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2014/HD05/18703U
PhD Student: Information Systems

- PhD Proposal Presentation
- 8th June 2018

May Progress

- Resubmitted proposal for presentation to HDRC in June
- Instruments vs stakeholders
- Revisited study area focus
- Reviewed specific objective 1
- Supervised WDR work

Topic: working title

- Modeling the value of meteorological information in health sector policy analysis in Uganda

Problem

- Goals towards eradicating weather-sensitive diseases such as malaria remain unmet and weather information remains largely underutilized in a context where meteorolical and health sectors have heavily invested in information systems (Connor et al., 2010; Kanagwa et al., 2015)

General Objective

- To develop a simulation model that demonstrates how utilization of weather and climate information would facilitate policy analysis in combating weather/climate related diseases

Specific objectives

Specific objectives

- To investigate how the dynamics of weather patterns affect malaria prevalence.
- To design a generic stakeholder relationship model that traces health sector value from weather and climate information systems.
- To quantify and simulate the generic model that demonstrates the systemically persistent weather/climate-sensitive health challenges
- To conduct model-based sensitivity analyses and "what-if" experiments in order to propose optimal systemic weather/climate and health sector policy changes.

Research questions

- What factors influence the value of weather and climate information in the health sector?
- How do stakeholders in weather, climate and health information systems relate in tackling weather and climate-sensitive health sector challenges?
- Why has the incidence of weather-sensitive diseases persisted in Uganda?
- What is required for Uganda to get the best health sector value from weather and climate information systems?

Stakeholders

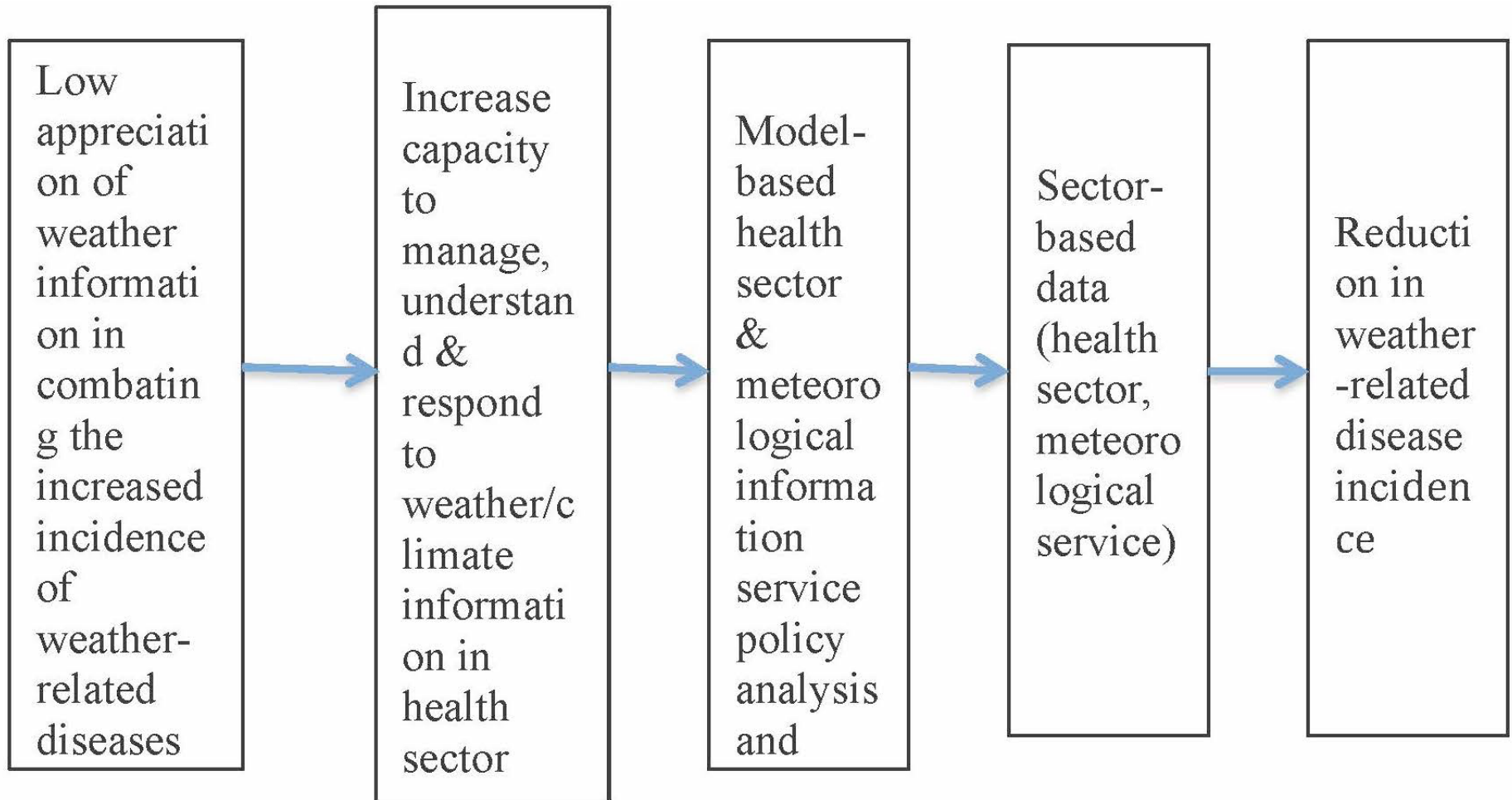|	Stakeholder	Role/contribution in relation to Meteorological & health Information
	Village Health Teams	Usage/utilisation/demand/need & disease prevalence
	Households	Usage/utilisation/demand/need & disease prevalence
	District/Municipal/City Health Officials	Policy: Usage/utilisation/demand/need & disease prevalence
	Hospitals	Disease prevalence
	UNMA	Collection, processing and supply
	Demographic health surveillance sites	Disease prevalence

