

Digital Belt and Road (DBAR) Initiative - Disaster Theme

Strengthening Science Capacities for Sustainable Development and Disaster Risk Reduction

Regional Research Strategy





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Regional Research Strategy

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Summary	1
1. Context and Need	3
2. Milestones and Evolution.....	8
3. Goal and Objectives	12
Strategic Goal.....	12
Objectives.....	12
Alignment with DBAR Science Plan Objectives.....	12
4. The Action Agenda.....	13
Twelve Key Actions	13
Prioritising of Actions.....	14
5. The Process: From Policy to Action	15
6. Work Plan.....	17
Phasing.....	17
Activities and Outputs.....	18
Cross-Cutting Activities	19
7. Resource Prioritization and Mobilization.....	21
Nature of Resource Requirement.....	21
Committed Resources	21
Involvement of End-users, Engagement and Technology Transfer	21
8. Current Achievements and Next Steps	22

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Summary

The Regional Research Strategy has been formulated under an international science program, Digital Belt and Road (DBAR) Initiative, for promoting cooperation between countries along the Belt and Road to advocate and demonstrate the applications of big Earth data in support of the sustainable development, including disaster risk reduction, of people and economies at local, national and regional levels. It aims at strengthening science technology academic community, and making research more meaningful, by focusing on higher education, research and disciplinary issues in academics.

The Belt and Road initiative involves more than sixty countries, repressing more than one third of the world economy and more than half of world population. This also is the very region that experiences over 85% of the world's natural hazard events having serious impacts on human populations. The region represents the majority of the world'd disaster deaths and losses. Given the rapid urbanisation and continued population growth trend, the challenges faced by the region are only due to increase in the future.

The Disaster Risk Reduction theme is thus very appropriate to be a key area of work in the region, bringing together mutliple stakeholders from the concerned countries to address the risk of disasters arising out of natural hazards, climate change and technological accidents.

The initiative has been formulated in the recently agreed global frameworks that include the Sendai Framework for Disaster Risk Reduction, the Sustainable Development Goals and the Paris Agreement on climate change.



The Belt and Road region houses a majority of the world's population, and experiences most of the world's hazard events, disaster deaths and losses.

The approach taken by the programme covers Satellite and Information and Communication Technologies, but also Implementation Oriented Technologies that involve hardware solutions to risk reduction challenges; Process Technologies that are concerned with decision making, collaboration and people's engagements; and Transferrable Indigenous Knowledge that banks on traditional wisdom that most countries of the region are very rich in.

A number of preparatory activities have been undertaken, including:

- 1st ASTCDRR, Bangkok, 2016
- Preparation of a Status Report
- Survey on Priority actions for S&T
- Networking and Communications

Based on this, a set of twelve actions was identified along the four SFDRR priorities, and these were further prioritised towards preparation of a phased work plan. Emerging issues were

identified through a Consultative Workshop. Common themes and unique approaches identified were then used to form a detailed action plan.

Focus on integrating digital and social processes and tools emerged as a key element of the approach, based on which principles of integration were agreed upon. These cut across data, disciplines, the region, and stakeholders.

Further, consultative group meetings and an international workshop were held for formative discussions on this strategy, with involvement of over fifty participants from seventeen countries. A regional training course was also piloted, which was conducted by international resource persons and was attended by twenty participants from fifteen countries.

The outcome is this comprehensive Regional Research Strategy, which lays down the roadmap to be followed for regional convergence, preparation of national strategies and plans, building of capacity particularly of young scientists, and taking up of specific country level projects. The strategy also details a work plan for the next three years, with activities as well as expected outputs clearly spelt out. The document is expected to be a key tool towards guiding the programme during 2016-19.

It is envisaged that the DBAR Disaster programme will influence regional and global milestone events during its tenure. It is set to inform SFDRR indicator based monitoring processes, influence the youth through capacity building initiatives, and assist countries in the preparation of national strategies and plans.

Operational strategies including communications, business and outreach strategies will be developed in the initial stages. Partnership offers are already coming from regional institutions, and these will be pursued to strengthen the networking aspect. A four country integrated assessment initiative has been launched, and more regional programmes will also be taken up in due course.

With these means, the Strategy is expected to influence a number of upcoming global policy events that will serve as milestones in the disaster risk reduction domain.

A three-year work plan has accordingly been developed as part of the strategy, with clear activities and outputs.



Year 1 (2016-17)	Year 2 (2017-18)	Year 3 (2018-19)
<ul style="list-style-type: none"> Development of Regional Research Platform Inception Consultative Workshop Regional Research Strategy Development Enhancing Capacities of young researchers 	<ul style="list-style-type: none"> National Research Strategy Development Second Consultative Workshop Enhancing Capacities of young researchers Specific country based research projects 	<ul style="list-style-type: none"> Third Consultative Workshop Enhancing Capacities of young researchers Specific country based research projects National Research Platform
Outputs: <ul style="list-style-type: none"> DBAR Regional Research Platform for DRR First Consultative Workshop of Regional Research Platform Regional Research Strategy Enhanced capacities of young scientists 	Outputs: <ul style="list-style-type: none"> Second Consultative Workshop of Regional Research Platform National Research Strategy Enhanced capacities of young scientists Country based research project 	Outputs: <ul style="list-style-type: none"> Third Consultative Workshop of Regional Research Platform Enhanced capacities of young scientists Country based research project National research platform

