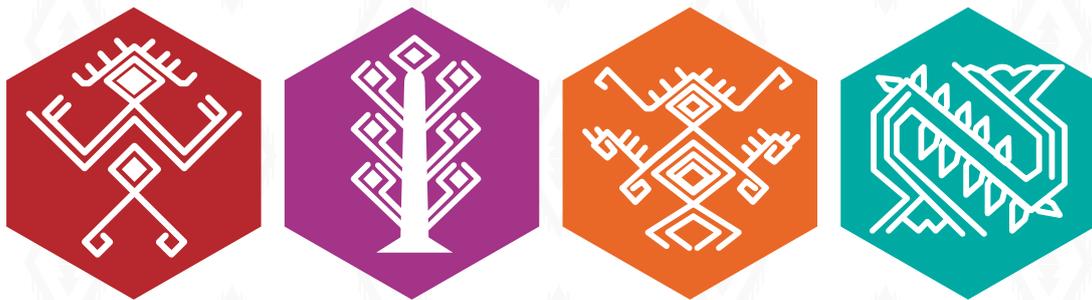


Global Platform for Disaster Risk Reduction

FIFTH SESSION



#MEXICOGP2017

22-26 May 2017 - Cancun, Mexico



UNISDR
The United Nations Office for Disaster Risk Reduction

In support of the Sendai Framework
for Disaster Risk Reduction 2015 - 2030

2017 Global Platform for Disaster Risk Reduction Summary and reflections of the online dialogue

The dialogue was conducted from 16 May to 5 June 2016 with more than 300 participants from 60 countries. Each of the three questions posed in the dialogue was discussed for a week before being summarized. The dialogue welcomed general comments, specific cases and good examples on each of the questions as well as suggestions of specific elements of strategies that need to be formulated to meet the challenges related to the questions discussed. Jerry Velasquez of UNISDR moderated the dialogue and developed this summary.

June 2016, UNISDR

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Summary and reflections

Online Dialogue

2017 Global Platform for Disaster Risk Reduction

16 May to 5 June 2016

Background

The Third UN World Conference on Disaster Risk Reduction adopted the Sendai Framework for Disaster Risk Reduction 2015-2030, as the global blueprint for reducing disaster risks and managing multi hazards at all levels, and within and across sectors.

Countries have already started implementing the Sendai Framework. The first target date is to increase the number of countries with national and local disaster risk reduction strategies and plans aligned with the new Framework by 2020. The sharing of practical experiences on implementation is important to further support the Framework's implementation.

The 2017 Global Platform for Disaster Risk Reduction - Fifth Session (22-26 May 2017, Cancún México), represents the first opportunity to identify critical elements and aspects of the Sendai Framework that require attention, action and guidance in order to drive implementation towards its expected outcomes. Particular attention should be given to creating the enabling mechanisms that will build the foundations to support the achievement of the imminent 2020 tar-

gets of the Sendai Framework and the Sustainable Development Goals up to 2030.

UNISDR initiated consultations with countries and stakeholders beginning of May 2016 to identify issues that will be addressed at the 2017 Global Platform through strategic discussions, with heads of states and governments, ministers, civil society leaders and CEOs at the special high-level sessions and plenaries and technical discussions, with Government experts, representatives from civil society, technical and scientific institutions, private sector, media on the occasion of multi-stakeholder working sessions, and special events.

To facilitate consultations, a paper with issues and questions to be discussed was circulated for feedback.

This document outlines the summary of contributions and comments provided by stakeholders in an online dialogue that ran from 16 May to 5 June 2016.

Analysis and Synthesis of the Online Dialogue

2017 Global Platform for Disaster Risk Reduction

The online dialogue highlighted a number of issues surrounding the three questions discussed, which provides some basis for initial design of the structure of the Global Platform 2017.

On understanding of risks and risk reduction, the primary issues raised include the need to improve the socio-economic evidence base for disaster risk reduction, which will help address frequent but small disasters or disasters caused by extensive risks. A number of suggestions were also made on data collection improvement, data disaggregation, and improving the assessment and risk assessment and analysis, including the consideration of other hazards in risk understanding.

To support action, the dialogue proposed to further improve disaster risk governance, support disaster risk reduction legislation and disaster risk reduction accountability.

In addressing the underlying drivers of risks, the discussions proposed promoting inclusion in decision-making and action, reduce disaster risks with social protection, and promote social cohesion and improvement in social capital.

There was a strong call for support making public and private investments risk sensitive. There were also calls for improving risk transfer and insurance, early warning and forecasting, improve building practices, and improving land use planning.

In addition, there were calls for improving build back better in disaster recovery and reconstruction, improving ecosystem protection and revitalization and promoting resilient agriculture and rural livelihoods.

To support meeting the 2020 target of the Sendai Framework, the dialogue proposed to develop programmes to build DRR capacity, develop support mechanisms to improve contents of DRR plans and

strategies, support and promote the review existing DRR plans and strategies, support the improvement of the DRR planning process, and engage stakeholders in preparation of these plans.

There were also calls to focus on means to reduce the vulnerability of small economies.

QUESTION 1 - What activities and programmes could be effective in curbing the increase in economic losses due to disasters?

The Hyogo Framework for Action (HFA) and achievements on the Millennium Development Goals can take credit for reducing mortality linked to hydrometeorological disasters, yet it is clear that we are making little headway in dealing with economic losses caused by the same disasters.

The trend of reduced mortality is proof that development investments in activities such as early warning, preparedness and contingency planning yield positive gains if invested in reducing vulnerability of people and communities.

However, the same development model, when not focused in building resilience, also drives the creation of new risks, by exacerbating hazards, creating vulnerabilities and widening exposure. For example, we are now facing an increasing and unmitigated trend of economic losses due to disasters on the public and private sector. For the first time globally, annual economic losses from disasters exceeded \$100 billion for five consecutive years (\$132 billion in 2010, \$364 billion in 2011, \$156 billion in 2012, \$119 billion in 2013, and \$110 billion in 2014). During these last 10 years of record-breaking temperatures and rainfall, we have seen economic losses close to \$1.4 trillion.

While climate change intensifies and makes climate related hazards more erratic and uncertain, economic

progress, the rapid pace of urbanization and population growth has combined to concentrate people, jobs and property in areas exposed to the very hazards that climate change has now intensified.

There are few examples of countries that succeeded in reversing the rise of economic losses in both the public and private sector. The Sendai Framework target (c) calls for the growth of risks to be at the same or lower rate as compared to the global economic growth rate.

Strategies such as pre-disaster recovery planning, land-use planning, risk-sensitive investments, reducing risks in global supply chains and stronger insurance mechanisms can play a role in preventing the creation of new risks.

- *What actions are required to reduce economic losses?*
- *What enabling policy and institutional arrangements are / should be in place?*
- *How can Governments ensure that development strategies limit the creation of new vulnerabilities and lessen exposure to hazards?*
- *What can be done to scale up these efforts to be in a position to measure economic losses due to disasters?*

This particular session on QUESTION 1 was discussed from 16 May - 22 May. The discussions covered general comments as well as specific cases and good examples as well as suggestions of specific elements of strategies that need to be formulated to meet the above challenge.

Summary and reflections

QUESTION 1

What activities and programmes could be effective in curbing the increase in economic losses due to disasters?

Development and the root causes of risks

Highlighting the best opportunity to reduce risks is going straight at the root cause, the online dialogue noted the need to find means to ensure that future development does not create new risks. One suggestion was to stop making the economy as the main symbol of development - this way, activities that create disaster risks are not encouraged simply because they are favorable to economic development. It was noted that hazards are natural but disasters are not, since they are the result of bad planning and increased exposure of people and assets to hazard prone areas. In a sense this is also captured in the issue that was raised on trade-offs between increase in economic gains versus the accompanying increase in risks and losses. For example, it was noted that choosing the sites and construction methods for buildings should be based on the probability of risks over the expected life of the building. In another example, there was a call to inform agriculture settlers on areas that are susceptible to floods so that they could make informed decisions on where to invest their efforts in settling. Similarly it was noted that there is a need to inform communities on relocation of economic activities, where possible, to reduce risks.

The suggestions on how this can be promoted included improvements in economic loss assessment, the improvement of the understanding of the economic losses from 'everyday disasters' or small-scale disasters that happen frequently, which accumulates risks

and are similarly destructive as compared to larger disasters. Another example cited on how to make development resilient is to ensure that disaster risk reduction efforts are fully embedded into development planning and budgeting at all levels. It was concluded that risk avoidance is and will always be the best way to limit losses.

In this same discussion, it was interesting that so called disaster risk reduction initiatives are also reported to be creating additional disaster risks themselves. An example of an embankment built to protect a city from floods and also serve as a road, may also contribute to increased water logging during monsoon rainfalls and disrupt movement and thus create economic losses.

There is growing understanding that population and strong economic growth will drive more economic activities in hazard prone areas, which will eventually drive the increase in risks.

For example, catastrophe modeling firm AIR Worldwide estimates the insured replacement value of coastal properties is expected to increase by 7% per year, which means that the value at risk would approximately double every decade. Making development risk sensitive is therefore a key priority in order to ensure that growth of future economic losses is managed.

