

Supplementary Materials: Integrated Flood Risk Assessment of Rural Communities in the Oti River Basin, West Africa

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Table S1. Questionnaire used in the Community-based Disaster Risk Index, modified from Bollin et al. [12].

1. Hazard				
	Experienced hazard			
1.1	(H1) Occurrence			
	How often did an emergency with this hazard happen in the past 30 years			
	0–1 Times	Low		
	2–3 Times	Medium		
	> 3 Times	High		
1.2	(H3) Intensity			
	What was the intensity of the worst event in the last 30 years?			
	No persons killed, only damages to houses and infrastructure	Low		
	Few persons killed, destruction of some houses and infrastructure	Medium		
	More than few persons killed, destruction of many houses and infrastructure	High		

2. EXPOSURE				
	STRUCTURES			
2.1	(E1) number of housing units.			
	Total number of housing units			
	< 10,000	Low		
	10.000–100.000	Medium		
	> 100.000	High		
2.2	(E2) lifelines			
	% of homes with piped drinking			
	< 20%	Low		
	20%–50%	Medium		
	> 50%	High		
2.2	Economy			
	(E3) average income per capita/year			
	< \$1022	Low		
	\$1022–\$4015	Medium		

	> \$4015/capita/year	High		
	Population			
2.3 (E4) Resident population				
	Total number of population living in the commune			
	< 50,000	Low		
	50,000–500,000	Medium		
	> 500,000	High		

3. VULNERABILITY				
3.1 Physical/demographic				
	(V1) Density			
	How many people per km ² live in the			
	< 100	Low		
	100–500	Medium		
	> 500	High		
	(v2) Demographic pressure			
	Population growth rate			
	< 2%	Low		
	2–4%	Medium		
	> 4%	High		
	(V3) Flood-prone areas			
	% of the total area prone to flood			
	< 10%	Low		
	10–30%	Medium		
	> 30%	High		
	(V4) Access to basic services			
	Rate of access to safe drinking water			
	> 50%	Low		
	20–50%	Medium		
	< 20%	High		
3.2 Social				
	(V5) Poverty level			
	Percent of population below poverty level (\$1/DAY)			
	< 10%	Low		
	10–30%	Medium		
	> 30%	High		
	(V6) Literacy			
	Percentage of adult population able to read and write			
	> 70%	Low		

	40–70%	Medium		
	< 40	High		
	(V7) Attitude			
	What priority does the general population give the protection against a flood hazard			
	High priority. Protection against a hazard	Low		
	Concerned, but only if a disaster has hit.	Medium		
	Not concerned. Other issues (food, work)	High		
	(V8) Decentralization			
	What is the portion of self-generated revenues of the total available			
	> 50%	Low		
	20–50%	Medium		
	< 20%	High		
	(V9) Community participation			
	% voter turnout on last commune			
	> 70%	Low		
	50–70%	Medium		
	< 20%	High		
3.3	Economic			
	(V10) Local resource base			
	Does the community have a budget	Yes/no		
	Enough to help the most affected	Low		
	Insufficient	High		
	(V11) Diversification			
	Source of livelihood comes from one, two or three			
	Mix of 3 sectors	Low		
	Mix of 2 sectors	Medium		
	More than 80% in 1 sector	High		
	(V12) Small business			
	Percentage of businesses with fewer than 20 employees			
	< 50%	Low		
	50–80%	Medium		
	> 80%	High		
	(V13) Accessibility			
	How often in the last 5 years was the commune isolated through interruption of access roads for more than 2 days			
	0- time	Low		
	1–5 times	Medium		
	> 5 times	High		
3.4	Environmental			

	(V14) Area under forest			
	How much of the total territory of the commune is covered with forest?			
	> 30%	Low		
	10–30%	Medium		
	< 10%	High		

4. CAPACITIES AND MANAGEMENT

1. CAPACITIES AND MANAGEMENT				
4.1	Physical planning and engineering			
	(C1) Landuse planning		Their enforcement is	Evaluation
	Does a land use plan or zoning regulations exists that keeps local production and housing out of hazardous areas?	YES/NO If YES, explain	Low	Low
			High	High
	(C2) Preventive measures		Expected effect on damage	
	Do flood exposure-limiting mechanisms/structures exist (dykes, retaining walls, dams, barrages, rock fall barriers, terraces, drainage)?	YES/NO If YES, explain	Low	Low
			Medium/high	Medium/high
	(C3) Environmental management		Number of activities and project	
	Are there activities to promote and enforce conservation of natural resources in risk areas (e.g. protection of water reserves, natural resources, desertification control techniques, reforestation)	YES/NO If YES, explain	Few	Low
			Some	Medium
			Many	High
4.2	Societal measures			
	(C4) Public awareness		Frequency	
	Are the public awareness programs executed?	YES/NO If YES, what are these programmes	Once	Low
			sometimes	Medium
			regular	High
	(C5) School curriculum		The topics are taught at	
	Are risk, disaster, environment and development topics part of taught lessons at school?	YES/NO If YES, explain	One grade only	Low
	(C6) Public participation		It is composed of	
	Is the public represented as member in the risk management/ emergency committee?	YES/NO If YES, explain	Only level 1	Low
			Level 2	Medium
			Level 3 of the society	High
	Level 1: administration (mayor's office, planning department			
	Level 2: relevant response institutions (police, fire brigade, education, emergence health)			

	Level 3: the public (business, civil society, NGO'S)			
	(C7) Access to national emergency fund		How fast can it be released/ received	
	Is there access to a national/ district emergency fund?	YES/NO If YES, explain	> 7days	Low
			3–5 days	Medium
			< 3 days	High
	(C8) Access to international emergency funds		Access to funds is:	
	Is there access to international emergency funds?	YES/NO If YES, explain	Difficult	Low
			Easy	High
	(C9) Insurance market		Use	
	Is disaster risk insurance coverage for buildings available?	YES/NO If YES, explain	Not common	Low
			Common	High
4.3	Management and institutional measure			
	(C10) Risk management		Meeting frequency:	
	Does a community risk management or emergency committee exist, that deals with prevention, mitigation, Preparedness and response?	YES/NO If YES, explain	Only during Emergency	Low
			Once a year	Medium
			At least quarterly	High
	(C11) Risk map		The map is available at	
	Does a risk map exist?	YES/NO If YES, explain	Only level1	Low
			Also at level 2	Medium
			Also at level 3	High
	Level 1: administration (mayor’s office, planning department)			
	Level 2: relevant response institutions (police, fire brigade, education, emergence health)			
	Level 3: the public (business, civil society, NGO'S)			
	(C12) Emergency plan		Availability of maps at different levels:	
	Is there a worked out and circulated emergency plan?	YES/NO If YES, explain	One	Low
			Few	Medium
			many	High
	(C13) Early warning system		Does it work	
	Is an early warning system in place?	YES/NO If YES, explain	Low	Low
			Medium	Medium
			High	High
	(C14) Institutional capacity building			

	Do local institutions (administration, police, fire brigade, hospitals, building sector) receive training on risk management?	YES/NO If YES, explain	Sometimes	Low
			Often	Medium
			Constant	High
	(C15) Communication			
	Is there coordination with national level risk management organizations (national committees, government etc.)?	YES/NO If YES, explain	Sometimes	Low
			Often	Medium
			constant	High