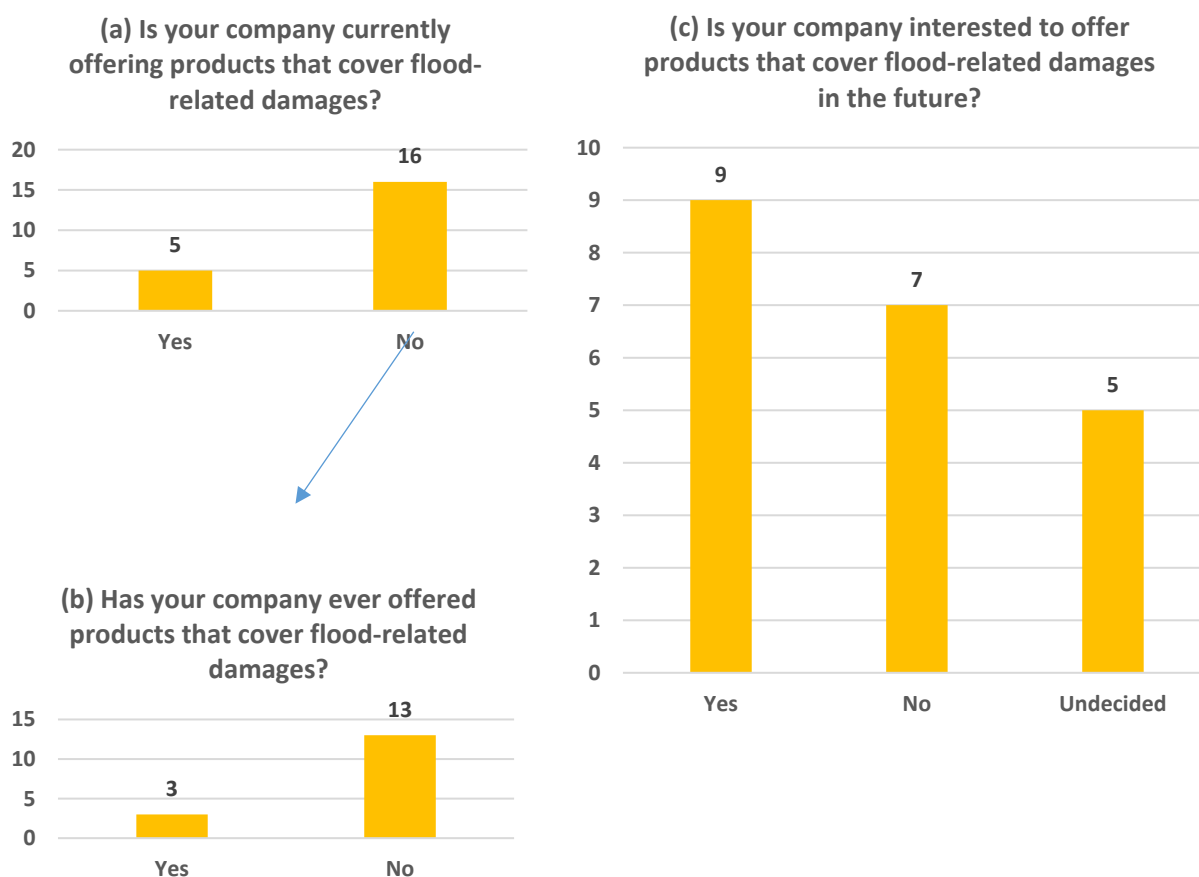


Figure 5: Present (a), past (b) and future engagement (c) of Togolese and Beninese insurance companies in covering flood-related damages [2]

Regarding the present engagement of insurance companies in this field (Figure 5a), the questionnaire yielded that some products exist and are currently offered. However, they are mainly intended for businesses and corporate clients. There are also multi-risk offers (including water damage), but they are not focused on river floods. Moreover, the existing few products are not intended for the rural population, which mainly derives their livelihoods from agriculture [2].