Understanding of risks and risk reduction

One of the fundamental requisites to enable action to reduce losses is the understanding of disaster risks. An understanding of the present status and future growth of risks that a community or a nation faces, the drivers of its various components (hazards, vulnerability and exposure) and the determination of risk layers, allows for a better understanding of what measures to deploy to reduce impacts.

For example creating options such as building community resilience for very frequent but small disasters, mitigating medium scale disasters, improving preparedness and insurance for large disasters and calling for aid for very intense disasters. In this regard, the discussion in the dialogue included the research, study and monitoring (including the possible development of indicators) of the evolution of and patterns of risks and its components, including vulnerability, identification of multi-hazards and exposure to these hazards of both people and economic activities, and the use of these information by relevant agencies responsible for authorization of economic activities, issuance of building permits, etc. Local risk was highlighted, including small but frequent risks that often strike at local levels and that causes poverty.

There was also a suggestion of the importance of understanding not just the risks, but also the benefits of certain actions, and the understanding of the possible “tradeoff” between risks and benefits, trade-off or prioritization among various risks, and trade-offs between time periods (short term versus long term). To improve the understanding of risks, there were suggestions to use new technologies, including mobile communication, the Internet, and social media, which have been noted to improve collective sharing of information and decision-making. There were also calls for improving access to risk information, including improving equity in managing information and communications related to disaster risks. The understanding of indigenous knowledge was also highlighted, with a number of examples provided where community initiatives already adapt to risks, instead of combating it.

For example, it is not often understood that disaster risk reduction offers cost-effective approaches to reduce the

negative impacts of flooding, landslides, heat waves, temperature extremes, droughts and intense storms. The benefits can be calculated not only in money saved, but also in more secure livelihoods and saved lives. Some examples include:

- *China spent US\$3.15 billion on flood control between 1960 and 2000, which is estimated to have averted losses of about US\$12 billion.*
- *The Rio de Janeiro flood reconstruction and prevention project in Brazil yielded an internal rate of return exceeding 50%.*
- *The disaster mitigation and preparedness programmes in Andhra Pradesh, India yielded a benefit/cost ratio of 13.38.*
- *A mangrove-planting project in Vietnam aimed at protecting coastal populations from typhoons and storms yielded an estimated benefit/cost ratio of 52 over the period 1994 to 2001.*
- *Property-owners in the US Gulf States who implemented hurricane protection methods employed at nearly 500 locations avoided US\$500 million in property losses from Hurricane Katrina, after customer investments of only US\$2.5 million. These customers sustained eight times less damage than those who choose not to implement the protection measures.*

Another enabling element noted in the dialogue is the importance of building awareness through risk knowledge, sensitization and dialog, and through the development of human and institutional capacities. In addition to improving DRR school education, the dialogue noted the need for advocacy and awareness raising for local policy makers, especially at the local level. Working with mass media was also noted as a particular priority that needs focus.

Without risk understanding, there can never be effective and efficient set of actions to reduce risks. Practical approaches to expand and scale up risk knowledge and use should therefore be a priority in order to reduce economic losses in the future.

Disaster risk governance

An important enabling issue to reduce disaster losses is improved risk governance. Ensuring disaster risk reduction is a priority with the institutional, policy and legal foundations, allows for the requisite actions on the ground that then reduce risks. The dialogue highlighted the importance of cooperation among various public administration structures. The discussion noted

the importance of strengthening of DRR platforms at the national and local levels, which can then bring government and non-government actors nearer, build trusted relationships and better contribute in DRR processes. This is related to the issue of inclusion in decision-making and implementation. A number of contributors noted the importance of engaging various stakeholders in particular at the community level. There were calls for the development of regional and sub-regional management mechanisms concerning separate types of natural hazards within and across the states.

A number of contributors also highlighted the importance of improving disaster risk reduction legislation. For example there were suggestions of improving DRR legislation development and compliance. The importance of a mandatory character and binding legal rules related to civil liability and criminal law on DRR issues was noted. Fortunately, although the global DRR regime – the Sendai Framework – is voluntary in nature, regional and national DRR arrangements have more binding nature. Examples of these are the regional arrangement in ASEAN (AADMER) and the binding nature of most disaster risk management legislations. Improving accountability was also noted, with suggestions for peer review process and the possible development of shadow reports on disaster outcomes and DRR actions.

For example, the assembly of the East African Community (EAC), a regional intergovernmental organisation that groups Burundi, Kenya, Rwanda, South Sudan, United Republic of Tanzania and Uganda, in March 2016 passed a Disaster Risk Reduction and Management Bill, which is the first such regional legislation in Africa. The EAC act calls for a “legal framework for the intervention and assistance for people affected by climate change and natural related hazards and to protect the natural environment through integration of comprehensive disaster risk reduction and management practices in the East African Region.” It has the provision for establishing a ministerial-level East African Community Disaster Risk Reduction and Management Authority, with clearly stipulated functions and encourages compliance with the Bill by taking appropriate measures such as adoption of laws and regulations and administrative actions and enforcement measures.

It was also noted that national and local budgets should support the DRR initiatives. In addition to legislation and budgets, a number of contributions pointed to the need for improved policy and strategies

both freestanding on disaster risk reduction, or embedding DRR in national development plans. The discussions noted that risk sensitive local comprehensive physical and development plans are key areas that need to be established. Finally the dialogue noted the importance of bringing down to the local and community levels DRR development planning and implementation.

Of the many issues noted above the issues of accountability and of land use, urban and spatial planning as they link to reduction of economic losses are particularly explored below.

We all know that there are different approaches for accountability for disasters that can be pursued in the many cultural contexts of the world. In some places, Governments assume full ownership and guiding responsibility for disaster risk reduction as a part of an inclusive and sustainable development strategy. Although the disaster risk reduction community of practice has been partly successful in increasing government ownership and actions on vulnerability reduction resulting in measurable decrease in mortality due to disasters, it was unable to instill the same level of ownership and the related actions in reducing socio-economic exposure to hazards.

As hazards become stronger driven by climate change, exposure has been shown to be a bigger driver of economic losses than vulnerability. Improving accountability in reducing exposure to disasters would thus be a useful approach to reduce future economic loss growth.

Take one example in the Philippines where Governor Salceda of Albay Province has adopted a priority policy on reducing exposure first, and then proceeds to reduce vulnerabilities, both on a continuous basis. Explaining his policy, Governor Salceda notes that “people have the basic right to the capacity to adapt; relief, recovery and rehabilitation are essentially compensation [penalty] of the State for failing to reduce exposure and to increase capacity. No [need for] evacuation if [the] vulnerable is relocated. No rescue, if evacuated. No rehabilitation, if homes are built safely. The more disasters, the higher the rights of the vulnerable, [and] the higher the duties of the State.”

There is a visible trend indicating that the responsibilities for disaster risk reduction are becoming more decentralized as provinces, cities and municipalities

become key stakeholders engaging in risk governance. While accountability in reducing vulnerabilities is improving, there is still a need to improve the breadth of ownership required for reducing exposure of people and assets to hazards, in order to reduce economic losses.

On the issue of land use and spatial planning, we should take note that fast-growing cities and urban areas of the world are engines of growth and wealth accumulation. This growth has positive results in social improvements, cultural, educational and other positive impacts. On the other hand fast economic growth combined with fast population expansion in urban areas, also increases disaster vulnerability as natural defenses are removed, and exposure increased as more people and more and higher valued assets are located in hazard prone locations. For example, for the first time in history, more than half of humanity lives in urban areas.

For example, following the Canterbury earthquakes of 2010 and 2011 New Zealand developed a strategic plan to manage future growth called the Greater Christchurch Urban Development Strategy (UDS), which looks into where development should occur in the city and the districts. The strategy was driven by projections that indicated that the population in the greater Christchurch area would grow from 350,000 people to 470,000 over the next 35 years. Threats posed by natural hazards, such as earthquakes, floods and rock falls, were factored in to ensure the most appropriate land was identified for development. The implementation of the strategy focuses on improving the settlement pattern, transport network, urban design and housing, central city revitalization and water management.

One big challenge in governance therefore is how to promote systematic improvement of spatial, urban and land use planning to reduce future exposure to hazards and thus reduce future risks. Many countries around the world already have experience on how this can be done.

Another example is Scotland, where national planning policy has reduced construction on flood plains to almost zero since 1995. The approach is founded on public-private partnerships with strong involvement of real estate developers and insurers. Local governments are legally obliged to set up Flood Liaison Advice Groups (FLAG) as non-statutory bodies of public and private sector representatives. Only one local authority, Moray up until recently, did not engage and continued construction in floodplains. Con-

sequently, up to 2014, it had serious problems with flooding and had limited access to flood insurance.

Risk transfer and insurance

While disaster avoidance continues to be the best protection, transferring risks can also reduce economic losses. Innovative insurance and other risk transfer mechanisms were proposed to help individuals and communities to recover faster from natural catastrophes. Examples highlighted include micro financing - relending to micro-enterprises affected by disasters allowing them to augment income from crop production and micro insurance that secures life, food security, shelter, businesses, crops and livestock. Additional examples given include indexed crop and livestock insurance. Another risk transfer mechanism cited was catastrophe bonds, which represent a stronger mechanism transfer economic losses. Finally the Catastrophe Deferred Drawdown Option (CAT-DDO) was also cited as a means to improve liquidity after disasters. This last option does not transfer risks, but is a means of risk financing, allowing for early action to reduce ongoing impacts of disasters, by providing resource when it's needed most.

