

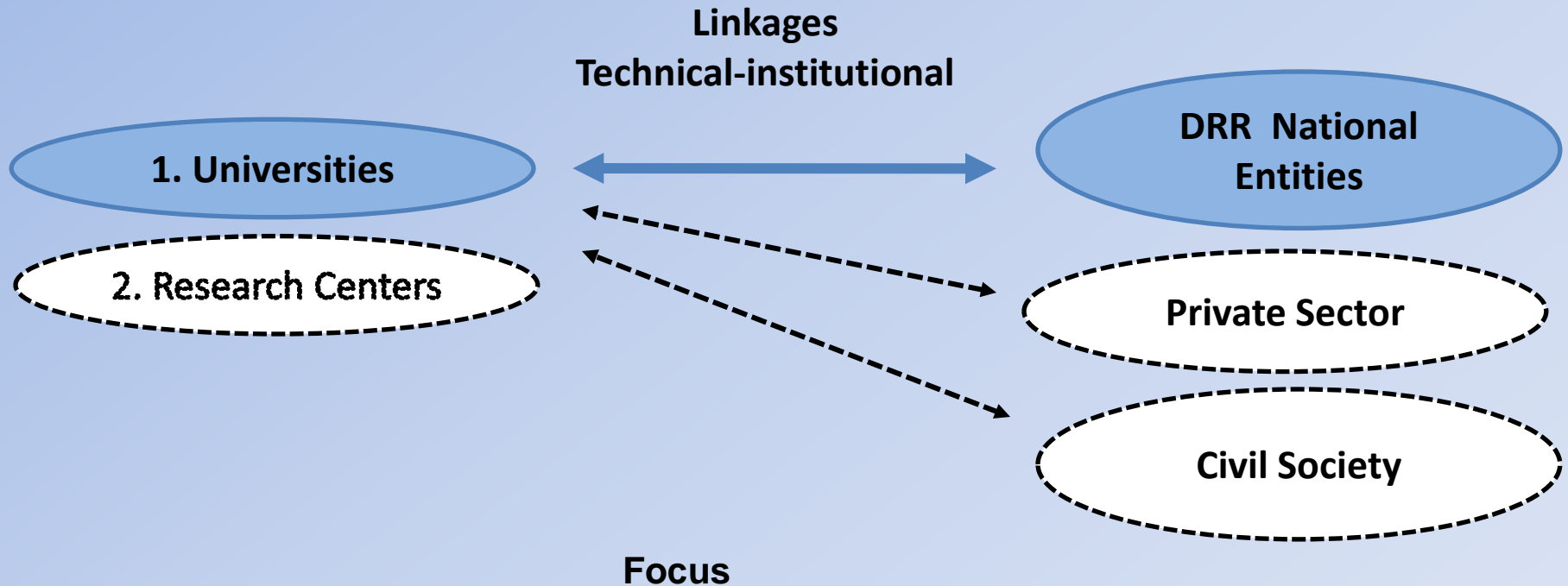
# ***Identification of Existing Advances and Linkages of the Scientific and Academic Community Initiatives with Disaster Risk Reduction (DRR) in Latin America and The Caribbean***

*Study elaborated with the support of researchers from  
LA RED de Estudios Sociales en Prevención de Desastres  
en America Latina (The Network for Social Studies on  
Disaster Prevention in Latin America) and other  
collaborators*

# OBJECTIVE

- **To assess the current advancements in LAC based on existing programmes and projects on DRR, in order to define a regional strategy to strengthen the integration of the agendas of the scientific community and DRR practitioners, and national authorities, to reinforce current efforts within the region.**

# THE STUDY



➤ Academic Institutions working on DRR  
(Program and Projects)

➤ Research Projects and *Best Practices*

➤ Cooperation Agreements

# LAC REGION



The study was carried out in 18 countries in the Region (7 tor's/12 proposal):

## Mexico

**Central America:** Costa Rica, El Salvador, Guatemala, Honduras and Panamá

**South America:** Argentina, Bolivia, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, Venezuela

**Caribbean:** Haiti, Jamaica and Dominican Republic

- *3 countries need further coverage, Cuba, Trinidad and Tobago and Barbados*
- *Brazil was not considered in the study due to time and budget constraints*
- The study was carried out in **4 months** in collaboration with LA RED

# BASIC ASSUMPTIONS FOR THE ASSESSMENT

- **Experiences in Disaster Risk Reduction considered** (not emergency or response...). *Sometimes Disaster Risk Reduction (DRR) is used as synonymous of Disaster Risk Management (DRM).*
- **Cooperation/links between scientific institutions and national institutions** (and local level).
- **Academic institutions that promote educational or scientific research in DRR**  
(DRR programs formally established, promoting lines of research, thesis, scientific knowledge, publications and projects).
- **The disciplinary, multidisciplinary and inter/trans-disciplinary nature of DRR projects.**

# APPROACH

- **Assessment of basic information** and Identification of academic institutions (universities) and research centers providing educational services, scientific knowledge and research on DRR in LAC, from different sources.
- **Design of 2 data collection instrument** for the survey.
- **Application** of the instrument for Data collection: **20 researchers**, more than **60 contacts**. The information was collected for this study from **universities, research centers, and individuals working in national entities such as ministries and secretariats** (contacted on a personal basis without compromising official sources), that are promoting research. 2 Matrix.
- **Systematization and analysis** of the information
- **Evaluation of 11 research projects** ( 6 tor's/18). Graphs.
- **Evaluation of 5 Agreements**. Scientific institution and Government. three of them had an international funding sponsor. (2 tor's/15). Matrix
- **Recommendations** for a regional strategy

# CRITERIA FOR PROGRAMS ON DRR

- Programs are offered by formally constituted authorities
- The institutional mission is centered on the development of human resource
- Training programs should be explicitly aimed at Disaster Risk Reduction, or must be promoted through specific courses within a discipline
- Preferably given through regular or permanent programs.

# Questions on INSTRUMENT #1

- **A. UNIVERSITIES** Providing DRR educational services in lac region
- **B. SCIENTIFIC RESEARCH, KNOWLEDGE OR OTHER DRR SERVICES** offered by academic institutions to national authorities
- **C. RESEARCH CENTERS** providing educational services, scientific research or knowledge on DRR



## Questions on INSTRUMENT #2

- **A.** Identify existing projects (or culminated in the last 2 years) that links the scientific knowledge with DRR.
- **B.** Apply the following criteria to one project identified on Part A.
  1. Participation of various stakeholders during the formulation/execution of the project
  2. Inter / Transdisciplinary projects
  3. Contributions on the generation of knowledge or sharing information on DRR.
  4. Enforcement of DRR capacities
  5. Applicability of results
  6. Public Policy linkage
  7. Financial feasibility

## Questions on INSTRUMENT #2

- **C.** Dialogue between scientific community and national entities
- **D.** National authorities promoting research, by country

