Landslide and Flood Hazards and Vulnerability in NW Rwanda: Towards Applicable Land Management and Disaster Risk Reduction

Research Project for Development (RPD)

Follow-up Committee
26th of May 2023

B. Tychon

Framework of our « Research Project for Development (RPD) »

Belgian Development Cooperation

Higher Education (University) Belgian Development Cooperation

Framework of our « Research Project for Development (RPD) »

- ARES : Académie de Recherche et d'Enseignement Supérieur of the French speaking part of Belgium (Wallonie-Bruxelles Federation)
- ARES support collaborative research projects in partnership between Higher Education Establishments (HEI) of the Wallonie-Bruxelles Federation and HEI from 18 concentration countries in the South including Rwanda.
- **Research Projects for Development (RPD)** are both research and dissemination of knowledge projects from joint North-South initiatives targeting development problems of local, national and even regional dimension, beyond the academic world borders.

Aims and expected results of RPDs

- to build **research capacities** of HEI partners to tackle key development issues identified locally in society.
- to strengthen the **dissemination capacities** of HEI partners to ensure knowledge diffusion towards civil society actors, as well as accompanying them and training them to sustainably solve development issues.

Tools

PhD students supervized by both North and South partners

Ms students from both Rwanda and Belgium

Equipment

Operating means

Communication and dissemination means

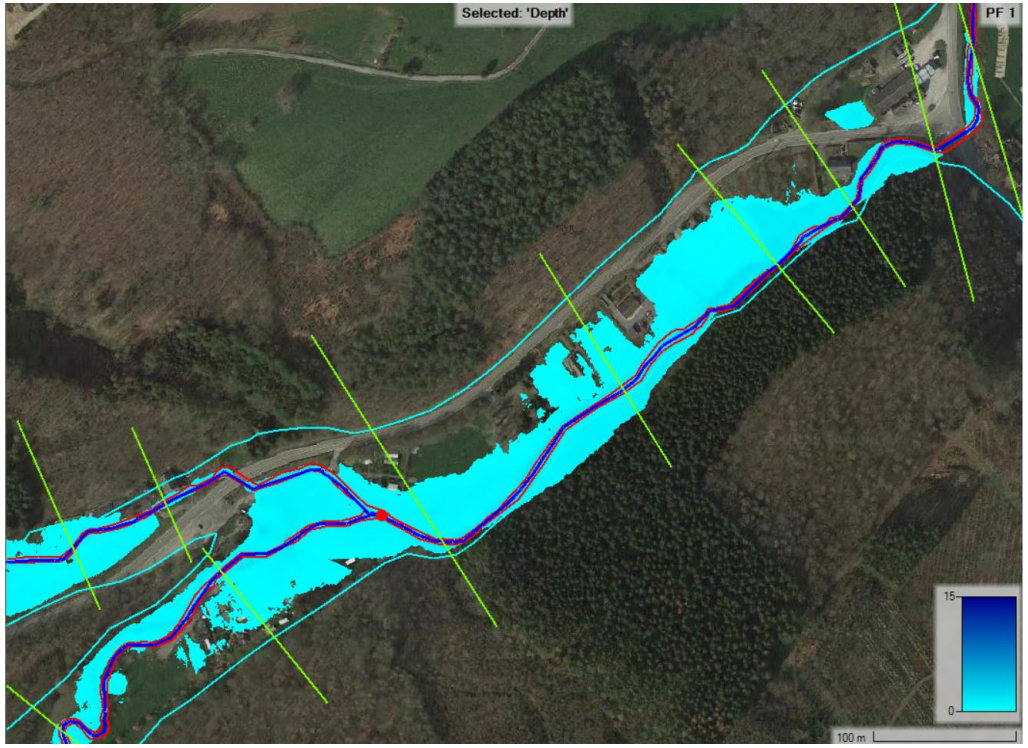
Communication

We want to build a strong network including local and national stakeholders as well as other actors involved in disaster risk reduction policies and measures

= Follow-up committee of today

Expected Outcomes

✓Research results and developed tools will have the potential to directly contribute to the development of suitable disaster risk reduction plans.



Duration

- 5 years, started the 1st of April 2020
- Due to Covid-19, extension of 8 months

Budget

- 500 k€

Objectives

Global Objective: Strengthen the capacity of Rwandese researchers and stakeholders to prevent and mitigate the impacts of floods and landslides on the local communities.

Specific Objectives

- Better understanding and quantifying the role of land use, land management and land cover change regarding the occurrence of landslides and flood events.
- Better understanding and quantifying the population's vulnerability to landslide and flood risks.
- Provide reliable and applicable tools that allow assessing landslide and flood risks by scientific community.
- Build a strong partnership between local and national stakeholders as well as other actors involved in disaster risk reduction policies and measures.