However promoting the expansion of disaster insurance is easier said than done. Despite the rapidly increasing disaster risks globally, insurance growth still lags behind this increasing growth trend of risks. In China, for example, only 3 percent of properties are insured against earthquake and 5 percent against typhoons and floods. The US \$45.7 billion Thailand floods in 2011 prompted a number of insurance and reinsurance companies to pull out of the country because of the financial hit in claims.

The World Bank notes that the catastrophe insurance markets are underdeveloped in low- and middle-income countries. A 2011 study found that in developed countries, more than 40 percent of the direct losses from natural disasters are insured, as compared to less than 10 percent of losses insured in middle-income countries and less than 5 percent in low-income countries. This is a direct consequence of the underdeveloped non-life insurance markets. Insurance penetration is only 1.4 percent of GDP in Latin America and Africa, compared to 3 percent in Europe and almost 5 percent in North America.

However, without understanding why insurance account for such a small portion of many countries disaster risk management strategies will not lead to better understanding of the price of risk. This will thus not allow for improved understanding of, or incentivize investment in prevention measures, and thus reduce economic losses – not just transfer them.

One possible approach, like in the early days of promoting climate change mitigation, is to remove barriers for expanding action - in this case insurance as a practical means to reduce and share losses in countries. One of the greatest barriers that blocks adoption is the lack of understanding of the benefits that insurance brings. There is general lack of understanding, especially among decision makers, on how insurance can be used in order to build resilience. This lack of understanding has resulted in policies that are detrimental to the expansion of insurance as an instrument for dealing with disaster losses, and in the lack of priority to correct these detrimental policies.

For example the Philippine Government Service and Insurance System (GSIS), a State run pension fund, is given the sole authority to insure all property owned by the government—from power plants to roads and bridges to office buildings, and insures about PHP 1.5 trillion worth of state assets. However, requirements by the GSIS and the Philippine Commission on Audit (COA) on the conditions of coverage have limited its usefulness for local governments. Despite the mandatory coverage, most public assets are underinsured. In a 2011 study, the World Bank estimated that in the case of a complete loss of a major asset such as a town hall building due to a typhoon for example, local governments in the Philippines would on average, recover less than 15 percent of the current asset replacement cost.

There are also examples where awareness and understanding has improved the effectiveness and use of insurance to build resilience.

For example, Peru's Flood Index insurance (ENSO) focus on education to help understanding not only the insurance mechanisms itself but also how to mitigate risks through practical actions in their local community. One result is drainage systems clearing undertaken by farmers in Piura, a city in northwestern Peru, which was funded by the pre-event payout of the ENSO insurance scheme.

Another barrier is Government intervention. In many countries, Governments distorts insurance markets

with post-disaster recovery and reconstruction aid that not only eliminates the incentive to buy insurance in the first place, but also discourages resilience building, as only those with damages are supported by the State after disasters, but not resilience building before disasters. Instead of waiting for disasters to happen to provide assistance, it would be ideal to use some of these same funds to promote resilience building to reduce risks and to increase insurance cover to lower disaster losses.

Still another barrier is high transaction costs that increases prices of premiums and makes insurance packages unattractive. For example, the high premium tax for non-life insurance in some countries stifles the development of local insurance markets and discourages homeowners and small and medium sized enterprises from obtaining adequate catastrophe insurance coverage.

In the Philippines, for example, non life insurance premiums carry a 27.5 percent in taxes. Comparatively, Singapore carries a 7 % tax for non life insurance, Thailand 11 % and Viet Nam 12 %.

Other countries have addressed this by subsidizing costs instead, thus lowering premiums.

In Korea, partial premium subsidies are offered by central and local governments to support a special insurance scheme for storms and flooding controlled by Government but operated by a private insurance company. In Japan income tax deductions for earthquake insurance premiums have been introduced, in order to incentivize the purchase of coverage.

The above means that a practical approach is to consider how to systematically remove barriers to improve the conditions and mechanisms to support disaster insurance. This will not only improve the implementation of the Sendai Framework and the SDGs, but also support the implementation of the Paris Agreement mechanisms on adaptation and on loss and damage.

Ecosystem protection and revitalization

The dialogue noted the need to promote ecosystem preservation and protection, including the planting of trees and forest restoration in order to reduce soil erosion, improvement of water retention and to reduce landslides and floods (regulating ecosystem services), in addition to the food, and raw materials that healthy forests provide to communities contributing to their resilience (provisioning ecosystem services) and the biological reserves that they support. In addition to water and erosion regulation, the discussion also noted the importance of promoting carbon regulation (sequestration) through healthy ecosystems, which ultimately will reduce future risks due to climate change.

It should be noted that that risk reduction is more effective when it uses ecosystem approaches such as green infrastructure. Protecting and restoring ecosystems can often be a cost effective risk management strategy compared to conventional engineering approaches.

For example, instead of spending US\$6.8 billion in drainage improvements, New York invested US \$5.3 billion in green infrastructure— permeable pavements, more green areas, and other measures to address drainage capacity. Green infrastructure acts like a sponge – absorbing and regulating peak water flows. These and similar measures have many other co-benefits, including improving water quality, reducing urban heat islands and making cities more livable.

In other examples, a study by the World Resources Institute found that healthy coral reefs in the Caribbean provide US\$0.7–2.2 billion of coastal protection from erosion and storm surges to 18,000 km of beaches. In the United States of America, coastal wetlands absorb wave energy and act as ‘horizontal levees’, providing US\$23.2 billion per year in protection from storms. The forest in Andermatt, Switzerland, provides US\$2.5 million of avalanche protection each year. At the same time, ecosystems not only provide regulatory services, they also sustain livelihoods, provide drinking water and energy, and provide a host of other benefits, from soil formation and nutrient cycling to cultural services.

Early warning and forecasting

We have always used early warning to save peoples lives, and in this discussion it was proposed that the same systems that are used for early warning such as seasonal forecasts and weather and climatic information, should also be used for preparing farms to avoid losses (such as by doing early harvests). It was noted that accurate and well communicated warnings that not only inform about the hazard but also inform about the risk can enable pre-emptive action by recipients to not only saves lives but also reduces economic losses.

For example, in 2012, a World Bank Policy Research working paper noted that, in Europe, hydro-meteorological information and early warning systems save several hundreds of lives per year, avoid between 460 million and 2.7 billion Euros of disaster asset losses per year, and produce between 3.4 and 34 billion EUR of additional benefits per year through the optimization of economic production in weather-sensitive sectors (agriculture, energy, etc.).

The report notes that because of the current situation of hydro-meteorological services – and especially limited funding, lack of qualified workers and poor state of the observation network – such benefits are not realized today in developing countries.

The paper makes the case for upgrading standards the hydro-meteorological information production and early warning capacity in all developing countries which can lead to between 300 million and 2 billion USD per year of avoided asset losses due to disasters, and between 3 and 30 billion USD per year of additional economic benefits thanks to the optimization of economic activities using weather information. It notes that overall, the total economic benefits would reach up to 32 billion USD per year.

To make this happen in the developing world, additional investment are required in improving local observation systems; local forecast capacity; increased capacity to interpret forecasts and translate them into warnings; communication tools to distribute and disseminate information, data, and warnings; and institutional capacity building and increased decision-making capacity by the users of warnings and hydro-meteorological information.

Resilient private investments

As owners of close to 80% of all investments in countries and cities globally, there can be no global resilience without improved resilience of the private sector. The dialogue highlighted the need to encourage the private sector to adopt disaster risks into their core business practices. This means the use of business capacity, resources, skilled manpower, advanced technology and innovative ideas to reduce their own disaster risks and to contribute to risk reduction in the communities where they do business. Some ideas proposed include making supply chains resilient to disasters, promoting risk-informed private investments, promoting business continuity planning especially among small and medium scale enterprises (SMEs), and removing barriers to cooperation between public and the private sector on DRR actions including involving private sector entities in disaster mitigation, prevention, preparedness and recovery efforts.

For example, the private sector bore almost 94 per cent of the colossal total economic losses of \$44 billion incurred during the Thailand floods in 2011. Primarily, manufacturers and insurance companies had to pay the costs of those economic losses.

Of the issues noted above by the dialogue the issue of supply chains and business continuity planning as they relate to reducing economic losses are particularly highlighted below. The reality is that the increasing exposure of supply chain disruptions caused by disasters is one major driver of the recent increase in disaster economic losses. Driven by trade and investment liberalization and continued cost reduction pressures from customers, businesses have been extending their activities worldwide. In the process they are also expanding their exposure to disaster risks. Disasters caused by hazards are one cause of disruptions to supply chains, even when the disaster may occur in another part of the world from where its impact is eventually felt. This is now understood as having the potential for serious economic impacts on another country's economy.