Nº	Region/ Country	Universities in Latin America and the Caribbean <sup>1</sup>	Universities with programs on DRR (i1) <sup>5,6,7,8,9,10,11</sup>	% Percentage of universities with programs on DRR	Total programs on DRR <sup>11</sup>	Total research projects at universities (i2) <sup>11</sup>	Research centers working on DRR (i1) <sup>11</sup>	Research projects at centers (i1) <sup>11</sup>	Assessed projects (Part B. Instrum. 2)
	<b>Mexico</b>	<b>180</b>	<b>6</b>	<b>3,33%</b>	<b>12</b>	<b>8</b>	<b>7</b>	<b>15</b>	<b>1</b>
1	Mexico <sup>1</sup>	180	<u>6</u>	3,33%	<u>12</u>	<u>8</u>	<u>7</u>	<u>15</u>	<u>1</u>
	<b>Central America</b>	<b>174</b>	<b>14</b>	<b>8,05%</b>	<b>15</b>	<b>39</b>	<b>8</b>	<b>8</b>	<b>4</b>
2	Costa Rica	56	<u>5</u>	8,93%	<u>5</u>	<u>29</u>	<u>0</u>	<u>0</u>	<u>1</u>
3	El Salvador	24	<u>2</u>	8,33%	<u>2</u>	<u>3</u>	<u>1</u>	<u>2</u>	<u>1</u>
4	Guatemala	13	<u>1</u>	7,69%	<u>1</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>1</u>
5	Honduras	20	<u>1</u>	5,00%	<u>1</u>	<u>5</u>	<u>1</u>	<u>1</u>	<u>1</u>
6	Nicaragua <sup>4</sup>	50	<u>4</u>	8,00%	<u>5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
7	Panama	11	<u>1</u>	9,09%	<u>1</u>	<u>1</u>	<u>4</u>	<u>4</u>	<u>0</u>
	<b>South America</b>	<b>726</b>	<b>43</b>	<b>5,92%</b>	<b>60</b>	<b>52</b>	<b>21</b>	<b>17</b>	<b>10</b>
8	Argentina	96	<u>7</u>	7,29%	<u>11</u>	<u>8</u>	<u>1</u>	<u>0</u>	<u>0</u>
9	Bolivia	85	<u>9</u>	10,59%	<u>11</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>1</u>
10	Chile	60	<u>3</u>	5,00%	<u>4</u>	<u>16</u>	<u>3</u>	<u>2</u>	<u>1</u>
11	Colombia	189	<u>6</u>	3,17%	<u>6</u>	<u>9</u>	<u>3</u>	<u>10</u>	<u>2</u>
12	Ecuador <sup>2</sup>	71	<u>2</u>	2,82%	<u>2</u>	<u>3</u>	<u>2</u>	<u>0</u>	<u>0</u>
13	Paraguay	52	<u>0</u>	0,00%	<u>1</u>	<u>3</u>	<u>0</u>	<u>0</u>	<u>0</u>
14	Peru	100	<u>10</u>	10,00%	<u>16</u>	<u>4</u>	<u>6</u>	<u>2</u>	<u>1</u>
15	Uruguay	15	<u>1</u>	6,67%	<u>1</u>	<u>3</u>	<u>1</u>	<u>0</u>	<u>1</u>
16	Venezuela	58	<u>5</u>	8,62%	<u>8</u>	<u>4</u>	<u>5</u>	<u>3</u>	<u>4</u>
	<b>Caribbean</b>	<b>154</b>	<b>7</b>	<b>4,55%</b>	<b>7</b>	<b>5</b>	<b>4</b>	<b>0</b>	<b>3</b>
17	Barbados (***)				0		1		0
18	Cuba (*)	67	1	1,49%	1		1	0	0
19	Haiti (**)	49	1	2,04%	1	1	0	0	1
20	Jamaica <sup>3</sup>	3	<u>2</u>	66,67%	3	3	<u>1</u>		<u>1</u>
21	Dominican Republic	32	<u>3</u>	9,38%	<u>2</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>1</u>
22	Trinidad and Tobago (***)	3		0,00%			1	0	0
	<b>TOTAL</b>	<b>1234</b>	<b>70</b>	<b>5,67%</b>	<b>94</b>	<b>104</b>	<b>40</b>	<b>40</b>	<b>18</b>

**1.234** Universities in the LAC Region. **Less than 6%** of the Universities work on DRR initiatives.

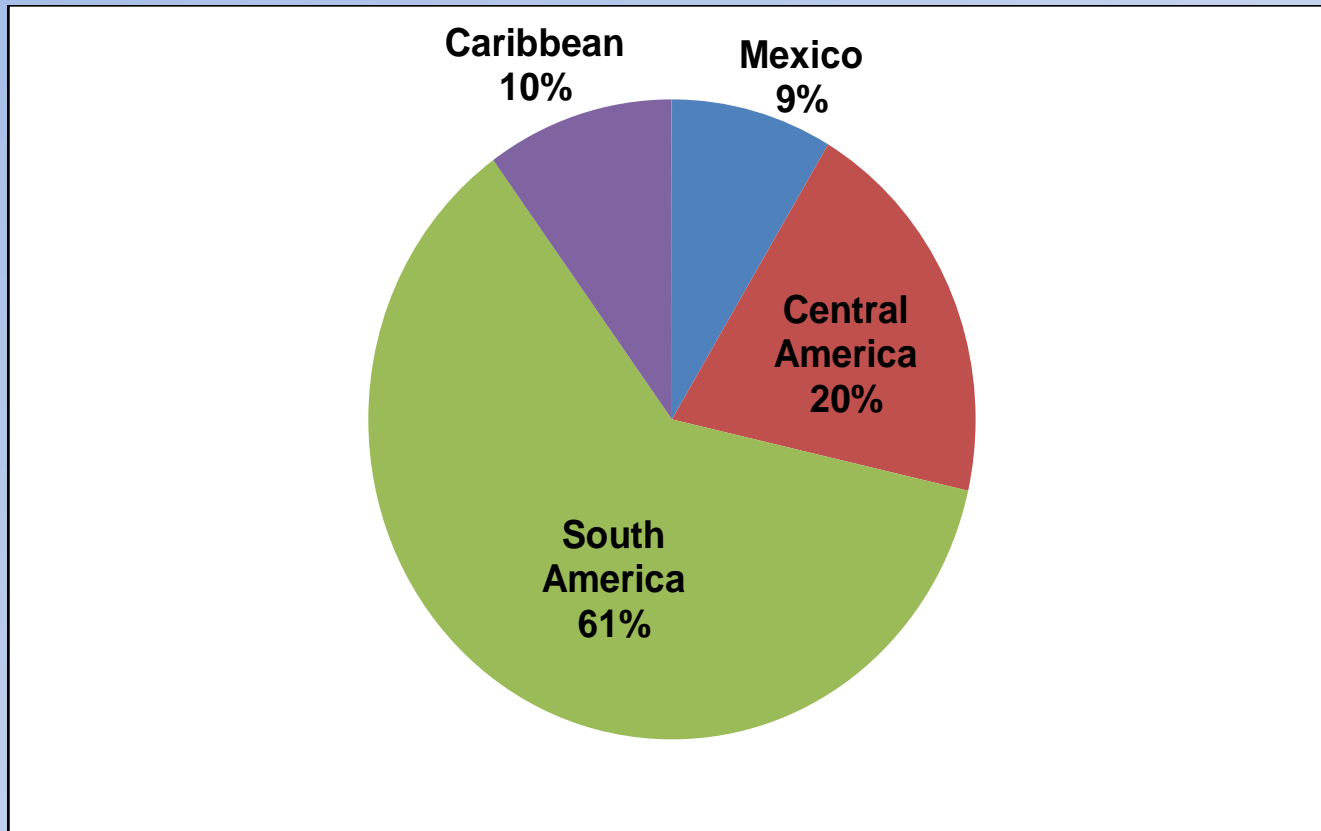
## UNIVERSITIES, PROGRAMS, PROJECTS, RESEARCH CENTRES

- **94 programs** related to Disaster Risk Reduction were identified in **70 Universities** in 19 countries of the region (including Cuba). *Previous studies carried out by LA RED-CIGIR (2011), registered 64 programs mainly at postgraduate level.*
- **40 Research centers** were identified related to DRR (Education or research)
- A total of **104 research projects** dealing with different aspects of DRR were identified.

