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**Review of the implementation of OSCE commitments in the field of Disaster
Risk Reduction**

22ND OSCE ECONOMIC AND ENVIRONMENTAL FORUM
**“Responding to environmental challenges with a view to promoting
co-operation and security in the OSCE area”**

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Abbreviations Used

APEC	Asia-Pacific Economic Forum
BCPR	Bureau of Crisis Prevention and Recovery
BSEC	Organization of the Black Sea Economic Co-operation
CA	Central Asia
CA-CRM	Central Asian Multi-Country Programme on Climate Risk Management
CCA	Climate Change Adaptation
CAREC	Central Asia Regional Economic Co-operation
CARRA	Central Asia Regional Risk Assessment
CBDRR	Community Based Disaster Risk Reduction
CSOs	Civil Society Organizations
CoE	Council of Europe
CoP	Conference of the Parties
CSCE	Conference on Security and Co-operation in Europe
DPPISEE	Disaster Preparedness and Prevention Initiative in South East Europe
DRR	Disaster risk reduction
EADRCC	Euro-Atlantic Disaster Response Co-ordination Centre
ECHO	European Commission's Office of Humanitarian Aid and Civil Protection
EEA	European Environment Agency
EFTA	European Free Trade Association
ENVSEC	Environment and Security Initiative
EM-DAT	Centre for Research on the Epidemiology of Disasters (CRED) - Emergency Events Database
EU	European Union
GAR	Global Assessment Report on Disaster Risk Reduction
GFDRR	Global Forum for Disaster Risk Reduction
GFMC	Global Fire Monitoring Center
HDR	Human Development Report
HFA	Hyogo Framework for Action
HFA2	Post-2015 Framework for Disaster Risk Reduction

IAEA	International Atomic Energy Agency
JRC	European, Joint Research Centre
MC	Ministerial Council
MDG	Millennium Development Goals
NATO	North Atlantic Treaty Organization
NGOs	Nongovernmental Organizations
OAS	Organization of American States
OCEEA	Office of the Co-ordinator of OSCE Economic and Environmental Activities
OSCE	Organization for Security and Co-operation in Europe
PAHO	Pan-American Health Organization
PDNA	Post Disaster Needs Assessment
PEIC	Public Environmental Information Centre
PGA	Peak Ground Acceleration
REC	Regional Environmental Centre for Central and Eastern Europe
SARS	severe acute respiratory syndrome
SDG	Sustainable Development Goals
SEECF	South East European Co-operation Process
SEEDRMAP	South Eastern Europe Disaster Risk Mitigation and Adaptation Programme
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNISDR	United Nations Office for Disaster Risk Reduction
UNSPIDER	United Nations Platform for Space-based Information for Disaster Management and Emergency Response
UNOCHA	United Nations Organization for Co-ordination of Humanitarian Affairs
WHO	World Health Organization

EXECUTIVE SUMMARY

Disasters are posing a great challenge to mankind. In recent years, frequency and intensity of disasters have increased, putting pressure on national economies and creating hardship, distress and displacement of the affected people. The OSCE area is highly prone to disasters like earthquakes, floods, droughts, storms, heat waves, forest fires etc., which affected more than 76 million people during the last 25 years. According to analysis of data from 1990 to 2014, storms (34%) and floods (31%) are the most frequently occurring natural disasters in the OSCE area.

- Floods (35%) and storms (29%) followed by drought (19%) affected the maximum number of people in this area.
- Earthquakes (54%), floods (26%) and storm (16%) have resulted in making maximum number of people homeless.
- Extreme temperature events have resulted in maximum deaths (141,251 people, 77%) in the OSCE area.
- Storms are the costliest natural disaster faced in the OSCE area, which had resulted in 62% of total damages occurred due to natural disasters. Overall, disasters have caused huge economic losses (about USD 1.03 trillion) to the OSCE participating States over the last 25 years.

Disaster risk is spread unevenly throughout the OSCE area and natural hazards result in different impacts due to vulnerability and capacity levels. While some areas experience more casualties, others experience higher financial losses.

Urban areas are vulnerable due to inappropriate land use planning, uncontrolled urbanization, and lack of capacity or awareness of respective authorities for disaster-resilient urban planning. Location of economic activities and high concentration of population put many urban areas of the OSCE area at higher risk from disasters of geological and hydro-meteorological origins. These disasters also pose significant challenge to agriculture, businesses, infrastructure and service sectors. Most of the natural hazards and man-made risks in the OSCE region have trans-boundary nature. Environmental degradation and disasters, including small scale and slow-onset disasters, could be potential contributors to conflicts.

Hydro-meteorological disasters, thus those related to water and climate, represent the predominant hazard type in the OSCE area. The impact of climate change is going to enhance the frequency and intensity of such events, making these hazards even more critical and posing a serious security challenge. Climate change is going to have far reaching consequences on ecology, hydrology and water resources and coastal areas of the participating States of the OSCE. Climate change will not only be manifested in specific sectors as a slow onset process, it

will aggravate the negative impact caused by extreme disaster events, which will not only put tremendous stress on physical infrastructure but also lead to migration of people. Major impacts of climate change in the OSCE area will be observed on food security and sectors like water, agriculture and energy, often intensifying existing social, economic, physical and environmental vulnerabilities. The repercussions of climate change on human health, settlements (both urban and rural), food production, industry, energy and infrastructure are going to have critical bearing on security

On the international level, the importance of resilience to natural disasters is addressed in several ongoing processes, such as the post-2015 development agenda, the climate change negotiations, and, most importantly, the post-2015 framework for disaster risk reduction. In 2015, we expect the adoption of the Sustainable Development Goals (SDG) and of the *International Framework for DRR (HFA 2)* at the 3rd World Conference on Disaster Risk Reduction (WCDRR); and the 21st Conference of the Parties to the UNFCCC will be held. Despite the fact that the HFA 2, the SDG and UN FCCC COP 21 are conceptually and procedurally separate processes, important complementarities exist, as all of them are targeting and working towards achieving sustainable human development, achievements of which are to be protected from destructive impacts of disasters, conflicts and other disturbances alike. The OSCE has an opportunity to contribute significantly to the post-2015 development agenda and HFA 2 by adopting a proactive approach towards DRR and climate change adaptation (CCA).

One of the most practical and effective ways of engaging in DRR is to start working at community level. The local level capacities usually are the most neglected and under-developed, which makes it the most needed area of intervention. The *Community Based Disaster Risk Reduction (CBDRR)* approach helps to build safer and resilient communities at local level - one of the major challenges faced by the participating States.

The OSCE participating States have recognized the linkages between security, environment, and disasters already in the Helsinki Final Act and back in 1992 with the Helsinki Document for the first time called for co-ordinated approaches regarding natural disasters and emergencies. Since then, participating States have adopted a number of commitments which primarily aim for enhancing the co-ordination and co-operation in this field among the participating States at all levels. Several OSCE Ministerial Declarations and Ministerial Decisions made specific references to natural and man-made disasters, including industrial accidents.

Participating States are engaged in numerous regional and sub-regional mechanisms that have provisions to enhance co-ordination, co-operation and capacities in DRR. On national level, the OSCE participating States, in their efforts to implement the Hyogo Framework for Action, have since 2005 significantly improved their national co-ordination mechanisms and preparedness activities for disasters.

Based on their respective mandates and the guidance provided by the political OSCE documents, the OSCE Executive Structures have been supporting these endeavours of participating States

through the implementation of a number of projects, i.a. through the ENVSEC Initiative, addressing security-related aspects of disaster risks such as floods and wildfires, and also supporting multilateral environmental agreements. ENVSEC as a partnership of OSCE, UNDP, UNEP, UNECE, REC and NATO as an associated member is playing a critical role in raising awareness, promoting co-operation, and building capacity for natural resource management, risk reduction from hazardous substances, and climate change adaptation. The Aarhus Centres are addressing environment and security related challenges at local level. These centres have a great potential to work towards strengthening the community based disaster risk reduction in their respective countries and sub-regionally.

In order to strengthen the efforts of participating States and the OSCE in responding to environmental challenges, the following recommendations are given:

Recommendation #1: Systematic institutionalized co-operation between the OSCE participating States on disaster risk reduction

Recommendation #2: The OSCE should co-ordinate its activities on disaster risk reduction with other international and regional organizations active in this field taking into account the added value of the OSCE's comprehensive approach to security and regional coverage and should further strengthen its engagement in ENVSEC as a robust mechanism for co-ordination and co-operation among international organizations.

Recommendation #3: The OSCE to engage with UNDP and other partners in reducing the risk and improving the security aspect around Uranium Tailings in Central Asia

Recommendation #4: The OSCE could explore possibilities of joining the CADRI inter-agency DRR capacity assessment platform

Recommendation #5: The OSCE could encourage participating States to establish and/or strengthen the national multi-stakeholder co-ordination mechanisms for disaster risk reduction while providing participating States with support in such endeavors, including through joint efforts with other international organizations

Recommendation #6: The OSCE could institutionalise its position on DRR and CCA by developing the organization's position paper to address disaster risk reduction and climate change adaptation

Recommendation #7: The OSCE could further integrate DRR into the organization's work by mainstreaming DRR in relevant projects and activities and by recruitment of DRR practitioners

Recommendation #8: The OSCE should explore possibilities for practical engagement in the work on DRR capacity development for the CACDRRR, as well as other regional and sub-regional operational and information networks

Recommendation #9: *the OSCE could advocate for inclusion of DRR considerations in the work of government agencies and the private sector*

Recommendation #10: *The OSCE should consider more substantial and regular engagement into the local-level work on DRR through, inter alia, strengthening of the respective capacities of Aarhus Centres and the CASE NGO Small Grants Programme*

Recommendation #11: *The OSCE could consider substantial and sustainable engagement with global DRR Stakeholders to contribute a security perspective to the shaping of global DRR Agenda, such as HFA 2, DRR Indicators for SDGs, DRR Political Champions Process.*

1. DISASTER RISK MANAGEMENT IN THE OSCE AREA

1.1 Disaster Risk Profile of the OSCE Area

Large regions of the world are susceptible to natural disasters and are becoming increasingly vulnerable, posing greater security challenges to nations. Records show that disasters have been increasing both in terms of frequency and severity¹. Disasters are caused not only by natural hazards but also through the human interference with the environment. The impact of disasters does not depend only on the force with which it strikes, but the way it is received and felt is equally important.

The frequent repetition of disasters means a constant pressure on the economy of nations. Most of the disaster problems are essentially the unsolved development problems. The problem of disasters cannot be approached in isolation, as it is an issue of coping capacity of the system, prevailing environmental conditions and process of development. There is no ready-made solution to disaster problems. Many developed countries like the United States and Japan have also suffered from severe disasters in the recent past. However, these countries are able to mitigate the impact of impending disaster up to a certain extent by adopting an integrated approach to disaster risk reduction through regional development planning with community participation.

At the same time the losses imposed due to natural disasters neutralize real economic growth gained over several years. High population density, ill planned and/or unplanned development activities along with the changing climatic conditions are the major source of disasters events.

Natural disasters pose a great security challenge. In the recent past, disasters like the Indian Ocean tsunami, Haiti earthquake, Pakistan floods and Japan triple disaster etc. not only resulted in large number of deaths but also resulted in displacing large number of people from their native places. Such events also have potential to continue to affect economic and social progress years after they have occurred causing long term impact on the affected areas. The death, displacement of people, hindrance to economic and social progress caused tremendous miseries to the affected people. At the same time, such events also pose a serious challenge to the peace, stability and security of the affected areas.

Many of the participating States are impacted by a number of disasters that are taking place in the OSCE area causing hardship to the people and causing damages of worth of millions of USD. Since the beginning of 1990, according to the EM-DAT database, 182,075 people have lost their lives in 2179 natural disaster events causing a total loss of USD 1.03 trillion in the OSCE² area.

¹ Munich re

² Excluding Andorra, Holy See, Malta, Liechtenstein, Monaco and San Marino

Results for occurrences, deaths due to natural disasters, homeless population, affected population and total damages in the OSCE area have been depicted in the following figures.

Table 1: Damages due to Natural Disasters in the OSCE³ Area 1990-2014

Disaster Type	Occurrence	Deaths	Affected	Homeless	Total Affected	Total Damage USD (,000)
Drought	51	2	13,688,769	0	14,681,769	59,968,309
Earthquake	147	23,057	631,465	1,437,678	6,185,738	91,053,009
Epidemic	68	1,063	215,257	0	623,528	0
Extreme temperature	254	141,251	3,967,988	0	4,010,331	2,8263,351
Flood	670	5,442	10,236,685	684,789	26,542,413	176,898,172
Wet Mass Movement	63	1,907	110,645	78,061	199,714	1,618,089
Storm	754	8375	8,968,705	415,530	22,083,377	635,432,289
Wildfire	158	551	1,291,089	34,866	2,183,457	33,041,911
Others ⁴	14	427	8,819	400	10,219	22,200
Total	2,179	182,075	39,119,422	2,651,324	76,520,546	1.03 trill.

Source: EM-DAT

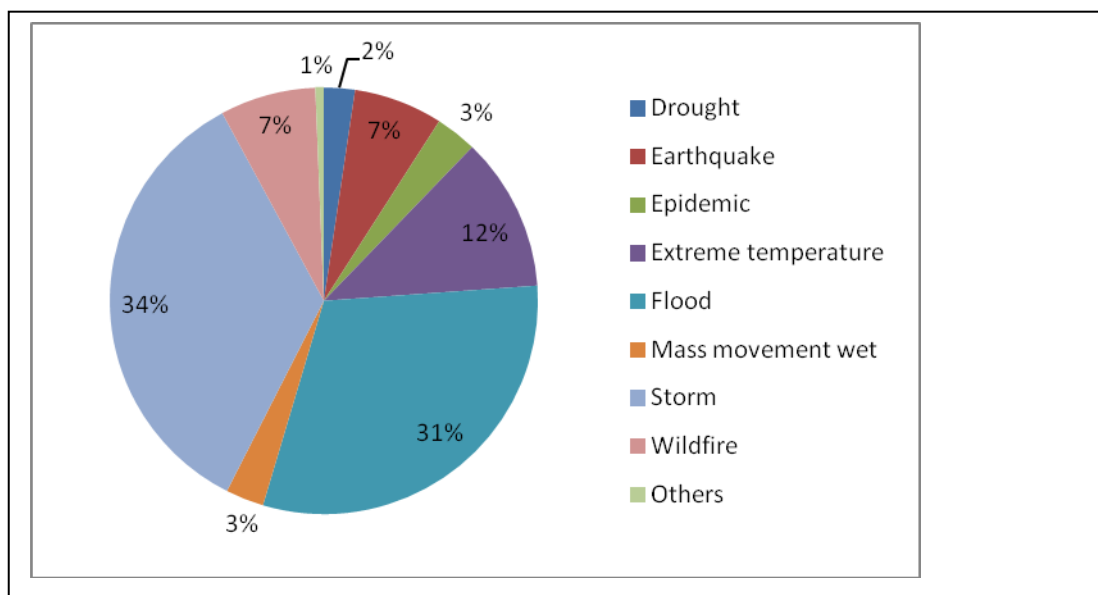


Figure 1: Occurrences of Natural Disasters in the OSCE Area (1990-2014)

Source: EM-DAT

³ Excluding Andorra, Holy See, Malta, Liechtenstein, Monaco and San Marino

⁴ Including mass movement dry, volcano and insect infestation

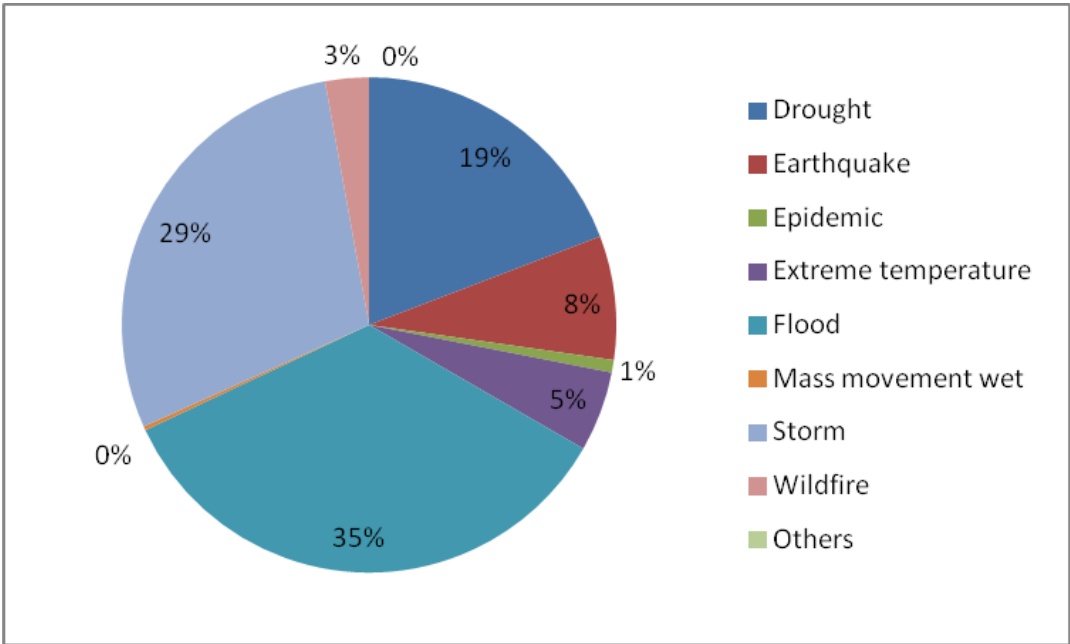


Figure 2: Total Affected Population due to Natural Disasters in the OSCE Area (1990-2014)
 Source: EM-DAT

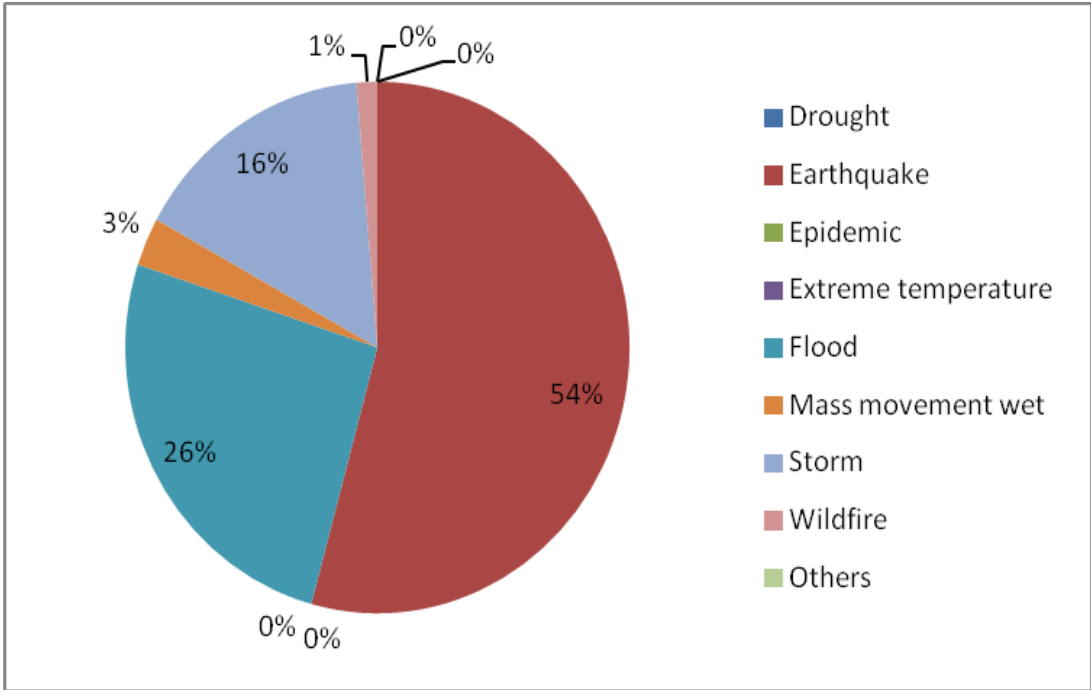


Figure 3: Homelessness due to Natural Disasters in the OSCE Area (1990-2014)
 Source: EM - DAT

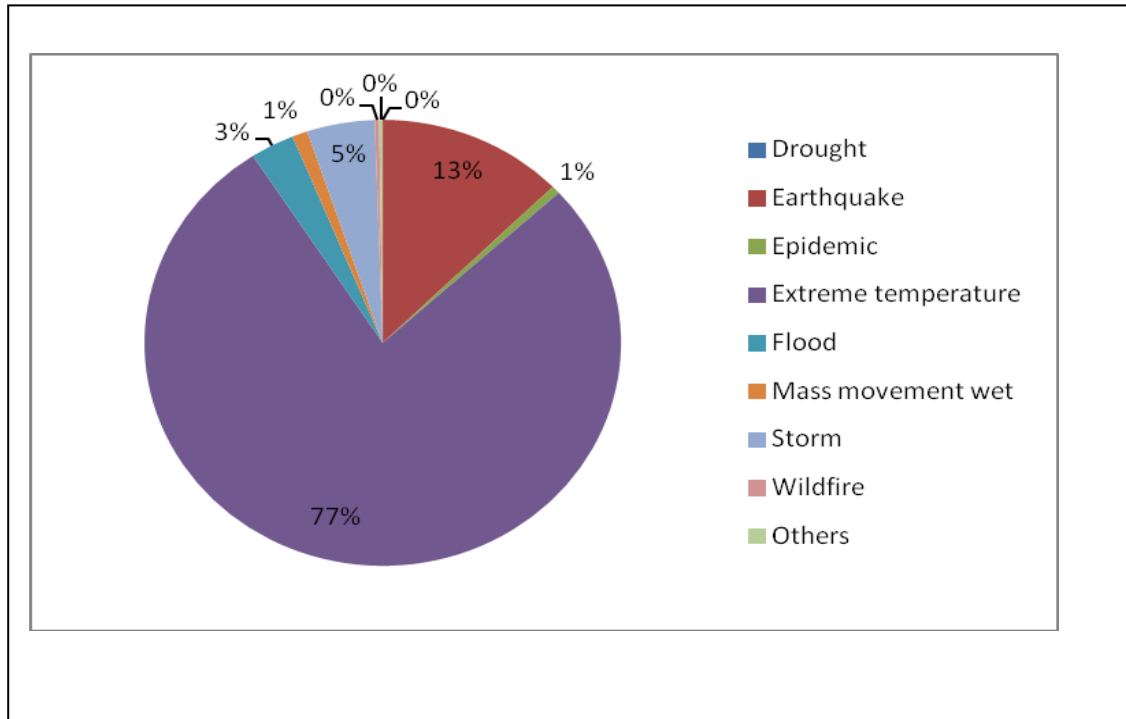


Figure 4: Deaths due to Natural Disasters in the OSCE Area (1990 – 2014)
 Source: EM- DAT

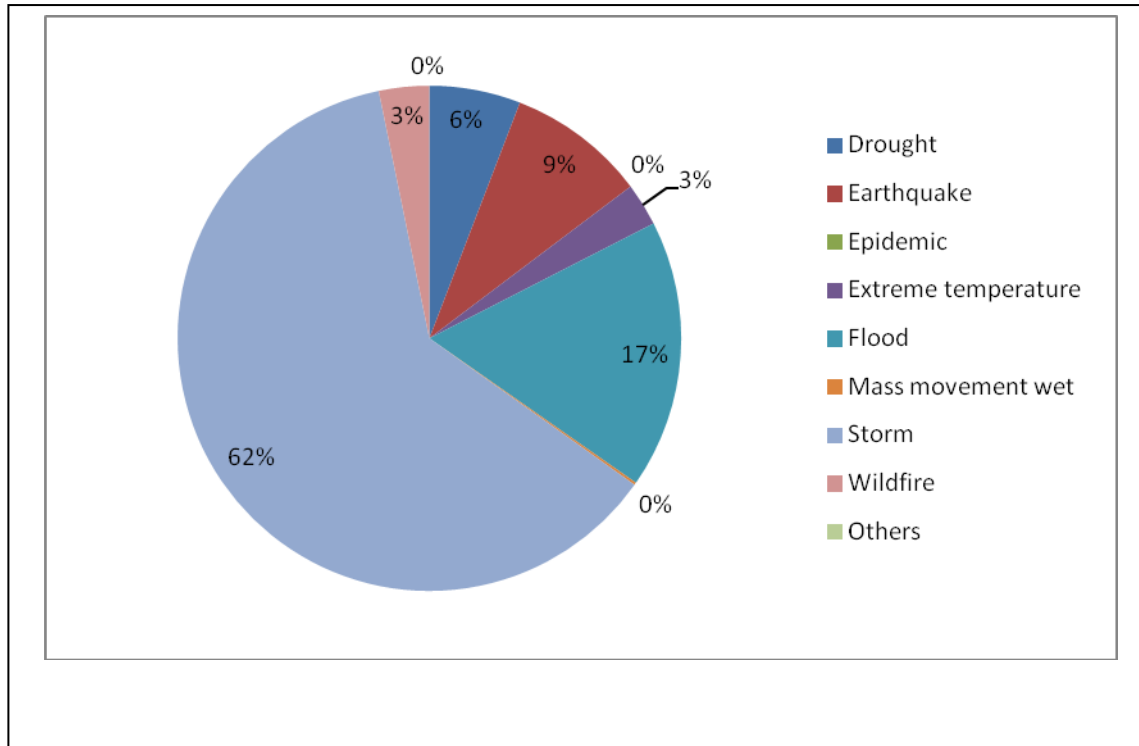


Figure 5: Total Damage in the OSCE Area due to Natural Disasters (1990- 2014)
 Source: EM - DAT

From the analysis of the data presented in table 1, (as represented in figures 1-5), it is clear that during the last twenty-five years (1990-2014):

- Storms (34%) and floods (31%) are the most frequently occurring natural disasters in the OSCE area.
- Floods (35%) and storms (29%) followed by drought (19%) affected the maximum number of people in this area
- Earthquakes (54%), floods (26%) and storm (16%) have resulted in making maximum number of people homeless
- Extreme temperature events have resulted in maximum deaths (77%) in the OSCE area
- Storms are the costliest natural disaster faced by this area, which had resulted in 62% of total damages occurred due to natural disasters.

