



Disaster Risk Reduction Report
4th National Communication on
Climate Change

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Cover page photo: Photo Courtesy of UNDP <https://tinyurl.com/5fzukur4> (Potential flood damage in the urban part of Skopje)

ABBREVIATIONS

BUR	Biennial Update Report
CAT Bonds	Catastrophe Bonds
CBIT project	“Strengthening institutional and technical Macedonian capacities to enhance transparency in the framework of the Paris Agreement” Project
CMC	Crisis Management Centre
CMS	Crisis Management System
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EP&R	Emergency Preparedness and Response
ESM	Power Plants of North Macedonia
FITD	Fund for Innovations and Technological Development
GFDRR	Global Fund for Disaster Risk Reduction
GIS	Geo-Information Systems
GDP	Gross Domestic Product
ICTs	Information and Communication Technologies
IUCN	International Union for Conservation of Nature
JICA	Japan International Cooperation Agency
MoEPP	Ministry of Environment and Physical Planning
MRV	Monitoring, Reporting and Verification
NbS	Nature-based Solutions
NDC	Nationally Determined Contributions on Climate Change
NGOs	Non-governmental organizations
PE NF	Public Enterprise National Forests
PDNA	Post-Disaster Needs Assessment
PRD	Protection and Rescue Directorate
QA/QC	Quality Assurance/Quality Control
SDA	Sustainable Development Agenda
SDGs	Sustainable Development Goals
SEA	Secretariat of European Affairs
SEE	South-eastern Europe
Sendai Framework	Sendai Framework for Disaster Risk Reduction 2015 - 2030
SIDA	Swedish International Development Cooperation Agency
SRS	Software Requirements Specifications
SSO	State Statistical Office
UHMR	State Hydrometeorological Service
UN	United Nations
UNDP	United Nations Development Programme
UNDRR	United Nations Office for Disaster Risk Reduction
WIM	Warsaw International Mechanism
ZELS	Association of Local Self-governments Units

1. NORTH MACEDONIA DISASTER PROFILE

1.1 Risk and hazard profile of the country

The Republic of North Macedonia is a landlocked and upper-middle-income country located in the south-eastern parts of the European continent, on the Balkan Peninsula. Its hazard profile follows the regional one, characterized by the impact of a palette of natural and human-made hazards ranging from floods, earthquakes, extreme temperatures, storms, to droughts, landslides, epidemics and technical – technological ones. Floods are most frequent with the highest intensity and magnitude, weather-related events are on the rise with greater magnitudes, wildfires are increasing in frequency and consequences for nature and biodiversity, while earthquakes have the potentially biggest impact on the country and the citizens in terms of loss of life and long-term damage and losses.

#	Year	Disaster type	Date	Total deaths	Population affected	Total damages ('000 \$)	Source
1	1995	Flood	07.1995	/	1,500	245,000	2
2	2000	Wildfires	08.2000	/	/	13,563	2
3	2001	Extreme temperatures	1.12.2001	15	/	/	1
4	2003	Flood	8.1.2003	2	4,000	/	1
5	2004	Extreme temperatures	1.7.2004	15	/	/	1
6	2004	Flood	4.6.2004	/	100,000	5.661	1
7	2005	Storms	1.1.2005	1	/	/	1
8	2005	Flood	4.8.2005		2,000	/	1
9	2007	Wildfires	07.2007	1	1,000,000		1
10	2008	Flood	4.12.2008	2	30,000	4,842	2
11	2012	Extreme temperatures	1.1.2012	1	5,100	/	1
12	2012	Wildfire	23.07.2012	4			2
13	2013	Flood	24.2.2013	1	4,911	/	1
14	2014	Extreme temperatures	28.12.2014	/	8,800	/	1
15	2015	Flood	01/03.2015	2	100,000	40,421	2
16	2015	Flood	3.8.2015	7	2,116	87,000	2
17	2016	Flood	6.8.2016	22	33,582	50,000	2
18	2016	Earthquake	11.9.2016	/	/	10,000	2
19	2017	Extreme temperatures	5.1.2017	5	2,220	/	2
20	2021	Wildfires	06/09.2021	/	/	42,653	3

Figure 1 – Overview of disastrous events in the country during the period 2000 – 2021¹

¹ Prepared by the author using the following data: 1) *Plan for Readiness and Response of the Health System in Dealing with Urgent Crisis Situations and Disasters*, Ministry of Health, 2018; 2) *International Disaster Database EM-DAT* https://www.emdat.be/emdat_db/ and 3) http://www.stat.gov.mk/pdf/2021/5.1.21.15_mk.pdf

The table above points out this trend i.e., meteorological hazards (floods, extreme temperatures, storms, etc.) are dominant, followed by wildfires, geophysical hazards (earthquakes, landslides, etc.). The risks and hazards are not equal across the entire territory of the country and vary depending on the type of hazards, level of exposure and vulnerability, as well as the coping capacities of the DRM system and the communities. Therefore, on the regional level, there are some differences between the individual regions, but in general, they are following the hazard profile of the country and the regional distribution of the prevailing hazards and levels of risks is presented in the table below.

Hazard	Risk level	Region(s)
River flood	High	North, south, northeast, southeast, and central
Urban flood	High	Whole country
Wildfire	High	Whole country
Earthquake	Medium	Whole country
Water scarcity	Medium	Whole country (medium in the north, low in the rest)
Extreme heat	Medium	Whole country (hazard level is lower in the west)
Landslide	Low	West and southeast
Coastal flood	Very low	Whole country

Figure 2 - Hazard exposure profile of planning regions in North Macedonia (EU, 2018)²

As per the GFDRR, the annual average population affected by flooding is about 70,000 and the annual affected GDP is 500 M USD, whether the annual average population affected by the earthquake is 40,000 and the annual affected GDP is 200 M USD.³ As can be seen based on the availability of data, there were 72 human casualties from twelve disasters, approx. 1.3 million inhabitants were affected by 12 disasters and only eight disasters had the price tag of half a billion USD. During this period most human casualties were during the Skopje August 2016 Torrential Flood (22), wildfires in July 2007 affected almost half of the population (1,000,000 inhabitants) and the floods in 1995 had the highest damages of 245 million USD. Additionally, numerous small scale disastrous events are chronically pressuring the resilience texture of the society and communities utilizing their finite resources.

This trend is expected to grow further in the future given the expected impact of climate change and following the analysis on the climate change projections and the extreme events⁴, the country will face warmer and drier climates in the future with the increased occurrence of extreme warm events and decreased number of cold extreme events. On the other side, the drier conditions will result in a potential increase of extreme precipitations resulting in greater risk from torrential floods. The expected reduction of the summer precipitation and continuation of the subsequent duration will increase the risk of occurrence of droughts, prolonged vegetation periods and increased number of wildfires. Because of the

² European Union Civil Protection. *Peer Review – Report North Macedonia 2018*. 2019. p.14. [online] Available at <https://tinyurl.com/y4pxv23m>

³ Global Forum for Disaster Reduction and Recovery. North Macedonia section. 2017. <https://tinyurl.com/47pdmfar>

⁴ Gjurgjevik, Vladimir. *Climate projection report changes and for changes in the extreme climate events in the Republic of North Macedonia*. UNDP. 2020. p. 4. [online] Available at <https://tinyurl.com/yc3r4yaa>

deteriorating environmental conditions and the increased air pollution, it is expected that there will be an increase in the frequency, intensity and impact of catastrophic events that will significantly affect the overall resilience of the country and the local communities, especially affecting women and other vulnerable categories of citizens.

