Engagement on Youth
UNESCO Science Report 2015

UNESCO’s strategy on Youth 2014-2021

Other topic from UNESCO
What would be the issues on empowering young scientists for DRR?

• Quantity/quality of DRR science programme at higher education?
• Generation/Gender gap of scientists?
• Regional gap? Mobility?
• Job opportunity/Brain drain of DRR scientists?
• Global trends: A steep rise in research input and output
  • economy (+20.1%) and global population (+7.3%) between 2007 and 2013
  • research expenditure (+30.5%)
  • the number of researchers (+21%, FTE)
  • scientific publications (+23%)
UNESCO Science Report (Global)

The G20 accounts for 64% of the global population and 92% of research spending

G20: World shares of GDP, research spending, researchers and publications, 2009 and 2013 (%)

Strong growth in the world shares of China and Rep. Korea, little change in the Southern Hemisphere
A PhD market still dominated by the USA

Ten countries host 89% of international PhD students in science and engineering fields.

Malaysia plans to attract 200,000 students by 2020 (56,000+ in 2012), double that in 2007.
UNESCO Science Report: towards 2030
Regional shares of female researchers, 2013 or closest year (%)
Technicians across the region are most concentrated in Australia and New Zealand, but Singapore has a much lower concentration. One of the driving forces for the freer flow of skills across ASEAN member States and Malaysia and Singapore can access to technical personnel from elsewhere in the region.
When it comes to women’s participation in research overall, globally, we are seeing a leaky pipeline. Women are actively pursuing bachelor’s and master’s degrees and even outnumber men at these levels, since they represent 53% of graduates, but their numbers drop off abruptly at PhD level. Suddenly, male graduates (57%) overtake women.

Women constitute half of researchers in Malaysia, the Philippines and Thailand but remain an unknown quantity in Australia and New Zealand, for which there are no recent data.
More than half of researchers are employed by the higher education sector in most countries.

The notable exception is Singapore, where half of researchers are employed by industry.
Singapore has ceded its regional lead for R&D intensity, which shrunk from 2.3% to 2.0% of GDP between 2007 and 2012, having been overtaken by Australia, which has maintained a steady investment level of 2.3% of GDP in R&D.
UNESCO’s engagement on Youth

UNESCO is guided by an Operational Strategy on Youth (2014-2021), which is the result of a long process of review and consultation, engaging both young people and Member States. This serves both to consolidate and innovate UNESCO’s action for youth.
UNESCO’s engagement on Youth

• The 10th UNESCO Youth Forum took place at UNESCO Headquarters in Paris, from 25 to 26 October 2017.
• Every two years, young women and men come together at UNESCO’S Headquarters in Paris for several days of debate and discussion about pertinent issues related to the Organization’s fields of competence.
• 10 participants out of 60 were science related and made recommendation including the needs of the platform on civil science toolkits.

UNESCO co-organized with UNISDR the Regional Workshop on “Strengthening, Empowering, and Mobilizing Youth and Young Professionals in Science, Engineering, Technology and Innovation for Disaster Risk Reduction in Asia and the Pacific” 1st to 4th November 2018.

U-INSPIRE initiative, A Youth and Young Professional Platform for DRR supported by UNESCO.
UNESCO’s engagement on Youth

Strengthening Countries Capacities for Assessing School Facilities

Adaptation and Implementation of the UNESCO-VISUS methodology for school safety multi-hazard assessment (Prevention and Mitigation)

UNESCO-VISUS Post Disaster Safety Assessment (Response) management

Strengthening an integrated system for the safety emergency management
UNESCO’s engagement on Youth (cases)

1. **Methodology Adaptation** to the country and local realities and particularities
   
   (Hazard profile - building typologies – Local costs)

2. **Capacity building** and **strengthening** local and national capacities for the assessment of critical infrastructure
   
   1. Decision Makers
   2. Training of trainer
   3. Surveyors – *Students from the civil engineering departments of local universities*

1. Development of the **assessment**

2. **Reporting** (Collective and Individual per school)