# PROGRAMS

# PROGRAMS

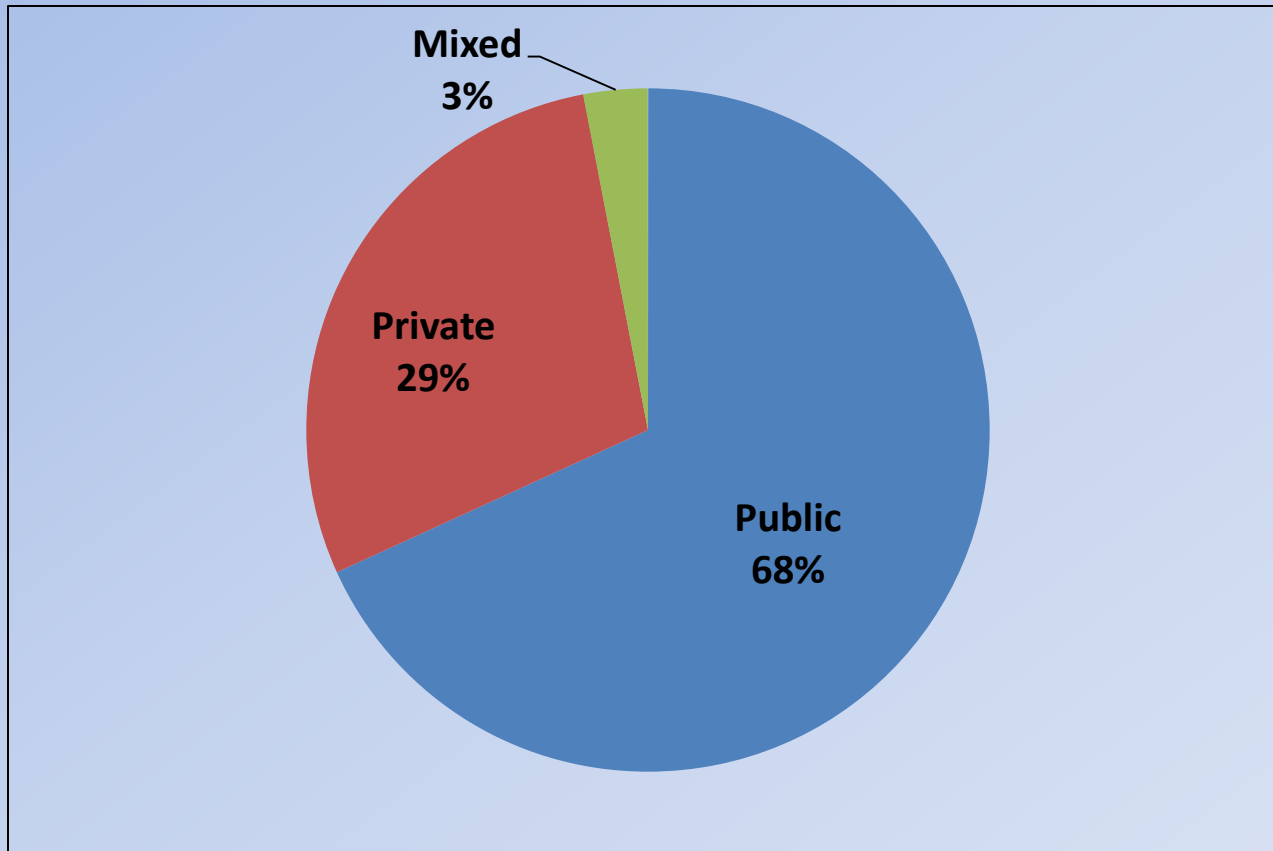
Figure 2. Universities working on DRR, by region



- **94 programs** related to Disaster Risk Reduction were identified in **70 Universities** in 19 countries of the region (including Cuba).
- *Previous studies carried out by LA RED- CIGIR (2011), registered 64 programs mainly at postgraduate level.*

# PROGRAMS

## Private/Public Universities in LAC region



Although most of the programs are given in public Universities (68%), private institutions have taken interest on the subject recently by creating programs related to DRR.

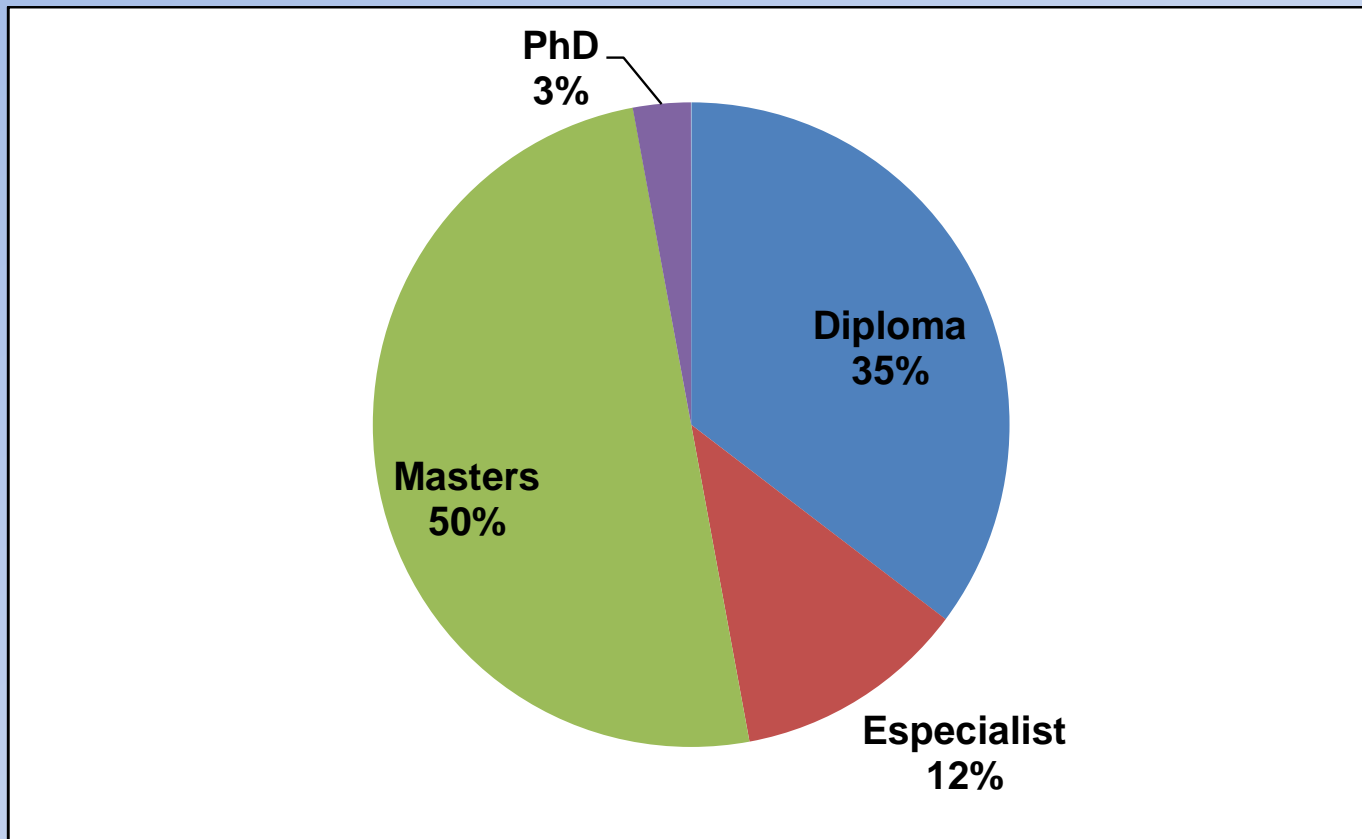
# PROGRAMS

- The study reveals that very few university faculty members are dedicated to DRR (so are the number of researches that will be referred later). **Around 820 lectures teaching DRR in 70 universities** registered by the study. This figure is underestimated as some surveys did not provide this type of information.
- ***“The option to put emphasis on the theme of risk management within specialized, different and relevant topics (land management, agricultural planning, management of basins, etc.), rests on the existence of lecturers prepared with capabilities for providing the necessary knowledge”*** (LA RED-CIGIR, 2011). The number of graduate students in programs could not be determined at this time, despite having been referred in the data collection instrument.



# PROGRAMS

Fig. 4 Postgraduate programs on DRR in LAC



The programs are mostly at post-graduate level (68 programs), nearly half of courses, 47% (this is 32 programs) in the region **do not conferred academic title** (they are diplomas and specializations). There are 14 programs in the region at bachelor's level or *licenciaturas*

# PROGRAMS

- **In terms of content and focus** of the program/course on DRR, all countries have programs on Disaster Risk Management, focusing on aspects of risk identification and planning issues and land and environment. **Argentina, Bolivia, Mexico and Peru include climate change issues** and although it has not been the center of this data collection in some countries such as Uruguay contents of existing programs focus on disaster preparedness mainly. Some programs at universities **in Colombia and Venezuelan put emphasis on the treatment of specific subjects such as engineering or earthquake resistant structural mitigation** (in schools of architecture and engineering)

