

Engagement on Youth



UNESCO Science Report 2015

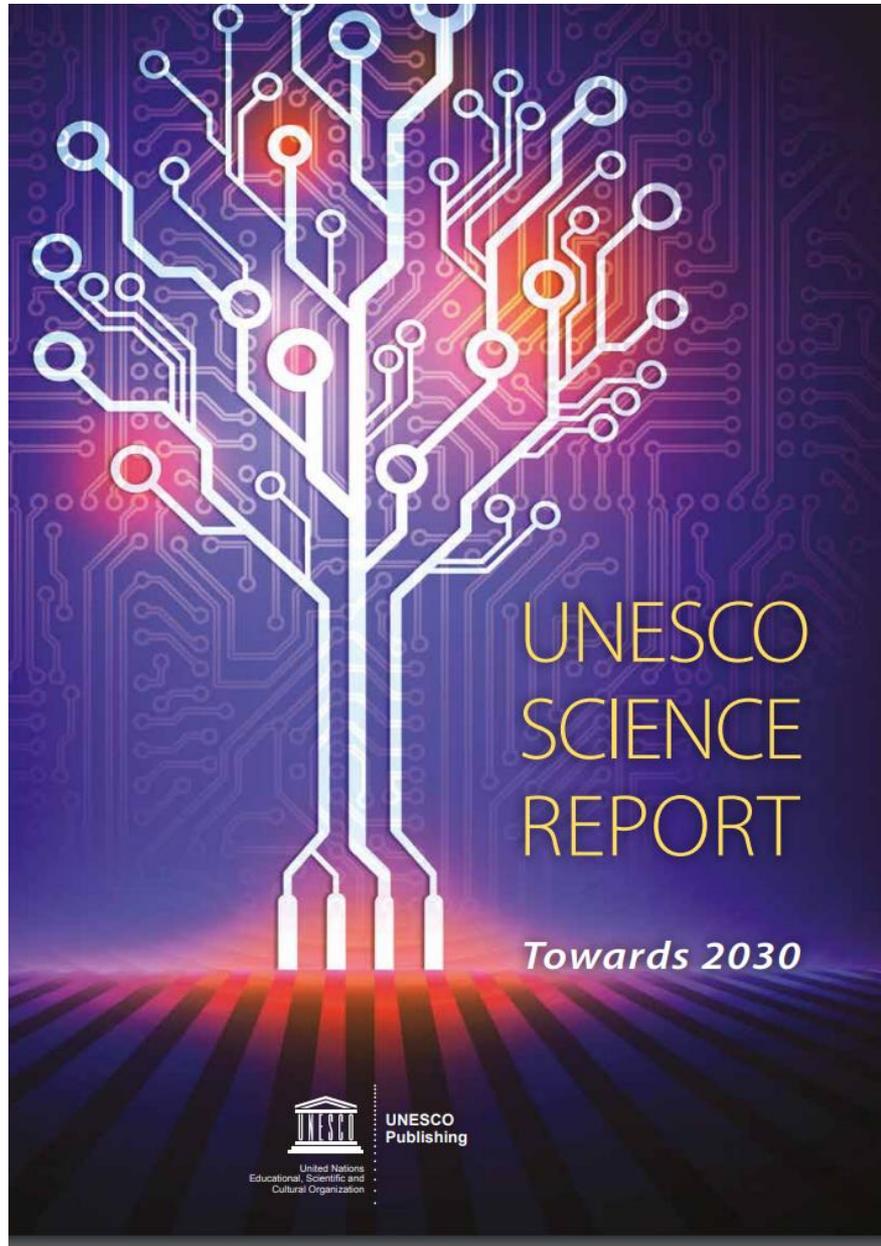
UNESCO's strategy on Youth 2014-2021

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 ?

UNESCO Science Report (Global)



- 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%)