3. **Planning** for intervention

*Teams of surveyors in Indonesia and Mozambique*
UNESCO’s engagement on Youth (cases)

From 2019 to 2023 through the UNESCO Associate Schools, UNESCO plans to assess 11,500 Schools in 182 countries in 5 Years.
Artificial intelligence at UNESCO

UNESCO’s events on AI

September 11 and 12
Debates on ethics of Artificial Intelligence and Gene Editing at UNESCO HQ Paris

UNESCO further considers events on AI

December 12 13
AI Forum in Africa to discuss issues, opportunities, current status and future of AI in Africa in Morocco

2019
Global conference “Towards human–centered artificial intelligence” to facilitate dialogue on the potential benefits and challenges of AI and its application, particular in the areas of education, sciences, culture, communication and information in UNESCO HQ Paris
## AI for DRR (mapping exercise 1)

### PREVENTION

<table>
<thead>
<tr>
<th>Disaster risk prediction</th>
<th>satellite</th>
<th>Crowd-sourced data/Social Networking Service (SNS)</th>
<th>Observation data</th>
<th>Historic data</th>
<th>Robot</th>
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<tbody>
<tr>
<td></td>
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<td>landslide, tsunami, forest fires, rain</td>
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<td>Monitoring of aging infrastructure</td>
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<tr>
<th>Training crisis staff and validating contingency plans</th>
<th>satellite</th>
<th>Crowd-sourced data/Social Networking Service (SNS)</th>
<th>Observation data</th>
<th>Historic data</th>
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<tr>
<td></td>
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<td>Pilot for Greater Paris Region by UNISDR ARISE</td>
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<tr>
<th>Flood prevention</th>
<th>satellite</th>
<th>Crowd-sourced data/Social Networking Service (SNS)</th>
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<tr>
<th>Flood level mapping</th>
<th>satellite</th>
<th>Crowd-sourced data/Social Networking Service (SNS)</th>
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<tr>
<th>Drought prediction</th>
<th>satellite</th>
<th>Crowd-sourced data/Social Networking Service (SNS)</th>
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<th>Storm prediction</th>
<th>satellite</th>
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**To be developed – for future**

**Under development - Pilot project**

**Developed - Implemented**
# AI for DRR (mapping exercise 2)

## RESPONSE

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<thead>
<tr>
<th>Identification of affected areas for faster humanitarian response</th>
<th>satellite</th>
<th>Crowd-sourced data/ Social Networking Service (SNS)</th>
<th>Observational data</th>
<th>Historic data</th>
<th>Robot</th>
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<td>Data analysis by Red Cross start-up</td>
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<td>Defining needs after disaster</td>
<td>Water filter placement around Kathmandu, Nepal by Rescue Global and Imperial College London</td>
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<td>Analysis of citizens’ responses to disasters on social media to identify needs after disaster - Japan</td>
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<td>AIDR – Artificial Intelligence for Digital Response.</td>
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<p>| Identification of damaged infrastructure | Pilot of Rescue Global | | | | |
| Assess flood damage for insurance company | Pilot in Japan | | | | |
| Assess Storm damage to forests | | | | | |
| Human body searching after disaster | | | | | |</p>
<table>
<thead>
<tr>
<th>Function</th>
<th>Practices</th>
<th>Future development (?)</th>
</tr>
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<tbody>
<tr>
<td>Automatic analysis</td>
<td>• Social media analysis to identify needs (Japan, AIDR etc.)</td>
<td>• Increase accuracy of recognition/analysis (finding infrastructure vulnerability)</td>
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<td>• Imagery assessment (satellite, drawn) for damage estimation, baseline data</td>
<td>• Enhance application (other languages, disasters)</td>
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<td>• Sensors</td>
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<td>Pattern finding (including machine learning)</td>
<td>• Forecasting disaster (draught, fire) by learning current and past data (Gwadi, google, Oklahoma Univ)</td>
<td>Application for identifying vulnerability for preparedness phase (finding infrastructure vulnerability etc.)</td>
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<td>• Estimating most needed for rescue (Rescue Global, 510)</td>
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<td>Optimization</td>
<td>Identifying the crucial recovery points via imagery, SNS, data (Rescue Global)</td>
<td>• Applying to goods/human resource allocation for response</td>
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<tr>
<td></td>
<td>Real time control of sewer storage during flood risk period (EU project)</td>
<td>• Applying to goods/human resource allocation for preparedness phase</td>
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<tr>
<td>Human capacity building</td>
<td>Training DRR response staff by AI simulation</td>
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<tr>
<td>Others</td>
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Organization of UNESCO

