Science and Technology for Disaster Risk Reduction:

Global and Regional Perspectives

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Gap / Issue 1:
Science/ Technology in disaster risk reduction

1st Asia Science Technology Conference On Disaster Risk Reduction (ASTCDRR)

11 countries
28 examples of application of science

1. PROFILE / CONTEXT*

INDONESIA

Indonesia is geologically located at the confluence of three tectonic plates, namely the Eurasian, Indo-Australian and the Pacific. The country is also located in the tropical zone, which has two extreme seasons; the rainy and dry seasons. Therefore, Indonesia is vulnerable to a variety of hazards, geological, hydro-meteorological, and environmental.

Research and development in disaster management continue to be done by research institutions and universities to understand disaster risk. This activity is starting to increase since the Indian Ocean tsunami occurred in 2004. The Government of Indonesia has given a serious attention in disaster research and development. It is seen through the policy of the government through Ministry of Research, Technology and Higher Education, and the National Disaster Management Agency.

2. STATUS

	Attributes of Science and Technology to Disaster Risk Reduction (DRR)	1	2	3	4	5
1	**Science and Technology in decision making**					
1.1	Presence of Science and Technology advisory group to DRR nodal ministry and or/related ministries			■		
1.2	Presence of Science and Technology group in DRR national platform				■	
1.3	Existence of inter-ministerial discussion/dialogue on science related issues			■		
1.4	Implementation of risk, needs and damage assessment with involvement of Science and Technology group			■		
1.5	Existence of early warning system and mechanism with Science and Technology knowledge and tools				■	
1.6	Availability of disaster data/statistics on damage and impacts and its data collection mechanism			■		
1.7	Involvement of Science and Technology group in infrastructure design			■		
1.8	Scientific revision/updating of regulations, policies and guidelines for DRR including building codes, disaster response and preparedness plan etc.				■	
2	**Investment in Science and Technology**					
2.1	Existence of grant support by the national government to researchers in disaster related topics that focus on Science and Technology					■
2.2	Establishment of disaster related courses in higher-education				■	
2.3	Presence of national research institutes and organizations for disasters				■	
2.4	Investment/support by the national government in national/international conferences and events on disasters for knowledge sharing			■		
2.5	Support to collaboration with academia and the private sector for developing innovative technical solutions			■		
2.6	Support to collaboration with academia and civil society for developing innovative social solutions				■	
3	**Link of Science and Technology to people**					
3.1	Availability of a hazard map to people, developed based on scientific knowledge		■			
3.2	Scientific validation of indigenous knowledge		■			
3.3	Involvement of Science and Technology group in developing program for evacuation drills				■	
3.4	Availability and participation of Science and Technology group in community discussion as facilitator or advisor/commentator				■	
3.5	Dissemination of science based early warning and forecast to people					■
3.6	Involvement of Science and Technology group in developing disaster related education curriculum				■	
3.7	Existence of facilities such as museum and events such as expo to disseminate disaster knowledge and deepen understanding on disasters among citizens			■		

*This report is prepared by Dr. Sugeng Triutomo and his colleagues in Indonesia

ROFILE / CONTEXT*

JAPAN

Japan is vulnerable to different types of natural hazards, due to its crucial location in the Pacific n of Fire. Science and Technology has contributed significantly in reducing the risk to natural asters. Science Council of Japan is the premium science body, which provides advice to the ional government in terms of disasters. Japan also has a yearly Grant-in-Aid program for conducting earch in the university and research institutions, apart from special grant program after major asters. A few previous disasters have changed the course of disaster research in Japan: 1923 nto Earthquake, 1959 Isewan Typhoon, 1995 Great Hanshin Awaji Earthquake, and 2011 Great East pan Earthquake and tsunami. Several of these disasters have urged new direction of implication of ence into decision making, early warning systems and science policy dialogue.

TATUS

Attributes of Science and Technology to Disaster Risk Reduction (DRR)	1	2	3	4	5
Science and Technology in decision making					
Presence of Science and Technology advisory group to DRR nodal ministry and or/related ministries				■	
Presence of Science and Technology group in DRR national platform				■	
Existence of inter-ministerial discussion/dialogue on science related issues			■		
Implementation of risk, needs and damage assessment with involvement of Science and Technology group					■
Existence of early warning system and mechanism with Science and Technology knowledge and tools				■	
Availability of disaster data/statistics on damage and impacts and its data collection mechanism				■	
Involvement of Science and Technology group in infrastructure design					■
Scientific revision/updating of regulations, policies and guidelines for DRR including building codes, disaster response and preparedness plan etc.					■
Investment in Science and Technology					
Existence of grant support by the national government to researchers in disaster related topics that focus on Science and Technology				■	
Establishment of disaster related courses in higher-education			■		
Presence of national research institutes and organizations for disasters				■	
Investment/support by the national government in national/international conferences and events on disasters for knowledge sharing				■	
Support to collaboration with academia and the private sector for developing innovative technical solutions				■	
Support to collaboration with academia and civil society for developing innovative social solutions			■		
Link of Science and Technology to people					
Availability of a hazard map to people, developed based on scientific knowledge				■	
Scientific validation of indigenous knowledge		■			
Involvement of Science and Technology group in developing program for evacuation drills				■	
Availability and participation of Science and Technology group in community discussion as facilitator or advisor/commentator			■		
Dissemination of science based early warning and forecast to people				■	
Involvement of Science and Technology group in developing disaster related education curriculum			■		
Existence of facilities such as museum and events such as expo to disseminate disaster knowledge and deepen understanding on disasters among citizens				■	

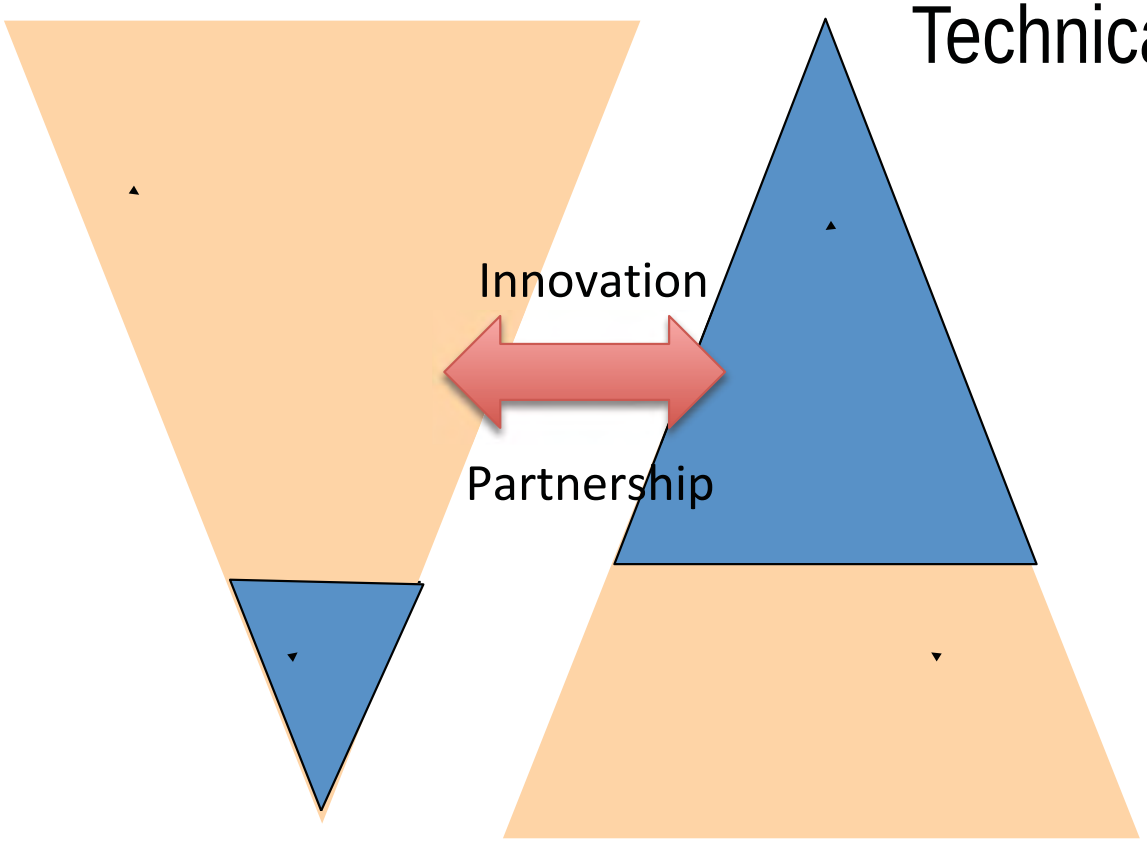
*This report is prepared by Rajib Shaw and Takako Izumi, ASTAAG members from Japan based on their knowledge, interpretation and interviews with Professor Takashi Onishi, President, Japan Science Council, Professor Kaoru Takara, Director, DPRI, Kyoto University and Professor Fumihiko Imamura, Director, IRIDES, Tohoku University.