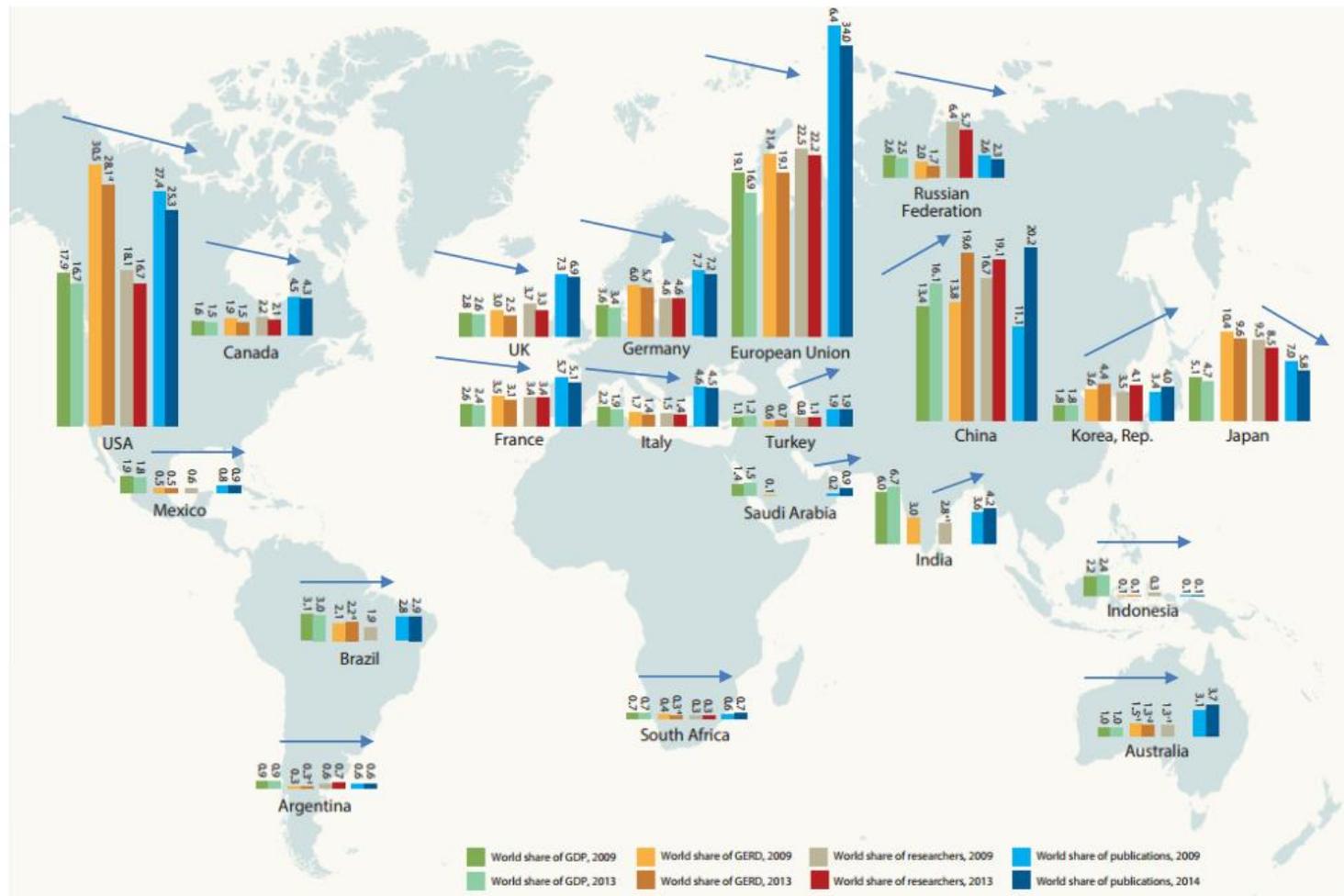
UNESCO Science Report (Global)



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 (%)

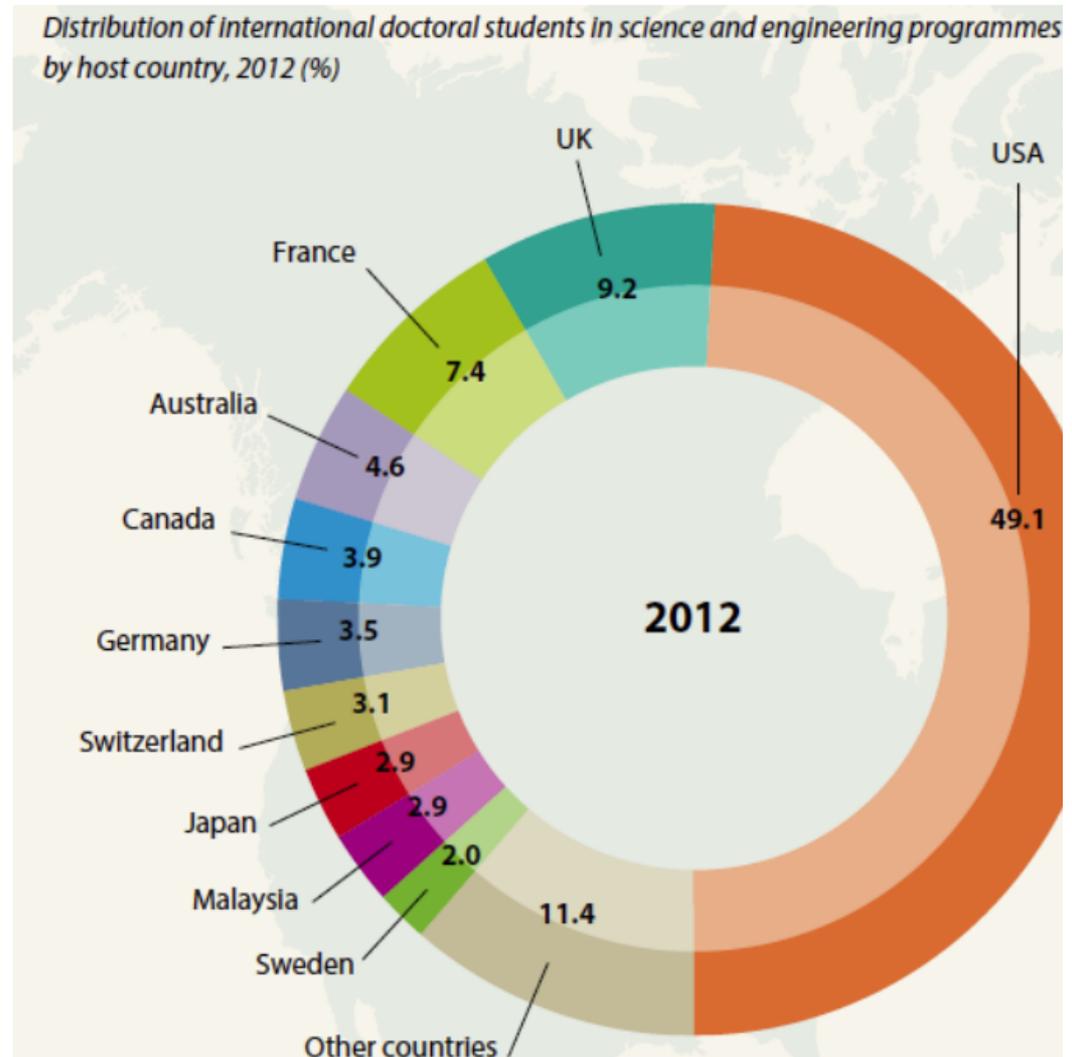
Strong growth in the world shares of China and Rep. Korea, little change in the Southern Hemisphere



