Country Code	Editor (MB = Maren Blecking; PF = Pauline Fehrmann; PM = Polina Mihaj)	relevant? (1 = yes)	ESPON countries Hazards	DRM - Assessment (assessment of hazards on national level and results: hazard maps, risk maps, multi-risk maps, reports)	DRM - Management (policies on national level: guiding decisions, strategies, programmes; way of integration into spatial planning: primary or secondary)	CCA - Assessment (assessment of climate change impacts on national level and results: impact maps, vulnerability maps, reports)	CCA - Management (policies on national level: guiding decisions, strategies, programmes; way of integration into spatial planning: primary or secondary)	Policies in general DRM/CCA	Good practice examples	Comments
AT	MB	1	(1) Floods (river floods, storm surges)	Gefahrenhinweiskarte "Oberflächenabfluss" als Teil des Nationalen Hochwasserrisikomanagementplans (wird alle 6 Jahre neu aufgestellt, Umsetzung HWRM-Richtlinie) (vgl. BMNT 2019: 20) -> in Österreich Flash Floods also in HWRM-Umsetzung integriert Website vom Bundesministerium für Landwirtschaft, Regionen und Tourismus: naturgefahren.at Hier gibt es Detailkarten zu Hochwasser und Wildbächen, Lawinen, Erosion und Steinschlag Natural Hazard Overview and Risk Assesment Austria (HORA) : To foster development and sharing of flood risk information, the Federal Ministry of Agriculture Forestry Environment and Water Management (BMLFUW) has worked closely with the Austrian insurance companies (Austrian Insurance Association: VVO) and developed a nationwide zoning system for natural disasters (HORA-Flood Risk Zoning Austria). Hazard maps are available for the country's river system spanning across more than 25,000 km2, for the 30-year, 100-year and 200-year flood events (Assessing the economic case for adaptation to extreme events at different scales 2016: 11) Auf der Website HORA.gv.at können Bürgerinnen und Bürger Adressabfragen machen und durch die digitale Gefahrenlandkarte die Gefährdung des eigenen Hauses oder Grundstücks einsehen. -> Good practice example for communicating hazards. - Hochwasserrisikozonierung (eigentlich Gefahrenzonen) - Oberflächenabfluss - Gefahrenzonenplan Wildbach - Gefahrenzonenplan Lawinen (Website HORA.gv.at) Anmerkung: Offensichtlich einheitlich für Österreich insgesamt, gleicher methodischer Ansatz; Schnittstelle zwischen Hazard Assessment, Risk Management und Risk Communication.	Integration of spatial planning within flood risk management: In Austria, hazard zone plans show the areas that are at risk of floods, mountain streams, avalanches and erosion. Municipalities' zoning and development plans include information on hazard zones, which form the basis for further planning. (ECA 2018: 43) Regarding natural hazard management, the provincial governments have legislation competence in (1) development planning, (2) building affairs and (3) catastrophe/disaster measures and execution competence in flood control and supra-local disaster management. (EEA 2017: 38) * The Flood Risk Management Plan is the superordinate planning instrument in Austria. A National Flood Risk Management Plan is created for the entire federal territory in 6-year cycles. It includes particularly those areas which have been identified as Areas of Potential Significant Flood Risk (APSFR) in a preliminary risk assessment. Referring to elaborated flood hazard and flood risk maps appropriate objectives are defined, and measures for achieving the objectives are selected from the fields prevention, protection and preparedness. A River Basin and Risk Management Concept (GE-RM) serves to coordinate possible measures in a catchment area or longer water body sections to identify potential synergies and to avoid conflicts. (Flood risk management in Austria: 26-28) The Austrian regional planning conference (ÖROK - Österreichische Raumordnungskonferenz) conducted a recommendation on preventive measures for natural hazards in regional planning with the focus on floods due to previous devastating impacts of events (ÖROK-Empfelung Nr. 52 zum präventiven Umgang mit Naturgefahren in der Raumordnung). *The Hazard Zone Plan (GZP - Gefahrenzonenplan) is the key instrument for the visualisation and evaluation of the risks posed by natural hazards. The GZP for torrent and avalanche control is regulated in the Forestry Act 1975 (Gefahrenzonenplan der Wildbach- und Lawinenverbauung). Regarding floods, the plannig is regulated by the ordinance on hazard zone planning under the Water Act from 2014. As an expert opinion without immediate legal validity, the GZP serves as a basis for planning, prioritisation and implementation of protective measures as well as planning in the fields of spatial planning, civil engineering and disaster control. Primarily the GZP identifies two areas: 1. red danger zone: permanent use for settlement and traffic purposes is not posible or only possible with high effort due to the expectd domaging effects or the frequency of the hazard. 2. yellow danger zone: permanent use for settlement and traffic purpose is impaired due to the hazard (ÖROK Atlas)*		In Austria, the BMNT holds overall responsibility for adaptation policy-making (Division I/4 of the BMNT). One of its main assignments is to provide guidance by keeping the NAS (National Adaptation Strategy) and NAP (National Adaptation Platform) updated, as well as by drafting the progress report on its implementation. The NAP is implemented in collaboration with a wide range of fellow ministries, regional government actors and sector stakeholders. Climate adaptation is addressed in the amendment to the Environmental Impact Assessment (EIA) Law in Austria in 2018. The guidance documents for conducting EIA Reports are currently being revised in order to comply with the requirements of the amended EIA Directive. (Climate Adapt)		The national platform for climate adaptation contains information on climate research, policies, proposed implementation measures and examples and support for municipalities, the Bundesländer and sectors. The databank is useful for finding relevant resources, e.g. sectorspecific research or adaptation practice for a specific region. It is possible to subscribe to a newsletter. (European Commission 2018: 13) Projekt Danube Floodrisk: Kooperation zwischen Donau-Anrainerstaaten Deutschland, Österreich, Slowakei, Ungarn, Kroatien, Serbien, Rumänien, Bulgarien und Italien sowie der Internationalen Kommission zum Schutz der Donau (IKSD): gemeinsam wurde der Donauatlas erarbeitet, der alle Karten zur Hochwassergefährdung und dem daraus resultierenden Hochwasserrisiko an der Donau enthält. Berücksichtigt wurden auch Szenarien wie nicht schließende Hafentore und das Versagen mobiler Wände. City of Steyr (Upper Austria): Flood protection can be this natural: The function of the new side arm in the Himmlitzer Au upstream of the town of Steyr is the removal of bed load, but it is also a popular local recreation area. Lausingbach (Styria): A newly constructed flood retention basin at the Lausingbach will protect Obdach from floods in the future. The bottom outlet regulates discharge during flood events and during normal water flow allows fish and water animals to migrate unimpeded. (Flood Risk Management in Austria: 42-44)	In Austria, two different kinds of multi-sectoral CCIV assessments have been published in recent years. The Austrian Assessment Report 2014 (AAR14) is an IPCC-type report based on a literature review that was initiated and driven by the scientific community and supported by the Federal Ministry of Sustainability and Tourism (EEA 2018: 25)
AT	MB		(2) Droughts			Investigations into aridity show a three-fold increase in the likelihood of the occurrence of drought in future climate, 2071–2100, compared to the past (1961–1990) for the SRES A1B scenario. (Austrian Assessment Report Climate Change 2014: 51)	According to the NAS, one objective in the sector of forestry is the establishment of preventative measures with regard to potential increases in forest fires (NAS Part 1 2017: 7).			
AT	MB	1	(3) Storms (winter, convective)	Natural Hazard Overview and Risk Assesment Austria (HORA) keine Prognosen, sondern Aufzeichnungen der vergangenen Stürme.						
AT	MB	1	(4) Earthquakes	Seismic Hazard Map/ Erdbebengefährdungskarte (HORA) Gefahrenhinweiskarte zu Rutschungen *The Central Bureau for Meteorology and Geodynamics (ZAMG - Zentralanstalt für Meteorologie und Geodynamik) issues various maps [illegible]						
AT	MB	1	(5) Others (flash floods, land slides)	NO: Coastal flood/ IMPORTANT: Earthquake, Riverine Flood, Flash Flood, Storm, Storm convective, Landslide/mudslide, Avalanches *Avalanches: The Ministry of Agriculture, Regions and Tourism has made several detailed maps for predominant hazards in Austria (available http://maps.naturgefahren.at/). **Mudslide** (Mure): In Autumn 2019 a project has been launched that aims to create an early warning system for mudslides. It is a cooperation of INTERREG Italy-Austria, the EU and Austrian die Wildbach und Lawinenverbauung. Two of the five test areas for the prototype of the systeme are located in Austria (Bundesforschungszentrum für Wald - website). **Landslide**: Besides the GZP, a working group created a hazard warning map for landslides for all federal states of Austria. Inter alia the rock structure of the subsoil was considered and the susceptibility to slip was classified (ARGE GHK 2016: 11f).	The **GZP/ Hazard Zone Plan for torrent and avalanche control** is regulated in the Forestry Act 1975 (Gefahrenzonenplan der Wildbach- und Lawinenverbauung). According to the plan building is prohibited in the red danger zones that have been identified in the GZP. In the yellow zone construction is only allowed with legal requirements (Naturgefahren - website).	***Slide/Landslide** (Rutschung): The BFW (Bundesforschungszentrum für Wald - Federal Research Center for Forest) conducts a project on climate-induced system changes on slopes and their significance for the occurence of loose rock slides. Effects of climate-related system conditions and land use on spontaneous landslides are investigated (Bundesforschungszentrum für Wald - website). According to the NAS one of the expected future temperature- and precipitation-induced effects, in the action area construction and housing, is: Regionally variable increases in heavy precipitation and the thawing of permafrost in Alpine regions can lead to increased mud flow, rock slides, rock falls, landslides, and (in winter) avalanches (NAS Part 1 2017: 44). Moreover landslides and mud flows will also pose a threat to transportation infrastructure (ibid: 45).	One objective from the Austrian NAS is the promotion of sustainable spatial development strategies. Areas potentially affected by natural hazards shall be kept free from use for residential, commercial or infrastructural purpose. The analysis of past catastrophic flooding and torrent events in Austria has shown that the increasing concentration of buildings and infrastructure in exposed areas and in some cases in areas also designated as dangerous have had a proven effect on damage and subsequent costs. This has occurred despite extensive protective measures through public money [...]. Similar situations exist for avalanches, landslides or areas threatened by rockfalls in the Austrian Alps. Hence climate change and adaptation need to be more than partially integrated in the existing instruments (NAS Part 2 2019: 116).			
