COUNCIL OF EUROPE CONSEIL DE L'EUROPE

Strasbourg, 26 April 2012

EUROPEAN AND MEDITERRANEAN
MAJOR HAZARDS AGREEMENT (EUR-OPA)

Recommendation 2012 - 1 of the Committee of Permanent Correspondents on ecosystem-based disaster risk reduction,

adopted at the 62nd meeting of the Committee of Permanent Correspondents of the European and Mediterranean Major Hazards Agreement (EUR-OPA), Strasbourg, France, 26-27 April 2012

The Committee of Permanent Correspondents of the European and Mediterranean Major Hazards Agreement (EUR-OPA),

A. Recognising the need to explore all possible ways to reduce disaster risk, combining traditional engineering approaches with solutions based on the maintenance or build up of natural infrastructures or buffers capable of reducing risks of flooding, erosion, landslides, snow avalanches, coastal risks and others;

B. Aware that eroded, degraded or badly managed ecosystem may increase the vulnerability of populations, particularly in mountain regions, rivers flood plains and coastal areas and that hazards in those areas may increase with global change, including climate change;

C. Desirous to promote new, cost effective solutions based on natural infrastructures as an alternative or a complement to more classical engineering ones, with the additional advantage of favouring ecological stability, water filtration and storage carbon sequestration, increasing aesthetic and recreational values of the areas treated;

D. Taking note with satisfaction of the report “Ecosystem Approach to DRR : basic concepts and recommendations to governments, with a special focus to Europe” by Dr. K. Sudmeier-Rieux (IUCN Commission on Ecosystem Management), and welcoming the participation of the Agreement in the Partnership for Environment and Disaster Risk Reduction (PEDRR);

Recommend that member States of the European and Mediterranean Major Hazards Agreement (EUR-OPA):

1. Continue to integrate progressively ecosystem-based solutions into national disaster risk reduction policies and practice, favouring as appropriate investment and landscape planning in prevention and long-term strategies that would reduce vulnerability;

2. Pursue the integration of disaster risk reduction into climate change adaptation policies promoting ecosystem-based DRR as a useful approach to help mitigation, protect people, and produce other benefits for populations;

3. Consider taking measures to improve the resilience of communities through ecosystem-based DRR such as those specified in Appendix 1 to this recommendation, and the use of tools and approaches such as those specified in Appendix 2 to this recommendation;

4. Support the efforts of the Agreement to promote ecosystem-based DRR in its Member States mainly through the organisation of specific training and the promotion of ecosystem based DRR in other fora.

Appendix 1

Examples of actions that may be taken by governments to apply ecosystem–based DRR and CCA.

#1. Recognize and promote the multiple functions and services provided by ecosystems at multiple spatial scales.
Ecosystems provide valuable services for hazard protection and regulation, which until now have been under-utilized by European programmes and strategies. Ecosystems serve as natural infrastructure that can reduce physical exposure and buffer energy from physical hazards. However, it is equally important to recognize ecosystems' contributions towards overall human well-being by sustaining rural economies, urban green spaces and strengthening resilience against hazard impacts.

Harnessing the potential of ecosystems for DRR should be based on rigorous understanding of the context-specific, ecological and technical requirements to enhance natural protection and hazard mitigation. Inadequate or ineffective natural buffers and physical structures can create a false sense of security and jeopardize the credibility of ecosystem-based DRR as a whole.

#2. Analyse and promote the cost-effectiveness of ecosystem-based DRR and CCA.
Cost-benefit analyses of ecosystem services for hazard reduction as compared to engineered structures are clearly needed and should be part of spatial planning and any new development projects. Ecosystem valuation studies have clearly shown the value of ecosystems for regulating, provisioning, supporting and cultural services. Yet, there is a lack of economic valuation studies for hazard reduction in Europe to inform decision-making about the benefits and trade-offs between natural and physical infrastructure investments.