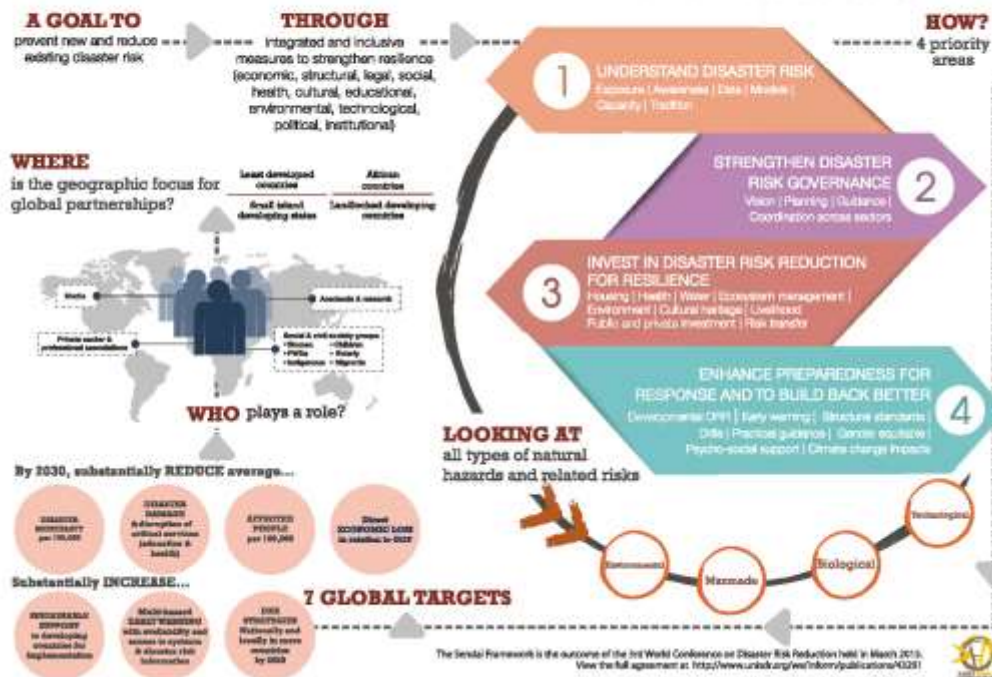
1. Context and Need

A gap analysis of the regional research domain highlights compartmentalisation along different parts of the region, highly varying levels of state of the art, and differing states of research motivation. Inter-regional collaborations do exist in an ad-hoc manner, but have never addressed the issue of disaster risk in an organized way. Global Frameworks that have emerged in recent times have a significant potential to influence the way an inter-regional strategy can translate into regional/national/local plans. DBAR Disaster Theme is thus aiming to complement and strategically link regional initiatives, and deliver benefits at the local level.

There is undisputable evidence to strong linkages between development, environment and disasters. Sustainable development can reduce pressure on the environment and results into less disasters and eventual impacts. In turn, a well prepared disaster risk reduction (DRR) approach and/or environmental management can reduce the impacts of disasters on development and can make the development sustainable. With climate change emerging as an important issue undermining the development and impact the disaster risks, finding synergies between Climate Change Adaptation (CCA) and appropriate DRR measures is an inherent goal.

Keeping pace with the urgency for progress on the fronts of sustainable development, CCA and DRR, the year 2015 has been a landmark year in the history of development, disaster and environment fields, where three major international frameworks have been formed. The year started with adopting a new DRR framework in March 2015 in Sendai, Japan, called Sendai Framework for Disaster Risk Reduction (SFDRR) with a time frame of 2015 to 2030. Then, there was a new set of development goals called Sustainable Development Goals (SDG) with the same time frame of 2015 to 2030, which was adopted in the UN General Assembly in New York in September 2015. Finally, the world leaders agreed on a new climate change agreement called Paris Agreement under the UNFCCC (United Nations Framework Convention on Climate Change), which needs to be ratified between 22nd of April 2016 to 21st April 2017.

SEDAI FRAMEWORK FOR DISASTER RISK REDUCTION



THE SUSTAINABLE DEVELOPMENT GOALS: Transforming our world



The 'RESILIENCE' AGENDA

The SDGs have specific references to 'resilience' in the declaration and goals 1, 2, 9, 11, 13 & 14; as well as several cross-links with themes of capacity building, underlying risks and mitigation. This includes:

- We are also determined to promote resilience and disaster risk reduction
- Cooperation should also strengthen the resilience of communities hosting refugees, particularly in developing countries
- By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters
- By 2030, implement resilient agricultural practices
- Develop sustainable and resilient infrastructure
- By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters; and develop and implement, in line with the Sendai Framework, holistic disaster risk management at all levels
- Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries
- By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration



The Sustainable Development Goals were adopted by the United Nations in November 2015. View more details at <http://www.un.org/sustainabledevelopment/goals/>

PARIS AGREEMENT: Climate change framework from 2020

*Open for signature from 22nd April 2016 – 31 April 2017. Needs to then be ratified by at least 55 parties to the convention which account for an estimated 55% of total GHG emissions.

*While technically legally binding, many key points are not phrased in legal language.

TEMPERATURE AND MITIGATION	FINANCE	LOSS AND DAMAGE	COMMON BUT DIFFERENTIATED RESPONSIBILITIES	ADAPTATION	REVIEW
<ul style="list-style-type: none"> Limit global temperature increase well below 2°C above pre-industrial levels and to pursue efforts to limit it to 1.5°C Global peaking of greenhouse gas (GHG) emissions 'as soon as possible' Recognised that sustainable lifestyles and sustainable patterns of consumption and production, with developed country Parties taking the lead, play an important role in addressing climate change 	<ul style="list-style-type: none"> Floor of USD 100 billion per year from developed countries to developing countries between 2020 – 2025 Figure to be reviewed in 2025 Decided that apart from Green Climate Fund (GCF), Global Environmental Facility (GEF) etc, the Adaptation Fund may also serve the agreement 	<ul style="list-style-type: none"> Addressing loss and damage (including extreme weather events and slow onset events) categorised as a separate issue The article on loss and damage however does not provide any basis for liability or compensation Warsaw International Mechanism for Loss and Damage will continue following its review in 2016 	<ul style="list-style-type: none"> Recognised that peaking of GHG emissions will take longer for developing countries Developed country Parties should continue taking the lead by undertaking economy-wide absolute emission reduction targets Developing country Parties, however, should continue enhancing their mitigation efforts, and are encouraged to move over time towards economy-wide emission reduction or limitation targets Developed countries must provide financial resources. Developing countries invited to voluntarily provide support Provision of technology assistance from developed countries mentioned 	<ul style="list-style-type: none"> Global goal on adaptation established Adaptation recognized as a global challenge faced by all but needs of particularly vulnerable countries to be taken into account Adaptation action should follow a country-driven, gender-responsive, participatory and fully transparent approach, taking into consideration vulnerable groups, communities and ecosystems 	<ul style="list-style-type: none"> Stock-taking in 2018 and review every 5 years, beginning in 2023 Each review will include adaptation efforts, (financial and other) support provided for adaptation to inform countries in 'updating and enhancing' their pledges