It may be concluded that the disasters of hydro-meteorological origin are the predominant hazard faced by the OSCE area. The impact of climate change is making these hazards even more critical for the communities, posing a serious security challenge as it is going to enhance the frequency and intensity of such events. At the same time, climate change will trigger extreme events resulting in severe losses and hardship to the affected communities. This fact highlights the need for a proactive approach for integration of disaster risk reduction and climate change adaptation at local level.

1.2 Prevailing Disasters in the OSCE Area

Prevailing disasters in the OSCE area can be grouped into the following categories based on their origin.

- *Geologically Related Disasters* are defined as natural earth processes or phenomena that include internal earth processes of tectonic origin as well as external processes. Earthquakes, Tsunamis, Landslides, Mudflows, Sea Erosion etc. fall under this category.
- *Water and Climate (Hydro-meteorological origin) Related Disasters* are natural processes or phenomena of an atmospheric, hydrological or oceanographic nature. Hazards like floods, droughts, cyclones, tornadoes, hurricanes, cloudburst, snowing, heat & cold waves etc. fall under this category.
- *Biologically Related Disasters* are processes of organic origin or those conveyed by biological vectors, including exposure to pathogenic microorganisms, toxins and bioactive substances. Biological Disasters, Epidemics, Cattle Epidemics are few examples of this category.

- *Technological Disasters* - *Chemical, industrial and nuclear related disasters* are originated due to processes in chemical, industrial and nuclear plants leading to accidents. Other disasters in this category include oil spill fires, mine accidents, dam failure etc.
- *Accidents Related Disasters* are manifestation emerging due to accidents in Road, Rail and other Transportation related activities.
- *Forest Fires* are uncontrolled burning fires, usually in wildlands, which can cause damage to forestry, agriculture, infrastructure and buildings⁵

The OSCE area is highly prone to disasters of all origins as mentioned earlier. Their impact is felt almost in all participating States. A brief description of prominent events taking place in the OSCE area will be described in the following chapter.

1.2.1 Geological Disasters

Earthquakes

The OSCE area is highly prone to earthquake hazards. The seismic hazard map⁶ puts different sub regions of the OSCE in a very high seismic risk category. Earthquakes are, generally, the result of tectonic movement beneath the earth's crust leading to a sudden subterranean release of energy due to an abrupt shift along a fault fracture. In fact, more than 90% of earthquakes are caused at plate boundaries⁷. Large portions of Europe, Caucasus and all Central Asian countries are highly prone to earthquake disasters, which also have transboundary implications. The main fault lines in Europe are where the Eurasian plate meets the African plate and runs through the Mediterranean Sea. In Europe, Greece, Italy, Cyprus Portugal, Slovenia and Croatia as well as Romania and Bulgaria around the Black Sea are particularly at risk. Earthquakes have the potential to affect large number of people in terms of death, injury, homelessness etc. besides economic losses. There are typical requirements, like search and rescue, and provision of relief including emergency shelters, to deal with post-earthquake situation. Long-term interventions are needed to meet the challenge of rehabilitation and reconstruction of the affected communities/areas. Many times, international humanitarian agencies play a critical role in bringing normalcy of the earthquake-affected areas. All these issues highlight security dimension of earthquake disaster, which require attention, while dealing the issue of earthquake risk mitigation.

⁵ http://cred.be/download/download.php?file=sites/default/files/ADSR_2012.pdf

⁶ GSHAP, 1997

⁷ The lithosphere (outer shell of earth) is comprised of many uneven rigid subdivisions, or plates. These enormous blocks vary in size and shape, and have definite borders across continents and oceans alike. The borders, where these plates meet each other are defined as plate boundaries. There are three types of plate boundaries. The plates are always in relative motion with respect to other and putting stress along the plate boundaries, which on release causes earthquakes.

The OSCE area (including Central Asia, South Caucasus, Europe and North America) has a long history of destructive earthquakes. The Spitak Armenian earthquake in 1988 (magnitude 6.8,) is considered one of the most devastating earthquake of recent times where about 25,000 people were killed and another 31,000 were injured. Overall, this earthquake affected about 700,000 people. This earthquake is also known for the widespread collapse of school buildings and the fact that schools were in session when the earthquake struck, killing more children than adults. The economic impact of the earthquake was over 42% of Armenia's GDP at that time. The Tashkent earthquake of 1966, which destroyed most of the city (7.5 on the Richter scale), left over 300,000 residents homeless and destroyed more than 78,000 buildings and houses. Skopje earthquake of 1963 with a 6.3 magnitude killed more than 1,000 people, injured more than 4,000 and left 200,000 people homeless.

All countries in Central Asian and South Caucasus have experienced devastating earthquakes, in last 150 years. Best available estimate indicates that within the next 20 years there is a 40% probability that an earthquake with intensity of level XI (catastrophic) on the Medvedev–Sponheuer–Karnik scale will strike near one of the capitals of the region. The overwhelming majority of population lives within areas of high to very high seismic hazard (Armenia reaching 100%, Kyrgyzstan 99.9%, Tajikistan 88.3%, and Uzbekistan 80.4%), while on the other hand a significant portion lives within a moderate to very high hazard area (Turkmenistan 97% and Kazakhstan 43.6%)⁸.

The United States and Canada are also highly prone to earthquake hazard. The west coast of these countries poses a serious threat due to earthquakes of great magnitudes. In the United States, majority of states have some potential for earthquake occurrence. However, the major difference is the level of vulnerability and available capacities. According to the reinsurance company SwissRe, the developed world experiences much higher economic losses from disasters such as earthquakes than developing countries (in absolute figures), though their loss can be proportionally higher. Also, developing countries experience higher mortality rate compared to developed countries.

Urban areas are at higher earthquake risk, not only due the high concentration of population living in urban areas located in high to very high intensity earthquake zones, but also as the majority of economic activities like industries, trade and services are also located there. Table 2 indicates the top 20 European cities at risk for earthquakes as per European Joint Research Centre. The seismic hazard map of Europe with locations of top 20 cities most at risk is shown in figure 7.

⁸ Estimates by GSHAP and GeoHazards International.

City (Population>50000)	Country	Population	PGA ⁹	Population Percentile	PGA Percentile	Risk Percentile
Zagreb	Croatia	686,771	2.9	0.992	0.992	0.985
Brasov	Romania	303,874	2.9	0.973	0.991	0.970
Thessaloniki	Greece	352,658	2.6	0.978	0.984	0.967
Galati	Romania	341,432	2.5	0.978	0.979	0.961
Sofia	Bulgaria	1,091,857	2.2	0.996	0.958	0.954
Plovdiv	Bulgaria	336,317	2.4	0.978	0.975	0.957
Ploiesti	Romania	246,377	2.7	0.963	0.988	0.960
Iasi	Romania	351,965	2.4	0.978	0.972	0.955
Bacau	Romania	211,421	3.2	0.950	0.995	0.961
Messina	Italy	245,059	2.4	0.962	0.974	0.947
Bucuresti	Romania	1,840,470	2.0	0.998	0.937	0.935
Braila	Romania	229,791	2.4	0.956	0.966	0.937
Bologna	Italy	372,437	2.0	0.981	0.940	0.925
Firenze	Italy	367,988	2.0	0.981	0.929	0.914
Reggio di Calabria	Italy	181,374	2.4	0.936	0.973	0.931
Catania	Italy	300,140	2.0	0.973	0.935	0.914
Split	Croatia	174,550	2.4	0.931	0.972	0.928
Roma	Italy	2,540,654	1.8	0.999	0.903	0.902
Buzau	Romania	144,839	3.3	0.903	0.996	0.939
Murcia	Spain	404,453	1.8	0.983	0.908	0.894

Table 2: Top 20 European Cities at Risk of Earthquakes

Source: JRC, Europe

Over the years vulnerability to earthquakes has increased in some places due to unregulated building construction practices and inappropriate maintenance of the existing housing stock. At the same time, seismological observation, research and investment in this area has decreased considerably making earthquake risk mitigation a daunting task.

In some countries, lack of knowledge regarding seismically safe construction among the architects, engineers and masons as well as lack of awareness regarding their vulnerability among the population led to most of the construction being without reference to building standards. The bulk of private houses are not fit from an earthquake safety point of view.

Tsunamis

Undersea earthquakes cause tsunamis. Tsunamis pose a great security challenge to coastal communities. The Fukushima earthquake and tsunami disaster (2011) and the 2004 Indian Ocean earthquake and tsunami disaster are the grim reminders of the devastation that may be caused through this phenomenon. The participating States of the OSCE have a long history of facing

⁹ Peak Ground Acceleration PFA Source: GSHAP

tsunami as well. Within the OSCE area, the Mediterranean and Black Sea countries are exposed to tsunami hazards, which include Greece, Italy, Portugal, France, Spain, Cyprus, Bulgaria, and Romania. The United States and Canada are also exposed to tsunami hazards especially from the Pacific side. The tsunami hazard map of Europe is shown in figure 8. Tsunamis also have transboundary implications on the affected regions and posing security challenge to the affected region/nation in terms of death, injury, homelessness and loss of livelihood options of coastal communities.

1.2.2 Water and Climate Related Disasters

Floods

Floods are a major challenge faced by the participating States of the OSCE. Floods occur frequently in all countries in the OSCE region in the form of river, flash and urban floods, as well as coastal flooding. Floods occur as a combination of complex processes involving socio-economic and physical factors. Floods are having varying nature and characteristics; often, their impact is localised; however, floods can also affect large areas, often spreading across borders. The high water level during flooding may remain stagnant for weeks. Post flooding environmental conditions deteriorate, which can result in breeding grounds for vector / bacterial infection leading to diseases.

Flooding poses a significant security challenge as its consequences on people, businesses, infrastructure and services are tremendous. Floods also pose greater risk to the environment and cultural heritage of the affected area. There are a number of international examples, where floods not only have forced evacuation to people but also posed serious health issues due to unhygienic conditions developed in the aftermath of floods. A report by the European Environment Agency (EEA) studying the floods in Europe for 1998-2009 identifies 213 recorded events, over 1,100 casualties and overall economic losses at about €60 billion¹⁰.

This year only, major floods have occurred in several participating States of the OSCE affecting lives and livelihood of the people. Continuous heavy rainfall in May 2014 caused Floods in Serbia, Bosnia and Herzegovina (BiH) and Croatia, killing at least 53 people. In Serbia, more than 1.6 million people were affected by the floods (22% of the population) and more than 31,000 people have been evacuated¹¹. In BiH, an estimated 1.5 million people were affected (39% of the population) and more than 90,000 had to leave/evacuate their homes. In Croatia, 38,000 people were affected. The floods created tremendous pressure on the affected population. Heavy and widespread rainfall caused landslides, further deteriorating the disaster situation. The severity of floods faced by these countries was unprecedented this year and required immediate transboundary co-operation, bringing the security dimension of floods into forefront.

¹⁰ European Environment Agency (EEA), "Mapping the impacts of the natural hazards", Technical Report No. 13/2010, 2010

¹¹ <http://reliefweb.int/disaster/ff-2014-000059-srb>

The Russian Federation was affected by floods in May-June this year. Heavy rainfall induced flooding forced 22,545 persons to be evacuated. Floods have affected 25 municipalities within the Republics of Khakassia, Altai, Tuva and the Altai Territory, in Siberia as well as in the Republic of Adygeya in North Caucasus of Russia. Severe damage was reported due to these floods in the affected regions¹².

Similarly, heavy rainfall across South-Eastern Europe has led to flooding in Bulgaria and Romania, in July/August, causing deaths and destruction besides evacuation of people to safer locations¹³.

In 2013, Southern and Eastern Germany along with neighbouring countries witnessed worlds' costliest flood disaster with estimated costs of €12 billion¹⁴. The Elbe basin flooding in 2002, in Italy, France (estimated costs of €20 billion); the Swiss Alps in 2000 (economic costs of €12 billion); and in the United Kingdom in 2007 (with accumulated losses of €4 billion)¹⁵ are few examples of devastating floods in the participating States of the OSCE. These examples clearly indicate the transboundary nature of the disasters. Besides, death, displacement, health considerations pose greater security challenges requiring urgent attentions of the policy planners in the OSCE area to take appropriate action to counter flood disasters.

It is widely believed that due to changing climatic conditions, the number of floods and heavy precipitation in Europe has increased. The recent floods in the Balkans are the fitting case of extreme events and impact of climate change. It is also expected that such events will increase in coming years. Figure 9 shows the European flood hazard map for the 100-year return period based on JRC, Europe. Similarly, figure 10 shows the damage potential for 100-year flood based on the same source.

In Central Asia, flash floods and mudflows are more common and widespread than more slowly forming river floods. They are concentrated in foothills and mountainous areas and are usually triggered by intense rainfall events and/or glacial lake outburst floods. In Kazakhstan, about 13% of the country's area containing over 26% of its population (including the entire city of Almaty, with a population of 1.2 million) is prone to mudflows. The Fergana Valley comprising of three out of five Central Asia countries is highly prone to this type of disasters.

Similarly, floods are the most common type of hazard faced by the North America including both Canada and the United States. In these countries, floods can occur, any time of year, due to heavy rain, melting of snow and other reasons.

¹² <http://reliefweb.int/disaster/fl-2014-000073-rus>

¹³ <http://floodlist.com/europe/july-2014-floods-bulgaria-romania>

¹⁴ Munich RE, "Floods dominate natural catastrophe statistics in first half of 2013", *Press Release*, 9.7.2013,

¹⁵ EEA, 2010

Droughts

Drought conditions developed due to scarce rainfall over a prolonged period of time are not uncommon in the OSCE region. The majority of the participating States, including those located in the North America, Europe and Central Asia are highly prone to droughts. Regions of Europe with a moderate to high drought hazard are located in the Mediterranean basin, especially the Iberian Peninsula, Southern France, parts of Italy, Greece and Cyprus.

The most severe drought in recent memory hit Central Asia in 2000-01, when a precipitation deficit of 30-70% was observed in most of the countries in the region, coupled with above-average temperatures¹⁶. The areas affected by widespread drought cut-across national boundaries and are a decidedly regional phenomenon.

In the Russian Federation alone large-scale droughts were recorded in 1972, 1975, 1979, 1981, 1995, 1998, 2002, 2010 and 2012. Droughts of 1975 and 1981 were unprecedented in nature affecting all crop production regions of the country¹⁷.

Over the past two decades, the number of drought events in the OSCE region has increased, potentially due to the effects of climate change causing rising temperatures, heat waves and dry winters. Impact of droughts is widespread covering large tracts of geographical areas. Depending upon the impact and duration, droughts are classified in meteorological, agricultural, hydrological and socio-economic droughts; with each one has its own implications. Droughts are a fitting case of transboundary disaster that has a potential to displace large population and forced migration within the country and/or across the region. During droughts food, fodder and water become scarce, many at times forcing migration of large population, which pose serious security concerns.

Severe Weather

Severe weather occurrences regularly have bearing on the OSCE participating States, including cyclones/storms/hurricanes, tornados, heat and cold waves, droughts, snow and/or ice and heavy rainfall. Meteorological occurrences, resulting in disasters like floods, cyclones, heat and cold waves, and even droughts, when become disruptive and necessitate the intervention of emergency management services are termed as 'severe' or 'extreme weather' conditions. There are numerous examples in the OSCE region having critical bearing of such events and resulting in huge socio-economic and environmental losses posing serious security challenge to the affected nations. To overcome such events, necessary resilience needs to be built in existing as well as new infrastructure projects, which will help in reducing the vulnerability not only of such projects but also save nations from severe economic losses resulting from such events. Few of

¹⁶ Michael Thurman, 2011, Natural Disaster Risks in Central Asia: A Synthesis

¹⁷ <http://www.climateadaptation.eu/russia/droughts/>

the extreme weather events prevalent in the region have been discussed in the following paragraphs.

- **Cyclones/Storms/Hurricanes** are most commonly occurring phenomena in several countries of the OSCE area especially in Europe and North America. A cyclonic storm is a natural phenomenon consisting of strong winds and heavy precipitation accompanied by sea surge along the coast. Such events have great potential to cause huge damage along the coastline and deep inlands. Associated excessive rain can trigger landslides, mud slides and mudflows as well as flash flooding can occur in the hilly tracts. Due to excellent early warning systems in place in many participating States, evacuation to safer locations does take place before the landfall of the storm saving precious lives. After the landfall, storms cause damage to physical and natural environment, result in food, water, health/epidemic and physical security issues, which may lead to displacement/migration of people from affected area. Situations like these pose greater security challenge within the affected nations, requiring attention not only local/national governments but also regional/international humanitarian agencies.

Storms in Europe generally originate from extra-tropical cyclones resulting from warm subtropical air coming into contact with polar air over the Atlantic Ocean. Large differences in these pressure systems result in the formation of storms over western and central Europe; less frequently, these storms may progress southward and affect southern and south-eastern Europe. Storms pose a greater security challenge in Europe by displacing people besides affecting daily life of thousands of people in affected areas.

- **Tornadoes** are one of the most violent and destructive storms creating devastation in many participating States of the OSCE. Generated from powerful thunderstorms, tornadoes can cause fatalities and devastate a neighbourhood in seconds. A tornado appears as a rotating, funnel-shaped cloud that extends from a thunderstorm to the ground with whirling winds that can reach a speed as high as 300 miles per hour. Damage paths can be in excess of one mile wide and 50 miles long. Tornadoes pose security challenge as they have great potential to wipe-out the built environment in the affected area.
- **Cloudburst/Heavy Rainfall** over a short period of time can be the cause of particularly dangerous flash flooding. Heavy rain may also have other cascade effects such as landslides, mud flows, loss/ damage of critical infrastructure and transport accidents. In recent years number of floods and heavy precipitation in North-Eastern Europe, South Caucasus and Central Asia has increased. It is in line with current projections of increased extreme weather events resulting from climate change. As such events, generally, occur in hilly areas, they pose serious security challenge in search and rescue operations as well as provision of relief to the affected communities.
- **Hot and Cold Waves** are extreme heat and cold spells over a long period of time. Heat wave is defined as a lengthy period of extraordinarily hot and/or humid weather patterns for a set region. The World Health Organisation (WHO) identifies a heat wave as "*a period when*

maximum apparent temperature and minimum temperature are over the 90th percentile of the monthly distribution for at least two days"¹⁸. In recent years, heat waves have been the extreme weather hazard that has had the largest impact in terms of loss of life in the OSCE region. The most vulnerable populations are the elderly, the infirm and socio-economically deprived groups in dense urban environments. Urban heat islands may exacerbate the effects of heat waves. In 2003, for example, heat waves killed some 70,000 people in the OSCE participating States spread all across Europe. Heat waves may also impact infrastructure, causing overheating and damage to many installations¹⁹. In Europe, southern parts are more exposed to heat waves than the northern parts. Climate change may however lead to an increase in the occurrence and intensity of heat waves in years to come.

Risks of extreme low temperatures, or cold spells, are high in the OSCE area spread in Central Asia, North America and Europe. The extreme cold conditions affect the vulnerable population, which including elderly, children, homeless, and asthmatic people with increased risk of mortality. Such conditions can disrupt services like water supply, electricity, transportation etc. The trends of extreme temperature spells are on rise, most probably, due to impact of climate change on such events.

Majority of participating States of the OSCE are exposed to severe snowing or snow storms which have economic and social impacts on a country/region posing security challenge. Snowing affects large areas. The cessation of transport services, in all modes, has economic and social impact, which can be a security issue in long run and require attention/intervention from local/national governments.

1.2.3 Wildfires affecting Forests and other Ecosystems

Wildfires (vegetation fires) burning uncontrolled in natural and human-shaped ecosystems constitute a high probability risk and a recurrent phenomenon in the majority of the OSCE participating States. In some fire-adapted and fire-dependent ecosystems wildland fires are an essential component of ecosystem dynamics. However, due to combined and mutually reinforcing effects of climate change and human interventions the recurrence and severity, the degree of impact of wildfires, are considered a main hazard in the OSCE area posing socio-economic challenge. In Europe alone, yearly economic losses due to forest fires are estimated at about €2 billion. According to the annually published Global Wildland Fire Bulletins in which the yearly recorded wildfire-caused fatalities and damages are summarized, the loss of lives and injuries exceed several hundred people, most of them recorded in OSCE participating States.²⁰

¹⁸ Quoted in EEA, 2010

¹⁹ EEA, 2012

²⁰ Annual Global Wildland Fire Bulletins issued by the Global Fire Monitoring Centre (GFMC):
http://www.fire.uni-freiburg.de/media/bulletin_news.htm

The indirect consequences of wildfires are not yet entirely quantifiable. The impact of vegetation fire smoke is one of the major concerns. The amount of people killed by short- to long-term effects of fire emissions may actually exceed several hundred thousands of people annually at global level. The heat and wildfire pollution episode in Western Russia in 2010 is an example that the combination of an extreme heat wave and smoke pollution may have grave consequences in this regard. The amount of people evacuated ahead of wildfires in the U.S.A. are exceeding more than hundred thousand people per year, and the loss of houses caused by wildfires up to several thousand. In Europe the secondary threats of wildfires burning at the interface between wildlands and settlements, in terrain contaminated by radioactivity and unexploded ordnance stemming from past armed conflicts, including World Wars I and II and the more recent conflicts, are posing additional threats to humans. Long-range transport of atmospheric pollutants are affecting remote ecosystems, e.g. the black carbon emissions from excessive agricultural burning in Eastern Europe that are deposited on the Arctic environment and result in acceleration of melting of snow and ice cover.²¹ Between some of the OSCE participating States fires are sometimes crossing national borders, a fact that supports the recent suggestions by the UNECE, supported by the OSCE, to intensify the cross-boundary co-operation in fire management.²²

Options to reduce the occurrence of wildfires and their impacts on the environment and society include the development national and international policies addressing wildland fire issues by cross-sectoral approaches. Capacity building of national agencies and land owners responsible for fire management, including the participation of local rural populations, aimed at increasing the participation of civil society actors in the prevention and self-defence of wildfires receive increasing attention in OSCE participating States.²³ The experiences of the OSCE in assisting countries of the South Caucasus region to build fire management capacities include the development of national fire management policies and training of specialized personnel at national and regional levels.

