UNISDR SCIENCE AND TECHNICAL ADVISORY GROUP 2015 REPORT:

SCIENCE IS USED FOR DISASTER RISK REDUCTION

Executive Summary

UNISDR

The United Nations Office for Disaster Risk Reduction

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The year 2015 presents an unparalleled opportunity to unify UN policy efforts through the convergence of three landmark UN frameworks: the post-2015 Framework for Disaster Risk Reduction (March 2015), the Sustainable Development Goals (September 2015) and the Climate Change Agreements (December2015). There is an urgent need to align policy and efface institutional and financial barriers that obstruct the development of resilient communities and enable access to relevant knowledge, equitable participation and sustainable development.

Science and technology have shown that we can reduce or prevent the impact from disasters, and it is an opportunity for governments to work together with national and international policy and science and technology communities in an effort to reduce disaster risk and prevent disasters where possible.

The UNISDR Scientific and Technical Advisory Group (STAG) and partners have been working to embed a broader approach to disasters and disaster risks which includes prevention, mitigation, preparedness, response and recovery. It is no longer sufficient to react once a disaster has occurred, because even if disasters are well managed, the impacts on people, society and the economy can be devastating and felt over the long term. With disasters increasing in frequency and severity, the International Panel on Climate Change Assessment Report 5 (2014) recognised the urgent need to focus on sustainable development.

Throughout the post-2015 Framework for Disaster Risk Reduction negotiations and discussions process, the STAG and the Major Group on Science and Technology in partnership with Regional and Global Platforms have identified priority areas for action. This supportive work has been met with acall to actively strengthen the relationship between science, technology, innovation, knowledge development and research to assist in informing policy making and practice. While there are many challenges including the complexity of the risks associated with disasters, terminology that is diverse and often overlapping, the difficulty in prioritisation of targets and issues in aligning global, national and local indicators there is a clear case for the continuing uptake and integration of science into practice to deliver more effective policies that truly benefit human societies and their ecosystem.

While political leadership and community partnerships are required for the successful implementation of effective, science-informed initiatives, the research community has a responsibility to formulate applicable methodologies and tools that respond to real-word challenges, but communities that need these have limited resources to acquire or the capacity to make use of these. Ensuring that research addresses the full cycle of prevention, mitigation, preparedness, response and recovery for those who need it the most is key, while national and international partnerships and networks can ensure the dissemination and sharing of good practice and scientific findings.

To assist this process the STAG has endeavoured, through the process of writing this report, *Science is Used for Disaster Risk Reduction*, and the publications of case studies[1] to create a repository of good practice on the integration of science[2] and technology into disaster risk reduction.

The repository has gathered applicable case studies through inviting scientists and professionals of all disciplines around the world to demonstrate how technology and science can improve areas such as early warning systems, safer building practices, more relevant education and a greater emphasis on communication and community engagement. We asked partners contributing case studies to explain the problem they were trying to address in reducing disaster risk, how they used science to inform an initiative or policy and whether this made a difference.

As with their predecessors in 2013, the case studies included within this report and on the website (http://www.preventionweb.net/english/professional/networks/public/stag/) identified some common themes for success including more inclusive community participation in the development of science-informed initiatives, clear leadership and high-level commitment to implement and sustain interventions in the long term.

The science and technology communities have stated, through voluntary commitments formulated for the Third UN World Conference on Disaster Risk Reduction, a wish to strengthen the dialogue and collaboration with policy-makers and disaster risk reduction (DRR) practitioners at local, national, regional and global levels to identify needs and knowledge gaps, co-design, co-produce and co-deliver new knowledge, and make science more readily available and accessible. In order to achieve this, science and technology communities and networks will mobilise and strengthen existing capacities and initiatives to support the implementation of the post-2015 framework for DRR from the local to the global scale, and in particular deliver outputs in the following **six areas:**

> (1) **Assessment** of the current state of data, scientific knowledge and technical availability on disaster risks and resilience (what is known, what is needed, what are the uncertainties, etc.);

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1. STAG publications of case studies "Using Sciences for Disaster Risk Reduction" are available at www.unisdr.org and www.preventionweb.net
2. Science in this context refers to knowledge obtained through systematic observation, recording, testing, evaluation and dissemination and includes physical, geographical, engineering, environmental, social, health, psychological, management and economic sciences to name but a few.