A PhD market still dominated by the USA

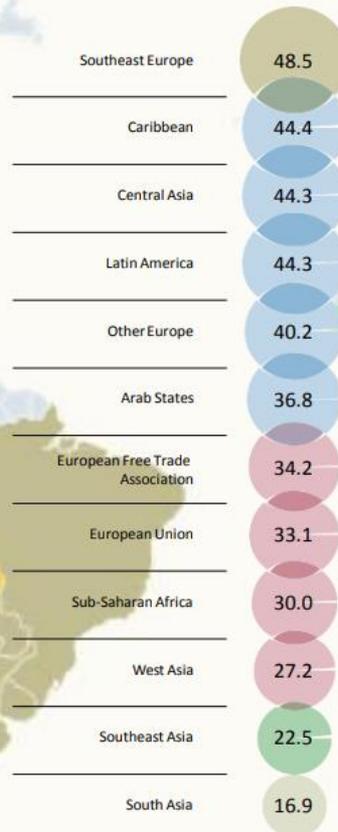
Ten countries host 89% of international PhD students in science and engineering fields.

Malaysia plans to attract 200,000 students by 2020 (56,000+ in 2012), double that in 2007.



UNESCO Science Report (Global)

UNESCO Science Report: towards 2030 Regional shares of female researchers, 2013 or closest year (%)



UNESCO Science Report (Regional)

Table 27.1: Research personnel in Southeast Asia and Oceania, 2012 or closest year

	Population ('000s)	Total researchers (FTE)	Researchers per million inhabitants (FTE)	Technicians per million inhabitants (FTE)
Australia (2008)	21 645	92 649	4 280	1 120
Indonesia (2009)	237 487	21 349	90	-
Malaysia (2012)	29 240	52 052	1 780	162
New Zealand (2011)	4 414	16 300	3 693	1 020
Philippines (2007)	88 876	6 957	78	11
Singapore (2012)	5 303	34 141	6 438	462
Thailand (2011)	66 576	36 360	546	170

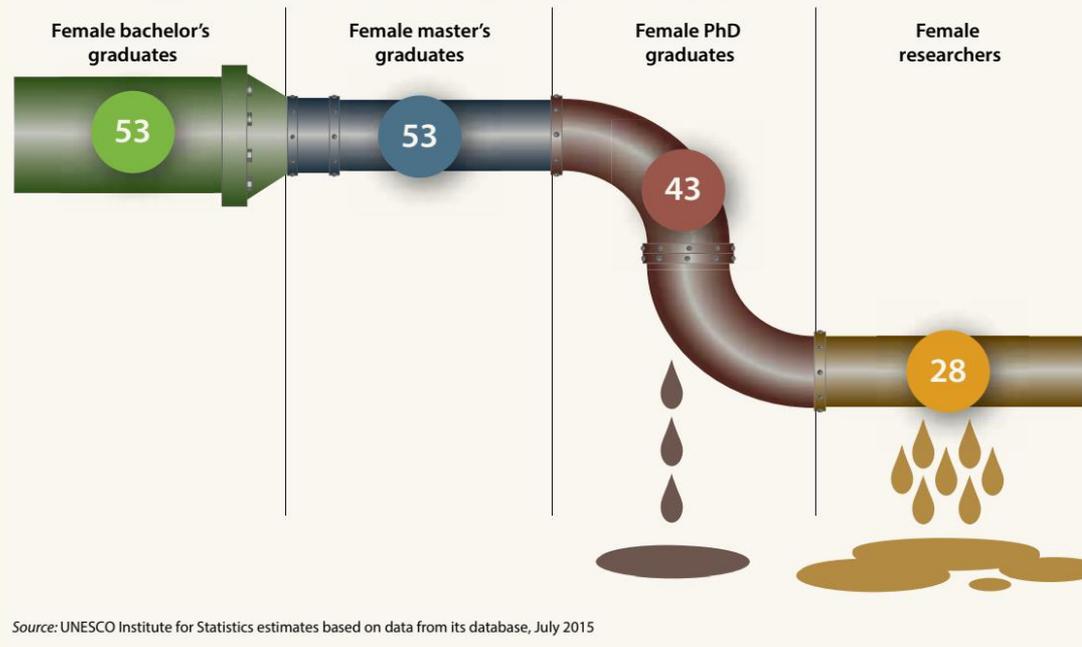
Source: UNESCO Institute for Statistics, June 2015