In this context, the risk index of North Macedonia is measured through the overall INFORM risk index that identifies the risk from humanitarian crises and disasters that could overwhelm national response capacity. It is made up of three dimensions - hazards and exposure, vulnerability and lack of coping capacity. The overall risk for North Macedonia is assessed as *low* (2.3) and the country is ranked at 140 places from 191, with the highest-ranked having the lowest risk. *Hazard and exposure* risk dimensions consist of natural hazards with an index of 2.1, where the earthquake poses the highest risk, followed by epidemics, floods and droughts. Human-made risks are extremely low. Within *the vulnerability* index, socio-economic vulnerability is assessed with 2.3 points, consisting of development and deprivation, inequalities and aid dependency and the vulnerability of the population being low. Finally, the *lack of a coping capacity* index of 3.6 means that the country is successfully implementing its obligations under the global frameworks priorities and performs well in overall risk reduction. Nevertheless, the weaker points are given to the overall governance and infrastructure with access to health care emphasized. The multi-annual trend line for the country's risks dimensions shows that the situation in overall risk reduction is improving even though the risk threat is increasing.

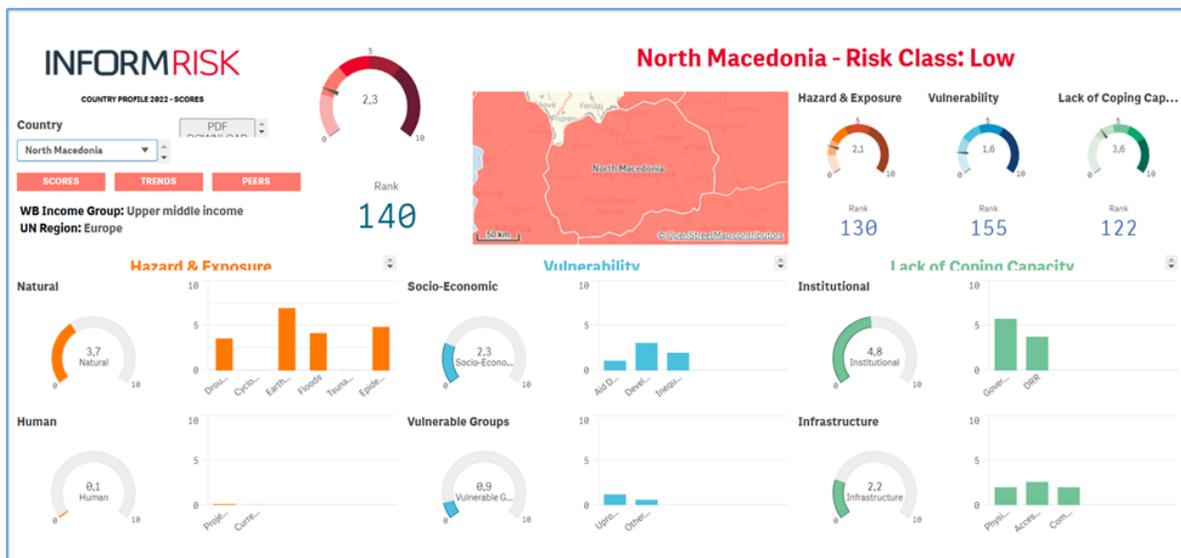


Figure 3 - INFORM National Risk Index for North Macedonia⁵

2.2 Emerging risks and threats

During recent years, the resilience structures of the society and communities have been affected by a series of new and emerging risks and threats i.e. migrants and refugee crisis since 2015, air pollution in

⁵ <https://tinyurl.com/5awdupr9>

Skopje and other bigger cities across the country or the COVID-19 pandemic crisis. The latter one is more than a health crisis unprecedentedly affecting the countries and territories globally, cascading through all socio-economic sectors, disrupting the sustainable development with a record loss of human lives and impacts to the well being of the communities resulting in exacerbated vulnerabilities and deepened inequalities. The pandemic toll until now is 221,285 confirmed cases, 7,815 deaths and cumulative output losses for 2020 and 2021 estimated at 3.7 billion USD⁶. The COVID-19 pandemic is a crisis with the longest duration, magnitude and consequences for the country, for the social and economic system and the population in general. However, all of these risks contribute to the weakening of the overall resilience texture of the country, as well as spending its finite resources.



Figure 4 - Interactive GIS platform for monitoring the situation with COVID-19 in the country⁷

Consequently, based upon the review of the prevailing natural and human-made hazards, previous disastrous events, as well as the potential impacts on the society and the communities, the national hazard profile can be summarized as the following:

FIRST DEGREE		NO RISK (Regular situation)	
SECOND DEGREE		LOW RISK (Regular situation with rarely manifested occurrences of endangerment)	Landslides Epidemics Pollution (air, water, soil)
THIRD DEGREE		INCREASED RISK (Potential start of a crisis or crisis situation)	Flood Fires (open space fires, wildfires and fires in urban areas) Earthquake Extreme weather events
FOURTH DEGREE		HIGH RISK (Probability of a start of a crisis or crisis situations)	
FIFTH DEGREE		HIGHEST RISK (Endangerment of the vital values and conditions of declaration of a crisis or crisis situations)	COVID-19 pandemic Migrant and refugee crisis

Figure 5 – National hazard profile⁸

⁶ Social and Economic Evaluation of the COVID-19 impact in North Macedonia. UNDP. June 2020. p. 8.

⁷ <https://www.arcgis.com/apps/dashboards/2096bd4b051b42948ac3f5747e80c3a5>

⁸ The national hazard profile is done based on the open data analysis and in accordance with the Article 6 of the Regulation on the Methodology for Preparation of the Assessment of the Endangerment of the Security of the Republic of Macedonia from all Risks and Hazards (Official Gazette of the Republic of Macedonia no.29/05).

It can be concluded that the priority hazards for DRR and CCA in the country are floods, wildfires, extreme weather events and droughts. The complementarity of the threats to the society, communities and ecosystems is a clear indication that the DRR and CCA need to be integrated while providing additional benefits for their overall resilience and addressing the primary societal challenges for reducing disaster and climate risks. With all this in mind, DRM is becoming increasingly important at national and local levels transitioning from a set of DRR activities to a more comprehensive and structured approach for prevention, preparation, response and recovery from disasters and crises.

2. DISASTER RISK REDUCTION CONTEXT IN NORTH MACEDONIA BETWEEN THE TWO NATIONAL COMMUNICATIONS

2.1 Background

For a better understanding of the resilience-building and disaster and climate risk reduction context, it is necessary to review the period following the Third national communication on CC⁹ i.e. 2015/2021. On a global level, this period is characterized by the laying down of the foundations of sustainable and resilient development, increased importance of the systemic risks, as well as better anticipation of the new and emerging risk and threats and complex disasters. On the national level, it is characterized by shifting the overall course of DRM from reactive to a proactive course i.e. from preparedness to prevention and mitigation. Therefore, an overview of this period is presented, including the damages and losses aspects.

