

Environmental Dimension of Disaster Risk

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Overview

As outlined in the Hyogo Framework for Action priority 4: '*Reduce the Underlying Risk Factors*', healthy ecosystems and environmental management are considered key actions in Disaster Risk Reduction (DRR). Although the field of disaster risk management has evolved to recognize the need for addressing sustainable development issues for reducing risk, the environmental dimension has not received adequate attention.

It has been increasingly recognized that increase in frequency, scale and impact of hydro-meteorological disasters is the result of climate change. The underlying risk factors of disaster are increasing with increased number of people living in vulnerable areas, such as low lying coastal areas, steep hillsides, flood plains, or in forested areas on the outskirts of cities, most often out of necessity. Natural disasters can have huge environmental impacts, even when human communities are relatively not much affected or unaffected at times. Environmental degradation leads to reduced capacity of ecosystems to meet the people's need, and to protect them from hazards. The vulnerable communities affected by reoccurring disasters are mostly dependent on natural resources for their livelihoods, and thus the appropriate management of ecosystems becomes crucial for the people's ability to prevent, cope up with, and recover from disasters. Acting as physical buffers to reduce the impact of natural hazards, such as landslides, flooding, avalanches and storm surges, well managed ecosystems reduce vulnerability to hazards by supporting livelihoods.

Environment and Disaster – Linkage

Disasters are driven by and contribute to environmental change and degradation. Environmental degradation is one of the underlying causes of disaster risk. Better environmental management can effectively support disaster risk reduction, post-disaster response and environmental and humanitarian recovery efforts. Disasters are traditionally defined by their impacts on humans. Taking the perspective that the environment provides a vital resource base for human survival, it means that without environmental well-being, we cannot have human well-being. Thus, disaster impacts on the environment also lead to disasters for humans. Environmental protection as a component of sustainable development is imperative with the prevention and mitigation of disasters. Changes in temperature and related local rainfall variations affect the environment through accelerated desertification, land degradation, the availability of water resources as well

as reducing the overall agricultural output. In addition, climate change is expected to affect sea levels and cause weather extremes. All these factors have a compounding effect on the occurrence and impact of disasters.

Natural resource exploitation, urban development and environmental degradation directly affect risk. The degradation of mangrove forests significantly impairs their important functions such as shoreline stabilization and storm protection. The coastal forests become too degraded to absorb the energy of coastal storms, thereby increasing the flood and storm risks in the coastal zone. Changes in weather intensities, hydrology, and sea level induced by climate change have increased the risk. The loss of ecosystem services, the benefits that people derive from ecosystems, further increases the vulnerability of vast populations in densely populated coastal areas and flood plains. On the other hand, the consequences of disasters can be devastating for aquatic and land-based ecosystems. While urban infrastructure may reduce disaster risk, in many cities where drainage, drinking water, sanitation and solid waste management are inadequate, they compound the risk.

The economically deprived and vulnerable communities are most affected by climate-related disaster. As per World Disaster Report 2020, the number of climate and weather-related disasters has increased nearly 35 percent since the 1990s.

It is important to look at the impact of disasters on the environment, as damage to environmental resources affects the environmental sustainability and poses challenges in achieving the Millennium Development Goal 7 '*Ensuring Environmental Sustainability*'. Natural disasters are one of the factors directly causing environmental degradation. Natural disasters impair the resiliency of natural systems to disaster-related impacts. As a consequence, natural systems are left poorer. Several disasters in recent past highlighted the intrinsic environment disaster linkage not only in developing countries, but also in the context of developed countries such as Japan, USA, and Europe.

Conclusion

The situation warrants for building capacity of vulnerable communities through awareness on environmental and climate risks to which disaster-hit communities are exposed, and requirements of climate-resilient infrastructure/reconstruction. Environmental concerns should necessarily be integrated into DRR strategies at both local and national levels. Thus, mainstreaming disaster risk and ecosystem management in development planning will make major contribution to the goal of achieving sustainable development and secure livelihoods particularly for the economically deprived and vulnerable communities.