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.

UNESCO Science Report (Regional)

Figure 3.1: The leaky pipeline: share of women in higher education and research, 2013 (%)



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.

Figure 27.6: Women researchers (HC) in Southeast Asia, 2012 or closest year (%)

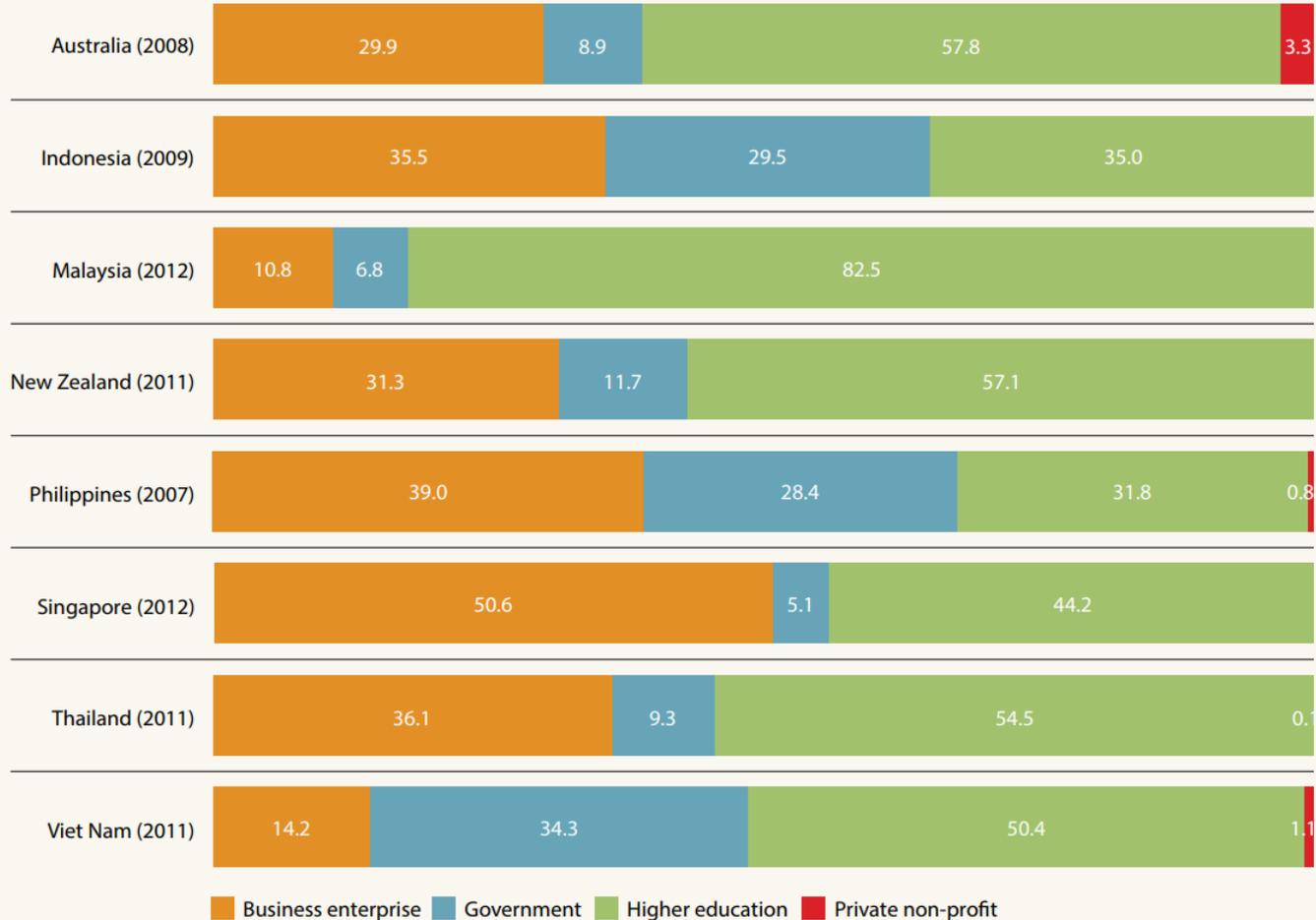


Source: UNESCO Institute for Statistics, June 2015

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.