2.2 Global Framework for sustainable and resilient development

In 2015 the foundations of sustainable and resilient development were laid by the international community with the adoption of the landmark frameworks i.e. the Sendai Framework, the 2030 Sustainable Development Agenda and the Paris Climate Agreement integrating DRR as a mutual enabler for the achievement of their goals. “The world set course for a transition to low-carbon, climate-resilient societies and economies, with countries working towards common goals while focusing on national circumstances, challenges and opportunities.”¹⁰

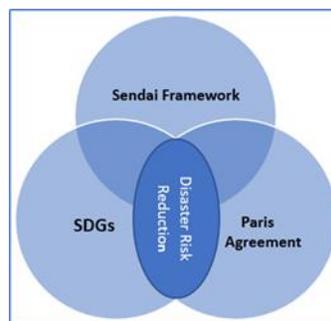


Figure 6 – Integrating DRR in the sustainable and resilient development framework

⁹ <https://tinyurl.com/2p8vykc9>

¹⁰ UNFCCC. *Opportunities and options for integrating climate change adaptation with the Sustainable Development Goals and the Sendai Framework for Disaster Risk Reduction 2015–2030*. 2017. p.5. <https://tinyurl.com/2p8mdmz2>



2.2.1 Sendai Framework for Disaster Risk Reduction 2015 – 2030¹¹

The Sendai Framework is a global framework for the reduction of the disaster risk adopted at the Third World UN Conference on disaster risk reduction held in Sendai, Japan in March 2015. It aims for “*the substantial reduction of disaster risk and losses in lives, livelihoods and health in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries*”.¹² The Sendai Framework establishes contemporary ground of resilient development of the countries and territories globally through a paradigm shift from disaster management to disaster risk management of existing and future risks bringing in resilience-building as the core goal to be reached by 2030. It has seven targets and four priorities for action (i.e. understanding disaster risk, strengthening disaster risk governance, investing in resilience and enhancing and leveraging disaster preparedness) that contribute to the prevention of new and reduction of the existing risks through the mainstreaming of DRR across all development sectors, programmes and policies. While the SFDRR is a voluntary, non-binding agreement, it calls for an all-of-society engagement, with governments having the primary role of reducing disaster risk. Paragraph 13 recognises climate change as a driver of disaster risk and points to the opportunity to reduce disaster risk in a meaningful and coherent manner throughout the interrelated intergovernmental processes while respecting the UNFCCC mandate. The Sendai Framework includes specific targets and indicators against which progress can be measured i.e. to measure efforts of the countries and territories to reduce disaster losses by 2030, including mortality, numbers of people affected, economic losses and damage to critical infrastructure such as water, transportation, telecommunications, schools and hospitals while bringing overall coherence in the reporting to the sustainable development advancement. The Sendai Framework encourages national reporting and voluntarily related arrangements that could be used for identifying, minimizing and tracking disasters, including climate-related risks and hazards.

2.2.2 Sustainable Development Goals (SDGs)¹³

SDGs are blueprints of how to achieve a better, more sustainable and resilient future for all. With a total of 17 goals and 169 targets, the SDGs focus on three main areas: (i) eradication of poverty; (ii) protecting the planet from degradation, while ensuring that economic, social and technological progress occurs in harmony with nature; and (iii) promoting universal peace and just and inclusive societies. While the SDGs are not legally binding, governments are expected to take ownership and establish national frameworks for the achievement of the 17 Goals i.e. eliminating poverty and hunger, addressing inequalities both within and among countries, achieving sustainable and inclusive economic growth, creating peaceful, just and inclusive societies, protecting the planet; ensuring the availability of water, achieving sustainable production and consumption, taking action to combat climate change and enhancing global partnerships for sustainable development. Each goal has several targets and indicators for tracking progress and comprehensive reporting i.e. in total there are 169 targets and 230



¹¹ <https://www.undrr.org/implementing-sendai-framework/what-sendai-framework>

¹² United Nations General Assembly. *Resolution adopted by the General Assembly on 3 June 2015, 69/283. Sendai Framework for Disaster Risk Reduction 2015–2030.* Paragraph 16. <https://tinyurl.com/32ff5maj>

¹³ <https://sustainabledevelopment.un.org/?menu=1300>

indicators. Climate action and disaster risk reduction are crosscutting issues but explicitly mentioned in SDG 13 on addressing climate change and its impacts and SDG 11 on making cities inclusive, safe, resilient and sustainable. Furthermore, they also contribute to the achievement of many of the other goals.

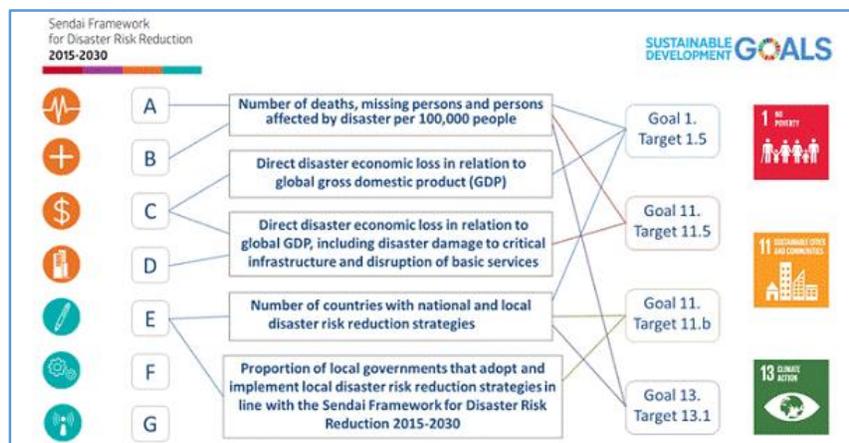


Figure 7 – Interconnection between the Sendai Framework targets and SDGs¹⁴

The Sustainable Development Goals Report is submitted every year to the High-level Political Forum (HLFP), drawing on data collected and reported by countries on an annual basis. In 2019, reporting on progress towards the shared indicators between the Sustainable Development Goals and Sendai Framework fed into the High-level Political Forum and Sixth Global Platform.¹⁵

2.2.3 Paris Agreement¹⁶

The Paris Agreement seeks to significantly scale up climate actions and deal more comprehensively with climate change impacts to safeguard development and eliminate poverty. Countries committed to hold the global average temperature to well below 2°C above pre-industrial 30 levels (and to pursue efforts to limit the increase to 1.5°C). It specifically aims to “*significantly reduce the risks and impacts of climate change and foster climate resilience*”. It targets the climate risks and aims to limit global warming and is not directly referring to the DRR, but the overall importance of averting, minimizing and addressing loss and damage associated with the adverse effects of climate change, including extreme weather events and slow onset events, and the role of sustainable development in reducing the risk of loss and damage. Articles 7 and 8 explicitly focus on CCA and DRR: article 7.1, on enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change and article 8.1, on averting, minimising and addressing loss and damage associated with the adverse effects of climate change. In particular, **Article 8** establishes “*the global goal on adaptation of enhancing adaptive capacity, strengthening resilience, and reducing vulnerability to climate change, to contribute to*