21 Goldammer, J.G. 2013. Beyond Climate Change: Wildland Fires and Human Security in Cultural Landscapes in Transition – Examples from Temperate-Boreal Eurasia. Chapter 22 in: Vegetation Fires and Global Change: Challenges for Concerted International Action. A White Paper directed to the United Nations and International Organizations (J.G. Goldammer, ed.), 285-311. A publication of the Global Fire Monitoring Center (GFMC). Kessel Publishing House, Remagen-Oberwinter, 398 p. (ISBN 978-3-941300-78-1). <http://www.forestrybooks.com/>

²² <http://www.fire.uni-freiburg.de/intro/team.html>, see also the draft "International Wildfire Preparedness Mechanism (IWPM) (in prep.): <http://www.fire.uni-freiburg.de/IWPM/>

²³ Defence of Villages, Farms and Other Rural Assets against Wildfires: Guidelines for Rural Populations, Local Communities and Municipality Leaders in the Balkan Region: http://www.fire.uni-freiburg.de/Manag/CBFiM_11.htm

1.2.4 Biological Disasters

Pandemics/Epidemics

A pandemic or epidemic can have direct impacts on life, health and well-being, and severe indirect consequences in the form of socio-economic losses and strain on public health services and other areas of governance.

In history, there were several pandemics, which had resulted in large number of human deaths. However, in recent years such events are not of those large proportions. Modern surveillance techniques have contributed in curtailment of such diseases. In recent years, few common events caught international attention, were:

- The type A (H1N1) pandemic in 2009 was the first of the 21st century, which resulted in casualties in several countries and required responses at global level.
- The severe acute respiratory syndrome (SARS), a viral respiratory illness caused by a corona virus, called SARS-associated corona virus (SARS-CoV). SARS was first reported in Asia in February 2003. The illness spread to more than two dozen countries in North America, South America, Europe, and Asia before the SARS global outbreak of 2003 was contained. According to the World Health Organization (WHO), a total of 8,098 people worldwide became sick with SARS during the 2003 outbreak. Of these, 774 died²⁴.

1.2.5 Technological Disaster

A hazard originating from technological or industrial conditions, including accidents, dangerous procedures, infrastructure failures or specific human activities, that may cause loss of life, injury, illness or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage²⁵. Examples of technological hazards include industrial accidents, nuclear radiation, toxic wastes, dam failures, transport accidents, factory explosions, fires, and chemical spills. Technological hazards also may arise directly as a result of the impacts of a natural hazard event. Technological hazards have potential to cause socio-economic distress to the affected posing a security concern to the affected community. The OSCE area has been affected by many of such events in the past. A few of such disasters have been discussed in the following paragraphs.

- **Industrial Accidents** take place when industrial accident risk emerging from handling and/or storage of significant quantities of dangerous substances results in events leading to dangerous and serious impact on human health, physical infrastructure and environment.

²⁴ Overview of natural and man-made disaster risks in the EU

²⁵ UNISDR - <http://www.unisdr.org/we/inform/publications/7817>

Industrial accidents may occur in chemical installations, fuel storage including liquefied natural gas production, storage and distribution, chemicals manufacture, general engineering, and all such heavy industries requiring use of combustible material in manufacturing etc. All countries are prone to industrial accidents of varying nature. Figure 6 shows the number of major accidents in EU, European Economic Area (EEA) and European Free Trade Association (EFTA) countries from 2001 – 2011 as per the European Joint Research Centre.

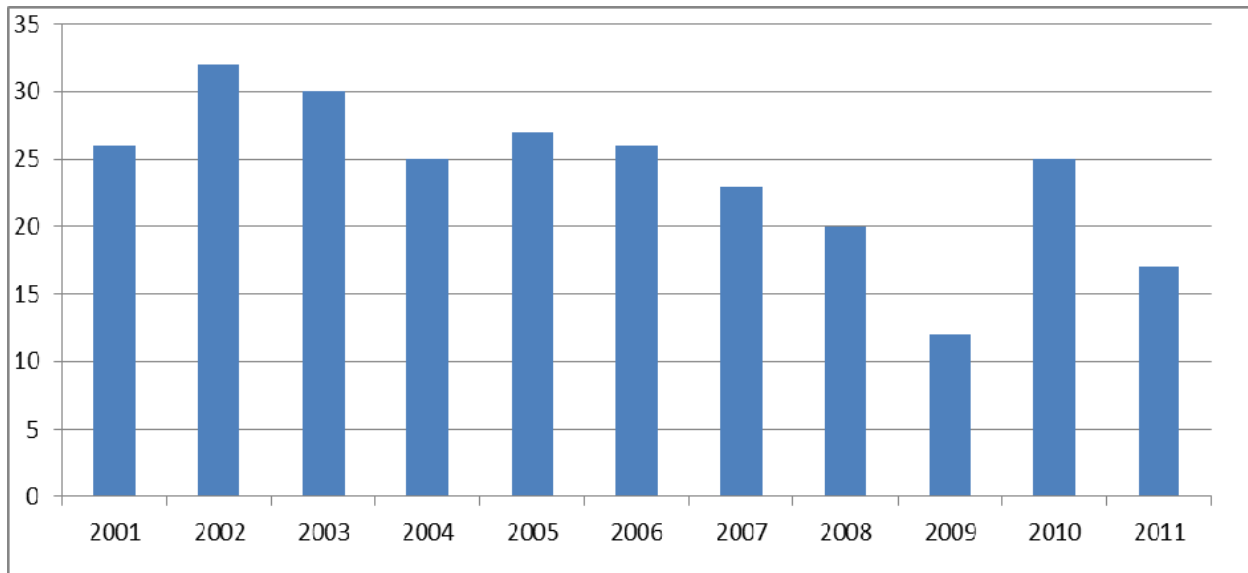


Figure 6: Number of Major Accidents in Europe from 2001 -2011

Source: <https://emars.jrc.ec.europa.eu>

- **Nuclear/Radiological Accidents** - as defined by the International Atomic Energy Agency (IAEA), a nuclear or radiological accident corresponds to "*any accident involving facilities or activities from which a release of radiological material occurs or is likely to occur and which has resulted or may result in an international trans-boundary release that could be of radiological safety significance for another state*"²⁶.

In general nuclear accidents correspond to low probability/high impact type of risks, with potentially high human, economic and environmental impacts. Due to very high potential impact of any nuclear accident, nuclear power plants are subject to strict safety and security controls and national authorities have strict prevention and mitigation measures in place. There are currently 131 nuclear reactors in operation in the EU, grouped on 56 sites in 14 Member States (Bulgaria, Czech Republic, Denmark, Estonia, Germany, Ireland, Lithuania, the Netherlands, Norway, Poland, Romania, Slovenia and Sweden). Due to very high safety record no "major accidents" have ever taken place. However, this type of disaster poses a huge security challenge in the affected region.

²⁶ International Atomic Energy Agency (IAEA)

Accidents of this type have a bearing of transboundary nature by spreading the radiation in air, which have a potential of contaminating the environment as well as economic impact in the country of origin and the neighbouring countries.

After the nuclear accident in Japan (the Fukushima reactors) the EU has conducted a stress test on all existing nuclear plants in the union to re-assess the margin of safety against the impacts from extreme external events, such as earthquakes and flooding²⁷.

Among the OSCE participating States, Central Asia is having a serious threat from uranium tailings. From the 1950s till the 1980s, the Fergana Valley (consisting of three regions of Uzbekistan, three regions of Kyrgyzstan and one region of Tajikistan) was one of the main sources of metal and uranium ore, with some 50 deposits in the area and hundreds of tailings sites. With the collapse of the Soviet Union, many mining plants had lost their markets and had been closed. However, health and environmental threats from these facilities have not lessened in the most densely populated region of Central Asia i.e. Fergana Valley, where more than 12 million people reside. Challenges faced due to radiation threat in the Fergana Valley are vast and daunting. Central Asia's uranium legacy sites contain a total of 400 m.t. of radioactive waste and 400 m.t. heavy metals and other materials, mostly located in high hazard zones for floods, mudflows, earthquakes, and landslides. Four sites in the Fergana Valley (in three countries) are hydrologically linked to the upper course of the Syr Darya River. Natural hazards here (floods, mudflows, landslides, seismic events) are the key component of transboundary risk for uranium legacy sites in Central Asia²⁸. These sites pose a huge security challenge in the region, requiring urgent attention. A disaster originating from these sites have a potential not only affecting local area, but also having impact on the downstream of the Syr Darya River.

1.3 Impact of Climate Change in the OSCE Area

It has been observed that disaster events are not only increasing in numbers but also becoming more intense, resulting in more socio-economic damage. Climate change has made significant contribution in enhancing the frequency and intensity of disasters, especially hydro-meteorological origin. Climate change, in general, is a multifaceted phenomenon (as it may contribute towards many disasters like flood, droughts etc.) at the same time, it is also multi-dimensional (as it has varied impacts). Due to changing climatic conditions natural hazards are getting intensified, ultimately affecting well-being of people in terms of impact on settlements and infrastructure, impact in terms of health and reduced livelihood options which may lead to migration of affected population.

²⁷ Overview of natural and man-made disaster risks in the EU

²⁸ Michael Thurman, 2011, Natural Disaster Risks in Central Asia: A Synthesis, UNDP/BCPR

Climate change refers to any change in climate over time, whether due to natural variability or as a result of human activity²⁹. The consequences of climate change on well-being of people are being witnessed world over. These impacts are predicted to intensify in years to come. Some of the prominent indicators like rising temperatures, shifting rainfall patterns, melting glaciers, rising³⁰ sea levels and extreme weather events are enhancing hazard potential of floods, droughts, cyclones, heat and cold waves, (snow) blizzards etc. Such events are serious security threats as they have socio-economic implications to communities. Many times, these events result in human lives lost and severe damage to public and private property in affected areas. It has been projected that the changing climatic conditions are going to have significant increase in extreme events in North America, Europe and Asia. For example, more heat waves, droughts and forest fires are noticed in the Southern and Central Europe, while the number of floods and heavy precipitation has increased in Northern and North-eastern Europe³¹. The likely increase in magnitude of such events would lead to significant economic losses resulting in serious consequences to human security in these regions. Urban areas in particular are going to face severe impact of climate change in terms of developing them into urban heat islands, increasing air and water pollution levels, increasing water supply and quality challenges. The climate change will have tremendous stress on availability of natural resources as well. It will also lead to over exploitation of such resources due to immigration of population to urban areas, growing and aging of population etc.

Climate change is going to have far reaching consequences on ecology, hydrology and water resources and coastal areas of the participating States of the OSCE. The repercussions of climate change on human health, settlements (urban and rural both), food production, industry, energy and infrastructure are going to have critical bearing on security which will also jeopardize the achievements of MDG/SDG over a period of time. Climate change will be intensifying existing social, economic, physical and environmental vulnerabilities. A recent study by the Joint Research Centre³² for the European Union indicates that climate change is going to have biggest security concern in terms of health of people. It will add premature deaths from heat stress. Other than this, coastal losses would claim €42 billion and agriculture losses €8bn. The worst-hit regions would be Southern and South Central Europe, which would bear 70% of the burden; Northern Europe would experience the lowest impact. The same study highlights that failing to take necessary action could burn 8,000 square kilometres of forest, which will cost at least €90 billion a year in economic losses. The resulting consequences from climate change highlight the need for climate change adaptation and risk mitigation activities in the OSCE area.

It is very timely to take action to adapt to these unavoidable phenomena while taking action to cut the greenhouse gas emissions that are a big contributing factor in causing global warming.

²⁹ IPCC, 2007a

³⁰ European Commission - COM(2013) 216 final

³¹ Overview of natural and man-made disaster risks in the EU

³² https://ec.europa.eu/jrc/sites/default/files/jrc_20140625_newsrelease_climate-change_en.pdf

The global warming is one of the major contributing factors to climate change. The average global temperature, currently around 0.8°C above pre-industrial³³ levels, continues to rise³⁴. Several studies have indicated that the last decade (2002–2011) was the warmest on record in Europe, with European land temperature 1.3°C warmer than the pre-industrial average³⁵.

Majority of the OSCE participating States are facing a daunting challenge from changing climatic conditions in all regions/sub regions of the organization. Depending on factors like socio-economic conditions, level of awareness among the governments and the communities, vulnerability to climate change varies widely across regions. Changing climatic conditions are leading to many consequences which will have adverse effect on the OSCE participating States. Selected highlights of climate change impacts have been discussed in the following paragraphs:

1.3.1 Sea-level Rise

The warming of the world's oceans is expanding their volume, while polar ice sheets have started to melt and glaciers around the world are shrinking. The combination of these changes is increasing sea levels, which in time will threaten low-lying land areas and islands.

This is the most fundamental challenge of global warming that urban settlements particularly in coastal areas face, and it will tend to increase because of the on-going influx of people and economic assets into the coastal zones. At risk are coastal cities and their infrastructure, beaches subject to erosion, riverbeds subject to sedimentation, and wetlands. The impact of climate change on coastal areas will come from the rise in sea level as also the possibility of more storms. The most important source of concern is the future of low-lying delta regions. Besides loss of living space to the sea, coastal areas will also be adversely affected by saline water intrusion into groundwater aquifers due to stronger storm surges in years to come³⁶.

Increasingly frequent and intense cyclones would cause severe damage due to high winds, intense rainfall and stronger storm surges which, compounded with the sea-level rise, are expected to become a severe problem for low-lying coastal regions and cities. With increased intensity and high frequency of cyclones would pose higher risks to ports and harbours and other coastal infrastructure. The North Pacific and the North Atlantic Ocean basins are at higher risks due to enhanced frequency of cyclones, which will be the leading cause of the increase in damage.

Sea levels are rising, increasing the risk of coastal flooding during storm events. Global average sea level has risen by 1.7 mm a year in the 20th century, and by 3mm a year in recent decades³⁷.

³³ Pre-industrial being defined as 1850–1899

³⁴ EEA report No.12/2012. Climate change, impacts and vulnerability in Europe 2012

³⁶ Overview of natural and man-made disaster risks in the EU

³⁷ Overview of natural and man-made disaster risks in the EU

Future projections vary widely, but it is likely that 21st century sea-level rise will be greater than during the 20th century. The Arctic basin is warming faster than other regions. Record low sea ice was observed in the Arctic sea in 2007, 2011 and 2012, falling to roughly half the minimum extent seen in the 1980s³⁸. Melting of the Greenland ice sheet has doubled since the 1990s, losing an average of 250 billion tonnes of mass every year between 2005 and 2009. Glaciers in the Alps have lost approximately two thirds of their volume since 1850 and these trends are projected to continue³⁹.

1.3.2 Impact on Public Health

The changing climate would have severe bearings on the public health aspects throughout the world including the OSCE area. Extreme weather events pose a direct risk to the health and safety of people, with the very young, the elderly, and the disabled and low-income households particularly vulnerable. Impact of the changing climate can be grouped as following:

- Weather related mortality - Heat Strokes, skin diseases, eye diseases, psychological distress, loss of physical infrastructure
- Infectious diseases - Geographic range and incidence of vector borne diseases, changed incidence of diarrhoeal diseases
- Altered food productivity and associated pest and diseases - Malnutrition, hunger, impaired child growth and development
- Air quality respiratory illnesses - Asthma and respiratory diseases

1.3.3 Impact on Flora and Fauna

Many studies have measured widespread changes in plant and animal characteristics. For example, plants are flowering earlier in the year. Animals are moving northward or uphill as their habitats warm. Since the migration rate of many species is insufficient to keep pace with the speed of climate change, they could be pushed towards extinction in the future.

While there may be less water available for agriculture in southern Europe, growing conditions may improve in other areas. The growing season for several crops in Europe has lengthened and this is projected to continue, alongside the expansion of warm-season crops into more northerly latitudes. However the yield is projected to fall for some crops due to heat waves and droughts in central and southern Europe⁴⁰.

³⁸ Climate change, impacts and vulnerability in Europe 2012

³⁹ Climate change, impacts and vulnerability in Europe 2012

⁴⁰ Overview of natural and man-made disaster risks in the EU

1.3.4 Impact on Infrastructure

Impact of climate change, causing more regular and severe weather conditions, will also have a cascade effect on the increased risk of industrial, transport or infrastructure incidents. Rise in temperatures and sea levels as well as the increased frequency and intensity of extreme weather events, such as storms, heat waves and flooding, already have a significant impact on the functioning of transport and energy infrastructure⁴¹. These impacts will vary according to location, geophysical risk exposure, adaptive capacity and resilience and level of regional economic development⁴². In addition, the use of infrastructure becomes more hazardous under severe weather conditions with a higher number of serious road traffic crashes as a possible outcome.

Impacts on transport infrastructures under extreme weather events were addressed by the EU-funded projects WEATHER⁴³ assessing the impacts of weather extremes on transport systems and hazards for European regions.

In the case of energy, climate change will mean interconnected risks for electricity security and for investment costs in the energy sector, including:

- Increased risk of flooding of energy infrastructure (including power stations and sub-stations);
- Higher incidence of extreme weather events impacting on infrastructure resilience and creating disruptions; Variation of renewable energy resource availability and output (solar radiation, water, etc.);
- Potential reduction of efficiency in power station outputs (e.g. lower cooling efficiency of warmer water or decreased availability of cooling water) and power transmission (e.g. capacity of overhead lines affected by temperature changes); and
- Changes in energy demand patterns, possibly increasing the risk of the impact of demand peaks exceeding grid capacity⁴⁴.

1.3.5 Impact on Migration

Worsening environmental conditions, combined with increased extreme natural phenomena, may trigger unanticipated social and economic processes leading to a geographical redistribution of capital and labour. Currently available evidence suggests that most movements will happen in an

⁴¹ European Commission, Commission Staff Working Document on Adapting infrastructure to climate change accompanying the Commission Communication An EU Strategy on adaptation to climate change COM(2013) 216 final, SWD(2013) 137 final, Brussels, 16.4.2013, 11.

⁴² SWD(2013) 137 final, 16.4.2013, 7.

⁴³ WEATHER project, www.weather-project.eu.

⁴⁴ Overview of natural and man-made disaster risks in the EU

intra-state context or within developing regions, and mainly from rural to urban environments⁴⁵. Climate change is going to have critical bearing on livelihood options for many sections of the population, which can result in major migrations. Those most likely to migrate will be persons in the poorest segments of societies affected by climate change who already face multiple stress to livelihoods and are, therefore, highly vulnerable to the effects of environmental degradation. The reality of migration in a climate change context will present challenges (and opportunities) to both countries/areas of origin and destination⁴⁶.

In the EU strategy on adaptation to climate change stresses the need to identify disaster risk management mechanisms that can avoid or reduce the need for migration. This can be achieved through proper action in the areas of water management, biodiversity, forests, desertification, coastal erosion, energy, health, social policy and research⁴⁷.

1.3.6 Costs of Adaptation for Climate Change

Measures taken to reduce the impact of climate change by individuals, communities, and/or organizations are defined as climate change adaptation. Adaptation and risk mitigation from the changing climatic conditions are the only solutions to avoid resulting socio-economic losses. Many economic sectors are directly dependent on climatic conditions like agriculture, forestry, tourism - beach and snow-, and health. All such sectors are facing the impact of climate change. Climate change offer some opportunities as well in few specific sectors like agriculture, where in some regions crop yields will enhance due to rising temperatures. Similarly; the rising temperature will result in less energy requirements for heating in certain regions⁴⁸.

In the European Union, the minimum cost of not adapting to climate change is estimated to range from €100 billion a year in 2020 to € 250 billion in 2050⁴⁹. Between 1980 and 2011, direct economic losses in the EU due to flooding, alone, amounted to more than €90 billion⁵⁰. This amount is expected to increase, as the annual cost of damage from river floods is estimated at €20 billion by the 2020s and €46 billion by the 2050s⁵¹. Additional flood protection measures are estimated at €1.7 billion a year by the 2020s and €3.4 billion a year by the 2050s⁵². Such measures can be very effective, as it has been established that each Euro spent on flood

⁴⁵ SWD(2013) 138 final, 2013, op.cit

⁴⁶ European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on Maximising the Development Impact of Migration

⁴⁷ *Ibid*, 24.

⁴⁸ EEA Adaptation in Europe report

⁴⁹ EEA report No 12/2012.

⁵⁰ EEA report No 12/2012

⁵¹ Rojas, R., Feyen, L., and Watkiss, P. (2013)

⁵² Feyen, L. and Watkiss, P (2011)

protection could avoid six Euros of damage costs⁵³. A thorough cost-benefit analysis of climate change adaptation measure can provide a basis for convincing the national governments and decision makers to invest in such measures. However, such estimates are not yet available for many regions/countries of the OSCE area.

1.3.7 Security Concerns of Climate Change

Climate change is posing a greater challenge to security in terms of displacement, livelihood options, food security and conflicts. In many sub-regions of the OSCE, climate change is disturbing the regional balance in terms of development and requires attention to carry forward the agenda of climate change associated risk mitigation and climate change adaptation. A recent study conducted on behalf of the OSCE has highlighted the regional priorities for security in changing climatic conditions. The sub-regional priorities as identified after thorough consultations with stakeholders in these areas will be described in the following paragraphs⁵⁴:

- **Western Balkans:** The water and energy sectors were identified as priority sectors. Inefficient management of transboundary rivers and insufficient adaptation pose particular challenges. Action should focus on the particularly vulnerable coastal and urban regions.
- **Eastern Europe:** Food security was clearly identified as the priority for the region. This includes specific action to enhance food security and the adaptation of the agricultural sectors, as well as broader economic policies, good governance and international co-operation.
- **South Caucasus:** The water, agricultural and energy sectors were identified as priorities, with water being the most pertinent challenge. In addition, extreme weather events and disaster preparedness and management were highlighted as priorities.
- **Central Asia:** The closely interconnected water-energy-agricultural nexus with its regionally integrated infrastructure poses the biggest challenge for the region. The water sector is highly politicized, but also key to adapting to the challenges posed by climate change. In addition, disaster preparedness and management was also identified as a key priority.
- **Arctic:** The expert roundtable did not pinpoint specific sectors, but did stress the importance of fisheries and hunting for the indigenous communities and environmental protection. The main challenge highlighted was establishing the appropriate multilateral forum to institutionalize greater co-operation among Arctic countries and relevant stakeholders.
- **Southern Mediterranean:** The agricultural and water sector were identified as priority sectors for the region. However, broader social and economic challenges, as well as the

⁵³ Ibid

⁵⁴ Adopted from - Lukas Ruettinger, 2013, Adelphi, Climate Change and Security in the OSCE Region - Scenarios for Action and Co-operation

development of political systems, good governance and moves towards more open and democratic societies were also key points.

It is clear from the above analysis that climate change is having serious impact on water, energy and the agriculture sector. All such sectors are important for stability and security in the OSCE region.

