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Periperi U*:
Disaster Risk Management Education

*** (Partners Enhancing Resilience for People Exposed to *Risks*)**

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Disaster trend

- Continued World population growth,
- Accelerated urbanization and concentration in hazard-prone areas,
- Increased capital and physical assets,
- Increased degradation of the urban infrastructure,
- Emerging new vulnerabilities
- Continued economic losses from natural hazards will rise.

WE CONTINUE

- To build along earthquake faults
- To neglect zoning, code, build, maintain (aging infrastructure), to inspect and enforce appropriately
- To build in floodplains
- To destroy wetlands
- To build on the coast
- To build on alluviums
- To build in and near forests susceptible to wildfires
- To try to control nature

PERIPERI U AS A UNIVERSITY NETWORK

- The innovative elements of PERIPERI U are the conceptualization and implementation of an African DRM capacity-building model that has created *institutional traction*, achieved *curricula innovation*, sustained *growth in staff and student numbers*, been *socially responsive*, and produced *robust disaster risk research*.

- They centre on five deliberate focus areas:

- 1. **Institutional embedding (i.e. sustainability)** of active disaster risk-related teaching and training, research and policy advocacy capacity;

- 2. Enhancement of capacity for each university to provide **short disaster risk-related courses**;

- 3. The **growth and sustainability of new undergraduate and/or graduate programmes** related to reducing/managing the risk and vulnerability profile of the country concerned;

- 4. **The generation and communication of applied research outputs by each university** on the risks and vulnerabilities of the country concerned that increase local understanding and improve local risk management

and

- 5. **Mobilisation of the consortium to advance disaster-risk reduction** efforts through the strategic engagement of each university at multiple scales.

Our ‘experiment’ that began nearly 10 years ago

- quietly built a solid multi-lingual architecture for extending DR-related capacity building in Africa & to link this globally.
- has taught us the value of being connected. At all scales.

Let us think back to 2006 in Africa, when we faced all these gaps…

… in skilled DRM human resources, locally and nationally

… in risk reduction scholarship in African HE institutions

… in DRM-related academic programmes that should have been relevant, robust and responsive

+

… in risk research capacity to support local risk management

We struggled to find a solution because academically, the disaster risk domain is complex. It can be:

Disciplinary and multidisciplinary

and

Transdisciplinary (it must integrate knowledges across different disciplines)

but it should

actively engage scholarship and practice

We had few resources. Many countries had fragile higher education infrastructures.

We struggled even more to figure out…

… How could we build an appropriate DRM **'knowledge management architecture'** for different risks, disciplines, languages, organisations & contexts in Africa,

so we could **align our efforts** with those of other interest groups,

but so we would not **limit our responsiveness**, **innovation** and **prospects** for sustainability?