BE	PF	1	(1) Floods (river floods, storm surges)	Flemish risk-based approach: Flood Hazard maps, Maximum damage maps, Damage maps, Vulnerability maps, social risk maps, economic risk maps (Kellens et al 2013; Flood Risk Management in Flanders: Past Developments and Future Challenges: 3589) Wallonia: Overall plan for preventing and fighting agains floods and their effects, the "Plan PLUIES". Includes a flood hazard map and a flood risk map. (NAP) Ecological impacts of flooding in the Dijle catchment upstream of Leuven by the Flemish Environment Agency (https://www.eea.europa.eu/data-and-maps/figures/ecological-impacts-of-flooding-in)	- Emergency/action plans established for forest fires or floods. BE-Alert: channels for notification of the population in the event of a crisis. Systematic collection of data on natural disasters (e.g.: EM-DAT, disaster database developed by the Center for Research on the Epidemiology of Disasters). Collection of information / experiences after interventions / incidents. Belgian risk analysis conducted in 2016 identifying 10 risks (including floods and heat waves). Establishment of a national platform for disaster risk reduction (Sendai platform) in 2016 (UNFCCC NC7 Belgium: 100-101). - Disaster risk management is a shared responsibility between the local, provincial and federal levels. Disaster risk management plans do not include direct reference to climate change. Five separate Flood Risk Governance Arrangements (FRGAs4) can be identified.The first three of them encapsulate the strategies of prevention, mitigation and defence and are referred to as the Water System Arrangement. Competences related to these strategies belong to the regional governments (Flemish, the Walloon and the Brussels-Capital Regions). The fourth FRGA is the Flood Preparation Arrangement, which focuses on emergency planning and crisis management. The fifth is the Flood Recovery Arrangement (Meers et al 2016:6) The regional Water System Arrangements are highly fragmented in terms of actors. Competences are divided over four categories of watercourses, each of which has different water managers. In order to increase the coordination between them and with the Flemish Department of spatial planning, the Flemish government installed a Coordination Committee on Integrated Water Policy (CIW) in 2003. In the same year, the Walloon government took a similar initiative with the Interdepartmental Flood Group (GTI). At basin level, integrated water management is pursued by the sub-basin boards in Flanders and the river contracts in Wallonia. (Meers et al 2016:7) Spatial planning remains the Achilles' heel of the Belgian FRGA. The fact that an ambitious policy is pursued today has come about through the need to compensate for ill-considered spatial planning choices made in the past.(Meers et al 2016:12) - here is no national contingency plan in Belgium for emergencies involving flooding. Every municipality has its own specific contingency plans on issues relevant to that municipality. The provincial authorities of West-Flanders also have an overarching plan for their specific role during (flooding) emergencies. The Flemish Coordination Committee on Integrated Water Policy (CIW) set up an integrated approach to the Decree on [illegible]	Measurements. Sector Water management: Widespread information campaign to encourage water savings. Flood Risks prevention and management framework (regional plans). Update flood part of the national emergency plan 'natural disasters' (on-going) which foresees prevention measures such as closure of the riverside walls of the river Scheldt; defence mechanisms to protect from high water and tide levels at the coast, etc. Inclusion of cover for floods (and other natural disasters) in household fire insurance policies. (UNFCCC NC7 Belgium: 100-101). The Sigma Plan protects Flanders from flooding. In extreme weather conditions, the river Scheldt and its tributaries can reach dangerously high water levels and can even overflow their banks. That is why the Sigma Plan invests in sturdier and higher levees and in a chain of natural flood control areas in the river valleys. Areas like these can catch excess river water in a controlled manner. This gives the rivers room to flow and to overflow. (Sigmaplan.be); In 2007, the Flemish Government started the elaboration of an Integrated Master Plan for Coastal Safety that was eventually implemented by the Flemish Government in 2014.(ClimateAdapt)	- On 2 May 2013, the Brussels Capital Region adopted its Air-Climate-Energy Code (known as COBRACE). It serves as a legal basis for its Integrated Air-Climate-Energy Plan, which was adopted on 2 June 2016 and which includes a section on adaptation. Priority sectors are water management, infrastructure and built areas, energy, green areas and, forests. Other thematic plans that include adaptation measures are the 2012 Regional Water Management Plan, including a flood prevention plan created in 2003. A second regional water management plan has been adopted for the period 2016-2020 and integrates consideration of floods and flood risks. (European Commission 2018b_Adaptation preparedness scoreboard for Belgium: 9) - The NAP includes a measure for the 2018 risk analysis to include consideration of climate impacts in order to revise the disaster risk management plans. Specific plans for the protection of critical infrastructure, as well as specific emergency management plans for floods, heat waves and forest fires, do consider climate change to a certain extent. (European Commission 2018b_Adaptation preparedness scoreboard for Belgium: 21)			Wallonia (2011): Adaptation to climate change in Walloon Region Flanders (2012): LNE adapt, impacts report Brussels Region (2012): Adaptation to climate change in Brussels: elaboration of a preliminary study to the regional adaptation plan Federal (2013): Exploring federal contribution to a coherent adaptation policy. Mees, H., Suykens, C., Beyers, J-C., Crabbé, A., Delvaux, B., Deketelaere, K. 2016: Analysing and evaluating flood risk governance in Belgium Dealing with flood risks in an urbanised and institutionally complex country;
BE	PF		(2) Droughts			Climate impacts are monitored by the different organisations: Impact on water: flood, water quality and drought – Flanders Hydraulics Research, the Flemish water managers, the Walloon Waterways, the Walloon Flood Portal, Brussels Environment, Royal Institute of Natural Sciences. Impact on extreme precipitation, heat waves, and droughts is collected by the RMI. In 2015, the RMI published "Vigilance climatique". In 2015 the Flanders Environment Agency (VMM) published the 'MIRA Climate Report 2015: About observed and future climate changes in Flanders and Belgium'. The indicators from the report are regularly updated on their website. Due to the dry conditions in Flanders, the VMM published a report on drought based on hydrological and meteorological indicators in June 2017. [illegible]				
BE	PF		(3) Storms (winter, convective)							
BE	PF	1	(4) Earthquakes	[illegible]	Die Wahrscheinlichkeit der seismischen Gefährdung in Belgien wurde mit der probabilistischen Methode berechnet. Das Ergebnis ist eine Karte der höchsten Bodenbeschleunigung, die mit 475 Jahre erreicht oder überschritten wird. Die Wahrscheinlichkeit einer seismischen Gefährdung ist in der Provinz Lüttich (Lüttich und Hohes Venn) und im Hennegau am höchsten. (Königliche Sternwarte Belgien)					
BE	PF		(5) Others (flash floods, land slides)	No Coastal flood, no Landslides in our Data recorded	Coastal governance is only of relevance for the Flemish region as the other two regions (Brussels Capital and Wallonia are land-locked). The Coastal Division (Department Coast) of the Flemish Government is the main body responsible for coastal protection infrastructure and management. The "Masterplan for Coastal Safety", which has been approved by the Flemish Government in 2011, and [illegible]					
BG	MB	1	(0) General	[illegible]	[illegible]		[illegible]	[illegible]		
BG	MB	1	(1) Floods (river floods, storm surges)	[illegible]	[illegible]	[illegible]			Consideration of dam failures	Bulgaria was the only member state that failed to submit its flood hazard and risk maps by March 2015 (RBA KIT)
BG	MB	1	(2) Droughts	**Droughts**: There may also be needs to develop higher-resolution information on water scarcity and the impact on hydropower, [illegible]						
BG	MB		(3) Storms (winter, convective)							
BG	MB	1	(4) Earthquakes	[illegible]	[illegible]				1,000 year return period; consideration of critical infrastructure	
BG	MB	1	(5) Others (flash floods, land slides)	[illegible]	[illegible]		[illegible]		Maps for land slides, droughts and wildfires (at least planned)	
CH	PF	1	(1) Floods (river floods, storm surges)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
CH	PF	1	(2) Droughts hazard level medium (GFDRR)		[illegible]	[illegible]	[illegible]			
CH	PF		(3) Storms (winter, convective)	[illegible]						
CH	PF	1	(4) Earthquakes	[illegible]	[illegible]					ARE (Bundesamt für Raumentwicklung) 2005: Raumplanung und Naturgefahren. Empfehlung. ARE, Bundesamt für Wasser und Geologie (BWG).
CH	PF		(5) Others (flash floods, land slides)	[illegible]						
CY	PM		Cyprus (Zypern)	A National Risk Assessment is regularly conducted by the Cyprus Civil Defence Department	[illegible]	[illegible]	National Adaptation Strategy and Action Plan have been adopted in 2017 (UNFCCC NC7: 169)		[illegible]	
CY	PM	1	(1) Floods (river floods, storm surges)	[illegible]	[illegible]	[illegible]	[illegible]			
CY	PM	1	(2) Droughts	[illegible]	[illegible]	[illegible]	[illegible]			
CY	PM		(3) Storms (winter, convective)			[illegible]				
CY	PM	1	(4) Earthquakes	[illegible]						
CY	PM	1	(5) Others (flash floods, land slides)	[illegible]	[illegible]					
CZ	MB	1	(1) Floods (river floods, storm surges)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CZ	MB	1	(2) Droughts		[illegible]	[illegible]				
CZ	MB		(3) Storms (winter, convective)				[illegible]			
CZ	MB		(5) Others (flash floods, land slides)	NO: Coastal flood/ Landslide/ Mudslide/ Avalanche	[illegible]					
DE	PM		Germany (Deutschland)							[illegible]
DE	PM	1	(1) Floods (river floods, storm surges)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
DE	PM	1	(2) Droughts	[illegible]	[illegible]					
DE	PM	1	(3) Storms (winter, convective)	[illegible]	[illegible]					
DE	PM		(4) Earthquakes	[illegible]		[illegible]				
DE	PM		(5) Others (flash floods, land slides)	[illegible]						
DK	PF		Denmark (Dänemark) Positive				[illegible]		[illegible]	[illegible]
DK	PF	1	(1) Floods (river floods, storm surges)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
DK	PF		(2) Droughts	[illegible]						
DK	PF		(3) Storms (winter, convective)	[illegible]		[illegible]				
DK	PF		(4) Earthquakes							
DK	PF		(5) Others (flash floods, land slides)	No Flashfloods, no landslide events recorded						
EE	MB/PF		Estonia (Estland)			[illegible]	[illegible]			
EE	MB/PF	1	(1) Floods (river floods, storm surges)	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]
EE	MB/PF	1	(3) Storms (winter, convective)	[illegible]	[illegible]					[illegible]
EE	MB/PF	1	(5) Others (flash floods, land slides)	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]
EL	PF		Greece (Griechenland)	[illegible]	[illegible]		[illegible]		National risk assessment; civil protection plan; platform with plan overview	
EL	PF	1	(1) Floods (river floods, storm surges)	[illegible]	[illegible]		[illegible]		[illegible]	[illegible]
EL	PF	1	(2) Droughts	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]
EL	PF		(3) Storms (winter, convective)							
EL	PF	1	(4) Earthquakes	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Earthquake hazard information for every Greek city.	
EL	PF	1	(5) Others (flash floods, land slides)	[illegible]	[illegible]				[illegible]	
ES	PF/MB	1	Spain (Spanien)	[illegible]		[illegible]	[illegible]			
ES	PF/MB	1	(1) Floods (river floods, storm surges)	[illegible]	[illegible]	[illegible]	[illegible]			In 2012 Spain was sued by the EU because the state failed to comply with the Water Framework Directive 2000/60/EC and didn't develop river basin management plans within the set deadline. [illegible]
ES	PF/MB	1	(2) Droughts	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	
ES	PF/MB		(3) Storms (winter, convective)							
ES	PF/MB		(4) Earthquakes	[illegible]	[illegible]				Tsunami hazard maps along the whole Spanish coast.	
ES	PF/MB		(5) Others (flash floods, land slides)	[illegible]			[illegible]			
FI	PM		Finland (Finnland)		[illegible]					
FI	PM	1	(1) Floods (river floods, storm surges)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
FI	PM	1	(2) Droughts	[illegible]	[illegible]	[illegible]	[illegible]			
FI	PM	1	(3) Storms (winter, convective)	[illegible]			[illegible]			
FI	PM	1	(4) Earthquakes	[illegible]	[illegible]				multi-hazard early warning system	
FI	PM		(5) Others (flash floods, land slides)							
FR	MB	1	France (Frankreich)		[illegible]	[illegible]	[illegible]		[illegible]	
FR	MB	1	(1) Floods (river floods, storm surges)	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	
FR	MB	1	(2) Droughts		[illegible]	[illegible]			Financial instrument to combat droughts.	
FR	MB	1	(3) Storms (winter, convective)	[illegible]		[illegible]				
FR	MB	1	(4) Earthquakes	[illegible]	[illegible]				[illegible]	
FR	MB	1	(5) Others (flash floods, land slides)	[illegible]	[illegible]				[illegible]	
HR	PM	1	Croatia (Kroatien) Positive	[illegible]	[illegible]				[illegible]	
HR	PM	1	(1) Floods (river floods, storm surges)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	#VALOR!