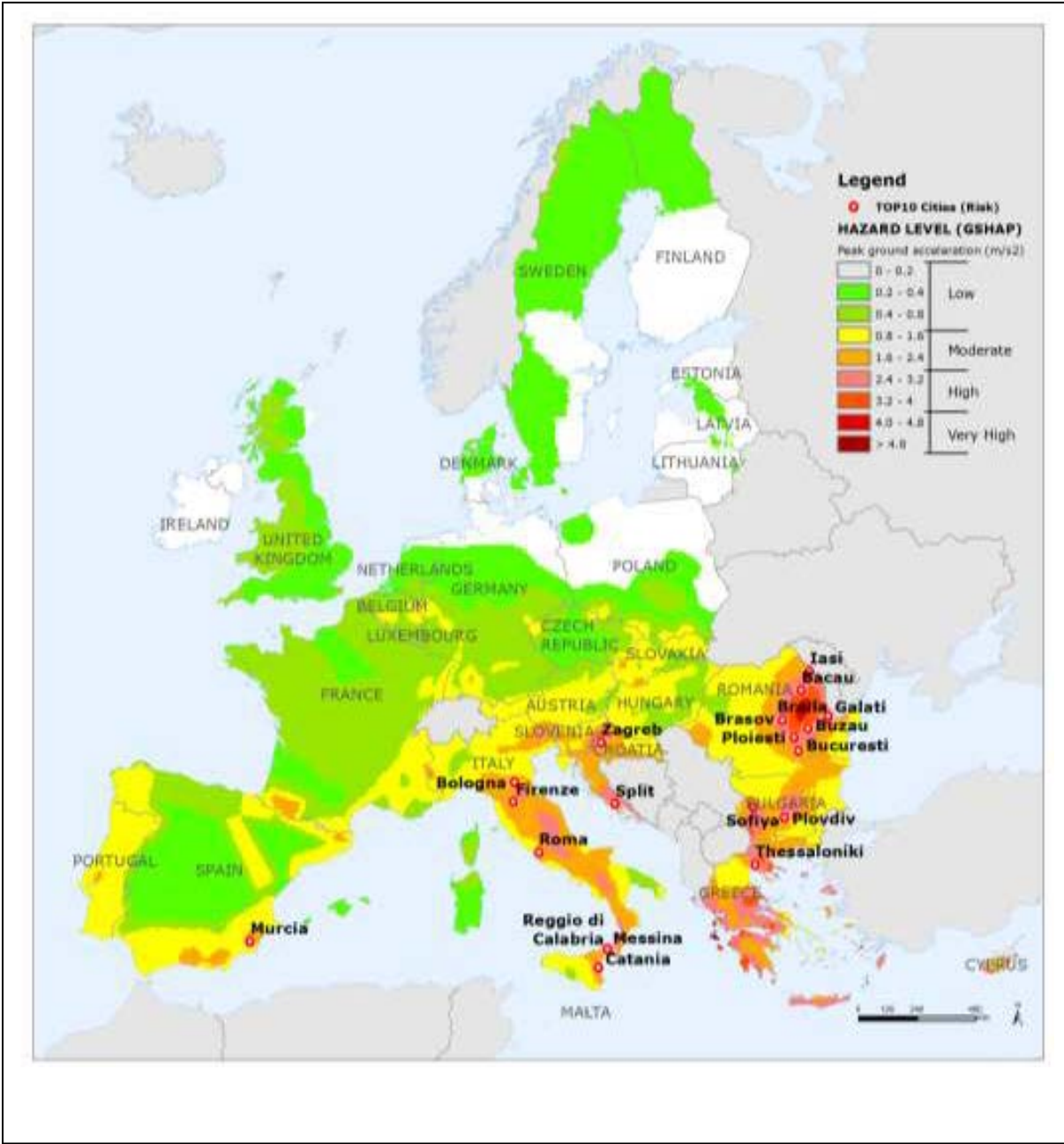


Figure 7: Earthquake Hazard Map of Europe, with top 20 Cities at Risk. Source: JRC. Data: GSHAP

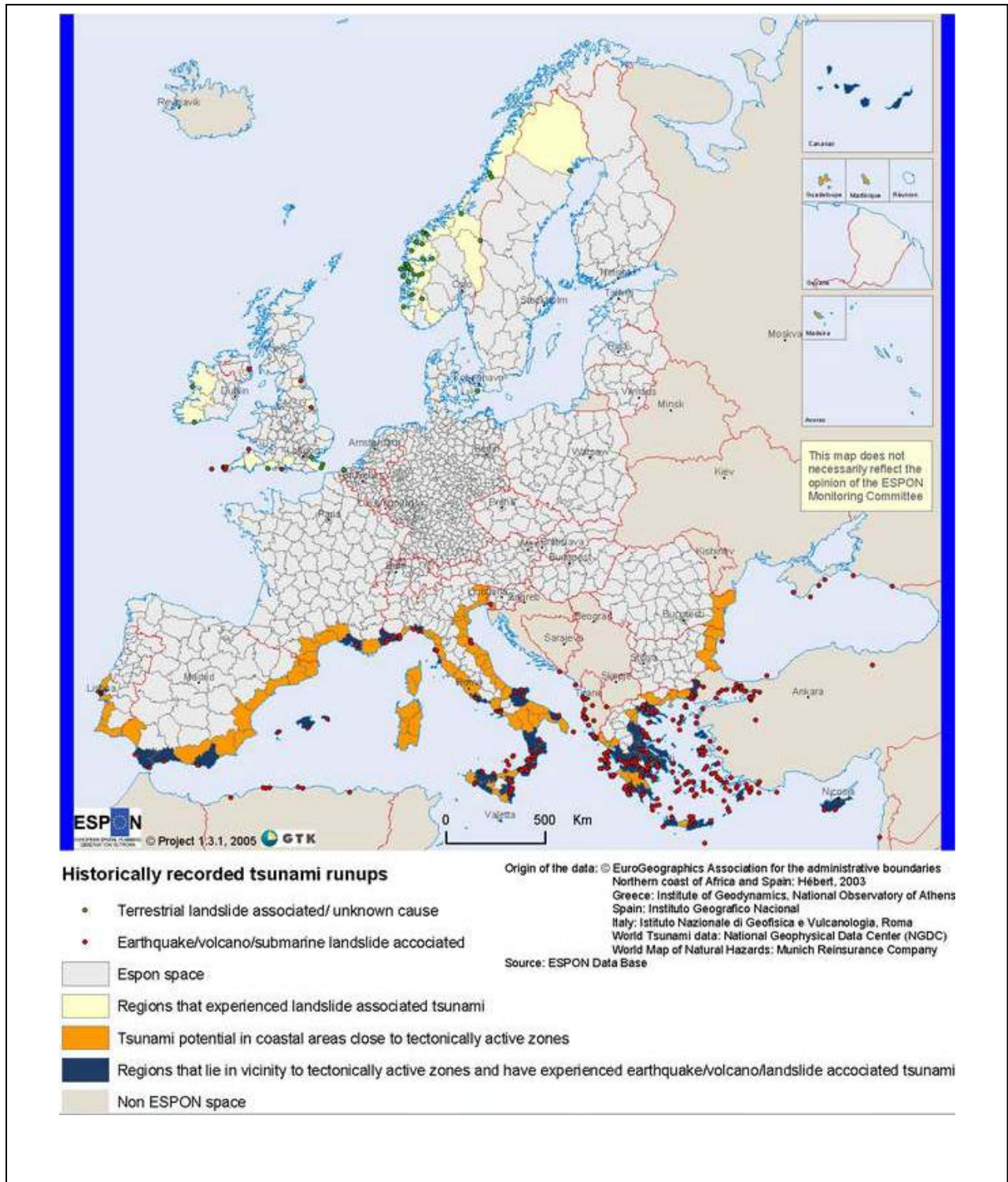


Figure 8: EU-wide Tsunami Risk.

Source: EPSON. http://www.preventionweb.net/files/3831_TsunamihazardN3.jpg



Figure 9: European Flood Hazard Map for the 100-year Return Period

Source: JRC, Europe

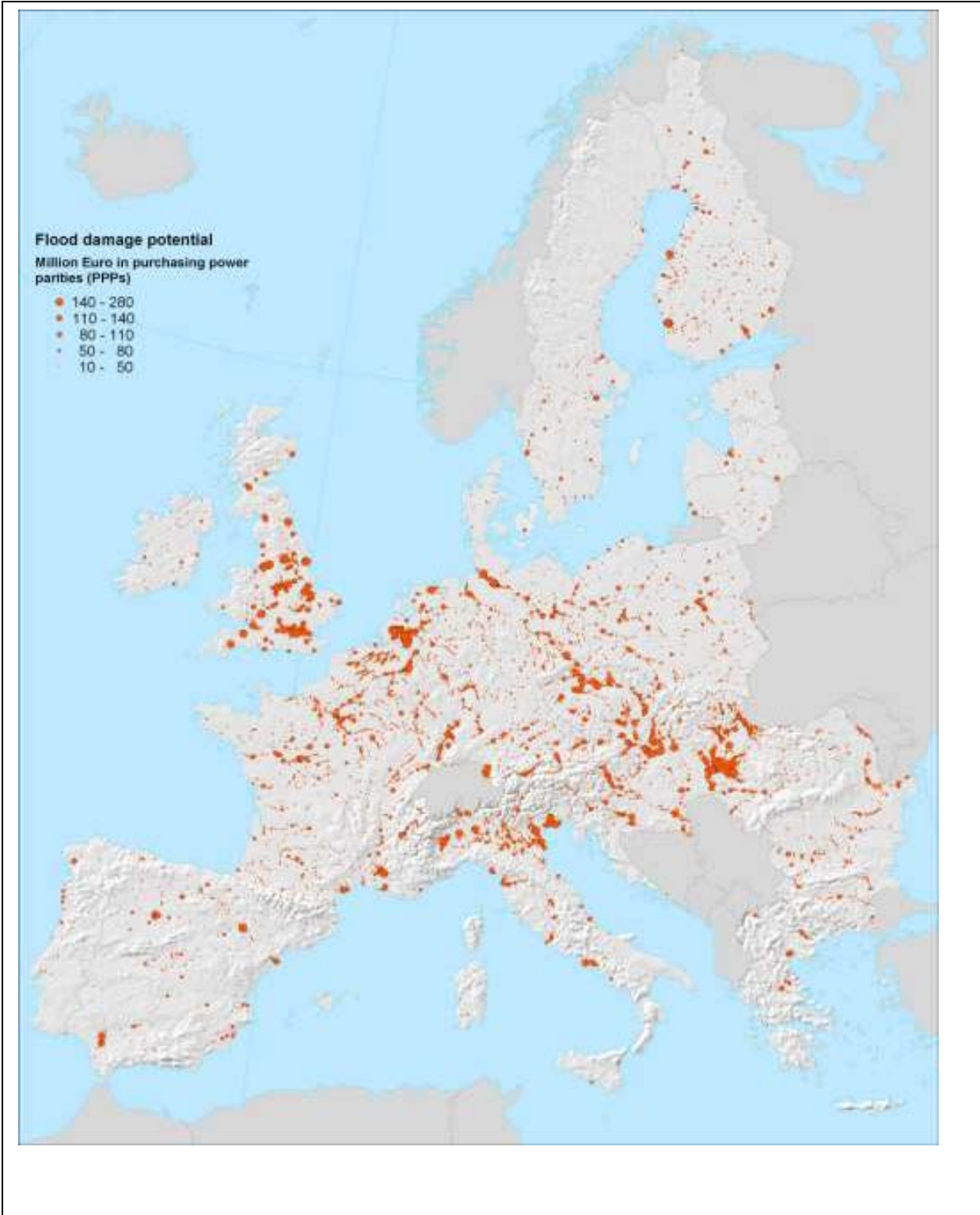


Figure 10: Map of Damage Potential of Current 100-year Flood
Source - JRC Europe

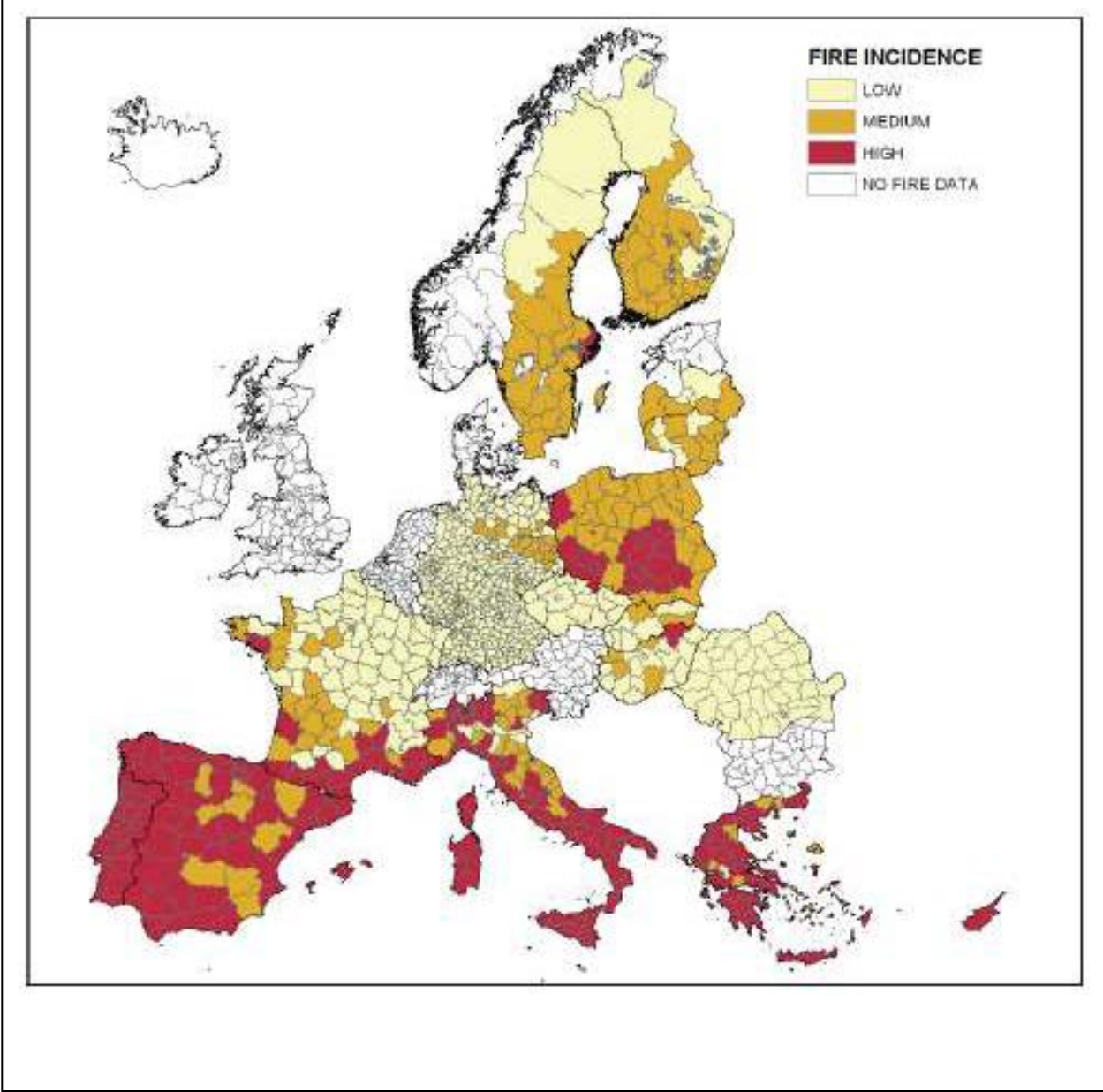


Figure 11: Fire Incidents in Europe Source: JRC

2. INTERNATIONAL PERSPECTIVE OF DISASTER RISK REDUCTION

2.1 Policy Discourse at International Level

The United Nations General Assembly by Resolution 44/236 designated the decade of the 1990s as the International Decade for Natural Disaster Reduction (IDNDR). The decade was intended to reduce, through concerted international action, loss of life, poverty damage and social and economic disruption caused by natural disasters. During this decade emphasis was laid on the need to ‘mainstream’ disaster risk reduction into development. Upon successful completion of the decade and with consideration of the high importance of the subject, the UN GA has transformed UNIDNDR into a permanent body as part of the UN Secretariat – UN ISDR – International Strategy for Disaster Reduction. One of the key functions of the UNISDR is to advocate globally for inclusion of DRR issues into overall development work i.e. advocate for DRR mainstreaming. The term mainstreaming means to consider and address risks emanating from natural hazards in medium-term strategic frameworks and institutional structures, sectoral strategies and policies in hazard-prone countries. UN initiatives have helped to refine and promote the concept at international level, bringing a paradigm shift in emphasis, internationally, from a disaster management to a disaster risk management approach, with much greater importance given to reducing risk.

2.1.1 Millennium Development Goals and Sustainable Development Goals

The UN Millennium Declaration⁵⁵ (A/RES/55/2) adopted by 189 countries in the year 2000 highlighted the need for countering the effects of disasters. Under “Protecting our common environment” the declaration resolves "to adopt in all our environmental action a new ethic of conservation and stewardship and, as first steps, resolves...to intensify co-operation to reduce the number and effects of natural and man-made disasters” [paragraph 23]." The road map towards the implementation of the United Nations Millennium Declaration (Secretary-General Report to GA A/56/326)⁵⁶, has mentioned the areas to be focused to reduce the impact of disasters:

- effective early warning and preparedness of communities;
- ensuring co-operation and building partnerships for supporting research disaster risk reduction and climate change adaptation;
- urban risk management, and proper land use planning;

⁵⁵ <http://www.un.org/millennium/declaration/ares552e.pdf>

⁵⁶ <http://www.un.org/millenniumgoals/sgreport2001.pdf?OpenElement>

- mainstreaming disaster risk reduction into development planning including adopting higher building construction standards/ codes;
- encouraging community based risk management;
- establishing financial and social protection mechanisms against disasters

The Millennium Development Goals (MDG)⁵⁷ touch upon areas which are closely linked to vulnerability to natural hazards. Thus, the achievement of these goals is contributing to reduction of community's vulnerability to natural hazard.

Sustainable Development Goals

The United Nations Conference on Sustainable Development (Rio+20), held in Rio de Janeiro in June 2012, resulted in agreement by member states to launch an intergovernmental process to develop a set of Sustainable Development Goals (SDG) which will build upon the Millennium Development Goals and converge into a post 2015 development agenda. The SDG targets include poverty reduction, food and livelihood security, improved access to health and education, macro-economic growth and financial stability, political participation etc. It also highlighted the need for climate change adaptation and mainstreaming of disaster risk reduction. The desired outcome from SDG from disasters and climate change besides other things include lowering the exposure of people and assets, reduction in losses and impact to livelihood of people.

2.1.2 Hyogo Framework for Action and HFA2

In January 2005, at the World Conference on Disaster Reduction, 168 Governments adopted the Hyogo Framework for Action (HFA); a 10 year plan to make the world safer from natural hazards. From the global blueprint for disaster risk reduction efforts, the HFA offers guiding principles, priorities for action and practical means for achieving disaster resilience for vulnerable communities. The *Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters* envisages “integrating risk reduction into development policies and plans at all levels of Government including poverty reduction strategies and multi-sectoral policies and plans”⁵⁸. It is the instrument around which the whole of disaster risk reduction discourse is revolving. Besides, the impact of climate change and its consequences have put forth the agenda of climate change adaptation and mitigation of its impact upright to the international community. While significant progress has been made in implementing the HFA,

⁵⁷Eight goals including Eradicating extreme poverty and hunger, Achieving universal primary education, Promoting gender equality and empowering women, Reducing child mortality, Improving maternal health, Combating HIV/AIDS, malaria and other diseases, Ensuring environmental sustainability and Developing a global partnership for development need to be achieved by 2015

⁵⁸Hyogo Framework for Action : Building the resilience of nations and communities to disasters 2005-15

much more needs to be done to integrate disaster risk reduction into sustainable development policies and planning.

Attempts have been made to underline the factors that are driving the increase in disaster risk, like rural poverty and vulnerability, unplanned and poorly managed urban growth and declining environmental conditions. Urgent action is necessary to reduce disaster risk, poverty reduction, adaptation to climate change and better health outcomes.

In March 2012, consultations towards a post-2015 framework for disaster risk reduction were launched, and an advisory group established. The results and recommendations feed into the Intergovernmental preparatory meetings, of which the first took place in July 2014 and the second will take place in November 2014 in Geneva, Switzerland. In March 2015, at the Third World Conference on Disaster Risk Reduction at Sendai, Japan, United Nations Member States will adopt the successor arrangements to the Hyogo Framework of Action (HFA), referred to as the Post-2015 Framework for Disaster Risk Reduction (HFA2).

Recurrent themes throughout the HFA2 consultations were the call for increased regional co-operation and for transfer and sharing of knowledge among and between regions (as also already included in the HFA). The OSCE can offer its network as a multi-stakeholder and multi-level platform to foster such co-operation and knowledge-sharing and consult on regional disaster risk management strategies. The revision of the HFA is also an opportunity for the OSCE to take stock of the policies developed and progress made in building resilience and disaster risk management through OSCE policies and further integrating this in our programmatic activities.

2.1.3 Outlook to 2015

The year 2015 will also see the adoption of the Sustainable Development Goals (SDG). It may also be noted that the 21st Session of the Conference of Parties (COP) to the UN Framework Convention on Climate Change (UNFCCC) will also be held in 2015.

Despite, the MDG, Post 2015 Framework for Disaster Risk Reduction (HFA2), the SDG and UNFCCC COP 21 are conceptually and procedurally separate processes, there are important complementing areas as among other things, these documents consider integration of DRR into broader development agenda, which would allow enabling actions at all levels to manage disaster risks and climate change in a way that facilitates sustainable development. Thus, there are growing calls for all these processes/frameworks to converge as post 2015 development agenda.

The outcomes of the Post 2015 Framework for Disaster Risk Reduction will have a critical influence on the achievement of the SDG and UNFCCC COP21 and vice versa. Unless disaster risks and climate change are effectively managed, increasing disaster loss and impacts will undermine achievement across the SDG. At the same time, whether or not the SDGs facilitate risk - sensitive investment by the public and private sectors will directly influence the underlying

risk drivers and hence future levels of risk and resilience. The public policies adopted to achieve both the Post 2015 Framework for Disaster Risk Reduction and the SDG, therefore, need to be mutually supportive. The OSCE has an opportunity to contribute significantly to the post 2015 development agenda by adopting a proactive approach towards DRR and CCA.

Given this mutually supportive relationship between these frameworks, it is critical that disaster risk reduction and climate change targets and indicators chosen under each SDG are also reflected in the Post 2015 Framework for Disaster Risk Reduction. Common indicators, shared between these frameworks would allow measurement of how achievements in one framework contribute to the other.

2.2 Prevalent International Practices

2.2.1 Mainstreaming Disaster Risk Reduction into Development

Natural hazards are inevitable. However, the impact of these hazards can be minimized by mainstreaming disaster risk reduction into development. It will not only help in maintaining the development gains but also help in breaking the vicious cycle of disasters and underdevelopment. DRR is defined as the “concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.”⁵⁹ It is clear from the definition that DRR, therefore, aims in addressing vulnerability to build resilience against natural hazards and ensures that development gains do not increase vulnerability to such hazards. It is much easier and cost effective to reducing disaster risks than repairing damage or totally replacing damaged structures. The cost benefit analysis of disaster risk reduction measures indicate that every dollar spent on hazard mitigation generates an estimated four dollars on the average in future benefits.⁶⁰

Thus, “Mainstreaming” DRR into development means “to consider and address risks emanating from natural hazards in medium-term strategic frameworks and institutional structures, in country and sectoral strategies and policies and in the design of individual projects in hazard-prone countries”⁶¹.

The lack of disaster risk considerations in the development processes, including rehabilitation efforts following major catastrophes, leads to investments in “constructing and reconstructing risks” which perpetuate the conditions for unsustainable human development. As a result, the

⁵⁹ UN ISDR

⁶⁰ US-FEMA

⁶¹ Benson and Twigg, 2007

achievement of poverty alleviation, good governance, and other related goals becomes more difficult.

A comprehensive strategy for mainstreaming disaster risk reduction into development involves all stakeholders at all levels of government as well as the private sector, local communities and civil society. It is also required to implement an appropriate legislative framework in place to put forward the agenda of mainstreaming.