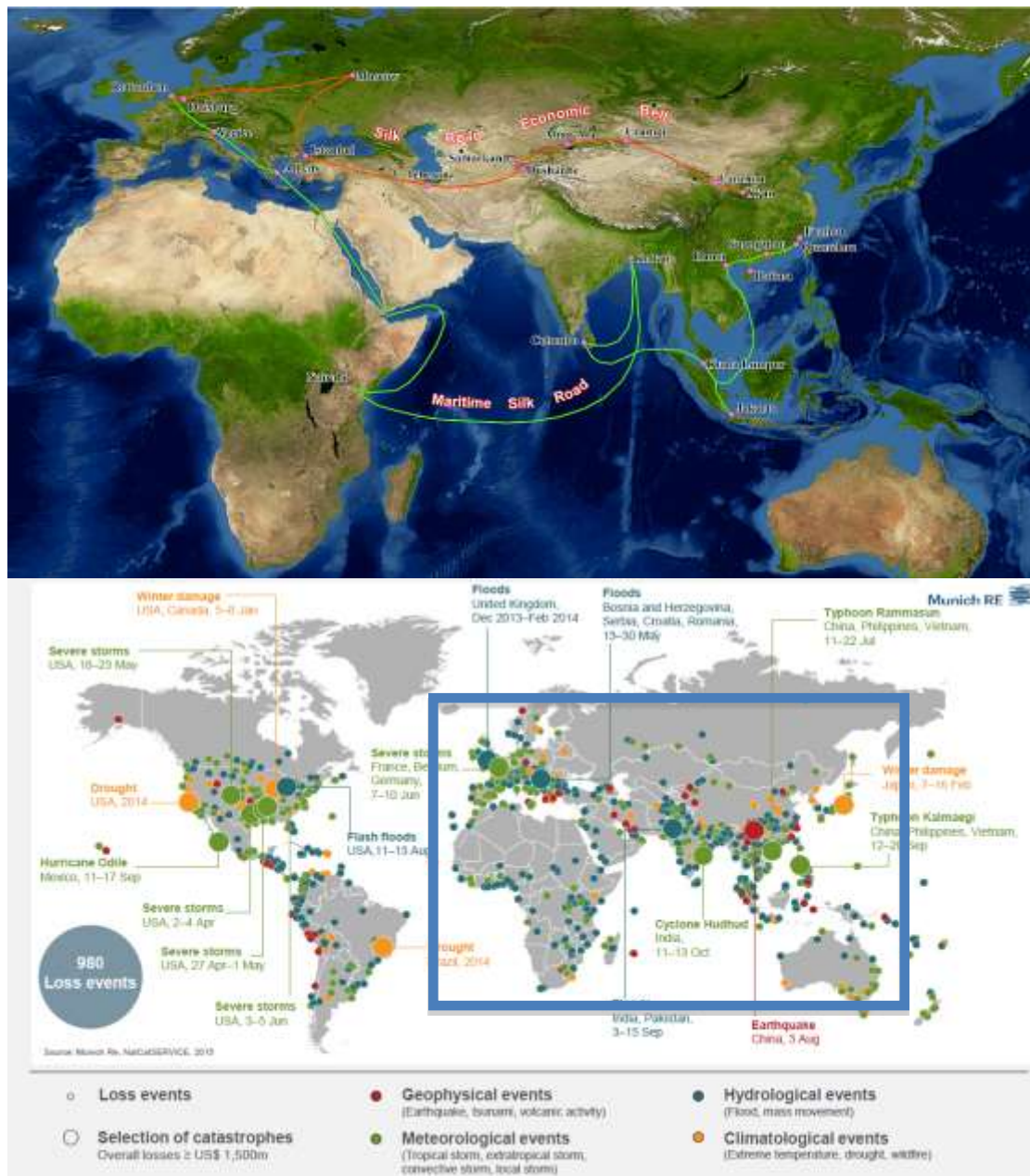
Global greenhouse gas emission gaps



Science and Technology for disaster risk reduction has always been there in some form in different countries. Through the advancement of scientific research, disaster risk reduction has been benefitted, especially in terms of early warning systems, to identify risk in both spatial and temporal scale, strengthening of buildings and infrastructures for different types of hazards. There is a need for proper synergy of new innovations in terms of science and technology, knowledge development and business opportunity in terms of sustainable development and disaster risk reduction. As the world has entered into the new age of communication, social networking and open data sharing among countries and stakeholders become important. The new communication technology needs to be used more effectively, breaking the development divide of the countries.

The Belt and Road initiative will involve more than 60 countries, repressing more than one third of the world economy and more than half of world population. It is an initiative that creates vast opportunities for public and private sector to contribute to infrastructure development and trade and economic cooperation projects and to build "people to people" relationships through cultural and scientific exchanges and partnerships. Digital Belt and Road initiative (DBAR) is an international research programme for promoting cooperation with countries along the Belt and Road route to advocate and demonstrate the smart use and application of 'Big Earth Data' in support of the sustainable development of people and economies at local, national and regional levels. DBAR is initiated by the Institute of Remote Sensing and Digital Earth (RADI) of the Chinese Academy of Sciences (CAS), and is to be given the fullest support by over 20 countries along the Belt and Road. Disaster management is one of the key pillars of sustainable development in the DBAR, along with coastal zone management, agriculture and food security, environmental changes, water resource, and heritage conservation.