More than 50 field offices
UNESCO’s Role in DRR

- UNESCO operates at the interface between natural and social sciences, education, culture and communication playing a vital role in constructing a global culture of resilient communities.
- UNESCO assists countries to build their capacities for preventing disasters and managing climate risk, and with their ability to cope with natural hazards.
- UNESCO has been a catalyst for international, inter-disciplinary cooperation in many aspects of disaster risk reduction and mitigation.

1) Networking for Knowledge Exchange

2) Capacity Building

4) Multi-disciplinary Approach
   Science & Education / Science & Culture /…. 

3) Policy Recommendation

UNESCO as a Catalyst
1) Knowledge Exchange

UNESCO through international scientific collaboration and its different academic networks and programmes, promotes and fosters knowledge exchange in geological, hydro-meteorological and marine hazards to conducts activities and research that improve quality of data, early warning systems, hazard mapping and vulnerability assessments.

**IHP**
United Nations Educational, Scientific and Cultural Organization
International Hydrological Programme

**IOC**
United Nations Educational, Scientific and Cultural Organization
Intergovernmental Oceanographic Commission

**IGCP**
United Nations Educational, Scientific and Cultural Organization
International Geoscience Programme

**MAB**
United Nations Educational, Scientific and Cultural Organization
Man and the Biosphere Programme

**ICL**
International Consortium for Landslide

**IPRED**
International Platform for Reducing Earthquake Disasters

ICL meeting in Sendai 2015

8th Session of the UNESCO-IPRED, 2015, Tokyo
2) Capacity Building

UNESCO facilitates and implements technical training workshops and research activities in disaster risk reduction to improve the capacities of countries to cope with natural hazards. These capacity building activities result in enhancing the current knowledge and in proceedings and resource materials to help decision-makers and stake-holders to build their capacity in managing disaster risks as well as creating networks of technical experts.

**Strengthening Countries Capacities for Assessing School Facilities**

Adaptation and Implementation of the UNESCO-VISUS methodology for school safety multi-hazard assessment (Prevention and Mitigation)

Science-based → Improve safety

UNESCO-VISUS Post Disaster Safety Assessment (Response)

Strengthening an integrated system for the safety emergency management
3) Policy Recommendations

- UNESCO provides an interface for disaster risk reduction between scientists, policy-makers and civil society.
- UNESCO prepares technical documents that serve national and local governments to better prepare and mitigate the risks related to natural hazards.
- UNESCO, through its areas of expertise, is also engaged in disaster risk reduction policy analysis and in the provision of recommendations and guidelines to Member States.
- UNESCO undertakes post-disaster field investigations in order to determine the causes of the disaster that can inform policy and produce and disseminate lessons to be learned.

Policy Recommendations collaborated with IPRED*

Policy/technical Guidelines on non-engineered buildings

UNESCO publications

Technical approaches for Structural Improvement of Non-Engineered Construction

Post-earthquake field investigations

To date, two IPRED missions have been carried out:
Van, Turkey in 2012
Bohol, Philippines in 2014.

Mission report
A comprehensive Framework for School Safety

identifies three overlapping pillars:

1. Safe Learning Facilities,
2. School Disaster Management, and
3. Risk Reduction and Resilience Education

with the following goals:

- To protect learners and education workers from physical harm in schools;
- To prevent interruption of the provision of education when faced with hazards;
- To safeguard education sector investments;
- To strengthen climate change adaptation and mitigation competencies and disaster resilience through education.