At a national level, disaster risk reduction is a crosscutting issue that needs to be ‘owned’ by all government agencies rather than by a single department. However, an overarching national agency is required to provide leadership, determine broad disaster risk management policies, oversee implementation and advocate for the inclusion of disaster risk reduction concerns in broader development.

To mainstream disaster risk reduction into development, it is important to promote and facilitate the process by laying down general policy guidelines, developing sector specific tools and methodologies and creating legal and institutional frameworks for mainstreaming. Mainstreaming disaster risk reduction into development generally penetrates into all sectors of development. Key sectors like agriculture, education, environment, health, housing, infrastructure etc. must be given priority. To mainstream disaster risk reduction, it becomes inevitable to develop necessary frameworks, guidelines and institutional mechanisms for disaster impact assessment of all new development projects at national, provincial and local levels.

UNDP has been engaged in advocacy for mainstreaming DRR into development for long. According to UNDP⁶² mainstreaming of DRR is a governance process enabling the systematic integration of DRR concerns into all relevant development spheres. In other words, responsive, accountable, transparent and efficient governance structures underwrite the environment where DRR can be institutionalized as an underlying principle of sustainable development. UNDP’s mainstreaming approach is based on the five spheres⁶³ of engagement including policy, advocacy and networking, organization, implementation and citizen.

2.2.2 Mainstreaming Disaster Risk Reduction into Security Policies

World over, disasters are becoming more frequent, intense and destructive causing a serious threat to safety and security of human beings. Natural disasters are capable of causing widespread destruction, death and displacement in the affected region and beyond. It is important to note that many of the natural disasters cannot be predicted with full confidence and thus, making appropriate preparation against them is still a daunting task. There are numerous examples from disaster events in the recent past causing widespread devastation, huge death toll

⁶² UNDP/BCPR, 2010, Disaster Risk Reduction, Governance & Mainstreaming

⁶³ UNDP Framework for Mainstreaming DRR into Development

and affecting large parts of the population, also across state boundaries. When such dimensions are involved, disasters, definitely, pose a big security issue, requiring attention of all stakeholders to reduce their impact on communities.

The impact of disasters results in destruction of individual houses forcing people to stay in temporary shelters away from their residences for long and thus, making them refugee in their own country or in neighbouring countries. Disasters' critical bearing on large sections of the affected community is in terms of limiting well-being by changing the social fabric of the society, limiting livelihood options and causing deteriorating health conditions, etc.

As a consequence, mainstreaming DRR into Security Policies is needed to adequately address trans-boundary impacts as well as cross-border measures for prevention and recovery, and in order to avoid destabilization of the area affected by the disaster as well as neighbouring ones exposed to indirect consequences.

Through the UNDP's human security approach an attempt is made to address the needs of the most vulnerable strata of society including women, children, and the elderly. This approach encourages people to act on their own to take protection against the natural hazards.

UNDP in its Human Development Report, 1994⁶⁴ emphasized security of people against natural disasters. The Report identifies "Environmental Security" under which fall security considerations against natural disasters. The seven main threats to human security as identified by the Report, encompasses economic security, food security, health security, environmental security, personal security, community security and political security, all of which have a bearing on people during disaster situations.

Following the UNDP 1994 HDR, in 2001 the UN 'Commission on Human Security was established. The Commission in its final report⁶⁵ submitted in 2003 observed that, "three kinds of crises - economic, natural disasters, and conflict — inflict the greatest shocks on society and people's human security". Traditionally, security is understood in terms of the military defence of state interests, whereas human security provides an alternative, human-centered perception which focuses on securing and protecting individuals' "freedom from want" and "freedom from fear"⁶⁶.

The OSCE's comprehensive approach to security comprises three complementary dimensions (politico-military dimension, economic and environmental dimension and human dimensions), all of which are viewed as being of equal importance. This approach to security rests on the underlying premise that security is indivisible — meaning that co-operation is beneficial to all states while the insecurity in and/or of one state can affect the well-being of all. In other words, the security of every state is inseparably linked to that of all the others. Therefore, security of one

⁶⁴ http://hdr.undp.org/sites/default/files/reports/255/hdr_1994_en_complete_nostats.pdf

⁶⁵ <http://www.unocha.org/humansecurity/chs/finalreport/English/FinalReport.pdf>

⁶⁶ <http://www.unocha.org/humansecurity/chs/finalreport/English/FinalReport.pdf>

state should not be enhanced at the expense of the security of another state. The various aspects of security are viewed as interconnected and interdependent. Closely related to the indivisible nature of security is the co-operative approach to security which calls on states to co-operate in all fields, including the environment, and with a broad range of actors. The states should “endeavour, in developing their co-operation as equals, to promote mutual understanding and confidence, friendly and good-neighbourly relations among themselves, international peace, security and justice” and “to improve the well-being of peoples”. These approaches towards security are also very relevant in the context of disaster risk reduction. The security considerations during disasters emphasize on local level needs, capacities and experiences of people affected by disasters.⁶⁷

Thus, it becomes imperative to take care of security considerations while mitigating the impact of impending disasters. Conversely, if the peoples' security considerations are taken care of, that will contribute in building resilience. Mainstreaming disaster risk reduction for security is an important consideration, requiring much needed attention of decision makers at international level.

2.2.3 Integrating Disaster Risk Reduction and Climate Change Adaptation

It is now well established that disasters are the result of human actions, not simply natural processes⁶⁸, and affect the social, political, environmental and economic context⁶⁹. Disaster risk reduction (DRR) is the systematic development and application of policies, strategies and practices to minimize vulnerabilities, hazards and the unfolding of disaster impacts throughout a society, in the broad context of sustainable development⁷⁰. Disaster risk reduction reduces the underlying factors that contribute to human vulnerability. Disaster risk reduction activities are well established at the grassroots level as a method to reduce vulnerability to all hazards and can involve structural measures such as building disaster safe infrastructure to certain standards, or non-structural measures, for example capacity building, land use planning, education and awareness raising.

Climate change adaptation (CCA) relates to an adjustment in natural or human systems in response to actual or expected climate stimuli or their effects, which moderates harm or exploits

⁶⁷ Source for the text: The OSCE Concept of Comprehensive and Co-operative Security An Overview of Major Milestones, June 2009, OSCE Secretariat, Conflict Prevention Centre, Available at: <http://www.osce.org/cpc/37592>

Source for the quotes: Helsinki Final Act, IX. Co-operation among States, p. 7. Available at: <http://www.osce.org/mc/39501>

⁶⁸ Helmer, M. and Hilhorst, D.: Natural disasters and climate change, *Disasters*, 30, 1–4, 2006

⁶⁹ Mercer, J.: Disaster Risk Reduction or Climate Change Adaptation: Are we reinventing the wheel?, *J. Int. Dev.*, 22, 247–264, 2010.

⁷⁰ UNISDR

benefit opportunities⁷¹. CCA recognizes that due to the concentrations of greenhouse gases in the atmosphere, our climate is, and will continue to change, despite efforts to curb emissions. It is, therefore, necessary to brace ourselves to some extent for coming changes, particularly with regard to vulnerable populations and those likely to experience proportionally more negative impacts. CCA activities also address vulnerability, in this respect in regard to climate changes.

Like DRR, CCA activities are seen as including structural measures and non-structural measures – e.g. reinforcing sea walls, rebuilding or maintaining healthy ecosystems, as well as climate change education and awareness raising. These activities are seen as both DRR and CCA.

The conceptual and practical similarities and differences between DRR and CCA have been the subject of several recent studies⁷². These studies found that whilst there are some political and physical distinctions between the scope of each field there is a key area of similarity – a focus on vulnerability reduction and the enhancement of resilience. A number of compelling arguments for the integration of DRR and CCA have been made and discussions are occurring across scales to make this a reality.

Key benefits of integration have been identified as

- reduced climate related losses through widespread DRR measures;
- increased efficiency of resources (financial, human and natural, which is crucial when considering aid efficiency); and
- enhanced effectiveness and sustainability of CCA and DRR approaches.

Integration makes particular sense at the community level, since communities themselves do not differentiate between DRR and CCA. Rather, they see risks to their livelihoods and the environment upon which they depend. Local communities have been long adapting to changes to their environment and have as a consequence, developed local coping mechanisms that can be built upon and learned from when considering future climate change adaptation strategies.

The OSCE area frequently experiences natural hazards such as floods and storms, earthquakes, etc. causing significant economic and human losses. The implications of climate change in the OSCE are expected to be severe. They include changes to the nature and frequency of extreme events, sea level rise and associated impacts, and threats to water resources. In addition to these direct impacts, climate change has the potential to compound the often devastating impacts of some of the natural hazards in the OSCE area.

Natural hazards and climate change, therefore, challenge the significant investment in development and stability in the OSCE area. As a result, many projects have been established

⁷¹ IPCC

⁷² Mercer, J.: Disaster Risk Reduction or Climate Change Adaptation: Are we reinventing the wheel?, *J. Int. Dev.*, 22, 247–264, 201; Venton, P. and La Trobe, S.: Linking climate change adaptation and disaster risk reduction, Tearfund, United Kingdom, 19 pp., 2008; Mitchell, T. and van Aalst, M.K.: Convergence of Disaster Risk Reduction and Climate Change Adaptation, A Review for DFID, 1–22, 2008

that seek to address the vulnerability of the OSCE area to the negative impacts of climate change and natural hazards. Given the strong similarities in the methods used to reduce vulnerability to disasters and climate change, it has been discussed that successful countering of the adverse impact requires integration CCA and DRR efforts. Limited research is available on comparative advantages of disaster management and conflict resolution methods and their complementarities.

2.2.4 Community Based Disaster Risk Reduction and Climate Change Adaptation

These days, community based approaches to DRR are becoming more common as they recognize local knowledge, conditions and development issues. Benefits are particularly apparent for initiatives that aim to build resilience to disasters and climate change, as local communities are able to work with development partners and identify risks themselves, thereby addressing vulnerability issues using local knowledge.

Within the DRR field, community based approaches to reducing vulnerability have become increasingly popular over the last few decades. In fact, a policy trend towards valuing local knowledge and capacity, and instances of putting this policy into practice are emerging, with interesting examples and pioneering methodologies from Armenia, Moldova, the former Yugoslav Republic of Macedonia, where Local Level Risk Management (LLRM) models were used. Lessons need to be learnt from such examples for replication in the OSCE area. Within the CCA field, there is evidence of increasing interest in community based approaches.

Further examples of the growing popularity of community based approaches are seen in the increasing number of tools developed to assess community vulnerability and resilience by international development agencies.

Analysis of community based approaches with regard to DRR, CCA and vulnerability reduction suggests that community based approaches have proven to be more sustainable, inclusive of innovation and welcomed by beneficiaries. The application of lessons learned is a powerful tool for community based DRR, which is emerging as one of the best approaches to deal with climate change at the local level. Developing series of cases studies highlighting the best practices on DRR and CCA approaches in the region could be helpful in shaping the organizational agenda on for DRR and CCA. By focusing on best practice such studies will be able to contribute to the growing body of practical evidence to further assist in overcoming the challenges associated with integrating DRR and CCA in the OSCE area.

2.3 Important Stakeholders in Disaster Risk Reduction

Disaster risk management is a complex issue. As such, no single agency or actor can deal with disaster risk management alone. A combination of many different stakeholders contributes

significantly to developing a successful DRR/DRM programme. For improving the resilience of local community, it is required to have effective co-ordination and collaboration among all stakeholders.

The role of all stakeholders is critical in achieving the targets as envisaged in HFA. Each stakeholder in different levels has important roles to play in implementing HFA. For example, national governments can commit to the development of national co-ordination mechanism and of policy/legislation, disaster risk reduction baseline assessment, review of national progress in achieving HFA, and integration of disaster risk reduction with climate change strategies. Local governments and Civil Society Organizations (CSOs) are closest to communities and know the risks to disasters at the grassroots level. In order to strengthen the entire disaster risk reduction capacity and to achieve HFA goals, it is important to scale-up the current Community-Based Disaster Risk Reduction (CBDRR) approach and to speed up the implementation of HFA at the local level.

There are many stakeholders in the area of disaster risk reduction, which can play critical role. Role of few of stakeholders in disaster risk reduction and management have been discussed as following:

2.3.1 Policy Makers

Political leaders and legislators constitute one of the most important groups of stakeholders in DRR. They hold primary responsibility of protecting the lives and livelihoods of citizens of their country from disasters. Parliaments can be instrumental in increasing political and economic investment in making socio-economic development disaster resilient and climate proof. Parliamentarians and senators with increased understanding and knowledge of disaster risk reduction (DRR) can play a strategic role in bridging long-existing gaps in DRR between national governments and local authorities. This is because the majority was elected to represent the interests of their local constituencies at the national level. Informed legislators can also play an active role in strengthening policies and legislations at national level and their implementation at local level. The policy makers can play a strategic role in bridging long-existing gaps in DRR. UNISDR is advocating for making disaster risk reduction an essential part of planning and programmes and has taken the initiative to target advocacy efforts at legislators. The aim is to foster an enabling political environment for achieving sustainable socio-economic development resilient to disasters and climate change⁷³.

2.3.2 Local Governments

Local governments are critical for making effective DRR. Proactive role of the local government leadership is essential in ensuring political momentum for implementing local DRR measures

⁷³ UNISDR

with different stakeholders. They are responsible for sustaining a multi stakeholder platform for DRR. They are in a position to engage local communities with DRR activities. To achieve the better community preparedness, they are not only expected to raise public awareness for DRR but also organize training and capacity building programmes including mock drills for local community. A local government is required to consider and institutionalize disaster risk reduction in its day-to-day operations, including development planning, land use control and the provision of public facilities and services.

There are challenges with the local governments vis-à-vis DRR. There are limited capacities for DRR within the local governments. To overcome this lacuna, support mechanism need to be established in collaboration and push from national government, NGOs, and international actors. Local governments are responsible for maintaining the infrastructural facilities within its jurisdiction. Such facilities need to be made disaster safe. Appropriate financial provisions need to be ensured for this purpose. Disaster risk reduction is a lengthy and time consuming process, so it is important to make a long term strategy to handle this issue at local government level.

The most important aspect is the realization among the local and national governments that there would be no disaster resilience without effective decentralization; that communities should be empowered to reduce risk; and that social inequalities and poverty alleviation should be taken into account⁷⁴. In their view, authorities should be better prepared to face future disasters and should receive the appropriate financial and technological support.

2.3.3 Community

Community as an institution in itself is central to the local level risk management. The community is the sufferer of any disaster and the first responder to such event as well. In event of actual disasters, the community, if well aware of the preventive actions it is required to take, can substantially reduce the damage caused by the disaster. Awareness and training of the community is particularly useful in areas which are prone to frequent disasters. During devastating Kobe earthquake of 1994, over 80% of rescued form rabble people were rescued by their neighbors before the arrival of specialized rescue service.

In Tajikistan, with support from UNDP, communities formed voluntary rescue teams to enhance own capacity to respond immediately to disasters. Volunteers were trained and provided light equipment by the state rescue service. In Armenia, a voluntary community rescue team was supported by the State Rescue Service with equipment, means of communication, training and fuel. Recognizing the importance of community level preparedness and resilience, efforts are needed to further strengthen and sustain community based organizations at grassroots levels, which can be an entry point for OSCE in the Central Asia, South Caucasus and the Balkans.

⁷⁴ UNISDR, 2013

Communities had been working towards building resilience at local community level for long. Community based organizations are working to change the way the development works are being done. There is a need for creating more mechanisms to encourage commitment at community level and promoting the inclusion of women and indigenous understanding. Communities are the most suitable mechanism in building resilience at local level besides providing helpful hand into emergency response.

2.3.4 Private Sector

Private sector is an important stakeholder in disaster risk reduction as they have huge investments at stake which are at risk due to disasters. Similar impact on private sector could have worsening security situation. Regional consultations and discussions over shaping the HFA II priorities have identified private sector as a key stakeholder in disaster risk reduction. Regional consultation for Europe and CIS region was conducted in April 2014 in Almaty, where number of participants voice the importance of the role of private sector in HFA II framework and in general in DRR. It has been evident during unprecedented events like 2011 Thailand floods where economic losses were estimated by the World Bank at THB1.4 trillion (USD45.7 billion), which makes these floods as one of the top five costliest natural disaster events in modern history⁷⁵. Besides, private sector can play a critical role in disaster risk management as they have availability of expertise and resources with flexible in terms of procedures and rules. Generally, they are established organizations and are acquainted with local terrain, language and culture of the region. Usually they have field presence. Excellent example of co-operation with private sector on disaster preparedness is the global joint initiative of UNDP and DHL on getting airports ready for disasters. Supply chain interruption is critical for the private sector (Toyota supply chain interruptions after Japan triple disaster of 2011), and it is critical for the private sector to make the supply chain resilience towards disasters. Private sector has big opportunity to support international efforts in the area of disaster risk reduction. Big companies have resources like experts, equipment etc. which can be utilized to its full capacity during all phases of DRR for the benefit of affected or endangered population and sustainability of the business. The private sector increasingly engages in corporate social responsibility initiatives including DRR.

Private sector pioneers in DRR can be instrumental in advocating and raising private sector's awareness on benefits of engaging into DRR. Prevention can be achieved by addressing root causes of disasters which will help in avoiding recurrent occurrences. In the present context, the sector has to be resilient to face major shocks and thus will be able to make responsible investment. The private sector has to be empowered itself and other stakeholders associated with it. For this purpose soft and hard measures need to be devised with a focus on the local level.

⁷⁵ 2011 Thailand Floods- Event Recap Report: Impact Forecasting- March 2012, Aon Corporation, 2012

According to the UNISDR Global Assessment Report on Disaster Risk Reduction (GAR 2013) the private sector is responsible for 70 to 85% of all new investments globally⁷⁶. This includes major multinational corporations as well as small and medium-sized enterprises. These investments build the foundation and critical infrastructure of communities around the world; they provide transportation, drinking water, electricity, offices, public buildings and housing. With every investment decision, a company contributes to either increased risk exposure or greater resilience. In order to create economically viable and resilient societies, all private investments have to be resilient. Reducing a company's own risk as well as encouraging suppliers, vendors, local and national governments to become more resilient makes perfect business sense in an increasingly interconnected world economy.

2.3.5 Non-Governmental Sector / civil society

Emerging trends in managing natural disasters have highlighted the role of Nongovernmental Organizations (NGOs) as one of the most effective alternative means of achieving an efficient communication link between the Disaster Management agencies and the affected community. Many different types of NGOs are already working at advocacy level as well as grassroots level; in typical disaster situations they can be of help in preparedness, relief and rescue, rehabilitation and reconstruction and also in monitoring and feedback.

The role of NGOs is a potential key element in disaster management. The Non-governmental sector that operates at grassroots level can provide a suitable alternative as they have an edge over Governmental agencies for invoking community involvement. This is chiefly because the NGO sector has strong linkages with the community base, and can exhibit great flexibility in procedural matters *vis-a-vis* the government. NGOs can be very useful in all stages of DRR and DRM. While traditional focus of NGOs in DRR was at community level work, NGOs take active part globally in shaping the HFA II.

2.3.6 Other stakeholders

There are many other stakeholders which are as critical in mitigating the impact of disasters at national level. Stakeholders like Armed Forces, Academia, Think Tanks, Research and Training Institutions and Media. These groups have specific role to play in DRR and building resilience. UNISDR has developed a special toolkit for media role in DRR. In Armenia, Ministry of Emergency Situations conducts regular training and awareness sessions for private and public media on their role in emergencies. Intergovernmental organizations are equally important for disaster prepared society, as they can provide substantial resources for carrying forward DRR activities at any given time and space.

⁷⁶ GAR2013

3. IMPLEMENTATION OF OSCE COMMITMENTS IN THE AREA OF DISASTERS

3.1 OSCE Commitments in the Field of Disaster Risk Reduction

The OSCE offers a forum for high-level political dialogue on a wide range of security issues and a platform for practical work to improve the lives of individuals and communities. As an inclusive regional instrument for early warning, conflict prevention, crisis management and post-conflict rehabilitation, the OSCE helps in bridging differences between states and build trust through co-operation.

The OSCE views security as comprehensive and works to address the three dimensions of security - the politico-military, the economic and environmental, and the human - as an integrated whole. With its specialized institutions, expert units and network of field operations, the OSCE addresses a range of issues that have an impact on common security of its area, including arms control, terrorism, environment and natural resources, good governance, energy security, human trafficking, democratization, media freedom and minority rights. The OSCE connects different actors inside and between States and across regions by building partnerships between the private and public sectors and working with civil society.

Disaster risk management, including humanitarian relief, has so far received limited attention within the OSCE, despite recognising the need for disaster risk management starting with the 1992 Helsinki Document. The OSCE participating States have adopted number of commitments that relate to the need for working together to promote security and co-operation in relation to environmental challenges. The topic of natural disasters and industrial accidents has been emphasized several times in political documents by the OSCE participating States. Few of such commitments have been discussed in the following paragraphs.

- 1975 Helsinki

The Helsinki Final Act (1975) calls for harmonization of policies in relation to the environment. In the Helsinki Final Act of 1975 under Chapter 4 (Science and Technology), the “*study and forecasting of earthquakes and associated geological changes; development and research of technology of seism-resisting construction*”, as well as “*human adaptation to climatic extremes*” is agreed as a topic of co-operation.

- 1989 Sofia

At the meeting on the Protection of the Environment of the CSCE in Sofia in 1989, participating States recognized the importance of establishing regional or sub regional mechanisms for

response, assistance, and exchange of information in environmental emergencies. The focus was mostly on dealing with industrial accidents.

At the same meeting, participating States also stressed the need to prevent and control the transboundary effects of industrial accidents and recommended “*consultation and exchange of information on the prevention and control of industrial accidents and their transboundary effects*”, the “*mutual assistance, co-operation and co-ordination including emergency response for the implementation of measures to control the effects of industrial accidents*” and to enhance the scientific and technological co-operation for “*emergency response, including criteria for the monitoring and assessment of transboundary damage*”.

- 1992 Helsinki

At the Helsinki Summit in 1992, participating States encouraged the creation of national environmental arrangements, such as task forces, which could coordinate the dissemination of relevant information on expertise and equipment to countries facing emergencies, to the United Nations Centre on Urgent Environmental Assistance, and to other relevant international organizations. They also suggested that the latter centre should consider having a CSCE liaison officer and should be connected to the CSCE communications network.

During this Summit in 1992, the ministers of participating States agreed that “*the participating States will work towards the development of policies aimed at increasing environmental awareness and educating citizens to reduce the risks of natural and technological disasters, as well as preparing appropriate actions when such disasters occur*”. Furthermore, participating States encouraged exchange of information “*on early warning and assistance in environmental emergencies*”, to designate national “*task forces, which could co-ordinate the dissemination of relevant information on expertise and equipment to countries facing emergencies*” and to connect the UN Centre for Urgent Environmental Assistance to the “*CSCE communications network, which could serve as a supplementary information system in emergency situations*”.

- 1995 Budapest

At the Ministerial Council in Budapest in 1995 (MC decision 2/95) on “A Common and Comprehensive Security Model for Europe for the Twenty-first Century- A New Concept for a New Security” participating States decided that the Chairman-in-Office will organize the work *inter alia* by “*co-operation in solving environmental problems and managing disasters*” (Annex to MC Dec. 2/95).

- 1996 Lisbon

At the Lisbon Summit, through the 1996 Lisbon Document 1996 (DOC.S/1/96) , it was agreed that “*interaction with regional, sub regional, and transborder co-operative initiatives in the economic and environmental field should be enhanced, as they contribute to the promotion of good neighbourly relations and security.*”

- 1999 Istanbul

The Istanbul Summit which took place soon after a 7.6 magnitude earthquake in Turkey, the OSCE participating States declared that *“we need to strengthen the international community’s ability to respond to such events, by improving the co-ordination of the efforts of participating States, international organizations, and NGOs”*. The Permanent Council was tasked with discussing the matter further. At the 1999 Istanbul Summit it was further suggested to use the OSCE as a platform for cooperative security, including on economic and environmental issues. That said, the caveat was added that this will be done *“in ways that neither duplicate existing work nor replace efforts that can be more efficiently undertaken by other organizations.”* .