DBAR, jointly with Integrated Research on Disaster Risk (IRDR) International Programme Office (IPO), IRDR China National Committee (IRDR CHINA), Institute of Remote Sensing and Digital Earth (RADI), International Society for Digital Earth (ISDE), and CAS-TWAS Centre of Excellence on Space Technology for Disaster Mitigation (SDIM) will conduct international research programme (DBAR-Disaster) to strengthen science capacities for sustainable development and disaster risk reduction under the Digital Belt and Road Initiative for three years, starting from year 2016. To develop regional research strategy and facilitate the process of science policy linkage, a regional research platform is being formed with participation from scientists, policy makers and practitioners from the countries under the Belt and Road initiative.



The Belt and Road region houses a majority of the world's population, and experiences most of the world's hazard events, disaster deaths and losses

Over the past decade, a number of natural hazards of great severity have occurred in countries and regions countries along the Belt and Road, such as Nepal (earthquake, 2015), Pakistan (flood, 2015), Thailand (flood, 2011), Indonesia (Tsunami, 2004), Kyrgyzstan (landslide, 2009), etc. The impacts of natural hazards are continuing to increase around the Belt and Road, and it has been noticed that mitigation of the damage caused by natural hazards like floods, droughts, earthquakes and cyclones has been a key challenge.

Science and technologies are already playing a crucial role in contributing to the generation of relevant information to support informed decision-making regarding risk and vulnerability reduction and to address the underlying factors of disaster risk in the Belt and Road. To address need of big earth science based policy making for disaster risk reduction; and of science-policy interface to the better balance between the supply and demand between science community and the governments, the implementing partners have established several successful operational support services.

However, it is noted that Earth observation data and many DRR related information are owned by a variety of entities around the Belt and Road. There are several challenges in the weak use of Earth observations in DRR, including the perception of the high cost of satellite imagery and the reluctance to use low-resolution imagery, the capacity development of national and local users in the integration of satellite data and information into decision making processes for DRM and response preparedness (e.g., while several national and local instances possess GIS capacity, only a few are able to integrate satellite data and imagery to have a more up-to-date decision support tool to monitor risk and plan corrective and emergency actions). Currently, no single party is able to acquire the comprehensive data and tools it needs to inform policy decision on DRR in Belt and Road, therefore, a platform focusing on big earth data for DRR in the Belt and Road is urgently required.



The work is in tandem with the UNISDR's Asia level initiative for promoting science and technology through the Asia Science, Technology, and Academia Advisory Group (ASTAAG), with which the DBAR Disaster group is well aligned and has an established system of coordination and cooperation, including a number of common advisory group members.

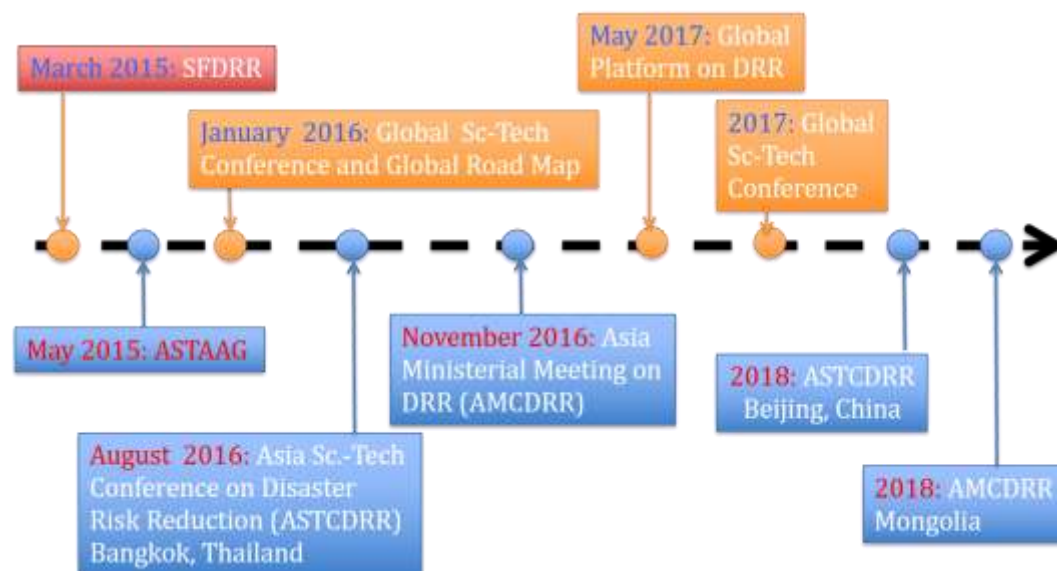
2. Milestones and Evolution

On March 18, 2015, the Sendai Framework for Disaster Risk Reduction 2015-2030 (SFDRR) was agreed at the Third UN World Conference on Disaster Risk Reduction (DRR) in Japan, which is one of the landmark agreements together with the Sustainable Development Goals and the Paris Agreement.

In Geneva in January 2016, a Science and Technology Conference was organised by the United Nations Office for Disaster Risk Reduction (UNISDR) together with a wide range of partners, including Integrated Research on Disaster Risk (IRDR) to further discuss a roadmap defining the contribution of science and technology to the implementation of the Sendai Framework. The Science and Technology Roadmap (draft) was produced by the science and technology community as well as other stakeholders shortly thereafter.