#3. Combine investments in ecosystems with other effective DRR strategies as part of a diversified "DRR portfolio".
Investing in ecosystems is not a single solution to disasters but should be used in combination with other risk reduction measures, such as early warning systems and disaster preparedness. Ecosystem thresholds may be surpassed depending on the type and intensity of the hazard event and the health status of the ecosystem, which may provide insufficient buffering against hazard impacts. In some cases, combining ecosystem-based approaches with engineered structures may be necessary to protect critical assets especially in densely population urban areas.

#4. Address both long-term and short-term climate risks with ecosystem-management.
Adopting an ecosystem-based DRR approach can strengthen long-term adaptation to climate variability as well as immediate hazard events. In contrast to degraded ecosystems, well-managed ecosystems are viewed to be more resilient to climate-related risks. Efforts to integrate DRR and ecosystems management should maximize ongoing work on CCA, i.e., through ecosystem-based approaches such as integrated water resource management

#5. Enhance governance capacities for ecosystem-based DRR through multi-sector, multi-disciplinary platforms and especially in spatial planning.
Europe is a leader with regards to progressive legislation on an integrative multi-hazards approach to flooding, spearheading several innovative programmes such as "making space for water", thus a shift towards ecosystem-based DRR is possible through adoption of national policies and legislation promoting natural infrastructure for risk reduction, as already demonstrated by several European countries. Such innovative policies have yet to reach all European countries at the national and local level.

In many cases, appropriate policies and legislation may be in place, but the main problem lies in their enforcement and the lack of political willingness to carry out programmes over the long-term. In order to facilitate cross-sectoral collaboration and stimulate innovative policies, strong multi-sectoral mechanisms or platforms are needed. It is particularly important to develop multi-disciplinary teams and involve people with different technical expertise and knowledge, for instance city engineers and land developers working together with ecologists and disaster management experts. This should apply both at national as well as sub-national levels. Multi-sectoral, multi-disciplinary mechanisms facilitate sharing of available data, help ensure scientific and technical rigour in designing and implementing ecosystem-based DRR initiatives and obtain the political support necessary to integrate them into national and local development plans. However, clear incentives are needed for such mechanisms to build consensus and work effectively.

#6. Create financial incentives for ecosystem-based DRR and CCA.
A strong regulatory framework is certainly a first step for guiding innovative solutions and practices to DRR and CCA but are only effective if coupled with additional innovative financial incentives (e.g., restoration of wetlands may financially compensated, especially if near high risk zones). Risk transfer schemes (i.e. insurance or re-insurance companies) may be possible by investing in natural infrastructure for reducing risk. Another example are Payments for Ecosystem Services, where the value of ecosystems are transferred from consumers to producers (i.e. downstream water consumers pay upstream users for protecting water source). Financial incentives are often required for relocating settlements out of high-risk zones to the benefit of green spaces.

#7. Involve local stakeholders in decision-making to ensure more sustainable solutions.
Local stakeholders clearly have a role to play in promoting risk reduction through sustainable ecosystems management. The EC has recognized the importance of local action (EC 2009b) for the prevention of natural and technological disasters and further action can be taken to incorporate ecosystem management concerns. This involves understanding local livelihood needs and priorities, risk perceptions, local knowledge, and involving local stakeholders in decision-making. Local communities are often direct resource users and their knowledge of local ecosystems can provide critical information in planning successful ecosystem-based DRR initiatives. Raising the awareness of local people by demonstrating the combined livelihoods and risk reduction benefits of ecosystem-based solutions is equally important in winning and sustaining local support.

#8. Utilize existing instruments and tools in ecosystems management and enhance their DRR value.
A variety of tools, instruments and approaches used in ecosystem management (i.e. EIAs, protected area management, community-based natural resource management, integrated forest management) can be readily adopted and applied at country and community levels as part of disaster risk reduction strategies. What is needed is the improved and routine use of disaster risk information (e.g. types of hazards over time and space, socio-economic vulnerability profiles of communities, elements at risk, etc.) in the design of integrated ecosystem approaches to maximize their added value for DRR. For instance, rehabilitation of upland watersheds can be further harnessed for flood mitigation by improved understanding of the local hazards, hydrology, topography as well as socio-economic demands on forest products and the types of indigenous tree species that are best suited for reforestation activities. Also, considerable progress can be made in incorporating risk assessments into spatial planning tools (Greiving et al., 2006) and ecosystem management in Europe.