UNESCO Science Report (Regional)

Figure 27.7: Researchers (FTE) in Southeast Asia and Oceania by sector of employment, 2012 or closest year (%)



Note: The data for Viet Nam are by head count.

Source: UNESCO Institute for Statistics, June 2015

- 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.

UNESCO Science Report (Regional)

Table 27.2: GERD in Southeast Asia and Oceania, 2013 or closest year Gross Expenditure on R&D

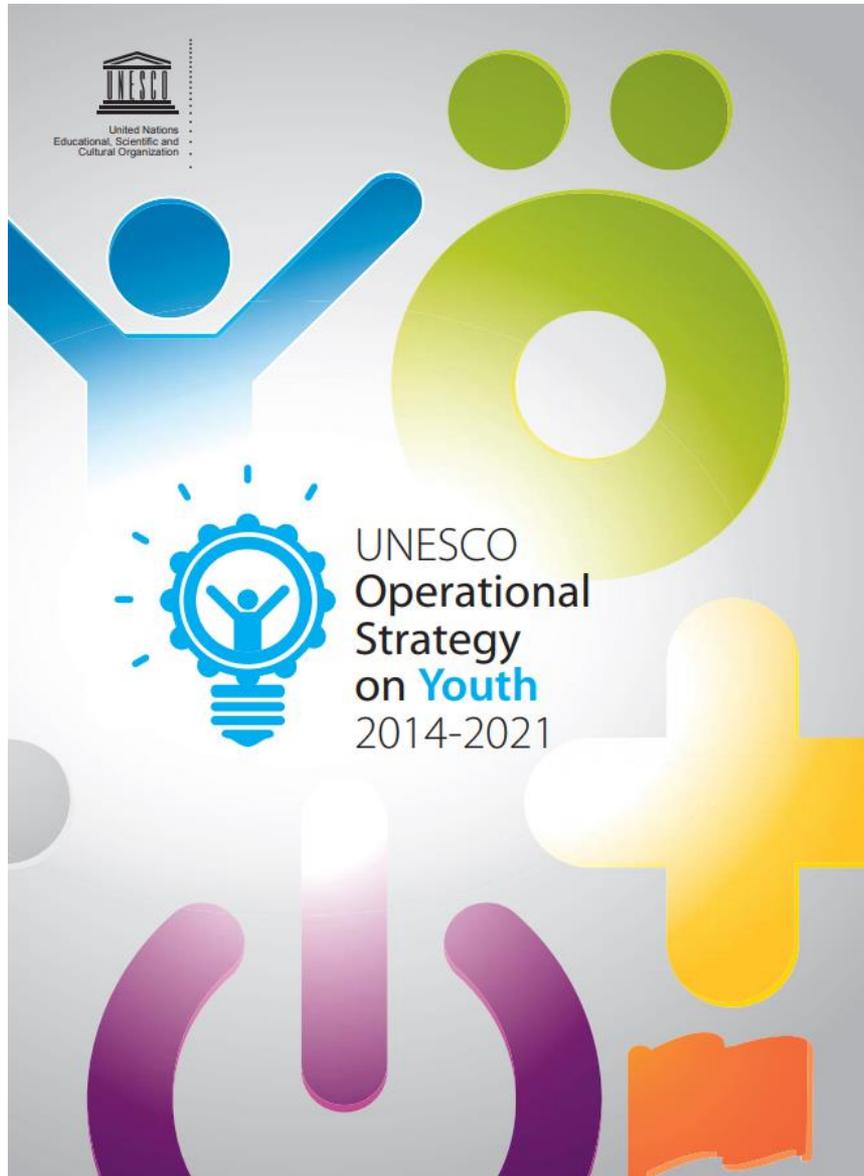
	As % of GDP	Per capita PPP\$	Share performed by business (%)	Share funded by business (%)
Australia (2011)	2.25	921.5	57.9	61.9 ³
New Zealand (2009)	1.27	400.2	45.4	40.0
Indonesia (2013*)	0.09	6.2	25.7	–
Malaysia (2011)	1.13	251.4	64.4	60.2
Philippines (2007)	0.11	5.4	56.9	62.0
Singapore (2012)	2.02	1 537.3	60.9	53.4
Thailand (2011)	0.39	49.6	50.6	51.7
Viet Nam (2011)	0.19	8.8	26.0	28.4