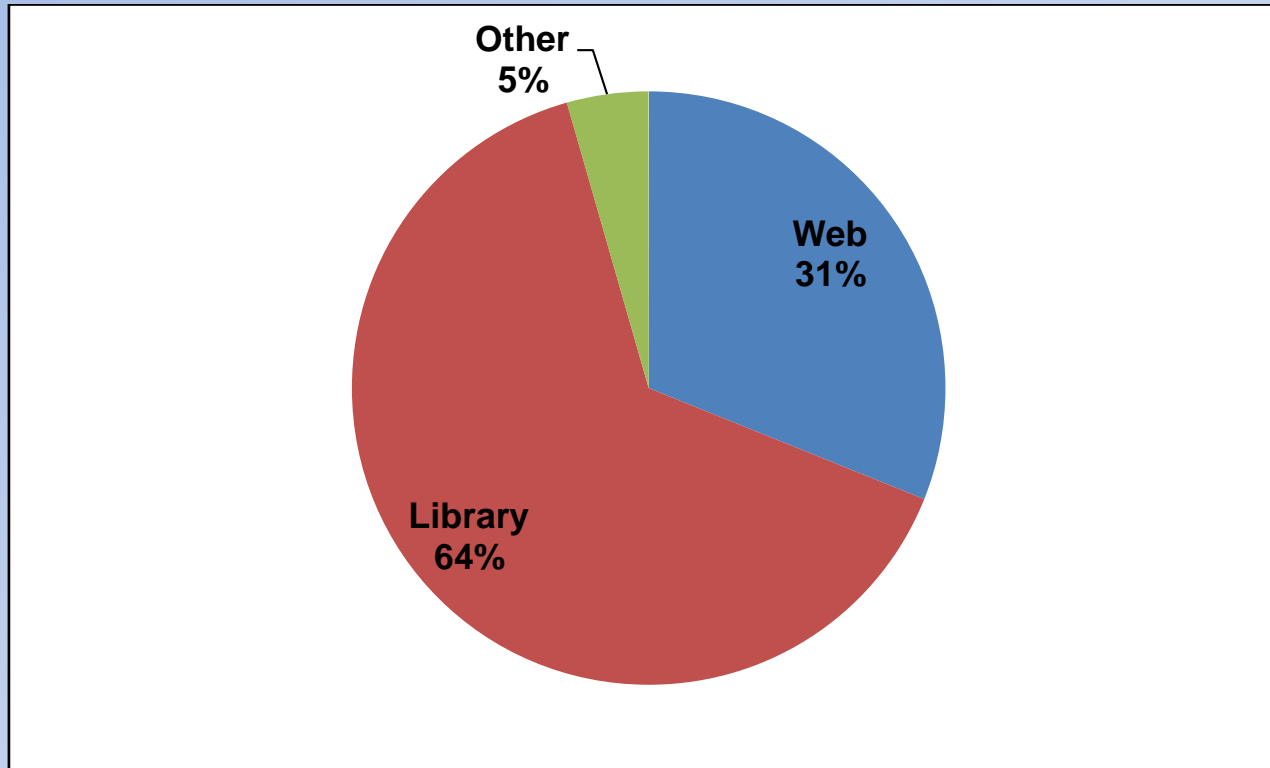
# PROGRAMS

There are very **few linkages established between academic programs and national entities working on DRR**. Stated clearly, the teaching process hardly includes internships or academic research projects as part of the program.

**39%** of postgraduate research on the basis of works that result from the DRR programs conducted in the region, deal with problems of national or local interest, **but *these are not linked to a demand for national or local entities***. In general it is an initiative of the student during the academic year

# PROGRAMS

Figure 5. Public access of research projects



Few research results go to journals; publications are often outside the region. When asking about **availability of the results to public officers for national/local entities**, the answer was that they were available in university libraries and has to be borrowed through the standards administrative procedures. **Seminars and Congresses were considered a very important way to share findings with the public officials.**

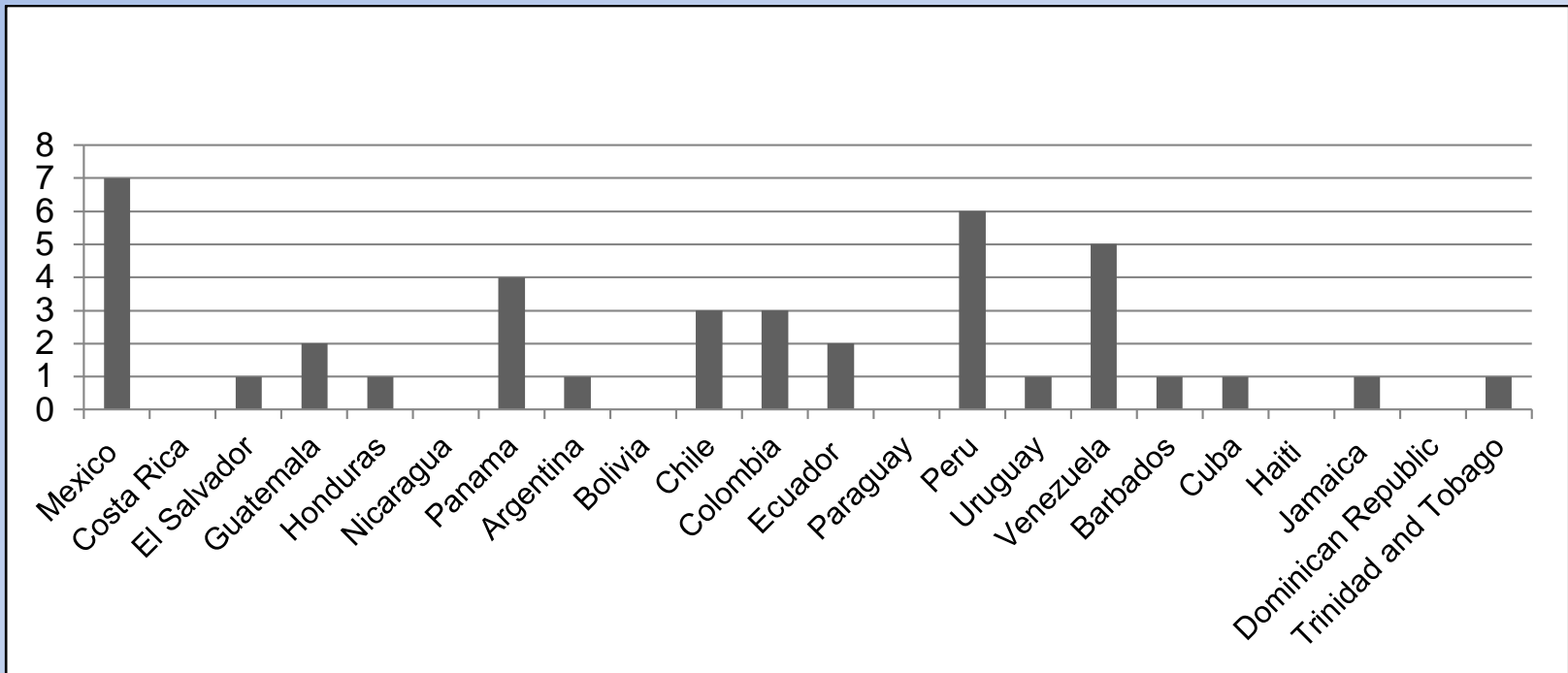
## RESEARCH CENTRES

- Integrated research can be promoted through research centers in the region. The disciplinary organization of the Universities sometimes does not favor the transdisciplinary approach that is needed for Integrated research on disaster risk.

# RESEARCH CENTERS

- **40 Research centers in 16 countries** were identified related to DRR (Education or research). **80%** of the Research Centers are public