#9. Link ecosystems-based risk reduction with sustainable livelihoods and development.
Even in Europe, poverty remains an issue and it is usually the poor and vulnerable who are at greatest risk and the least resilient to disasters (i.e. the 2003 heat wave and the elderly). While ecosystem-based disaster reduction should be an integral part of a long-term development

strategy, demonstrating short-term tangible outcomes and benefits especially to communities will be critical to win and maintain stakeholder engagement.

#10. Foster more science - policy - practitioner dialogues

There is still much to be learned about ecosystem services for DRR. More research is needed to better understand the performance thresholds ecosystems and resilience against hazard events and climate change. There is even greater lack of economic valuation studies on the multiple values of ecosystems for hazard reduction. Nonetheless, given the challenges of fully monetizing ecosystem services, there should also be further development and testing of non-economic valuation methodologies. This includes combining evidence-based risk and ecosystem service assessments, such as the RiVAMP project (UNEP, 2010) (See Appendix 2); and interdisciplinary studies that combine local and expert knowledge to measure and quantify the role of ecosystems especially for hazard mitigation. Above all, it is crucial to transmit existing knowledge through guidelines to national and local governments on how to move forward in integrating ecosystem based management with DRR and CCA, which is what this publication is about (modified from Estrella and Saalismaa, 2010).

Appendix 2

Examples of tools and approaches for ecosystem-based DRR and CCA.

This appendix provides an overview of the full range of environmental tools and instruments available that could be used to integrate environmental concerns and ecosystems-based approaches as part of DRR. Most of these tools and approaches have existed for decades but have not often been combined to integrate ecosystem and DRR functions. These tools include the following:

1. **Environmental assessment tools:** Environmental impact assessments (EIAs) and strategic environmental assessments (SEAs) are the best-known tools for undertaking environmental assessments to inform policy, programme or project development. They allow information on social, economic and environmental impacts to be considered, resulting in a much more integrated assessment process. While practical experience remains very limited, EIAs and SEAs are being adapted to analyze disaster risk-related factors associated with the potential threats to and consequences from proposed projects, programmes, plans or policies. Rapid Environmental Assessments (REAs) are generally applied to assess the environmental situation in the aftermath of a disaster and quickly provide data to support decisions, paying close attention to water and sanitation, potable water supplies, solid and disaster debris management, safe handling of hazardous substances, site selection of temporary camps, and procurement of building materials.

2. **Integrated risk and vulnerability assessments:** although there are many risk and vulnerability assessment methodologies, most do not adequately identify the changes to risk and vulnerability that are attributable to ecosystem conditions and environmental change, including climate change. As a result, assessment methodologies often fail to identify critical aspects of risk and vulnerability affected by ecosystem conditions and thus do not sufficiently address environmental risk drivers nor consider ecosystem-based risk reduction options. To fill this gap, UNEP developed the RiVAMP methodology, which integrates ecosystem conditions with data on exposure, vulnerability and hazards (Text box 1).

> The Risk and Vulnerability Assessment Methodology Development Project (RiVAMP) is a methodology, developed in 2010 by the United Nations Environment Programme, which takes into account environmental factors in the analysis of disaster risk and vulnerability. While there are different types of risk and vulnerability assessments, what is new about RiVAMP is that it recognizes ecosystems and climate change in the risk assessment process. The purpose of RiVAMP is to use evidence based, scientific and qualitative research to demonstrate the role of ecosystems in disaster risk reduction, and thus enable policymakers to make better-informed decisions that support sustainable development through improved ecosystems management. In this regard, the targeted end-users of RiVAMP are national and local government decision makers, especially land-use and spatial development planners, as well as key actors in natural resource and disaster management.
> **Source: UNEP, 2010**

Text box 1. Risk and Vulnerability Assessment Methodology Project (RiVAMP) UNEP, 2010.