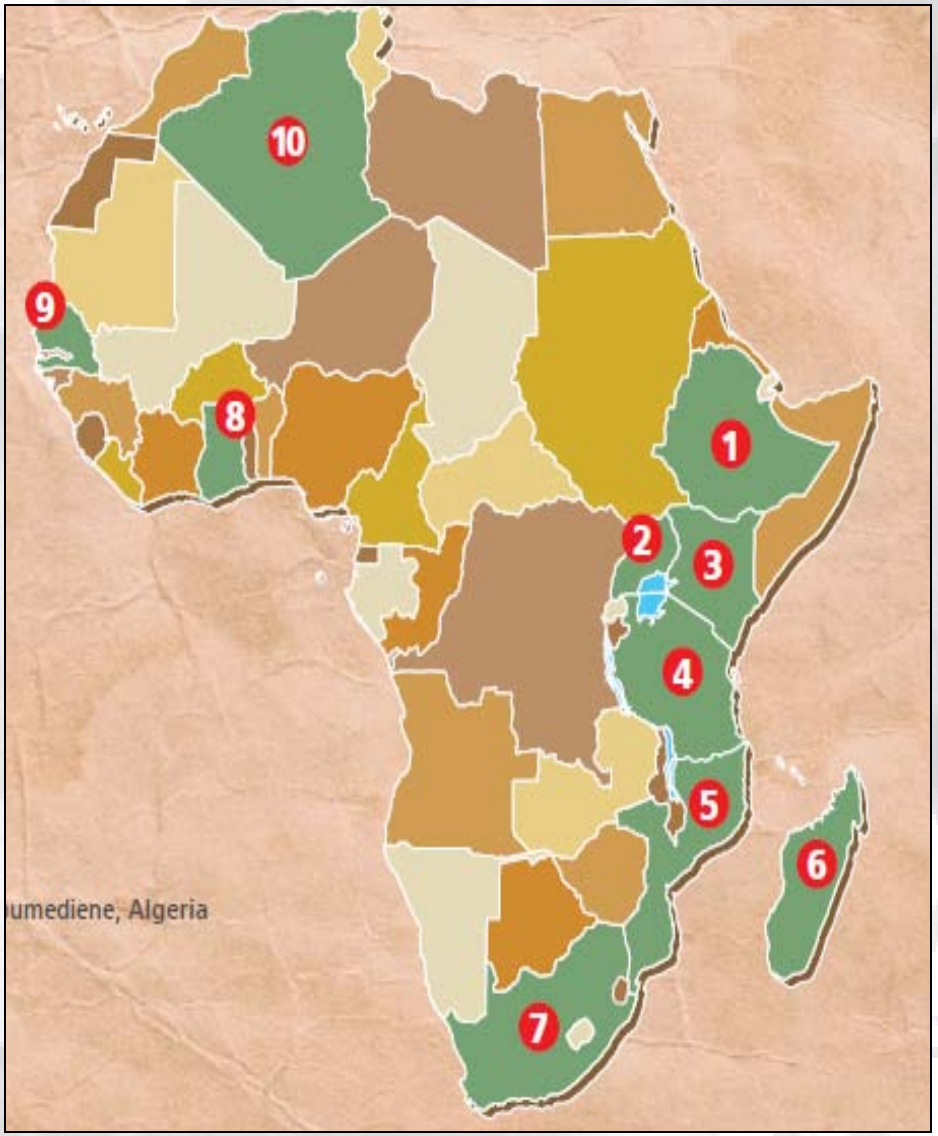
So we experimented with …

- Multiple higher education pathways (short courses, academic modules, seminars, workshops)
- Different disciplines (eg geography, seismology, geology, geophysics, engineering, environmental health, urban planning)
- Different risks (eg seismic risks, public health, urban flood and fire risks, etc.)
- A growing no. of partners …

And we learned from each other

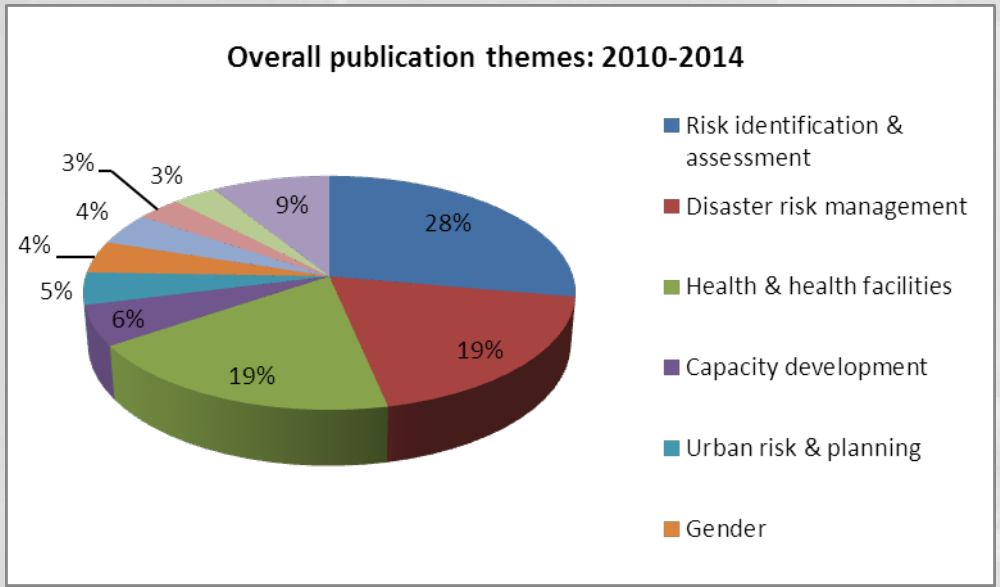
Periperi U - partnership …

1. Bahir Dar Univ.
2. Makerere Univ.
3. Moi Univ.
4. Ardhi Univ.
5. Technical Univ. Mozambique
6. Univ. of Antananarivo
7. Stellenbosch Univ.
8. Univ. of Ghana
9. Gaston Berger Univ.
10. Univ. Science & Technology Houari Boumediene



From 2011-14, this is what we grew…

Short Courses	57
Participants	1,417
Academic progs/modules	18
Students registered	870
Publications (67 articles)	94