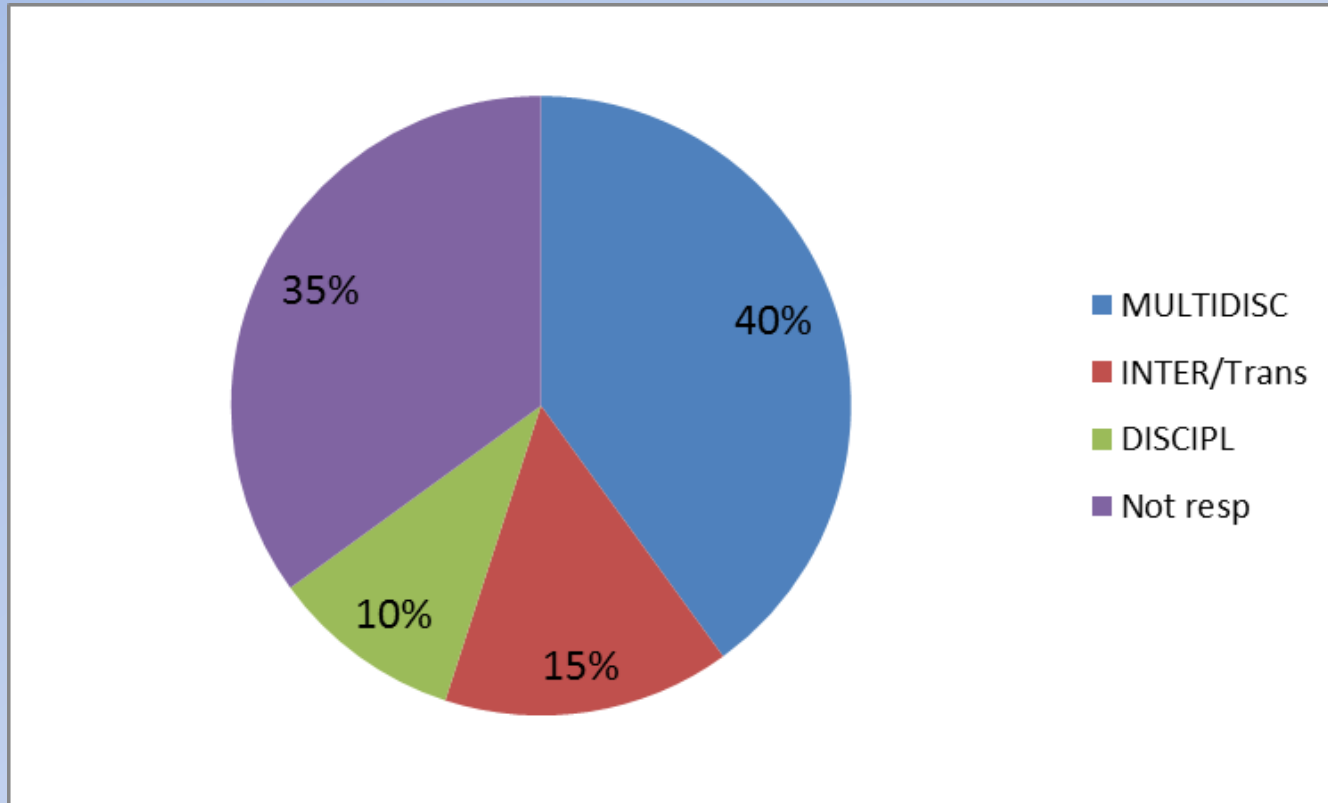
Figure 6. Number of Research Centers working on DRR, by country



- 60% (24) of the research centers are within universities, 25% (10 centers) are private, some of them as foundations and 15% (6 centers) belong to government agencies.

# RESEARCH CENTERS

## Character of the projects



- These centers have a total of 40 research projects: 40% described their character as multidisciplinary and 15% of inter/transdisciplinary character. 10% are involved in disciplinary research on what might constitute specialized institutes such as seismological and volcanological research entities. 35% did not respond about the character of their projects

# Character of the projects

- **Disciplinary:** One discipline addresses a specific aspect of the problem.
- **Multidisciplinary:** That involves knowledge of several disciplines, each contributing from their field to the subject.
- **Inter/Trans-disciplinary:** The combination of several disciplines that leads to gradual integration in a new discipline with defined characteristics. This combination produces a complex process that merges knowledge of natural and social sciences. The result of the project is a solution of a problem, which is not particular to any discipline.



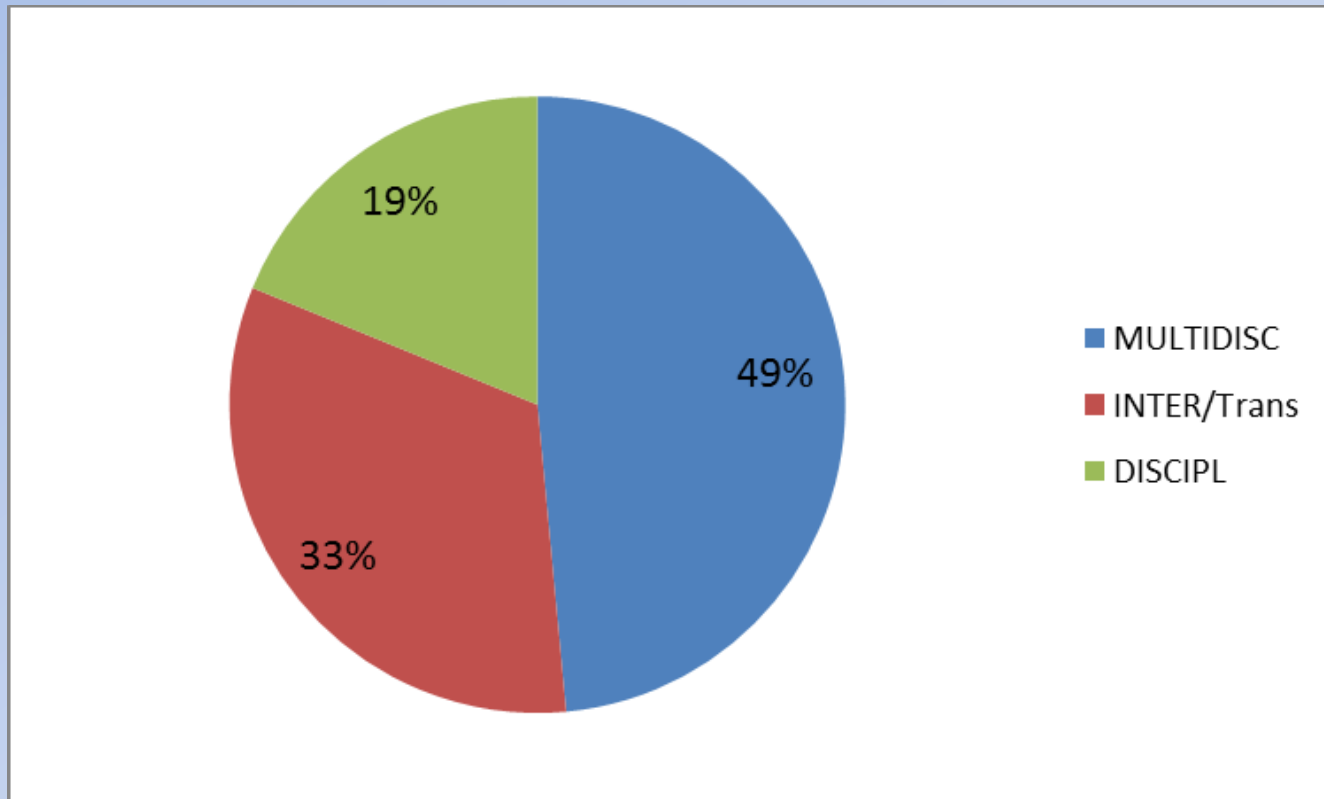
# INTEGRATED RESEARCH

- **Integrated disaster risk research** requires transdisciplinary work, this is, the combination of several disciplines that leads to gradual integration in a new discipline with defined characteristics. This combination produces a complex process that merges knowledge of natural, social and applied science. The result is a solution of a problem, which is not particular to any discipline. It involves various researchers from diverse disciplines and specialties (including professional and practitioner's expertise, and the affected community or representatives), active in the co-production of novel concepts, theory, methods that leads to new knowledge.

# PROJECTS

# PROJECTS

- A total of **104 research projects** dealing with different aspects of DRR were identified.