Furthermore, there were companies that indicated having offered flood-related coverage but having stopped it (Figure 5b). The reasons they mentioned were that the product was not profitable, and reinsurance placement was difficult because the damages were too severe and frequent. Also, there was a case in which a product is now only offered as part of a multi-peril product, and flooding is not anymore insured as a single risk. Besides, it was mentioned that issuance criteria for such products have become more stringent, and thus residential houses in high-risk flood zones could not be included in an insurance policy anymore. In addition, companies could indicate if they were interested in venturing

into offering flood-related coverage in the future (Figure 5c). Nine companies indicated that they would be interested, out of which the majority consisted of non-life companies (7 out of 9). Similarly, the majority of companies that were not interested or undecided were life companies or societies that covered both areas [2].

Table 1: Needs Identified by Togolese and Beninese insurance companies to increase the feasibility of creating a flood insurance mechanism [2]

What is needed in the future to make flood insurance feasible in your country?	Times mentioned
Conduct more studies on flood risk/probability	6
Reliable data (demographic, rainfall, river levels)	5
Governmental support	5
A market study on the level of interest, knowledge and practices of the population regarding insurance for the population at risk	4
Raising awareness among the population on the functioning and advantages of insurance	3
Investing in the implementation of flood control infrastructures/measures	2
Having precise indicators for assessing damage	2
The creation of experts in the field	1
To set up a common structure for insurers and possibly other companies involved in flood management	1
Making (flood) insurance mandatory	1
A pool with the participation of all insurers	1

In response to the question on what company representatives deemed necessary to make a flood insurance mechanism in their country feasible (Table 1), a diverse range of responses was received. First of all, among the most frequently mentioned responses was a need for more studies on flood risk and the probability of damage in the area. Also, a need for more reliable and accessible data was pointed

out, particularly data giving information on demographics, the amount of rainfall, or river levels. Moreover, it was raised that companies will require governmental support in terms of regulation by the law and rendering the conditions for the establishment of these types of products affordable to insurance companies. Besides, the companies were very keen on knowing about the level of interest, knowledge and practices of the population regarding insurance for the population at risk [2].

Based on those insights the following conclusion was formulated:

There is a relevant level of interest among Togolese and Beninese insurance companies (non-life) to get involved in the subject of flood insurance in the future. Future research could explore the extent to which the activities deemed necessary to increase the feasibility of flood insurance can be shared among government, business, NGOs, companies, etc.

-> Companies pointed out that governments should take the lead role in creating incentives for the development of a potential insurance product. This ranges from implementing effective flood adaptation measures (in cooperation with all other stakeholders) to providing a legal framework and subsidies for companies venturing into residual risk coverage. There is also scope to explore whether the governments of Togo and Benin can collaborate in this area to harmonize their efforts and create a common approach.

-> Companies raised that more investment is needed in the collection and documentation of meteorological, hydrological, demographic, and asset data available to insurance companies.

-> In addition to the research that has been conducted within CLIMAFRI in the areas of flood risk, hydrologic studies, flood impacts, and community-based research on insurance experience and perception, companies encouraged additional studies in this area that can then be made available to relevant stakeholders.

4. Insurance providers need to address several topics with the potential beneficiaries of a potential flood insurance product that relate to trust, affordability, and product understanding

In the survey, households were asked about their attitudes towards insurance-related questions. The attitudes were measured through a Likert-Scale, indicating levels of agreement with insurance-related statements (Figure 6). The statements addressed: (1) the willingness to purchase a potential insurance product (covering a previously selected impact) in case it would be available; (2) the self-reported level of understanding the way insurance generally functions by households; (3) the level of trust that

insurance companies will cover what they promised; (4) the perception of insurance being reserved for rich people mostly; and (5) the fear that catering for essential household needs could be affected if insurance would be purchased [3].