* national estimate

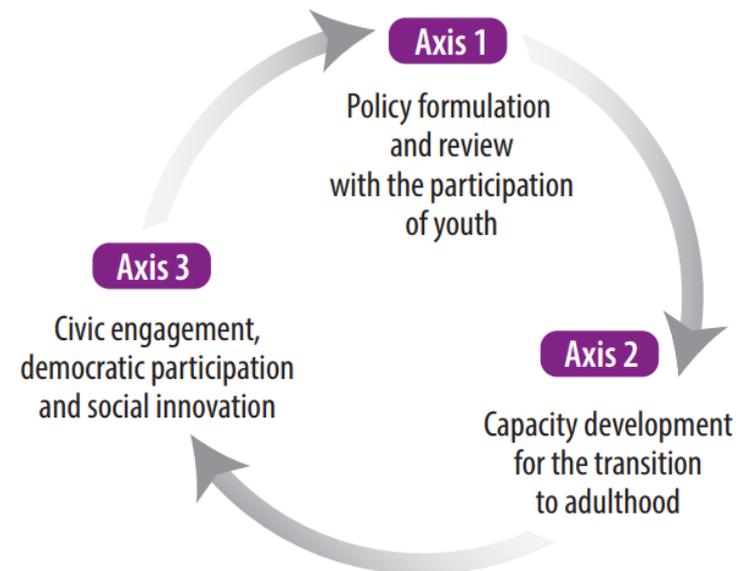
Source: UNESCO Institute for Statistics, June 2015

Singapore has ceded its regional lead for R&D intensity, which shrank 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.



Strengthening Countries Capacities for Assessing School Facilities



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

This block contains a collage of images illustrating the VISUS methodology. On the left is the 'VISUS-METHOD HANDBOOK'. In the center is a fan of five cards labeled 'REPRESENTATION OF RESULTS', 'COSTS', 'EVALUATION', 'CHARACTERIZATION', and 'BASIS', with a blue card at the bottom labeled 'VISUS METHOD INTRODUCTION'. To the right is a 'Collective Report' cover featuring a group of children and the text 'Strengthening Macombiqué's Capacities for Assessing School Facilities'. Below these are a map of a region, a hand holding a tablet displaying the VISUS interface, and a person in a white uniform holding a clipboard and pen.

UNESCO-VISUS Post Disaster Safety Assessment (Response) magement

This block displays screenshots of the VISUS software interface. On the left is a 'VISUS Post Disaster Safety' dashboard with various data points and charts. On the right is a 'VISUS Post-Disaster For Antigua and Barbuda (2017) FINAL REPORT' cover, which includes a photograph of a damaged interior space and the VISUS logo.

Strengthening an integrated system for the safety emergency management

This block shows a group of people in a meeting room, gathered around a table with several laptops. They appear to be collaborating on a project. To the right is a screenshot of a map interface with various data points and a legend, likely part of the VISUS system.

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



Team of surveyors in Indonesia



Team of surveyors in 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

VISUS pre
 ○ UNESCO-VISUS PILOT PROJECT PRE DISASTER ASSESSMENT

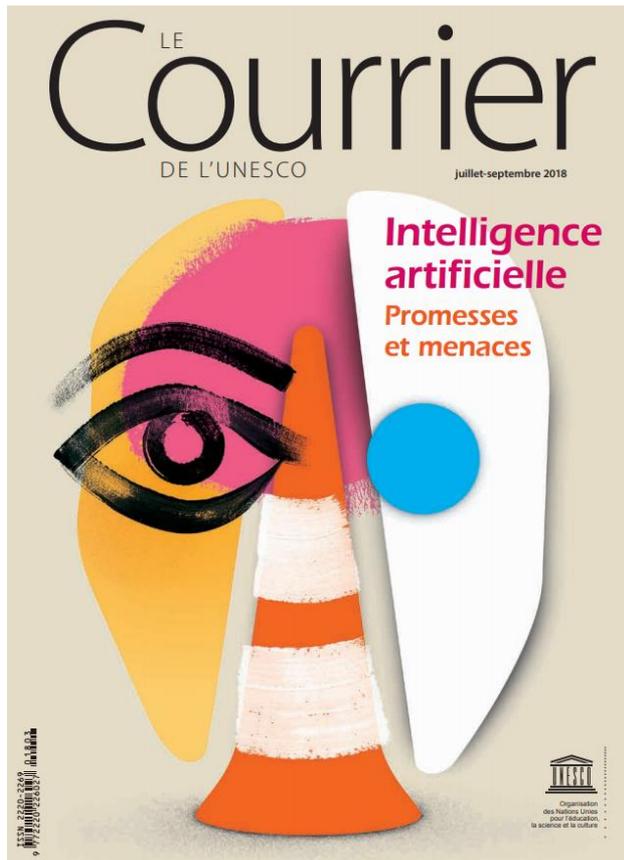
VISUS post
 ◆ UNESCO-VISUS POST DISASTER ASSESSMENT
 ◇ SPRINT POST DISASTER ASSESSMENT