Subsequently, the 1st Asian Science and Technology Conference for Disaster Risk Reduction (ASTCDRR) on 23-24 of August 2016 was organised by UNISDR with support from IRDR and other partners, which aims to discuss the key issues, challenges, needs and opportunities in the application of science in policy-making and explore the way forward for promotion of science-policy interface for evidence-based policy-making in DRR. Finally the Asian Ministerial Conference on Disaster Risk Reduction was held in November 2016 in New Delhi, India, with a strong political statement emerging on promotion of regional efforts on DRR, including as Asia Plan.

The DBAR Disaster Theme Regional Research Strategy has been formulated in alignment with these, and keeping in mind the upcoming global events of significance that include the Global Platform for DRR and Global Science Technology Conference in 2017, and ASTCDRR and AMCDRR in 2018 as illustrated in the accompanying timeline.



Box:**The 1st ASTCDRR Workshop Outcome**

- Following the global and regional conference, IRDR together with International Council of Science (ICSU), the ICSU Regional Office for Asia and the Pacific (ICSU ROAP), the Academy of Sciences located in Taipei and IRDR International Centre of Excellence (ICoE) Taipei organized the 1st Workshop to Strengthen Scientific Advisory Capacities for Disaster Risk Reduction in Bangkok, Thailand, hosted by National Research Council of Thailand (NRCT). The 1st workshop aimed at strengthening scientific advisory capacities on disaster risk management as well as enhances the interface between IRDR and policy platforms in charge of DRR among 12 countries, including Bangladesh, Fiji, India, Indonesia, Iran, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka and Thailand. The key outcomes included:
- Analyzed the gaps and challenges in implementing science based decision-making in DRR among the 12 countries - review the PowerPoint presentations at: <http://www.irdrinternational.org/2016/08/30/1st-workshop-to-strengthen-scientific-advisory-capacities-for-disaster-risk-reduction-was-successfully-held/>
- Shared the best practices of science based decision-making from China, Japan, Thailand and UN-SPIDER - review the PowerPoint presentations at: <http://www.irdrinternational.org/2016/08/30/1st-workshop-to-strengthen-scientific-advisory-capacities-for-disaster-risk-reduction-was-successfully-held/>
- Discussed the essentials of the science technology plan for DRR in accordance with the outcome document and briefly developed the framework of the science technology plan for DRR - review the tentative framework of the science and technology plan below
- Encouraged the 12 country representatives to focus on development of a framework for their respective science technology plan and then present their plans in the 2nd workshop

The 2nd workshop will be held in January 2017 to present and further discuss the Science Technology Plan for DRR in the respective countries, with specific targets to implement the Sendai Framework.

Science Technology Planning for Implementation of SFDRR

One of the very significant areas where DBAR Disaster Theme can contribute is the formulation of Science and Technology Plans for the implementation of SFDRR in the region and in individual member countries. Following are a few issues to be kept in mind while developing such a Science and Technology Plan for SFDRR implementation:

- **Multi stakeholder partnership:** Science Technology Plan is not a Scientist's plan. It needs multi stakeholder collaboration, including science community, government, civil society, private sector, media etc.
- **Focused approach:** The plan does not need to include the hazard, vulnerability of the country, which is already part of the national DRR plan. More emphasis is required to focus on the four priority areas of SFDRR, and looking through a science lens.
- **Inclusive approach:** The plan development should have a balanced mix of different professions, stakeholders, age and gender. Link to different professional societies and science academy is important.
- **Cultural calibration:** Science and its influences on society and governance are different in different country. Thus, there is not a single one-fit-all model for all countries. Science technology plan needs to keep in mind the local cultural issues of the countries, and customize accordingly.
- **Dynamic evolution:** DRR is an evolving subject. The science landscape is changing rapidly over time. The plan needs to cope with the dynamic evolution of the subject as well as science landscape.
- **Youth voices:** The whole subject of DRR is very much related to its future disciplinary evolution. Higher education plays an important role here. It is very important to involve young scientists, professionals and practitioners in the process to make it futuristic oriented.

Box:**Suggested Framework of Science Technology Plan for Implementation of SFDRR**

1. Background
 - Science technology for public policy
 - Evidence based decision-making
 - Review of application of science and technology in DRR
 - Linking science technology plan to the SFDRR, the Sustainable Development Goals and the Paris agreement
2. Context of the Plan
 - Summary of National Science Technology Plan (if available)
 - Background, rational, goal and strategies
 - Strategic actions
 - Implementation framework
 - Performance Monitoring and Evaluation
 - Summary of National DRR Plan (if SFDRR implementation plan is available, please focus on that)
 - HFA (if the plan is before SFDRR) or SFDRR priority of actions
 - Role of science and technology mentioned in the DRR Plan
 - Financial mechanism
 - Science technology status
 - Countries who have conducted science technology mapping with the status report, can refer to the key findings there
3. Purpose and key objectives
 - This section needs to focus on specific purposes and key objectives of the Science and Technology Plan. The actions identified in the section 4 (under SFDRR) needs to be linked to the objectives mentioned here.
4. Specific actions under SFDRR priorities
 - Refer to the Global Road Map of Science Technology in DRR. There are 39 specific actions and 7 outcomes of the road map.
 - Refer to the Outcome document of the 1st Asia Science Technology conference. There are 12 specific actions under the four priority areas of SFDRR.
 - Identify through a consultative process which actions are more crucial for your country perspective, keeping in mind the national science technology plan and DRR plan.
 - Refer to the Asia Science Technology Status for Disaster Risk Reduction White Paper, and consider the indicators under three key issues:
 - Science in decision-making
 - Investment in science and technology
 - Science link to people
5. Implementation framework
 - Institutions, networks and partnerships: This section needs to describe the key roles and responsibilities of the institutions responsible for the implementation of the plan. The key resource institution(s) need to be identified along with partner organisations. A network of institutions and organisations are required to facilitate the implementation of the science technology plan.
6. Key challenges to overcome

3. Goal and Objectives

Strategic Goal

- Evidence based decision making, science-community link (benefits to people)
- To strengthen the national science capacities under the above frameworks in selected countries along the Belt and Road

Objectives

The key objectives to this initiative are:

- To undertake innovative, implementation oriented research in the field of DRR through collaboration and partnership
- To strengthen national research capacities to enable informed decision-making in different aspects of disaster risk reduction
- To foster the development of young professionals and researchers through training and capacity building programs

Alignment with DBAR Science Plan Objectives

DBAR-Disaster aims to foster the use of big earth data through existing mechanisms, and to contribute to a better and more integrated use of such technologies in DRR around the Belt and Road.