	Attributes of Science and Technology to DRR	Bangladesh	China	India	Indonesia	Iran	Japan	Malaysia	Myanmar	Pakistan	Philippines	Vietnam
1	**Science and Technology in decision making (normalized score out of 100)**	**45**	**90**	**70**	**68**	**63**	**85**	**70**	**48**	**50**	**53**	**53**
1.1	Presence of Science and Technology advisory group to Disaster Risk Reduction (DRR) nodal ministry and/or related ministries	2	5	4	3	2	4	4	2	2	3	2
1.2	Presence of Science and Technology group in DRR national platform	2	5	3	4	3	4	4	2	3	3	1
1.3	Existence of inter-ministerial discussion/dialogue on science related issues	1	4	2	3	2	3	4	3	2	2	2
1.4	Implementation of risk, needs and damage assessment with involvement of Science and Technology group	2	4	4	3	3	5	2	1	2	3	2
1.5	Existence of Early Warning system and mechanism with Science and Technology knowledge and tools	3	5	5	4	4	4	4	4	3	4	3
1.6	Availability of disaster data/statistics on damage and impacts and its data collection mechanism	3	4	3	3	2	4	2	2	3	2	4
1.7	Involvement of Science and Technology group in infrastructure design	3	5	3	3	4	5	4	3	2	1	3
1.8	Scientific revision/ updating of regulations, policies and guideline for DRR including building code, disaster response and preparedness plan etc.	2	4	4	4	5	5	4	2	3	3	4
2	**Investment in Science and Technology (normalized score out of 100)**	**33**	**87**	**53**	**77**	**60**	**73**	**70**	**40**	**47**	**40**	**60**
2.1	Existence of grant support by the national government to researchers in disaster related topics that focus on Science and Technology	1	5	3	5	2	4	4	1	3	3	3
2.2	Establishment of disaster related courses in higher-education	3	5	3	4	5	3	4	2	2	2	2
2.3	Presence of national research institute and organization for disasters	3	5	3	4	4	4	3	2	2	1	4
2.4	Investment/support by the national government in national/international conferences and events on disasters for knowledge sharing	1	5	3	3	3	4	4	3	2	3	4
2.5	Support to collaboration with academia and the private sector for developing innovative technical solutions	1	3	2	3	2	4	3	1	2	1	2
2.6	Support to collaboration with academia and civil society for developing innovative social solutions	1	3	2	4	2	3	3	3	3	2	3
3	**Link of Science and Technology to people (normalized score out of 100)**	**34**	**57**	**57**	**69**	**51**	**69**	**51**	**40**	**40**	**43**	**37**
3.1	Availability of a hazard map to people, developed based on scientific knowledge	1	3	3	2	1	4	2	1	2	3	2
3.2	Scientific validation of indigenous knowledge	1	2	1	2	1	2	1	1	1	1	2
3.3	Involvement of Science and Technology group in developing program for evacuation drills	2	3	2	4	4	4	2	2	2	3	1
3.4	Availability and participation of Science and Technology group in community discussion as facilitator or advisor/commentator	2	1	3	4	3	3	3	2	2	2	3
3.5	Dissemination of science based early warning and forecast to people	3	3	5	5	3	4	3	3	3	3	2
3.6	Involvement of Science and Technology group in developing disaster related education curriculum	2	4	4	4	4	3	4	2	2	2	1
3.7	Existence of facilities such as museum and events such as expo to disseminate disaster knowledge and deepen understanding on disasters among citizens	1	4	2	3	2	4	3	3	2	1	2
Normalized Science Technology Atribution Score (out of 100)		**38**	**78**	**60**	**71**	**58**	**76**	**64**	**43**	**46**	**45**	**50**

Problem versus Solution

Social Problem

Engineering/
Technical Solution



Engineering /
Technical Problem

Social Solution

Gap / Issue 2:
Disaster Research and Policy Implications

A Global Outlook on Disaster Science

November 2017

An analysis of recent scholarly output and impact in disaster science according to the Sendai Framework for Disaster Risk Reduction, aiming to provide insights on the field to governments, research institutions, and funding agencies

Empowering Knowledge

Data Source

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High-quality Data

5,000+ Publishers

69+ M records

12+ M author profiles

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22,800+ peer reviewed journals
3,600+ open access titles
280+ trade journals

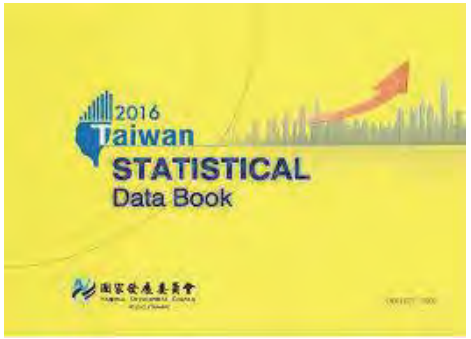
Books
560+ book series
150,000+ non-serial books

Conferences
100,000+ conference events
8+ million conference papers

+

Sendai Framework for Disaster Risk Reduction
2015 - 2030

WORLD BANK



Partner and Expert Group

APRU

Cemaden
Centro Nacional de Monitoramento e Alertas de Desastres Naturais

European Commission

IRDR
Integrated Research on Disaster Risk

災害科学国際研究所
IRIDeS
International Research Institute of Disaster Science

UNISDR
United Nations Office for Disaster Risk Reduction

Gordon McBean

ICSU

Chadia Wannous

UNISDR

Shuaib Lwasa

IRDR

Ian Clark

JRC/ EU

Rajib Shaw

Keio University &
UN ISDR STAG

Takako Izumi

IRIDES/ APRU

John Rundle

UC Davis

Fumiko Kasuga

Future Earth

Osvaldo de Moraes

CEMADEN

Elisabeth Krausmann

JRC/EU

Josh Tewksbury

Future Earth

Key Findings

2012-2016

Death toll versus publications

countries with the highest death tolls from natural disasters tend to have low volumes of disaster science scholarly output

Economic loss versus publications

countries with the highest economic losses from natural disasters tend to have the largest disaster science scholarly output

27,273

the number of recent scholarly output in disaster science

0.22%

the share of recent global scholarly output belonging to disaster science

9,571

the number of recent disaster science publications on geophysical disasters

>5,000

the number of recent disaster science publications on each of the following disaster types: geophysical, meteorological, chemical & radiological, and hydrological

China

the most prolific country in disaster science scholarly output overall and disaster prevention scholarly output

USA

the most prolific country in disaster preparedness, response, and recovery scholarly output

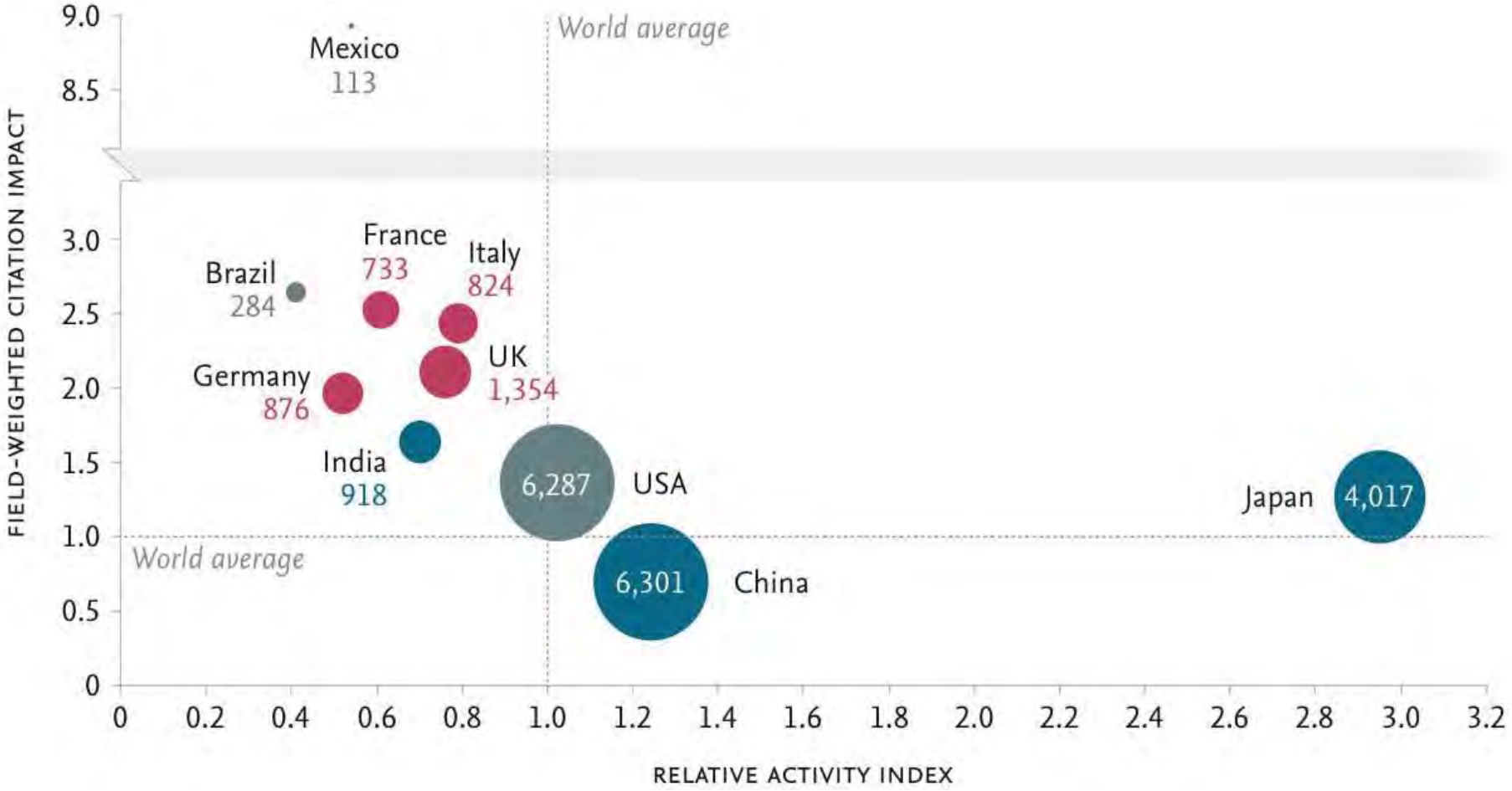
Japan

the most specialized prolific country in disaster science, overall and in research on each disaster management cycle stage