- 2002 Porto

At the Ministerial Council in Porto, in 2002, the Ministerial Declaration (MC.DOC/1/02) referred to the catastrophe caused by the loss of the oil tanker Prestige and called *“on participating States, the International Maritime Organization and other relevant international organizations to enhance their efforts to ensure the protection of the marine environment against such disasters by strengthening co-operation on the prevention, reduction and control of pollution by oil on the basis of full respect for international law”*.

- 2003 Maastricht

The OSCE Strategy Document for the Economic and Environmental Dimension, adopted at the Maastricht Ministerial Council in 2003 expressed growing concern about threats to the environment and noted that *“ecological disasters resulting from natural causes, economic activities or terrorist acts may pose a serious threat to stability and security.”* The strategy said that *“environmental threats, including risks of natural and manmade disasters, should be identified in a timely fashion and tackled by common efforts of participating States”*. The issue has also been raised in the context of border management. Equally, in the OSCE Strategy to Address Threats to Security and Stability in the 21st Century, adopted at the Ministerial Council, the participating States affirmed that *“environmental degradation, unsustainable use of natural resources, mismanagement of wastes and pollution affect ecological systems and have a substantial negative impact on the health, welfare, stability and security of States. Ecological disasters may also have such effects”*.

- 2004 Sofia

At the Ministerial Council in Sofia in 2004, the Ministerial Council Decision on the OSCE and its Partners for Co-operation referred to the *“possibility to exchange views on how Civil Military Emergency Planning (CMEP) activities could serve as a confidence- and security-building measure with the Mediterranean and Asian Partners for Co-Operation”* (MC.DEC/17/04).

- 2005 Ljubljana

The Border Security and Management Concept (MC DOC/2/05) adopted refers to the need for the *"facilitation of cross-border co-operation in case of natural disasters or serious accidents in border zones"*.

In the OSCE Ministerial Declaration on the 20th Anniversary of the Disaster at the Chernobyl Nuclear Power Plant (MC DOC/3/05) on, the participating States stressed *"how important it is for the international community to develop and apply commonly agreed policies and strategies to ensure that appropriate arrangements are in place for the prevention of, and response to, technological accidents and their consequences for human beings and the environment"*.

- 2007 Madrid

The Madrid Declaration on Environment and Security (MC.DOC/4/07) took note of the *"environmental risks, notably those related to land degradation, soil contamination, desertification and water management, and the environmental impact of natural and man-made disasters, such as the Chernobyl accident, which may have a substantial impact on security in the OSCE region and which might be more effectively addressed within the framework of multilateral co-operation"*. It concluded that *"Environmental degradation, including both natural and man-made disasters, and their possible impact on migratory pressures, could be a potential additional contributor to conflict. Climate change may magnify these environmental challenges"* and that *"Environmental co-operation and the promotion of early warning could be useful tools in diminishing tensions as part of a broader effort to prevent conflict, build mutual confidence and promote good neighbourly relations."*

The OSCE Forum for Security Co-Operation (FSC) called in FSC Decision 16, 2007 on Extended Dialogue with the OSCE Partners for Co-operation in Civil-Military emergency preparedness *"upon the participating States to remain seized of this matter and continue to engage OSCE Partners for Co-operation in dialogue on a bilateral basis on co-operation in activities relating to Civil Military Emergency Planning (CMEP)"*

They noted that *"the OSCE could raise awareness on the potential impact on security of environmental challenges, by using its forum for dialogue and exchange of experiences and best practices and also by integrating these considerations into its activities"*.

- 2008 Helsinki

At the Ministerial Council in Helsinki, in 2008, with the Ministerial Council Decision on the Follow-up to the Economic and Environmental Forum on Maritime and Inland Waterways Co-Operation (MC.DEC/9/08), participating States recognized the *"need to step up regional, subregional and inter-regional efforts, in particular in addressing the challenges and opportunities related to (...) emergency situations and the need for joint emergency responses"*.

-2009 Athens

At the Ministerial Council in Athens, in 2009, the Ministerial Council Decision on Further OSCE Efforts to Address Transnational Threats and Challenges to Stability and Security

(MC.DEC/2/09) recognized that *“the problem of refugees and internally displaced persons throughout the OSCE area, including resulting from conflicts, violations of human rights and natural or human-made disasters, requires enhanced co-operation of all participating States and concerted action”*.

- 2011 Vilnius

At the 2011 Ministerial Council in Vilnius, through the Ministerial Council Decision on Elements of the Conflict Cycle, Related to Enhancing the OSCE’s Capabilities in Early Warning, Early Action, Dialogue Facilitation and Mediation Support, and Post-Conflict Rehabilitation (MC.DEC/3/11), the participating States took note of the *“threats to environmental security, including environmental degradation, natural and man-made disasters and their possible impact on migratory pressures, could be potential contributors to conflict”*.

- 2013 Kyiv

At the 2013 Ministerial Council in Kyiv, the Decision on “Improving the Environmental Footprint of Energy-related Activities in the OSCE Region (MC.DEC/5/13), tasked *“the OSCE executive structures, within their mandates, to further follow the cross dimensional aspects of the environmental impact of energy-related activities when exacerbated by natural or man-made disasters, and to assist participating States upon their request in making best use of the OSCE as a platform for a broad dialogue, co-operation, exchange of information and sharing of best practices on these aspects”*.

Furthermore, the Decision on “Protection of Energy Networks from Natural and Man-made Disasters (MC.DEC/6/13) encouraged participating States *“to consider necessary measures, including the identification and assessment of risks, countermeasures and relevant procedures, at the national and local level, to increase protection of energy networks from natural and man-made disasters”* and *“States, in the context of attaining sustainable development, to implement integrated environmental and natural resource management approaches that incorporate disaster preparedness and risk reduction, in order to obviate adverse effects on energy networks”* and tasked the Office of the Coordinator of OSCE Economic and Environmental Activities *“to identify opportunities for co-operation with international organizations and regional organizations and agencies in the field of protection of energy networks against natural and man-made disasters and to facilitate discussions on possible areas for co-operation”* and *“to facilitate the exchange of good practices, technological innovations and the sharing of information on effective preparedness for, and responses to, disaster risks to energy networks without duplicating activities already carried out by other relevant international organizations”*.

3.2 Implementation of the OSCE Commitments

The OSCE area is prone to number of disasters causing security concerns. This has led to the commitment of participating States formulated in several Ministerial Decisions and other key

documents to strengthen awareness, co-ordination and co-operation with regard to disaster risk reduction as was described in the previous chapter.

The participating States of the OSCE have taken care of meeting these commitments and the disaster-related challenges to security by adopting various mechanisms to safeguard their citizens from the vagaries of such events. Several countries present leading examples in the area of disaster risk reduction and are investing significant resources in security and disaster risk reduction related activities. Countries with limited resources are using the opportunities offered by United Nation through its different agencies (UNDP, OCHA, ISDR etc.) and other international and regional organisations to build disaster safe and resilient nations. The executive structures of the OSCE have supported participating States in their efforts. The following sections will describe the implementation activities first by the participating States, and then by the OSCE.

3.2.1 Implementation of the OSCE commitments by participating States

There are several initiatives and programmes by different agencies for disaster risk reduction and climate change adaptation in the OSCE area. Through these programmes, participating States, UN and other agencies are working providing necessary security against disasters. In addition, the participating States have adopted comprehensive treaties and memberships of different organizations, which have a clear and effective mandate on disaster risk reduction related issues. Details of such implementation activities in the different sub-regions of the OSCE area are presented in the following paragraphs.

3.2.1.1 Efforts for co-operation and co-ordination

The OSCE region has been facing disasters which are resulting in unprecedented losses. To overcome the challenge posed to the security from disasters there are several organizations, which have dedicating efforts to reduce the impact of such events in their respective regions. Such organizations include:

The Organization of the Black Sea Economic Co-operation (BSEC) was established as a 12 member's⁷⁷ state organization with headquarters located in Istanbul, Turkey. The objective of its creation is to maintain the Black Sea region as a stable and prosperous area through the multilateral economic co-operation among its member states.

The BSEC is actively engaged in dealing with disaster risk reduction issues in member states by conducting regular intergovernmental meetings on disaster risk reduction and management.

⁷⁷Member States - Albania, Armenia, Azerbaijan, Bulgaria, Georgia, Greece, Moldova, Romania, Russian Federation, Serbia, Turkey, Ukraine.

There is a technical co-operation among the member states for capacity building activities (e.g., training programmes, conferences/ workshops etc.) for the national staff working in these areas of the member states. The BSEC has signed an agreement of collaboration in Emergency Assistance and Emergency Response to Natural and Man-made disasters in 1998. This agreement facilitates emergency assistance between its member states. There is a working group of BSEC on co-operation in emergency assistance. Under this working group ad-hoc working groups of experts to deal with the issues concerning seismic risks, forest fires and floods in the member states have been constituted.

The Council of Europe (CoE) was established in 1949 by ten countries and has been expanded to entire Europe since then. At present, there are 47 member states⁷⁸ represent the organization. The CoE is based in Strasbourg, France. It is established with an objective of developing common and democratic principles throughout Europe based on the European Convention on Human Rights and other referenced texts on the protection of individuals⁷⁹.

The CoE has formed a European and Mediterranean Major Hazards Agreement (EUR-OPA) in 1987 for co-operation between European and Southern Mediterranean countries in the field of major natural and technological disasters. Current membership of the agreement is 26⁸⁰. The framework of this agreement provides collaboration on the issues like hazard and risk analysis, risk prevention, risk management post crisis analysis and rehabilitation of affected areas. Under the Agreement a series of 27 scientific and technical Euro- Mediterranean centers work on themes of interest at national and regional level. These centers prepare projects for creating awareness and improving resilience of local communities in the member states. The EUR-OPA has a medium term plan (2011-15) highlights⁸¹ of this plan include:

- improving values, law and governance: new policies for disaster risk reduction, promoting education and risk awareness
- Using science and technical co-operation to assess risks, reduce vulnerability and improve resilience of societies;
- Ensuring early warning, efficient response and attention to victims.

The European Union (EU) came into effect by merging European Communities through a treaty in 1993. At present with its 28 member states, the EU is the main driving force for European economic and political unification.

⁷⁸Member States - Albania, Andorra, Armenia, Austria, Azerbaijan, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Republic of Moldova, Monaco, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russian Federation, San Marino, Serbia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, the former Yugoslav Republic of Macedonia, Turkey, Ukraine, United Kingdom

⁷⁹www.coe.int

⁸⁰Council of Europe - European and Mediterranean Major Hazards Agreement

⁸¹Council of Europe - European and Mediterranean Major Hazards Agreement: medium term plan (2011-15)

The European Union promotes civil protection, under which EU support national, regional and local efforts for disaster risk reduction. Under its civil protection action programme, the European Union promotes disaster risk evaluation, prevention and mitigation from hazards, information to the public, preparedness and response, and analysis after the disaster⁸². In 2001 European Union had established a Civil Protection Mechanism (CPM). All 28 member states plus 5 non-member states⁸³ participate in the mechanism. EU, World Bank and UNDP have signed in 2008 an agreement on preparation and implementation of Post Disaster Needs Assessment (PDNA). This is so far, the EU's biggest disaster related on-going institutional commitment.⁸⁴

The European Union has developed a mechanism in terms of the Monitoring and Information Centre. This Centre provides access to countries, whether inside or outside the Union, to a one-stop shop for civil protection means available among all participating States. Based on the appeal for assistance from disaster affected country the center coordinates with participating States on the provision of assistance. To facilitate emergency communication, the European Union has developed a Common Emergency and Information System - a web-based alert and notification application. The European Union has developed a set of 17 modules to train intervention teams from member states to improve co-ordination on civil protection intervention by ensuring compatibility and complementarities.

EU has developed few Directives (the legislation in the European Parliament) related to disaster risk reduction like Directive 2007/60/EC⁸⁵ on the assessment and management of flood risks and Guidance on risk assessment at work (Directive 89/391/EEC)⁸⁶. The Directive on flood risks requires the member states to assess if all water courses and coast lines are at risk from flooding, to map the flood extent and assets and humans at risk in these areas and to take adequate and coordinated measures to reduce this flood risk. The Directive on risk assessment describes how the strategies for identification of hazards and control of the risks should be based on the participation and consultation of all those who work at the workplace, which especially includes workers and their representatives.

The European Union gives due importance to prevention and preparedness issues, based upon 'A Community approach on the prevention of natural and manmade disasters' (Commission Communication -2009). This communication provides leverage to creation of an inventory of information on disasters, improvement of the knowledge base on disaster risk reduction through

⁸²European Commission, EU focus on civil protection, 2002

⁸³ Croatia, Iceland, Liechtenstein, Norway and the former Yugoslav Republic of Macedonia

⁸⁴Personal communication from Armen Grigoryan, UNDP NY,

⁸⁵ http://ec.europa.eu/environment/water/flood_risk/

⁸⁶ <https://osha.europa.eu/data/links/guidance-on-risk-assessment-at-work>

research and collection of best practices, promotion of a multi-hazards, multi-risk approach, etc.⁸⁷

Risk assessments are crucial for enhancing disaster prevention and preparedness activities and contribute significantly to planning and capacity building as described in the Staff Working Paper (2010) on Risk Assessment and Mapping Guidelines for Disaster Management based on a multi-hazard and multi-risk approach⁸⁸.

The European Union has significant resources available for financing disaster preparedness and risk management. The European Commission is also the third largest funder of UNISDR, contributing more than \$19 million between 2000 and 2011⁸⁹. The European Union is the second-largest global humanitarian aid donor beside from its work on civil protection. Also the European Union institutions contributed \$1.7 billion globally for humanitarian assistance⁹⁰

The North Atlantic Treaty Organization (NATO) was founded in 1949. With its present membership⁹¹ of 28, NATO was established as a military alliance to oppose Soviet advancement during the cold war era and to provide military co-operation and collective defense for North Atlantic countries. Its headquarter is located in Brussels, Belgium. NATO recognizes the importance of political, economic, social and environmental factors as a concern to security of member states. Factors like extreme weather conditions and depletion of natural resources have been identified by NATO, which may lead to disasters and regional tensions.

Euro-Atlantic Disaster Response Co-ordination Centre (EADRCC) was established as NATO's principal civil emergency response mechanism in its area of operation⁹². The Centre involves all Member and Allies States of NATO and functions as a clearing house of requests for assistance.

EADRCC conducts annual large-scale field exercises to improve interaction between NATO, Partnership for Peace (PfP) and other partner countries to practice procedures, provide training for local and international participants and build up interoperability skills and capabilities. EADRCC works in close co-operation with UN OCHA.

The South East European Co-operation Process (SEECP) was founded in 2000 with headquarters in Sofia, Bulgaria with 11 member states and two partner countries⁹³. SEECP provides a platform for diplomatic and political dialogue reaffirming the political will and readiness of the countries from SEE to work together in pursuit of a common agenda to meet the

87 European Commission, "A Community approach on the prevention of natural and man-made disasters," Communication from the Commission of the European Commission, Brussels, 2009

88 European Commission, "Risk assessment guidelines," 2011

89 UNISDR, "Donor Partnerships, Biennial Contributions, 2010 -2011

90 Development Initiatives, Global Humanitarian Assistance Report 2012

91 Member States: Albania, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Turkey, United Kingdom, United States

92 NATO, The Euro- Atlantic Disaster Response Co-ordination Centre

93 Member States: Albania, Bosnia-Herzegovina, Bulgaria, Croatia, Greece, former Yugoslav Republic of Macedonia, Moldova, Montenegro, Romania, Serbia, Slovenia, Turkey

region's needs of stability, security, democratization and economic prosperity. Considering the high exposure of South East Europe (SEE) to natural hazards a Disaster Preparedness and Prevention Initiative was launched in 2000(DPPISEE)⁹⁴.DPPI SEE fosters regional co-operation and co-ordination in disaster preparedness and prevention across borders of the SEE.

In 2007 the World Bank, the WMO and the United Nations, through the International Strategy for Disaster Reduction (UNISDR), also initiated the **South Eastern Europe Disaster Risk Mitigation and Adaptation Programme (SEEDRMAP)**⁹⁵. The three components of the Programme have been implemented by three agencies i.e. UNDP, as United Nations' lead agency on strengthening disaster risk reduction in the SEE, WMO on meteorological hazards and GFDRR on disaster insurance. During the 2010 SEECF Ministerial Conference (Antalya, Turkey), the need for a more comprehensive approach to disaster risk reduction, tracking status of and protecting critical infrastructure, co-ordination and active participation of the national authorities was identified⁹⁶. This approach resulted in formulation of South East Europe Disaster Risk Reduction Strategy Outline 2016.

The **South Eastern Europe Disaster Preparedness and Prevention Initiative** provides a valuable contribution to supporting national efforts in South-Eastern Europe. In an effort to contribute to the development of a cohesive regional strategy for disaster preparedness and prevention for its member States, in November 2000, the “Disaster Preparedness and Prevention Initiative” (DPPI) for SEE was launched. Through this initiative a comprehensive project on DRR has been implemented in this region. The first phase of the project mainly focused on national and regional governance and institutional frameworks for DRR. The second phase of SEE Project mainly focused on core and specialized products and services for DRR decision support. Disaster Management Training Programme of the DPPI started in 2002 to exclusively focusing on capacity building of the stakeholders. The project has shown excellent results by enhancing co-operation among the national governments of the region and building capacity of stakeholders in the SEE region.

The participating States in **Central Asia** have made progress in expanding co-operation between governments for technical support and capacity development in disaster risk reduction, as well as in promoting monitoring mechanisms, and systems for the exchange of information and best practice within the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters. Co-operation is supported by the Centre for Disaster Response and Risk Reduction in Almaty (CACDRRR), which became operational in May 2013, jointly

⁹⁴The goal of the DPPI SEE is to foster regional co-operation and co-ordination in disaster preparedness and prevention for disasters. <http://www.dppi.info/content/about-us>

⁹⁵ South Eastern Europe Disaster Risk Mitigation and Adaptation Program, 2008 <http://www.unisdr.org/europe/eu-gfdr-r/Concept-Note-SEEDRMAP.pdf>

⁹⁶ Hyogo Framework for Action, Implementing the Hyogo Framework for Action in Europe: advances and challenges 2009-2011

funded by the governments of Kazakhstan and of Kyrgyzstan. The Centre is a joint collaborative effort of three UN agencies - UNDP, UNOCHA and ISDR. Together with the regional platform, bilateral agreements for partnership and co-operation between National Platforms, the Centre further promotes regional collaboration on disaster risk reduction. There is also a partnership agreement signed by Kyrgyzstan National Platform for Disaster Risk Reduction with its counterpart in Armenia.

Strategies for disaster risk reduction and relevant legislation have been adopted in three countries. This is supported by expanding work on risk assessment and risk mapping - in some cases at the sectoral level – as well as integration within curricula and professional training programmes. Three countries in Central Asia have established National Platforms for Disaster Risk Reduction, and one in the South Caucasus, Introduction of new systems of monitoring, early warning as well as integration of disaster risk reduction in education curricula is under way while early warning systems are upgraded at least in most of the countries in this region.^{97]}

A number of other regional programmes bolstering national efforts of the participating States in Central Asia are also worth mentioning in this regard.

Central Asia and Caucasus Disaster Risk Management Initiative

The Global Facility for Disaster Reduction and Recovery and UNISDR in partnership with other international partners under the umbrella of the Central Asia Regional Economic Co-operation (CAREC) has initiated a Central Asia and Caucasus Disaster Risk Management Initiative, which is in line with the Hyogo Framework for Action 2005-2015 and aims at reducing the vulnerability of countries to security issues and the risks of disasters.

The Central Asia and Caucasus Disaster Risk Management Initiative incorporates three focus areas (with the possibility to include new activities):

- Co-ordination of disaster mitigation, preparedness and response;
- Financing of disaster losses, reconstruction and recovery, and disaster risk transfer instruments such as catastrophe insurance and weather derivatives, and
- Hydro-meteorological forecasting, data sharing and early warning

One of the outcomes of this initiative has been a risk assessment for Central Asia and Caucasus.

Central Asia Climate Risk Management Programme

UNDP is currently implementing a Central Asian Multi-Country Programme on Climate Risk Management (CA-CRM) in all five countries of the region (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan). The purpose of this multi-national program is to strengthen climate-related disaster risk reduction and adaptive capacity, promote early action and provide the foundation for long-term investment to increase resilience to climate-related impacts across

⁹⁷http://www.preventionweb.net/files/32916_implementationofthehyogoframeworkfo.pdf and http://www.preventionweb.net/files/temp/sin_1_5_b5quvssg7fcko8356ka9vIrcnh2l0af7b2jo25mv7e15rc50stv1~posthfaconsultationcacenglish.pdf

the region. The CA CRM is assisting all countries to adjust their national development processes to address risks posed by current climate variability and future climate change.

Central Asia Regional Risk Analysis

The Central Asia Regional Risk Assessment (CARRA) was launched by UNDP Regional Bureau of Europe and Central Asia following the natural crisis which affected Tajikistan and Kyrgyzstan in 2007-2008 as interagency donor co-ordination mechanism among relevant stakeholders (including United Nations agencies and other members of the international community and focused on disaster risks and other development challenges) It was envisaged as an analytical initiative to understand and prepare for compound hazards. In 2011 CARRA, became an umbrella platform for an interagency donor DRR work plan, embracing all major donors, as well as national partners in Central Asia and Afghanistan. The DRR Work Plan has provided an interagency platform (including UNDP, OCHA, GIZ, UNICEF, ISDR, and UNFPA) for executing key tasks, for achieving consensus on priorities and mandates in assisting national partners, and for facilitating regional consultations and co-operation among national partners in high priority areas identified/requested by them. A series of national consultations culminating in a regional conference in December 2012 for national partners from Central Asia definitively shifted the emphasis of the work plan from donor priorities (such as portfolio analysis and advocacy) to core DRR priorities of national partners in regional co-operation.

The CARRA has been instrumental in convening of a regional ministerial conference in October 2013. A resolution of partners (Kazakhstan, Kyrgyzstan, Tajikistan, and Afghanistan) further defines priority actions of CARRA for 2014-16. In recognition of the new direction, the CARRA initiative was been rebranded as Central Asia Regional Resilience Alliance (CARRA) in its new phase 2014-16. During this phase CARRA is expected to:

- Enhanced regional DRR capacities and knowledge
- Risk management in uranium legacy sites
- Vulnerability reduction targeting especially vulnerable social groups

Canada and USA are part of the Organization of American States (OAS), which was established in 1948. The OAS has significant provisions for taking care of disaster risk reduction and strengthen regional co-operation in this respect, for example the Inter-American Convention to facilitate disaster assistance adopted in 1991 or the mandate on disaster risk reduction and management from the Sixth Summit of the Americas 2012.⁹⁸ Canada and USA are also members of Asia-Pacific Economic Forum (APEC), which again has sufficient provisions for emergency management and capacity building of government officials and other stakeholders in the area of

⁹⁸<http://www.summit-americas.org/sisca/dm.html>

disaster risk reduction of the member states, under the lead of a distinguished Emergency Preparedness Working Group (EPWG).⁹⁹

3.2.1.2 Efforts to strengthen disaster risk reduction at national level

In their efforts to implement the Hyogo Framework for Action, the OSCE participating States have since 2005 significantly improved their national co-ordination mechanisms and preparedness activities for disasters. In total, 46 participating States have nominated an HFA focal point and 29 participating States have created national platforms. The National Platform (NP) as a nationally owned and led mechanism facilitates the interaction of key stakeholders around the national disaster risk reduction agenda. NPs involve government organizations, NGOs, civil society organizations, academic institutes and private sector etc. The NPs serve as an advocate for adopting disaster risk reduction and climate change adaptation measures at all levels. The NPs serve as an indicator about the seriousness of the respective national government accorded to DRR issues.