As such the themes that align the objectives of the DBAR-Disaster with the larger DBAR Science Plan objectives are:

- To promote innovative, implementation oriented research on science and technology, using big earth data, specifically in the field of DRR
- To facilitate the dialogue among stakeholders in Earth observation, data, and the community of DRR experts and policy makers in Belt and Road, including by the compilation and exchange of lessons learned regarding the use of such sciences and technologies
- To Serve as a collective source and repository of information on efforts carried out in the Belt and Road, including guidelines and products to improve the applications of existing and emerging technology to reduce the risk
- To foster the development of young professionals and researchers on science and technology research as well as application, with specific focus on DRR
- To facilitate the use of EO and related technology to monitor progress in the implementation of the Sendai Framework for Disaster Risk Reduction in the Belt and Road

4. The Action Agenda

The 1st Asian Science and Technology Conference for Disaster Risk Reduction (ASTCDRR) generated an outcome document, which consists of twelve recommended actions aligning with and contributing to the 'Science and Technology Roadmap'. The Outcome Document has emphasized the increasing needs to science and technology in achieving the targets and priorities of SFDRR. Twelve actions are mentioned under four SFDRR priority areas to enhance science and technology based DRR in Asia. The DBAR Disaster theme will support the implementation of these priority actions through consultative and collaborative research among different countries in the region.

Twelve Key Actions

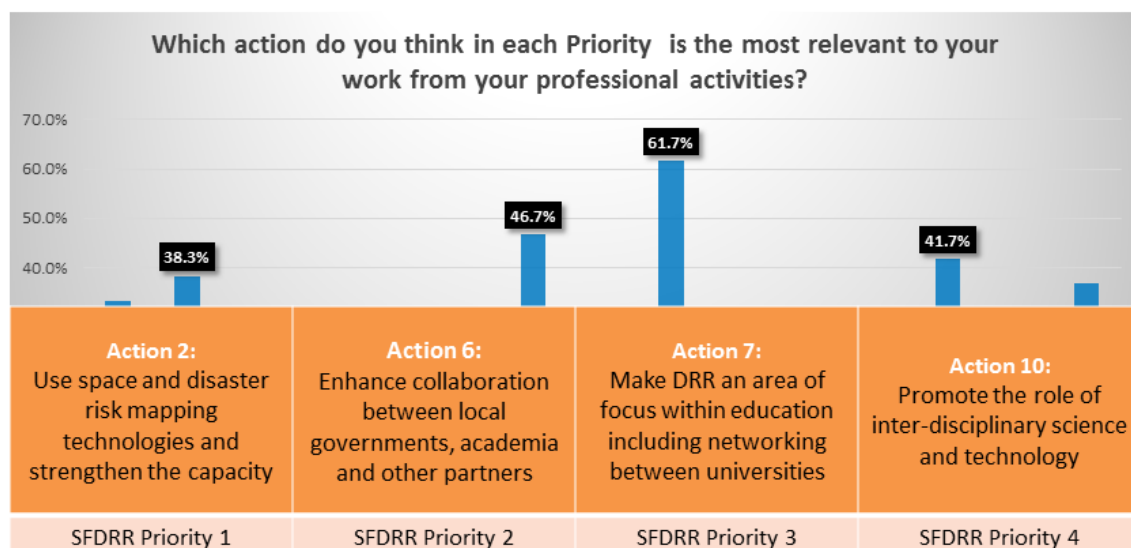
Priority 1	Action 1 Enhance disaster loss and damage accounting, national and local disaster risk assessment and communication of disaster risk	Action 2 Use space and disaster risk mapping technologies and strengthen the capacity	Action 3 Strengthen regional exchange on disaster risk information and science
Priority 2	Action 4 Strengthen science-policy-practice nexus at all levels	Action 5 Develop inter-disciplinary national science and technology plans to support implementation of the Sendai Framework	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
Priority 3	Action 7 Make DRR an area of focus within education including networking between universities	Action 8 Ensure risk-sensitive investments	Action 9 Develop young professionals in the field of multi-disciplinary disaster risk reduction
Priority 4	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 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 12 Research into innovative solutions to promote the whole-of-society engagement

Prioritising of Actions



A survey has been carried out by IRDR across organisations and individual key informants in the member countries towards creating country profiles and prioritisation of actions. The survey led to a rapid broad-brush assessment of status across the sub themes and countries, carried out through a self-assessment process. This is being used as an initial indicative study, and yields valuable inputs on the way forward.

Besides providing country specific information as illustrated in the example alongside, it also gave indication on the areas of prioritisation as well as perceived challenges and opportunities. Some of these, particularly around areas such as resource mobilisation, have been very useful and revealing. Some of these are in contrast to often held notions around financial resource constraints and little that can be done within given systems and resources.



Based on the outcomes, four key action areas as illustrated above have been identified as the most prominent ones from amongst the twelve overall priority actions identified. The strategy is thus informed through one priority action for each of the SFDRR priorities.