¹⁴ <https://www.undrr.org/implementing-sendai-framework/sf-and-sdgs>

¹⁵ <https://www.undrr.org/implementing-sendai-framework/sf-and-sdgs>

¹⁶ https://unfccc.int/sites/default/files/english_paris_agreement.pdf

*sustainable development.*¹⁷ Accordingly, areas of cooperation and facilitation to enhance understanding, action and support may include: early warning systems; emergency preparedness; slow onset events; events that may involve irreversible and permanent loss and damage; comprehensive risk assessment and management; risk insurance facilities, climate risk pooling and other insurance solutions; non-economic losses; and resilience of communities, livelihoods and ecosystems. This Agreement was the last one adopted during the historic year for sustainable development – 2015 and accordingly, these areas of cooperation and facilitation correlates with the Sendai Framework priorities and SDGs goals and targets as presented in the table below:

Paris Agreement Article VIII	Sendai Framework	SDGs
Early warning systems/Emergency Preparedness	Priority 4	3, 11, 13
Slow onset events/Events that may involve irreversible and permanent loss and damage	All priorities	1, 2, 13, 15
Comprehensive risk assessment and management	Priority 1	11, 13, 15
Risk insurance facilities, climate risk pooling and other insurance solutions	Priority 3	
Non-economic losses	Priority 3	1, 2, 11, 13, 14, 15
Resilience of communities, livelihoods and ecosystems	All priorities	All SDGs

Figure 8 – Correlation of the Article VIII areas of cooperation and facilitation with the SFDRR priorities and the SDGs goals and targets

As per the stipulations in the agreement, all countries for the reporting purposes prepare nationally determined contributions to the overall global climate change response informing on the level of achievement of the agreements’ objectives. Accordingly, a global stocktake assessment is done every five years. Furthermore, to inform the international community of their efforts and needs, countries are requested to submit an adaptation communication reflecting their priorities, implementation and support needs, plans and actions. This communication can be submitted together with other documents such as the national adaptation plans, nationally determined contributions or national communication aimed for recognizing the adaptation efforts and progress assessment.¹⁸

2.2.4 Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts (WIM)

Even though it is not a separate global framework, the COP19¹⁹ established the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts in 2013 in Warsaw, Poland. As the main vehicle in the UNFCCC process and reaffirmed with the Paris Agreement, its objective is to address loss and damage associated with impacts of climate change, including extreme events and slow onset events, in developing countries that are particularly vulnerable to the adverse effects of climate change in a comprehensive, integrated and coherent manner. The WIM promotes the implementation of

¹⁷ WB Group. *LIFELINES The Resilient Infrastructure Opportunity*. 2019. p.27. [online] Available at <https://tinyurl.com/2bv7hdmd>

¹⁸ https://unfccc.int/sites/default/files/resource/techpaper_adaptation.pdf

¹⁹ <https://tinyurl.com/3kfd6cva>

approaches to address loss and damage associated with the adverse effects of climate change by undertaking the following functions while implementing Article 8 of the Paris Agreement:

1. **Enhancing knowledge and understanding of comprehensive risk management approaches** i.e. action to address gaps in the understanding of and expertise in approaches to address loss and damage associated with the adverse effects of climate change, including, inter alia, the areas outlined in decision 3/CP.18, paragraph 7(a); collection, sharing, management and use of relevant data and information, including gender-disaggregated data; provision of overviews of best practices, challenges, experiences and lessons learned in undertaking approaches to address loss and damage.

2. **Strengthening dialogue, coordination, coherence and synergies among relevant stakeholders** i.e. providing leadership and coordination and, as and where appropriate, oversight under the Convention, on the assessment and implementation of approaches to address loss and damage associated with the impacts of climate change from extreme events and slow onset events associated with the adverse effects of climate change; fostering dialogue, coordination, coherence and synergies among all relevant stakeholders, institutions, bodies, processes and initiatives outside the Convention, to promote cooperation and collaboration across relevant work and activities at all levels.

3. **Enhancing action and support, including, finance, technology and capacity-building** i.e. providing technical support and guidance on approaches to address loss and damage associated with climate change impacts, including extreme events and slow onset events; providing information and recommendations for consideration by the Conference of the Parties when providing guidance relevant to reducing the risks of loss and damage and, where necessary, addressing loss and damage, including to the operating entities of the financial mechanism of the Convention, as appropriate; facilitating the mobilization and securing of expertise, and enhancement of support, including finance, technology and capacity-building, to strengthen existing approaches and, where necessary, facilitate the development and implementation of additional approaches to address loss and damage associated with climate change impacts, including extreme weather events and slow onset events.

Implementation of these functions is guided by the *Executive Committee* through the adopted Workplan and with support by the various *thematic expert groups*. In fulfilling its mandate the Executive Committee also develops initiatives, such as the *Fiji Clearing House for Risk Transfer*, which connects experts and those looking for risk transfer solutions to build tailor-made responses, to foster climate-resilient sustainable development. The current Workplan has five strategic streams as follows:²⁰

1. **Non-economic losses** are additional losses to the property, assets, infrastructure, agricultural production and/or revenue that can result from the adverse effects of climate change i.e. loss and damage that is not easily quantifiable in economic terms e.g. loss of life, degraded health, losses induced by human mobility, degradation of territory, cultural heritage, biodiversity, ecosystem services, etc. This strategic workstream aims at enhancing data collection on, knowledge and awareness of non-economic losses so that they can be further taken into account in national-level measures.

2. **Comprehensive risk management approaches** include risk assessment, risk reduction, risk transfer and risk retention. Such approaches aim at building long-term resilience of countries, vulnerable populations and communities to loss and damage, including concerning extreme and slow onset events, including through emergency preparedness, measures to enhance recovery, rehabilitation and build back/forward/better, social protection instruments, including social safety nets and transformational approaches. This strategic workstream aims at enhancing knowledge and understanding of

²⁰ <https://tinyurl.com/cmd8kc6t>

comprehensive risk management approaches, including issues related to finance, data, technology, regulatory environments and capacity-building.

3. **Human mobility** comprises migration, displacement and planned relocation related to the adverse impacts of climate change. The main purpose of this strategic workstream is to better understand the impacts of climate change on human mobility, develop and disseminate recommendations for integrated approaches to avert, minimize and address displacement related to the adverse impacts of climate change, as well as facilitate stakeholder engagement for further action.

4. **Action and support** targets enhanced cooperation and facilitation concerning action and support, including finance, technology and capacity-building, to address loss and damage associated with the adverse effects of climate change.

5. **Slow onset events** include increasing temperature, desertification, loss and biodiversity, land and forest degradation, glacial retreat, sea-level rise, ocean acidification, and salinization. Activities under this strategic workstream aim at improving the understanding of slow onset events, as well as enhancing the capacity to address them, particularly at regional and national levels.



2.2.5 European Forum on Disaster Risk Reduction

The European Forum for Disaster Risk Reduction²¹ is a regional platform for Europe and Central Asia comprising 55 countries aimed at guiding and supporting national and local actions, including through regional DRR frameworks and strategies. It serves as a forum for other stakeholders to take a shared responsibility and make actionable commitments to reduce disaster risk. *The European Forum for Disaster Risk Reduction ROADMAP 2021-2030: For a disaster-resilient European and Central Asian region by 2030* was adopted at the Matosinhos 2021 identifies four shared priority areas for achieving the priorities of the Sendai Framework for Disaster Risk Reduction 2015-2030. The four shared priorities include 16 common action areas for development and investment, along with five enabling approaches.