As cities and local governments are the engines of DRR, CCA and security at local levels which need to get ready, reduce risks and become resilient to disasters. The "Making Cities Resilient" campaign of the UNISDR addresses issues of local governance and urban risk. There are 548 cities in 26 participating States of the Organization, which are part of the movement.

Most participating States have made substantial progress in establishing or amending legislative frameworks on DRR. A remaining challenge throughout the OSCE region is nevertheless to sustain long-term commitment and adequate resources for DRR.¹⁰⁰

A number of participating States in Europe, including Eastern and South-Eastern Europe and the South Caucasus, have established national platforms for disaster risk reduction. The functioning of multi-sectoral National Platforms showed significant gains with seven countries establishing new National Platforms: Belarus, Bosnia and Herzegovina, Greece, The Netherlands, Norway, Serbia and Turkey. At the same time, existing platforms expanded their reach and engagement. In general, substantial progress has been reported regarding the establishment of legal and regulatory frameworks for disaster risk reduction. In some cases, the countries enacted new legislation to address DRR; in other countries, existing legislation was amended to remain current and relevant to the changing risk landscape. Preparations for trans-boundary risks showed substantial improvement along with progress in addressing climate change adaptation at local and regional levels.

In North America one of the participating States has officially declared its national platform for disaster risk reduction. While Canada's efforts on disaster risk reduction are largely guided by the Emergency Management Act, which supports policies, programs and strategies to ensure an

⁹⁹<http://www.apec.org/Groups/SOM-Steering-Committee-on-Economic-and-Technical-Co-operation/Working-Groups/Emergency-Preparedness.aspx>

¹⁰⁰http://www.unisdr.org/files/33275_hfa13web.pdf

emphasis on disaster prevention, mitigation and preparedness, it currently is working on an integrated National Disaster Mitigation Strategy to bring a holistic approach to mitigation and support for preventative structural and non-structural disaster reduction and preparedness. Progress has also been made to strengthen institutional and governance mechanism on emergency management between the Federal/Provincial/Territorial governments. Canada's Platform for Disaster Risk Reduction has also continued to strengthen its institutional base and capacities. Four working groups have been established under the Platform and are pursuing activities, largely targeted at the local level, that serve to increase the capacity of communities to build resilience.

The United States through the U.S. Geological Survey (USGS) has established the Science Application for Risk Reduction (SAFRR) team. SAFRR works across societal sectors within communities and with government agency partners to develop and work through disaster scenarios to empower local communities to understand their vulnerabilities and take action to reduce them. The Subcommittee on Disaster Reduction (SDR) was re-established by the National Science and Technology Council (NSTC) Committee on Environment, Natural Resources, and Sustainability (CENRS) in 2011. The USGS has been reorganized from a scientific discipline-based structure to a mission-based structure, forming a Natural Hazards Mission Area (NHMA) that with allied mission areas such as Water unifies and elevates multi-hazard science and response within USGS. A new memorandum of understanding (MOU) with the Federal Emergency Management Agency (FEMA) helps to ensure proper transfer of hazard information to application in crisis preparation and management to the community level. A broad plan was initiated to increase the readiness of the U.S. to predict and mitigate future weather-related disasters.

In many participating States in Eastern and South Eastern Europe, the South Caucasus and Central Asia, disaster risk reduction issues are dealt with by specialized Ministries of Emergency Situations (MoES). Usually the MoES have disaster management departments and in general, disaster management is well institutionalized, although facing similar challenges as in other countries, such as adequate funding and lack of comprehensive national contingency plans to meet the challenge of disaster risk management.

Several participating States face another big challenge in terms development of hydro-meteorological services to make accurate forecasts. There are several gaps in the overall capacity of national hydro-meteorological services in several participating States. Few of these may be described as following:

- Hydrological and meteorological observation networks are old and fast deteriorating, which acutely lack use of modern technologies like remote sensing and GIS for data collection and analysis. Lack of proper data management and numerical modeling techniques makes it more challenging for making accurate forecasts and warning for

natural hazards. Existence of weak communication systems for collection, analysis and dissemination of data and information makes the task much more difficult.

- Limited capacity for training and skill development. As the hydro-meteorological agencies work under government control, this might restrict their possibilities for co-operation at international level including exchange of experts programmes etc. Lack of skills/competency in English language also limits the staff's capability to use internet and contribute and participate in international programmes.

The international efforts to move from a culture of reactive response and recovery after a disaster to proactive risk reduction, security and safety requires a significant change in the mind-set of national experts for disaster management. Most of the countries in the OSCE region have recognized the importance of the paradigm change in the policy from reactive to proactive approach and adopting this shift to build necessary resilience to counter the adverse impact of disasters. However, there are still many challenges to successfully implant a culture of resilience into policies, programmes and planning at national level of the many participating States of the OSCE. The core challenge relates to the need for the political will to advance disaster risk reduction to the top of the policy agenda.

Despite recognition of the importance of DRR, adequate funding from local governments to carry this agenda forward remains another big challenge. Due to insufficient resources, capacity-building for DRR and climate change adaptation often remain underdeveloped.

To overcome such challenges, UNDP has been engaged in development and security in many of the participating States of the OSCE. The UNDP's¹⁰¹ work in the region revolves around the following:

- Armenia, Kyrgyzstan, Serbia and Tajikistan developed strategies to reduce the risk of natural disasters; and Armenia, Croatia, Kyrgyzstan, Serbia, Tajikistan and the the former Yugoslav Republic of Macedonia set up the systems necessary to coordinate the prevention and response to natural disasters.
- Communities living in high risk areas in Armenia, Georgia, Kyrgyzstan, Moldova, Tajikistan and the former Yugoslav Republic of Macedonia developed local plans to deal with the risk of earthquakes and climate change.

3.2.2 Disasters Related Multilateral Environmental Agreements

OSCE participating States have signed and ratified a number of multilateral agreements that imply regulations for disaster risk reduction. Within the ENVSEC Initiative, the OSCE supports

¹⁰¹ http://www.eurasia.undp.org/content/rbec/en/home/ourwork/crisispreventionandrecovery/in_depth/

the promotion and implementation of international and UNECE environmental agreements, some of which are of particular relevance to disaster prevention, risk reduction and response.

The **UN Framework Convention on Climate Change (UNFCCC)** is the parent treaty of the 1997 Kyoto Protocol. The ultimate objective of both treaties is to stabilize greenhouse gas concentrations in the atmosphere at a level that will prevent dangerous human interference with the climate system. With 196 Parties, the United Nations Framework Convention on Climate Change has near universal membership. 55 OSCE participating States are parties to UNFCCC, of which 39 Annex 1 and 16 non-Annex 1 countries.

The **United Nations Convention to Combat Desertification (UNCCD)** is devoted explicitly to combat slow-onset disasters stemming from desertification and drought. It was developed after the Rio Summit and adopted in 1994. It addresses specifically arid, semi-arid and dry sub-humid areas. Out of its 195 parties, there are 55 participating States of OSCE.

The **UN Convention on the Law of the Non-Navigational Uses of International Watercourses** of 1996 entered into force on 17 August 2014. It contains explicit provisions for cases of emergency stemming from natural or human causes, obliging watercourse states to take all practicable measures to prevent, mitigate and eliminate harmful effects of the emergency and encouraging watercourse states to jointly develop contingency plans for responding to emergencies. 17 OSCE participating States are parties to the Convention.

The **UNECE Convention on the Transboundary Effects of Industrial Accidents** obliges parties to cooperate in cases of industrial accidents that have transboundary effects (with some notable exceptions, including accidents at military sites). It also obliges parties to put in place an Industrial Accident Notification System. UNECE maintains this system in a standardized online format that is operated by Parties' points of contact in case of emergency. 40 OSCE participating States are parties to the Convention.

The **UNECE Convention on Transboundary Environmental Impact Assessment (Espoo Convention)** obliges parties to consult affected parties when developing projects and programmes that have transboundary environmental implications. A transboundary Environmental Impact Assessment process would include considerations on the safety of sensitive infrastructure, including industrial plants and nuclear installations, in the event of a natural disaster. 46 participating States are parties to the Convention.

The **UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki Convention)** is intended to strengthen national measures for the protection and ecologically sound management of transboundary surface waters and groundwater. It obliges Parties to prevent, control and reduce transboundary impact, use transboundary waters in a reasonable and equitable way and ensure their sustainable management. Parties bordering the same transboundary waters shall cooperate by entering into specific agreements and establishing joint bodies. The Convention includes provisions on warning and alarm systems in critical situations and mutual assistance. 38 participating States are parties to the Convention.

3.2.3 Major Events Organised by the OSCE in the Area of Disaster Risk Reduction

The OSCE under the leadership, or with the support of its participating States, and in collaboration with its partners, including within the Environment and Security Initiative (ENVSEC), has organized a number of events that addressed various aspects of disaster risk reduction. A summary of such major events are provided below.

Year	Details of events
2014	<p>Meetings: Two preparatory meetings within the framework of the 22nd OSCE Economic and Environmental Forum on “Responding to environmental challenges with a view to promoting co-operation and security in the OSCE area” (27-28 January 2014, Vienna, Austria; 20-21 May 2014, Montreux, Switzerland)</p>
2014	<p>Workshops: National Consultation Workshops on Climate Change and Security</p> <p>Where: the countries of Eastern Europe, Central Asia, and the South Caucasus</p> <p>Organized: by ENVSEC partners as part of an OSCE-led ENVSEC project on climate change and security in Eastern Europe, Central Asia and the South Caucasus. The project is funded by the European Union through its Instrument for Stability, together with the Austrian Development Agency.</p> <p>The workshops brought together representatives and experts from national ministries and agencies, civil society, academia and international organizations to discuss relations between climate change and other pressing environmental and socio-economic issues at the national/trans-national context; identify geographic areas of concern; discuss potential scope of actions to anticipate, prevent and reduce potential security risks resulting from climate change, including natural disasters.</p>
2013	<p>Seminar: Development of a Self-assessment Guide for Nations to Increase Preparedness for Cross- Borders Implications of Natural Disasters and Crisis</p> <p>When: 13- 14 June 2013</p>

	<p>Where: Vienna</p> <p>Organized by: Borders Unit/ Transnational Threats Department of the OSCE</p> <p>Before the seminar, a first draft of the ‘Self-assessment Guide for Nations to Increase Preparedness for Cross- Borders Implications of Natural Disasters and Crisis’ was shared with the participants in order to allow the participants to become familiar with the document and to prepare for discussions. The seminar was held both in plenary as well as smaller working groups and discussed the comprehensive nature of the tool through the use of scenario-based exercises. The seminar was attended by experts from national emergency, civil protection and border services, health, foreign and interior ministries and other interested agencies.</p> <p>The guide contributes to overall response preparedness by promoting existing tools and pointing national authorities to international and regional assistance frameworks. The document compiles expertise from various organizations working on different aspects of disaster response, and thus offers States a comprehensive overview of relevant aspects when preparing for cross-border implications of natural disasters and crises.</p>
	<p>Conference: Regional conference on reducing disaster risks</p> <p>When: 14 March 2013</p> <p>Where: Almaty, Kazakhstan</p> <p>Organized by: OSCE Centre in Astana, United Nations International Strategy for Disaster Reduction office for Central Asia and the South Caucasus</p> <p>Organized as a post-2015 framework for disaster risk reduction (HFA2) consultation for Central Asia and South Caucasus region, the event was attended by 60 representatives of the eight countries of the region (Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) and representatives of regional/sub-regional organizations supporting disaster risk reduction activities namely: Collective Security Treaty Organization (CSTO), UNDP Country Offices of Kazakhstan, Kyrgyzstan, and Uzbekistan, ESCAP, OCHA, UNICEF, World Bank, GTZ, USAID/CAR, JICA, UNEP, Red Crescent Society of Kazakhstan, Regional</p>

	Environmental Center for Central Asia.
2012	<p>Workshop: Workshop on International Response to Major Natural and Man-made Disasters: The Role of the OSCE</p> <p>When: 17 September 2012</p> <p>Where: Vienna</p> <p>Organized by: The Office of the Co-ordinator of OSCE Economic and Environmental Activities (OCEEA)</p> <p>The OCEEA organized this workshop to facilitate the exchange of best practices in the area of national and multilateral international civil emergency response to major disasters, to review the activities of existing multilateral and regional structures in the sphere of natural and manmade disasters civil emergency response, and address major challenges to the international civil emergency response to natural and man-made disasters. It was organized with the intention of raising awareness, providing room for interaction between experts, identifying linkages of the topic to the OSCE's comprehensive approach to security and looking into options regarding a possible follow-up.</p>
2011	<p>OSCE Chairmanship Event: V to V Ambassadorial Meeting on Challenges posed by Natural and Man-made Disasters and the Coordinated Response of the International Community</p> <p>When: 20 May 2011</p> <p>Where: Vienna</p> <p>Organized by: The Lithuanian OSCE Chairmanship</p> <p>The Lithuanian OSCE Chairmanship convened an Informal Ambassadorial Meeting on Challenges Posed by Natural and Man-Made Disasters and the Coordinated Response of the International Community within the framework of the V to V Dialogues. The V to V Dialogues are a set of informal discussions on topics covering all three dimensions of Euro-Atlantic and Eurasian security.</p>

	<p>This meeting took stock of multilateral agreements, instruments, good practices and policies in disaster preparedness, risk reduction and disaster response in the OSCE area, and discussed a possible role for the OSCE.</p> <p>International experts presented existing international efforts in the field of disaster preparedness, risk reduction and response. Presentations addressed the following topics:</p> <ul style="list-style-type: none"> • Activities of the OSCE in disaster preparedness and disaster risk reduction and response; • Multilateral environmental agreements and their role in disaster preparedness and disaster risk reduction and response in the OSCE area; • Good practice in disaster relief; • Safety of sensitive infrastructure from disasters.
2010	<p>Seminar: Advanced Regional Seminar in Wildland Fire Management</p> <p>When: 1-4 March 2010</p> <p>Where: Antalya, Turkey</p> <p>Organized by: OSCE, - the Global Fire Monitoring Center (GFMC) / United Nations University (UNU), the General Directorate of Forestry of Turkey, the UNISDR Regional Southeast Europe Wildland Fire Network and the UNECE / FAO Team of Specialists on Forest Fire.</p> <p>The regional seminar aimed to exchange expertise in fire management between countries of the South Caucasus, the Southeast European region, Russia, Turkey and Germany</p>
2009	<p>Seminar: Advanced Seminar “Wildfires and Human Security: Fire Management on Terrain Contaminated by Radioactivity, Unexploded Ordnance (UXO) and Land Mines”</p> <p>When: 6-8 October 2009</p> <p>Where: Kiev and Chernobyl, Ukraine</p> <p>Organized by: OSCE, the Global Fire Monitoring Center (GFMC), the UNISDR Regional Southeast Europe Wildland Fire Network and the UNECE / FAO Team of Specialists on Forest Fire.</p>

	The seminar addressed consequences of wildfires and fire management solutions on terrain contaminated by radioactivity, unexploded ordnance and land mines.
2009	<p>Conference: The security implications of climate change in the OSCE region</p> <p>When: 5-6 October 2009</p> <p>Where: Bucharest</p> <p>Organized by: The Greek Chairmanship of the OSCE, the Romanian Ministry of Foreign Affairs and the Office of the Co-ordinator of OSCE Economic and Environmental Activities.</p> <p>This event brought together experts and representatives of participating States, international organizations and institutions to discuss the ways climate change may impact on security in the OSCE area, and develop tools for co-operation. It aimed to foster dialogue and international co-operation on the security aspects of climate change</p>
2006	<p>Conference: New Challenges and Crisis Management: Demobilization, Disarmament, Rehabilitation, Disasters and Disruption - EU and OSCE responses</p> <p>When: 17 November 2006</p> <p>Where: Vienna</p> <p>Organized by: Austrian Institute for International Affairs in co-operation with the Federal Ministry of Foreign Affairs and the Institute for Peace Support and Conflict Management</p>

3.2.4 ENVSEC and Disaster Risk Reduction- over a decade of partnership

The Environment and Security Initiative (ENVSEC) was established in 2003 as a unique partnership bringing together the OSCE, UNDP, UNEP, UNECE, REC and NATO as an associated member. ENVSEC's mission is to strengthen national capacities, regional co-ordination mechanisms and international co-operation for environment and security risk reduction. The Initiative tackles the environmental factors of stability and security, ranging from conflict prevention to disaster risk reduction, in a flexible and comprehensive way. As environment and security risks are not confined with borders, a basin-wide or eco-system

approach is adopted within ENVSEC. ENVSEC operations are focussed on four regions, where in total: Eastern Europe, South Eastern Europe, South Caucasus and Central Asia where more than 150 projects on environment and security have been implemented¹⁰². ENVSEC has benefited significantly from the support and contributions of the OSCE participating States in these four sub-regions and beyond.

ENVSEC works in the following four thematic areas:

- **Natural Resources and Security Risk Management** - Activities under this thematic area focus on enhancing the transboundary management of shared resources, including forests, land, water, rivers and energy, with the goal of providing equitable long-term solutions. ENVSEC supports countries to improve their policies and regulations on environment and security challenges such as water management, natural disasters, with particular focus on flooding and fire management; dam failures, and illegal logging.
- **Hazardous Substances and Security Risk Reduction** - The ENVSEC Initiative supports assessments, capacity building, and the development of preparedness and emergency response capacities in order to prevent or minimize the risk from past, present and future activities involving hazardous substances.
- **Climate Change Adaptation and Security Risk Reduction** - Climate change has wide range of direct and indirect risks related to water, energy and food security, as well as to human health and economic livelihoods. Failure to adapt to challenges like floods, drought, coastal erosion, glacial melting and heat waves can result in disasters and societal instability. At regional level, climate change will put stress on existing mechanisms for sharing resources such as transboundary rivers and arable land. The strengthening of policies, institutions and capacities are among the main activities of the ENVSEC Initiative. The Initiative also raises awareness of the links between climate change and security at local, national, regional and international level.
- **Information on Environment and Security and Participation in Risk Management** - The ENVSEC initiative provides due emphasis on awareness raising, information sharing, promoting participation along with strengthen the capacities of policy and decision makers, NGOs, civil society groups and local communities. The ENVSEC initiative facilitates public authorities and civil society to undertake participatory planning that includes security issues in environmental policy making. The Aarhus Centres Network supported by the OSCE constitutes one of the major public outreach tools of ENVSEC.

¹⁰² Environment and Security Initiative - transforming risks into co-operation; ENVSEC leaflet available at http://www.envsec.org/publications/ENVSEC_leaflet.pdf

3.2.5 Aarhus Centres - Environment and security public outreach facilities

The OSCE aims to empower civil society to participate in addressing environment and security challenges. The OSCE is also actively engaged in supporting the participating States in the implementation of the UNECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (the Aarhus Convention).

The OSCE in close collaboration with the UNECE and mostly through the ENVSEC initiative creates and supports the operation of Aarhus Centres/ Public Environmental Information Centres. As of August 2014, there are 56 Aarhus Centres in 14 countries in South-Eastern Europe (Albania, Bosnia and Herzegovina, Montenegro, Serbia), Eastern Europe (Moldova, Belarus, Ukraine), the South Caucasus (Armenia, Azerbaijan, Georgia), and Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan).

Each Aarhus Centre takes into account specific local needs and capacities. They disseminate environmental information, raise public awareness on environment and security issues, organize public hearings, monitor environmental hotspots, provide legal advice, support local environmental planning, and engage young people and women in environmental initiatives. The centres increasingly serve as an outreach facility for OSCE and for ENVSEC to local communities. They also provide a platform for dialogue and interaction between governmental officials, NGOs and citizens.

Bearing in mind that local communities with all their stakeholders can play an important role in strengthening disaster resilience by maximizing awareness and encouraging civilian participation in disaster risk reduction, the Aarhus Centers offer a good platform to promote community based disaster risk reduction.

3.2.6 Projects implemented by the OSCE in the field of disaster risk reduction

At present, the OSCE engagement in disaster risk mitigation and management has been limited and confined to a few select thematic areas. Further work is needed to address the security challenges posed by disasters in the OSCE area.

Below is a summary of the DRR related projects implemented by the OSCE with the support of its participating States and in close collaboration with its partners, particularly within the framework of the ENVSEC Initiative:

ENVSEC Project on “Enhancing National Capacity in Fire Management and Wildfire Disaster Risk Reduction in the South Caucasus”:

The project is launched by the OSCE in 2009 with a view to assist the South Caucasus countries in enhancing their fire management capacities. The project is based on the outcomes of the

“OSCE-led Environmental Assessment Mission to Fire-Affected Territories in and around the Nagorno-Karabakh Region” in 2006 and the “Joint OSCE/UNEP Environmental Assessment Mission to Georgia” in 2008. It is implemented jointly with the Global Fire Monitoring Center. During its three phases, in addition to several national and regional capacity building activities, the project delivered a National Fire Management Policy for Georgia and legislative and institutional analysis and draft fire management policy documents for Armenia and Azerbaijan. Building on the achievements of the earlier phases, the project now aims for the development of a Wild-land Fire Danger Rating System (FDRS) in all three countries. The FDRS is a decision making tool for effective wildfire management at national and local levels. The system will enable more effective implementation of the fire prevention, detection and suppression plans and will provide early warning of dangerous burning conditions. The design and construction of the FDRS will be followed by a series of trainings on the use of the system. Preparations are also underway for organizing the second Advanced Regional Seminar in Wild-land Fire Management, in the fall 2014, in Turkey, with the participation of the South Caucasus countries and selected South Eastern European countries.

ENVSEC Project on “Strengthening the capacities of Aarhus Centres in disaster risk reduction (DRR) in order to enhance awareness of local communities”:

The project is led by the OSCE and is implemented together with UNDP, UNEP and REC. Based on the existing institutional structure and the partnership arrangements of the Aarhus Centres, this project aims to enhance the capacities of Aarhus Centres in the field of DRR, and empower them to be active players in promoting community based disaster risk reduction efforts, which have security implications within and across borders. 7 countries of high disaster risk (Albania, Armenia, Bosnia and Herzegovina, Kyrgyzstan, Moldova, Tajikistan, and Serbia) participate in the project. Of the 35 Aarhus Centres in these countries, at least 24 are located in areas vulnerable to natural hazards and many of them already have established contacts with NGOs active in DRR. As direct beneficiary of this project, the DRR-related capacities of these Aarhus Centres will be strengthened in two ways:

- a) by learning about community-based management approaches in disaster risk management taking into account the knowledge and experience of local DRR stakeholders; and
- b) for a selected number of them, in addition by developing and implementing elaborated action plans (with concrete measures and new communication tools) to raise disaster awareness, disaster prevention and disaster preparedness of local communities.

With this knowledge and skills, Aarhus Centres will be better equipped to facilitate adequate civilian participation in DRR activities.