Country	Resp.	No.	Hazard	Hazard / risk assessment and mapping	Measures / policies	Climate change consideration	Adaptation strategy / plans		Assessment type	Sources / remarks
HR	PM	1	(2) Droughts	Mapping water sources which are out of control and outside the public water supply system. Purposeful evaluation and increase in source exploitation based on initial and comprehensive additional risk assessment in the event of hydrometeorological influences such as flood, forest fires, drought, etc. The measure's contribution to the adaptation process is expected to result in more effective management during disasters, major accidents, extraordinary events or incident / crisis situations in case regularly available water resources for human consumption and other purposes are exploited (Action Plan for implementing the Strategy on Adaptation to Climate Change, Croatia 2017: 27).	Operative drought monitoring and early warning system has been established by Meteorological and Hydrological Service (MHS) of Croatia. (Drought conditions and management strategies in Croatia: 2)		Climate change adaptation policies and actions, which concern soil degradation and desertification, must necessarily be designed and implemented at local level; [illegible]		Operative drought monitoring and early warning system. Drought Risk in the Danube region, Funding: Danube Transnational Programme Duration: January 2017 – June 2019: [illegible] (UNFCCC NC7: 179-180)	
HR	PM		(3) Storms (winter, convective)		Daily and weekly newspapers in the Republic of Croatia monitor different areas of environmental protection; (drought, heat, floods, **storms**), the use of renewable energy sources and biofuels, and the international obligations and activities of the Republic of Croatia in the implementation of the Convention and the Kyoto Protocol (UNFCCC NC7: 196). Meteorological data are available on extreme weather events of climate change relevance, such as heatwaves, floods, strong winds and thunderstorms causing forest fires, and snow and ice (European Commission 2018: 13).	Maximum wind speed at 10 m. At an annual level, in future climates between 2011 and 2040 and between 2041 and 2070 the expected maximum wind speed would remain virtually unchanged in relation to the reference period, with the highest values of 8 m/s on the southern Dalmatian islands. Until 2040, a slight reduction of the maximum wind speed for seasonal averages is expected in all seasons, except in summer. Winter is expected to show reduction of the maximum wind speed by about 5%, in the regions where under the reference climate the wind is the strongest - in the southern Adriatic and in the hinterland of central and southern Dalmatia. In the period 2041-2070, the maximum wind speed reduction is expected in all seasons except in summer. The largest decrease in the maximum wind speed in this period is expected in winter in the southern Adriatic (Climate Change Adaptation Strategy Croatia 2017: 29).				
HR	PM	1	(4) Earthquakes	Croatian Earthquake Hazard Map / Seismic Hazard Map Croatia. Disaster risk assessment for the Republic of Croatia – Earthquake risk was prepared. With this assessment, the seismic risk together with potential negative impacts from other two natural hazards: flood and fire risks, was rated as unacceptable for Croatia. In 2018, the ensuing risk management process continued with Assessment of the risk management capability for the Republic of Croatia, while the Disaster risk assessment for the Republic of Croatia – earthquake risk was updated and upgraded to high-level (Građevinar 10/2019, Seismic risk for Croatia: 924) Disaster Risk Assessment for the Republic of Croatia based on Guidelines for the Preparation of National Disaster Risk Assessment for the Republic of Croatia issued by the National Protection and Rescue Directorate (2014) in accordance with the Risk Assessment and Mapping Guidelines for Disaster Management SEC (2010) 1626, and HRN ISO 31000 Risk Management (Građevinar 10/2019, Seismic risk for Croatia: 935).	* The project "Preventing, Managing and Overcoming Natural-Hazards Risks to mitiGATE economic and social impact" (PMOGATE) was initiated in 2019 in the scope of the Interreg Italy-Croatia 2014-2020 Program in which Croatia participates through the Faculty of Civil Engineering, Architecture and Geodesy of the University of Split. The general objective is to involve joint development of an innovative methodology for prevention, management and control of natural hazards and increase the protection level and resilience to natural disasters specific to the participating regions, such as river and sea flooding, meteorological tsunamis and **earthquakes.** (Građevinar 10/2019, Seismic risk for Croatia: 942). * The project entitled "Resilience Enhancement of Adriatic basiN from firE and SeiSmic hazards – READINESS", which focuses on the analysis of buildings of special (strategic) significance, such as schools and hospitals, in three counties, is also currently in progress. The project is carried out by the Faculty of Science and the Faculty of Civil Engineering of the University of Zagreb, and a special emphasis is placed on the extremely complex and detailed analysis of the General Hospital building in Dubrovnik. Such projects focused on analysis of the seismic resistance of existing buildings are of crucial importance as Croatian critical infrastructure and essential facilities generally over fifty years old, their usual service life. (ebd.: 943)					
HR	PM		(5) Others (flash floods, land slides)	Landslide hazard distribution in Croatia By WHO						
HU	MB	1	**Hungary (Ungarn) Maren**	The NDGDM (National Directorate-General for Disaster Management of the Ministry of Interior) develops a professional framework for the classification of settlements based on real risks into disaster management. Provides the needed professional support for the regional bodies so that they can carry out risk identification and assessment (European Commission Fact Sheet Hungary)		The NAGIS (National Adaptation Geo-information System) is a multipurpose geo-information system that can facilitate the policy-making, strategy-building and decision-making processes related to the impact assessment of climate change and founding necessary adaptation measures in Hungary. The system will provide information on past and future climate conditions in the whole of Hungary, possible impacts of climate change and on strategic risks as well as on possibilities for adaptation. Based on this information preventive measures protecting humans and nature against climate change damage can be applied. (NAGIS - website).			Climate change is included as an intensified risk in the National Development and Territorial Development Concept (Report)	
HU	MB		(1) Floods (river floods, storm surges)	Water risk map (prepared by the project: 'Flood risk mapping and preparing strategic risk management plan'). The National River Basin Management Plan (RBMP) was adopted in 2010 for Hungary's one Danube river basin districts and its 4 sub-districts (European Commission 2012: 2). Monitoring systems for water bodies and groundwater were started (ibid). Within the project 'Flood risk mapping and preparing strategic risk management plan' the South-Transdanubian Water Management Directorate (Dél-dunántúli Vízügyi Igazgatóság) completed the task of creating excess water risk maps of Hungary (South-Transdanubian [illegible]	In the RBMP 38% of the planned future infrastructure projects are flood related, such as water retention measures, reservoirs to mitigate flood peak levelsandnew dams. Co-ordinated action is going on to harmonise WFD and Flood Directive implementations among the Danube countries. The Flood Risk Action Programme was developed for the Danube RBD in the frame of ICPDR, and the Danube countries area also co-operating in preparation of similar sub-basin plans (European Commission 2012: 45).	Two climate models, ALADIN-Climate and REMO regional climate models, adapted by the Hungarian National Meteorological Service. Modellations/Maps for "Average change in the maximum summer duration of dry periods (%)" (UNFCCC NC7:143)	National Water Strategy (UNFCCC NC7: 149) The National Climate Change Strategy [illegible] adaptation measures (keeping the rainwater [illegible] building water transition structures). [illegible] (European Commission 2012: 45).			No further National Climate Change Programmes have been adopted since 2010 and, thus, currently, no adaptation plans are in place (European Commission 2018:6)
HU	MB		(2) Droughts	Droughts and water scarcity partly affect the Hungarian river basin district. A detailed map on annual climatic water deficit shows that a huge area of the country is affected by it and that this will be intensified by the expected climate change (European Commission 2012: 43f)	National Water Strategy (2014-2020): water policy has the explicit aim of adaptation to climate change, with special emphasis on extreme weather events and droughts. The National Water Strategy includes several adaptation measures in the field of local water management, such as water retention in local (both groundwater and surface) water reservoirs, improved irrigation and land-use change, where necessary (less arable lands at extreme low elevations). (European Commission: 17)					The agricultural strategy adapting to the climate and weather change contains: preparation of residents, local preparation for the more and more frequent agricultural fire hazards, disaster prevention, insurance, and procurement of protective tools, device, transformation of the landsharing & financial system. (UNFCCC NC7:150f)
HU	MB		(3) Storms (winter, convective)			The most significant physical threat to the built environment and settlement infrastructure comes from the flood-like rainfalls accompanying storms and the increase in wind speed. The increasing wind speed and the expected increase in the frequency of windstorms means a direct, physical source of danger to the building stock, which primarily affects the external boundary structures of buildings, meaning the structures on the façade and the roof. In addition to the dimensioning of support structures, problems might be expected to occur with the mounted claddings, doors and windows and shades. As for the roof, damage of roof covering elements and water insulation sheets and elements protruding from the roof plane (lightning protection devices, chimneys, antennas) should be prepared for in the first place. Strong wind blows in the vicinity of buildings can damage street fixtures (warning lights, electric pylons, phone boxes) and the vegetation, thus causing serious damage to the buildings as well16 (UNFCCC NC7: 151f).				
HU	MB		(4) Earthquakes	**Hungarian National Seismological Bulletin:** since 2011 detailed information on all earthquakes detected by the Seismological Observatory has been collected and published in form of a yearly bulletin. For each year various maps are issued, for instance with the epicenters of the detected earthquakes. The Hungarian National Seismological Network is operated by the Kövesligethy Radó Seismological Observatory and in the end of 2017, 15 permanent broadband stations and 12 temporary broadband stations were in action to monitor seismicity in Hungary (Kövesligethy Radó Seismological Observatory 2018: 9). On the website of the Seismological Observatory (http://www.seismology.hu/index.php/en/seismicity/seismicity-and-seismic-hazard) a seismic hazard map of Hungary with a 475 year return period is available, but it has not been updated since 2013.						
HU	MB		(5) Others (flash floods, land slides) NO: Coastal flood/ Flash flood/ Avalanche	***Avalanches:** Vulnerability assessment based on the National Adaptation Geo-information System (NAGIS) Flash flood risks in hills and mountains (European Commission 2018: 10f). * **Landslides:** A susceptibility landslide map was produced by Jdesa et al. (2019). In the course leading to the production of this map the distribution of landslides was reconstructed from inventory data and also mass movements in Hungarian counties were analysed.						