Target groups

- INES
- U. Rwanda and Rwanda-Polytechnics
- North Partners
- Ministry of Environment (ME) + REMA, RWFA and Meteo Rwanda
- Ministry in charge of Emergency Management (MINEMA)

Beneficiaries

- INES
- Ministry of Environment and its Institutions
- MINEMA
- Ministry of Infrastructure and its Institutions
- Ministry of Agriculture
- Ministry of Local Government
- **Population living in landslides and flood prone areas**

Dissemination and valorization

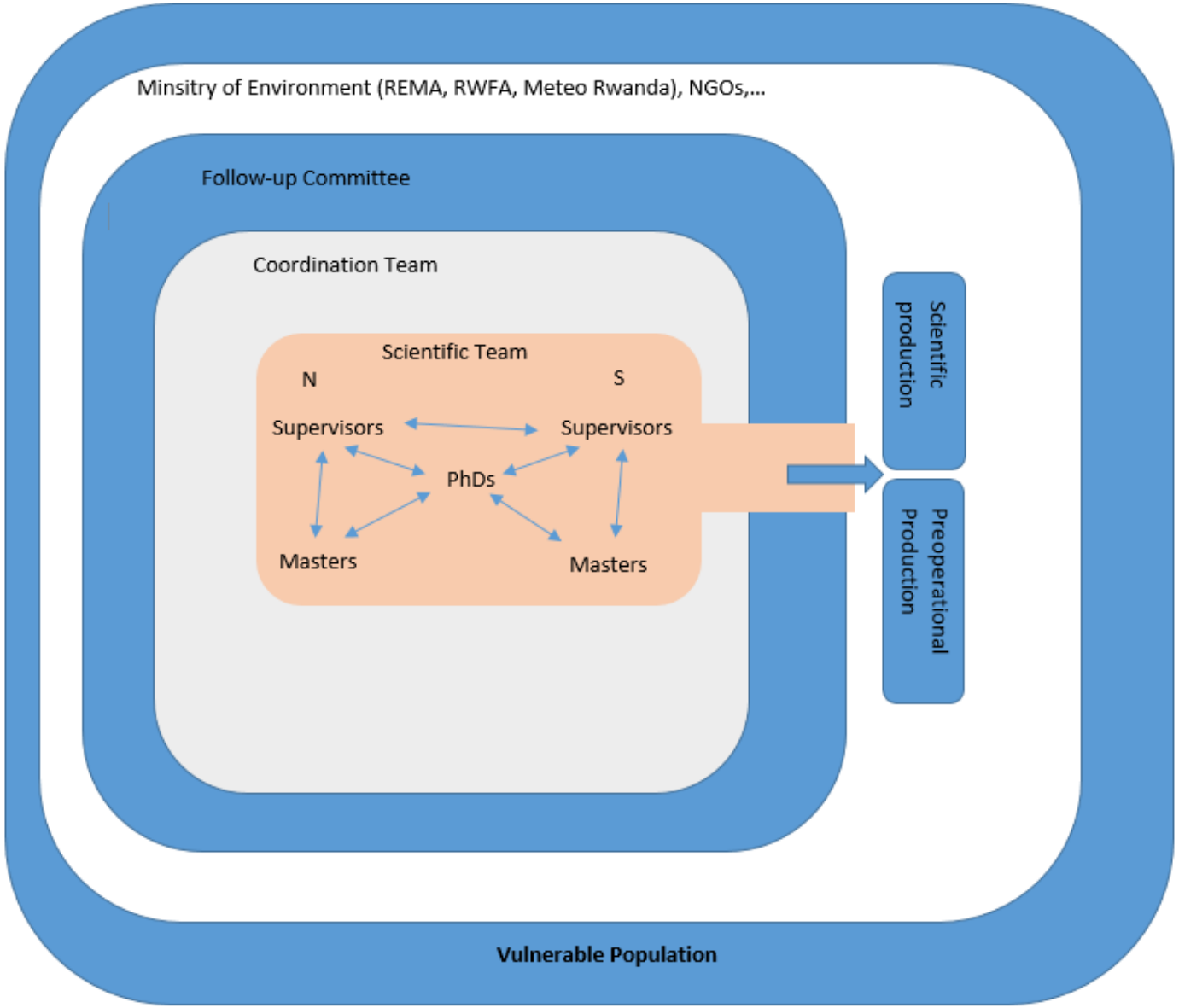
- ✓We want to implement a participative methodology, associating stakeholders and actors involved with disaster risk reduction policies and measures.

- ✓The findings of this research will be disseminated to relevant stakeholders and policy makers.

- ✓The results of the project will also be disseminated through scientific publications, but also through a regional conference organized for local, regional, national and international stakeholders.