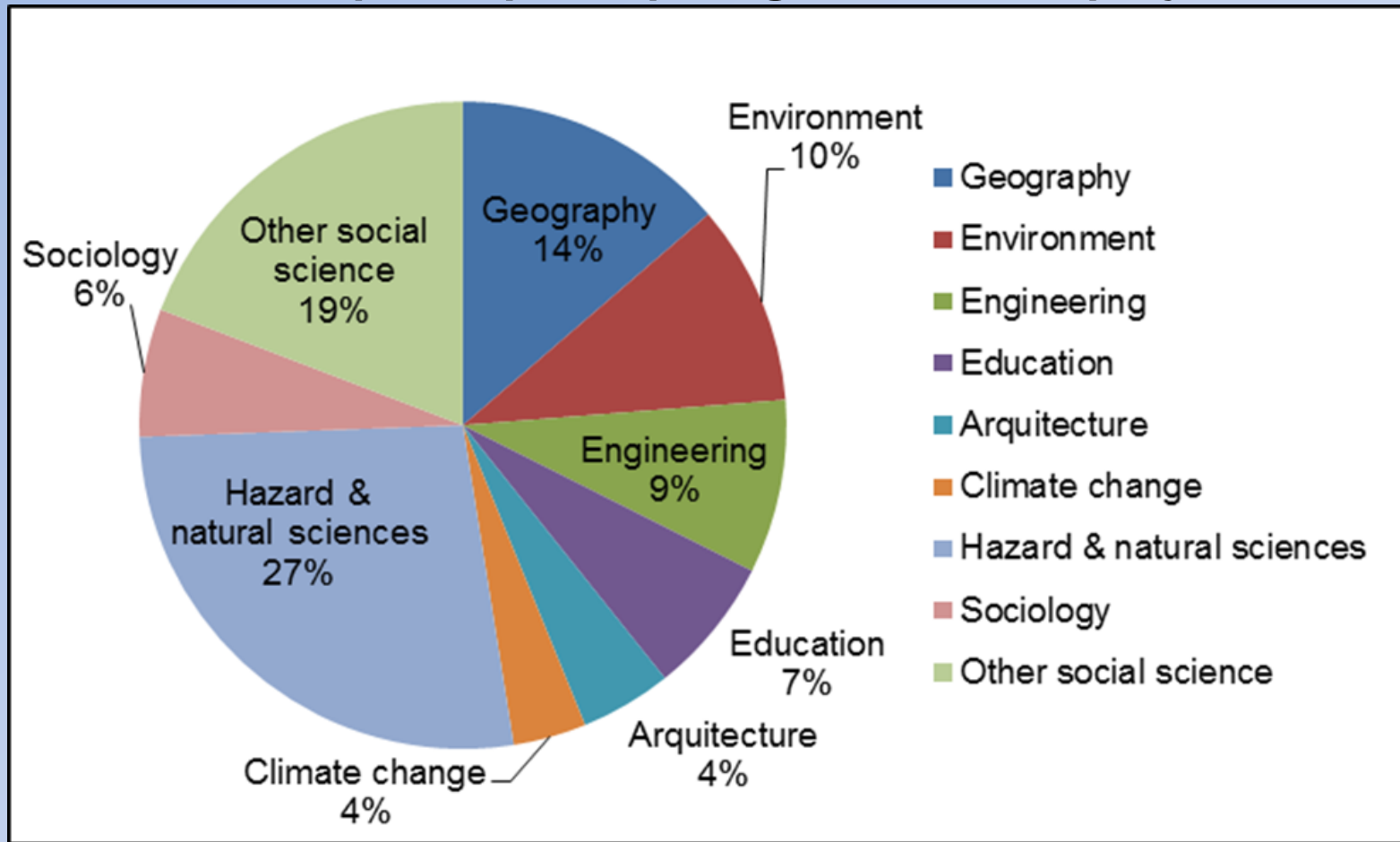
- The respondents have defined 33,3 % as inter/transdisciplinary, but a close validation with other questions in the survey confirmed that most of them were multidisciplinary research projects with each researcher bringing expertise from their own field to solve a specific problem.

# PROJECTS

- **Most of the Research Projects in Central America especially in Costa Rica relates to climate change topics, as well as agricultural and water themes.**
- **The focus of the research projects in South America, ranges from urban planning issues, hydrological hazards, tsunamis (Chile), climate change, floods and some sectorial issues related to engineering applications and public policy implementation. The Venezuelan research project relates most with risk in urban centers, as in Chile. Each country seems to have a special focus**

# PROJECTS

## Disciplines participating on research projects



The most common disciplines involved in research projects were related to hazard analysis and other natural science, followed by geography, environment, sociology and other social sciences. Other disciplines were architecture, engineering and education where the participation in projects was high. It is important to note that development planning did not have the high participation expected, maybe is embedded in other areas.

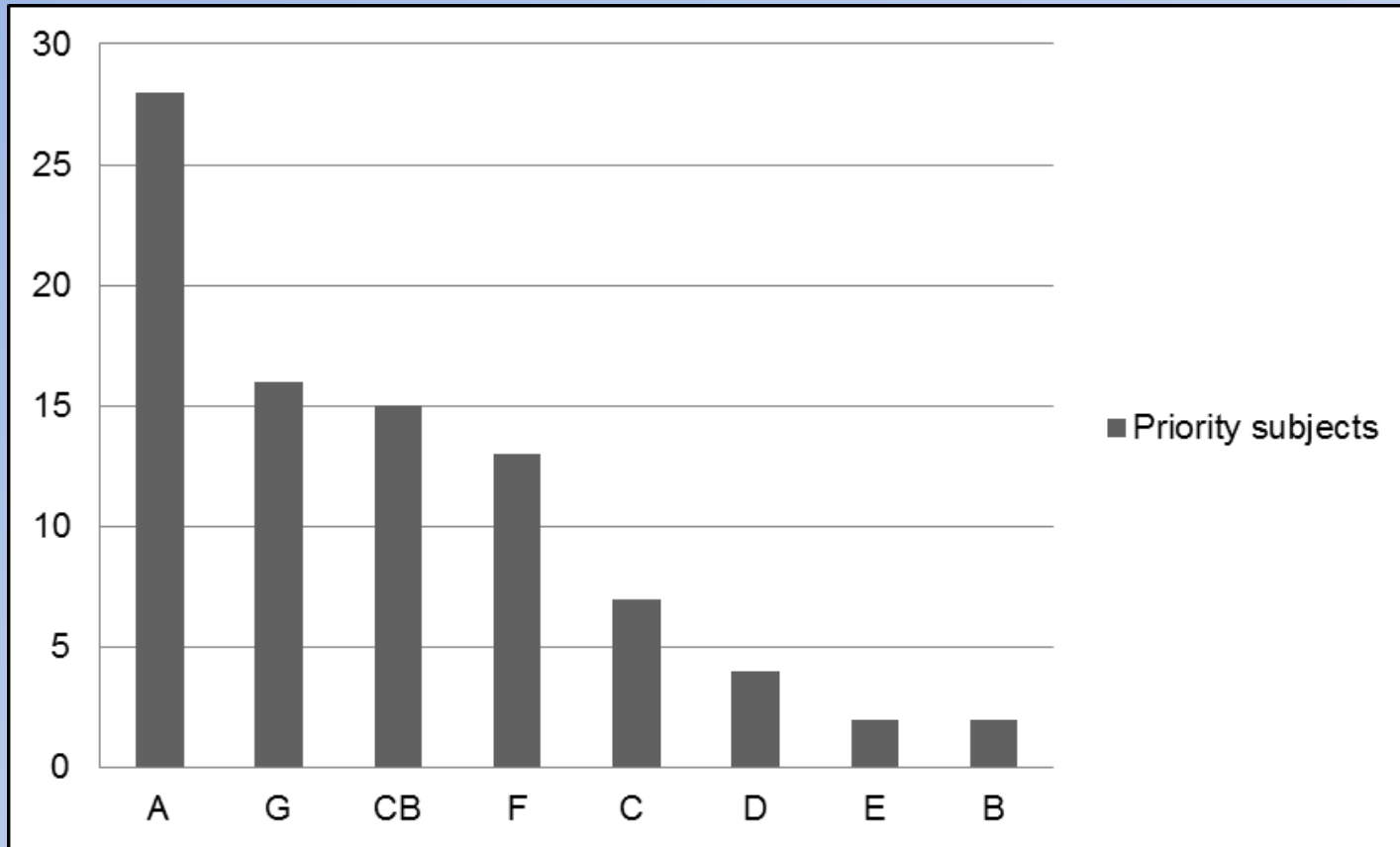
# PROJECTS

- **40%** of the research projects have been prompted by a disaster
- On the number of researchers working on DRR in the region, **a total of 497 researchers from various disciplines were identified but this number seems low.** This figure is underestimated as some surveys did not provide this information.
- **Regarding the participation of the community or local leaders in the research projects, 63% responded affirmatively.** When checking the whole answer, one can noticed that participation mainly relates to courses or workshops given to the community; serving as a source of information; and participating in meetings about the development of the projects. Although the community is often the beneficiary of the Project, its active participation in the design or development phase is very rare.
- On the number of public officials it was again difficult to assess this information, but the data gathered shows **128 public officials participating in projects.**

# PRIORITIES FOR IRDR

- A. Methodology for natural and socio-natural hazard mapping and integration in planning processes for small towns and villages in Latin-America
- B. Towards better hillside construction criteria
- C. Data collection for natural hazards
- D. Disaster risk modeling platforms
- E. Indicators of disaster risk and risk management at the sub-national level
- F. Decision making and risk mitigation and prevention
- G. Climate change adaptation and Disaster Risk Management: understanding, joining, and learning