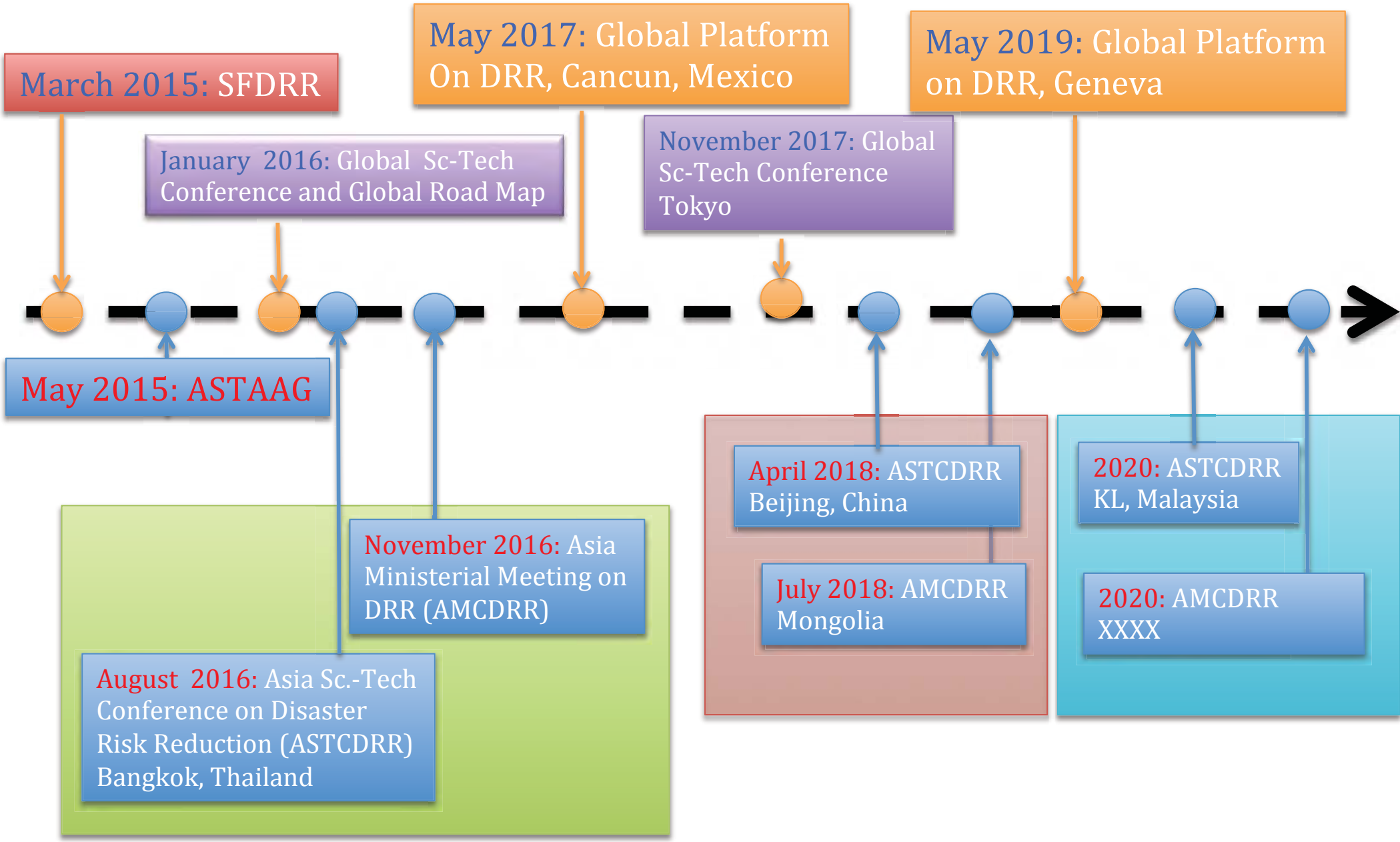
Philippines, Indonesia, Bangladesh, Japan, New Zealand, Thailand, Taiwan

territories with 125+ recent papers in disaster science that are 50%+ more specialized in disaster science than the global average

Key countries



Science Technology Milestone: Global and Regional (for Asia)



UN ISDR STAG

(Science Technology Advisory Group)

- 21 Members from
  - Asia, Africa, Americas, Caribbean, Europe, Pacific
  - Members from UNESCO and UNU
  - Members from research consortium
  - Chair: Rajib Shaw, Japan
  - Vice Chair: Victor Manuel García Lemus, Guatemala
  - Vice Chair: Najla Romdhane, Algeria
- Advocacy, Capacity building, Synthesis, New Technologies in disaster risk reduction
- Immediate Priorities
  - Target E (Increase the number of countries with national and local DRR by 2020) of Sendai Framework
  - Data management and country capacity building
  - Resilient infrastructure investment
  - NaTech (*Natural* and technological hazards)

UNISDR Asia Science, Technology, and Academia Advisory Group (ASTAAG)

8 – 10 – 12 – 20

2015 – 2016 – 2017 - 2018

BACKGROUND

The increasing importance and role of science-based decision-making was strongly emphasized in the Sendai Framework for Disaster Risk

WHO WE ARE

ASTAAG comprises selected disaster experts from Asian countries: Bangladesh, China, India, Indonesia, Japan, Malaysia and Philippines.

MAJOR ACTIVITIES

- Periodic assessment of status and science and technology for DRR in the region
- Provide specific advices to national and local governments on science based decision making
- Assisting governments in reviewing the progress of the SFDRR implementation
- Recognition of networks of universities/center of excellences and engage them in sharing knowledge and experience

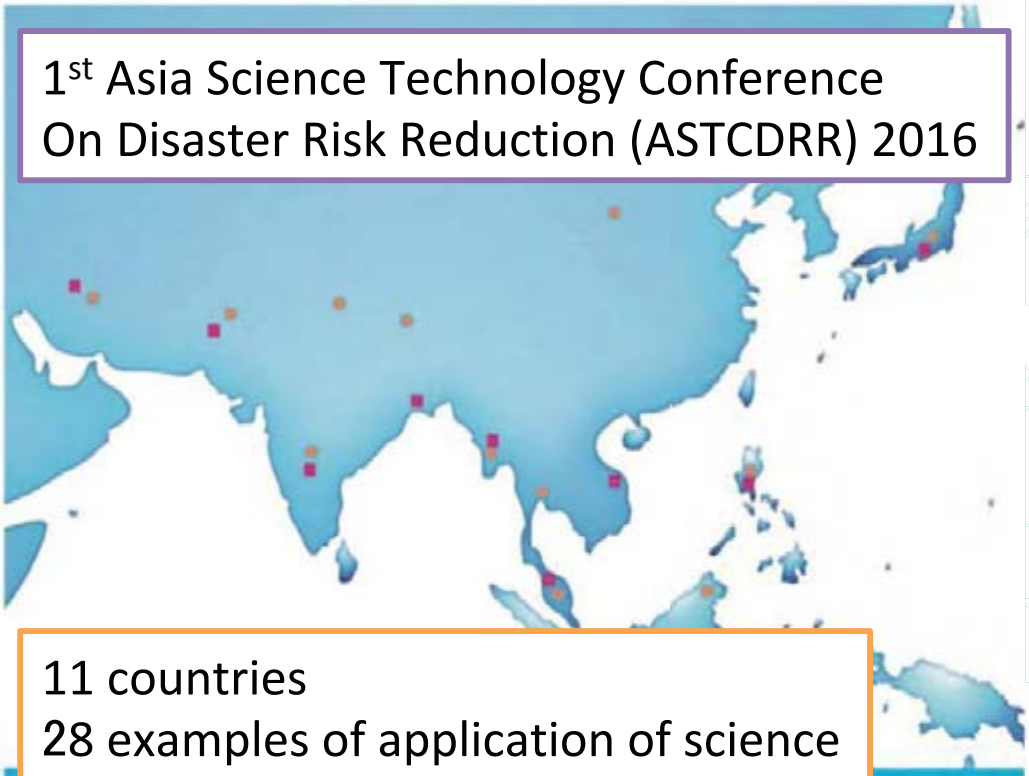
KEY FOCUSES

1. Strengthen capacities of the Science, Technology and Academic community in disaster science
2. Support governments in science based decision making to implement SFDRR
3. Enhance networking among academic community and other stakeholders

1. Understanding disaster risk;
2. Strengthening disaster risk governance to manage disaster risk;
3. Investing in disaster risk reduction for resilience;
4. Enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation and reconstruction.

UNISDR

1st Asia Science Technology Conference
On Disaster Risk Reduction (ASTCDRR) 2016



11 countries
28 examples of application of science

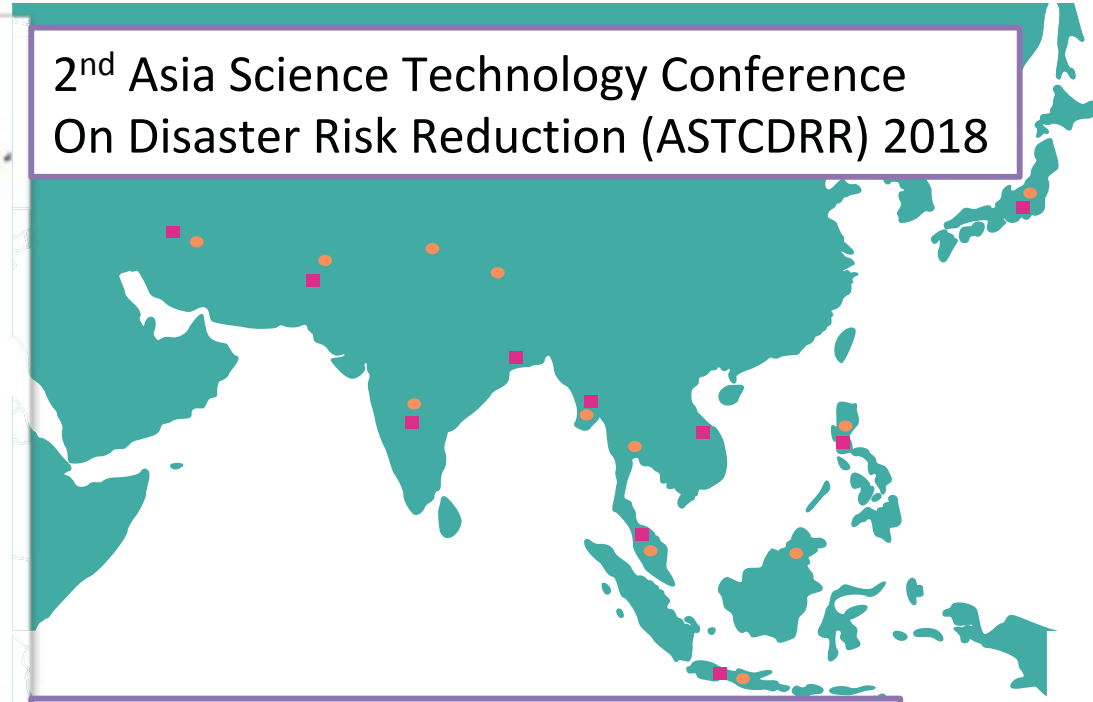
ASIA
Science Technology Status For Disaster Risk Reduction

