UNISDR
The United Nations Office for Disaster Risk Reduction

DISASTER RISK REDUCTION AND RESILIENCE IN THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT[1]

I. Introduction

The adoption of *'Transforming Our World: The 2030 Agenda for Sustainable Development'* represents the culmination of efforts to develop a successor to the Millennium Development Goals. It is a transformative plan of action for all countries and all stakeholders to implement. It sets poverty eradication as an overarching aim and has, at its core, the integration of the economic, social and environmental dimensions of sustainable development. The document also reinforces the universal and collaborative nature of the process, and pledges that no one will be left behind.

The 2030 Agenda for Sustainable Development is being hailed as a positive and ambitious milestone for all regions and stakeholders. The UN Secretary-General describes the outcome as a "universal, transformative and integrated development agenda". The 17 Sustainable Development Goals (SDGs) and 169 global targets sets out areas to advance sustainable development.

This reflection paper is a contribution by the United Nations Office for Disaster Risk Reduction (UNISDR) and examines the links between disaster risk reduction and development in the context of 2030 Agenda for Sustainable Development and the Sendai Framework for Disaster Risk Reduction 2015-2030. The paper gives perspectives on how disaster risk reduction and resilience is reflected in the outcome document and outlines what disaster risk reduction means for the SDGs. It also highlights the opportunities to reduce disaster risk, build a resilient future and achieve the goals and targets through the implementation of both the 2030 Agenda for Sustainable Development and the Sendai Framework.

Perspectives on Disaster Risk

'Transforming Our World: The 2030 Agenda for Sustainable Development' recognizes and reaffirms the urgent need to reduce the risk of disasters. There are several ways that disaster risk reduction is recognized and advanced in document including the direct references to the outcomes of the Third UN World Conference on Disaster Risk Reduction and the Sendai Framework as well as the specific opportunities to achieve the SDGs through reducing disaster risk. For example, by reducing exposure and vulnerability of the poor to disasters or building resilient infrastructure. There are also several goals and targets that can contribute to reducing disaster risk and building resilience, even where disaster risk reduction language is not explicit. These include targets related to promoting education for

[1] A reflection paper prepared by the UN Office for Disaster Risk Reduction, October 2015.

sustainable development, building and upgrading education facilities and ensuring healthy lives among others.

There is much to be gained from viewing the 2030 Agenda for Sustainable Development through the lens of disaster risk reduction and the Sendai Framework in particular. Direct references to disaster risk reduction which are examined in this paper can be seen in the Declaration and Goals and Targets sections in particular related to poverty, ending hunger, ensuring healthy lives, education, sustainable management of water, building resilient infrastructure, resilient cities, climate change and marine and terrestrial ecosystems. These references represent a significant step forward for disaster risk reduction in comparison with previous development frameworks such the Millennium Development Goals which largely overlooked the importance of reducing the impacts of disasters on society and economy.

A key part of the success of the 2030 Agenda for Sustainable Development will, in part, be measured by progress in implementation of disaster risk reduction. The focus on implementation provides an opportunity to encourage increased political commitment and economic investment to reduce risks and take development action that considers disaster resilience as critical to poverty reduction and key enabler of sustainable development. Potential approaches to implementation, based on priority actions identified in the Sendai Framework are included in the reflection paper.

II. Sustainable Development Goals: What do they mean for disaster risk reduction?

Disaster risk reduction cuts across different aspects and sectors of development. There are 25 targets related to disaster risk reduction in 10 of the 17 SDGs, firmly establishing the role of disaster risk reduction as a core development strategy.

This section examines the SDGs through the lens of building resilience and reducing disaster risk and draws attention to measures that can contribute to the implementation and achievement of each goal. The section also highlights the correlation between the SDGs and its target actions with the priorities for action and targets of the Sendai Framework.

Goal 1: End poverty in all its forms everywhere

Building disaster resilience is critical to achieving the goal of eradicating extreme poverty. As one of the key drivers of disaster risk, given the way it creates and aggravates economic and social vulnerability, poverty has significantly contributed to the growth in risk conditions which further limit the progress of sustainable development. Evidence suggests that the impacts of disasters undermine hard-earned development gains in both developing and developed countries, potentially dragging the poor and most vulnerable even deeper into poverty. By 2030, there could be 325 million people trapped in poverty and exposed to the full range of natural hazards and climate extremes particularly in sub-Saharan Africa and South Asia[i]. This suggests an urgent need to build and strengthen the resilience of poor communities to prevent future disaster events from pulling more people into poverty and to protect their livelihoods and assets to help them recover.

Target 1.5, which relates to building the resilience of the poor, further strengthens the position of disaster risk reduction as a core development strategy for ending extreme poverty. To achieve this goal and target, Sendai Framework proposes for the promotion and development of social safety nets linked with livelihood enhancement programmes in order to ensure resilience of household and communities to disasters. Strengthening the design and implementation of inclusive policies and social safety-net mechanisms through community involvement is equally important.

Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Natural hazards are a cause of global food insecurity and hunger, particularly when they compound existing economic vulnerability. Large shocks and extensive risks destroy agricultural assets and infrastructure, causing serious damage to the livelihoods and food security of millions of small farmers, pastoralists and fishers in many developing countries. Often, people depend on agriculture for their livelihoods and face increasing exposure to disaster risk which can trap them in a cycle of food insecurity and poverty. The high impact of disaster and climate risk on agriculture calls for enhanced mainstreaming of disaster risk reduction and climate adaptation strategies within the agriculture sector.

Target 2.4 supports the immediate need to advance actions in mainstreaming disaster risk reduction and climate adaptation into agriculture sector planning and investments in order to promote resilient livelihoods, food production and ecosystems. In the context of the Sendai Framework, relevant actions including strengthening productive assets such as livestock, working animals, tools and seeds are required to achieve this goal and target.

Agricultural practices also need to be modified in order to adapt to the projected changes in climate conditions as well as the increasing disaster risk. Sustainable and productive agriculture systems, including farm technologies and practices such as crop diversification to adjust to new temperature and precipitation patterns, changing livestock breeding practices and shifting grazing patterns, developing and managing climate resilient food production systems, developing and using drought and flood-tolerant crop varieties[ii] and adopting water and soil moisture conservation measures[iii] are just a few examples that could help prevent, mitigate and reduce disaster and climate risk.

Goal 3: Ensure healthy lives and promote well-being for all at all ages

People's health and wellbeing are often affected as a result of disasters and other emergencies. Major risks to public health are raised by diseases, injuries, psychosocial effects and disabilities linked to extreme weather and climate-related hazardous events. Moreover, damages to health facilities not only cost lives, but also disrupt health systems, facilities and services, leaving many without access to health care in times of emergency and longer-term implications through lost preventative care (such as vaccinations and prenatal)[iv]. Promoting resilient health systems can significantly contribute to building the capacities and resilience of communities to cope and recover from the impacts of disasters.

Target 3.d, which relates to strengthening early warning and risk reduction of national and global health risks presents an opportunity to further actions to promote resilient health

systems. This target in particular is complemented by the outcome of Sendai Framework which has placed strong emphasis on the resilience of health systems and integration of disaster risk reduction into health care provision at all levels. At least four of the seven targets in the Sendai Framework are directly linked to health, focusing on reducing mortality and injuries, improving people's well-being, early warning and promoting the safety of health facilities and hospitals. All these contribute to helping people lead more resilient lives.

Some of the implementation strategies highlighted in the Sendai Framework include enhancing the resilience of national health systems by integrating disaster risk management into primary, secondary and tertiary health care, especially at the local level, developing the capacity of health workers to understand disaster risk and applying and implementing disaster risk reduction approaches in health work, and promoting and enhancing training capacity in the field of disaster medicine. The Sendai Framework also calls for the inclusion of people with life-threatening and chronic disease in the design of policies and plans to manage risks before, during and after disasters.

Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Education plays a crucial role in reducing vulnerability and building community resilience to disaster risks. Damage and destruction of schools by disasters not only leads to the loss of children's and teachers' lives but also wastes valuable public investment in social infrastructure and interrupts education, with lifelong implications. In order to progress this goal, schools should incorporate disaster-resistant structures and adapt to local risks. Resilient schools not only provide space for learning and development but can also serve as centers to coordinate response and recovery efforts and as emergency shelters.

Knowledge and awareness of natural hazards also has the potential to influence behavioral change on how people can best protect their lives, properties and livelihoods, thereby contributing to disaster resilience. Target actions 4.7 and 4.a, focusing on building and upgrading education facilities and promoting education for sustainable development, contribute significantly to resilience-building in the education sector.

In order to progress these target actions, implementation needs to consider promoting disaster risk knowledge at all levels including in professional education and training as recommended by the Sendai Framework. Utilizing campaigns, social media and community mobilization can also be instrumental in promoting and strengthening public education and awareness in risk reduction.

Goal 5: Achieve gender equality and empower all women and girls

Women and girls worldwide are more exposed than men and boys to disaster risk, suffering higher rates of mortality, morbidity and significant damage to their livelihoods. More than 100 million women and girls are affected by the impacts of disasters every year due to gender inequalities associated with socio-economic and cultural traditions as well as their limited access to information[v]. However, women and girls also have much potential to reduce disaster risk and build community resilience. They are highly capable of taking care

of themselves and other people in the community in the wake of disasters[vi]. Women's active participation in disaster risk reduction has also proven effective, particularly in building leadership, sharing local knowledge and traditions as well as developing capacity for risk reduction.

Despite the absence of an action target that emphasizes strengthening the role of women and girls in the context of disaster risk reduction, it is evident that this is critical to achieving the goal of gender equality and empowerment and building disaster resilience of communities. The Sendai Framework underline women's participation is critical to effectively managing disaster risk and designing, resourcing and implementing gender-sensitive disaster risk reduction policies, plans and programmes. Adequate capacity building measures are needed to empower women for preparedness as well as build their capacity for alternate livelihood means in post-disaster situations.