IE	PF	1	**Ireland (Irland)**	The Irish Meteorological Service, Met Éireann (www.met.ie), is responsible for weather related warnings and alerts. It is at an advanced stage of developing a national flood forecast and warning system. In general, national and marine warnings are available. Additionally Met Éireann carries out climate analysis and modelling and is responsible for systematic observations of meteorological parameters (UNFCCC NC7: 14)	A national risk assessment is carried out every three years by the Governmental Task Force in accordance with the commitments of the EU Civil Protection Mechanism (https://ec.europa.eu/echo/what/civil-protection/disaster-management/ireland_en) www.emergencyplanning.ie		Ireland's National Adaptation Policy pursues the transition of the state to a low carbon, climate resilient and environmentally sustainable economy by 2050 as the National Transition Objective. [illegible] * The enactment of the "Climate Action and Low Carbon Development Act 2015" [illegible] * First National Adaptation Framework was published in 2018: "National Adaptation Framework - Planning for a climate resilient Ireland" * National Spatial Strategy from 2018: National Planning Framework [illegible] Ireland: 109f)		National risk assessment carried out every three years; Strategic Emergency Management (SEM): National Structures and Framework" (July 2017), Guidelines for Coordinating a National Level Emergency/Crisis Response" (2011)	
IE	PF		(1) Floods (river floods, storm surges)	The Office of Public Works (OPW) has created a national flood information portal (www.floodinfo.ie), providing location specific access to flood risk and flood management information. Various interactive maps are available such as drainage, coastal or flood plan maps. For instance flood maps are community-based and support planning and emergency response and allow property owners to be prepared for possible flood events. * Besides the website "Plan Prepare Protect" (www.flooding.ie) should help to raise public awareness for the dangers of flooding and measures that can be taken to minimise the damage that can be caused by an flood event. * Catchment Flood Risk Assessment and Management Programme by OPW: results of this programme are 29 Flood Risk Management Plans and 40.000 Flood Risk Maps showing the flood risk for 300 communities that are at significant flood risk. These maps should support planning decisions and emergency response (EPA Catchments Unit) The Preliminary Flood Risk Assessment (PFRA) is a requirement of the EU 'Floods' Directive that is aimed at identifying through a national screening exercise the Areas of Potentially Significant Flood Risk, or Areas for Further Assessment (AFAs) as they were referred to in Ireland. The AFAs are the areas where, under the 'Floods' Directive, detailed flood maps need to be produced and for which flood risk management measures need to be assessed to reduce and manage the risk. (Office of public works- FLOOD RISK MANAGEMENT Climate Change Sectoral Adaptation Plan 2019: 14) The OPW and the EPA (jointly with local authorities) are the two main public bodies involved with surface water monitoring in Ireland, and between them maintain a network of approximately 640 surface water hydrometric monitoring stations. Other major bodies involved in monitoring include Waterways Ireland, the Marine Institute, Geological Survey Ireland, Irish Water and the ESB. Hydrometric monitoring has an important role to play in flood risk management. Long-term records of flows, particularly high and flood-flows, are essential in the determination of design flood flows. Records of flood levels are also important to permit observation of flood events for calibration of flood models. Long-term hydrometric records can also assist in the detection of changes in flow regimes or mean sea level, such as might be due to climate change. (Office of public works- FLOOD RISK MANAGEMENT Climate Change Sectoral Adaptation Plan 2019: 22). Work is ongoing to review and enhance the assessments, including the development of national, fluvial indicative flood maps, reviewing the ICPSS national coastal flood maps and the development of predictive flood mapping for flooding from Turloughs, which together will inform assessments of the rural risk in areas outside of the 300 communities covered by the CFRAM Programme. The detailed flood maps produced through the CFRAM Programme will also be reviewed and updated as necessary on an ongoing basis. The FRMPs published in May 2018 will be reviewed in 2021. The flood mapping outlined above and the review of the FMRPs will continue to take the potential impacts of climate change and the need for adaptation into account. The review of the FRMPs, including the assessment of appropriate measures, will be informed by the priority impacts related to flooding and the adaptation actions that can impact on flood [illegible]	The OPW, as the lead agency for flood risk management, is coordinating the delivery of measures towards meeting the Government's National Flood Risk Policy across three areas, or 'pillars' of flood risk management, supported by data collection and strategic flood risk assessments. (Office of public works- FLOOD RISK MANAGEMENT Climate Change Sectoral Adaptation Plan 2019:18) Since 2012, when flooding was rated one of the most significant national level risks, additional flood mitigation schemes are implemented on an ongoing, prioritised basis. Funding of 430 million euro has been allocated to Flood Risk Management in the Capital Investment Plan 2016-2021. (Department of Defence- A National Risk Assessment for Ireland 2017: 30). The OPW is responsible for leading and coordinating the implementation of national flood risk management policy, structural (i.e. engineered) flood relief measures continue to play an important role in flood management but with an increased emphasis to be placed on non-structural measures (e.g. flood forecasting, sustainable planning, etc.). (Office of public works- FLOOD RISK MANAGEMENT Climate Change Sectoral Adaptation Plan 2019:14). The Guidelines for the Planning System and Flood Risk Management (DECLG, & OPW, 2009), provide a clear, transparent framework for forward planning and development management with due consideration of flood risk. The guidance on zoning for appropriate land use is based on existing risk, but with a recommendation that a precautionary approach be taken to potential future risk including the potential impacts of climate change. (Office of public works- FLOOD RISK MANAGEMENT Climate Change Sectoral Adaptation Plan 2019:38). The Office of Public Works' flood defence sectoral adaptation plan outlines existing flood risk and flood risk management practice in Ireland and summarises existing science on climate change and the current state of knowledge for impacts on flooding and flood risk. It defines the policy for adaptation in the flood risk management sector and sets out a series of actions to enhance the understanding of the potential impacts of climate change on flooding and flood risk and to embed adaptation into flood risk management practice. The plan also identifies how changing flood risk should be taken into account in spatial planning and other sectors and sets out what is required for the monitoring, review and evaluation of the plan. (UNFCCC NC7 Ireland: 205-207).	Individual Flood Plans have been prepared for each of the 29 River Basins that include the 300 communities. These Plans set out the roadmap for both investment and policy decisions for the coming 5-10 years. (www.floodinfo.ie) The PFRA was a national screening assessment to identify the areas of potentially significant flood risk. This assessment included the components of the Climate Impact Chain as set out in the Guidelines for Climate Change Adaptation (DCCAE, 2018) covering a number of considerations as outline below. (Office of public works- FLOOD RISK MANAGEMENT Climate Change Sectoral Adaptation Plan 2019:33) OPW, through the CFRAM Programme, has undertaken detailed analysis of the potential impacts of climate change on flood extents and hazards and on the potential consequences of flooding in terms of economic damages and assets at risk for two potential future scenarios. This analysis has been undertaken for 300 communities around the country, including our cities, towns and other communities at potentially significant flood risk, including 90 coastal communities. (National Adaptation Framework Planning for a Climate Resilient Ireland:56) The future scenario flood maps that have been produced under the CFRAM Programme will facilitate this approach, inform other sectors, and provide a valuable resource for local adaptation planning and sustainable land use management and planning. The development of flood risk management measures under the CFRAM Programme is equally cognisant of the potential impacts of climate and other future changes. (UNFCCC NC7 Ireland: 212-213).	The National Flood Policy Review of 2004 [illegible]			
IE	PF		(2) Droughts		Irish Water (national water supply company) hosts an informative website about possible reactions in terms of water shortages. For instance a Water Restriction Management Scale for the Greater Dublin Area has been developed and its chart outlines what customers can expect from different levels of water restriction (Irish Water online). "National Water Resources Plan by the Irish Meteorological [illegible]					
IE	PF		(3) Storms (winter, convective)							
IE	PF		(5) Others (flash floods, land slides)	Coastal Floods: The Irish Coastal Protection Strategy Study (ICPSS) [illegible]			Climate change mitigation and adaptation will continue to be key spatial planning objective in forward planning and development planning in Ireland. [illegible]			
IS	PM		**Iceland (Island)**	Icelandic Meteorological Office (IMO) is the official monitoring organisation for natural hazards (including early warning) [illegible]	Civil Protection Act				National Risk Assessment (2008 - 2011): all-hazard approach	
IS	PM		(1) Floods (river floods, storm surges)	[illegible]	Mitigation measures such as land use planning, warning and hazard awareness, maps and hazard assessment needs to be implemented. [illegible]					The legal effects of risk assessment conclusions on land use planning are not perfectly clear. [illegible] (Nordres 2016: 32)
IS	PM		(3) Storms (winter, convective)							
IS	PM		(4) Earthquakes	On the website of the IMO all activities in relation to earthquakes during the last 48 hours are visualised and hence available (Icelandic Met Office online). [illegible]						
IS	PM		(5) Others (flash floods, land slides)	* System for avalanche warning and protection: [illegible]					Volcanic hazard map with daily update	
IT	PM		**Italy (Italien)**	After a new Code of Civil Protection have been issued, National Risk Assessment has been carried out with the focus on the potential major disasters/hazards (seismic, volcanic, hydro-geological/hydraulic, extreme weather, droughts, forest fires) (Italian Civil Protection Department).	In Italy, DRR strategies are mostly produced at Regional (NUTS-2) or Municipal (LAU-2) level. (BSC KIT Italy)		National Adaptation plan: current status: is being developed - start was in 2016. [illegible]		National Risk Assessment has been carried out with the focus on the potential major disasters/hazards (seismic, volcanic, hydro-geological/hydraulic, extreme weather, droughts, forest fires)	
IT	PM		(1) Floods (river floods, storm surges)	[illegible]	River basins were adopted as planning and management units and includes key principles for coastal flood and erosion risk planning and management (BSC KIT Country Italy). [illegible]	Hydrogeological phenomena, such as flooding, landslides, debris flow, erosion, subsidence [illegible]	The PAI of the Arno has been active for more than ten years. [illegible]			
IT	PM	1	(2) Droughts	This bulletin is a practical tool to quantify and monitor drought conditions in Italy and Europe and is based on the monthly maps of the SPI-Standardized Precipitation Index, calculated at different time scales. [illegible]	Development, enhancement and dissemination of information and decision support systems (irrigation consulting services, early warning systems for drought risk, floods, landslides, overflows, plant diseases and pathogenic attacks) (sp: NAP Italy 195) * The drought management plan is a powerful tool to alleviate the impacts of drought and reflects a positive shift from a crisis response approach to a risk management approach. * Project "Increasing Palau's resilience to extreme drought events: taking action for long-term adaptation to the impacts of climate change" approved in 2014. [illegible] (UNFCCC NC7 2017: 212)	Climate change impacts on the Italian hydro-geological system include: increased winter run-off by 90% and decreased summer run-off by 45% in central Europe-Alpine rivers [illegible] (UNFCCC NC7 2017: 179)			Drought monitoring: Since December 1989, SPI maps are available for four areas (Italy, Mediterranean, Europe and CADSES area), defined with respect to four time scales (3, 6, 12 and 24 months). Drought management plan	
IT	PM		(3) Storms (winter, convective)							
IT	PM	1	(4) Earthquakes	[illegible]	In response to the destructive Abruzzo Earthquake in 2009, a National Plan for seismic risk prevention (art 11, Abruzzo Decree Law) has been developed (Civil Protection Department) * The prevention activities cover various areas from the creation of monitoring systems of the phenomenon, to determining the risks on the territory, to creating systems to reduce risks. [illegible]				Assessment of seismic scenarios, assessment not only based on PGA but also on scenarios including potential damages	
IT	PM	1	(5) Others (flash floods, land slides)	* **Tsunami:** Italy takes part in an international alert system for tsunami risks in the Northeast Atlantic, Mediterranean and linked seas (NEAMTWS) [illegible] * **Volcanoes:** [illegible] * **Forest fires:** [illegible]	* **Volcanoes:** The Department of Civil Protection clarifies on its website: "Emergency planning should also be included in territorial planning so as to reduce risk exposure by avoiding new constructions in specific areas, and by developing urban planning regulations that may reduce the vulnerability of constructions, not only for seismic risk, but also for some volcanic phenomena of lesser impact (e.g. falling and accumulation of ashes)." (Civil Protection Department) * **Forest fires:** [illegible]					Volcanoes: The Department of Civil Protection clarifies on its website "Emergency planning should also be included in territorial planning so as to reduce risk exposure by avoiding new constructions in specific areas, and by developing urban planning regulations that may reduce the vulnerability of constructions, not only for seismic risk, but also for some volcanic phenomena of lesser impact (e.g. falling and accumulation of ashes)." (Civil Protection Department)
LI	PM		**Liechtenstein**			It is difficult to transfer the consequences of global climate warming calculated on the basis of models to the spatial scale of Liechtenstein. [illegible]	National Adaptation Strategy has been adopted in 2014, consisting of two parts: an adaptation strategy and an action plan. [illegible]			
LI	PM	1	(1) Floods (river floods, storm surges)	The Federal Office for the Environment Switzerland (FOEN) operates a model for prediction of discharge and water levels for the river Rhine. [illegible] (UNFCCC NC7 Liechtenstein: 147).	The Federal Office for the Environment Switzerland (FOEN) operates a model for prediction of discharge and water levels for the river Rhine. [illegible] (UNFCCC NC7: 147).	From the projected temperature increase it can be deduced that the flood seasonality will be extended and flood volume will increase in the Alpine area (UNFCCC NC7: 126).	Based on actual knowledge, the main focus of Liechtenstein's adaptation strategy is water resources management, flood protection, biodiversity and healthcare during heat waves (UNFCCC NC7: 146). [illegible]			
LI	PM	1	(2) Droughts	For Liechtenstein, the most important impacts are related to raising temperatures, such as prolonged heat waves, **droughts**, an increased risk of landslides and debris flows. (UNFCCC NC7: 15)	Das erhöhte Risiko von Wasserknappheit aufgrund von vermehrt auftretenden Trockenperioden stellt für Liechtenstein eine der wichtigsten Herausforderungen dar. [illegible]	Together with the decrease in summer mean precipitation, the length of summer dry spells is likely to increase (CH2011, 2011), indicating an increased risk of drought for Switzerland and Liechtenstein. [illegible] (UNFCCC NC7: 126)				
LI	PM		(3) Storms (winter, convective)	Confidence in projections of windiness in Central Europe remains relatively low and hence no robust projection for extreme wind storms in Switzerland and Liechtenstein can be made (UNFCCC NC7: 126)		Über klimabedingte Veränderungen der Häufigkeit und Intensität von Sturmereignissen sind zum heutigen Zeitpunkt keine Aussagen möglich. [illegible] (Anpassungsstrategie an den Klimawandel in Liechtenstein 2018: 15).				