➤ **Area 1: Understanding and communicating existing, emerging and future systemic risks** i.e. Invest in and apply inclusive and accessible approaches and tools, and disaggregated data to identify and understand existing, emerging and future disaster risks, particularly those based on the future climate-related scenario; advance the monitoring of disaster risks, experiences and lessons learned, including understanding and communicating the disproportionate impacts on people with disabilities, different genders and age or marginalized population groups; improve coherence with and leverage global agendas to address future climate change, disaster risks and related socioeconomic challenges at all levels and build new inclusive and accessible systems to address systemic risks.

➤ **Area 2: Inclusive and collaborative systems for governance and decision-making** i.e. institutionalize a multi-stakeholder, inclusive approach for governance at all levels; systematize scientific and evidence-based decision-making processes for action at all levels; strengthen collaborative and transboundary systems for capacity-building and multistakeholder action at all levels and support effective and inclusive protection and safety nets.

➤ **Area 3: Supporting investments in resilience** i.e. invest in protecting critical infrastructure and systems from climate change and future cascading and cumulative disaster risks, leverage transparent and sustainable investments for gender-responsive, age-sensitive and inclusive disaster risk reduction at

²¹ <https://efdr.undrr.org/>

all levels; strengthen national and local budgets and regulatory powers for inclusive DRR to address future climate-driven and disaster risks and establish standards and tools for sustainable financing and investments at all levels.

➤ **Area 4: Preparedness for response and resilient recovery** i.e invest in accessible multi-hazard EWS; strengthen gender-responsive, age-sensitive and inclusive preparedness for complex emergencies at all levels; apply lessons identified from the Covid-19 pandemic response for future preparedness and recovery planning and approaches, including for pandemics; and develop new accessible and inclusive disaster resilience tools for building back better than address existing, emerging and future risks.

2.2.6 Alignment of North Macedonia to the global sustainable and resilient agenda

Concerning the topic of the analysis and the overall aspects of the scoping study, in particular, the Sendai DRR Framework and the SDGs are of great importance for the country’s advancement in these areas, as well as the attainment of the global objectives and targets. With North Macedonia having adopted all global agreements for climate change and DRR as well as several other global policies of relevance, there is great potential for the country to fully utilize them in these approaches to meet these global commitments. Accordingly, North Macedonia took an active role in their establishment, attainment of the objectives, as well as practical implementation through policies, measures and actions.



Figure 9 - Relevant global policy agreements and North Macedonia accessions

➤ **Sendai Framework** – North Macedonia was one of 187 countries that adopted the Sendai Framework for Disaster Risk Reduction 2015 – 2030 during the Third World UN Conference on Disaster Risk Reduction held in March 2015 in Sendai, Japan. It is the main driver for the development of national disaster risk management. Nevertheless, the country has not officially submitted reports on the progress of the achievement of the targets.²² Also, “the country lacks a national disaster-risk strategy in line with the Sendai Framework, and there are significant challenges in complying with European Union legislation and standards.”²³ Considering the Sendai Framework Targets, since there is no official report, examples of the related actions and interventions are presented further in the text.

➤ **SDGs** - Through the process of the Rapid Integrated Assessment performed within the framework of the Voluntary National Reviews of SDGs, all development policy planning documents and legislative acts were mapped against the SDGs, the role of state institutions in strategic policy planning through the lens of SDGs was reviewed, the EU Acquis requirements through the lens of alignment with SDGs were assessed and the donor financial contributions for the SDGs between 2016 and 2020 were estimated. Accordingly, it was concluded that 83% of the planning documents were aligned with the SDGs. Full

²² <https://sendaimonitor.undrr.org/>

²³ UNDP. Country programme document for the Republic of North Macedonia (2021- 2025). p.4. <https://tinyurl.com/2p9xnt2b>

compliance was found for SDGs 4 (Education), 6 (Water), 7 (Energy), 9 (Infrastructure and Industrialisation) and 16 (Inclusive governance). The least degree of alignment – about 50% was found for Goal 10 (Inequalities between and within countries). The least degree of alignment – about 50 per cent - was found for Goal 10 (Inequalities between and within countries).²⁴ Another finding was that if when taking into account the implementation of the country’s 55 ratified international conventions,² the level of alignment with the SDGs reaches 98 per cent.²⁵ In particular, the Government of North Macedonia has prioritised SDG 1, SDG 4, SDG 8, **SDG 13 (Climate Change)** and SDG 16 as priority goals for the period 2018 - 2020.²⁶

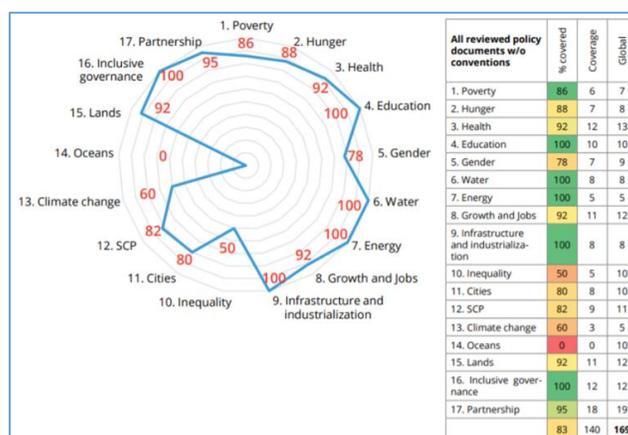


Figure 10 - Overall alignment with national SDGs and Agenda 2030 profile in North Macedonia²⁷

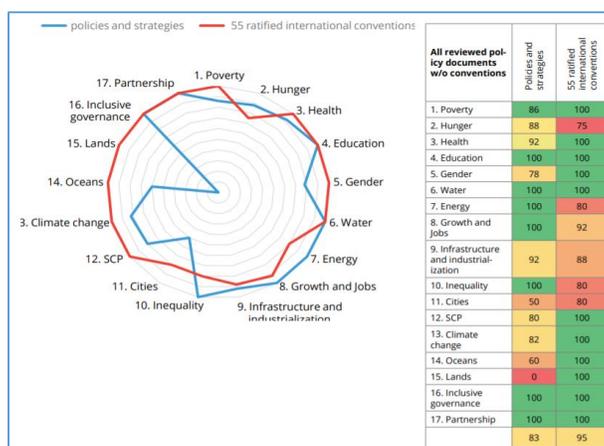


Figure 11 - Alignment of national policies and international obligations with Agenda 2030²⁸

²⁴ United Nations in North Macedonia, Government of the Republic of North Macedonia. *Sustainable Development Goals. Voluntary National Review North Macedonia*. 2020. p.16. <https://tinyurl.com/zu5pskrz>

²⁵ Ibid. p.17.

²⁶ Ibid. p.12.

²⁷ Ibid. p.16.

