Modelling and assessment of urban flood hazards based on end-user requirements. Kigali-Rwanda

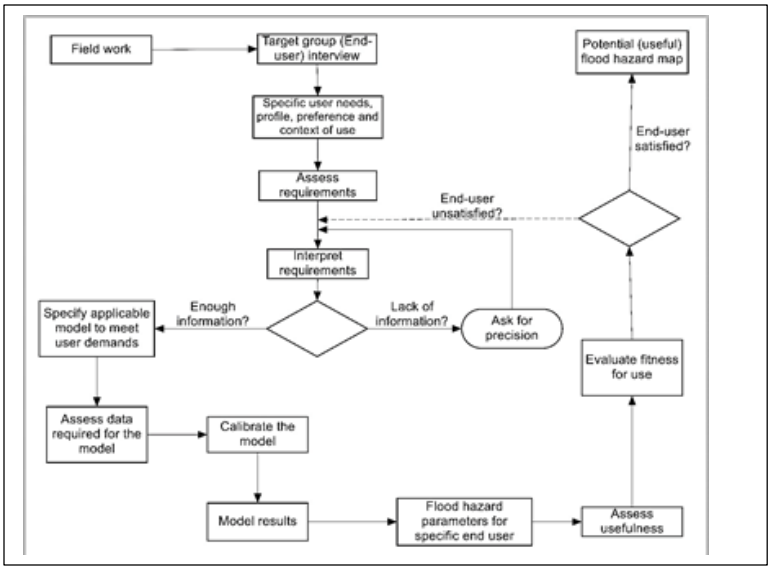
INTRODUCTION AND PROBLEM STATEMENT

Urban flooding is a significant challenge which today increasingly confronts the residents of the expanding cities and towns of developing countries. At least each year Kigali faces a flash flood during rainy season in different locations see fig 1. The committees has been commissioned and consultants have been hired to make assessments of the cause of regular but their reports come up with strategies which are costly and politically sensitive. Flood hazard mapping was another option to delineate the hazard areas which communicate risk areas, but this practice shows some deficits. i.e. the contents of flood maps do not meet the requirements of different stakeholders which means that the map are more generic and information may perhaps not understood by citizens at risk or may not be suitable for the respective needs of different stakeholders. This means that stakeholder's preferences are not incorporated while mapping hence these maps fail to communicate their potential since different stakeholders respond to them by disagreeing the contents believing them to be inaccurate This shows that different users have different needs with regard to contents of flood hazard maps. Due to the above deficits, this study was examined to find out "**who needs what, why, how and where".**

OBJECTIVES

1. To identify the specific needs and requirements of specific end user groups of flood hazard maps
2. To develop the contents of flood hazard maps by considering user specific needs

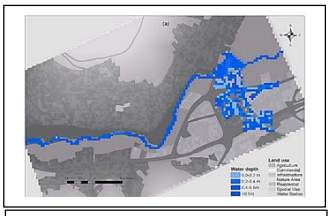
METHODOLOGY



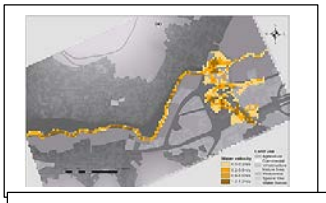
RESULTS

Table 2: Different stakeholder's requirements/needs on the content of flood hazard maps

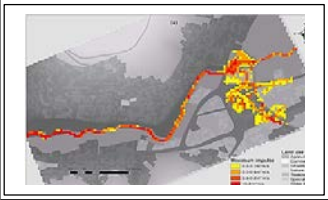
Requirements / Stakeholder /End-user	Flood extent	Flood depth	Flood velocity	Flood impulse	Flood duration	Warning time	Purpose/context of use
Water resource agency		✓	✓				Water retention areas, Flood action plan, identification of flood plains...etc.
City planning agency	✓	✓					Regional planning, Construction planning... etc.
Disaster and response agency					✓	✓	Set up disaster management plan, evacuation planning... etc.
Insurance company		✓	✓	✓			Flood insurance rates, identify who needs insurance... etc.
Engineers agency		✓	✓	✓	✓		Protection of buildings and infrastructure,
Citizens prone to flooding	✓						Public awareness, Better flood protection



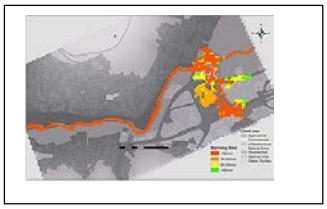
Maximum water depth



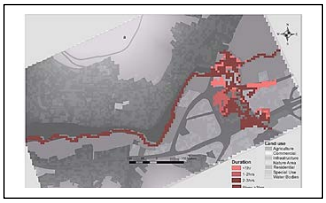
Maximum water velocity



Maximum quantity of moving (impulse)



Arrival time of 1st flood (Warning time)



Estimated duration of floods in hrs.

Over view of response of interviewed stakeholders

Activities	Flood extent	Flood depth	Flood velocity	Flood impulse	Flood duration	Warning time
Regional planning						
Construction planning						
Evacuation planning					X	X
Re-activation of water retention areas	X	X				
Insurance rates		X	X	X	X	
Disaster management plan	X					X
Public awareness	X	X				
Protection of building and infrastructure						
Formulating relevant policies	X	X				X
Identify who needs flood insurance				X	X	

Legend: X= Water resource; X= Disaster and emergency response; X= Insurance company

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