2016

IRDR
Integrated Research on Disaster Risk

futureearth
research for global sustainability

2nd Asia Science Technology Conference
On Disaster Risk Reduction (ASTCDRR) 2018



25 examples of implementation of priority action

Science & Technology into Action

Disaster Risk Reduction Perspectives from Asia

2018

UNISDR
United Nations Office for Disaster Risk Reduction

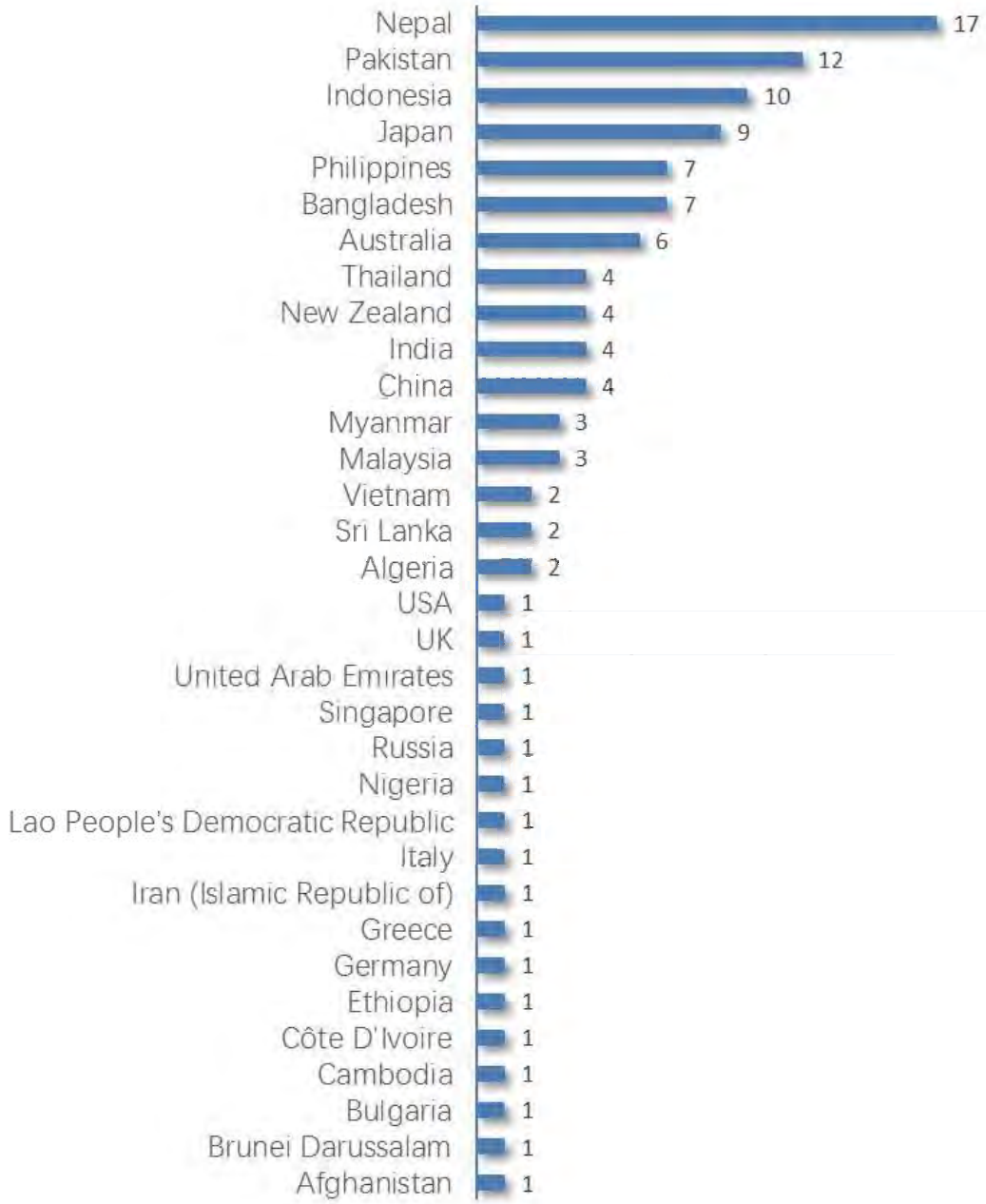
IRDR
Integrated Research on Disaster Risk

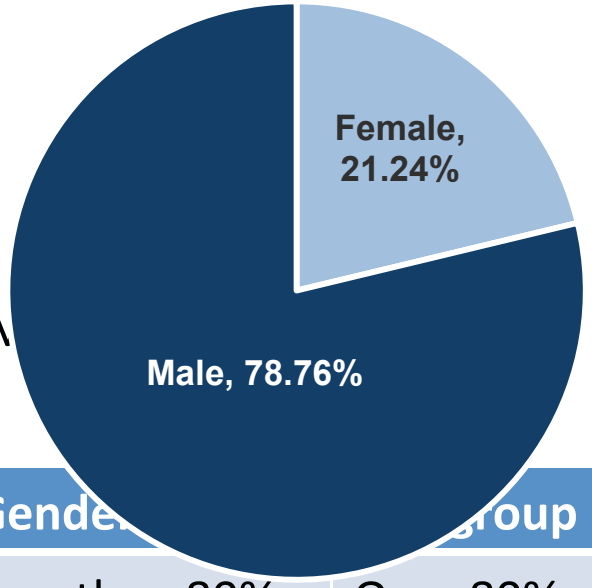
BEIJING NORMAL UNIVERSITY 1902

ADREM

1st ASTCDRR: Bangkok 2016

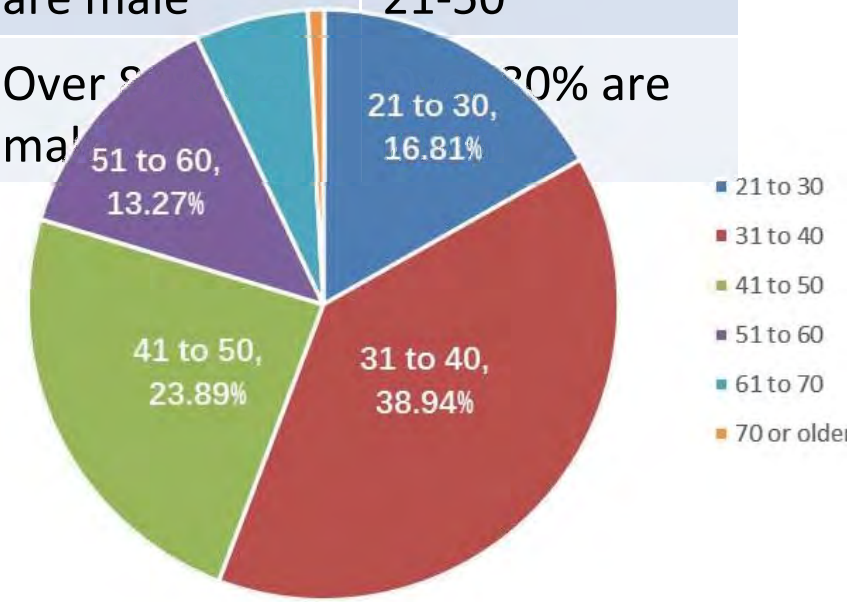
Priority 1	Priority 2	Priority 3	Priority 4
Action 1 Enhance disaster loss and damage accounting, national and local disaster risk assessment and communication of disaster risk	**Action 4** Strengthen science-policy-practice nexus at all levels	**Action 7** Make DRR an area of focus within education including networking between universities	**Action 10** Promote the role of inter-disciplinary science and technology in effective pre-disaster planning, preparedness, response, rehabilitation, recovery and reconstruction to build back better
Action 2 Use space and disaster risk mapping technologies and strengthen the capacity	**Action 5** Develop inter-disciplinary national science and technology plans to support implementation of the Sendai Framework	**Action 8** Ensure risk-sensitive investments	**Action 11** Develop an efficient and effective cooperation among the science community and business sector by utilizing the advancements of the fast developing information and communication technology (ICT) including big data
Action 3 Strengthen regional exchange on disaster risk information and science	**Action 6** Enhance collaboration between local governments, academia and other partners to promote local communities knowledge and traditions and to sustain and replicate many good practices that exist locally for science-based decision making	**Action 9** Develop young professionals in the field of multi-disciplinary disaster risk reduction	**Action 12** Research into innovative solutions to promote the whole-of-society engagement