In addition, Japan, mindful of a possible large-scale earthquake striking the Tokai region in the future, calculated the estimated losses based on the governments efforts to address the disaster. Noting a still unacceptable level of possible losses, the Government then proceeded to adopt

a policy to strongly encourage the adoption of business continuity planning for the private sector – setting a target adoption of 100 percent for large-scale corporations within five years and 50% adoption for SMEs for the same period. The Government then proceeded to develop guidelines and promoted incentives for widespread adoption.

Widely used supply chain management strategies of ten-compound disaster risks such as “just-in-time” practice and “lean supply” chain management. These require more frequent and precisely timed deliveries of supplies, increasing efficiency models in business but correspondingly raise the chances of a supply chain disruption. Improving business continuity and resiliency planning for both large multi-national companies and small and medium-sized enterprises (SMEs) is one approach that some countries have undertaken systematically.

For example, the 2011 Great East Japan Earthquake resulted in suspension of production in 80% of automotive plants in Japan. One auto company, Nissan, lost 270,000 automobiles worth of production capacity due to damage to six production facilities and 50 of its suppliers. However, Nissan ended 2011 with 9.3% increased production compared to 9.3% reduction for the rest of the industry in Japan. In this case, Nissan was prepared with a readiness plan including its suppliers, an earthquake emergency response plan, a business continuity plan and disaster simulations.

Build back better in disaster recovery and reconstruction

The dialogue asked the question - is there any positive gain from disasters? During disaster recovery and reconstruction, the opportunity to rebuild without risks for the future, at a time when interest is high and resources are available, is one benefit that needs to be capitalized and used. This is what is called build back better in the Sendai Framework. A number of examples were provided where disaster resettlement created secure housing on secure land reducing vulnerability to the effects of climate change, and strengthening capacities of communities. It is now widely recognized that good disaster recovery can reduce exposure to future hazards and thus reduce the potential for future disaster losses. There are many examples where this has happened already.

For example, following the Great East Japan Earthquake the Government focused its recovery planning on the national, prefectural, and municipal levels. One innovative example is Tago Nishi in Sendai City, Japan where the community and public and private partnership led to the relocation of not only residential, but also commercial and public infrastructure and services.

Similarly, after the passage of Tropical depression 12E that caused severe impact in the Central America in 2011, the need to prioritize pre-disaster recovery planning was agreed at a Presidential Summit held soon thereafter. This decision led to the development of national recovery frameworks as part of national DRR policies that considers recovery as a means for reducing risk, enhance livelihoods and reduce poverty.

There are already an increasing number of recovery frameworks and strategies that focus on re-evaluating and strengthening existing laws and procedural arrangements. This allows recovery efforts to address weaknesses in development processes to reduce risk for future disasters and thus reduce the potential for future economic losses. It also encourages recovery planning to draw on changed attitudes in local government and the community itself to seize opportunities to make changes a reality.

Reduce disaster risks with social protection

The dialogue suggested the improvement of social protection to reduce disaster losses. It was noted that adopting a social protection floor but with a proactive capacity response approach, will allow to engage the most vulnerable and address poverty reduction.

This can be elaborated further because of the extent of the most vulnerable that this scheme touches and the potential for such approaches to not only reduce economic losses but also the dual benefit of reducing poverty. The UNISDR Global Assessment Report on Disaster Risk Reduction in 2009 noted that expanding social protection initiatives and creating social “safety nets” for times of crisis provide particular value with added political dividends. These strategies should be embraced as catalysts to motivate specific development objectives, and for creating further investment opportunities. However, most of social protection schemes still target only structural vulnerability. There

have been few examples where these programmes also address specific vulnerabilities, for example by expanding conditional cash transfer programmes to promote family preparedness to disasters, in addition to promoting basic education and health programmes.

For example, the Government of Uganda has also demonstrated the effectiveness of measures to reduce risk with a shift towards recovery and development in the drought affected Karamoja region. The pastoralists in the region were overwhelmingly receiving food aid in 2009, in response to the 2005-2008 drought. With coordination provided nationally through the Office of the Prime Minister of Uganda and through the district local government and supported by international partners, a new initiative was launched to protect household assets, by providing vulnerable households with timely employment opportunities along with food/cash transfers. The initiative also puts a strong emphasis on communication and sensitization, and contributes to drought resilience through asset accumulation and diversification. Such risk management principles resonate very strongly with the pastoralist tradition in Africa. While relief efforts in the 2005-2008 drought cost on average 120 USD per person, this recovery and development initiative cost 50 USD per person to implement.

It has been shown that scaling up social protection programmes to address both structural and specific disaster vulnerabilities of disadvantaged groups in hazard-prone areas will not only be affordable, but could be a basis for proceeding with efforts to provide not only minimum needs in the context of disaster risk and vulnerability. Specific measures can include expanding supplementary incomes or in-kind transfer programmes, food-for-work programmes, rural employment guarantee schemes and labor-intensive public works programmes for those people most affected.

Another example is in the Philippines, where some four million of the country's poorest households are receiving conditional cash transfers under the government's flagship anti-poverty program, the “Pantawid Pamilyang Pilipino Program,” or 4Ps. The program invest in the country's human capital by keeping poor children in school and giving them medical assistance, while extending immediate financial support to their families. Recently the Government developed a “modified” programme (MCCT) to include families who have been displaced by calamities. As many of these families are not necessarily poor prior to the calamities, the original CCT conditions often do not apply. The 2016 Philippine national budget now promotes integrating

family disaster preparedness for those who will receive this MCCT to address a specific vulnerability – in this case those related to disasters.

Improve building code practices

There were a number of suggestions on how to improve construction practices in order to reduce economic losses from disasters. It was noted that including risk assessment into project large infrastructure projects could reduce the generation of new risks. There were also suggestions on improving the quality of infrastructures and in carefully selecting sites for construction.

In this issue the importance of building codes and how it can reduce future economic losses can further be highlighted. The traditional purpose of building codes, which is to protect public health and safety, does not necessarily foster reduction of disaster losses when faced with extreme disaster events. Enhancing building codes for specific hazards such as earthquakes is meant to add energy-absorbing structural flexibility to prevent total collapse and allow time for evacuation – so called “controlled failure.” The enhancements are not designed to ensure usability or minimal retrofitting for continued use. To do this, building codes need to be updated to also consider disaster resilience and sustainable design.

In order to incorporate resilience into the building practices, it is necessary to update hazard profiles to improve performance-based design, encourage retrofitting to consider existing risks, review codes to incorporate future risks, and link building code improvements with other risk reduction strategies such as spatial planning.

For example, a study on residential wind damage following the 2005 Hurricane Katrina in the US by Louisiana State University Hurricane Center found a possible reduction of losses from \$4.8 billion to \$1.7 billion if the buildings in the affected areas were built better, for example if they had protected building openings, improved roof-deck connections, and improved roof-to-wall connections. Similar studies of disasters from the 1994 Northridge earthquake to Hurricane Katrina demonstrate that effective building-code enforcement reduces loss in catastrophic events. Building code therefore is not only an issue for the developing world, but for the developed world as well.

In managing risks today and planning for the future, a combination of approaches is needed to minimize impact through both public and private investments. These approaches need to be in terms of both reducing and managing existing risks, and avoiding future ones through improved sustainable development practices.

Improving building codes and regulations will be a critical tool to save lives and in reducing losses from disasters in the future, and in so doing will assist in delivering the global 2030 Agenda for Sustainable Development.

Resilient agriculture and rural livelihoods

Another underlying risk driver is livelihood vulnerability in rural areas. Approximately 75% of the people living below the international poverty line of US\$ 1.25 per day live and work in rural areas. In such contexts, disaster risk is associated with livelihoods unable to sustain minimum levels of welfare and which are often exposed and vulnerable to even minor weather variations. In many rural areas across developing countries, people’s livelihoods still depend heavily on agriculture and other natural resources. Rural farm-based livelihoods are generally characterized by low input and low output agriculture due to limited access to productive assets such as land, labor, fertilizers, irrigation, infrastructure and financial services. For households without the minimum assets necessary to support a viable livelihood, the result is poverty.

According to FAO, the agriculture sector (including crops, livestock, fisheries and forestry) absorbs 22% of loss and damages in developing countries. The livestock subsector alone sustained nearly 34% of the total economic impact within agriculture. Asia is the most affected region, with total crop and livestock production losses amounting to USD 28 billion or 40 percent of total losses (between 2003-2013).

Due to drought and locust infestations in 2004 and 2005, food production in Niger showed cereal shortfall of 9% or 250,000 tonnes. However, the cereal shortage increased to about 16% due to a fall in purchasing capacity, especially among agro-pastoral populations. High market prices

and increasing poverty provoked the food crisis in Niger, even though food was available for purchase. Eventually, some 12 million people needed food aid in Niger and the surrounding region, with about 800,000 children affected.

Of the one-third of all humankind for whom farming is a source of livelihood, about 60 percent own livestock. Nearly 800 million livestock keepers live on less than USD \$2 a day. Agriculture is one of the sectors most affected by natural hazards and disasters. And those particularly vulnerable to natural hazards are the world's 2.5 billion small-scale farmers, herders, fishers and forest-dependent communities. Furthermore, many of the countries with the highest densities of livestock keepers, are also those with high multi-hazard ratings.