LI	PM		(5) Others (flash floods, land slides)	Liechtenstein has established natural hazard maps (OCP, 2017). These maps provide regionalized information on the specific local risks of avalanches, rock fall, landslides and flooding (UNFCCC NC7: 19). [illegible]						
LT	PF		**Lithuania (Litauen)**			For the natural disasters municipalities and county administrations are responsible for risk assessments. (UNISDR 2005: 2)				European Commission 2019: First Flood Risk Management Plans - Member State: Lithuania Accompanying the document REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL on the implementation of the Water Framework Directive [illegible]
LT	PF	1	(1) Floods (river floods, storm surges)	The indicative number of inhabitants affected was calculated using 2011 population census spatial data. [illegible]	The most common emergency in Lithuania is flood. For example, population is notified when flood is coming and provided with recommendations what measures have to be taken. (UNISDR 2005: 2). [illegible]		The Ministry of Environment is the main institution responsible for the development of climate change policy and its implementation (UNFCCC NC7: 11). [illegible]		GIS-based calculation and consideration of vulnerability data against river floods [illegible]	Guidelines on the implementation of "A Roadmap for moving to a competitive low carbon economy in 2050" establish that one of the possible methods of implementation of development priorities is to revise legal acts on spatial planning in order to ensure their full conformity to climate change goals. Spatial planning documents are used as an instrument for the implementation of planning of spatial organisation, management and use of territories and protection measures. The main function of spatial planning, which is to harmonise different interests at the planning stage, encompasses the achievement of both the reduction of GHG emissions and climate change adaptation goals. 29-30)
LT	PF		(2) Droughts		National Drought Management in accordance to the development and implementation of risk-based Drought Management Plans in the context of the EU Water Framework Directive [illegible]					
LT	PF		(3) Storms (winter, convective)							
LT	PF		(4) Earthquakes				The territory of Lithuania and adjacent areas feature a low seismic activity. Therefore, building codes of practice and standards are used [illegible]			
LT	PF		(5) Others (flash floods, land slides)	No landslides, avalanches or convective storms recorded						
LU	PF	1	(1) Floods (river floods, storm surges)	Flood hazard/risk maps have been prepared at national level covering all 15 APSFRs previously identified (all in Rhine RBD LU_RB_000). [illegible]		Erarbeite Projekt: Anwendung der Luftfemperatur und des Niederschlags auf Tagesbasis für die Hochwasservorhersage [illegible]	There are limited adaptation actions embedded in sectoral strategies and action plans. River basin and flood risk management plans contain adaptation actions mostly related to flood prevention and management. [illegible]		Luxembourg participated in the elaboration of the Adaptation Strategy for the Rhine basin by the International Commission for the Protection of the Rhine, which was adopted in 2015 (European Commission Luxembourg 2018: 6)	ministerium für nachhaltige Entwicklung und Infrastrukturen 2015: HOCHWASSERRISIKOMANAGEMENTPLAN für das Großherzogtum Luxemburg - Anpassung an den Klimawandel
LU	PF		(2) Droughts		The Water Agency has identified potential adaptation measures, including the prohibition of certain water uses to guarantee the water supply. [illegible]	Preliminary sectoral vulnerability analyses were completed for agriculture, forestry, biodiversity, **drought**, human health, infrastructure and economy on the basis of expert judgement. (European Commission Luxembourg 2018: 10)	Ziel in NAS: Ausarbeitung eines integrativen städtebaulichen Gesamtkonzeptes für städtebauliche Maßnahmen zur Reduktion von Hitzewellen [illegible]			
LU	PF		(3) Storms (winter, convective)		In der Strategie für die Raumplanung gibt es ein Handlungsfeld „Anpassung an Starkwind und Stürme". [illegible]					
LU	PF		(5) Others (flash floods, land slides)	No landslides, no earthquakes, no tsunamis, no coastal or flash floods, no avalanches			In 2012 a national document on spatial planning was published, which took consideration of climate change (European Union: 13)			
LV	PM		**Latvia (Lettland)**			The LEGMC maintains the national hydrological, meteorological and air quality monitoring network. [illegible]	National Adaptation Plan: Latvian National Plan for Adaptation to Climate Change until 2030. [illegible]		Cross-sectoral monitoring activities for climate change	
LV	PM		(1) Floods (river floods, storm surges)	The Latvian Environment, Geology and Meteorology Centre (LEGMC) has developed flood risk management plans and early flood warning systems for the highest river basins. Flood risk information systems and maps are published online (Climateadapt).	Flood Risk Management Plan for Riga City funded by the Riga City Council and the LIFE+ programme of the EU. [illegible]	The main climate change-related risks are damages by storm surges to buildings and roads at the coast and in cities at river mouths, damages caused by heavy rainfall induced precipitation floods and spring/ice-drift floods. [illegible]	KALME - national research program on climate change impact on Latvian water environment. [illegible]			
LV	PM		(2) Droughts			Heatwaves: The Latvian population will be exposed if the temperatures rise above a critical height or duration [illegible]				
LV	PM		(3) Storms (winter, convective)			The comparatively highest consequences will be caused by the "increased risk of damage by storm surge to buildings at the coast and in cities at river mouths" (UNFCCC NC7: 154). [illegible]	Adapting existing buildings and built structures to climate change impacts and loads: improvement of building constructions in specific storm-hazard nodes, e.g., flat roof structures (UNFCCC NC7: 156).			
LV	PM		(5) Others (flash floods, land slides)	"Latvia has already implemented early warning systems for some natural hazards: floods, earthquakes, forest fire, storm, blizzards or [illegible]	Plan and introduce warnings and safety measures for visitors of use perception in the case process of risk of landslides and mudflows				Early warning system for coastal hazards	
MT	PF		**Malta**	National Risk Assessment: The Civil Protection Act of Malta lays down the structure for the Civil Protection Department and their obligation to carry out risk and vulnerability assessments. [illegible]	Strategic Plan for Environment and Development: plan provides a strategic spatial policy framework for the environment and development up to 2020 (Government of Malta)		*Climate Change Committee for Adaptation; National: [illegible]		National risk assessment conducted on legal basis	
MT	PF		(1) Floods (river floods, storm surges)	The development of the Water Catchment Management Plan was a major milestone in the implementation of the EU Water Framework Directive. [illegible]	The Flood Risk Management Plan for the Malta Water Catchment District has been integrated with the 2nd River Basin Catchment Management Plan [illegible]	In Malta, sea level measurements conducted by the Physical Oceanography Unit show that, in spite of alternating interdecadal trends, the sea level has on average slowly declined over the last 15 years. [illegible]	"Storm Water Master Plan" has been adopted in 2008 to manage the local impacts arising from uncontrolled street surface runoff as a result of extreme rainfall events. [illegible]	Another impressive initiative is the National Flood Relief Programme funded by the ERDF, which aims to mitigate the impacts of flash floods on population and urban areas and to create scope for water conservation by the re-use of floodwaters. [illegible]	Drought and flash flood adaptation activities.	*Climate Change Committee for Adaptation, Malta 2010: National Climate Change Adaptation Strategy *Sustainable Energy and Water Conservation Unit Environment and Resources Authority: The 2nd Water Catchment Management Plan for the Malta Water Catchment District 2015 - 2021
MT	PF	1	(2) Droughts		The naturally low availability of water in the Maltese islands, has always required that due consideration be given to water demand management measures. [illegible]		Early warning systems: Switzerland in Malta, include heat waves [illegible]		Strict water charging/drought management policy. Health warnings connected to defined quantitative thresholds. Campaigns to raise awareness: WATER – Be the Change is a national water conservation campaign launched in September 2019 [illegible]	
MT	PF		(3) Storms (winter, convective)			Although such storm surges are not specifically predicted for the Mediterranean region and there are no local scenarios for this parameter, the precautionary principle is also being applied in this case. [illegible]				
MT	PF	1	(4) Earthquakes	The Malta Seismic Network is funded by the Seismic Monitoring and Research Group of the University of Malta: seismic activities around the Maltese islands are permanently monitored (Seismic Monitoring & Research Group)	Malta's NRA included the development of a GIS-based geographic information system tool for mapping the risk of hazards and threats with a spatial component. [illegible]		There seem to be no anti-seismic codes for buildings.		Integrated GIS based risk assessment across hazards including vulnerable assets such as critical infrastructure.	
MT	PF		(5) Others (flash floods, land slides)	No landslides (GFDRR)					* Malta has a comprehensive risk assessment as part of its risk management legislation, produced by international experts in coordination with national players such as ministries, academia, the private sector, civil society and public administration. [illegible]	
NL	MB		**Netherlands (Niederlande)**	Flood risk (measures in): provides information on flood risks in the Netherlands to citizens. [illegible]		In 2009, the Dutch provinces signed an agreement with the national government to mainstream climate adaptation into spatial planning by 2015 (European Commission Netherlands 2018: 7)	The National Knowledge and Innovation Programme Water and Climate (NKWK) started in 2015 and is a cooperation of governments, scientific organisations and companies. [illegible]		Flood risk map: information service	
NL	MB	1	(1) Floods (river floods, storm surges)	A number of actions are dealing with adaptation topics, of which several are related to water. The first campaign 'The Netherlands lives with Water' started already in 2003. [illegible] Directive. (European Commission Netherlands 2018)	Greater Risk Reduction Team (DRR Team) [illegible] old standards were based on probabilities of exceeding water levels. [illegible]	The impacts of economic growth and climate change on flood risk are taken into account. [illegible]	The Dutch Delta Programme [illegible]	The Delta Programme, including the recently published (September 2017) Delta Plan on Spatial Adaptation, is a reflection of the close cooperation between the national government, provinces, regional water authorities and municipalities. [illegible]	New standards in flood management standards are now based on flood probabilities (and not only on exceeding of water levels) [illegible]	
NL	MB		(3) Storms (winter, convective)							
NL	MB	1	(4) Earthquakes	At the data centre of the Royal Dutch Meteorological Institute (KNMI - Koninklijk Nederlands Meteorologisch Instituut) seismic data is available and special seismic hazards maps are issued for the area around the city of Groningen in the North of the Netherlands. [illegible]	Since 2014 there has been a sharp drop of the production of natural gas as a result of earthquakes in the Groningen area (in the north of the Netherlands). [illegible] (UNFCCC NC7: 27).					Earthquake hazard due to gas drilling in the northern parts of the Netherlands.
NL	MB		(5) Others (flash floods, land slides)	NO: Coastal flood/ Landslide/ Mudslide/ Avalanche						
NO	PF		**Norway (Norwegen)**	In Norway's case, the main problems are expected to be water related – in particular flooding, landslides and avalanches, stormwater, sea level rise and storm surges. (UNFCCC NC7)						There is a risk analysis with indication of the likelihood and consequences for 20 scenarios analysed without attaching importance to whether it is a natural event, major accident or malicious act. (for more information see National Risk Analysis 2014)
NO	PF	1	(1) Floods (river floods, storm surges)	Flood magnitude analysis (UNFCCC NC7: 166) The NVE is responsible for the national flood warning service and has a continuous 24-hour emergency telephone line. [illegible]	The Ministry of Petroleum and Energy has the responsibility for floods, landslides and avalanches at the national level, with the Norwegian Water Resources and Energy Directorate (NVE) as an executive authority (UNFCCC NC7: 162). [illegible]	- The climate change effect on floods is now included in flood hazard maps. [illegible]	Furthermore, several authorities are responsible for various regulations regarding urban flooding and the municipal management of such issues. [illegible] * **National Fund for Natural Disaster Assistance** [illegible] * **Norwegian Natural Perils Pool** [illegible]	The Norwegian natural hazard management regime is based on the principle of responsibility: whoever is responsible for an activity in normal conditions should maintain that corresponding responsibility, as well as initiating cross-sectoral cooperation, during exceptional conditions. [illegible]	Mandatory risk assessments: * The Norwegian Building Act obliges planning authorities to ensure that a risk and vulnerability assessment is carried out in the preparation of any development plans. [illegible]	* Official Norwegian Reports NOU 2018: 17 Summary Climate risk and the Norwegian economy [illegible]
NO	PF		(2) Droughts			A trend analysis for the period 1930-2004 indicates longer periods with low low flow in the summer in southeastern parts of Norway.				