3. **Spatial planning at regional and local scales:** Spatial planning can draw upon any or all of the above tools and approaches and encompasses comprehensive, coordinated planning at all scales, from national to local, aiming at an efficient and balanced territorial development. Spatial planning operates on the presumption that the conscious integration of sectors such as transport, housing, water management, etc. is likely to be more efficient and effective than uncoordinated programmes in the different sectors (Grieving et al., 2006). Thus, the core element of spatial planning is to prepare and make decisions about future land use, referred

to as land use planning at the local level (Grieving et al, 2006). In order to promote sustainable development, it is indispensable to mitigate hazards, a task where spatial planning can play an important role. Hence according to a 2006 study by Grieving et al., (2006) of spatial planning practices in Europe, risk management aspects play only a minor role in spatial planning decisions: "an integrated planning approach is missing". Spatial planning can be considering the master plan into which ecosystems management can be integrated.

4. Integrated ecosystems management

Common denominators of these approaches is their multi-stakeholder component and focus on dialogue-building for both improved natural resources management and risk reduction.

i. **Integrated water resources management:** Integrated water resource management (IWRM) is a process, which promotes the coordinated development and management of water, land and related resources in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems. In terms of disaster risk reduction, IWRM is relevant for managing both excess water (i.e. flood and landslide mitigation) and water scarcity (i.e. drought management). IWRM approaches can help to build a strong flood mitigation strategy by combining sustainable management of ecosystems (restoration of wetlands, forest and river basin management) with overall land-use planning for the area. It can also be particularly useful in managing transboundary river basins and watersheds, such as in the case of the Alpenrhein River that runs through Switzerland, Austria and Lichtenstein.

ii. **Integrated coastal zone management:** In coastal areas, integrated coastal zone management (ICZM) (also, 'integrated coastal area management' - ICAM) provides a multi-sectoral framework for the sustainable management of coastal zones and resources. It considers fragility of coastal ecosystems, the entire spectrum of cross-sectoral uses, their impacts and the trade-offs needed to ensure sustainable development. In Europe there is a move towards integrated coastal zone management (i.e. beach nourishment using dune grasses, and U.K., through a realignment of coastal wetlands to buffer coastal wave energy) (DEFRA, 2005; Deltacommissie, 2008).

iii. **Integrated fire management:** Enhances capacities to address wildfire hazards together with other social, economic and ecological sustainability concerns in a given area. In the South Caucasus countries Armenia, Azerbaijan and Georgia, fire management practices are introduced to build the social and ecological resilience of local communities (see case study on fire management in the South Caucasus) (Goldammer, 2010). Several countries in Europe are using prescribed burning both for decreasing wildfire hazards and for biodiversity and forest management objectives, and there is growing interest for better use and integration of traditional fire use and management.

iv. **Protected area management:** Protected areas encompass a wide range of ecological spaces and include national parks, nature reserves, wilderness areas, wildlife areas, protected landscapes as well as community conserved areas, with differing governance systems. Over 120,000 designated protected areas now cover approximately 13.9 percent of the Earth's land area. Marine protected areas cover 5.9 percent of territorial seas and 0.5 percent of the high seas and are gradually increasing in number and size. Although protected areas are expanding globally, under-protection and significant encroachment of protected areas are leaving many sites extremely exposed and vulnerable to hazards. Protected area professionals

therefore need to consider the added value of protected areas for disaster prevention and mitigation when planning, managing and advocating for protection (Dudley et al., 2009).

v. **Community-based Ecosystem and Disaster Risk Management:** Although in Europe, responsibility for risk has mainly been transferred from individuals to government agencies and insurance companies, local people are still first on site during a hazard event before search and rescue teams arrive. Especially in rural areas of Europe, local populations still possess a wealth of traditional knowledge both on ecosystem management and disaster risk reduction. Studies demonstrate that even in wealthy countries, disaster risk reduction strategies are much more effective when involving communities in both community based sustainable natural resources management and disaster risk management (Kuhlicke et al., 2011). Examples include community participation in maintaining protection forests, coastal protection, keeping waterways clean of debris, or maintaining terraces on steep slopes.