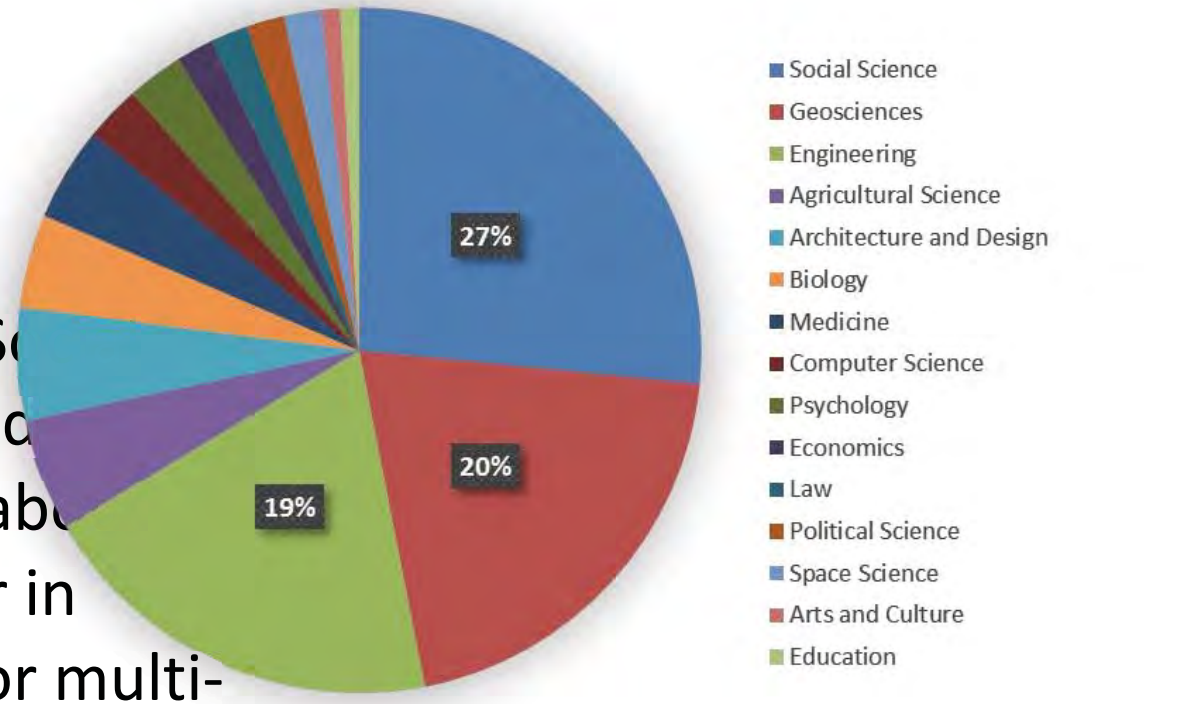


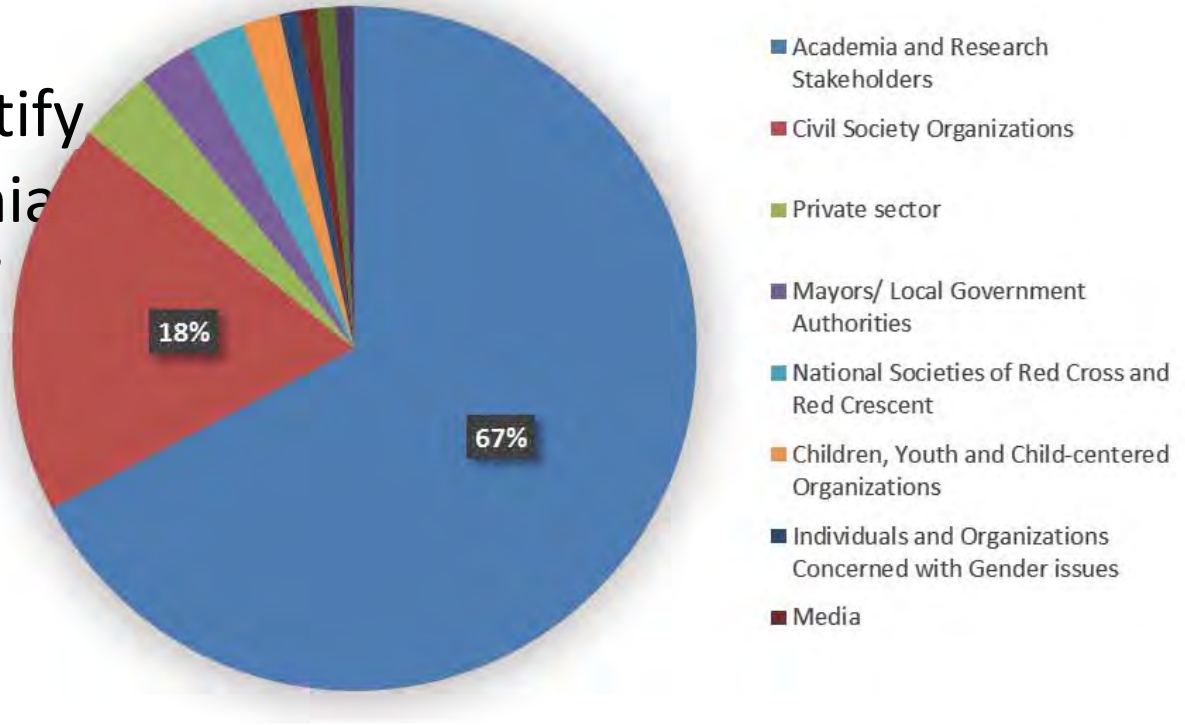
ity, AN

	Gende	roup
n,	Less than 80% are male	Over 80% are 21-50
	Over 8 ma	0% are



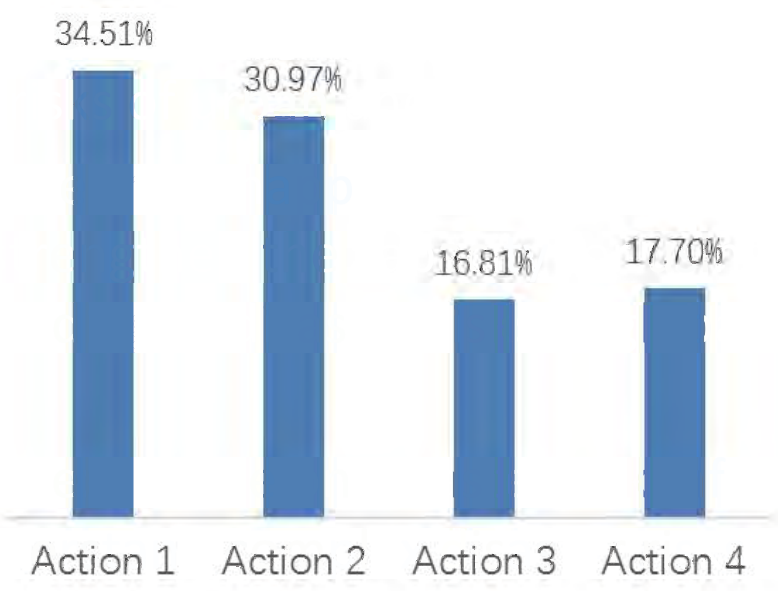
- Most respondents are S
  Science, Engineering and
  Geoscience. There are ab
  42% respondents major in
  Disaster Management or multi-
  disciplinary.
- Most respondents identify
  themselves as “Academia
  Research Stakeholders”





Actions for SFDRR Priority 1

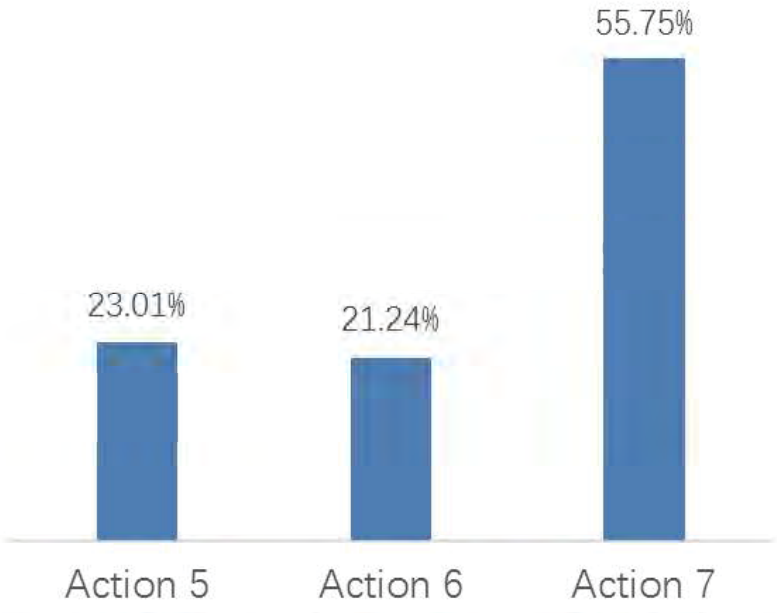
1. Enhance disaster loss and damage accounting, national and local disaster risk assessment a with a specific focus on ~~urban risks the~~ regions.
2. Use space and dis nd emerging technologies and hese technologies for improved unders national and local level.
3. Strengthen regio nation and science in order to better u cluding risks of transboundary, cascading and compound disasters.
4. Develop a synthesis system under international cooperation to share integrated ange of stakeholde



Action 2 → Action 1

Actions for SFDRR Priority 2

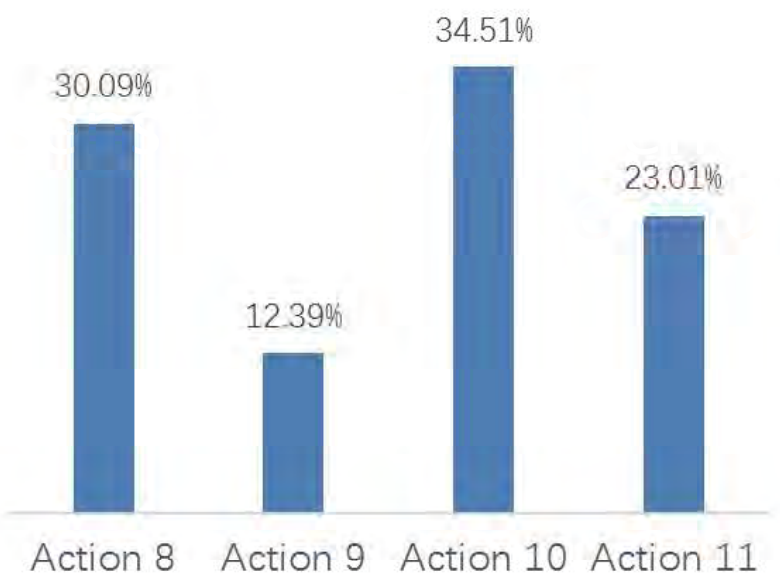
5. Strengthen science-policy-practice nexus at all levels (national, loc gional)
6. Develop inte ence and technology p ntation of the Sendai Fram ns by academia/ur r own disaster risk manage
7. Enhance coll governments, academia an ote local communities' knowledge and traditions and to sustai locally



Action 7 (Action 6 in 2016)

Actions for SFDRR Priority 3

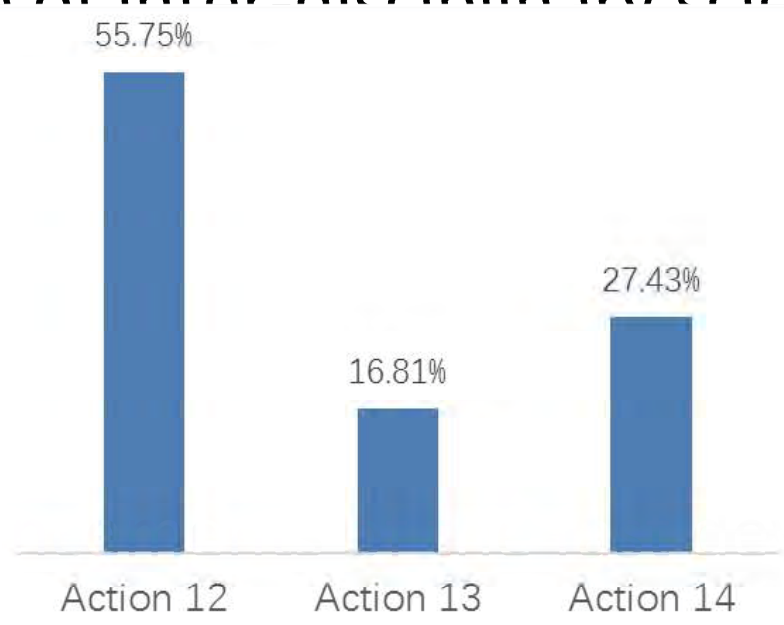
8. Make DRR an area of focus within education including n versities.
9. Ensure risk through enhanced r technology community
10. Develop yc e field of multi-disci uction.
11. Enhance and showcase projects that promote science and technology based DRR and encour ent in disaster risk reduction.