Numerous new disaster risk-related postgrad programmes

What we have learned - the value of programme diversity

Some nested in disciplines

Eg Makerere (Health)

SU (Geog/Environ)

UDM (Education)

USTHB (Engineering)

Some that are cross-disciplinary

Ardhi - MDRM

BDU - MDRMD

GBU - MPORSA

ABU - MDM

Tanà - MDRM

That is …

What it has meant practically for us as African HEIs

Student enrolment rises

Core teaching staff surges

Core staffing up from:
41 in 2011 to
120 in 2015

What this means practically for DRM practice

- New forms of human capital
- Eg 550 BSc DRM students enrolled at BDU since 2005…
- …and 170 MDRM students
- Also short courses

- New risk knowledge for planning and implementation.

Example for the Earthquake Engineering Discipline

- Earthquake engineering is defined as the application of civil engineering to the problem of earthquake phenomena. A multidisciplinary domain.

- The difficulty of this complex and multi-disciplinary domain is felt, not only by the students, but also, by the teachers, who may not have had formal advanced level training in the subjects of earthquake engineering, structural dynamics and earth sciences.
- Thus, there exists a need to develop suitable teaching and learning aids to augment the classroom teaching of these subjects.

Weaknesses in Earthquake Engineering Education

- Following predetermined curriculum
- Proceeding block by block, unit by unit
- Narrow, one discipline-based focus
- Knowledge of facts
- Learning skills in silos of really complex problem
- Problems are not presented in their full complexity but simplified for education purpose
- Lack of interdisciplinary connections in students learning and findings
- Lack of real-world questions that students worry about.

Crucial to Engineering

- Data collection
- Data presentation
- Data interpretation
- Objectivity
- Responsibility to society, organization, and self

Risk Management Education Based on Real Problem

A real multi-disciplinary subject which needs real education

- **Learning** is understood as an active process in which students construct new ideas or concepts based on their present knowledge which:
- engages students
- provides an environment for the acquisition of skills needed in higher education & workplace.
- Teaches curricula content.
- Builds skills aligned to today's preoccupation.

Learning is initiated with a real problem
Need of a team science to solve challenging problems

- Students assume a role in the real problem scenario and are led through a process in which they:

a) ask questions, “learning issues,” identifying what they need to know in order to address the problem

b) rank the learning issues in terms of importance and decide who will investigate which matter

c) identify needed resources and where they might be found

d) gather needed information through individual and group investigation

Learning is initiated with a real problem
Need of a team science to solve challenging problems

e) reconvene to **integrate** information

f) find and evaluate possible solutions

g) make needed decisions or take agreed upon procedures

h) communicate results as appropriate for problem resolution

i) step out of role to debrief on problem solving experience

Compelling Ideas for Education Changes
Changing from rote-skill to intelligence

Actual Student role (Rote-skill):

- Carry out instructions
- Memorization by repetition of facts
- Students obtain and complete concise tasks
- Listen and speak only when we speak to them

Change student role to intelligence:

- Problems presented in their full complexity
- Students finding interdisciplinary connections between ideas
- Students struggling with ambiguity, complexity, and unpredictability of problems
- Real-world questions that students worry about
- Skills and knowledge to be embedded into the project
- Problem based learning
-

Support and encourage student autonomy
Build capacity and promote geosciences education

- Introducing geosciences to all first HEI students (discovery)
- Students trained for a community of investigation
- Coursework in a socio-economic context
- Students learn to demonstrate task- and time-management
- Students should drive their own work & learning
- Students learn to simulate the professional work

Need for team science for building capacity and engaging

- Students educated for multi-faceted investigations
- Students encountering obstacles, seeking resources and solving problems
- Students making their own breakthrough among ideas and gaining new skills
- Students using real tools
- Students getting feedback from experts and realistic assessment
- Students educated in critical thinking to solve real-world problems
- Students to Enhance Social, Economic, and Environmental Resiliency

So what? Where do our graduates go?

Public Institutions

Prime Minister's Office Unit (eg resp. for DRR or Food Security), Min. Internal Affairs Bureau resp. for Disaster and Risk Emergency; Local govt resp. for DRM.

UN agencies

UNFPA, UNICEF, UNDP, etc.