Goal 6: Ensure availability and sustainable management of water and sanitation for all

Sustainable water management is critical to addressing disaster vulnerability and strengthening the resilience of communities to water-related hazards. Water-related disasters such as floods, droughts, hurricanes, storm surges and landslides account for approximately 90 percent of disaster events worldwide[vii]. Ongoing population growth in flood-prone areas and increased agricultural development on marginal lands will further increase exposure and vulnerability to such risks. Robust and sustainable management of water resources will significantly contribute to reducing the impacts of water-related hazards and strengthen efforts to mainstream disaster risk reduction strategies into water management.

Target 6.6, which relates to protecting and restoring water-related ecosystems, will significantly contribute to strengthening the resilience of communities to water-related hazards. This target also indirectly provides an opportunity to mainstream ecosystem-based approaches for disaster risk reduction and further highlight their value as a 'win-win' and 'no regrets' solution to the increasing disaster and climate risks underlined in the Sendai Framework. Some of the implementation strategies suggested by the Sendai Framework include mainstreaming disaster risk assessment, mapping and management into rural development planning and management of rivers, coastal flood plain areas, drylands, wetlands and all other areas prone to droughts and flooding, including through the identification of areas that are safe for human settlement and at the same time preserving ecosystem functions that help reduce risks.

Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all

Billions of dollars invested in energy infrastructure are lost to disasters each year, causing significant social and economic disruptions. Over the years, there has been a significant increase in the number of energy infrastructure installed and growing incentives for clean energy development. And while this growth drives the progress of cities and economies around the world, the size of electricity networks has exposed more of this foundational infrastructure to hurricanes, earthquakes, droughts and floods[viii]. In addition, disaster risk

reduction measures applied by energy sector are often managed in isolation from the broader disaster risk reduction efforts, thereby threatening to undermine overall progress on resilience[ix].

As in the case of building resilient infrastructure, measures to achieve the energy goal require strengthening and promoting the resilience of new and existing critical infrastructure to ensure they remain safe, effective and operational during and after disasters in order to provide life-saving and essential services. Some measures to consider include building better from the start to withstand hazards through proper design and construction; retrofitting and rebuilding; nurturing a culture of maintenance; and taking into account economic, social, structural, technological and environmental impact assessments.

Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Investing in disaster risk reduction and resilience is imperative to secure economic growth and development. Developed and developing countries alike have achieved significant economic progress over the years, yet the threat of increasing disaster risk raises uncertainties about their economic stability. This is due to the growing exposure of economic assets and people to hazards such as earthquakes, floods, hurricanes and drought, which magnifies disaster risk. Global average annual losses from disasters are forecast to increase from US$260 billion in 2015 to US$414 billion by 2030[x]. Trillions of dollars of new business investment will also pour into hazard-exposed regions, largely determining the future of disaster risk[xi].

Given the current trends in disaster impacts and increased exposure of economic assets to risk, the integration of disaster risk reduction and resilience into the economic and development strategies of both the public and private sectors should be a priority in order to achieve this goal. At the macro-economic level, losses incurred from disasters by the private and public sector, including destruction or loss of assets, capital and infrastructure, can have a negative toll on employment, economic activity and growth for many years after a disaster event[xii]. In addition, global supply chains have become increasingly interconnected so that when a disaster occurs, the impacts can ripple across countries and regions. For example, the 2011 Thailand flooding caused major global supply chain disruption resulting in material shortages, production interruption and worldwide price increases of electronic products. The Great East Japan earthquake and tsunami in 2011 left the global auto industry reeling for several months[xiii]. This implies that appropriate investment in disaster risk reduction is needed to reduce economic losses globally and maximize development potential.

Measures to achieve this goal as outlined in the Sendai Framework include promoting mechanisms for disaster risk transfer and insurance, risk-sharing and retention and financial protection for both public and private investment. Other areas include increasing business and protection of livelihoods and productive assets throughout supply chains and integrating disaster risk management into business models and practices. The Sendai Framework also calls for the integration of disaster risk reduction considerations and measures into financial and fiscal instruments.

Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Infrastructure, such as road, power, communications and water networks, and health and primary education facilities, is a basic requirement of a competitive economy[xiv]. When infrastructure fails during a disaster event, it can interrupt vital services and threatens the sustainability of large and small businesses. For example, power failures may disrupt water supply and transport during hurricanes. The destruction of a bridge in a flash flood may isolate a local smallholder farm, workshop or restaurant from markets and suppliers for days. Some businesses, particularly small and medium enterprises, could face the risk of bankruptcy due to the lack of cash flow or reserves to be resilient.

Estimates suggest that by 2030, annual investment requirements for infrastructure development are likely to total about US$53 trillion, an average of 2.5 percent of world GDP[xv]. Targets 9.1 and 9.a related to developing sustainable and resilient infrastructure development are vital not only to protect existing infrastructure but also future infrastructure investments. With the current trend of increasing disaster risk, it is vital for any economy to ensure that critical infrastructure is resilient to the impacts of disaster and climate risks. Infrastructure systems that have the ability to anticipate, absorb, adapt to and or rapidly recover from a disruptive hazardous event are considered resilient. This includes structural and non-structural measures such as flood control systems, protective embankments, seawall rehabilitation, building codes, retrofitting of buildings, risk-sensitive planning, hazard mapping and disaster risk financing[xvi].