Action 8 → Action 10

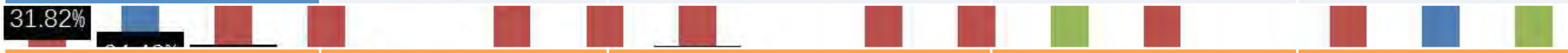
Actions for SFDRR Priority 4

12. Promote the role of inter disciplinary science and technology in eff ng, preparedness, re covery and reconstruction t
13. Develop an effic ation among the science com or by utilizing the adva eloping information and gy (ICT) inclu
14. Rese promote the whole-of-society engagement



Action 12 (Action 10 in 2016)

2018	Technical Resources	Government/legal Resources	Human Resources	Financial Resources
Priority 1	Action 2	**Action 1** Action 3 **Action 4**		
Priority 2	**Action 6(5)**	Action 5(4) **Action 7(6)**		
Priority 3			**Action 8 (7)** Action 10(9)	Action 9(8)
Priority 4	Action 12(10) Action 13(11)	**Action 14(12)**		

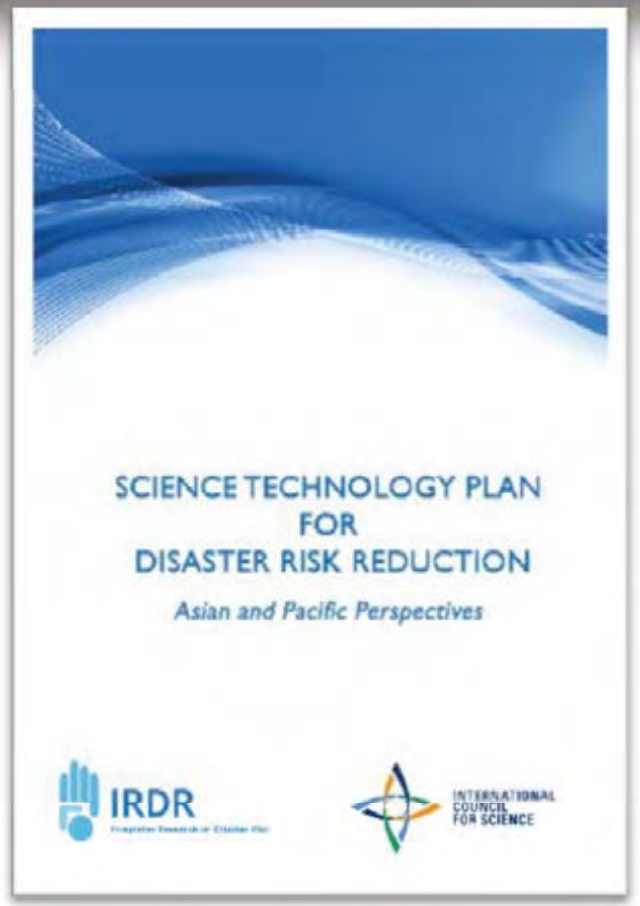


2016	Technical Resources	Government/legal Resources	Human Resources	Financial Resources
Priority 1	Action 2	Action 3	Action 1	
Priority 2		Action 4, Action 5	Action 6	
Priority 3		Action 7	Action 9	Action 8
Priority 4	Action 10, Action 11	Action 11		Action 12

National Science Technology Plan for DRR

Country List

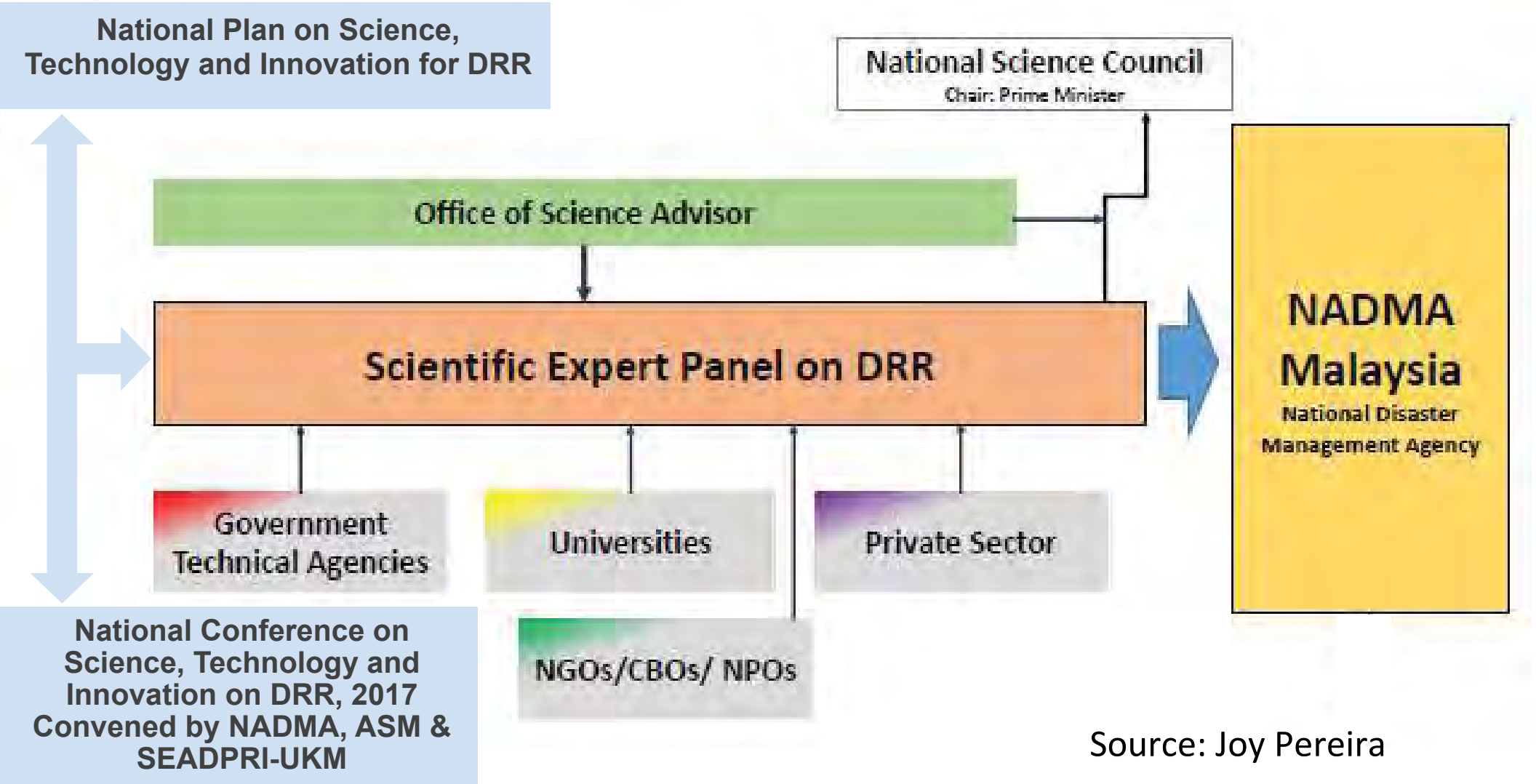
1. Bangladesh
2. Fiji (Pacific)
3. India
4. Indonesia
5. Iran
6. Malaysia
7. Myanmar
8. Nepal
9. Pakistan
10. Philippines
11. Sri Lanka
12. Thailand



- Contents: Inter-disciplinary, national-local linkage
- Operational framework: Link of science/technology community with NDMO
- Resource mobilization: In-country workshop
- Socialization: Link to other stakeholder

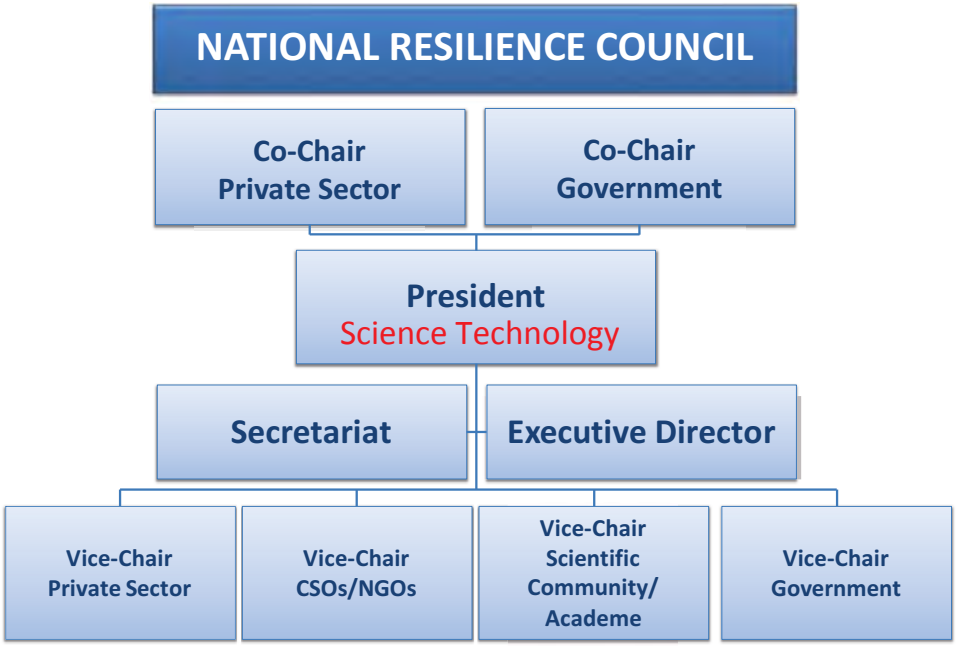
National Institutional Arrangement (Malaysia)

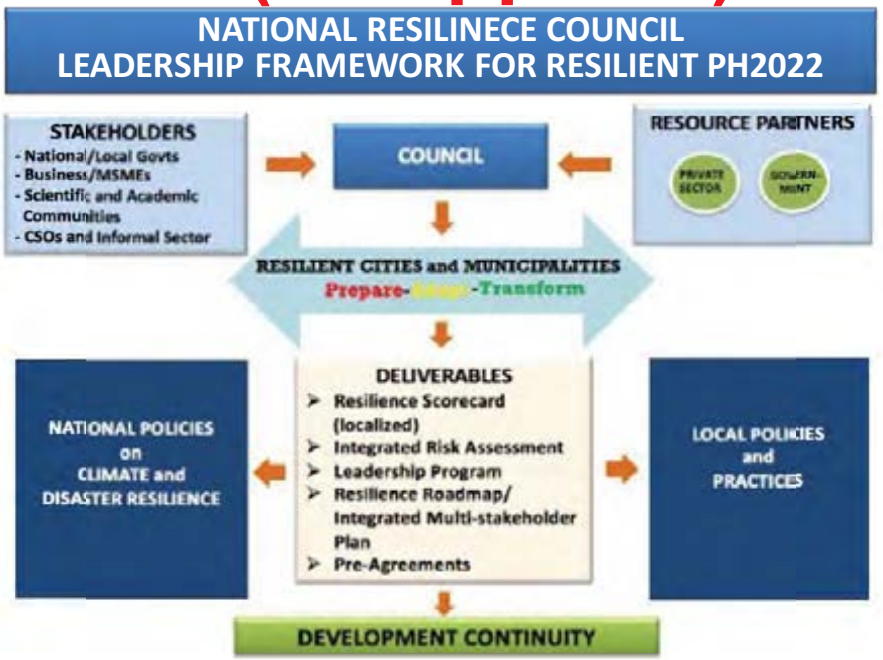
The **Director General of NADMA Malaysia** & the **Science Advisor to the Prime Minister** are co-chairs of the Scientific Expert Panel on DRR, which provides scientific support on DRR and reports to the National Science Council, chaired by the Hon. Prime Minister of Malaysia