VISUS IMPLEMENTATION DATA

Year	Country	Number of schools	Buildings			Number of people									Notes	
			Number of school buildings			Number of Students			Number of teachers			Administrative Staff				Total number of People
			Main buildidngs	Ancillary buildings	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total		
2010	Italy	1 022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No UNESCO Project
2013	El Salvador	100	298		298	21 818	23 061	44 879	537	1 350	1 887	137	175	312	47 078	
2015	Laos	10	163	108	271	5 605	5 311	10 916	306	429	735	108	62	170	11 821	
2015	Indonesia (Bandung Pangandaran)	58	166	137	303	20 153	17 602	37 755	883	1 263	2 146	265	211	476	40 377	
2016	Indonesia (Ambon)	87	396	116	512	15 168	13 948	29 116	577	1 658	2 235	149	195	344	31 695	
2016	Peru	54	123	19	142	6 381	6 654	13 035	95	479	574	49	148	197	13 806	
2017	Haiti	101	309	195	504	22 192	24 645	46 837	796	730	1 526	210	257	467	48 830	
2017	Antigua and Barbuda	51	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Visus Post Disaster
2017	Mozambique	100	474	395	869	114 046	93 113	207 159	3 284	4 297	7 581	212	353	565	215 305	
2018	Indonesia (Jakarta)	80														On going
2019	Bosnia Herzegovina															In conception
2019?	Brazil															In conception
2019?	Papua New Guinea															Seeking for Funding
TOTAL		1 663	1 929	970	2 899	205 363	184 334	389 697	6 478	10 206	16 684	1 130	1 401	2 531	408 912	

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

	satellite	Crowd-sourced data/ Social Networking Service (SNS)	Observation data	Historic data	Robot
Disaster risk prediction	landslide, tsunami				
	forest fires				
	rain				
	Monitoring of aging infrastructure				
Training crisis staff and validating contingency plans			Pilot for Greater Paris Region by UNISDR ARISE		
Flood prevention			H2020 project by EC		
Flood level mapping			In India by Google		
Drought prediction					
Storm prediction		G-WADI PERSIANN-CSS geoserver / iRain mobile application for global precipitation monitoring By the Center for Hydrometeorology and Remote Sensing (CHRS) and UNESCO – IHP			

To be developed – for future

Under development - Pilot project

Developed - Implemented

AI for DRR (mapping exercise 2)

RESPONSE

	satellite	Crowd-sourced data/ Social Networking Service (SNS)	Observation data	Historic data	Robot
Identification of affected areas for faster humanitarian response			Data analysis by Red Cross start-up		
	Case Nepal by Rescue Global				
Defining needs after disaster	Water filter placement around Kathmandu, Nepal by Rescue Global and Imperial College London				
		Analysis of citizens' responses to disasters on social media to identify needs after disaster - Japan			
		AIDR – Artificial Intelligence for Digital Response.			
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					