In order to progress these targets and goal, the Sendai Framework recommends strengthening disaster resilient public and private investments through structural, non-structural and functional disaster risk prevention and reduction measures in critical facilities, in particular schools and hospitals and other physical infrastructure. It also encourages the revision of existing or the development of new building codes, standards, and rehabilitation and reconstruction practices at the national or local levels. It also calls for the promotion of proper design and construction, including the use of the principles of universal design and the standardization of building materials; retrofitting and rebuilding; and nurturing a culture of maintenance of new infrastructure development.

Goal 10: Reduce inequality within and among countries

Disasters may exacerbate social inequalities. For example, they can widen the economic divide between men and women, as evident after Hurricane Katrina in 2005 where women's average income increased by 3.7 percent from 2005 to 2007 while men's incomes increased by 19 percent[xvii]. The poorest populations are almost always the most vulnerable to disasters, with precarious livelihoods, lack of safety nets and economic buffers and living in high-risk environments where disasters occur frequently[xviii]. Inequalities in the distribution of rights, resources and power which prevent equitable risk-sharing add to the increase in disaster risk.

As is the case of Goal 1 on ending poverty in all its forms everywhere, achieving this goal could substantially contribute to building the resilience of poor populations. To achieve this goal, the Sendai Framework proposes a comprehensive risk reduction approach to

development. Among the measures that it suggests are the promotion and creation of social safety nets linked with livelihood enhancement programmes, in order to ensure resilience of household and communities to disasters. Strengthening the design and implementation of people-centred, inclusive policies and social safety-net mechanisms through community involvement is equally important.

Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable

The world is increasingly becoming urban; population growth and urbanization are projected to reach more than two-thirds of the world's population. Increasing population density can lead to creation of risk, especially when urbanization is rapid, poorly planned and occurring in a context of widespread poverty. Furthermore, the growing concentrations of people and economic activity in most cities are seen to overlap with areas of high risk exposure. Estimates suggest that by 2050, the urban population exposed to cyclones will increase from 310 million to 680 million while exposure to major earthquake risks will increase from 370 million to 870 million[xix]. Urban development investment is also set to increase from US$7.2 trillion in 2011 to US$12 trillion by 2020[xx]. The exposure of urban assets to sea level rise and flooding could reach US$35,000 billion by the 2070s which is ten times more than the current levels.[xxi]

With 60 percent of what will be urban in 2030 still to be built[xxii], urban growth presents an unparalleled opportunity to reduce disaster risk in cities by reflecting resilience and disaster risk reduction in policy, planning, design and investment decisions over future urban development, and to avoid past development mistakes. Action targets under this goal (11.1, 11.3, 11.4, 11.5, 11.b and 11.c) focusing on upgrading urban slums, integrated urban planning, reducing social and economic impacts of disaster risk, building the resilience of the urban poor, adopting and implementing urban policies in line with the Sendai Framework and building sustainable and resilient urban infrastructure are strategic opportunities to ensure increase capacity to support cities, protect current and future development prospects and build safer, more resilient cities throughout the world.

Measures to achieve these targets and goal, as outlined in the Sendai Framework, require mainstreaming of disaster risk assessments into land-use policy development and implementation, including urban planning, land degradation assessments and informal and non-permanent housing, and the use of guidelines and follow-up tools informed by anticipated demographic and environmental changes. Empowerment of local authorities through regulatory and financial means to work and coordinate with civil society, communities and indigenous peoples and migrants in disaster risk management at the local level is also needed. Mobilizing effective global and regional campaigns such as the "Making Cities Resilient: my city is getting ready!" campaign are also instrumental to strengthen public awareness and education, promote a culture of disaster prevention, resilience and responsible citizenship, generate understanding of disaster risk and support mutual learning and experience sharing.

Goal 12: Ensure sustainable consumption and production patterns

The absence of proper waste management strategies and approaches influence the increase in disaster risk. The indiscriminate dumping of solid waste may cause flooding which could also damage critical infrastructure such as solid waste systems, triggering more sewage overflows[xxiii]. In addition, waste generated after a disaster event such as debris from collapsed buildings and infrastructure may contain toxic or hazardous components that could cause serious environmental and health impacts. Inefficient disaster waste management also affects livelihoods and recovery efforts, with potentially far-reaching implications for the economy[xxiv].

Although target actions under this goal are not specific to disaster risk reduction, the sound management of chemicals and substantial reduction in waste generation can significantly contribute to reducing disaster risk. However, more needs to be done to strengthen integration of sustainable waste management into disaster response and recovery and building back better.