Source: Joy Pereira

National Resilience Council (Philippines)





RESILIENCE MODEL

LEADERSHIP AND GOVERNENANCE IN RESILIENCY

- Leadership Commitment and Competencies
- Empowered Stakeholders
- Integrates Dev't Planning, implementation and Evaluation

IMMEDIATE OUTCOMES

PILLARS OF LGU SYSTEM

HUMAN DEVELOPMENT	SUSTAINABLE LOCAL ECONOMY	INFRASTRUCTURE	ENVIRONMENTAL SUSTAINABLITIY
Resilient systems of health, education and social protection	Resilient livelihoods, enterprises and businesses	Resilient housing, building and lifelines	Healthy ecosystems Socio-ecological protection systems Pollution management and resource use efficiency

Source: Antonia Loyzaga

IMPACT

Resilient LGUs
Provinces
Cities
Municipalities

Reduced deaths

Reduced damage to properties, infra and agri

Development continuity

Global Platform in Cancun 2017

14 countries
40 examples of co-designing solutions

Co-designing Disaster Risk Reduction Solutions:

Towards participatory action and communication in science, technology and academia

2017

UNISDR Asia Science Technology and Academia Advisory Group (ASTAAG)

Integrated Research on Disaster Risk (IRDR)

Collaborating Centre for Oxford University and CUHK for Disaster and Medical Humanitarian Response (CCOUC)

Asia Science Technology Academia Advisory Group

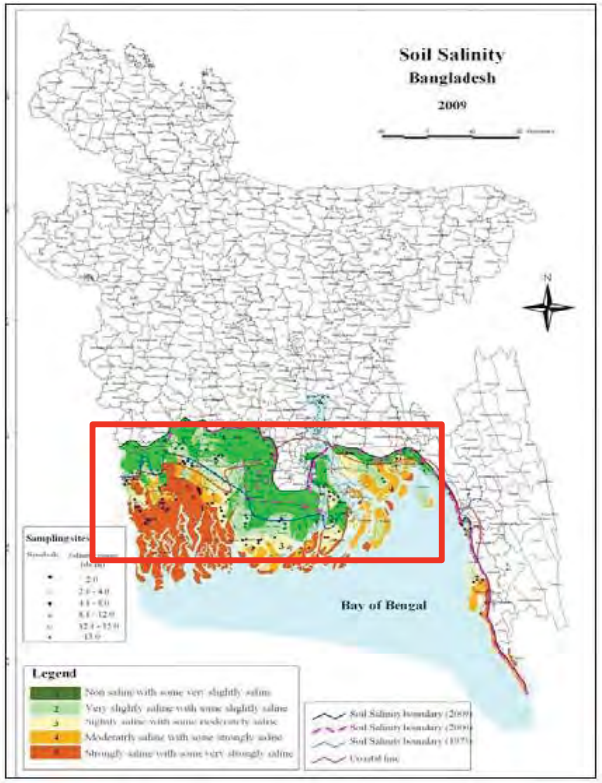
IRDR Integrated Research on Disaster Risk

CCOUC Collaborating Centre for Oxford University and CUHK for Disaster and Medical Humanitarian Response
CCOUC 災害與人道救援研究所

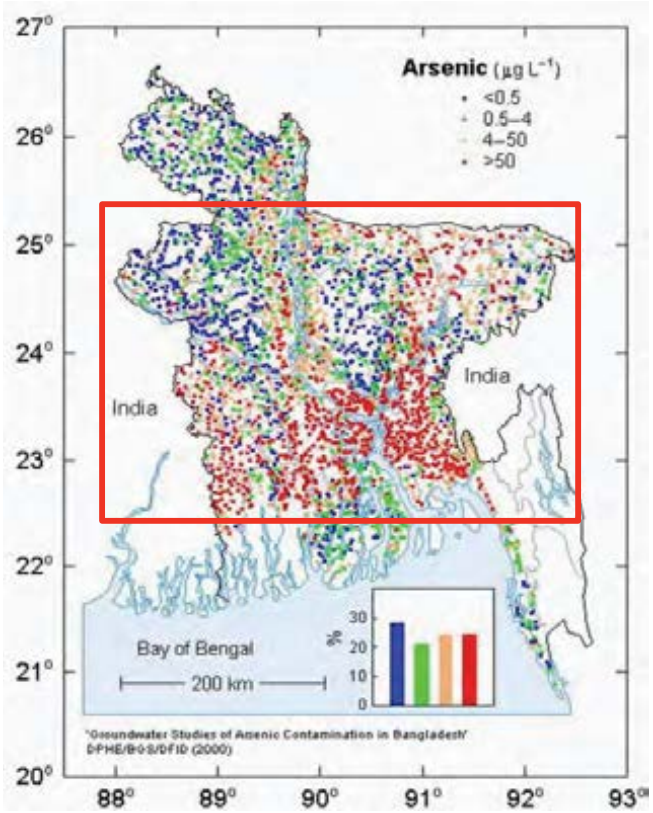
Grass-roots/ Demand driven innovation

Smart and participatory water solution in Bangladesh

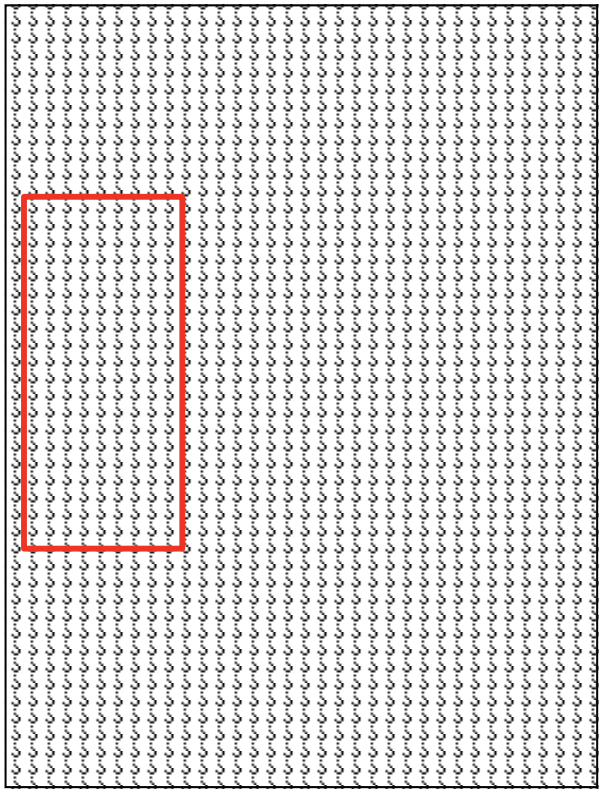
Southwestern Coast:
Severe Safe Drinking Water Scarcity Area



Salinity



Arsenic



Drought

Source: Abedin and Shaw (2016)

Women hardship due to water insecurity (2)

Disruption of Daily Activities and Extra burden on poor people (3)

Source: Abedin and Shaw (2016)

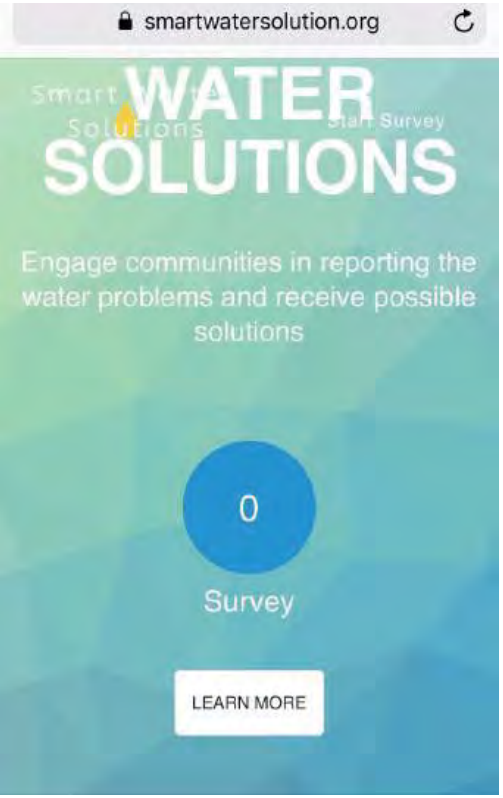
Technological innovations and intervention on social vulnerability data