²⁸ United Nations in North Macedonia, Government of the Republic of North Macedonia. *Sustainable Development Goals. Voluntary National Review North Macedonia*. 2020. p.16. <https://tinyurl.com/zu5pskrz>

➤ **UNFCCC/Paris Agreement** – “North Macedonia is a party to the UNFCCC, ratified the Kyoto Protocol and has associated itself with the Copenhagen Accord (2009). Concerning the Paris Agreement (2015), the country has submitted its Intended Nationally Determined Contributions for Climate Change, as well as the Enhanced Nationally Determined Contribution²⁹. North Macedonia is a non-Annex I country to the UNFCCC (developing country) and at the same time, having a status of a candidate country for EU membership, has to adhere to the EU Climate and Energy Policy, which takes in the commitments of the Annex I countries. This is also part of the requirements of the Energy Community Treaty. North Macedonia endeavours to integrate as much as possible of both aspects (UNFCCC/EU) in its national reports on CC.”³⁰

Concerning the WIM, the country until now has not engaged sufficiently in the reporting and utilizing the benefits from the mechanism, but it “plans to develop a National Adaptation Plan (NAP) based on nexus approaches in the following areas: water, food, energy, health, biodiversity, tourism, forestry, disaster risk reduction, loss and damage, built-in infrastructure.”³¹ NAPs can ensure coherent integration of climate change adaptation and disaster risk reduction. Furthermore, **the CBIT project intervention establishes grounds for the systematized reporting** not only to the **losses and damages** associated with the **climate change impact** but also concerning the **reporting and alignment to the Sendai and SDGs frameworks**. Therefore, the case study on development on the Sendai Framework and SDG 13 module is presented below, whether the review of the damages and losses framework and recommendations for a closer connection to the WIM are presented further in the text.

❖ **CASE STUDY: SENDAI FRAMEWORK AND SDG 13 REPORTING MODULE**

Within the framework of the “*Strengthening institutional and technical Macedonian capacities to enhance transparency in the framework of the Paris Agreement*” UNDP/GEF project³² and the efforts to the attainment and the monitoring of the implementation of the Sendai Framework objectives and the SDGs, especially the SDG 13: Climate Action, a new module within E-Assessment platform³³ of the Crisis Management Centre was developed aimed to support regular reporting towards the Sendai Monitoring Framework (as per the “*Technical Guidance for Monitoring and Reporting on Achieving Global Targets of the Sendai Framework for Disaster Risk Reduction*”³⁴), DesInventar and SDG13³⁵. The E-Assessment platform contains the Sendai Framework and SDG 13 modules which are used to record events, occurrences, conditions and certain data about the events that are entered and that contribute to the systematic and better data collection and reporting on damages and losses. So, within the **Sendai Framework targets**, the following data are collected:

- *Target A: Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortalities between 2020-2030 compared with 2005-2015 - Human losses;*

²⁹ <https://tinyurl.com/3fbsfcre>

³⁰ United Nations in North Macedonia, Government of the Republic of North Macedonia. *Sustainable Development Goals. Voluntary National Review North Macedonia*. 2020. p.76. <https://tinyurl.com/zu5pskrz>

³¹ <https://tinyurl.com/2vktzybt> p.20

³² <https://www.thegef.org/projects-operations/projects/10042>

³³ <http://procena.cuk.gov.mk/Login.aspx?ReturnUrl=%2f>

³⁴ <https://tinyurl.com/44j63ktx>

³⁵ <https://unstats.un.org/sdgs/metadata/?Text=&Goal=13&Target=>

- *Target B: Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 between 2020-2030 compared with 2005-2015 - Number of directly affected people;*
- *Target C: Reduce direct disaster economic loss in relation to the global gross domestic product (GDP) by 2030, and*
- *Target D: Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030.*

Relevant **SDG 13: Climate action** indicators that are part of this module are the following:

- *Indicator 13.1.1: Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000;*
- *Indicator 13.1.2: Has the country adopted and implemented a national disaster risk reduction strategy in line with the Sendai Framework for Disaster Risk Reduction 2015–2030?;*
- *Indicator 13.1.3: Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies;*
- *Indicator 13.2.1: Adopted nationally determined contributions, long-term strategies, national adaptation plans and adaptation communications, as reported to the secretariat of the United Nations Framework Convention on Climate Change;*
- *Indicator 13.2.2: Total greenhouse gas emissions per year.*

The development of this module enables the competent institution that covers the Sendai Framework Targets i.e. National Coordinator for DRR, CMC, PRD, municipalities, etc. to have technical possibilities to enter collected data in line with Sendai Indicators and to participate in the process of establishing the National Disaster Loss Database that will be established within the CMC ICT platform. This will contribute not only to better data collection and analysis across the relevant sectors strengthening the multi-sector strategic and policy development and enhanced risk and hazard assessment but also will improve the monitoring and reporting on sustainable and resilient development. **This module is a breakthrough approach in collecting the disaster and climate risk-related data, both on damages and losses and the progress of the alignment of the country to the Sendai Framework and SDG 13 objectives.** The same approach is regarding the SDG 13 indicators, where their alignment can be regularly monitored resulting in better reporting and informed decision-making. In that sense, it is important to point out that until now the country has not prepared and submit any reporting on the implementation of the Sendai Framework as can be seen from the Sendai Framework Monitor System.³⁶ As it can be seen on the graph below, the module is based upon the integration of the two global frameworks on sustainable and resilient development and contributes to the fulfilment of the reporting requirements and enhanced disaster and climate risk management on national and local levels.

³⁶ <https://sendaimonitor.undrr.org/>

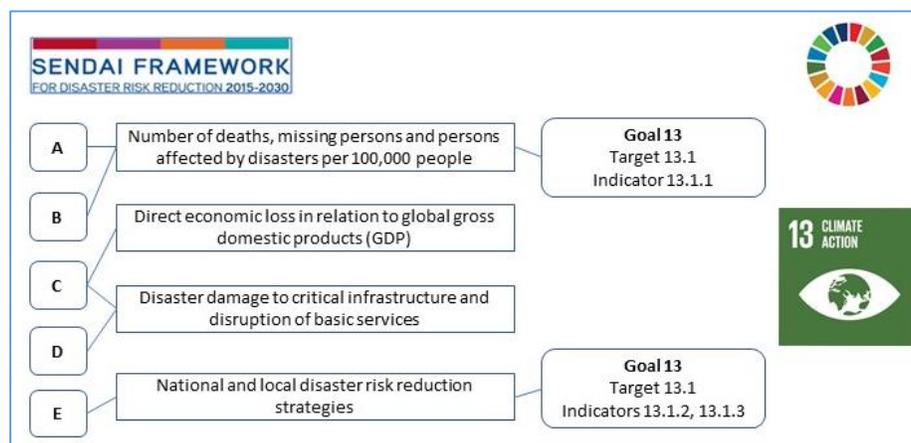


Figure 12 - Integrated monitoring of the global targets and indicators of the Sendai Framework and SDG 13

The module was developed on two levels i.e. consultation and formulation of the type of information and data to be collected and uploaded in the E-assessment platform, as well as designing ICT solutions for this module. Consultations were held between the representatives of CMC, MoEPP and the UNDP team, as well as coordination with the National DRR Platform and resulted in the identification of the relevant data and information, modality of administration and operation, as well as dissemination of the results and reports. In the table below the structure of the data to be collected, analyzed and presented is given.