Goal 13: Take urgent action to combat climate change and its impacts

Climate change magnifies disaster risk and increases the cost of disasters. Through changing temperatures, precipitation and sea levels, amongst other factors, global climate change is modifying hazard levels and exacerbating disaster risks in different sectors and countries. Since 1980, weather-related hazards have accounted for 74% (US$2.6 trillion) of total reported losses, 87% (18,200) of total disasters, and 61% (1.4 million) of total lives lost[xxv]. The number of weather-related hazards has tripled, and the number of people living in flood-prone areas and cyclone-exposed coastlines doubled. The trend is expected to continue to increase. For example, in the Caribbean, climate change will contribute an additional US$1.4 billion to expected annual losses by 2050[xxvi]. As risks become further amplified by increasing climate variability and change, higher losses and impacts in the future are expected, which would certainly undermine current and future development efforts.

Investing in disaster risk reduction is a precondition for developing sustainably in a changing climate. Target actions under this goal, focusing on strengthening resilience and adaptive capacity, capacity building and integrating climate change measures into policies and plans, awareness raising on climate adaptation and early warning (Targets 13.1 to 13.3 and 13.a to 13.b) provide opportunities to strengthen the integration between disaster and climate resilience to protect broader development paths at all levels. This goal and targets could also influence the provision of long-term financing for addressing disaster and climate risk, needed to optimize implementation and bring about transformative change.

In order to achieve these targets and the overall goal, the Sendai Framework recommends to strengthen disaster risk modeling, assessment, mapping, monitoring and multi-hazard early warning systems; promote the conduct of comprehensive surveys on multi-hazard disaster risks and the development of regional disaster risk assessments and maps, including climate change scenarios; and maintain and strengthen in situ and remotely-sensed earth and climate observation. The Sendai Framework also calls for the integration

of disaster risk reduction measures into multilateral and bilateral development assistance programmes related to climate change adaptation.

Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development

More than half of the world's population lives within 100 kilometers of the coastlines, a figure which could rise to three quarters by the year 2020[xxvii]. Marine resources and associated coastal ecosystems contribute significantly to national economies and provide a wide range of services to communities, including food sources, livelihoods as well as shoreline protection against storm surges, floods, sea level rise, tsunami and other coastal-related hazards. Along with natural hazards, improper development and the degradation of marine and coastal ecosystems pose threats to coastal communities and often lead to creation of risk by removing the benefits that ecosystems provide, further exposing people and properties to the impacts of natural hazardous events.

Target action 14.2, focusing on the sustainable management and protection as well as strengthening resilience of marine and coastal ecosystems, can contribute to reducing disaster risk and increase in demand for healthy marine and coastal ecosystems. Through this demand, marine and coastal efforts may be more socially and economically acceptable. Moreover, coastal and marine protection can be further enhanced through management plans that factor risk-reducing elements into their design – for example through investing in coastal mangroves or protecting vital coral reefs.

The Sendai Framework explicitly seeks to account for the environmental damages caused by disasters – in many cases damages are attributable to the removal of disaster waste and to impacts associated with recovery and reconstruction planning that have by-passed existing environmental legislation. The looming collapse of global fisheries as a hazard with far-reaching consequences should also be considered by disaster risk managers adopting a truly multi-hazard perspective. Finally, the science and observing systems that support analysis of coastal hazards (storm surge, tsunami and El Nino variations) significantly add to the data and knowledge base available to managers of coastal and marine ecosystems.

As is the case for terrestrial ecosystems, the Sendai Framework proposes a number of priority actions for implementation, including mainstreaming disaster risk assessment, mapping and management into rural development planning and management of coastal flood plain areas, among others; supporting trans-boundary cooperation for the implementation of ecosystem-based approaches with regard to shared resources, such as within river basins and along coastlines; and encouraging the establishment of mechanisms and incentives to ensure high levels of compliance with existing laws and regulations addressing land use, environmental and resource management.

Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

Ecosystem degradation erodes the resilience of communities and nations and exposes them to increased risks of and impacts from disasters. From desertification and degradation of

drylands to the destruction of coastal forests and wetlands, the loss of biodiversity and ecosystem services often translates into increased disaster risk, losses and slower recovery, in urban and rural areas alike. Drivers of degradation such as land conversion for urban growth, unsustainable agriculture and infrastructure as well as extractive industries and pollution are well understood[xxviii]. Conversely, ecosystem protection and restoration offer sustainable and cost-effective solutions for disaster risk reduction.

Preliminary estimates put global annual losses to ecosystem services as high as US$190 billion[xxix]. Protecting, restoring and sustainably using ecosystems are critical in this regard. Target actions 15.1 to 15.4 and 15.9, focusing on managing and restoring forests, combating land degradation and desertification, conserving mountain ecosystems and their biodiversity and integrating ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies, all contribute to resilience building. These targets are also in line with the Sendai Framework's focus on building environmental resilience through the inclusion of ecosystems in risk analysis and planning.

As per marine ecosystems, the Sendai Framework proposes similar priority actions for their terrestrial equivalents -- mountains, rivers, coastal flood plain areas, drylands and wetlands, among others.

