

Protected areas, natural hazards and disaster recovery

Draft Message from WG1 on Natural Disasters and Protected Areas

The number of people affected by disasters is increasing. Almost half the world's population has lived through a disaster at some point in the past decade. Of those affected by disaster, it is now estimated that more people are affected by natural hazards than by warfare and conflict¹. Climate change and its impact on extreme weather patterns has focused much attention on the increasing frequency and severity of disaster caused by natural hazards. The number of geophysical disasters: earthquakes, tsunamis and volcanic eruptions have remained steady, however, the number of climate-related disasters: including droughts, windstorms and floods is increasing steadily. Floods, hurricanes and droughts have increased dramatically over the last 20 years. From 1987 to 1998, the average number of climate-related disasters was 195. From 2000 to 2006, the average was 365, representing an increase of 87 per cent. Today, more than 70 per cent of disasters are related to changing weather.²

UNISDR, the United Nations Office for Disaster Risk, is the focal point in the UN system for disaster risk reduction. Established as the Secretariat of the International Strategy for Disaster Reduction in 1999, UNISDR is also tasked to coordinate the implementation of the 'Hyogo Framework for Action 2005-15', the international blueprint on disaster risk reduction.³

A disaster may be defined as *"a serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceeds the ability of the affected community or society to cope using its own resources"* or put more simply *"aspects of the physical world that have the potential to cause considerable harm to people."* UNISDR note that, strictly speaking there is no such thing as a natural disaster, but there are natural hazards such as cyclones and earthquakes....a disaster takes place when a community is affected by a hazard...in other words the impact of the disaster is determined by the extent of the community's vulnerability to the hazard.⁴

Natural hazards may be classified into six types: biological, geophysical, meteorological, hydrological, climatological and extra-terrestrial. For the purposes of this guidance on best practice protected area policy and management the focus is on those disasters most common in Asia and most commonly associated with protected areas: earthquakes; volcanic eruptions; land and mudslides; floods; glacial lake outbursts; tsunamis; fire; drought and desertification; storm events including typhoons and storm surges in coastal areas; and extreme weather events in high mountains.

Asia as a region has a relatively high number of developing nations. The region's densely populated lowlands, coasts and cities makes it a highly hazard prone environment. UNESCAP's 2013 report on Asia-Pacific resilience to natural disaster states that *"Asia and the Pacific is the most disaster-prone region of the world. Almost two million people were killed by disasters in the region between 1970 and 2011, representing 75 per cent of global disaster fatalities. A person living in Asia and the Pacific is four times more likely to be affected by (natural) disasters than someone living in Africa, and 25 times more likely than someone living in Europe or North America. In 2011 alone, economic damages and losses from disasters in the region totalled more than \$293 billion."*⁵ Exposure to natural hazards and the damage caused by disasters has become more serious and intense in Asia due to

population growth, urbanization of river courses and coastal areas, and the concentration of land use in areas at high risk of disaster.

There has been a steadily growing awareness backed by mounting evidence that protected areas provide a very wide spectrum of values and benefits to nature and society. These values and benefits have always been there but, in the past, known only to a few and/or not well documented or widely accepted. The WWF and IUCN Arguments for Protection Series⁶ commencing in 2000, assembled a significant body of information on the benefits of protected natural ecosystems and offered compelling evidence that such protection is a justified, cost effective and efficient way of delivering many social, cultural and biological services. It is clear that protected areas play a significant role in human health, water supply, recreation, food security, climate stabilization and disaster mitigation.⁷ With respect to disaster risk reduction the UNISDR acknowledge that *“ecosystem management is a vital component of disaster risk reduction, a management regime to which protected areas can clearly contribute.”*⁸

Disaster Risk Reduction for protected areas: disaster impacts/implications for protected areas themselves

Natural hazards have a direct impact on protected areas themselves. In addition to physical damage during the disaster, degradation from post disaster operations such as debris disposal, overexploitation of services, temporary shelter establishment and spread of invasive species that may have been transferred in relief operations also threaten protected areas. Such factors affect the ecosystem services provided by protected areas which may be critical in assisting communities to recover from the event. Therefore, such areas need disaster risk reduction planning and strategizing to reduce impacts on the area during and after the disaster. Ill prepared protected areas will have less resilience to disasters and likely fail to fulfil their potential to assist in post-disaster recovery efforts.