Animals are worth more to their owners than just their commodity value and as a productive asset they require protection and care to preserve their productive quality. To minimize suffering, reduce economic losses, and safeguard the livelihoods of the poor, the dialogue called for the improvements in rural agriculture and the incorporation of animal protection into Disaster Risk Reduction policies, plans and activities.

At the start of 2012, Chihuahua in Mexico, a state that is economically dependent largely on agriculture and livestock, faced the impacts of two years of drought and three successive failed farming seasons. Without rain, green pasture dried up; what was left was overgrazed. Malnourished cattle were forced to eat fallen leaves and cotton leftovers from nearby plantations. As livestock deaths rose to the thousands, the people of Chihuahua were desperately in need of an action plan that would protect the lives and welfare of their remaining animals and – by extension – protect their long-term economic prospects. An animal-focused disaster reduction and recovery measure implemented by local people enabled the government to support communities in rebuilding their economies and planning for the future.

QUESTION 2 - What priority actions are required to meet the 2020 target of increasing the number of countries with national and local disaster risk reduction strategies and plans aligned with the Sendai Framework?

Reviewing national plans, encouraging the development of local plans, adopting national and local targets, promoting cooperation and capacity building, defining baselines and risk profiles, including the establishment or enhancement of systems to record disaster losses are but a few activities that can be highlighted. What other priority initiatives and actions on disaster risk reduction governing can be highlighted, shared and promoted in order to accelerate the achievement of this target?

This particular session on QUESTION 2 was discussed from 23 May - 29 May. The discussions covered general comments as well as specific cases and good examples as well as suggestions of specific elements of strategies that need to be formulated to meet the above challenge.

Summary and reflections

QUESTION 2

What priority actions are required to meet the 2020 target of increasing the number of countries with national and local disaster risk reduction strategies and plans aligned with the Sendai Framework??

Build DRR capacity

One important aspect that the dialogue noted is the capacity and know-how of the people who will update the plans. For this purpose, a number of participants highlighted the need to develop training programs that target government officials from the national to the local levels. It was noted that these programmes should inform about disaster risks and approaches such as how to mainstream DRR into planning. It was also noted that in addition to government officials, there is a need to include in these programmes other stakeholders such as civil society and private enterprises, which are critical actors in understanding risks and in implementing the plan later on.

The dialogue noted that capacity building is where international cooperation will be useful among countries leading to the 2020 deadline, and a number of examples were cited including the CADRI programme, which are already being implemented in a number of countries.

The dialogue took inspiration from multilateral environmental agreements and called for systematic capacity building programmes for what the dialogue called as the development of the National Action Plans (NAPs) for the implementation of Sendai Framework (or simply Sendai NAP).

the countries in the region, Tonga is clearly a lead example of integration of DRR and CCA, having developed an integrated plan for Disaster Risk Management and climate change including the reduction of greenhouse gas emissions. In the case of Tonga, it is interesting to note that these developments occurred without any substantive institutional re-organization at the time. A key lesson is that effective integration of CCA and DRM is based on the knowledge and commitment of individuals at the national level and on the ability of the responsible government agencies to work together closely.

There are a number of possible funding sources, where capacity building support for Sendai NAP development can actually be supported, including bilateral and multilateral programmes such as from the Japan International Cooperation Agency (JICA) and those run by the World Bank (GFDRR) and the European Commission.

For example, Japan through the Japan International Cooperation Agency (JICA) opened in April 2016 its training program on disaster risk reduction management (DRRM) and post-disaster recovery for Filipino young professionals as part of JICA's capacity building support to developing countries including the Philippines. The training, which will begin July 2016, is under Japan's Knowledge Co-Creation Program (Young Leaders) that aims to develop human resources and enhance capabilities of developing countries by sharing Japan's experience and knowledge.

The Pacific is a leader in promoting the development of joint national action plans on disaster risk reduction and climate change adaptation, which they call JNAPs. Among

Review existing plans and strategies

The importance of reviewing existing plans and strategies before updating them was noted. Ensuring that the plans are up to the requirements were also noted after its development. For example, it was proposed that a comprehensive mapping exercise needs to be undertaken to determine not only what worked in the past and the gaps and challenges that needs to be addressed in the future, but also to determine what are actually being planned by various stakeholders on DRR action in the years to come. This will ensure that the updated plan will not only be comprehensive but also inclusive.

In order to facilitate third party review of present and updated plans, the dialogue proposed a peer review mechanism as a potential catalyst to influence and drive countries to develop and ensure that the updated National Action Plans and local DRR strategies are fully aligned to the Sendai Framework. It was noted that a coherent programme on this is very vital and should be implemented through the relevant DRR sub-regional bodies. Also, in the review of existing plans, it was noted that the issue of coherence should also be looked into. Examples were cited on the need to start with reviewing present legislations that will allow for the development of “joined up” strategies between DRR, development and climate change.

For example, in Europe, given enhanced policy approaches at the national level and the self-assessment nature of the DRR monitoring, a learning process of validation of the monitoring among peers was put forward by national counterparts at the European Forum for Disaster Risk Reduction as a way to improve policy, to enhance mutual learning and exchange good practices. As a result a pilot peer review process was developed through collaboration between the European Commission, UNISDR and OECD. Since the piloting of the HFA monitor peer review by the UK in 2012 and Finland in 2013, a European programme for peer reviews within the EU has been developed.

Once developed, it was proposed that the plans and strategies should be stress tested annually and the results of these used to develop remedial actions with clear identification of who is accountable to fill what gap and by what date.

Assess and understand risks

The Sendai Framework calls on countries to update their plans considering present and future risks. This means that plans and strategies can only be aligned with the Sendai Framework if these are based on an improved understanding of present and future disaster risks. Risk assessments are the first steps in improving the understanding risks, which will then enable the prioritization of which sectors to focus on which measures to do first. The dialogue noted the importance of mapping of present and the future growth of hazards and the vulnerabilities of people and economic activities exposed to these hazards.

In understanding risks, the dialogue noted the importance of taking a multi hazard approach, and particularly noted hazards which we have either previously ignored or have not fully considered. For example, the importance of landslide risks was suggested, including landslide risk assessment, early warning and risk communication.

In addition, the dialogue noted the importance of considering technological hazards in updating the DRR strategies and plans. It was also noted that doing so would not only help to update plans to the new realities of technological advancement and use, but will also align plans and strategies with the Sendai Framework, which includes technological hazards within its scope and which emphasizes the importance of taking a multi-hazard approach.

In considering technological hazards, the importance of incorporating risk communication, mitigation of and preparation for large-scale evacuations, protracted displacement situations and loss of livelihoods was highlighted as well.

For example, the most often used categories of hazards used in disaster risk reduction are geological, hydrological, meteorological, and climatological. However, the 2015 European Commission's Compendium of Risk Knowledge highlights that in Africa and the Caribbean, biological hazards are more frequent and equally deadly as compared to natural hazards. This means that there is an urgent need to integrate both man made and biological hazards in the overall consideration of risks by countries and organizations dealing with disaster risk management, and in the understanding of risks globally.

In preparing to better understand risk analysis, it was noted the importance of developing risk maps at national and community levels, which the dialogue noted helps decision makers and vulnerable communities fully understand the risks they are exposed to. It was even noted the need for comprehensive risk analysis of each city, town and indeed, smallest settlement are an absolutely vital requirement in order for the residents and planners to understand and thus address these risks.

In an interesting approach combining usual disaster risk assessment and climate adaptation strategies, it was noted the need to better understand how communities are responding or adapting to disaster risks. One approach proposed is the conduct of surveys on how those exposed to hazards understand the threats and their previous responses to them. It was also noted that these surveys should include better understanding of community perceptions of which organizations or persons they would look to for warnings or advice in the event of a disaster and or how they would expect such information to be delivered.

Related to the calls for reviewing existing plans and strategies is the importance of knowing your baseline. The dialogue noted that a key to achieving the goal of improved plans and strategies is to have a baseline that allows us to know where we started.

For example, in April 2016, Angola, Botswana, Lesotho, Malawi, United Republic of Tanzania and Zambia -- all members of the Southern Africa Development Community (SADC), and currently tackling the impacts of El Nino -- have launched a programme to build an evidence base of disaster losses that will track the time, place and impact of hazard events and thereby enable them to make their policies risk-informed. Nearly two disasters of significant proportions have been recorded every week in Sub-Saharan Africa since 2000. Water, weather and climate hazards, notably floods and drought, dominate the region's disaster profile, affecting around 12.5 million people per year. The economic impact is thought to be significantly underestimated, hence the need for more reliable, in-depth data.

It is important to note that many countries still do not have historical disaster damage and loss databases, which will allow this improved understanding of risks. Without knowing fully what are being lost to disasters historically, it would be difficult to plan to reduce them efficiently. Similarly few countries are able to project

the growth of risks into the future. This is particularly important in the context of the changing climate. There are other innovative approaches that will allow countries to go beyond an understanding of hazards into an understanding of risks. These approaches need to be explored before countries start updating their plans and strategies to ensure that they are finally risk-informed.

Improve DRR planning process

The dialogue noted the need to improve the planning process in the development of the updated strategies and plans.