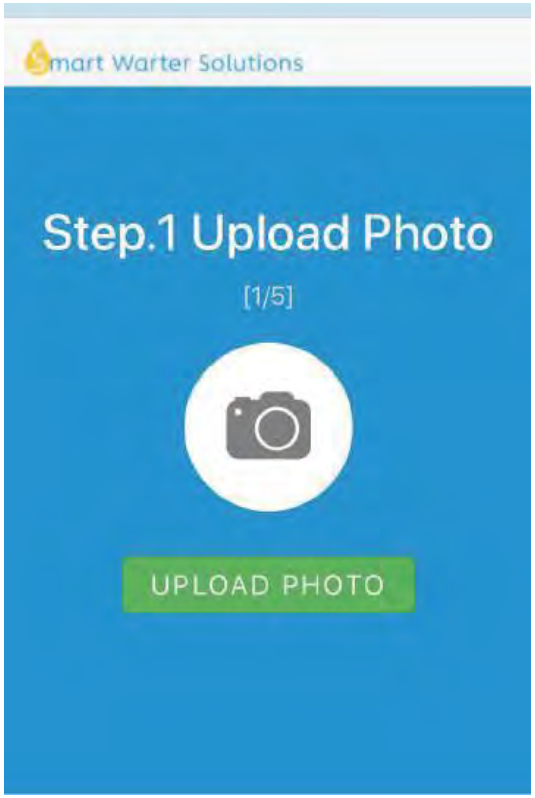
Smart-phone apps

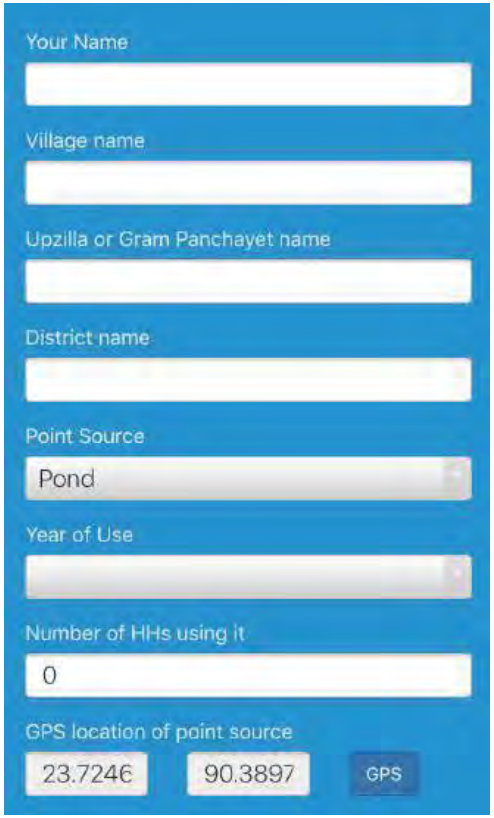
Mobile penetration: 87% HH

Smart phone: 68%

Source: Shaw et al. and Keio Uni., Japan


smartwatersolution.org
Smart WATER SOLUTIONS
Start Survey
Engage communities in reporting the water problems and receive possible solutions
0
Survey
LEARN MORE


mart Warter Solutions
Step.1 Upload Photo
[1/5]
UPLOAD PHOTO


Your Name
Village name
Upzilla or Gram Panchayet name
District name
Point Source
Pond
Year of Use
Number of HHs using it
0
GPS location of point source
23.7246
90.3897
GPS

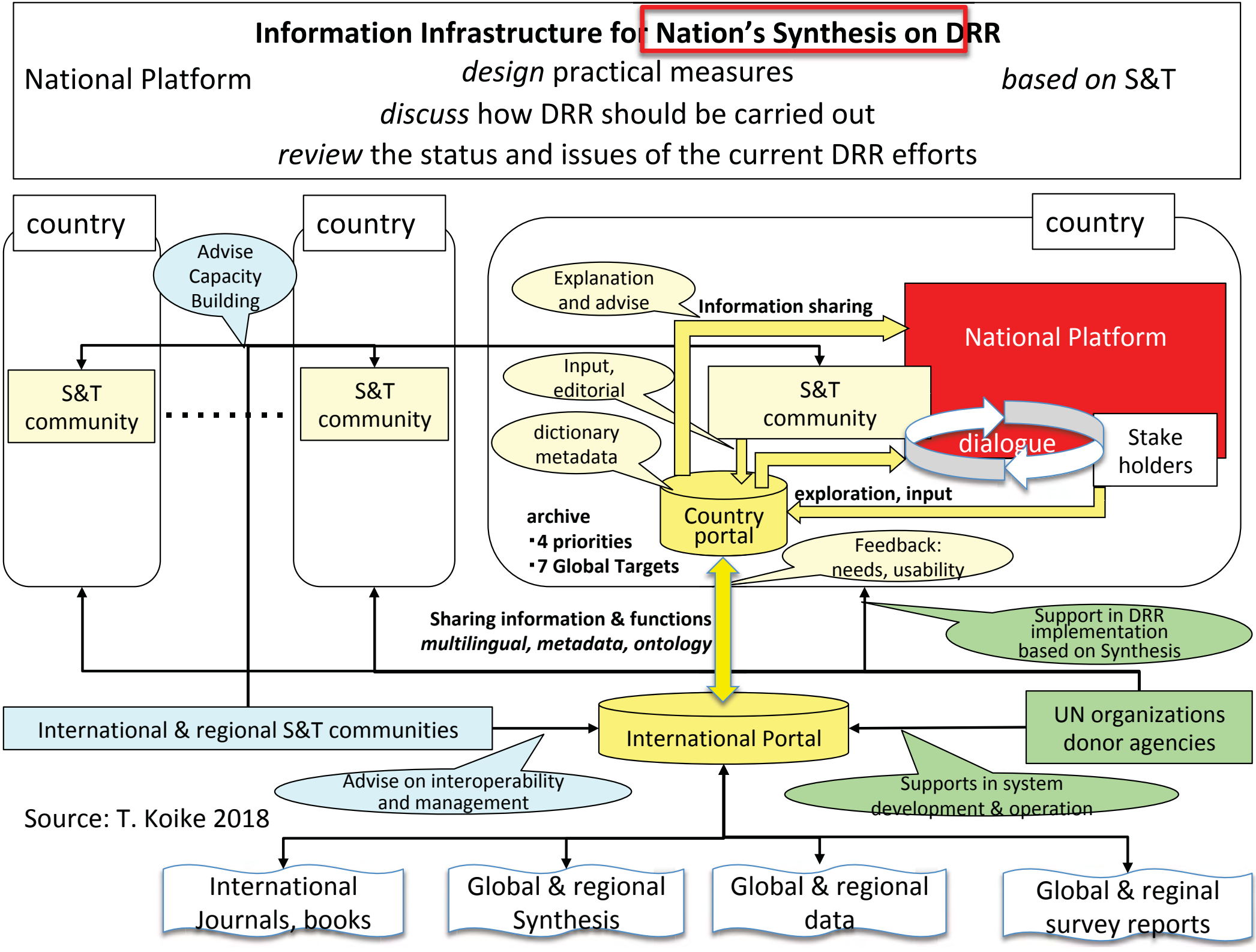

Step.3 About Source
[3/5]
Colour
clear
Light yellow
Brown
Odour
None
pungent
Turbidity / TDS
Yes
No
Taste
normal
salt
Transparency
clear
Not clear


Step.4 About Contaminants [4/5]
Microbiological
Unknown
analysis of planktons
infectious diarrhea/ dysentry
None
Iron
Unknown
sediment ation
colour
Fatigue, weight loss among children
None
Arsenic
Unknown
Already identified
Analysis of sample
Skin hardening (3) pigmentat ion in hands and
None


Step.4 About Contaminants [4/5]
Microbiological
Unknown
analysis of planktons
infectious diarrhea/ dysentry
None
Iron
Unknown
sediment ation
colour
Fatigue, weight loss among children
None
Arsenic
Unknown
Already identified
Analysis of sample
Skin hardening (3) pigmentat ion in hands and
None


robi axiata 3G 13:06 69%
survey.smartwatersolution.org
blisters, itchiness
Sodium / Salinity
Unknown
Taste
Hypertensi on, hyper acidity, gastrointest inal
None
Fluoride
Unknown
Already identified
Sample analysis
Discolour ation of teeth, bone deformati on, death
None
BACK
NEXT


robi axiata 3G 13:07 69%
survey.smartwatersolution.org
Step.5 Suggested tips [5/5]
Following are some of the suggested solutions. Tell us your preferred option.
Iron : colour
Sedimentati on
Iron filter
Find alternate source
Rainwater harvesting
Arsenic : Already identified
Identification of safe source
Arsenic filters
Pond sand filter
Surface water use
Rainwater harvesting
Ground water recharge
Change aquifer
Find alternate


Information Infrastructure for Nation's Synthesis on DRR
National Platform
design practical measures
discuss how DRR should be carried out
review the status and issues of the current DRR efforts
based on S&T
country
country
country
Advise
Capacity
Building
S&T
community
S&T
community
S&T
community
Explanation
and advise
Information sharing
National Platform
Input,
editorial
dictionary
metadata
dialogue
Stake
holders
exploration, input
archive
▪4 priorities
▪7 Global Targets
Country
portal
Feedback:
needs, usability
Sharing information & functions
multilingual, metadata, ontology
Support in DRR
implementation
based on Synthesis
International & regional S&T communities
International Portal
UN organizations
donor agencies
Advise on interoperability
and management
Supports in system
development & operation
Source: T. Koike 2018
International
Journals, books
Global & regional
Synthesis
Global & regional
data
Global & reginal
survey reports

POLICY BRIEF

July 2016
Number 34

SDGs, DRR and CCA: Potential for Strengthening Inter-linkages

Key Messages

- The world has arrived at a crucial turning point with the inception of three major global frameworks dedicated to sustainable development (SD), disaster risk reduction (DRR) and climate change adaptation (CCA). A coordinated response is now needed from all relevant stakeholders to maximise implementation on the ground.
- At the global level, while SD, DRR and CCA interlinkages are acknowledged, DDR is weakly linked to the Paris Agreement. Linking CCA with DRR by strengthening national and local level adaptation planning and implementation would assist here, and loss and damage can provide ample opportunities for this to take place.
- At the national level, the economic aspect is key to sustainable development in many countries—DRR and CCA can assist in economic development objectives of most developing and least developed countries without compromising environmental integrity or increasing disaster risk.
- At the local level, strong convergence of SD, DRR and CCA calls for greater collaboration among related stakeholders with adaptive management—not just in drafting broad plans and policies but also actual implementation, monitoring and evaluation, via collaboration among local governments, local experts, non-government organisations and business sectors.
- This policy brief identifies approaches that could help achieve better synergies in implementation of these frameworks on the ground via programmatic integration, collaboration, capacity and innovation. Focal Points at national and sub-national levels could mainstream and monitor progress of indicators and targets in the three frameworks, as well as ensure convergence of these frameworks takes place on the ground.

Rajib Shaw

SVRK Prabhakar

Yohei Chiba

Inter-relationship of Global Framework

	SDG (UN 2015b)	SFDRR (UN 2015a)	Paris Agreement (UN 2015c)
Sustainable development		20	16
Disaster risk	12		1
Climate change	20	15	

	SDG	**SFDRR**	**Paris Agreement**
Use of term "LOCAL"	10	48	9
Number of Pages	35	25	32
Context	Authorities, communities, culture, materials and planning (Goal 6, 8, 11 and 13)	Government, community, knowledge, priority, DRR strategy	Communities and knowledge (in terms of Adaptation)

Summary: Science Policy Action NEXUS

- Three major frameworks (SDG, SFDRR, Paris Agreement) have overlaps and "local" issues are strongly highlighted
  - Science technology gaps: People link
  - Research gaps: Developed and developing countries
- Several ongoing global and regional initiatives
- National Science Technology Plan for implementation of Sendai Framework
- Global information infrastructure: need to link science to national platform
- Grass-roots and demand driven innovation is crucial and it needs strong partnership