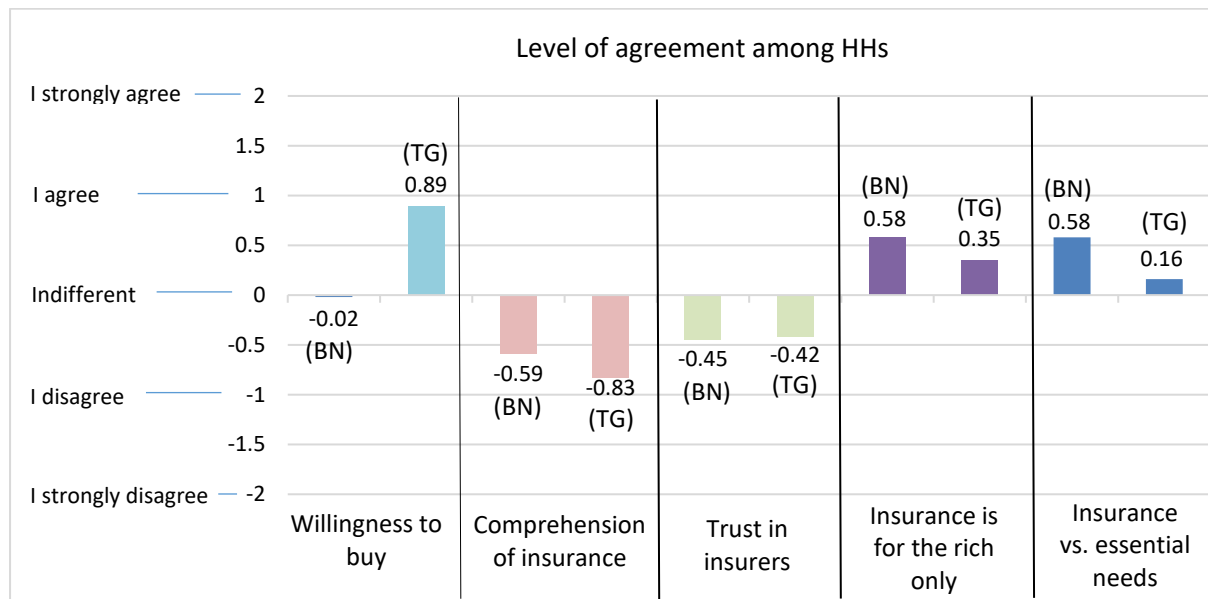


Figure 6: Attitudes of households towards insurance-related questions [3]

The results show an apparent difference in the willingness to purchase a potential insurance product between Togo and Benin, with a rather high willingness in Benin compared to Togo. Moreover, levels of understanding of the general functioning of insurance as well as levels of trust in insurance companies turned out to be rather low in both countries. In addition, it became apparent that, particularly in Benin, insurance was perceived as being a tool designed for wealthy people. Similarly, households in Benin were more concerned about covering their essential needs when hypothetically buying insurance in comparison to Togo [3].

Based on those insights the following conclusion was formulated:

-> If an insurance product is launched at some point, building relationships with communities through trusted channels (such as cooperatives or savings groups) could be very helpful.

-> Similarly, it will be important to improve general understanding of insurance products as well as understanding of the specific product to be offered with awareness campaigns once the product is in the market.

-> Issues of affordability and general interest in purchasing a potential product will be an important aspect of advertising a potential product, but will most likely require more attention in the Beninese part of the basin.

5. If at some point flood-related insurance is to be pursued, agricultural impacts would be the most desired impact to be covered in a potential insurance product.

Another aspect inquired in the household survey was the type of impacts to be covered by a potential insurance product, if the household had to choose only one (Figure 7). The majority of households in both countries prioritized the coverage of agricultural impacts from floods [3].

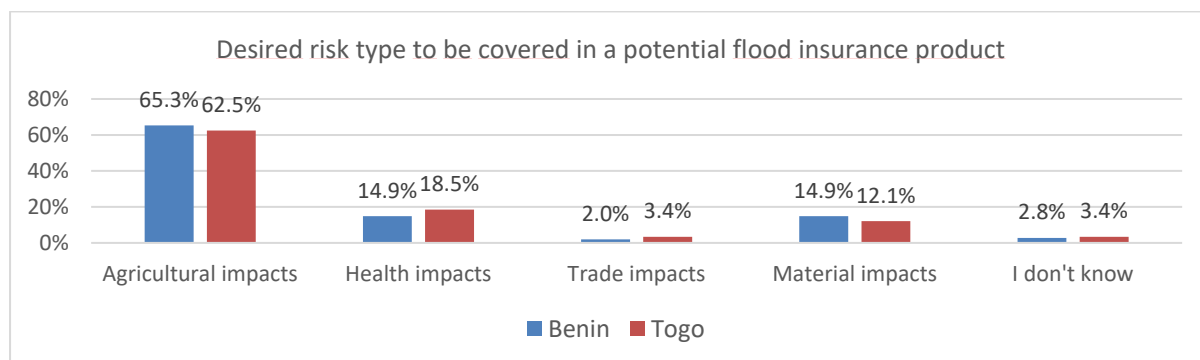


Figure 7: Desired impact types in a potential flood insurance product (single choice) [3]

Moreover, households were asked about further natural hazards they have been experiencing in the past 20 years (Figure 8). The results revealed that, in addition the floods, a large number of households in the area was affected by droughts, severe winds, erratic rainfall, and erosion. Regarding the strong emphasis on protecting agricultural losses, a potential agricultural insurance product could consider bundling multiple risks to diversify the risk pool beyond floods in the LMRB [3].