Disaster Risk Reduction for people, communities and livelihoods: protected areas as buffers against natural hazards

By their very nature, protected areas control land use and provide tenure stability in rapidly changing landscapes. Therefore, properly planned, established and well managed protected areas have proven to be one of the most effective tools we have to maintain natural systems that can shield communities from severe impact. The World Disasters Report, 2012 concludes that the Philippines could shield up to 20 million of its people—about a fifth of its total population—from disasters by improving the protection of its coral reefs, a primary line of defence against coastal hazards, including tsunamis.⁹

Disaster Recovery: role of protected areas in post disaster rehabilitation

As evident from the 2004 Western Indian Ocean (WIO) Tsunami and the 2011 Great East Japan Earthquake protected areas can become an important tool in post disaster reconstruction and healing processes. The Sanriku Fukko Reconstruction National Park initiative in Japan is an example of a specific response using protected areas to aid in the post disaster healing process for both nature and humans. The initiative culminating in 2013 brings together several protected areas in the disaster affected area in cooperation with agricultural, forestry and fisheries interests. This so called “Green Reconstruction” is consistent with Japan’s interconnected forests, rivers and sea philosophy known as Satoyama¹⁰.

Therefore, PARTICIPANTS in the Working Group on *Natural Disasters and Protected Areas* at the 1st Asia Parks Congress, in Sendai, Japan (14- 17 November, 2013) commend to those international organizations, governments, NGOs, CBOs, academic institutions, businesses and donors who influence directly and indirectly the future of protected areas the following set of *best practice protected area policy and management principles*:

Disaster risk reduction and disaster management authorities should recognise, promote and help preserve the contribution of protected areas in all phases of the disaster management cycle (such as risk assessment, risk reduction, relief and reconstruction). Furthermore, protected areas authorities need to establish sound risk management strategies that help preserve the protected area during and after a disaster, and in doing so strengthen its role in contributing to protecting lives and livelihoods. Protected area managers also need to recognise this critical role of protected areas in the planning, establishment and management of new areas.¹¹

Disaster Response: post disaster impacts/implications for PAs

1. Undertake effective and collaborative hazard assessment to identify the risks to protected areas from natural hazards present in the area.
2. Work at land and seascape scale to better understand the underlying factors that exacerbate the impacts of disasters, which can also have dramatic impacts on protected areas. Efforts should be directed at working across sectors and jurisdictions to have a truly integrated approach for risk reduction, landuse planning, development and conservation.
3. Based on the above risk assessment prepare Protected Area Disaster Response Plans¹² that:
 - a) articulate integrated spatial and policy responses to relevant disaster scenarios. Consider issues such as the location and design of park infrastructure, communication and collaboration with stakeholders, interim protection following disasters, pre-emptive area closures; asset insurance, rebuilding of park facilities, ecological restoration, post disaster revenue implications etc;
 - b) ensure that protected area response strategies are consistent with overall management plans and are feasible to implement including identifying sources of emergency support in the form of human and financial resources and equipment;
 - c) develop emergency response plans to allow for rapid responses in times of crisis. Many calamities arrive suddenly and unexpectedly and may catch protected managers unaware;
 - d) ensure that where possible post-disaster relief is planned for so that protected areas can continue to function and be managed whilst explicitly accounting for the needs of affected people. Following the 2004 WIO tsunami many park management staff were killed or injured and park management infrastructure destroyed, leaving no capacity to manage the park in the immediate recovery phase and with no back-up plans to address this this gap from elsewhere;

- e) ensure, where possible, that post-disaster recovery efforts do not irreversibly impact on key protected area values. For example following the 2004 WIO tsunami significant aid arrived to support recovery efforts in and around Laemson National park, Thailand. While this support was welcomed, an increased number of fishing boats was provided by aid relief agencies, which had a longer term negative impact on the governance and viability of fisheries in the area and their capacity to sustain livelihoods.
 - f) Allocate/invest adequate resources to consistently monitor and adapt strategies according to changing circumstances.
4. Adopt IUCN principles of good protected area governance (legitimacy and voice; direction; performance; accountability; and fairness and rights)¹³ when preparing disaster response plans and in executing these. The links between protected areas and people will be thoroughly tested during disaster response. Collaborative approaches are essential as response roles will be shared by multiple institutions.
 5. Implement awareness raising, capacity building/training, educational and research programmes on disaster risk reduction in protected areas.