SENDAI FRAMEWORK INDICATORS		
Minimum Records under Sendai Framework		Additional variables
TARGET A - HUMAN LOSSES	Number of Deaths (A-2)	<ul style="list-style-type: none"> • Number of females and males • Number of children adult and elder • Number of persons with disabilities • Number of people below the poverty line
	Number of Missing persons (A-3)	<ul style="list-style-type: none"> • Number of females and males • Number of children adult and elder • Number of persons with disabilities • Number of people below the poverty line
TARGET B - NUMBER OF DIRECTLY AFFECTED PEOPLE	Number of Injured/ill (B-2)	<ul style="list-style-type: none"> • Number of females and males • Number of children adult and elder • Number of persons with disabilities • Number of people below the poverty line
	Number of People living in damaged dwellings (B-3)	<ul style="list-style-type: none"> • Number of females and males • Number of children adult and elder • Number of persons with disabilities • Number of people below the poverty line
	Number of People living in destroyed dwellings (B-4)	<ul style="list-style-type: none"> • Number of females and males • Number of children adult and elder • Number of persons with disabilities • Number of people below the poverty line
	Number of People whose livelihoods were affected (B-5)	<ul style="list-style-type: none"> • Number of females and males • Number of children adult and elder

		<ul style="list-style-type: none"> • Number of persons with disabilities • Number of people below the poverty line
TARGET C - DIRECT ECONOMIC LOSS	<p>Direct Agricultural Loss (C-2): total economic loss in the agriculture sector (C-2) <i>[total hectares of crops affected, total number of livestock lost, total hectares of forests affected]</i></p>	<ul style="list-style-type: none"> • Economic loss from crops affected, total hectares of crops affected (damaged or destroyed) for different types of crops • Economic loss from livestock affected, number of livestock affected or lost for different types of animals • Economic loss of forests affected, number of hectares of forests affected (damaged or destroyed) for different types of forests • Economic loss from Aquaculture affected, number of hectares of aquaculture affected (damaged or destroyed) • Economic loss from fisheries affected, number of vessels affected (damaged or destroyed) • Economic loss from agricultural Stock loss, number of agricultural Stock facilities affected (damaged or destroyed) • Economic loss from agricultural productive assets, number of agricultural productive assets affected (damaged or destroyed)
TARGET C - DIRECT ECONOMIC LOSS	<p>Direct economic loss to all other damaged or destroyed productive Assets (C-3): total economic loss in all productive assets (C-3) <i>[number of productive assets facilities affected (damaged or destroyed)]</i></p>	<ul style="list-style-type: none"> • Economic loss from affected plantations - the total area of affected plantations (damaged or destroyed) in hectares for different types of crops • Economic loss of suitable livestock - number of heads affected or lost to different species of animals • Economic loss due to affected forests, area of affected forests in hectares (damaged or destroyed) for different types of forests • Economic loss due to affected aquaculture - affected area aquaculture in hectares (damaged or destroyed) • Economic loss of fishing - number of affected vessels (damaged or destroyed) • Economic loss in agriculture - loss of inventory, number of affected agricultural buildings (damaged or destroyed) • Economic loss from damaged agricultural products - number of affected agricultural products (damaged or destroyed)
	<p>Direct economic loss to all other damaged or destroyed productive Assets (C-3): total economic loss in all productive assets (C-3) <i>[number of productive assets facilities affected (damaged or destroyed)]</i></p>	<ul style="list-style-type: none"> • Economic loss and number of facilities affected (damaged or destroyed) for: • Manufacturing • Manufacture of food products • Manufacture of beverages • Manufacture of tobacco products • Manufacture of textiles • Manufacture of woods • Manufacture of paper • Manufacture of furniture • Manufacture of coke and refined petroleum products • Manufacture of chemicals • Manufacture of pharmaceutical products • Manufacture of plastics • Manufacture of metals
	<p>Direct economic loss in the Housing sector (C-4): total economic loss in the housing sector (C-4) <i>number of dwellings damaged, number of dwellings destroyed, economic loss (number)</i></p>	<ul style="list-style-type: none"> • Houses • Apartments • Buildings of concrete constructions, • Buildings of brick constructions • Buildings of wooden constructions

	<p>Direct economic loss to critical infrastructures (C-5): total economic loss to the critical infrastructures (C-5) Linked to indicators D-2, D-3, D-4</p>	<ul style="list-style-type: none"> • Hospitals • Schools • Roads network (paved, unpaved, highways) • Railway network • Airports (regionals, private) • Harbours • Metro/tram/subway lines • River and inland water transport • Power plants • Power transmission lines • Wastewater treatment plants • Public buildings • Administrative buildings
	<p>Direct economic loss to cultural heritage (C-6): total economic loss to cultural assets (C-6) number of cultural assets damaged or destroyed</p>	<ul style="list-style-type: none"> • Loss from affected fixed assets (number of damaged or destroyed fixed assets) • Loss from affected movable assets (number of affected movable assets, number of monuments damaged or destroyed) • Loss from monuments affected
TARGET D - DAMAGE TO CRITICAL INFRASTRUCTURE	<p>Number of destroyed or damaged health facilities attributed to disasters (D-2)</p>	<ul style="list-style-type: none"> • Human health activities • Small, medium, large hospitals • Health centres
	<p>Number of destroyed or damaged educational facilities attributed to disasters. (D-3)</p>	<ul style="list-style-type: none"> • Small, medium, large educational facilities, kindergartens, high schools, universities...
	<p>Number of other destroyed or damaged critical infrastructure units and facilities attributed to disasters (D-4)</p>	<ul style="list-style-type: none"> • Roads network (paved, unpaved, highways) • Railway network • Airports (regionals, private) • Harbours • Metro/tram/subway lines • River and inland water transport • Power plants • Power transmission lines • Wastewater treatment plants • Public buildings • Administrative buildings
	<p>Number of disruptions to educational services attributed to disasters (D-6)</p>	<ul style="list-style-type: none"> • Period (days or hours) of disruption
	<p>Number of disruptions to health services attributed to disasters (D-7)</p>	<ul style="list-style-type: none"> • Period (days or hours) of disruption
	<p>Number of disruptions to other basic services attributed to disasters (D-8)</p>	<ul style="list-style-type: none"> • Period (days or hours) of disruption • Services: transportation, power and energy supply, communications/ICT, water supply, sewerage, government, emergency services, agricultural/food, industrial services, others
SDG 13 INDICATORS		
INDICATOR 13.1.1: NUMBER OF DEATHS, MISSING PERSONS AND DIRECTLY AFFECTED PERSONS	<p>Number of Deaths (A-2)</p>	<ul style="list-style-type: none"> • Number of females and males • Number of children adult and elder • Number of persons with disabilities • Number of people below the poverty line
	<p>Number of Missing (A-3)</p>	<ul style="list-style-type: none"> • Number of females and males • Number of children adult and elder