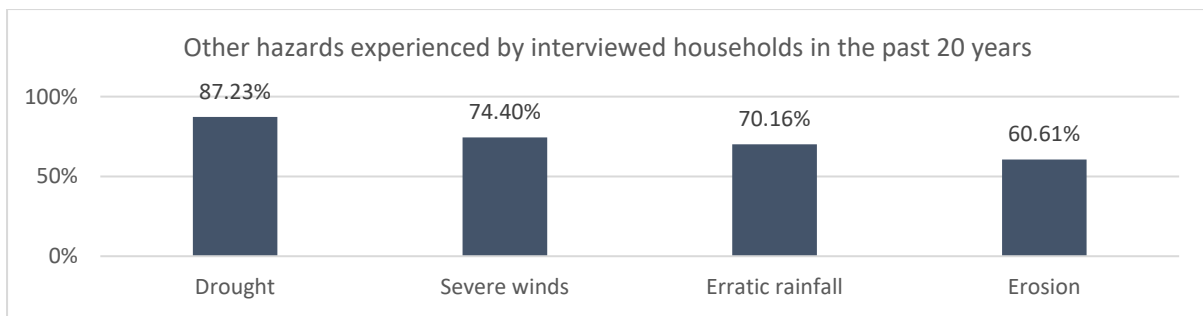


Figure 8: Other hazards apart from flooding experienced by interviewed households in the past 20 years [3]

Based on those insights the following conclusion was formulated:

-> In the event that the development of a flood insurance product is pursued, our research indicates that coverage of agricultural impacts will be most desired by the at-risk population in the Lower Mono River basin. It may be interesting to explore if coverage is also desired for the post-harvest period.

-> However, it could be explored whether more than one or all dimensions of the financial implications of flood impacts could be incorporated into a potential long-term product.

-> Another option to further diversify the risk pool could be to bundle flood coverage with other environmental risks, such as drought or storms. This practice could also help make the product attractive to potential customers beyond the basin area who are still affected by weather hazards. However, the inclusion of additional risks will depend on the level of public interest.

6. If at some point flood-related insurance is to be pursued, a parametric/index-based insurance approach that uses mobile payment technology would best meet current preferences of the surveyed population

Another aspect inquired in the survey was the households' preferences both, to make a payment for the policy and to receive a payout from an insurance company (Figure 9). First of all, the results showed that there was no difference between the preferences for payment and payout. Also, households exhibited a clear preference for handling payment and payout through mobile payment services, in comparison to cash or bank payment methods [3].

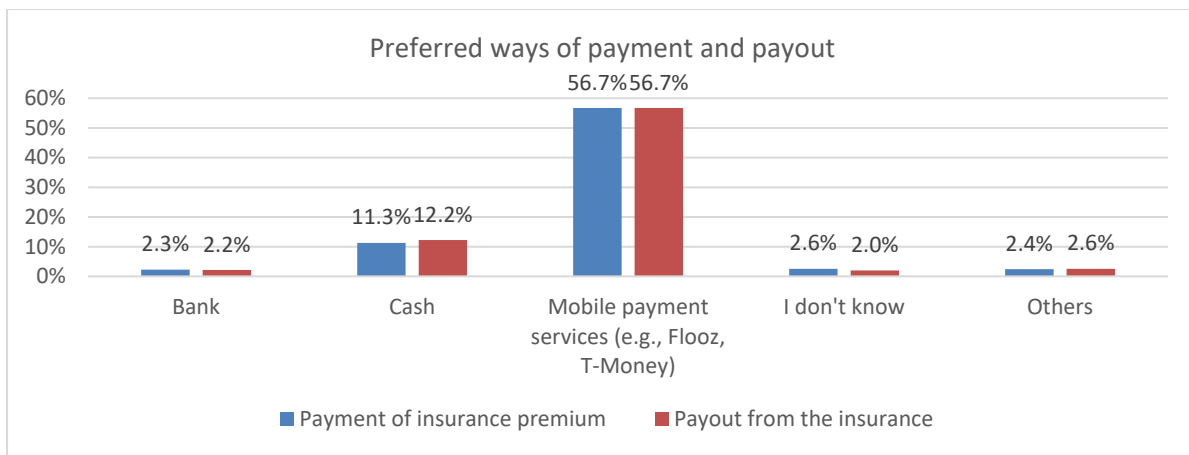


Figure 9: Preferred ways of payment and payout [3]

