"Scenario building through stakeholder analysis for flood risk management on Paz River catchment, Guatemala-El Salvador"

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Introduction:

Due to its geographical position Guatemala is exposed to several natural disasters and perhaps floods is the most recurrent among them. Under certain conditions floods pose a threat over life, infrastructure, economy, environment and livelihood.

Being the future hydro climatic conditions uncertain, preparation for different scenarios is a key element for policy planning and implementation, to do so, this study presents several future scenarios of flood risk management in a 30 year time horizon.

In the present study we analyze stakeholders' views to define story lines that are transformed into hypothetical future scenarios for flood management in a 30 year time horizon in Paz River catchment, Guatemala-El Salvador

Main Goal:

The main objective of these study is to give policy makers a set of key strategies and actions towards a better flood risk management plan in Paz River.

Methods and data:

1. Stakeholder classification for Paz River flood management

For the purpose of this work we defined stakeholder as: "*all individuals and collective entities the flood related phenomena in Paz River catchment, this include flood plain dwellers, upstream dwellers, public institutions, private sector, NGOs, in the scope of the transnational nature of Paz River"*

2. Scenario development

Participants reach common agreements and propose future scenarios based on possible changes on the frequency and severity of floods due to climate change in 30 years time horizon.

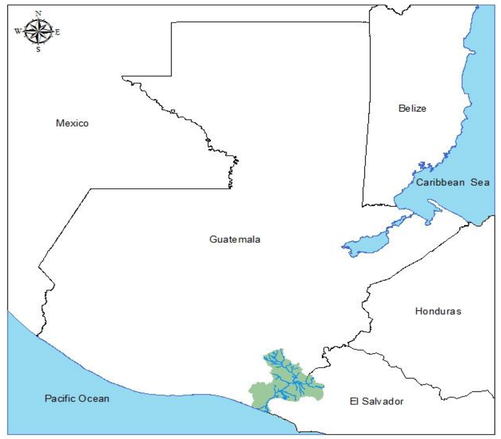

Figure 1. Paz River Watershed

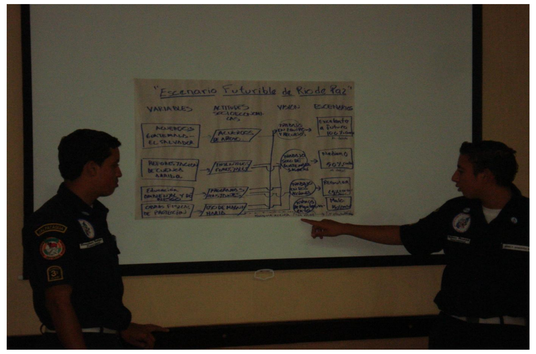

Figure 2. Stakeholders presenting their flood scenarios

Table 2. Variables of the final four exploratory scenarios

	FS1 (bad)	FS2 (Average)	FS3(Good)	FS4(Excellent)
Guatemala-El Salvador joint management	Deteriorates	Continues as the current state	Better integration but not in all the components and programs	Strong integration in all programs and components
Reforestation upstream areas	Deforestation of current woodlands and decline agroforestry	Preservation but no further increase of current woodlands	Increase of agroforestry areas and preservation of current woodlands	Increase of woodlands and increase of agroforestry areas
Environmental education and risk preparation	Without improvement	Without improvement	Increase	Increase
Economic growth	Decrease	Maintain current state	Increase	Increase
Population growth	Increase	Increase	Increase	Increase
Urban planning and legislation	Maintain current state	Maintain current state	Improves	Improves
Risk perception	Maintain current state in all watershed stakeholders	Maintain current state in all watershed stakeholders	Increase	Increase
Flow peak behaviour	Increase frequency of high flow peaks	Increase frequency of high flow peaks	Increase frequency of high flow peaks	Increase frequency of high flow peaks
Investment in defence infrastructure	Same level as current	Improvement of dredging projects	Improve dredging projects and dikes	Increase of dredging projects, dikes, alleviation channels,
Response Mechanisms	Same level as current	Increase	Improvement of technology	Improvement of technology, Improvement of
Flood warning mechanisms	Same level as current	Same level as current	Improve	Improve
Water retention	Same level as current	Same level as current	Increase of small retentions basin and other water retention strategies	Construction of dams, small retention basins, and other water retention strategies.
NGOs roles	Same level as current	Same level as current	Active players in the flood risk management plans	Active players in the flood risk management plans
Hydro meteorological stations network	Same level as current	Increase of the number of stations	Increase of the number and quality of stations	Increase of the quantity and quality of stations
Agricultural development	Increase of agricultural land in areas suitable for woodland	Improvement of productivity	Improvement of productivity, increase of agroforestry in upstream areas	Improvement of soil conservation techniques, Improvement of productivity

Results:

SCENARIO FS1"the bad scenario".

Flow peaks increase but risk perception does not change due to a weak environmental education and risk perception, population continues to growth but economic growth decreases.

SCENARIO FS2"the average scenario".

The frequency of high flow peaks increases due to more and stronger rainfall events, the general conditions for flood risk management continue as the current state.

SCENARIO FS3 "the good scenario".

Flow peak increase but most of the variables are favourable for a better flood risk management, there is an increase in the economic growth and institutional capacity that leads the improvement of urban planning and legislation, more resources to reforestation programs, flood defence infrastructure, water retention facilities and number and quality of hydro meteorological network, there is a higher level of environmental education and risk preparation.

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