Study areas: regions G, I, A2, C
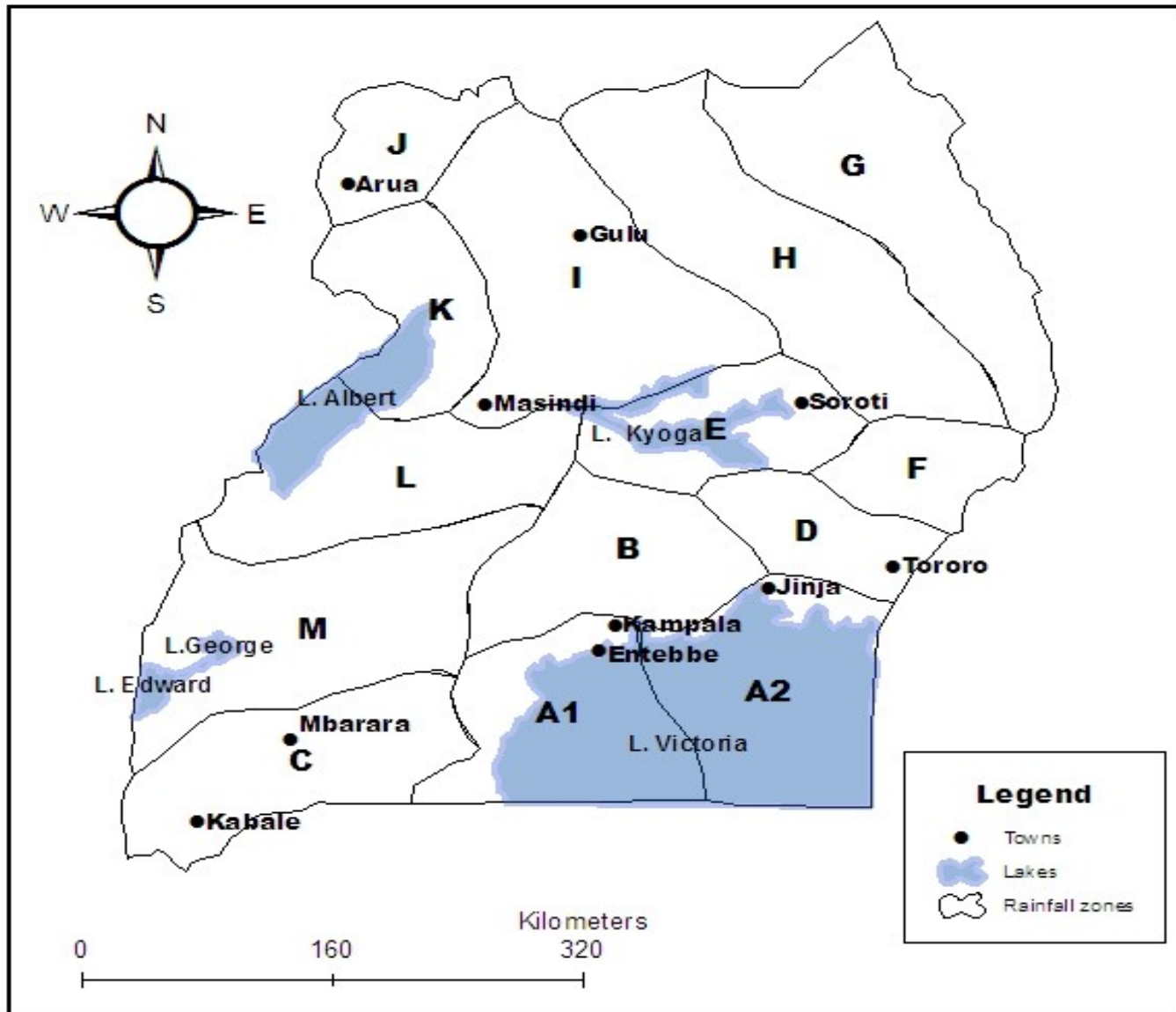
Instruments: meteorological info supply side