5. The Process: From Policy to Action

A fundamental premise of the Regional Research Strategy is to drive the research agenda from global to regional, national and down to local levels. It lays down the approach to achieve this through the following levels:

1. Regional Policy and Strategy Convergence

- DBAR, Digital Earth, Future Earth, SFDRR Asia Plan
- Regional Level:
 - Regional periodic Science Tech conference
 - Recommendations into Ministerial Conference
 - Periodic regional mapping
 - Collaboration with other programs like Future Earth
 - Decentralization, national plans, national and local capacities

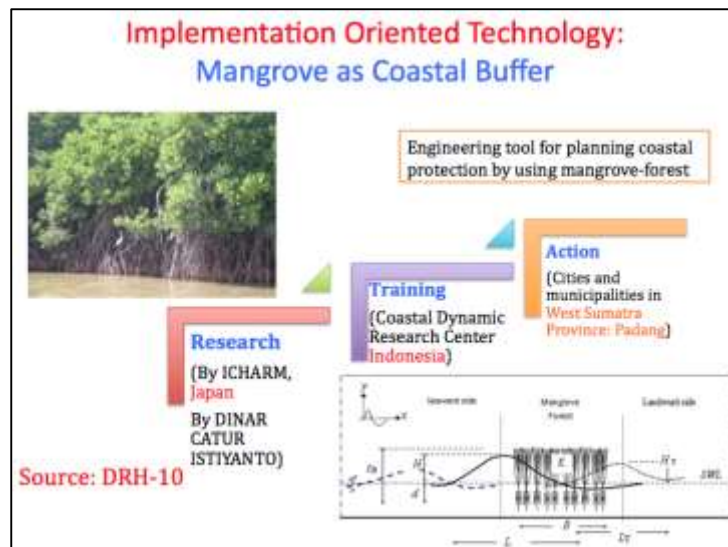
2. National Level Planning

- Strengthening national capacities
- Pro-active participation in national platforms
- National Science Technology Plan

3. Localisation and Capacity Building

- Recognize Local Center of Excellence
- Link local resource institute to local governments
- Local multi stakeholder DRR platforms

While carrying this out, care must be taken that DRR is not purely an earth observation science, but also has elements of implementation technologies, processes, and indigenous knowledge that are very important particularly in the DBAR region given the rich and long history and social elements of knowledge and experience within communities at risk. Learning from the Disaster Reduction Hyperbase experience of NIED, Japan, these three elements are maintained as part of the guiding principles of the Regional Research Strategy, along with Earth Observation data based approaches.



6. Work Plan

Utilising the inputs from members of the group, and taking into account the deliberations of the number of workshops and meetings held towards the formulation of the Regional Research Strategy, a phased work plan has been developed as discussed below. The work plan is formulated around the twelve priority actions identified for the theme, and is spread across three phases – short, medium and long, extending to a period of ten years.

It is envisaged that immediate actions to be taken in the short term, extending up to three years, are the critical ones for the current planning phase as they form the foundation of the programme for the future, and need to include an intensive effort of reaching out and making the membership and interest in the initiative strong across the region. During this phase visible pilot activities also need to be carried out to test and establish the approach, and to create traction in the larger audience.

Phasing

Short-term (next 3 years)	Medium-term (upto 5 years)	Long-term (upto 10 years)
<p>Action 1 Enhance disaster loss and damage accounting, national and local disaster risk assessment and communication of disaster risk</p> <p>Action 9 Develop young professionals in the field of multi-disciplinary disaster risk reduction</p> <p>Action 7 Make DRR an area of focus within education including networking between universities</p> <p>Action 4 Strengthen science-policy-practice nexus at all levels</p>	<p>Action 2 Use space and disaster risk mapping technologies and strengthen the capacity</p> <p>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</p> <p>Action 3 Strengthen regional exchange on disaster risk information and science</p> <p>Action 5 Develop inter-disciplinary national science and technology plans to support implementation of the Sendai Framework</p>	<p>Action 8 Ensure risk-sensitive investments</p> <p>Action 12 Research into innovative solutions to promote the whole-of-society engagement</p> <p>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</p> <p>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</p>

Activities and Outputs

Planned activities and expected outputs for the short term phase of three years have been developed in detail in tandem with the overall approach and phasing plan, and are illustrated and described as below.

Year 1 (2016-17)	Year 2 (2017-18)	Year 3 (2018-19)
<ul style="list-style-type: none"> ▪ Development of Regional Research Platform ▪ Inception Consultative Workshop ▪ Regional Research Strategy Development ▪ Enhancing Capacities of young researchers 	<ul style="list-style-type: none"> ▪ National Research Strategy Development ▪ Second Consultative Workshop ▪ Enhancing Capacities of young researchers ▪ Specific country based research projects 	<ul style="list-style-type: none"> ▪ Third Consultative Workshop ▪ Enhancing Capacities of young researchers ▪ Specific country based research projects ▪ National Research Platform
Outputs: <ul style="list-style-type: none"> ▪ DBAR Regional Research Platform for DRR ▪ First Consultative Workshop of Regional Research Platform ▪ Regional Research Strategy ▪ Enhanced capacities of young scientists 	Outputs: <ul style="list-style-type: none"> ▪ Second Consultative Workshop of Regional Research Platform ▪ National Research Strategy ▪ Enhanced capacities of young scientists ▪ Country based research project 	Outputs: <ul style="list-style-type: none"> ▪ Third Consultative Workshop of Regional Research Platform ▪ Enhanced capacities of young scientists ▪ Country based research project ▪ National research platform

Year 1 (August 2016 to March 2017):

- Development of Regional Research Platform: Selected eminent professionals, practitioners and policy makers would be invited to join the DBAR-Disaster Regional Research Platform.
- Inception Consultative Workshop: DBAR-Disaster Regional Research Platform members would be invited to the first consultative workshop to be held in China.
- Regional Research Strategy Development: Through several country consultations, regional research strategy would be developed.
- Enhancing Capacities of young researchers: Training programs would be organized for young scientists and researchers. Training programs would be developed to cover different priority areas of SFDRR.