Goal 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Disasters and conflict are mutually reinforcing. Weak state structures and social systems in conflict-affected countries are likely to affect the ability of people and communities to respond to disaster risks, as well as increase the likelihood of stresses and shocks turning into a disaster. At the same time, extreme weather events and other natural hazards can exacerbate the challenges that people and communities already face during conflict situations and may create new risks. Conflict and disasters damage and destroy livelihoods, safety nets, health and infrastructures, which perpetuates vulnerabilities that put people and communities at risk, further entrenching poverty and inequality[xxx].

For example, the result of the long-standing conflict in Somalia has led to a weak government response to drought or flooding. If there were no conflict in Somalia, it is conceivable that both the state and community institutions would be better able to cope with the natural hazards, thereby avoiding a disasters altogether[xxxi]. Many developing countries experience the impacts of both disasters and conflict. Reports show that more than 50% of people affected by natural hazardous events, from 2005 to 2009, have lived in fragile and conflict-affected contexts[xxxii]. In order to progress this goal, it is imperative that disaster risk reduction and response is incorporated into target actions in order to strengthen the resilience of people and communities in conflict-affected countries and in the aftermath of disasters.

Goal 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development

The success of the 2030 Agenda for Sustainable Development, particularly the SDGs, depends on its effective implementation. To be effective, the implementation must ensure wide participation of stakeholders including NGOs, civil society and the private sector, who have been instrumental in the progress achieved so far in sustainable development. This was seen at the Third UN World Conference on Disaster Risk Reduction in March 2015, where over 600 commitments were made by stakeholders as part of the implementation of the Sendai Framework. It will be important to ensure these commitments are consistent and coherent with partnerships and initiatives in the post-2015 development agenda.

Opportunities for partnership building are presented in the implementation of both the outcome document and the Sendai Framework. Successful partnerships can potentially bring out competence and experience-sharing as well as build synergies between different target actions which can be cost-effective in the long term. These partnerships can substantially contribute to or complement efforts to achieve the SDGs.

Opportunities for Reducing Disaster Risk and Building a Resilient Future

Building the resilience of communities and nations is fundamental to achieving the goals in the outcome document and succeeding in attaining development that is sustainable. With the magnitude of losses over recent decades, the likely impact of disaster risk on development efforts and the projected increase in losses over the coming decades present a strong case for the inclusion of disaster risk and resilience in the 2030 Agenda for Sustainable Development[xxxiii].

As the first major agreement of the post-2015 development agenda, the Sendai Framework and its implementation is an important catalyst to influence and complement the achievement of the goals and targets set forth in the 2030 Agenda for Sustainable Development, as well as in the Addis Ababa Action Agenda on financing for development, agreed in July, and in the COP21 climate agreement at the end of 2015. The Sendai Framework outlines seven global targets to be achieved over the next 15 years: a substantial reduction in global disaster mortality; a substantial reduction in numbers of affected people; a reduction in economic losses in relation to global GDP; substantial reduction in disaster damage to critical infrastructure and disruption of basic services, including health and education facilities; an increase in the number of countries with national and local disaster risk reduction strategies by 2020; enhanced international cooperation; and increased access to multi-hazard early warning systems and disaster risk information and assessments. *(See Annex 2 for the complete list)*

Implementation of all the post-2015 development agreements needs to rely strongly on measures to reduce disaster risk and loss and build resilience to preserve current and future development gains. Although these measures are reflected across a number of goals there are still opportunities to reduce disaster risk and building resiliency including:

(i) Addressing Risk Factors through Sustainable Development Goals

The outcome document and its implementation provides a significant opportunity to address underlying risk drivers by focusing on poorly planned urbanization, climate change, environmental degradation and poverty, all of which contribute to the increase in disaster risk. Targeted action is critical under each SDG to address the compounding factors that contribute to and intensify the generation of new risk. Moreover, this can provide more weight to current efforts to address the underlying risk factors by different stakeholders in parallel with the Sendai Framework.

At the same time, the global targets and priorities for action set in the Sendai Framework can contribute substantially to the achievement of the SDGs and targets through its stronger focus on resilience-building and risk reduction measures. For example, building the resilience and reducing disaster damage to critical infrastructure, particularly education and health facilities, which is one of the seven global targets in Sendai Framework, can be connected not only to the implementation and achievement of SDG 9 on building resilient infrastructure and its subsequent targets but also to SDG 3 and 4 on education and ensuring healthy lives. Similarly, the Sendai Framework target on increasing the availability and access to multi-hazard early warning systems and disaster risk information and assessments complements SDG 13 on combating climate change and its impacts. These are some of the opportunities where coherence in strategies for action can be promoted at all levels.

Furthermore, targets that are indirectly related to disaster risk reduction, such as ensuring healthy lives, promoting education for sustainable development and building and upgrading education facilities, can be closely linked and contribute to reducing disaster risk and vice versa. For example, reducing and managing national and global health risks under SDG 3 will be difficult to progress without also managing the risk and impacts associated with disasters.

(ii) Targets and Indicators

A key part of the success of the 2030 Agenda for Sustainable Development will be based on the progress made to implement disaster risk reduction and resilience building. As such, disaster risk reduction indicators will be one of the cornerstones to measure and monitor the progress of both public and private actions that aim to address the underlying risk drivers, reduce existing levels of risk and strengthen resilience towards the achievement of the SDGs. Success in this area will determine the level of disaster loss and damage a country faces and the longer-term impacts on its economy and welfare.