Disaster Risk Reduction: PAs as buffers against disasters

6. Invest in protected areas as part of disaster prevention/mitigation strategies. Whilst billions of dollars are spent on post disaster rehabilitation relatively little is spent on disaster prevention. Studies have shown that a \$1 investment in risk reduction can save between \$2 and \$10 in disaster response and recovery costs.⁷
7. Recognize and promote the fundamental role that intact forest and coastal vegetation cover plays in reducing disaster risk. Both the area and quality of forest cover are important to moderate impact.
8. Recognize and support the critical role that protected areas can play in mitigating or buffering impact from the following disasters:⁶
 - a) Flooding. Use of protected area systems to disperse floodwaters and maintain natural flooding regimes. For example floodplains act as natural overflow systems; integrated water basin management (IWBM) can restore natural catchment function. In addition the retention of natural forest cover, riparian and coastal estuarine ecosystems can mitigate against flood impacts.
 - b) Landslides, mudslides, avalanches and rock falls. Protected areas which maintain vegetated slopes can assist in stabilizing soil thereby mitigating against these types of disasters. In high mountain systems underlying natural landforms often pack snow in a more stable way that can prevent slippage. Whilst prevailing geology, soils and climatic conditions are significant factors, the protection of vegetation cover can reduce the occurrences of slips and slow them when they do happen.
 - c) Storm surges and coastal erosion defence. Protected areas which conserve reefs, seagrasses, mangrove forests, and saltmarshes can help buffer and filter sudden incursions of seawater from cyclonic, typhoon and tsunami activity. Offshore reef systems act as natural wave energy dissipaters. Undisturbed offshore sand erosion and depositional processes can moderate the impact of extreme weather events.

- d) Drought and desertification. Protected areas can also buffer the impacts of drought and desertification through alleviating grazing pressure on land, providing a reservoir of important stocks of drought resistant species, providing refugia for species under pressure in surrounding landscapes, acting as emergency food stores and/or by maintaining natural groundwater dynamics during times of pressure.
 - e) Fire. Protected areas are often seen as the source of fires, however they can also buffer fires by retaining natural vegetation mosaics which moderate fire behaviour. Natural stocks of fire adapted species will also be replenished in protected areas with natural fire regimes which do not threaten human life and property. Sizable and well-designed protected areas also limit the interface threats to human settlements.
 - f) Glacial lake outbursts floods (GLOFs). Warming processes are triggering the widespread retreat of glaciers in the region's high mountain systems which have led to the formation and rapid growth of many glacial lakes which are vulnerable to outburst flooding causing immense flooding downstream.¹⁴ This downstream threat from GLOFs can be lessened to some extent by well-sited protected areas with the capacity to absorb floodwater surges and protect vulnerable communities. Transboundary protected area cooperation is often critical in forecasting and responding to downstream impacts and to early warning systems for communities.
9. Undertake a programme to build knowledge including actions such as:
- a) documenting information on the role of protected areas in past disaster events to catalyze policy and practice change;
 - b) investing in research to quantify the value of protected areas in disaster mitigation; and
 - c) collecting local knowledge and experience in tried and tested nature-based solutions to disaster risk reduction.
10. Work to reform policy and practice with respect to protected areas and disaster risk reduction including:
- a) building protected area manager capacities in enhancing the role of protected areas in disaster mitigation (risk assessments, hazard profiling, restoration etc);
 - b) foster capacity exchange between protected area managers, disaster risk managers, all levels of government and community interests to build better awareness and response;
 - c) work to integrate planning for protected areas with disaster risk reduction planning; and
 - d) promote stronger support for investment in integrated disaster risk reduction and protected area programmes.