(2) **Synthesis** of scientific evidence in a timely, accessible and policy-relevant manner;

(3) **Scientific advice** to decision-makers through close collaboration and dialogue to identify knowledge needs including at national and local levels, and review policy options based on scientific evidence; and

(4) **Monitoring and review** to ensure that new and up-to-date scientific information is used in data collection and monitoring progress towards disaster risk reduction and resilience building.

In addition, two cross-cutting capabilities need to be strengthened:

(5) **Communication and engagement** among policy-makers, stakeholders in all sectors and in the science and technology domains themselves to ensure useful knowledge is identified and needs are met, and scientists are better equipped to provide evidence and advice;

(6) **Capacity development** to ensure that all countries can produce, have access to and effectively use scientific information.

Scientific data and information and the tangible application of technology are critical to the development of well-informed policies and decisions across the public, private and voluntary sectors. Much scientific evidence exists but better links to decision-making in policy and planning are needed to continuously enhance our ability to forecast, reduce and respond to disaster risks thereby building resilience.

Science and technology can assist in identifying a problem, developing understanding from research, informing policy and practice and making a difference that can be objectively demonstrated when evaluated.

The post-2015 Framework for Disaster Risk Reduction negotiations and process discussions as well as the UN-ISDR STAG and the Major Group on Science and Technology in partnership with the Regional and Global platforms identified priority areas for action. The following recommendations are made to help strengthen DRR policies and practices:

1. Share knowledge for action
Greater priority should be put on sharing and disseminating scientific information, including technological advances and translating them into practical methods that can readily be integrated into policies, regu-

lations and implementation plans concerning disaster risk reduction. Cross-disciplinary exchange will identify interdependencies which can help to identify findings for application to complex problems. Capacity development at all levels of society, comprehensive knowledge management and the involvement of science in public awareness-raising, media communication, behaviour change, and education campaigns should be strengthened.

Specific tools should be developed to facilitate science, technology and innovation outputs to help inform policy-making and practice. Additionally institutions and individuals at risk of disasters should be invited to participate in scientific research (surveys, vulnerability assessments and other activities) to collect local knowledge and create reliable databases should be created and so that information can be used to tailor initiatives to the local context while enabling global comparisons and assessments.

2. Use a multidisciplinary approach to research
An all-hazard, risk-based, problem-solving, results-oriented approach should be used in DRR research to address the multifactorial and interdependent nature of the disaster risk chain and to identify relevant solutions and optimize the use of resources. Synergies with the climate change and sustainable development agenda should continue to be articulated and leveraged. This requires collaboration and communication across the scientific disciplines and technical fields, and with all stakeholders including representatives of governmental institutions, communities of policy making, scientific and technical specialists, the technology sector and members of the communities at risk to guide scientific research, set research agendas and support scientific education and training. The potential contribution of affected and vulnerable communities in generating research questions, and in performing research collaboratively or independently, should be valued and facilitated.

3. Build systems resilience through local, national, regional and international partnerships
Science and technology communities wish to strengthen the dialogue and collaboration with policy-makers and DRR practitioners at local, national, regional and global levels to identify needs and knowledge gaps, co-design, co-produce and co-deliver new knowledge, and make science more readily available and accessible. To this end, science and technology communities and networks will mobilise and strengthen existing capacities and initiatives, including national platforms/bodies, to support the implementation of the post-2015 framework for DRR from the local to the global scale, and in particular deliver outputs.