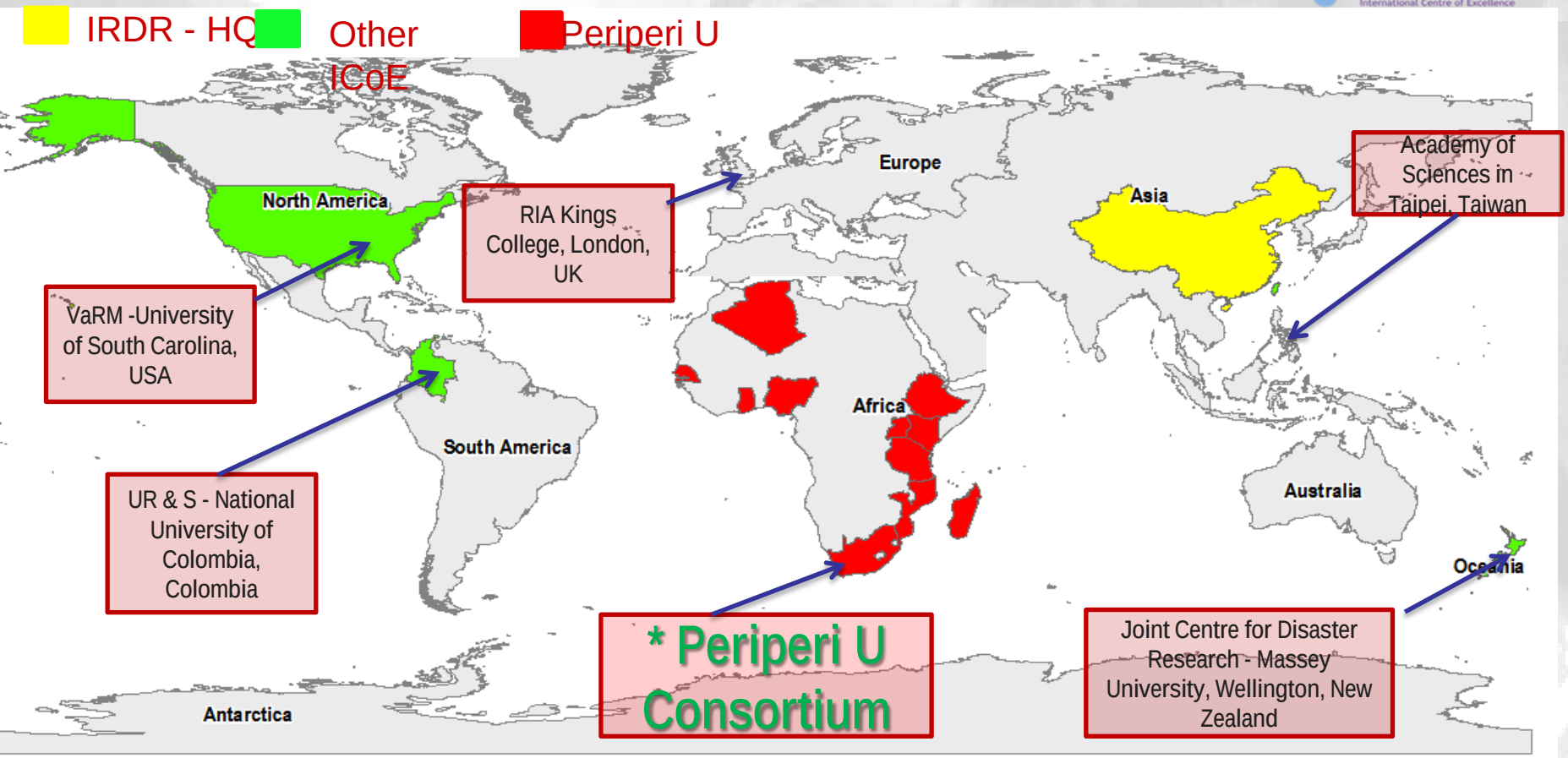
Private sector

National Tourism Office,

NGOs

International (CRS, CARE, ADRA, SALOHI prog.)
National (Malagasy Red Cross, Malagasy Reformed Church Unit for social development, etc.)

And now Periperi U is connected globally, now an IRDR ICoE



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CONCLUSION

- Our world is facing disasters of various dimensions and types.
- Engineering education needs to restructure and align itself to address global realities and challenges, and how to deal with them.
- Engineers are best suited to integrate the other disciplines to actively and holistically deal with disasters and propose effective and efficient solutions for a sustainable development.
- Academic community could engage more in hazards, vulnerability and disasters and how to do deal with them.

If you want to know more, go to

http://www.riskreductionafrica.org