Methods to measure the progress of disaster risk reduction are anchored by two processes including the Inter Agency and Expert Group on SDG Indicators (IAEG-SDG) and the Open-ended Intergovernmental Expert Working Group on Indicators and Terminology relating to disaster risk reduction. The IAEG-SDG was established by the UN Statistical Commission at its 46th session to develop an indicator framework to monitor all 17 goals and 169 targets of the 2030 Agenda for Sustainable Development. The Group's membership includes 28 representatives of national statistical offices.

During the Group's first meeting on 1-2 June 2015, it agreed to finalize the global indicator framework by the end of November 2015 for submission to the 47th Session of the UN Statistical Commission in March 2016.

The Open-ended Intergovernmental Expert Working Group on Indicators and Terminology relating to disaster risk reduction was established by the UN General Assembly, as recommended by the Third UN World Conference on Disaster Risk Reduction, to develop a set of indicators and terminology to measure global progress in the implementation of the Sendai Framework in coherence with the work of the IAEG-SDG. The group is composed of experts nominated by States, and supported by UNISDR, with involvement of relevant stakeholders. The working group will hold three formal sessions, at the United Nations Office in Geneva, including one session scheduled on 29-30 September 2015 and two sessions in April and November 2016.

The work of the two on-going processes differs in scope. The IAEG-SDG largely focuses on measuring the progress of all 169 targets set in the outcome document while the Open-ended Intergovernmental Expert Working Group focuses on monitoring the progress of the Sendai Framework, especially its seven global targets. However, given the mutually supportive relationship between the two documents, as demonstrated by the strong linkages between a number of targets, it is critical that disaster risk reduction indicators chosen under each SDG are coherent and strategically connected to the Sendai Framework indicators. Establishing a set of shared indicators on disaster risk reduction will allow the measurement of how the achievements in one framework can contribute to the other.

For example, indicators to measure mortality, affected people and economic loss due to hazardous events can be applied to related targets set in both the outcome document and the Sendai Framework. The indicators proposed for the Sendai Framework global targets can be linked to SDG targets on building the resilience of the poor (1.5), reducing the number of deaths, people affected and economic losses due to disasters (11.5), strengthening resilience and adaptive capacity to climate hazards (13.1). Disaster risk reduction strategies at national and local level, which are to be monitored for a Sendai Framework global target, can measure the SDG progress of national resilience capacity building (13.2) and local resilience capacity building (11.b), among others. In addition, measuring direct economic losses due to hazardous events in relation to global domestic product can be used to measure progress related to targets 11.5, 13.1, 2.4, 4.2, 15.3, 3.d and 13.b. (See Annex 1 for the list of SDG targets and suggested indicators).

(iii) Coherence in monitoring and reporting

The development of indicators to monitor the SDGs and the Sendai Framework, currently under consideration, can support coherence and align implementation through setting shared qualitative and quantitative targets. Taking into account the work of the IAEG-SDG and the Open-ended Intergovernmental Expert Working Group, current discussions present an opportunity to promote synergy and to monitor the global targets and set in both Sendai Framework and the 2030 Agenda for Sustainable Development.

Given that both documents share a common aim of making development sustainable, accelerating their implementation can be achieved by aligning the work and objectives of the National Disaster Risk Reduction Strategies and Plans that will be developed under the Sendai Framework with the future SDG implementation strategies to be set by the governments.

On reporting and accountability mechanisms, the High-level Political Forum on Sustainable Development (HLPF) offers an opportunity for Member States to build coherence in the monitoring and reporting of the SDGs and the Sendai Framework. This includes, inter alia, through thematic reviews, peer reviews, and special sessions.

(iv) Co-benefit partnerships

The 2030 Agenda for Sustainable Development encourages a revitalized global partnership echoing the inclusive and all-of-society approach called for in the Sendai Framework, which promotes building disaster risk reduction partnerships across sectors and stakeholders to meet the post-2015 international agreements. The 2015 processes have engaged civil society, the private sector and science in joint efforts to identify solutions and have created new opportunities for multi-stakeholder partnerships. Throughout the processes, stakeholders have been challenged to articulate, with greater specificity, how various stakeholders can support implementation. The cross-fertilization between stakeholders working in disaster risk reduction, sustainable development and climate change has helped to reinforce coherence among the international instruments. Implementation of the Sendai Framework and the 2030 Agenda for Sustainable Development will be strengthened and accelerated if these exchanges continue and new partnerships are actively nurtured.

Conclusion

This paper underlines that reducing disaster risk and building resilience are core aspects of the 2030 Agenda for Sustainable Development, directly and indirectly reflected across the outcome document. It is evident that increasing disaster risks present an immense challenge to the success of the outcome document particularly the SDGs and target actions, but at the same time the application of disaster risk reduction measures and building resilience offers a strategic opportunity to ensure its success. Unless disaster risks are effectively managed, increasing disaster loss and impacts will continue to undermine efforts to reduce poverty and achieve sustainable development.