Disaster Recovery: Role of PAs in post disaster rehabilitation

11. Invest in well managed protected area systems to restore natural infrastructure following a disaster. The tendency is to create hardened defence structures, often hard engineering solutions, against future disaster events. Natural infrastructure can be more effective in buffering future disasters and more cost effective than hard engineering solutions, especially in terms of maintenance and considering the many

other benefits (such as livelihoods and recreational values) that natural infrastructure provide.

12. Commit to considering the re-introduction of green spaces that may have been destroyed or removed due to development before the disaster. While the impacts of a disaster can be devastating, it also provides a chance to 'build back better' and greener. Following Hurricane Katrina in the USA, wetlands and swamps are being restored instead of rebuilding of dikes.
13. Engage full and informed community participation in post-disaster recovery programmes. The direct dependency of many local communities on natural resources strongly requires the use of protected areas as part of the recovery process. Many people in Asia have a long tradition and perception of protected areas as a source and succour in times of disaster. Community ownership and clear, negotiated rights of access and benefit during critical times can also ensure that the protected area is not over-exploited in the recovery process.
14. Integrate protected areas into strategies that make people less vulnerable and more resilient to disaster. Protected areas can help individuals and communities better appreciate natural processes, removing the fear of disaster and helping them to quickly bounce back better than ever from impacts. Protected areas can make people aware of the blessings and threats of nature, a very important asset for the Asian pursuit of a life in harmony with nature.
15. Consider the therapeutic and healing role that exposure to nature can have in helping people recover from personal tragedy. Protected areas can be places of spiritual recovery and their perpetuity offers solace to communities which have been touched by disasters. Furthermore, protected areas also help nature heal itself. These areas act as the ecological foundations for broader scale recovery of natural systems that underpin livelihoods.

¹ Christian Aid (2007). *Human Tide: The Real Migration Crisis*. Christian Aid, London.

² Christian Aid: <http://www.christianaid.org.uk/emergencies/prevention/facts.aspx>. Accessed October 2013.

³ HFA (2005) UN framework supporting nations to address DRR: <http://www.unisdr.org/we/coordinate/hfa>. Accessed October 2013.

⁴ UNISDR (2004). *Living with Risk: a Global Review of Disaster Reduction Initiatives*. UN/ISDR, Geneva, Switzerland.

⁵ UNESCAP (2013) *Building Resilience to Natural Disasters and Major Economic Crises*. The Asia-Pacific Gateway for Disaster Risk Management and Development: <http://www.drrgateway.net/>

⁶ WWF/IUCN Arguments for Protection Series cover seven issues linking protected areas to: climate change, drinking water, food supplies, poverty reduction, disaster mitigation, faiths and human health:

http://wwf.panda.org/what_we_do/how_we_work/protected_areas/arguments_for_protection/

⁷ Stolton, S. and Dudley, N. (eds). (2010). *Arguments for protected areas: multiple benefits for conservation and use*. Earthscan London, UK

⁸ UNISDR (2009). *Global Assessment Report on Disaster Reduction*. UN/ISDR, Geneva, Switzerland.

⁹ IFRC (2012). *World Disasters Report 2012*. International Federation of Red Cross and Red Crescent Societies, Geneva, Switzerland
<https://www.ifrc.org/PageFiles/99703/1216800-WDR%202012-EN-LR.pdf>

¹⁰ Ministry of Environment, Japan (2012). *Green Reconstruction: Creating a new National Park*. Tokyo, Japan

¹¹ UNESCO (2007). *Strategy for Reducing Risks from Disasters at World Heritage Properties*. World Heritage Committee-07/31. COM/7.2. Paris France

¹² UNESCO, IUCN, ICOMOS, ICCROM (2010). *Managing Disaster Risks for World Heritage*. UNESCO, Paris, France.

¹³ Borrini-Feyerabend, G. et al. (2013) *Governance of Protected Areas - from understanding to action*. IUCN WCPA in press.