Examples of how these processes can be improved were proposed, including the development of the legal mandates, review of ongoing governance structures and policies, reviewing functional areas where mainstreaming needs to take place, strategic planning workshops to develop and support the plan and the development of strategies themselves. Examples were cited on how this is already taking place in a number of countries. The dialogue also proposed the modification of existing DRR mainstreaming planning and budgeting tools to base these more on the results of risk assessments. It was also pointed out the need to further strengthen the links between national and local plans in order to support national policies and help governments include sustainability and disaster reduction in the development programmes

In addition to the process itself, the need to ensure that every local authority and agency has a plan was noted. It was pointed out that in many countries, most local authorities and national and local agencies have no clear strategies and plans to deal with disaster risks. However, this was also noted as an opportunity, by which new or updated plans can be developed that “join up the dots” across DRR, development and climate change, so that a cities and nations systems of systems when building resilience are standardized and effective in that they focus on doing the right thing and not simply in the right way.

A number of pilot initiatives are underway to link DRR and climate adaptation planning. What would be necessary is to move these pilot initiatives out of pilot phases and scale them up and in addition incorporate

the development aspects once the SDG planning processes gets rolled out into countries at the national and local levels as well.

Engage stakeholders in preparation

The role of civil society was highlighted as an important enabling process in the development or update of DRR strategies and plans, especially as a means to build synergies among various actors that would contribute to the implementation of these plans and strategies once adopted.

The dialogue noted that civil society are not only able to advocate for the implementation of the plan at the community level, but can also provide technical and financially support in this regard. A number of examples were provided where the government worked closely with civil society in national and local DRR plan implementation.

Improve contents of DRR plans and strategies

Once all the preparations are done, it is now time to look into the contents of the strategies and plans. There were a number of issues that have been highlighted as necessary elements to ensure that the updated plans not only contribute to the Sendai Framework targets, but also to ensure coherence with sustainable development and climate change objectives.

First it was noted that there is a need to ensure that plans and strategies have the all the elements of the four priorities of Sendai Framework. There were calls for the plans and strategies to tackle the root causes of disasters in order to insure wellbeing. The dialogue called for plans and strategies to address the risks faced by the poorest and those most vulnerable to disasters, and by doing so address poverty. The dialogue also noted practical approaches to do this including strengthening the protection of livelihoods and productive assets.

For example, to address urban flood problems in Jakarta Indonesia, the national government applied DRR concepts and began to implement the Jakarta Urgent Urban Flood Mitigation Project early in 2012. Its primary aims are to

improve the operation and maintenance of Jakarta's flood management system. The major components to accomplish this include dredging flood channels, canals and retention basins; rehabilitating and constructing embankments; and establishing institutional coordination among the agencies involved in the flood management system. The project is to be completed in 2017 at an estimated cost of US \$189 million.

In support of this, issues like food security and the protection of animals and livestock was proposed. The dialogue noted the need for the plans to address both small and large-scale disasters and have a multi-scale approach from national to the local levels.

A number of examples were given to show that these approaches are already in place in some countries. The dialogue noted the importance of including local knowledge and issues related to indigenous communities, as these allow us to fully explore practical and integrated "how to do" approaches at the local level. The dialogue noted the importance of fully integrating climate change issues into plans and strategies, both climate change mitigation and adaptation. It was also noted that the best approach to mitigate future disasters is to promote low carbon development, which will ultimately contribute to the reduction of future disasters caused by climate change. Finally it was highlighted that there should be improved accountability for the plan or strategies implementation.

QUESTION 3 - What activities and programmes would need to be developed or scaled up to accelerate vulnerability reduction and achieve resilience in the context of development?

Preventing the creation of new risk, addressing existing risks and building resilience requires a more people-centered approach to disaster risk reduction with strong emphasis on community resilience.

Improved early warning, preparedness and contingency planning, institutional arrangements for disaster risk reduction, and improved building codes have significantly contributed to reducing vulnerability. However, new vulnerabilities highlighted by small but frequent hazards and increasing climate extremes are turning into disaster risks particularly for small economies such as least developed countries and small islands developing states. It is crucial to enhance vulnerability reduction within climate adaptation efforts to achieve resilience, poverty reduction and inclusive development. It is essential to promote coherence between the Sendai Framework for Disaster Risk Reduction 2015-2030, the 2030 Agenda for Sustainable Development and the Paris Agreement on climate change. This means adopting a "no regrets" approach to decision-making and promoting the integration of development and climate

change issues as part of disaster risk reduction policies and vice versa.

- *What activities would be urgently required to scale up efforts in promoting a people-centered approach to disaster risk reduction and community resilience?*
- *What measures can be taken to harmonize policies and align tools and metrics across the post-2015 development agendas nationally and locally?*
- *What concrete measures should be taken to address small recurrent disasters to help reduce the vulnerability of least developed countries and small islands developing states?*
- *What urgent actions are required build the resilience of vulnerable countries and communities to meet the 2030 development agenda?*

This particular session on QUESTION 3 was discussed from 30 May – 5 June. The discussions covered general comments as well as specific cases and good examples as well as suggestions of specific elements of strategies that need to be formulated to meet the above challenge.

Summary and reflections

QUESTION 3

What activities and programmes would need to be developed or scaled up to accelerate vulnerability reduction and achieve resilience in the context of development?

Vulnerability reduction and resilience building

Since 2007, countries have been using the Hyogo Framework for Action Monitor to report on the progress made in disaster risk reduction. There had been gradual process in all regions, across all the Priorities for Action of the HFA. In particular, strengthening countries' institutional, legislative and policy frameworks, early warning, disaster preparedness for response as well as risk assessment, education, research, and fostering public awareness and a common understanding of disaster risk have shown progress. However, countries have been more challenged to factor disaster risk reduction into public investment, land-use planning, infrastructure projects, environmental management and social policies, which are the activities under HFA Priority for Action 4 on reducing the underlying risk drivers and tackling the causes of risk creation.

This inability to address the underlying risk drivers has resulted in the concentration of extensive disaster risks (disaster risks that are small, but happen frequently) in poor communities and households that then enhanced poverty, undermining development. Although extensive disasters do not cause significant fatalities, they are responsible for a large proportion of damage to local infrastructure and livelihoods of low-income households and communities. This reflects how the risks generated by rapid economic growth are transferred to low-income households and communities who least enjoy its benefits.

Having said this, there is also good news – mortality from disasters is decreasing. There are fewer lives lost from disasters over the HFA decade, despite more people being exposed, and weather related hazards growing more intense. A combination of achievements towards the Millennium Development Goals (MDGs) and investments in preparedness and early warning have contributed to the reduction of mortality over the decades. For example, improved transport infrastructure and health facilities, which facilitate evacuation and prompt medical attention, lead to reduced vulnerability – at least in the case of floods and tropical cyclones.

Scale good practices to further reduce mortality

This context was important, because it highlights the wealth of experience that exists globally on vulnerability reduction that then lead to reduced mortality due to disasters – mostly large ones or disasters caused by intensive risks, which can then be scaled up in order to achieve the Sendai targets.

The dialogue highlighted a number of such initiatives, for example, improving risk understanding - hazard characterization, exposure and vulnerability analysis, risk assessment; improving personnel and institutional capacity on disaster risk reduction, strengthening Early Warning Systems (EWS) including the possibility of pooling capacity to improve predictions and warnings. Another example proposed include the strengthening of disaster risk reduction education, including

engaging ministries of education, engaging the formal and non-formal educational sector, inclusion and implementation of school curriculum.

The dialogue also proposed integrated approaches such as a Safe City program, which can be used even by countries with limited in the financial opportunities, in order to deal with integrated portfolios of risks.

Make public investments consider disaster risks

One issue highlighted is that even for countries that have made good efforts in improving disaster risk governance in the past, there is still a need to revise its commitments to incorporate disaster risk reduction into their long term development plans as a matter of priority, and to allocate specific budgets nationally and locally to reduce disaster risks.

However, these are easier said than done. How do governments put disaster risk reduction as a priority and how were they able to allocate budgets into related activities?

For example, Bangladesh is well known for its successful cyclone preparedness programme that has greatly reduced the loss of life from this recurring hazard. What is not well known is the fact that the same programme, coupled with its climate adaptation programme for over 30 years, has invested to raise agricultural productivity in low lying areas, flood protection & drainage in urban areas, irrigation schemes to enable dry season crop, and coastal 'green-belt' projects and has contributed to reducing disaster losses from US\$ 4.3 Billion in a 1998 cyclone to just US\$ 0.27 Billion in losses in a similarly devastating cyclone in 2009.

In Mozambique, which is highly exposed to floods, 800 people died in the town of Chokwe in a 2000 flood disaster. In January 2013 floods devastated the town again, but the disaster claimed 70 lives compared to the 800 lost in 2000. The difference was due to government investments in better climate science, effective communication of early warnings, improved quality of housing and resettlement of people in less flood-prone areas.

Turkey also launched an Earthquake Strategy and Action Plan (2012-2023) aimed at building the country's seismic resilience. The strategy aims to retrofit existing building of critical importance and applying seismic standards to new constructions. It includes structural engineering measures and non-structural measures such as awareness among

the population on how to cope with seismic events. It also includes a broad number of stakeholders and identifies mandates and responsibilities for action in 13 governmental institutions.