NO	PF		(3) Storms (winter, convective)		Norwegian building codes have a specific chapter for acts of nature, requiring a satisfactory level of protection against damage or significant nuisance. Specific requirements are listed for protection against flooding, storm surges, avalanches and landslides. (Nordres [illegible]					
NO	PF		(4) Earthquakes				Preventive measures for adverse consequences of earthquakes are primarily connected to the use of the standards for the design of structures – the so-called Eurocodes. [illegible]			
NO	PF	1	(5) Others (flash floods, land slides)	At the end of 2011, NVE had closely studied a total of 135 quick clay zones, and completed full or partial protection of 72 zones. Around 40 zones were regarded as fully protected at the end of 2014. (National Risk Analysis 2014:57) - guidelines and reports on landslide and avalanche mapping and protection have been issued (UNFCCC NC7:168)	Quick clay landslides: The NVE works actively with guidance and follow-up of land use planning in the municipalities, with the aim of avoiding development in hazardous areas, or of implementing the necessary protective measures prior to development. (National Risk Analysis 2014:57)				Guidelines and reports on landslide and avalanche mapping incl. relevance for land-use planning	
PL	PM	1	(1) Floods (river floods, storm surges)	Flood Hazard and Risk Maps and Flood Risk Management Plans prepared in the framework of implementing the Floods Directive. [illegible]	In the years 2012-2017, the maritime authorities carried out the tasks emphasized in the Programme for the Protection of the Seashore, on sections of the coast – most vulnerable to erosion and sea floods. [illegible]	Analyses carried out for the Upper Odra River show increasing frequency the maximum flows. Flood Risk Map for Poland (UNFCCC NC7:156) - National Map showing Regions of the most frequent flash floods in the years 1971–2010 (UNFCCC NC7:155)	* The Strategic Adaptation Plan for sectors and areas sensitive to climate change (SPA 2020) states that floods are one of the major catastrophic threats to Poland (UNFCCC NC7: 162). [illegible]	Poland has neither developed nor is it planning to develop a National Adaptation Action Plan. [illegible]	* The GCS adjusts the risk assessment at national level and gives recommendations at appropriate sub-national level. [illegible]	Poland's main law on risk assessment is the Act on Crisis Management (26 April 2007). Polish legislation defines 'crisis management' as a comprehensive process incorporating risk prevention, preparedness, response and recovery (Peer Review Poland 2016: 13-14). No evidence was found of adaptation being mainstreamed in insurance or alternative policy instruments in Poland. The NAS 2020 is the national level document. In addition, the local and regional authorities are free to shape their adaptation policies in line with the national policy. There is no national adaptation plan in Poland in addition to the NAS 2020 and no dedicated sectoral plans have been identified (European Commission 2018:21).
PL	PM		(2) Droughts	The "Development of drought impacts prevention plans for the river basins" project is carried out under the Infrastructure and Environment OP 2014-2020. [illegible]	Drought mitigation plans (UNFCCC NC7 Poland: 172) [illegible]	The Analysis of drought risk will be recommended to be included Drought Prevention Strategies. [illegible]				
PL	PM		(3) Storms (winter, convective)	At the end of the 20th century, the vulnerability to surges in the Southern Baltic almost doubled in relation to the mid-20th century. [illegible]						
PL	PM		(5) Others (flash floods, land slides) or General	One of the main root cause of landslides in Poland is human activity. The key triggers are rainwater and/or meltwater, exacerbated by human activities/investments. [illegible]		Map of landslides in Poland (UNFCCC NC7:156)			Poland has a strong framework, coordination and cooperation. [illegible] (Peer review Poland 2016: 13-16)	
PT	PF		**Portugal**		At the national level, the ENAAC and ENAAC 2020 are high-level strategies which promote mainstreaming to encourage the sectoral groups to develop and adapt their own adaptation plans. (European Commission 2018:20)		The Portuguese National Platform for Disaster Risk Reduction, with over 50 governmental, non-governmental, private and scientific stakeholders, plays a specific role. [illegible]		Portuguese National Platform for Disaster Risk Reduction	
PT	PF		(1) Floods (river floods, storm surges)	- Development of the Action Plan for the Coastline - Coastline XXI and Annual Action Plan. [illegible]	In response to the winter of 2013/2014 where **Portuguese coastal area** were greatly affected by storm surges a Coastal Working Group was created, [illegible]	Action Plan for the Protection and Enhancement of the Shore (Plano de Ação de Proteção e Valorização do Litoral - PAPVL) 2012-2015 [illegible]	Coastal protection is one of the main areas of investment given our particular vulnerability. [illegible]		"Special" plans with binding effects: The regulations of these plans are mandatory for public administration as well for private companies and citizens. They also prevail over any other plan, as they are considered "Special Plans" under the Law 48/98.	IPMA is also responsible for monitoring extreme events, such as droughts, heatwaves, heavy rainfall and strong winds. It has established several indicators for climate modelling, which are available at Portugal's Climate Portal, including aridity, drought, fire risk, evapotranspiration and heatwave duration. Apart from the Climate Portal, there are two other related national databases focusing on extreme weather-related events: * Since 2006, the National Authority of Civil Protection (ANPC) has maintained a national database on disaster response and losses and publishes this information in the periodicals of civil protection events *The APA keeps the records of the historical marks of floods and of its network of meteorological and hydrological monitoring stations. These data are available on the National System of Environmental Information (Sistema Nacional de Informação do Ambiente - SNIAmb) (European Commission 2018:16).
PT	PF		(2) Droughts	Although there is no overall assessment of climate impacts on the economy, annual costs associated with forest fires (not counting the recent huge fires of 2017) are estimated at EUR 60-140 million. [illegible] (European Commission 2018: 17).	National Plan of Integrated Management of fire, encompassing the implementation of primary and secondary fuel management networks, [illegible] (European Commission 2018:24)	Drought monitorings (http://www.ipma.pt/en/oclima/observatorio.secas/)	In the first stage of ENAAC this sector was aggregated along with forests and fisheries and developed a National Adaptation Strategy for Agriculture and Forests (2013) [illegible] (European Commission 2018:21).		Drought monitoring	The establishment of the Portuguese National Platform for Disaster Risk Reduction, in May 2010, was a key measure towards better coordination of prevention, preparedness and response activities. (European Commission 2018:24)
PT	PF		(3) Storms (winter, convective)							
PT	PF		(4) Others (flash floods, land slides)			For tsunami risk, an early warning system started to be established at the end of 2017. It is based on a seismic network to detect the earthquake origin, a sea-level network based on coastal observation systems [illegible]			Tsunami early warning system	
PT	PF		(5) Others (flash floods, land slides)	No landslides or avalanches recorded						
RO	MB	1	(1) Floods (river floods, storm surges)	As a result of the catastrophic floods recorded at the end of 2005 year, it was elaborated the National Strategy of Flood Risk Management, [illegible]	At the national level, concrete actions were started to increase the ability to act, especially concerning the floods problem, but also generally, on the extreme weather phenomena. [illegible]	The National Institute for Hydrology and Water Management (NIHWM) elaborates short, medium and long term hydrological forecasts and warnings, [illegible]	One of the important projects underway is the WATMAN project information system for integrated water management. [illegible]		The project "Danube Delta Integrated Sustainable Development Strategy (2030)" (completed in 2015) identified a series of priority areas for intervention and key projects within each sector based on a number of criteria [illegible]	The NAS was also intended to enable the priority sectors to start developing and implementing their own sectoral adaptation plans. We could not find information on the existence of separate sectoral adaptation plans. (European Commission 2018:7)
RO	MB		(2) Droughts	Map showing "Agricultural surfaces in Romania affected by drought" (UNFCCC NC7: 40). [illegible]	Also, there are established, at the national, regional and local levels, the procedures needed to manage the emergency situations [illegible]	Case studies about heat waves risk assessment in Western Romania's urban areas were developed by the SEERISK project. (European [illegible]			Drought risk maps	
RO	MB		(3) Storms (winter, convective)							
RO	MB		(4) Earthquakes	Based on the recommendations in EUROCODE 8, a seismic hazard map was made as part of a new building code for Romania. (Ambiental [illegible]						
RO	MB		(5) Others (flash floods, land slides)	NO: Coastal flood/Avalanche IMPORTANT: Landslides: [illegible] (National Risk Assessment – RO RISK Report 2016: 37).	The scenarios developed, considering 10, 100 and 1000 year-return periods show that landslide hazard could inflict large damages to extended areas, either as non-triggered processes or earthquake-induced ones (National Risk Assessment 2016: 37).		**Landslides:** The risk of landslides, floods and erosion shall be diminished and the surface leakage improved by the implementation of the National Programme of expanding forest areas. [illegible]			
SE	PF		**Sweden (Schweden)**	The general mapping carried out by the Swedish Rescue Services Agency identifies areas that do not have satisfactory safety and where detailed investigations should be carried out. (SOU 2007:60)			Cooperation has been under way since 2005 in a network of government agencies to create a joint portal containing combined knowledge on vulnerability and climate change adaptation, known as the Adaptation Portal. [illegible]			SOU 2007: Sweden facing climate change - threats and opportunities
SE	PF	1	(1) Floods (river floods, storm surges)	General flood maps are prepared for risk areas along watercourses to aid preventive work in municipal planning and local authorities in general physical planning. [illegible] (Nordres 2016:41)	In The First Step Towards Simpler Planning and Building Legislation bill (2006/07:122) the government has made clear in the key regulations that development shall be located in suitable land [illegible]				Good practice MSB maintains two decision support systems that are aimed for authorities and professional users but are in principle open for anyone: WIS and RIB. [illegible] (Nordres 2016: 45f)	In contrast to this otherwise decentralised nature of the Swedish approach there is a designated agency responsible for coordinating the civil emergency planning. The Civil Contingencies Agency (MSB) is also responsible for the holistic review of emergency and disaster management in Sweden and for all hazards. MSB works in close cooperation with key public and private actors on all administrative levels and is also tasked to monitor and assess the effectiveness of natural hazard management system and measures. (Nordres 2016:42) The expected impact of climate change in Sweden has been examined thoroughly by the Climate and Vulnerability Investigation (2005-2007). The investigation has produced two reports: • Partial report: "Flood threat, risks and measures for Mälaren, Hjälmaren and Vättern" (November 2006) • Final report: "Sweden and climate change – threats and possibilities" (October 2007) (Swedish national platform for disaster risk reduction 2014: 12)
SE	PF		(3) Storms (winter, convective)							
SE	PF	1	(5) Others (flash floods, land slides) No landslides, no avalanches recorded	Geotechnical Institute (SGI) made an assessment of which water courses that have the highest priority to map from a socio-economic perspective. [illegible]	The Swedish Geotechnical Institute, in cooperation with the Geological Survey of Sweden, the National Land Survey of Sweden and the Swedish Civil Contingencies Agency [illegible]	Swedish Civil Contingencies Agency carries out general stability mapping in areas with existing buildings in order to prepare for landslides. (Nordres 2016:44f)			Consideration of **socio-economic data**: Assessment of which water courses that have the highest priority to map from a socio-economic perspective. **Elaborated landslide risk assessment and management system.**	
SI	PM		**Slovenia (Slowenien) Polina**					Slovenia adopted the first NDRA in 2015. Selected separate risk assessments for climate-related disasters (particularly floods, drought and forest fires), as well as the NDRA, were updated with available climate impact assessments in 2016 (European Commission: 13).	Slovenia participates in the work of two international river commissions: the International Sava River Basin Commission (ISRBC) and the International Commission for the Protection of the Danube River (ICPDR). [illegible] (UC 2018: 1)	
SI	PM	1	(1) Floods (river floods, storm surges)	The Risk Assessment for Floods is prepared by the Water Directorate of Ministry of environment and spatial planning. [illegible]	* Reduction of flood risk on the basis of defined areas of significant impacts of floods in the Republic of Slovenia (i.e. preliminary flood risk assessment), [illegible]		Reduction of flood risk on the basis of defined areas of significant impacts of floods in the Republic of Slovenia (i.e. preliminary flood risk assessment), the Flood Risk Reduction Plan was adopted in June 2017 defining measures of comprehensive flood defence, taking into account climate change impacts (UNFCCC NC7: 171).		Consideration of extreme flood event scenario.	