To be developed – for future

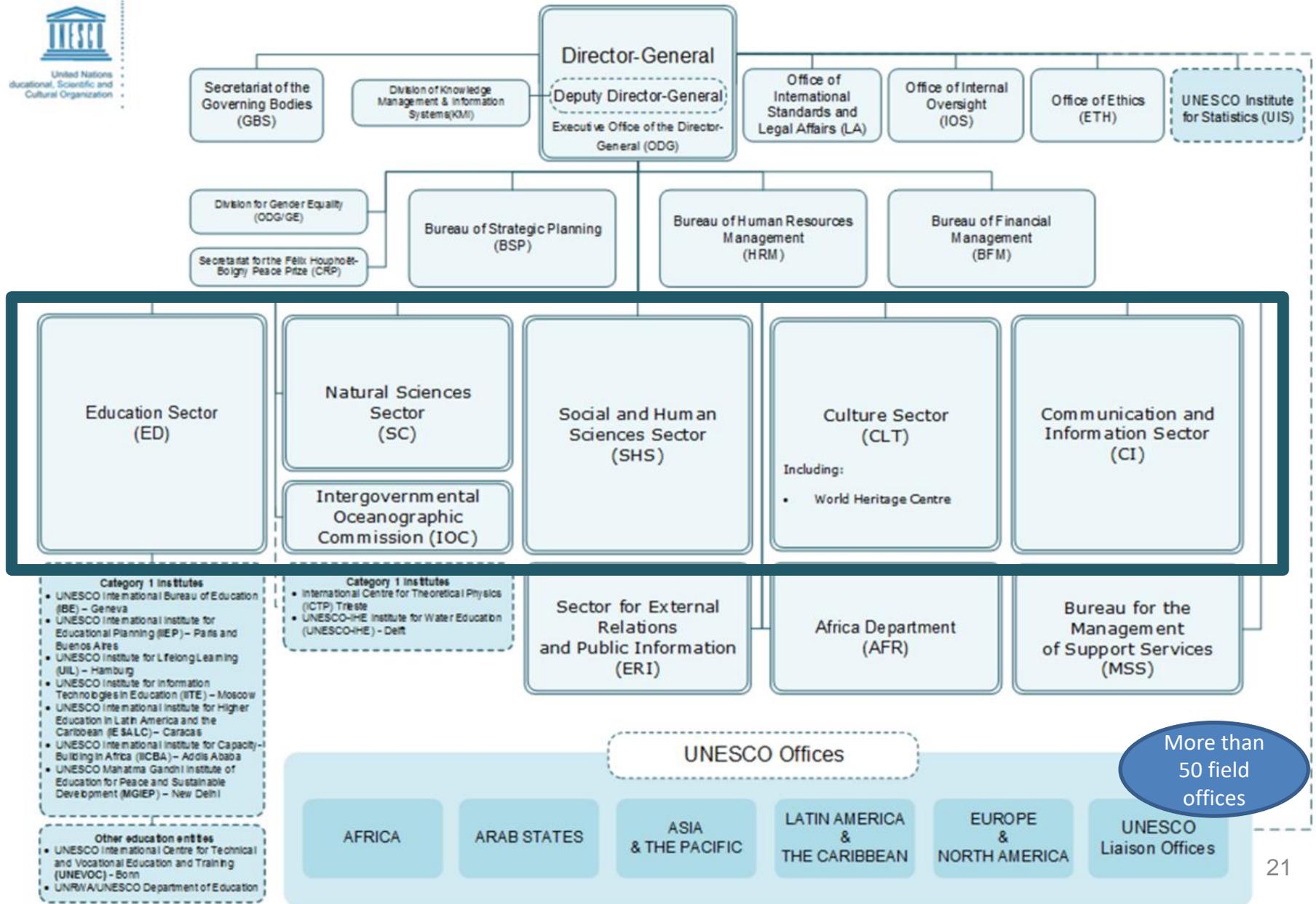
Under development - Pilot project

Developed - Implemented

AI for DRR (mapping exercise 3)

Function	Practices	Future development (?)
Automatic analysis	<ul style="list-style-type: none"> • Social media analysis to identify needs (Japan, AIDR etc.) • Imagery assessment (satellite, drawn) for damage estimation, baseline data • Sensors 	<ul style="list-style-type: none"> • Increase accuracy of recognition/analysis (finding infrastructure vulnerability) • Enhance application (other languages, disasters)
Pattern finding (including machine learning)	<ul style="list-style-type: none"> • Forecasting disaster (draught, fire) by learning current and past data (Gwadi, google, Oklahoma Univ) • Estimating most needed for rescue (Rescue Global, 510) 	Application for identifying vulnerability for preparedness phase (finding infrastructure vulnerability etc.)
Optimization	<p>Identifying the crucial recovery points via imagery, SNS, data (Rescue Global)</p> <p>Real time control of sewer storage during flood risk period (EU project)</p>	<ul style="list-style-type: none"> • Applying to goods/human resource allocation for response • Applying to goods/human resource allocation for preparedness phase
Human capacity building	Training DRR response staff by AI simulation	
Others		

Organization of UNESCO



More than 50 field offices

Organization of UNESCO: Field Offices Network



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.

2) Capacity Building



3) Policy Recommendation



4) Multi-disciplinary Approach

Science & Education / Science & Culture / ...



United Nations
Educational, Scientific and
Cultural Organization

UNESCO as a Catalyst



1) Networking for Knowledge Exchange

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



ICL meeting in Sendai 2015

IPRED

International Platform
for Reducing
Earthquake Disasters

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

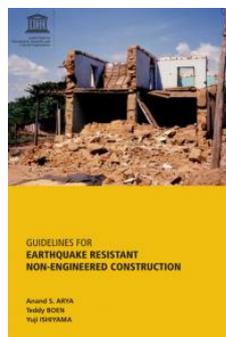


3) Policy Recommendations

- 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.



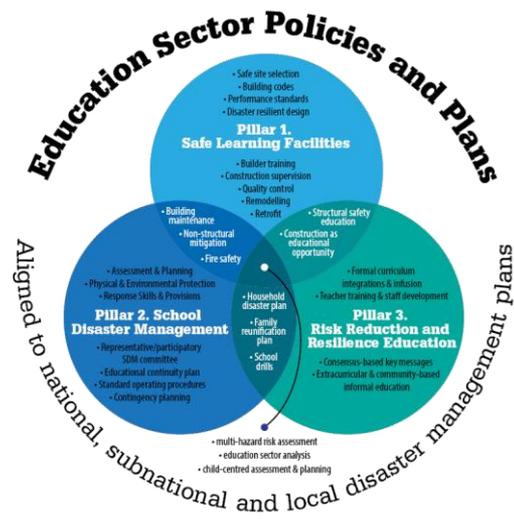
Bohol, Philippines



Mission report

4) Multi-disciplinary Approach: Science & Education

A comprehensive Framework for School Safety



The Global Action Programme for Education on Sustainable Development (GAP)

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