Similarly, Shanghai has created a multi-hazard early warning system that allows communities to channel information to the authorities and receive it at the same time. Its grid-based system divides the city into manageable units for preparedness and response.

We all know from previous discussions that all decisions on where to locate populations and assets ideally need to be made considering the levels of risks of these areas. Public and private investment planning in many cases are not yet fully risk sensitive, meaning that the planning of and the location of populations and assets in hazard prone areas do not yet fully incorporate the increasing risks development then generates.

Improve building practices

Another issue noted which we could scale up includes improvement in building codes and practices. The dialogue called for the adoption of construction codes and standards that address the future and new hazards not just the historically known ones, and the development of a system to enforce these codes in particular during post-disaster recovery and rehabilitation phases.

In relation to question 1 on reducing disaster losses, the dialogue already identified improvements in building practices as an important issue. In the context of question 3 on reducing vulnerability, the importance considering future risks and the implementation of existing codes was noted.

Japan for example, reviews its building code each time there is a major disaster affecting the country, with the 2011 Great East Japan earthquake and tsunami starting debates on inclusion of larger and more extensive designs of buildings along the coast.

Norway has emerged as a leader in rigorous building safety standards in terms of floods and storm surges. Over the past four years national legislation has designated a three-level classification system for all new construction. Buildings regarded as critical infrastructure, such as hospitals, must be built to withstand a 1-in-1,000 year flood in their given location. Housing must be able to withstand a 1-in-

200 year flood. Finally, third tier buildings, such as storage houses, must be able to withstand a 1-in-20 year flood.

In many countries, the lack of proper implementation of these codes is common practice, which often leads not only to more people dying in disasters, but also more economic losses. In addition, building code enforcement is not only an issue for the developing world, but for the developed world as well.

For example, studies of disasters in the US from the 1994 Northridge earthquake to Hurricane Katrina demonstrate that effective building-code enforcement can reduce vulnerability and thus the resulting loss in the case of catastrophic events.

Deal with underlying drivers of risks

However, our inability to address the underlying drivers of risks, and the related small-scale disasters, or disaster caused by extensive risks, means that we need to further explore what actions would be suitable, and then later possibly these scale up widely.

This is where there was a very interesting debate on the concept of resilience. The dialogues description of resilience is somewhat the opposite of vulnerability, and the resilience discussed was more in line with the capabilities of people and systems to absorb a shock or stress, or in this discussion, the effect of any hazard.

For example, the dialogue noted an example of some Afghan refugees in Iran who have been managing their lives in a challenging condition for over three decades. Although some call them as vulnerable communities, but it was proposed to call them as resilient communities, who have thrived and survived under tough conditions, limited resources, poor residential infrastructure.

The specific issues highlighted that needs to be increased as a component of resilience include inclusiveness and equity, adaptive capacity, availability, robustness, redundancy and diversified resources such as income, commodities and assets including social and ecological assets.

There are a few issues noted under this that can be further elaborated, because these are areas that the

disaster risk management community have not delved in deeply and fully yet, and thus maybe areas which can be explored and scaled up in the future in order to reduce vulnerability and increase resilience.

Promote inclusion

The dialogue noted the importance to increase involvement of communities, especially at risk groups, through improved social opportunities and democratic processes that would empower them to influence decisions and contribute meaningfully. The real and immediate and obvious benefit in doing this is that responsibilities, incentives and accountabilities at all levels of government can therefore be clearly defined and institutionalized.

In addition, the dialogue called for improving the disaggregation of disaster data globally. Presently, the ways of categorizing and counting disability vary globally. Best global estimates of persons with disabilities are 15-20% of the global population. Higher incidences of disability are linked to poverty, which also means risk. National figures are underestimated with a few exceptions. Improving understanding of the impacts of disasters will allow for improved planning on how to address them.

For example, an online survey conducted by UNISDR in 2013, involving more than 5,000 persons with disabilities from 137 countries, found that only 10% of respondents believe that their local government has emergency, disaster management or risk reduction plans that address their access and functional needs, and only 20% reported that they can independently evacuate immediately without difficulty in the event of a sudden disaster. The survey also found that 85% of its respondents have not participated in disaster management and risk reduction activities in their communities and have therefore been excluded from disaster risk reduction decision-making, planning, and implementation. The low disaster risk reduction participation rate contrasts markedly with another significant survey result: 51% of respondents expressed a desire to participate in community disaster risk reduction processes.

The dialogue noted that inclusion efforts in disaster risk reduction need to be addressed as a crosscutting issue of shared concern within DRR and resilience building. For this, the role of persons with disabilities and Disabled People's Organizations (DPOs) as contributing actors, and recognized stakeholders, should

be further emphasized in all of our work along with the inclusion of women's groups, youth groups and other representative organizations and networks of highly at-risk individuals and groups in DRR planning and programming.

Resilience in times of disaster can only be successful if a significant number of things are in place and if these things are accessible to every member of the community. When buildings are designed and equipped to be accessible to people with disabilities, they are more easily accessible to the entire population. People who are not considered to be disabled but who have ailments that make mobility somewhat difficult, for instance people with back pain or people with temporary problems such as exhaustion, have a better time of it if their entry or exit from buildings is made easier. Similar things can be said about access to transport, food, water and emergency medical care. Everyone needs this access when disaster strikes, but people have different advantages or disadvantages when it comes to making use of it. The above means that promoting inclusion in resilience building also benefits society at large.

Promoting inclusion also unlocks innovation of communities, as they approach problems with the most practical means at their disposal, and multiplies capacities to address the drivers of risks.

Poorer communities suffer a disproportionate share of disaster loss. Poor households are usually less resilient to loss and are rarely covered by insurance or social protection. Disaster impacts lead to income and consumption shortfalls and negatively affect welfare and human development, often over the long term.

For example, investments in urban drainage to reduce extensive risk in informal settlements will be ineffective if the drains are not maintained, are obstructed with garbage, or are encroached upon by buildings. If the drainage is planned and built in partnership with local government and the affected communities, there is a far better chance of it being maintained and protected in the long-term.

For example, San Francisco, a small coastal town in Cebu Province in the Philippines prone to typhoons, won the top UN Sasakawa Award for Disaster Reduction in 2011 for their innovative self-organization within villages (also known as Purok system) where members voluntarily contribute to a money bank used by those in need of emer-

gency funds after a disaster. Also, with limited access to the Internet, cell phones and radios, the Purok system is used to disseminate information and risk assessments, with Purok coordinators acting as couriers of information to residents.

Similarly, the UN Sasakawa award winner in 2013, the City Council of Belo Horizonte, Brazil organizes inspections of all of the city's most vulnerable areas. Area residents, local fire department, water, sewage and energy companies, and representatives of private businesses perform inspections. In places of medium or low risk, residents, with building material and technical guidance from the City Council, carry out small public works. In areas of high risk, the Council works to relocate families to public housing in safer locations. In addition, the 'Nuclei of Rainfall Alert' group, comprising networks of residents, issues alerts and strengthens preventive and mitigation measures. For instance, it marks risky locations on Google maps and indicates the best escape routes. Alerts are issued by telephone calls and SMS to city managers, community leaders and the press, and to the general public by e-mail, Facebook and Twitter.

The dialogue noted the need to engage with the youth and called on the development of methodologies that allow children and youth to strengthen their understanding of risks, confidence, and vision and improve their role in addressing the drivers of risks. Specifically, the dialogue called on improved understanding of risks and capacity building and the need to include the priorities of children and youth in their policies and priority actions in risk reduction.

The dialogue also called on communities to discuss 'vulnerabilities' balanced out with examples and details of those communities already using their situation as an opportunity for innovation and change. The importance of involving faith groups in resilience building at the community level and provided examples where these already worked was also highlighted.

Indonesia for example developed an inventory of hazards, vulnerabilities and capacities of all local governments in 494 districts, about 80% of which are classified as high-risk zones. The country has greatly improved its readiness for major disaster events since the Indian Ocean tsunami of 2004.

Rwanda's highly decentralized administrative structure has allowed the country to develop an innovative community-led system for targeting social protection programmes. Rwanda has a good track record in social protection, in-

cluding the provision of universal health insurance to 91 percent of the population, free education and several social transfers, including pension benefits. The new targeted approach, based on a traditional practice of collective action known as “ubudehe,” allows communities to identify beneficiaries of social protection based on locally relevant criteria, such as the size of land holding. Communities also suggest and lead area-specific programmes. Preliminary evidence shows that poor households can be directly involved in the planning and execution of social protection instruments and that even those usually without access to formal support can participate.

Where communities, civil society organizations and governments enter into partnership, the scale of disaster risk management efforts can be increased considerably. However, this requires a change in the administrative culture of many public departments: to accept that working directly with low income communities in risk-prone areas must become the norm rather than the exception. A strong civil society can play a critical role in creating social demand for DRM, by ensuring political responsibility and increased accountability, mostly at local levels. Civil society organizations, where they have the ability and opportunity to organize and voice their positions, can reduce local risks while building political and economic imperatives for disaster risk management.