SI	PM	1	(2) Droughts	The Risk Assessment for Drought was prepared by the Slovenian Environment Agency at the Ministry of the Environment and Spatial Planning in 2016. [illegible]	* Drought risk management: in 2006, Slovenia accepted a mandate for the organization of the work of the Drought Management Centre for South-eastern Europe, DMCSEE [illegible]	On the basis of the knowledge of past trends, within the framework of the project "Assessments of Climate Change Impacts in the 21st Century", climate change assessments for the future and climate change impact assessments [illegible]	Drought risk management: in 2006, Slovenia accepted a mandate for the organization of the work of the Drought Management Centre for South-eastern Europe, DMCSEE [illegible] (UNFCCC NC7: 171).		Drought assessment including climate change; working with three different scenarios	
SI	PM	1	(3) Storms (winter, convective)	The Risk Assessment for Storms was prepared in 2015 and modified in 2016 by the Administration for Civil Protection and Disaster Relief within the Ministry of Defence. [illegible]	Responsible authorities: Until 20 March 2014, the ACPDR reports on disaster responses units were submitted by the Ministry of Infrastructure and Spatial Planning, [illegible] (Slovenian national disaster risk assessment Slovenia 2016: 286).	In 2016, certain risk assessments for individual disasters were amended taking into consideration the impacts of future climate change. [illegible]			Also here Development of several scenarios as a basis for further decision making	

SI	PM	1	(4) Earthquakes	The Risk Assessment for Earthquake, Version 1.0, was **prepared by the Ministry of the Environment and Spatial Planning** (Spatial Planning, Construction and Housing Directorate – Construction Division, Slovenian Environment Agency – Seismology and Geology Office) in 2015. (- Seismic hazard in Slovenia , - Seismic intensity map for a 475-year return period, - The Map of Seismic Hazard in Municipalitie, - Seismik Risk Matrix. Seismic hazard is assessed on the basis of the data on the past earthquakes and the geological characteristics of the territory. Seismic hazard maps are prepared on this basis. The maps show that the entire territory of the state falls under a seismic area, certain areas being more at risk than others. The maps show the intensity of earthquakes and the effects to be expected in a certain area, but offer no information on the time and the intensity of such earthquakes. More appropriate for the system of protection against natural and other disasters and for the wider public is the seismic intensity map, as it provides a written assessment of the earthquake's effects on people, objects, buildings and nature (National disaster risk assessment Slovenia 2016: 34-50) The likelihood of an accident in a nuclear power plant is assessed with the methodology of probabilistic safety assessments (PSA). The PSA is a procedure used for obtaining a numeric assessment of risk posed to the nearby area and the population owing to the operation of various technological facilities or presence of different activities and processes. The PSA is based on the identification of possible initial events and determination of event sequence which can be initiated by each initial event, including its consequences. It includes three levels: - Level 1 - calculated likelihood of core damage owing to internal events (loss of entire alternate power supply, rupture of the primary system tube, etc.) and external events (fire, earthquake, flood, etc.). (National disaster risk assessment Slovenia 2016:127) * Early Post-Earthquake Damage Assessment Tool	Slovenia Earthquake Event Rapid Response Toolbox - POTROG (Project on the seismic hazard in Slovenia for the needs of Civil Protection) (National disaster risk assessment Slovenia 2016: 34). Some disasters, such as earthquakes, cannot be predicted. However, the scope of their consequences, especially their economic and environmental impacts and their impact on cultural heritage and people can, in the event of an earthquake with an intensity of VII or higher on the EMS scale, be considerably reduced with appropriate measures (ebd.: 212).				Earthquake risk assessment by ministry of environment and spatial planning - not only by a sectoral agency/ministry															x						
SI	PM	1	(5) Others (flash floods, land slides)	NO: Coastal flood/ Flash flood/ Storm Convective/ Avalanche		In 2016 and 2017, a project 'Assessments of Climate Change Impacts in the 21st Century' was carried out at the ARSO43. Based on the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) Representative Concentration Pathways (RCP) emissions scenarios, ensembles of six models from EURO-CORDEX for RCP4.5 and RCP8.5 were used to assess the long-term changes in climate variables for Slovenia (average climate conditions and extreme weather events until 2100). Impact assessments were carried out (including for agricultural drought, heat waves, frost, and soil conditions) using these scenarios. (European Commission Slovenia 2018: [illegible]			Slovenia also takes part in the implementation of the three EU-level macro-regional strategies: the EU Strategy for the Alpine Region (EUSALP)16, the EU Strategy for the Adriatic-Ionian Region (EUSAIR)17 and the EU Strategy for the Danube Region (EUSDR) (European Commission Slovenia 11)																					x
SK			**Slovakia (Slowakei)**																											
SK	PM	1	(1) Floods (river floods, storm surges)	Official national maps have been created for flood-prone areas by the POVAPSYS system (the flood warning and forecasting system). There is a flood vulnerability map.	A national framework for single and multi-hazard risk assessment is in place and considers some current climate-related risks (notably floods). Strategies are in place for tackling those risks, i.e. the Management of Flood Risks plan from 2012, Strategy of Floods protection until 2020 from 2013. The first flood management plans from the end of 2015 consider climate impacts and adaptation. (European Commission 2018:18) With regard to floods protection, there is further action under the Rural Development Programme of the Slovak Republic 2014-2020, the Integrated Regional Operational Programme 2014-2020.(European Commission 2018:20)	The Slovak Hydro-meteorological Institute (SHMU) monitors climate change and extreme weather events on an ongoing basis and has its own research capacity. Thus, it plays a key role in providing data and research for climate adaptation and indeed was a source of expertise and knowledge for drafting the current NAS. The website of the institute provides potential warnings for floods, wind, drought and heatwaves in the summer period. There is a section on climate impacts in Slovakia. (European Commission 2018:12) National revitalisation and integrated management of floods programme (European Commission 2018:17); Key documents for the inclusion of impact assessments of climate change on runoff are the Directive 2000/60/EC of the European Parliament and of the Council on establishing a framework for Community action in the field of water policy and Directive 2007/60/EC on the assessment and management of flood risks, with emphasis on the needs of assessment and prediction of water resources and ensuring flood safety. (UNFCCC NC7: 168)		In the area of the built environment the following policy instruments have been adopted: The Ministry of Transport and Construction of the Slovak Republic issued in 2014 a Methodological Guideline to the NAS, which was distributed to the local authorities (Spatial Planning Departments) with the requirement to introduce the recommendations to each municipality and to apply proposed adaptation measures. On the basis of the guideline, the outlined measures of the NAS (built environment chapter) should be taken into account in the local spatial plans. This could be observed by the district authorities when elaborating formal statements to the spatial planning documentation. In January 2018, the Urban Development Framework of the Slovak Republic by 2030 was adopted by Governmental Resolution No. 5/2018. The framework calls for climate change adaptation in urban areas, and recommends that regional and local authorities consider the adverse effects of climate change in city and spatial planning. The framework presents a couple of measures and encourages cities to elaborate local adaptation plans and implement adaptation measures. The framework supports the provision of the systematic integration of adaptation measures in spatial planning documentation. (Climate-Adapt)	national framework for single and **multi-hazard** risk assessment	there is currently no systematic approach to adaptation at regional or sub-regional level, as climate change and its impacts are not part of the standard planning processes at regional and local levels. (European Commission 2018:6) No regional and no sectoral adaption plans (European Commission 2018:6)				x																
SK	PM	1	(2) Droughts	On 14 March 2018, the Government approved the first NAP addressing drought and water scarcity, called "H2OONOTA JE VODA" (Water is value), prepared by the MZP, as a follow up to the Water Management Plan of Slovakia and the current NAS. The NAP proposes measures on monitoring and early warning systems for drought and disaster risk management. (European Commission Slovakia 2018: 7- [illegible]	There is an action plan addressing drought and water scarcity, which was adopted in March 2018 (European Commission 2018: 8).	* "Prognosis of hydrological drought occurrence in the Slovak Republic" managed at the Faculty of Natural Sciences, Comenius University in Bratislava (2013 - 2017) * Project of the Earth Science Institute, Slovak Academy of Sciences: "Drought monitoring in the Slovak Republic" (2015). (UNFCCC NC7: 213-214).	Adaptation in our country could be divided to two parts. One of them is the elimination of **drought** consequences, e.g., a decrease in the flow rate and water yield on the one hand and on the other hand, to minimize the impact of floods, especially flash floods in mountainous and foothill areas (UNFCCC NC7: 171).																							
SK	PM		(3) Storms (winter, convective)																											
SK	PM	1	(4) Earthquakes	The cross-bordering earthquake hazard map for three Central European countries, the Czech Republic, Poland and Slovakia (CZ-PL-SK) in the sense of the Global Seismic Hazard Assessment Program (GSHAP) was elaborated both in terms of macroseismic intensities and in terms of peak ground accelerations (PGA) (Earthquake Hazard for the Czech Republic, Poland and Slovakia: 331)	National Network of Seismic Stations (NNSS) is the most important Slovak infrastructure for monitoring of seismic activity. Its main goal is to monitor and localize earthquakes with macroseismic effects (effects on people, objects, buildings and nature) on the territory of Slovakia. Besides these earthquakes the seismic stations of NNSS record also weaker local earthquakes and other seismic events (e.g. quarry blasts) as well as regional and teleseismic earthquakes and nuclear explosion (Earth Science Institute of the Slovak Academy of [illegible]		The National Flood Resilience Review (HM Government, 2016), established to assess how the UK can be better protected from future flooding and extreme weather events, recommended a long-term action to improve modelling of flooding from all sources, which the EA and Met Office have picked up. (European Commission 2018:22)																							
SK	PM		(5) Others (flash floods, land slides)	NO: Coastal flood/ Storm convective *Avalanche: verschiedene Karten auf researchgate.com in einem conference paper; keine Informationen zu nationalen Maps	Avalanche Prevention Centre of the Mountain Rescue Service in Slovakia was founded in 1972 after several large avalanche incidents. The centre publishes avalanche bulletins, operates the network of automatic weather stations in mountains of Slovakia, trains mountain rescuers, organizes avalanche awareness courses for the public, caries out avalanche mapping, hazard zoning and other activities in the [illegible]																									
UK	MB		**United Kingdom (Vereinigtes Königreich) Maren**																											
UK	MB	1	(1) Floods (river floods, storm surges)	**UK**:- Flood risk management plans and River basin management plans for England, Wales and Scotland.; **ENGLAND**:- Map: Main urban areas at risk of surface water flooding in England; - Map Indicative Flood risk areas for England; - Flood risk maps for surface water - The flood risk maps show the potential risk and impacts of flooding in the flood risk areas. The Environment Agency identified flood risk areas in their preliminary flood risk assessment (PFRA) published in 2018.(by the Environment Agency) - Flood risk maps for rivers and the sea in England - December 2019, Flood risk maps for surface water in England - December 2019; Flood map for planning (by the Environment Agency https://flood-map-for-planning.service.gov.uk) Where flooding could occur in the future is examined in all river catchments and the coastline around England using 39 weather patterns of varying severity and likelihood18. The assessment includes the extent to which flood defence structures reduce the chance of flooding and what might happen if they overtop or fail. The national assessment identifies land at risk from flooding using three risk categories. These consider the chances of weather severe enough to cause a flood, and the likelihood this will overwhelm defence structures or lead to their failure; Low, Moderate, Significant. (Current practice in preparing a Preliminary Flood Risk Assessment as required under Article 4 of the Floods Directive 2016:26) Guidance on flood risk assessment by the Department for Environment, Food & Rural Affairs and Environment Agency **SCOTLAND**: - Scottish National Flood Risk Assessment (NFRA); Flood Warning Development Framework 2017-2021: sets out a number of actions which the Scottish Environment Protection Agency (SEPA) can conduct within the coming years. 14 new flood warning schemes will be added to SEPA's Floodline service (Preventionweb - website). **NORTHERN IRELAND**:The extent of the potential future flood hazards for each source of flooding for a range of return periods was determined using predictive flood inundation models developed by the Rivers Agency for rivers, sea and surface water20. Although strategic in nature these models have been developed using best practice methodologies that utilise the available topographical and land use data. The predictive flood models used for the assessment ignore the presence of existing flood defences and therefore represent the worst case scenario. (Current practice in preparing a Preliminary Flood Risk Assessment as required under Article 4 of the Floods Directive 2016:27) **WALES**: Long term flood risk maps are issued by Natural Resources Wales.	Significant flooding in 1998, 2000, 2005, 2007 and 2009 led successive UK Governments to review and improve risk management practices for flood and erosion damage around the country. The strategy of the Department for Environment, Food and Rural Affairs (Defra) from 2004 'Making Space for Water' laid out the national response to flood risk, signifying a paradigm shift from land drainage to reducing and managing risk from floods (ECONADAPT TOOLBOX: United Kingdom) Where there is a need to work across administrative boundaries, there are joint flood risk management plans, which in turn link to river basin management plans and to the **UK's Marine Strategy** (Environment Agency, 2016) (European Commission 2018:17f) **National flood and coastal erosion risk management strategy for England** by the Environment Agency from 2011, updated 2019; **The Flood and Water Management Act.