ENVSEC Project on “Climate change and security in Eastern Europe, Central Asia and the Southern Caucasus”

The project has been initiated under OSCE's leadership in 2013 as a three-year project. It is funded by the European Commission/Instrument for Stability (EC/IfS) and Austrian Development Agency (ADA) and is implemented jointly by the OSCE, UNDP, UNEP, UNECE and REC. The project aims to enhance understanding and awareness of climate change as a security challenge and the consequent need for regional and transboundary co-operation in adaptation in the three regions; and to enhance national and regional capacity to anticipate, prevent and mitigate effectively and in a timely manner potential security risks resulting from climate change. The specific project activities include:

- Participatory assessments of security impacts of climate change are designed and produced for each region
- Production and dissemination of information on security impacts of climate change and required adaptation measures
- Development of a Dniester basin-wide/transboundary climate change “Strategic framework for basin wide adaptation” (adaptation strategy) and endorsement by relevant authorities together with an implementation plan
- Training of key stakeholders are trained on security impacts of climate change

ENVSEC Project “Reducing vulnerability to extreme floods and climate change in the Dniester river basin”

The project jointly implemented by UNECE, OSCE and UNEP has contributed to reducing damages and associated security risks due to future flooding events; assessing other possible impacts of the changing climate; and to improved adaptation in the floods-prone Dniester river basin shared by Moldova and Ukraine. The project was undertaken in 2010-13 and is also part of the UNECE- ENVSEC programme of pilot projects on climate change adaptation in transboundary basins. The following results have been achieved:

- Vulnerability assessment for the entire Dniester basin;
- The modelling and mapping of flood risks in selected territories including the Dniester Delta;
- A series of interviews on flood alerts and flood communication with national and local representatives of responsible organizations took place in the basin along with an overview on flood communication and information exchange in the basin;
- An international workshop on flood communication was organized in the basin on in May 2013 (Lviv, Ukraine) gathering over 60 representatives of all key organizations from Ukraine and Moldova, international organizations and external experts from the UK, the Netherlands, Poland, as well as the Danube and the Tisza rivers basins.
- Local plans on flood communication for 4 communities in the basin were elaborated during the workshop.

4. CONCLUSIONS AND RECOMMENDATIONS

The OSCE's involvement in the area of Disaster Risk Reduction is based on the several existing key decisions and documents, adopted by the organization, including but not limited to the following:

- Commitments, principles and perceptions related to environment, natural disasters and security in the 1975 Helsinki Final Act, Helsinki Document 1992
- Ministerial Council Decision (MC (5).DEC/2) on Common and Comprehensive Security Model for Europe for the Twenty-First Century: A New Concept for a New Century, 1999 Istanbul Summit
- The OSCE Strategy to Address Threats to Security and Stability in the Twenty-First Century and the OSCE Strategy Document for the Economic and Environmental Dimension adopted at the Maastricht Meeting of the Ministerial Council in 2003
- Madrid Declaration on Environment and Security adopted at the Madrid Meeting of the Ministerial Council in 2007
- Ministerial Council Decision No.9/08 on the Follow-up to the Economic and Environmental Forum on Maritime and Inland Waterways Co-operation
- Ministerial Council Decision No. 5/13 on Improving the Environmental Footprint of Energy-related Activities in the OSCE Region and Ministerial Council Decision No. 6/13 on Protection of Energy Networks from Natural and Man-made Disasters.

Furthermore, it is increasingly clear that most of the natural hazards and man-made risks in the OSCE region have transboundary nature, and that environmental degradation and disasters, including small scale and slow-onset disasters, could be potential contributors to conflicts.

Consolidating co-operation on disaster risk reduction among the OSCE participating States

The growing significance of environment, climate change and disaster risk reduction in recent times has put forward the need for strengthening capacities of the OSCE participating States in these areas. This year's floods in the Balkans (Bosnia and Herzegovina, Croatia, and Serbia) are a grim reminder of the security challenge faced by the OSCE area from natural disasters and the need for transboundary co-operation. These floods resulted in loss of lives and injury of people and forced them to live without basic facilities, such as water and sanitation, communication, electricity etc. Clear link to security was the evidence of **landmines that were moved by the floods** in Bosnia and Herzegovina and Croatia. Extreme weather events become more frequent

and pose increasing risk to the existing governance systems, including security. In the changing climate scenario, which will inevitably lead to more severe disasters and extreme weather events, **systematic institutionalized co-operation between the OSCE participating States** on disaster risk reduction becomes a priority. This effort should be complimented with the establishment of functional partnerships with other international and regional institutions, working on the issues of climate change and disaster risk reduction. The OSCE is in a position, therefore, to encourage its participating States to use bilateral and multilateral partnership opportunities to promote co-operation, exchange of experiences and best practices on disaster risk reduction.

Recommendation #1: Systematic institutionalized co-operation between the OSCE participating States on disaster risk reduction

Enhanced co-ordination with other international organizations

Potential impact of disasters on security and stability of the OSCE participating States is a serious challenge, which as a minimum requires detailed assessment and understanding. The OSCE can benefit from the experiences of, and lessons learned by several global, regional and national stakeholders working on disaster risk reduction and climate change, including UNDP. Conceptually, the work on disaster risk reduction includes prevention, mitigation, preparedness, response, recovery and reduction of risks. The OSCE has a comprehensive approach to security, which can be complimented with the multi-hazard risk reduction approach in disaster risk reduction. Efforts are undertaken by several international organizations, inter alia, the United Nations and its specialized agencies in the area of disaster risk reduction, while the OSCE has added value in strengthening these efforts due to its comprehensive approach to security, cross-dimensional approach and geographical coverage. Within the UN system, **UNDP** as a development organization focuses on mitigation, prevention, preparedness, recovery and reduction of disaster risks, and **UNOCHA** (Office for Coordination of Humanitarian Affairs) focuses on response co-ordination. A number of other UN Agencies have programmes on DRR. On average, over the past five years, **UNDP has spent over \$150 million annually on disaster risk reduction** only, while the expenditures on climate risk management are considerably higher. In the Europe and CIS region (ECIS), UNDP has been actively working with partners, including governments, civil society, academia, local authorities, parliamentarians, private sector, etc. **NATO** has developed very clear protocols for the use of military assets in responding to disasters. NATO's Euro-Atlantic Disaster Response Coordination Centre (**EADRCC**) conducts annual large-scale field exercises to improve interaction between different members states on issues related to disaster response. At the same time, **UN OCHA** (Office for Coordination of Humanitarian Affairs) has an on-going programme on Civil Military Cooperation in Emergencies (**CIMIC**) and use of Military and Civil Defence Assets in emergencies (**MCDA**). The response and humanitarian component of the UN's work also includes partnerships, such as International Humanitarian Partnership (**IHP**) on provision of

equipment and expertise in response to major emergencies. Additionally, UNOCHA coordinates UN system wide process of UNDAC – United Nations Disaster Assessment and Coordination, which in partnership with other organizations and Governments provides immediate assessment and coordination in post disaster situations. Normally, UNDAC mission would establish OSOCC – On Site Operations Coordination Centre, which exchanges liaison representation with key relevant stakeholders – a practical and justified way for the OSCE to engage in post disaster situations. UNDAC also runs induction and refresher training courses, where number of seats can be allocated to external partners, such as OSCE.

There already exists a mechanism for co-ordination and co-operation of six agencies, including the OSCE, entitled the Environment and Security Initiative (ENVSEC), which is referred to in Chapter III. ENVSEC aims to strengthen national capacities, regional co-ordination mechanisms and international co-operation for environment and security risk reduction. As a result of continued support of the participating States along with concerted efforts by the partner agencies, ENVSEC has eventually developed into a unique multi-agency programme covering Eastern Europe, South Eastern Europe, South Caucasus and Central Asia and appears to be well placed for co-ordination of activities in the area of disaster risk reduction. It is therefore worth considering further strengthening this mechanism as well as the OSCE's engagement in it with a view to embracing possible future disaster risk reduction efforts.

***Recommendation #2:** The OSCE should co-ordinate its activities on disaster risk reduction with other international and regional organizations active in this field taking into account the added value of the OSCE's comprehensive approach to security and regional coverage and should further strengthen its engagement in ENVSEC as a robust mechanism for co-ordination and co-operation among international organizations.*

Engagement with UNDP to reduce the risks of man-made disasters in Central Asia

The OSCE mandate on peace and security is thematically closely linked with the wide range of issues including disasters originated from natural hazards and as a result of human activity. There are number of regional and sub-regional mechanisms to deal with issues of disaster risk reduction: Disaster Preparedness and Prevention Initiative for South Eastern Europe (**DPPI SEE**), NATO's Euro-Atlantic Disaster Response Coordination Centre (**EDRCC**), European Union's institutions and programmes as well as the European Commission's Humanitarian Aid and Civil Protection department (**ECHO**). **UNDP's** contribution towards disaster risk reduction in the OSCE area comes through over **18 national DRR programmes** and **five regional initiatives** implemented by the UNDP's Regional Service Centre for Europe and Commonwealth of Independent States (ECIS). Areas of UNDP expertise and work in the region include, but are not limited to: Governance for DRR, institutional and legal systems for DRR, Disaster Legislation, Risk Identification and Assessment, Capacity Development, Training and Learning, Preparedness and Recovery from emergencies. A practical way of engagement for OSCE with

strong link to security related issues is to partner with UNDP in working on **Uranium Tailings in Central Asia**. This work aims to reduce disaster risk and contribute to bringing peace, stability and security of affected population with focus on vulnerable groups.

***Recommendation #3:** The OSCE to engage with UNDP and other partners in reducing the risk and improving the security aspect around Uranium Tailings in Central Asia.*

Joining the efforts under the UN inter-agency capacity for disaster reduction initiative

Disasters do not recognize borders, therefore regional co-operation is critical in achieving results on reducing disaster risk and improving security situation of people. **Regional and sub-regional co-operation on disaster risk management will reduce conflicts and build confidence which will contribute to strengthening security and stability.** The UNECE Convention on the Transboundary Effects of Industrial Accidents, the UNECE Convention on Environmental Impact Assessment in a Transboundary Context and the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes provide institutional basis for engagement in the work on transboundary risks.

An **inter-agency DRR capacity assessment** methodology for disaster risk reduction is applied by **CADRI** – Capacity for Disaster Reduction Initiative – an inter-agency capacity development platform of six UN agencies, managed by UNDP with IFRC (International Federation of Red Cross and Red Crescent Societies) and MSB (Swedish Civil Contingencies Agency) being observers. The OSCE’s experience in environmental assessments in emergencies can be very useful and compliment the technical areas of expertise of participating UN Agencies and other partners.

***Recommendation #4:** The OSCE could explore possibilities of joining the CADRI inter-agency DRR capacity assessment platform.*

Establishment and/or strengthening of national multi-stakeholder mechanisms for disaster risk reduction

The OSCE participating States have recognized the importance of co-operation on addressing natural and man-made disasters. During the OSCE Summit in Istanbul of 1999, the participating States, emphasized their desire for improved co-ordination in disaster response. The Istanbul Summit Document recognized the need to strengthen the ability to respond to disasters, by improving co-ordination of the efforts of participating States, international organizations and NGOs. **The OSCE participating States can be encouraged to establish and/or strengthen the national multi-stakeholder co-ordination mechanisms for disaster risk reduction, such as National DRR Platforms or extended UN Disaster Management Teams (UNDMT’s),**

while the OSCE should join forces with other international organizations in supporting National DRR Platforms.

Recommendation #5: The OSCE could encourage participating States to establish and/or strengthen the national multi-stakeholder co-ordination mechanisms for disaster risk reduction while providing participating States with support in such endeavors, including through joint efforts with other international organizations.

The OSCE's position paper on disaster risk reduction and climate change adaptation

The OSCE can play a significant role in DRR and CCA (Climate Change Adaptation) based on its experience in the region's crises, direct link between disasters and security, organization's ability to bring together major donor countries in the fields of development co-operation and humanitarian assistance.. The OSCE also has significant experience in dealing with security and environment challenges. Using this experience, the organization has the potential to broaden its work towards disaster risk reduction and issues related to it. Development of specific **regional disaster risk reduction framework by the OSCE** would result in better integration of disaster risk reduction and climate change initiatives in the OSCE's core security and regional co-operation work. Additionally, a **DRR and CCA position paper** and/or regional strategy would provide impetus for the organization to engage institutionally.

Recommendation #6: The OSCE could institutionalise its position on DRR and CCA by developing the organization's position paper to address disaster risk reduction and climate change adaptation.

Mainstreaming of DRR in relevant OSCE projects and activities

The theme of the Economic and Environmental Forum in 2014 under the Chairmanship of Switzerland as well as the Forum process including the two preparatory meetings and the Concluding Meeting in Prague are major step by the OSCE to address the challenges faced by the participating States in the area of disaster risk reduction. This is a reflection of the strong commitment by the OSCE leadership towards addressing the challenges of our times, such as climate change and increasing frequency of disasters. This year's deliberations under the Swiss Chairmanship, provide the OSCE with a unique opportunity to progressively **integrate the DRR and CCA issues into the organization's work**, as DRR and CCA work best, when mainstreamed, and not as standalone initiatives. Institutional **mainstreaming of disaster risk reduction and climate change adaptation** is key. This would allow the OSCE to work with national stakeholders on integration of disaster risk reduction and climate change adaptation measures into national and local programmes and policies and will provide necessary impetus for reducing the risk of disasters. The national governments will be encouraged to take up vulnerability reduction activities at national level through training, education and other similar

activities. **Secondments of DRR practitioners to the OSCE Secretariat** from UNDP and/or other leading international/regional institutions working on DRR can be the first step.

***Recommendation #7:** The OSCE could further integrate DRR into the organization's work by mainstreaming DRR in relevant projects and activities and by recruitment of DRR practitioners.*

Engagement in the work of regional and sub-regional networks in the area of disaster risk reduction

Capacity development, learning, training and research are critical for science and evidence based DRR and CCA. While the OSCE Secretariat is well placed to conduct the research and develop training materials, OSCE's network of field operations and possibly the Aarhus Centres can play an important role in delivery and collection of feedback. A very practical area for the OSCE engagement at regional level in Central Asia is to provide DRR capacity development support to the **Central Asian Centre for Disaster Response and Risk Reduction (CACDRRR)**. The Center has been established in Almaty in 2014. Kazakhstan and Kyrgyzstan currently take part in its activities, Tajikistan is considering joining it and Afghanistan has an observer status. UNDP has already been working with the center.

Establishment of a virtual space for collecting and sharing information on DRR and CCA will support OSCE's work on links between climate, environment, disasters and security. It will facilitate expansion of the knowledge base among the stakeholders within and beyond the participating States. The "OSCE Knowledge Network" can be a multi-purpose hub for the OSCE participating States allowing them to access information from specifically designed portal for each participating state. The network could also establish links with relevant global, regional and national web portals and databases (**EM DAT, GRIPWEB, GFMC, Central Asia DRR Knowledge Network**) to enhance the OSCE institutional data and awareness.

Enhancement of regional cooperation on early warning systems, meteorological and seismological data and fire monitoring are essential elements for more predictable disaster profile and stable security situation. To improve the efficiency of disaster risk reduction initiatives in the OSCE area, the Organisation could make use of new technologies and develop frameworks for better analysis and management of disasters situations. In this context, use of **space-based technologies for disaster risk reduction** in the OSCE area could be beneficial. Such technologies will help in reducing the impact of disasters on communities and result in mitigating the impact of disasters and improved security. For this purpose, the **UNSPIDER** (United Nations Platform for Space-based Information for Disaster Management and Emergency Response) can be the natural partner to build the capacity of the stakeholders in adopting and use of such technologies.

***Recommendation #8:** The OSCE should explore possibilities for practical engagement in the work on DRR capacity development for the CACDRRR, as well as other regional and sub-regional operational and information networks.*

Facilitation of inclusion of disaster risk reduction considerations in the activities of government agencies and private sector

Experience shows that it is easier to mobilize support for disaster response than for efforts to reduce the risk of natural hazards. Investments in long term efforts to reduce future risks of disasters rarely take a front seat as such efforts do not yield an immediate payoff to political leadership. The **OSCE could join other international and regional partners in advocating** with participating States to invest in disaster risk reduction and climate change adaptation activities. UNDP has already developed significantly strong relationships with national governments to work with them on disaster risk reduction in the OSCE area and can be a strong ally to the OSCE in strengthening the capacity of the participating States in DRR.

Different studies (some conducted by the World Bank's Global Facility for Disaster Risk Reduction – GFDRR and UNDP) demonstrate the cost-benefit analyses of investing before and after disasters with the ratio of one up to seven (1:7), which means it is 7 times more costly to invest in disaster response than in disaster risk reduction.

Disaster Risk Reduction is everybody's business and involvement of the **private sector** has been increasingly advancing in the last few years. It is expected that the role of the private sector in DRR will be increased in the post 2015 DRR framework (HFA 2). The private sector through its corporate social responsibility can join national governments in building resilience (social, economic and physical) against natural disasters.

***Recommendation #9:** the OSCE could advocate for inclusion of DRR considerations in the work of government agencies and the private sector.*

OSCE support to disaster risk reduction at local level

Community Based Disaster Risk Reduction (CBDRR) is the key to build resilience at local level. Aiming at strengthening resilience of nations and societies in the OSCE region will enable them to resist, absorb, accommodate to and recover from the effects of disasters in a timely and efficient manner. **Piloting CDBRR in most disaster-vulnerable participating States** in the OSCE area can be the first step. Considering the hazard profiles and vulnerability status, Central Asia and South Caucasus can be considered for the initial stage. This would require putting forward a multi-stakeholder partnership by involving international agencies, civil society, community based organizations along with the private sector. Application of the **OSCE CASE NGO Small Grants Programme** mechanism to the thematic area of DRR and CCA will be the first step to engage with partners and institutionalize the approach.

The Aarhus Centres are well placed to create much needed awareness on DRR issues as well as initiate community based DRR activities. In some countries of the region Aarhus centres already got involved in DRR awareness work in partnership with UNDP through the ENVSEC Initiative, in particular through an ongoing project financed by Switzerland. This initiative needs to be supported, scaled up and institutionalized. A very practical way of engagement for OSCE in the DRR work would be to continue these activities aimed to develop capacity of Aarhus Centres in the region to conduct public awareness programmes on disaster risk reduction

Disasters and conflicts are linked through common causes, such as poor governance, environmental mismanagement, as well as migration and displacement. It is also increasingly clear that most of the disaster management and conflict resolution methodologies have a lot in common. It is also important to note that both disasters and conflicts hit hardest the most vulnerable and poor groups of population, such as children, elderly, women, disabled, etc.

Recommendation #10: *The OSCE should consider more substantial and regular engagement into the local-level work on DRR through, inter alia, strengthening of the respective capacities of Aarhus Centres and the CASE NGO Small Grants Programme.*

Contribution to Global DRR Agenda

The OSCE could have an increasing role in shaping international agenda for DRR. Three avenues for further engagement of the organization into the Global DRR Agenda are provided below:

1. Substantial contribution and participation in the World Conference on DRR, Sendai, Japan, March 2015 and HFA 2. The OSCE can also encourage its participating States to have a proactive position and engage in discussions on disaster risk reduction and climate change. UNDP being a key contributor can facilitate this entry.
2. Political Champions on DRR: multi stakeholder high-level initiative addressing DRR concerns in a concerted manner in 8 identified countries where UNDP is represented by its Administrator, Ms. Helen Clark.
3. OSCE can increase its visibility on the global DRR scene by stronger engagement in the post-2015 global development agenda by pairing with UNDP and UNISDR on work in the development of DRR indicators for SDGs – Sustainable Development Goals.

Recommendation #11: *The OSCE could consider substantial and sustainable engagement with global DRR Stakeholders to contribute a security perspective to the shaping of global DRR Agenda, such as HFA 2, DRR Indicators for SDGs, DRR Political Champions Process.*

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Annexure 1: Damage due to natural and technological disasters in the OSCE¹⁰³ Region (1990-2014)

	Country	Occurrence	Deaths	Affected	Injured	Homeless	Total affected	Total damage ('000 USD)
Europe								
1.	Albania	25	182	904,526	357	225	905,108	24,673
2.	Austria	41	686	71,916	229	0	72,145	6,621,770
3.	Belarus	14	116	104,032	3,329	300	107,661	177,680
4.	Belgium	50	2,315	5,975	797	0	6,772	2,310,132
5.	Bosnia and Herzegovina	22	87	413,462	14	90	413,566	385,000
6.	Bulgaria	39	190	57,465	439	1,000	58,904	482,504
7.	Croatia	25	976	4,660	281	2,000	6,941	687,750
8.	Cyprus	13	107	607	2,690	150	3,447	14,340
9.	Czech Republic	29	675	1,607,950	2,563	11,973	1,622,486	5,964,112
10.	Denmark	14	16	2,100	12	60	2,172	4,946,639
11.	Estonia	6	948	240	30	0	270	130,000
12.	Finland	5	35	400	48	0	448	10,000
13.	France	140	22,252	4,110,387	4,551	1,066	4,116,004	34,920,600
14.	Germany	102	10,146	575,666	2,436	0	578,102	54,600,030
15.	Greece	74	1,070	165,196	2,930	10,858	178,984	10,044,059
16.	Hungary	37	903	243,620	1,068	9,383	254,071	1,538,400
17.	Iceland	6	34	192	21	69	282	46,289
18.	Ireland	21	51	6,675	0	0	6,675	678,050
19.	Italy	119	22,781	105,423	3,817	135,319	244,559	56,402,463
20.	Latvia	9	146	102	29	0	131	325,500
21.	Lithuania	14	134	780,000	0	0	780,000	313,573
22.	Luxembourg	11	190	0	0	0	0	421,000
23.	the former Yugoslav Republic of Macedonia	25	436	1,131,701	144	150	1,131,995	2,028,263
24.	Malta	10	434	27	4	0	31	0
25.	Moldova	16	100	2,876,323	110	26,349	2,902,782	800,184

¹⁰³ Excluding Andorra, Holy See, Liechtenstein, Monaco, San Marino

	Country	Occurrence	Deaths	Affected	Injured	Homeless	Total affected	Total damage ('000 USD)
26.	Montenegro	7	14	12,386	32	800	13,218	0
27.	Netherlands	44	2,253	267,260	1,423	0	268,683	4,984,400
28.	Norway	19	452	6,612	130	0	6,742	563,000
29.	Poland	54	2,332	285,600	775	62,000	34,8375	7,597,050
30.	Portugal	34	3,094	157,948	393	604	158,945	6,386,136
31.	Romania	91	1,259	264,999	2,206	156,871	424,076	2,436,190
32.	Russia	366	67,760	4,734,689	17,706	273,324	5,025,719	16,402,276
33.	Serbia	43	226	248,514	1,188	19,696	269,398	132,260
34.	Slovakia	24	266	57,537	418	1,697	59,652	785,600
35.	Slovenia	10	310	62,600	5	1,750	64,355	752,000
36.	Spain	98	16,485	6,081,656	2,891	15,000	6,099,547	26,614,404
37.	Sweden	12	94	350	184	0	534	3,000,200
38.	Switzerland	46	1,283	12,582	117	0	12,699	8,017,860
39.	Ukraine	78	2,696	2,815,829	15,595	27,602	2,859,026	4,216,614
40.	United Kingdom	98	1,676	673,759	1,342	31,401	706,502	31,241,380
South Caucasus and Turkey								
41.	Armenia	13	107	3,895,500	60	394	3,895,954	201,453
42.	Azerbaijan	26	711	2,401,754	1,027	172,849	2,575,630	211,200
43.	Georgia	29	480	856,590	437	8,726	865,753	677,856
44.	Turkey	199	23,941	4,948,473	65,364	1,093,561	6,107,398	26,717,300
Central Asia and Mongolia								
45.	Kazakhstan	35	580	772,026	1,579	8,762	782,367	280,270
46.	Kyrgyzstan	35	616	2,196,571	1,092	57,706	2,255,369	214,160
47.	Tajikistan	64	2,379	6,660,280	531	73,241	6,734,052	1,798,384
48.	Turkmenistan	4	66	300	0	120	420	99,870
49.	Uzbekistan	12	254	672,034	158	7,460	679,652	50,000
50.	Mongolia	28	452	3,258,882	68	150	3,259,100	1,975,164
North America								
51.	Canada	101	783	207,638	3,193	20,230	231,061	17,843,100
52.	USA	757	12,565	25,950,848	29,275	438,405	26,418,528	715,120,440
Total OSCE		3,193	2,081,44	653,776,19	15,467,331	26,713,41	83,516,291	1.06 trillion

Source: EM- DAT

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