- Themes:
  - Demographic data
  - Weather information dissemination to health sector/population
  - Stakeholder relationship
  - Appropriate information systems in place

Instruments: info demand/utilisation side

- Themes:
  - Demographic data
  - Weather effects on health
  - Weather information access
  - Accuracy
  - Comprehension
  - Utilisation/response
  - Flexibility of information systems

Conceptual framework

| Low appreciation of weather information in combating the increased incidence of weather-related diseases | → | Increase capacity to manage, understand & respond to weather/climate information in health sector | → | Model-based health sector & meteorological information service policy analysis and | → | Sector-based data (health sector, meteorological service) | → | Reduction in weather-related disease incidence |

Methodology

- Received feedback on methodology section from supervisors
  - Analysed research approaches
    - Math modeling
    - Design science research
    - Laboratory experiments
    - Experimental Simulation
    - Laboratory experiments
    - Field study/field experiments
    - Case study
    - Action research (SD falls here- changing structure of problem environment)

Linking Specific objectives with methodology

Specific objectives

Methods

- To investigate how the dynamics of weather patterns affect malaria prevalence.
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- To quantify and simulate the generic model that demonstrates the systemically persistent weather/climate-sensitive health challenges
- To conduct model-based sensitivity analyses and "what-if" experiments in order to propose optimal systemic weather/climate and health sector policy changes.

- Prob. Identification: Literature review/document analysis - reference modes/BOT graphs
  - output: review paper: traces the state of usage of weather information systems in health sector policy in Uganda
- Model building stage: Field study, case study, FGDs
  - a) Causal loop modeling – group model building
    - Eight-factor procedure relationship validation
    - clarity, quantity existence, connection edge existence, cause sufficiency, additional cause possibility, cause/effect reversal, predicted effect existence and tautology
    - Output- paper: Using SD to clarify weather information usage for the health sector: multi-stakeholder approach
  - b) Stock & Flow modeling
    - Case study
    - FGDs
    - Paper:
- Experimental simulation
- Model use/implementation & theory extension
  - Interface design to facilitate model use
  - Case study: FGDs
  - Application of SD in extending knowledge in of RBV, dynamic capabilities, Value engineering & decision theories
- Sampling procedure
  - Purposive & stratified random sampling

June 2018 Plans

- Present to HDRC – 15th June 2018
- Incorporate feedback from HDRC
- Complete & pretest instruments
- Start data collection: specific objective 1

References

- Connor, S. J., Omumbo, J., Green, C., DaSilva, J., Mantilla, G., Delacollette, C., ... & Thomson, M. (2010). Health and climate–needs. *Procedia Environmental Sciences*, *1*, 27-36.

- Kanagwa, B. Tuheirwe-Mukasa, D. & Muwembe, K. (July, 2015). The need for an integrated effective weather dissemination system for Uganda. *The International Conference on Frontiers in Education: Computer Science and Computer Engineering.* Las Vegas, USA, July 27-30, 2015.

- Thank You