**Coastal erosion risk management authorities are identified by the Act as those districts or unitary councils that have a coastal erosion risk management function. (Defra 2011:30) We engage with and support local authorities in their responsibilities for managing local flood risk. National planning policy on the provision of sustainable drainage systems in developments has been strengthened. The **Housing and Planning Act** 2016 introduces a new requirement for the Secretary of State to carry out a review of planning legislation and planning policies for sustainable drainage in relation to the development of land in England.(The UK Climate Change Risk Assessment 2017: 12) There is an flood risk investment programme (The UK Climate Change Risk Assessment 2017: 10) The **Flood and Water Management Act 2010** requires the preparation of national and local strategies for flood risk management, which have to consider the risks of climate change. The **National Flood and Coastal Erosion Risk Management Strategy** includes long-term planning, avoidance of inappropriate development in high risk areas, improved flood management infrastructure, increased public awareness and improved flood detection/warning.(European Commission 2018:33f) The first **national marine plan for Wales** is under development; the draft report was released in March 2018 and a public consultation was subsequently conducted. Climate adaptation is embedded in the plan in relation to improving resilience of marine ecosystems and species and to coastal change and flooding. (European Commission 2018:35)	National Tidal and Sea Level Facility (NTSLF) conducts sea level measurements, computer modelling of tides and storm surges and the statistical estimation of extreme sea levels. The NTSLF has permanent tide gauge sites in the UK itself as well as in the south Atlantic to contribute to international climate research (UNFCCC NC7: 466). Flooding and Coastal change risks to communities, built environment and infrastructure are identified as a priority risk in a UK-wide Climate Change Risk Assessment (Climate-Adapt country fiche UK). Dynamic Coast: Scotlands National Coastal Change Assessment: delivers an up to date assessment of coastal erosion risks under the consideration of climate change effects and is thus a base for strategic planning inter alia Shoreline Management Plans have been derived from this (website Dynamic Coast).	A UK-wide Climate Change Risk Assessment was carried out for the second time in 2017. A third assessment is scheduled for 2022 (Climate-adapt country fiche UK). The UK Environment Agency provides a website with specific advice and support to key sectors to help them build resilience to climate change, particularly on water resources and environment, coastal erosion, and floods. (European Commission 2018:22) The Flood Risk Management Programme aims to reduce the likelihood and effects of flooding in England. Similar activity is conducted by all devolved administrations. Flood Forecasting Centre are partnerships between the Met Office and the Environment Agency (in England), alongside close collaboration and financial support from Natural Resources Wales, and the Scottish Environment Protection Agency. These bring together expertise on flood monitoring, forecasting and warnings. The Department for Infrastructure in Northern Ireland also works closely with the Met Office in managing flood risks (National Risk Register 2017:18) Flood insurance is recognised as a key tool to help households and private businesses manage the potential consequences of extreme events linked to climate change. Accordingly, the Government is committed to ensuring the continued availability and affordability of flood insurance to high-risk households (European Commission 2018:37f)	The responsibility for climate change adaptation is split between Wales, Scotland, England and Northern Ireland (four countries of the UK). The Climate Change Act 2008 created a framework for building the UK's ability to CCA by establishing: 1. UK-wide Climate Change Risk Assessment (CCRA) that is compulsory every five years 2. National Adaptation Programme (NAP) must be put in place to address climate change risks identified in the CCRA 3. Adaptation Reporting Power (ARP) that gives Her Majesty's Government and the Welsh Government the discretionary power to require bodies to report on their climate preparedness 4. Adaptation Sub-Committee (ASC) of the independent Committee on Climate Change to advise government and evaluate adaptation progress (Climate-Adapt Country fiche UK).		Defra 2011: Understanding the risks, empowering communities, building resilience - The national flood and coastal erosion risk management strategy for England																				
UK	MB	1	(2) Droughts	The UK drought portal is a tool to help visualise the current meteorological conditions across the UK, and understand the severity and magnitude of drought at different spatial scales across the UK over the past half century. Droughts can be visualised and explored through interactive maps and graphs. Data is updated at the beginning of each month. Launch the drought tool. The UK drought portal shows the relative magnitude of drought events within river basins and individual catchments based on rainfall deficits over durations ranging from 1 to 24 months (UK Centre for Ecology and Hydrology)	The Environment Agency acts as a technical advisor to government and as such, advises government on the water companies' drought plans and publishes technical guidance on preparing drought plans (How to write and publish a drought plan). (Environmental Agency 2017- Drought response: our framework for England : 9)		The Hosepipe Plan for England (2004) was revised in 2014 to better address the risks of climate change, including preparedness, alert and readiness. It has continued to be reviewed every year since 2014. (European Commission 2018:23)		Drought portal, drought plans																	x			
UK	MB		(3) Storms (winter, convective)																											
UK	MB		(4) Earthquakes	**Seismic hazard maps** for the UK have been produced with the introduction of the Eurocode 8 building regulations. The maps are available on the website of the British Geological Survey (BGS). Besides the BGS operates a network of over 100 seismograph stations across the [illegible]	Sensitive structures - certain critical buildings such as power stations, nuclear sites, and buildings under the Control of Major Accident Hazard regulations are subject to earthquake- resistant design requirements alongside other existing obligations. (National Risk Register [illegible]																									
UK	MB	1	(5) Others (flash floods, land slides)	NO avalanches *Landslides: Landslide susceptibility and debris flow maps as well as National Landslide database are issued and operated by the British Geological Survey (BGS). Each landslide is documented as fully as possible with information on location, name, size and dimensions, landslide type, trigger, damage caused, movement date, age and with a full bibliographic reference. The database is linked to a GIS which displays the landslides as point data (British Geological Survey - website).	**Landslides**: The UK has not yet developed a sophisticated legal and regulatory framework for the mitigation for many geological hazards which affect the population, due to limited direct experience with natural disasters. Especially landslides are not treated in many legal documents, as the previous effects of landslides did not raise much social or economic awareness (Gibson et al 2012: 1). All recorded deaths due to landsliding in the UK have resulted from rock fall s or debris flows [...]. Despite the small dataset, the nature of fatal landslides shown provides a number of important points relevant to the basis of land u se planning in relation to landslides in the UK. First, there are very few fatal landslides in the UK. Second, fatal landslides are very isolated and tend to involve only single individuals. Third, there is no consistent pattern from year to year (ibid: 2). There is no centralised, legally binding mechanism for the management or mitigation of landslides in the UK (ibid: 3).				Landslide database		x																			
TR	PM		**Turkey (Türkei) Polina**	Turkey has advanced disaster risk management (DRM) through initiating reforms to better-manage and reduce disaster risk and strengthing institutions for more proactive DRM. To overcome institutional fragmentation, the government established the Disaster and Emergency Management Presidency (AFAD) in 2009. In 2015, the government adopted the Turkey National Disaster Response Plan to [illegible]	Turkey's national disaster response plan (TAMP), the result of a two-year study conducted particularly in the light of the 2011 Van earthquake, was adopted in January 2014. TAMP is flexible, modular and adaptable to all types and scales of disaster. It clarifies the planning and coordination of public institutions and NGOs in the event of a local/national disaster to minimise the loss of life and [illegible]				Turkey National Disaster Response Plan to guide all disaster and emergency response														x							
TR	PM		(1) Floods (river floods, storm surges)	Most studies and projects on hazard and risk assessment are relatively recent and many are still ongoing. For example, the Turkey Disaster Risk Management System Project (TAF-RISK) focuses on risk modelling and developing algorithms in relation to earthquakes, floods, landslides and large-scale industrial accidents. TAF-RISK started in 2014 and still has to be implemented (Reer Review Report Turkey 2015: 23-24).	The Ministry of Forestry and Water Affairs has prepared a specific upper catchment flood control action plan (2013-2017). Works covering afforestation, erosion control, terracing, and the rehabilitation of inadequate land, flood brooks, rangelands and degraded forests will be carried out in 227 flood catchments. The General Directorate of Water Management has completed the preparation of a national flood management strategy paper and action document in consultation with relevant ministries. A river-basin management plan will be produced. The General Directorate of Water Management is responsible for preparing flood-risk management plans that are compatible with EU Flood Directive requirements (Reer Review Report Turkey 2015: 31).				Turkey applies international standards and follows EU and international regulations on technological risk, chemical accident prevention and flood risk. Turkey produces its flood risk map and risk management plans in line with the guidelines of the Floods Directive. The Ministry of Forestry and Water Affairs has prepared an upper catchment flood control action plan (2013-2017) and a comprehensive programme for flood risk reduction has been carried out. In addition, the Ministry of Culture and Tourism takes measures to protect and restore cultural assets in flood plains, in line with the aims of the Floods Directive (Peer Review Report Turkey 2015: 32).																					
TR	PM		(2) Droughts																											
TR	PM		(3) Storms (winter, convective)																											
TR	PM		(4) Earthquakes	* In the Turkish metropolis for example scientists are expecting a large earth-quake in future due to its proximity to the North Anatolian Fault, where the Eurasian Plate shifts against the Anatolian Plate. In Istanbul and other cities technical solutions are being sought with the SOSEWIN sensor early warning system in association with other research projects in order to record earthquakes quickly and to avoid or at least limit catastrophic damage with rapid protection measures (ESKP Turkey 2019). * The national seismic observation network development (USAG) project, which was started by AFAD in 2004, has led to the setting-up of 780 stations, including 550 accelerometric stations measuring seismic hazard (strong ground motion) around the clock. Infrastructure systems and software are continuously renewed in order to improve the network (Reer Review Report Turkey 2015: 24). * Turkey Earthquake Regions Map which came into effect in 1966 has been updated by the Presidency of Earthquake Directorate of AFAD and published in the Official Gazette on March 18, 2018 with issue no 30364. The new map will enter into force on January 1, 2019 (Reliefweb, Turkey's New Earthquake Hazard Map 2018).	* The Istanbul Seismic Risk Mitigation and Emergency Preparedness Project (ISMEP), with GFDRR support, enhances preparedness, strengthens critical infrastructure, and improves institutional and technical capacity for DRM and emergency response. In addition, the government has also stated a goal of improving seismic safety of all schools nationwide, which it is taking action on with GFDRR support (GFDRR Turkey 2019).* For Istanbul the IRREWS observation network (Istanbul Earthquake Rapid Response and Early Warning System) was constructed within the city area. This comprises ten so-called real-time strong-motion stations along the coast and more than 100 strong-motion stations inside buildings. The real-time stations are installed in the north of the North Anatolian Fault. If three neighbouring stations report a tremor, the central office of the Turkish seismological agency decides whether an alarm situation exists (ESKP Turkey 2019). * National Council of Earthquake – newly developing organization **links between governmental and nongovernmental institutions (planning for mitigation strategies for the country)** (WB-Natural Disaster Risk Management Program-Final Project 2005: 5). * The National Earthquake Strategy and Action Plan 2012-20236 aims to minimise the possible physical, economic, social, environmental and political damage and losses caused by earthquakes and to create living areas that are resistant to and prepared for earthquakes (Reer Review Report Turkey 2015: 24).				* Strong earthquake-risk mitigation and preparedness is ensured through strategies and action plans and a vast network of monitoring stations. There are hazard maps for earthquakes, a national seismologic observation network of 780 stations with 550 strong ground motion accelerometers, a national earthquake strategy and action plan (UDSEP-2023) and the ISMEP project (Peer Review Report Turkey 2015: 26). * Turkey introduced a requirement for earthquake insurance in 2000 and coverage is provided by the Turkish Natural Catastrophe Insurance Pool (DASK), set up under Law No 6305. Additionally, DASK may cover disasters such as floods, storms, landslides, and hail and snow damage in the event of insurance companies failing to do so (Peer Review Report Turkey 2015: 22).							x					x						x			
TR	PM		(5) Others (flash floods, land slides)	In some cases (seismic hazard), the hazard assessment and maps need to be improved, in others (landslides and floods) the limitation is [illegible]	The National Disaster Risk Assessment and Analysis Working Group has developed guidelines for assessing the following hazards: [illegible]				Turkey has invested in developing a comprehensive system of guidelines and methodologies for disaster hazard maps, such as AFAD's [illegible]											x		x								