## Priority subjects for the IRDR Research Program (ICSU-ROLAC, 2010)



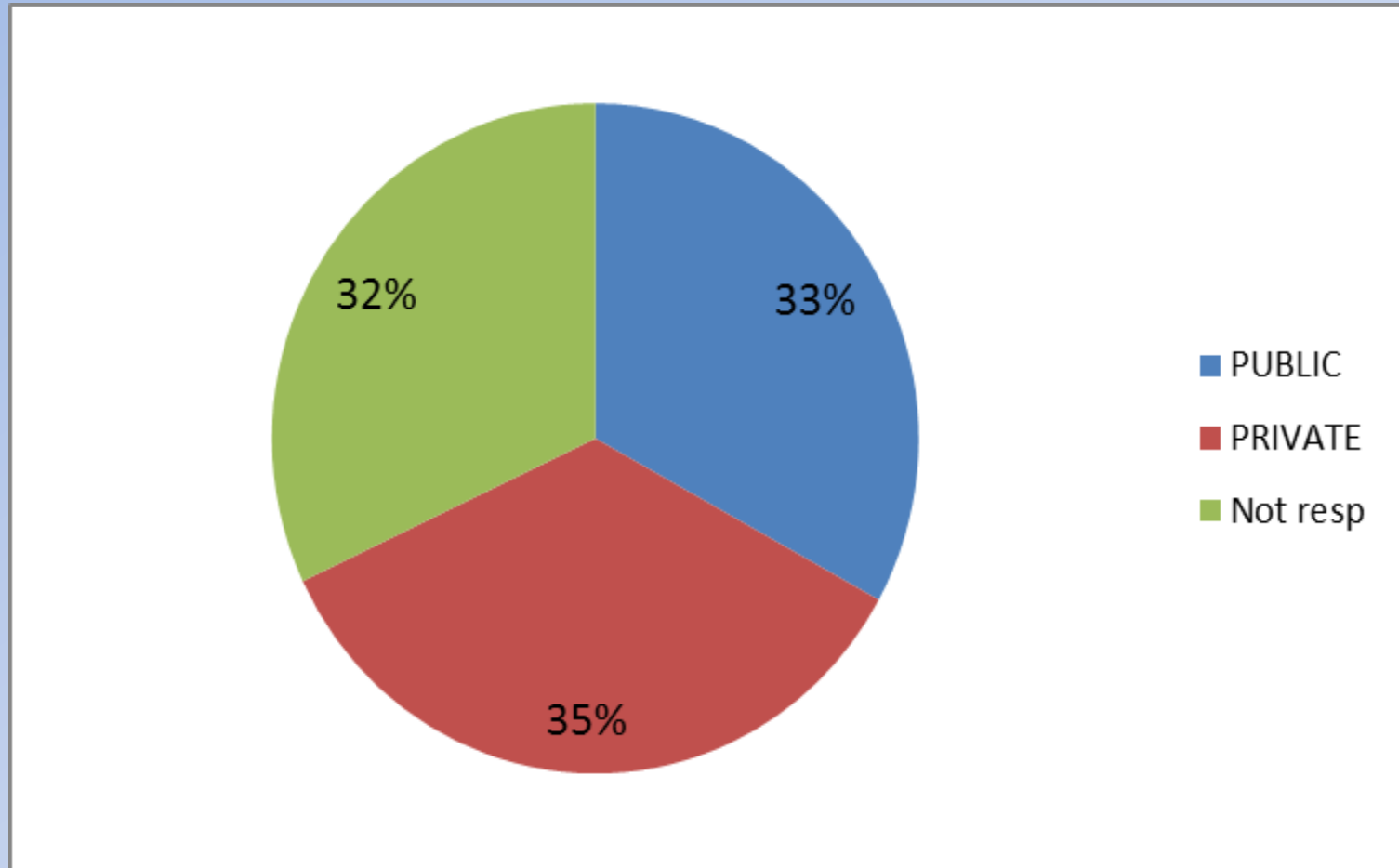
**Subjects that are dominating research subjects in the region**

- A. Methodology for natural and socio-natural hazard mapping and integration in planning processes for small towns and villages in Latin-America
  - B. Towards better hillside construction criteria
  - C. Data collection for natural hazards
  - D. Disaster risk modeling platforms
  - E. Indicators of disaster risk and risk management at the sub-national level
  - F. Decision making and risk mitigation and prevention
  - G. Climate change adaptation and Disaster Risk Management: understanding, joining, and learning
  - CB. Capacity building
- Others: preparedness/response projects, health, early warning systems, others.



# PROJECTS

## Time and Funds



Very few surveys convey information on the financial status of the projects. 36 projects received public funds and 35 private funds. The remaining 32 did not give information about financing

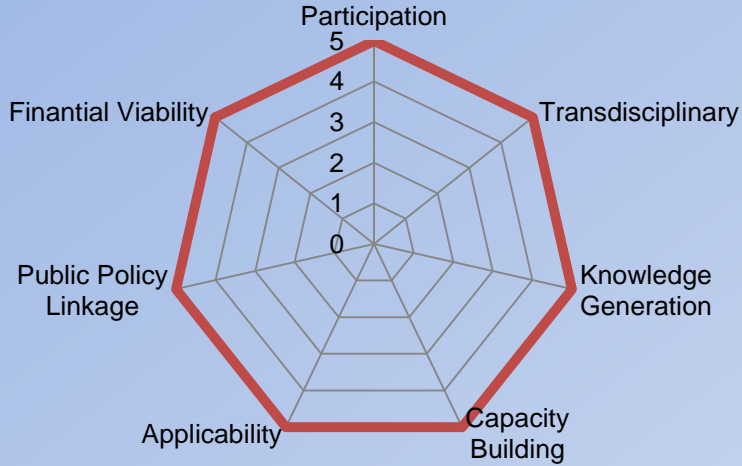
# PROJECTS

## Time and Funds

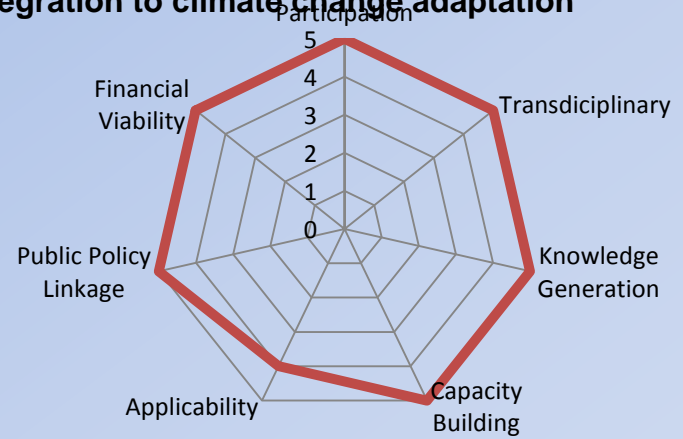
- **Research agendas** are the main mechanism used to promote and finance DRR research. Agreement (*convenios*), consultancy and service contracts are the next most common mechanism. (*Annex H National entities promote scientific research on DRR LAC*)
- On the duration of the research projects, the majority are completed between **2 and 3 years** timeframe.

# Project Evaluation

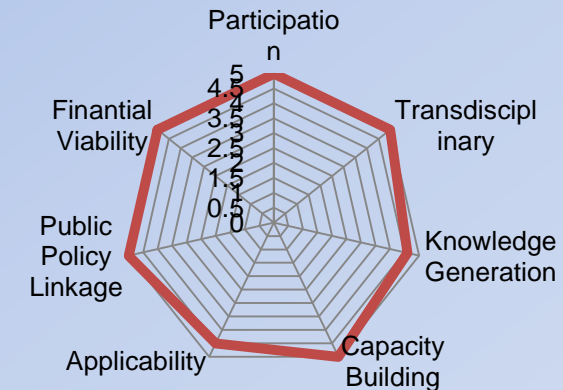
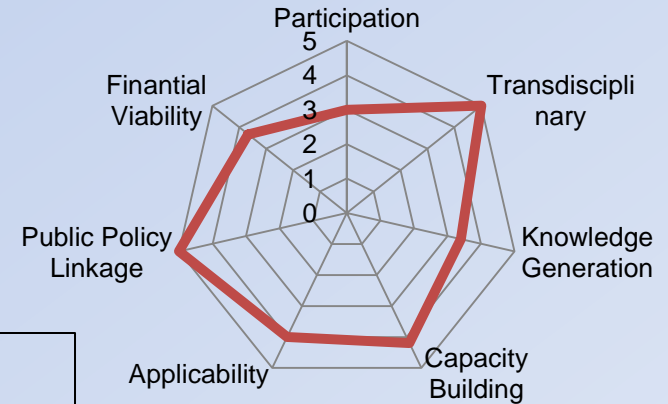
## New policies of adaptation of agriculture to climate change