The Sendai Framework will have an important role in the implementation and achievement of the 2030 Agenda for Sustainable Development and vice versa. Both have the capacity to shape public and private sector efforts and build partnerships to address the underlying drivers of risk and future levels of risk and resilience if implementation is concerted. Moreover, ongoing discussions to develop the indicators framework for both the outcome document and the Sendai Framework need to be coherent to ensure and demonstrate how progress and achievements can mutually contribute to each other.

Annex 1: Disaster Risk Reduction Targets in SDGs[2]

Sustainable Development Goal	Related disaster risk reduction target	Suggested indicators included in the list of 11 Aug compiled by UNDESA for SDG-IAEG consultations
Goal 1: End poverty in all its forms everywhere	*Target 1.5: By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extremes and other economic, social and environmental shocks and disasters*	• *Number of deaths, missing and affected people due to hazardous events per 100,000 (Sendai Framework Target (a) and (b))* • *Direct economic loss due to hazardous events in relation to global gross domestic product. (Sendai Framework Target (c))*
Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture	*Target 2.4: By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that held maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.*	• *Direct agricultural loss due to hazardous events*
Goal 3: Ensure healthy lives and promote well-being for all at all ages	*Target 3.d: Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks.*	
Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	*Target 4.7: By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.*	
	Target 4.a: Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all.	• *Number of safe educational facilities*
Goal 6: Ensure availability and sustainable management of water and sanitation for all.	*Target 6.6: By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.*	
Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	*Target 9.1: Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with focus on affordable and equitable access for all.*	• *Damage to critical infrastructure due to hazardous events (Sendai Framework Target (d))* • *Number of countries that adopt and implement critical infrastructure protection plan*

[2] United Nations, General Assembly, *Transforming Our World: The 2030 Agenda for Sustainable Development,* A/69/L.85 (12 August 2015). Available at: www.un.org

	Target 9.a: Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island development states.	
Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable	*Target 11.1: By 2030, ensure access for all to adequate, safe and affordable and basic services and upgrade slums.*	
	Target 11.3: By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries.	
	Target 11.4: Strengthen efforts to protect and safeguard the world's cultural and natural heritage	
	Target 11.5: By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations.	• *Number of deaths, missing and affected people due to hazardous events per 100,000 (Sendai Framework Target (a) and (b))* • *Direct economic loss due to hazardous events in relation to global gross domestic product. (Sendai Framework Target (c))*
	Target 11.b: By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels	• *Percentage of local governments that adopt and implement local DRR strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030 (Sendai Framework Target (e))*
	Target 11.c: Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials.	
Goal 13. Take urgent action to combat climate change and its impacts	*Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries*	• *Number of deaths, missing and affected people due to hazardous events per 100,000 (Sendai Framework Target (a) and (b))* • *Direct economic loss due to hazardous events in relation to global gross domestic product (Sendai Framework Target (c))*
	Target 13.2 Integrate climate change measures into national policies, strategies and planning.	• *Number of countries that adopt and implement national DRR strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030 (Sendai framework Target (e))* • *Number of countries that integrate climate and disaster risk into development planning*

	Target 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.	• *Number of countries that have multi-hazard early warning system(Sendai Framework Target (g))* • *Number of countries that have multi-hazard national risk assessment with results in an accessible, understandable and usable format for stakeholders and people (Sendai Framework Target (g))*
	Target 13.a Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible.	
	Target 13.b Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries, including focusing on women, youth and local and marginalized communities.	
Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development	*Target 14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans*	• *Number of deaths, missing and affected people due to hazardous events per 100,000.(Sendai Framework Target (a) and (b))* • *Direct economic loss due to hazardous events in relation to global gross domestic product. (Sendai Framework Target (c))*
Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	*Target 15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.*	
	Target 15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.	
	Target 15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world	• *Direct agricultural loss due to hazardous events* • *Number of countries that have multi-hazard early warning system (Sendai Framework Target (g))* • *Number of countries that have multi-hazard national risk assessment with results in an accessible, understandable and usable format for stakeholders and people(Sendai Framework Target (g))*
	Target 15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for	

	sustainable development.	
	Target 15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts.	

Annex 2: Sendai Framework's seven global targets[3]

To support the assessment of global progress in achieving the outcome and goal of the Sendai Framework, seven global targets have been agreed. These targets will be measures at the global level and will be complemented by work to develop appropriate indicators. National targets and indicators will contribute to the achievement of the outcome and goal of the present Framework. The seven global targets are:

(a) Substantially reduce global disaster mortality by 2030, aiming to lower the average per 100,000 global mortality rate in the decade 2020–2030 compared to the period 2005– 2015;

(b) Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 in the decade 2020–2030 compared to the period 2005–2015;

(c) Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030;

(d) Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030;

(e) Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020;

(f) Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of the present Framework by 2030;

(g) Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030.

[3] United Nations, General Assembly, *Sendai Framework for Disaster Risk Reduction 2015-2030,* A/RES/69/283, (23 June 2015) Available at: www.un.org

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