GOVERNANCE

- Scientific team(s)
- Coordination team
- Follow-up Committee
- Target groups and beneficiaries



Composition and Role of the follow-up committee

- Includes all project partners (including the Ministry of Environment and its associated Institutions) as well as other selected stakeholders that could contribute to the valorization of our project results
- Is chaired by the two coordinators
- Follows up on the direction and progress of the project (in relation to the logical framework) and will decide on the important and strategic aspects of the project (including financial management, coordination and execution of the project, implementation and communication strategies)
- Meets at least once a year

5 résults

- Result 1 : Knowledge about the role of land use / land cover, its changes and land management regarding the occurrence of landslides and flood events is produced and disseminated
- Result 2 : Knowledge about the population’s vulnerability and resilience to landslide and flood risks is produced and disseminated
- Result 3 : INES has the expertise in the area of prediction of landslides and floods and population’s vulnerability and can offer it to other stakeholders (public authorities, NGOs, population…)
- Result 4 : Space for discussion between researchers and other stakeholders exists and knowledge produced by academic institutions is used by policy makers
- Result 5 : The implementation and monitoring of the project is effective

Three PhD

- **PhD 1: landslides and their relation to LULC change – Pascal Sibomana**
- **PhD 2: understanding flood hazards – Deogratias Nahayo**
- **PhD 3: assessing vulnerability and risk assessment to flood and landslide hazards – Clémence Idukunda**

Activités - intitulés	Semestre 1	2	3	4	5	6	7	8	9	10	Partenaire(s) responsable(s)
R1-A1 Literature review and compilation of existing data											2 PhD candidates
R1-A2 Data collection through remote sensing and field surveys											2 PhD candidates
R1-A3 Installation of runoff and rainfall measuring equipment											2 PhD candidates
R1-A4 Station maintenance and rainfall/runoff data collection											2 PhD candidates
R1-A5 Data processing: landslides											PhD candidate on landslides thesis
R1-A6 Data processing: floods											PhD candidate on Flood thesis
R1-A7 Scientific dissemination of the research results											2 PhD candidates
R1-A8 Production of hazards maps, forecasting floods models and other tools useful for general audience											2 PhD candidates
R1-A9 Supporting and supervising the PhD and MSc theses											Supervisors
R2-A1 Collect and mapping the exposed elements: population distribution in the study areas											PhD candidate
R2-A2 Assessing the social vulnerability of the population to landslide and flood hazards											PhD candidate
R2-A3 Mapping and validating social vulnerability of the area											PhD candidate
R2-A4 Production of Disaster Risk Reduction tools											PhD candidate
R2-A5 Scientific dissemination of the research results											PhD candidate
R2-A6 Support and supervise the PhD and MSc theses											Supervisors
R3-A1 Organization of capacity building workshops on landslide and flood hazards, vulnerability and resilience, writing scientific proposal											E. Rukundo and B. Tychon
R3-A2 Organization of one international seminar											E. Rukundo
R3-A3 INES's curricula are updated based on the knowledge produced by research											E. Rukundo
R3-A4 Acquisition of scientific equipment and training of INES's staff in optimal use and maintenance											B. Tychon and 3 PhD Candidates
R3-A5 Production of scientific papers and technical reports											PhD candidates
R3-A6 Production of databases, maps, policy briefs and other dissemination tools (leaflets, handouts for population…)											D. Kayiranga
R4-A1 Set up and animate a platform of dialogue on landslides, floods and vulnerability/resilience											E. Rukundo
R4-A2 Organization of a final international conference											E. Rukundo and B. Tychon
R4-A3 Setting up a website dedicated to the project											E. Rukundo
R5-A1 Creation of a follow-up committee (identification of roles and responsibilities of members of the committee)											B. Tychon and E. Rukundo
R5-A2 Regular communication between the coordinators and partners											B. Tychon and E. Rukundo
R5-A3 Organization of meetings by the follow-up committee											E. Rukundo and B. Tychon
R5-A4 Realization of a baseline study based on the indicators defined in the logframe											B. Tychon and E. Rukundo

Activities

- Field work (including equiment installation) and data acquisition
- Data processing
- Mission in Rwanda and follow-up committee
- PhD and Msc supervisions
- Technical reports and scientific papers
- Workshop on flood and landslide hazards, vulnerability and resilience
- Participation to a National/International workshop/symposium

Agenda

- 9h00 : Participants arrival
- 9h20 : Welcome words by Vice Chancellor of INES
- 9h30 : Round table for presentation
- 9h40 : Introduction to the project by Bernard Tychon
- 10h00 : Hydrogeomorphological approaches to understanding flood hazards and flood-risks management in NW Rwanda by Deogratias Nahayo
- 10h20 Landslide distribution in the changing landscapes of the Northern and Western Provinces of Rwanda by Pascal Sibomana
- 10h40 : Assessing vulnerability to flood and landslide hazards in the Northwestern province of Rwanda by Clemence Idukunda
- 11h : Coffee break
- 11h30 : Automatic detection of landslides and flash floods from satellite remote sensing by Olivier Dewitte
- 11h45 : Rainfall assessement using smartphone antennas by Kwinten VanWeverberg
- 12h00 : Discussion
- 12h50 : Conclusions by Emmanuel Rukundo
- Photo of the group and lunch