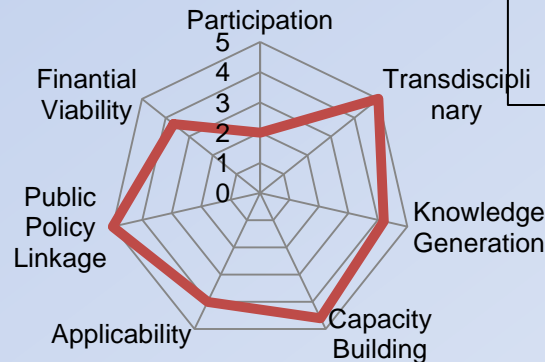
## Enabling knowledge for disaster risk reduction in integration to climate change adaptation



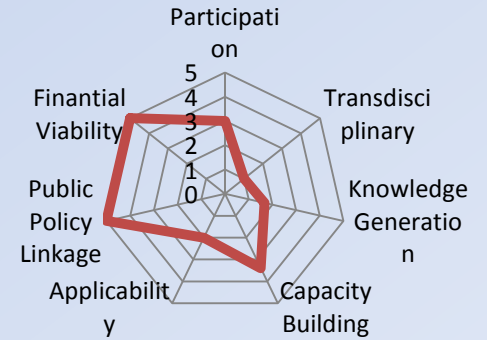
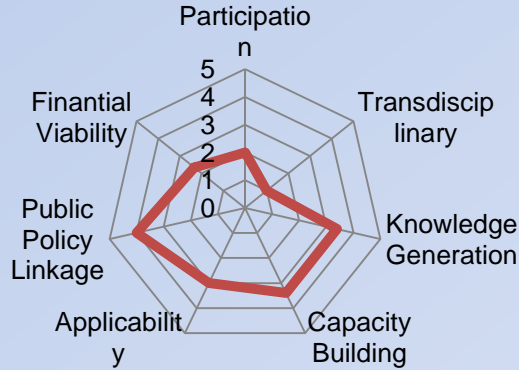
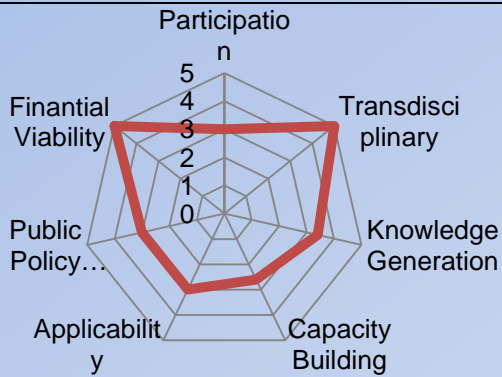
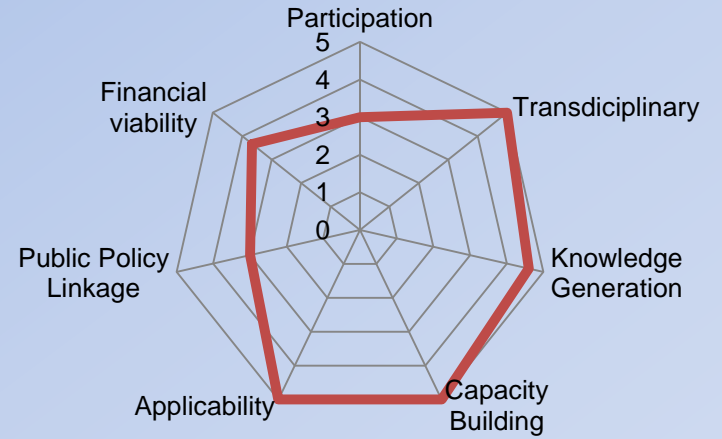
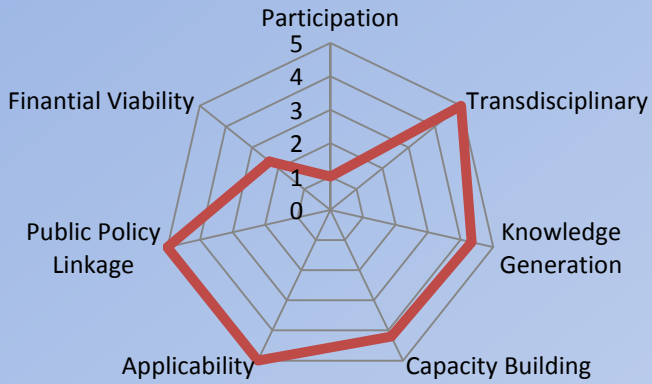
## Caribbean Risk Atlas



## Improvement of risk knowledge in the city of Manizales



## Seismic risk reduction in Caracas



# Cooperation Agreements

- Type of agreement
- Intervening parties
- Duration
- Object of the agreement
- Knowledge generation
- Capacity Strengthening
- Product Application for Public Policy, socialization of information and networks
- Coordination mechanisms
- Administrative mechanism

# Old Challenges...

- **The Linkages of the Scientific and Academic Community Initiatives with Disaster Risk Reduction (DRR) in Latin America and The Caribbean is still fragile.** An integrated approach has to be promoted to understand and intervene risk underlying factors and to effectively reduce it.
- This task is not possible only from University as the *provider* of knowledge. Integrate means also to include practitioners and communities actively, not only as spectators of the scientific knowledge, but also as an actor responsible on the process.

# Recommendations

- Other sources of scientific knowledge need to be considered, contexts where research on the topic is carried out in the region, in the framework of consultations or **through scientific but non-academic initiatives**. Those contributions usually have to deal with stakeholders demanding their applications, therefore giving a different approach to the research process.

# Suggestions for a Regional Strategy

As the basis for an strategy it is important to take into account that the IRDR mission is to develop trans-disciplinary, multi-sectoral alliances for in-depth, practical disaster risk reduction research studies, and to implement effective, evidence-based disaster risk policies and practices



# Recommendations

To achieve the mission it is necessary:

1. To approach from IRDR-ICSU, the National institutions promoting research in each country and to present to them, the document produced for the region in 2010 to establish an initial link with the national research funding entities and the academic institutions. (The present study is providing that information).
2. To target the universities already identified in this study to promote IRDR programs. Each program is an Strategy for Integrated Research.

# Recommendations

3. To promote IRDR programs in the region through the existing research centers, on-going projects, networks and researchers identified in the present study and the ICoE
4. To promote collaborative research between countries, identifying common areas through Cooperation Agreement for IRDR.
5. To promote lines of research for young scientist on IRDR programs, given that most of the research in the region in the subject, is on postgraduate levels.

***Identification of Existing Advances and Linkages of the  
Scientific and Academic Community Initiatives with  
Disaster Risk Reduction (DRR)  
in Latin America and The Caribbean***

*Consultant - Researchers:*

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LA RED de Estudios Sociales en Prevención de Desastres en America Latina  
(The Network for Social Studies on Disaster Prevention in Latin America)*

- The IRDR, Integrated Research on Disaster Risk research program, was established by the International Council for Science (ICSU) in 2010, in co-operation with the International Social Science Council (ISSC) and the United Nations International Strategy for Disaster Reduction (UNISDR).
- The mission of the ROLAC steering committee and members is to promote integrated interdisciplinary scientific research on Risk Prevention and Management in Latin America and the Caribbean, including the development of methods for integrating social and natural sciences and to support both, evidence based policy and decision making processes. This should include a shift in focus from response–recovery towards risk reduction strategies, corrective and prospective views to avoid the construction of risk conditions, to learn from experience and to avoid past mistakes and to find the underlying causes of disasters as better ways for sustainable development.

- For the DRM, *Reduction is a synonym for mitigation or attenuation, mitigation refers to the reduction of existing disaster risk conditions, through corrective actions that offset the results of historical processes of construction of risk-* through, for example, the relocation of settlements, restructuring of buildings to provide greater resistance to hurricanes or earthquakes, the construction of dykes to protect against floods in areas already populated, and early warning to populations in areas at risk. I.e., in contrast to operate exclusively on the physical processes that contribute to the hazard conditions and, consequently, the risk, *mitigation refers to any intervention on hazard, exposure or vulnerability that contributes to a reduction in existing levels of risk (Lavell, 2010)*