Additionally, households were asked about the maximum amount of time they would be willing to wait for a payout from a potential insurance product after a flood event to cover the financial implications of its impacts (Figure 10). The results show that the majority of households in both countries would expect a payment within latest one week [3].

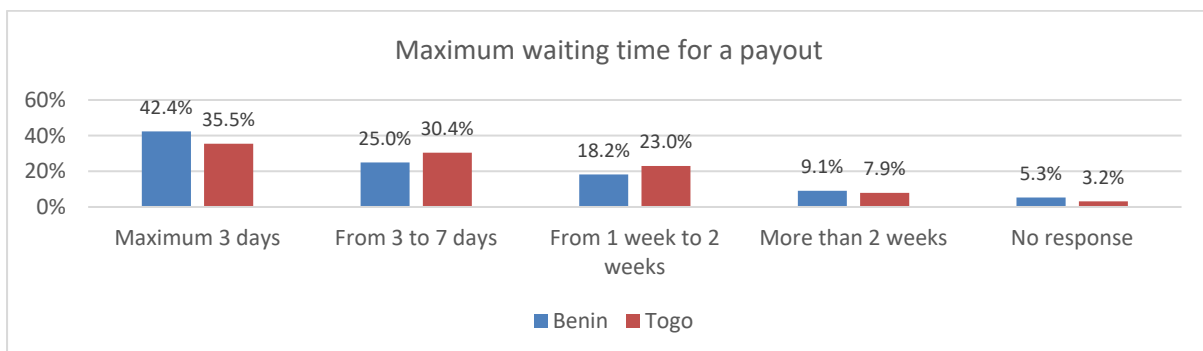


Figure 10: Maximum waiting time for a payout from a potential insurance product after experiencing a flood event [3]

Based on those insights the following conclusion was formulated:

Given the indicated maximum waiting time for a payment, a parametric/indexed insurance approach may be the first choice, should an insurance approach be pursued at some point. This is due to its ability to quickly issue a payment without having to evaluate claims. However, an improvement of the data situation might be a prerequisite for such. In addition, forecast-based financing methods and automatic prepayment should be explored further.

In addition, a potential product could leverage mobile payment technologies to provide fast payment processing and meet the preferences of potential customers. However, further studies are needed to assess the reliability of the payment method in the basin area and its reliability during flooding.

This report is based on the following sources:

[1] Wagner, S.; Thiam, S.; Dossoumou, N.; Hagenlocher, M.; Souvignet, M.; Rhyner, J. (2022) Recovering from financial implications of flood impacts – The role of risk transfer in the West African context, Sustainability 14, no. 14: 8433. <https://doi.org/10.3390/su14148433>

[2] Wagner, S. (forthcoming) Assessment of the Togolese and Beninese insurance sector's attitudes towards flood insurance

[3] Wagner, S., Thiam, S.; Dossoumou, N.; Daou, D.; Rhyner, J. (forthcoming) Assessing demand for a potential flood insurance product in an area with low insurance penetration – a case study in the West African Lower Mono River Basin (LMRB)



UNITED NATIONS
UNIVERSITY

UNU-EHS
Institute for Environment
and Human Security

 **MCII**

About MCII

The Munich Climate Insurance Initiative was initiated as a charitable organisation by representatives of insurers, research institutes and NGOs in April 2005 in response to the growing realization that insurance solutions can play a role in adaptation to climate change, as suggested in the UN Framework Convention on Climate Change and the Kyoto Protocol. This initiative is hosted at the United Nations University Institute for Environment and Human Security (UNU-EHS). As a leading think tank on climate change and insurance, MCII is focused on developing solutions for the risks posed by climate change for the poorest and most vulnerable people in developing countries.

Follow us on Twitter: [@_MCII_](#)
Email Us: mcii@ehs.unu.edu