Year 2 (April 2017 to March 2018)

- National Research Strategy Development: In conjunction with the members of Regional Research Platform and trained young professionals and practitioners, national research strategy would be formed in selected countries
- Second Consultative Workshop: Second consultative workshop of Regional Research Platform members would be organized.

- Enhancing Capacities of young researchers: Training programs would be organized for young scientists and researchers. Training programs would be developed to cover different priority areas of SFDRR.
- Specific country based research projects: Selected research projects would be selected for funding in selected countries. Research projects would be formulated in the four priority areas of SFDRR.

Year 3 (April 2018 to March 2019)

- Third Consultative Workshop: Third consultative workshop of Regional Research Platform members would be organized.
- Enhancing Capacities of young researchers: Training programs would be organized for young scientists and researchers. Training programs would be developed to cover different priority areas of SFDRR.
- Specific country based research projects: Selected research projects would be selected for funding in selected countries. Research projects would be formulated in the four priority areas of SFDRR.
- National Research Platform: National research platform would be established to ensure sustainability of the research projects and implementing national research strategies.
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Cross-Cutting Activities

A number of cross cutting activities are also envisaged under the DBAR Disaster research theme. These are described as follows:

1. Linkage with other parts of DBAR or other programs

Large amounts of DBAR-disaster related data exist today, they are typically dispersed geographically and owned by various entities including government agencies, research centers, groups and, sometimes, individuals, making them difficult to access and utilise. To effectively apply and share the data and information, DBAR-Disaster will connect to DBAR-Data group through the channels like CODATA LODGD.

2. Managing Output Expectation and Deliverables

A large number of complex and interlinked activities and outputs have been planned. In order to manage these appropriately, the following mechanisms will be put in place:

- DBAR Regional Research Platform for DRR
- Serial Consultative Workshops of Regional Research Platform
- Implementation of Regional Research Strategy under the framework of DBAR
- Flagship capacity building program of young scientists under the framework of DBAR

3. Connections/Contribution to DBAR Big Data Platform

In order to maintain a strong link with the DBAR Big Data Platform, DRR data products in the Belt and Road for fire, flood, drought, landslide will be developed and made available through DBAR Disaster initiative.

Some of the ongoing initiatives in the regard, that will be strengthened further, are illustrated as below.



- Youth and Innovation
- Co-Designing Disaster Risk Reduction Solutions
- Partnership of science, Civil society, private Sector and UN

7. Resource Prioritization and Mobilization

The survey carried out by IRDR under the Regional Research Strategy preparation process has thrown light on the perceived challenges and resource requirements. A view of the nature of resource requirements indicates a low dependence on financial resources vis-à-vis government, legal, human and technical resources. This is of great significance for the furtherance of the DBAR Disaster theme as it indicates that investment in government, legal, human and technical resources through networking, capacity building and data based collaboration can assist in achieving very significant gains even without very intensive financial investments. Graded resource mobilisation and deployment strategies can therefore be formulated subsequently in accordance with this.

Nature of Resource Requirement

	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

Committed Resources

The DBAR Disaster theme related activities would be initially implemented jointly by CAS-TWAS SDIM, IRDR IPO, IRDR CHINA, ISDE, and RADII. DBAR Disaster partners will mobilise additional resources through in-kind (expertise, equipment, travel to attend seminars and workshops and other such support) and direct cash contributions in subsequent stages as the work plan progresses.

Involvement of End-users, Engagement and Technology Transfer

User and stakeholder engagement is seen as a significant approach for resource mobilisation under the strategy. As a way to achieve DBAR disaster strategic long-term objective, the working group and implementing partners will work in close cooperation with relevant major stakeholders, including:

- United Nations Office for Disaster Risk Reduction (UNISDR)
- United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UNSPIDER)

- Group on Earth Observations (GEO)
- CODATA Linked Open Data for Global Disaster Risk Research (LODGD)
- ICSU World Data System (WDS)
- The World Academy of Sciences-TYAN
- Commonwealth Scientific and Industrial Research Organisation-DATA (CSIRO-DATA)

8. Current Achievements and Next Steps

The significant achievements of the DBAR Disaster Working Group till the end of 2016 have included a number of organizational and operational activities successfully completed, and the next steps are related to the execution of the work plan, replication, and scaling up to the entire DBAR region. Some significant highlights of this are as listed below.

- DBAR – Disaster (Risk) Research Working Group formed.
- Integrated Digital and Social Vulnerability Research Support Programme launched in 4 countries to start with, namely Bangladesh, Nepal, Pakistan and Sri Lanka. The programme will trigger country approaches via regional deliberations conducted in the Working Group, and will pave the way for country science technology plans to be developed and further taken down to sub country levels.
- Regional Capacity Building Programme on Climate and Disaster Risk Reduction launched, with 15 countries already covered towards the creation of a cadre of young professionals. This will be extended substantially in the coming phases.
- Annual Reports and event specific reports to be generated in accordance with the work plan execution. Substantive report such as Regional Status Reports on the theme to be taken up in later stages.
- Regional Research Programme to be launched on Asian Drought, covering climate change, water, agriculture, urban water stress and such themes.
- Regional coordinating capacity to be strengthened at IRDR, eventually aiming to reach out to all 60 DBAR countries.
- Links with Civil Society to be strengthened immediately, to be extended with subsequent efforts to engage with the private sector and media. Platform and fellowship exchange programme to be established, linking social sciences with the programme.

Jointly Implemented by:

Digital Belt and Road Initiative (DBAR)
Integrated Research on Disaster Risk (IRDR)
International Programme Office (IPO)
IRDR China National Committee (IRDR CHINA)
Institute of Remote Sensing and Digital Earth (RADI)
International Society for Digital Earth (ISDE)
CAS-TWAS Centre of Excellence on Space Technology for Disaster Mitigation (SDIM)