Improve food security and agriculture practices

In many developing countries agriculture is among the most important economic sectors. In Ethiopia, DR Congo, Liberia, Myanmar, and Sierra Leone it accounts for over 40% of GDP. In Benin, Burundi, Afghanistan, Cambodia, Lao PDR, Mali, Mozambique, Nepal, and Nigeria it accounts for over 30% of GDP.

Agriculture provides roughly half of total employment in Afghanistan, Bangladesh, Benin, Haiti, Liberia, Mali, Myanmar, Nepal, Nigeria, Pakistan, Sierra Leone and Uganda, and over 70% of total employment in Burundi, Cambodia, Chad, DR Congo, Ethiopia, Guinea, Madagascar, Mozambique, Sudan and Tanzania.

At the same time, the level of food insecurity is high in many of these same countries. Between 30 and 40 percent of the population is undernourished in Chad, Ethiopia, Guatemala, Mozambique, Sierra Leone, Sudan, Tanzania and Uganda. In Burundi, Eritrea and Haiti at least 50% of the population is food insecure.

There is growing recognition of the impacts of disasters on agriculture and food security.

For example, in 2012, over 18 million people faced food insecurity in the Sahel region of West and Central Africa. In the Horn of Africa, the food security crisis that began in 2011, has threatened the lives and livelihoods of over 12 million people. In 2010, Pakistan experienced the worst flooding since 1929, which damaged 2.4 million hectares of cultivatable land and standing crops across the country. In 2011 the country's monsoon season caused renewed and devastating flooding, affecting about 880,000 hectares of area planted. The Haitian earthquake caused nearly US\$ 26 million in damages to the agricultural sector.

The observed disaster losses in agriculture caused by large but infrequent disasters (so called disasters caused by intensive risks) are higher in countries that relies more on agriculture for employment and economic growth such as LDCs. However, in addition to these large disasters, small but recurrent “silent disasters” (or disasters caused by extensive risks) account for an additional 50% of disaster losses, often unaccounted for by governments and rarely addressed.

Because of these the dialogue highlighted the need to scale up efforts to reduce the vulnerability of agriculture, especially in poor countries. The dialogue specifically called for a focus of disaster risk reduction and resilience building activities on the sectors that the poorest and most vulnerable rely on for their livelihoods, which is the agriculture sector and its subsectors: crops, livestock, fisheries and forestry.

For example, it was noted that West Africa either faces floods that destroy crops, and thus the means of survival for vulnerable rural communities, or face droughts that also destroys crops and reduces the capacity of the whole communities to provide for its own need of food. The dialogue cited that in some countries like Togo and Benin, both situations are possible while in Niger, Mali, and Burkina Faso and the Gambia the impacts of drought is the most felt by local communities.

The dialogue called for the development of multi-crops production system programme increasing adaptive capacity of communities and allowing people to have different choice of crops to bring to the market. The dialogue also called for meteorological support in terms of weather alerts and seasonal forecasts to

assist in the planning of farming seasons. The dialogue called for scaled-up efforts in responsible investment in agriculture that promotes conservation, and sustainable management of natural resources, which will lead to increased resilience and will reduce disaster risks. The dialogue also called to integrate animals and livestock into resilience building activities and programmes to reduce economic losses and safeguard livelihoods.

For example, Burkina Faso is one country, which is researching new drought-resistant millet and sorghum for decreased rainfall regimes. Diversification is an option, for example, by combining food crops, livestock and agroforestry. The introduction of insurance schemes can help people cope with crop losses.

Promote social cohesion and improve social capital

Next let us consider another item noted above – social cohesion, which is an issue that is now being recognized as another key driver in improving disaster resilience.

In July 1995, a scorching heat wave hit Chicago, killing seven hundred and thirty-nine people, roughly seven times as many as died in Super Storm Sandy. Two adjacent neighborhoods on the segregated South Side of Chicago, Englewood and Auburn Gresham, were both 99% African-American, with similar proportions of elderly residents, unemployment, violent crime, and high rates of poverty. Despite similarities, Englewood had thirty-three deaths per hundred thousand residents, but Auburn Gresham's death rate was only three per hundred thousand, making it far safer than many of the most affluent neighborhoods on the North Side of Chicago.

Why did people in some of Chicago's vulnerable neighborhoods fare so much better than people in others? Research showed that social infrastructure – the sidewalks, community centers, parks, and commercial establishments that shape people's capacity to connect with each other – played a crucial role in determining who lived and died during the heat wave. Places with a social infrastructure that encouraged local social life and contact between neighbors were far less likely to have multiple heat deaths, whereas places whose broken down streets, sidewalks, and public spaces actively discouraged older people from venturing outdoors were far more likely see death rates soar.

The important role of faith groups in providing support in reducing risks through their social capital was also noted. For example, after the Great East Japan Earthquake in

2011 and the 2016 Kumamoto earthquake local faith leaders immediately formed a taskforce to manage the evacuation shelters. Amidst circumstances of social interactions diminishing within local communities, faith groups can play a distinctive role by offering support using their extensive social capital. Faith groups create social capital among residents through their regular religious and outreach activities. The dialogue noted that social capital enables local communities to raise voices in the recovery stage such as those on reconstruction and planned relocation. The recovery process should be based on the full engagement and partnership among local communities, local governments and host communities. Without social capital it's quite difficult to consolidate local communities' voices, and faith leaders can help to promote it.

Reduce the vulnerability of small economies

In an interesting list of issues that was provided that need to be promoted for national resilience building, the dialogue elaborated the need to set aside a budget for disasters risk management, diversification of the economy, enhancement and improvement of social and human capital, promotion of traditional cultures that safeguard social cohesion, encourage low general government debt, enhance flexibility in the labor market and secure multi-employment status and opportunities, avoid external dependence of basic resources for the society and economy, consider redundancy, decentralization and dispersion in facility and infrastructure, legislate contingency and business continuity plans as prerequisites, and elaborate and update national mitigation, emergency and recovery plans.

The importance of diversified economies for improving resilience and reducing vulnerabilities is first explored below.

The vulnerability of small economies to hazards is particularly apparent and can have long-term consequences for national development, especially for Least Developed Countries (LDCs) and Small Island Developing States (SIDS).

For example, in the case of the Maldives, the estimated damage from the 2004 Indian Ocean earthquake and tsunami was a staggering loss of over 62 per cent of its GDP. In 2004, the World Bank and the Asian Development bank (ADB) calculated the overall estimated damage exceeded \$470 million with nearly 10 per cent of the country's total population directly affected. This lack of preparedness

does not allow them to adjust their macroeconomic policies in a timely manner with prior fiscal considerations after disasters.

Similarly, international tourism account for more than 50 per cent of exports of SIDS. The high reliance of local economies on this sector, coupled with their high disaster risks highlights the vulnerability of local economies to disasters.

In another example, following the 2009 floods in Nadi, Fiji, one-fifth of all those registered with the Chamber of Commerce had to close down because of damage to buildings or destruction of stock; only a handful eventually reopened. These highlight the need to promote the diversification of economies, improvement in pre-disaster financial recovery planning, preferential trade and tariff agreements, catastrophe insurance pools, and other risk financing mechanisms.

How do we address frequent but small disasters or disasters caused by extensive risks?

The dialogue in a number of times tried to focus our attention on small-scale disasters. The dialogue called it forgotten or silent disasters; we call it disasters caused by extensive risks. These are disasters that are more frequent, smaller in size, localized and not systematically recorded by governments.

We all know that as people consider the seriousness of various disasters, there is a tendency to focus on powerful earthquakes, large tsunamis, unprecedented floods or destructive tropical cyclones. However, we also know from various studies that the accumulated consequences of recurrent small or medium-scale disasters have the greater impact.

For example small-scale disasters from the Islamic Republic of Iran and Nepal both indicate that these disasters can

cause similar numbers of death and property losses over a period of time when compared to larger disasters.

In addition, risks are influenced by poverty and inequality. For example analysis of 16 disaster loss database in Latin America covering the period 1990-2011 shows that over 99% of total event registers are linked to extensive risk (less than 25 casualties and 300 houses affected) and associated with climate induced disasters (95%) that account for the majority of people affected (90%), damaged houses (86%), half of the lives lost and 37% of houses destroyed. Most of these countries are also the most inequality-rife countries as measured by the Gini coefficient, which suggests that inequality has some links to driving disaster losses.

In the past there has been too much focus on the large scale but infrequent disasters, or disasters caused by intensive risks, and with very little understanding of the effects of small-scale disasters and how to address them.

The question remains on what is needed to scale up the recording of disaster impacts and losses through the institutionalization of national disaster inventory systems. The recording of comprehensive disaster losses and consequential impacts will enable governments to measure and quantify the socio-economic costs of recurrent disasters. Only then can a strong case be made to justify significant and sustained investments in DRR from fiscal budgets and long-term public investment plans.

Efforts to build the socio-economic evidence base either will disclose inadequacies or preferably stimulate additional commitments to improve risk communications. This is essential for engaging all stakeholders, and particularly those responsible for decision-making, planning and investment. Progress can only be possible when the subject of risk becomes a matter of concern in additional sectors of society and in the priority areas involved with sustainable development, disaster risk reduction and climate change.