ATTRIBUTED TO DISASTERS PER 100,000 POPULATION		<ul style="list-style-type: none"> • Number of persons with disabilities • Number of people below the poverty line
	<i>Number of Injured/ill (B-2)</i>	<ul style="list-style-type: none"> • Number of females and males • Number of children adult and elder • Number of persons with disabilities • Number of people below the poverty line
	<i>Number of People living in damaged dwellings (B-3)</i>	<ul style="list-style-type: none"> • Number of females and males • Number of children adult and elder • Number of persons with disabilities • Number of people below the poverty line
	<i>Number of People living in destroyed dwellings (B-4)</i>	<ul style="list-style-type: none"> • Number of females and males • Number of children adult and elder • Number of persons with disabilities • Number of people below the poverty line
	<i>Number of People whose livelihoods were affected (B-5)</i>	<ul style="list-style-type: none"> • Number of females and males • Number of children adult and elder • Number of persons with disabilities • Number of people below the poverty line
INDICATOR 13.1.2: HAS THE COUNTRY ADOPTED AND IMPLEMENTED A NATIONAL DISASTER RISK REDUCTION STRATEGY IN LINE WITH THE SENDAI FRAMEWORK FOR DISASTER RISK REDUCTION 2015–2030	<i>National Disaster Risk Reduction Strategy adopted</i>	Yes/No/Under development <ul style="list-style-type: none"> • If yes, upload document or link
INDICATOR 13.1.3: PROPORTION OF LOCAL GOVERNMENTS THAT ADOPT AND IMPLEMENT LOCAL DISASTER RISK REDUCTION STRATEGIES IN LINE WITH NATIONAL DISASTER RISK REDUCTION STRATEGIES	<i>Number of Local Governments</i>	Municipality Yes/No If yes, upload document or link
INDICATOR 13.2.1: ADOPTED NATIONALLY DETERMINED CONTRIBUTIONS, LONG-TERM STRATEGIES, NATIONAL ADAPTATION PLANS AND ADAPTATION	<i>Nationally determined contributions adopted</i> <i>Climate Change Long Term Strategy adopted</i> <i>Climate Change Adaptation Plan adopted</i> <i>Others</i>	Yes/No/Under development If yes, upload document or link

COMMUNICATIONS, AS REPORTED TO THE SECRETARIAT OF UNFCCC		
INDICATOR 13.2.2: TOTAL GREENHOUSE GAS EMISSIONS PER YEAR	<p style="text-align: center;"><i>Year Number</i></p> <p style="text-align: center;"><i>Note: Values for the period 1990-2019 shall be imported from the National Greenhouse Gas Inventory</i></p>	<p>Number (Gg CO₂ eq) Insert table /upload file</p>

Figure 13 – Sendai Framework and SDG 13 Indicators Module (data/information)

On the side of the ICT architectural solutions, it is using the existing architecture of the E-Assessment platform in which system, the new module is added. The system is administered by CMC and users from other institutions can access the module to upload or download data. Considering the current normative frameworks and institutional policies, as well as the ICT architecture of the system, this E-Assessment platform was established to facilitate the integrated risk and hazard assessment on the national and local level and it can be accessed by authorized personnel from the CMC and its regional centres, whether some of the functions of the MKFFIS system are accessible for the Protection and Rescue Directorate. Nevertheless, besides the existing competencies framework, the Sendai Framework and SDG 13 Indicators Module will enable institutional cooperation and the data and information can be accessed by competent institutions. At present, the CMC and its regional offices, MoEPP and the municipalities can upload data and this will be practically implemented during the first quarter of 2022 with the pilot actions for DRR data collection and reporting in areas relevant to DRR, SDGs and climate change vulnerability, impacts and adaptation on the local level. Accordingly, the list of users with defined user privileges will be extended adding the Ministry of Agriculture, Forestry and Water Economy, National Coordinator of the DRR Platform, and others as appropriate. In general, the DRR mainstreaming in the platform is especially ensured by the connection of the Sendai Framework and SDG 13 Indicators module from the E-Assessment platform of CMC which is the existing repository of loss and damage data in the country aimed at supporting the reporting requirements, but also improving the assessments and analysis, creation of risk-informed decisions and policies on national and local levels.

Furthermore, this module is connected with the national platform “Transparency Platform for Monitoring, Reporting and Verification of Climate Actions” (MRV platform) which is established, organized and maintained as a database of accurate and up-to-date data and structured and unstructured information related to climate action. The platform facilitates regular data collection, analysis, monitoring and reporting to inform decision-makers and the public and also to fulfil reporting according to the requirement of UNFCCC, EU and other frameworks. As a multi-sector platform provides an excellent opportunity for interlinking the areas of disaster risk reduction and climate action, as well as closely connecting the competent institutions and enhancing their cooperation and coordination. Integration of a DRR module within the MRV Platform is an innovative approach and expands the initial scope and objectives of the platform transforming it into a repository database. As a unique approach, it is necessary to identify the potential areas where disaster risk reduction related data and information can be provided and stored. The connections for the establishment of a DRR module in the MRV Platform are identified considering the national climate-related loss and damage and expected future risks and vulnerabilities.

The ICT architecture of the integration of the Sendai Framework and SDG 13 Indicator Module in the National MRV Platform is presented in the scheme below.

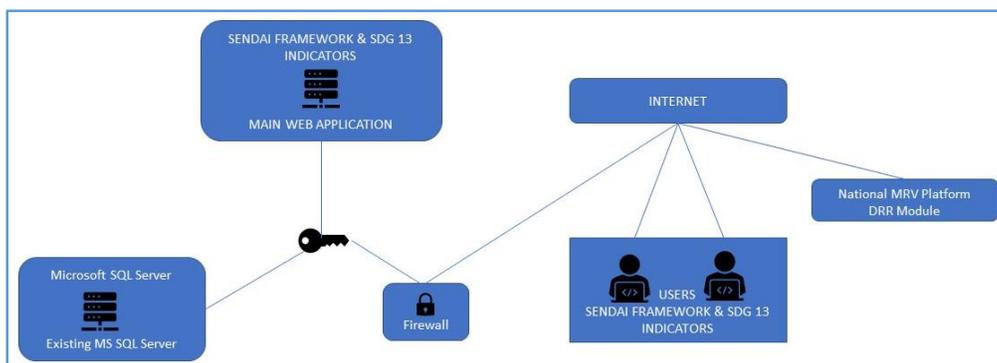


Figure 14 – Sendai Framework and SDG 13 Indicators Module and connection with the National MRV Platform (DRR Module)

2.3 State of the play of disaster risk reduction in the country

During the reported period the disaster risk management system in the country continued to function based upon the competencies and responsibilities of the Crisis Management Centre, the Protection and Rescue Directorate, as well as key ministries and other relevant national and local institutions and bodies, units of local self-government, etc. The two mentioned institutions are the backbone of the national risk management system while having the main roles in creating and implementing risk reduction policies and activities.

Considering the strategic, policy and normative approaches, during this period no efforts have been taken to develop the National DRR Strategy in line with the Sendai Framework and sustainable development agenda and this is one of the drawbacks of the DRM agenda advancement in the country. From the legislative aspects, both primary legislative acts, the Law on Crisis Management and the Law on Protection and Rescue have been modified on several occasions, but without major impact on the functioning of both systems, except for the integration of the European Emergency Number 112 in the crisis management system. On the policy level, “the *National Disaster Risk Reduction Platform* was launched in 2019 and provides necessary information for implementing the early warning system and mitigation measures.”³⁷ From the institutional framework point of view, the established DRM mechanism continued with operation mitigating the adverse effects of the potential and responding to the increased number of disastrous events. On the positive side is the initiative for implementation of activities for alignment with the *Global target E: Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020* from the Sendai Framework and the consequent indicator *E2: Percentage of local governments that adopt and implement local disaster risk reduction strategies in line with national strategies*. For the first time in the country in an inclusive and participatory manner, the strategic plans

³⁷ United Nations in North Macedonia, Government of the Republic of North Macedonia. *Sustainable Development Goals. Voluntary National Review North Macedonia*. 2020. p.66. <https://tinyurl.com/zu5pskrz>

for disaster risk reduction on the local level were developed and consequently adopted by the municipal councils of five municipalities i.e. Konche³⁸, Karbinci³⁹, Veles⁴⁰, Kavadarci⁴¹ and Mavrovo-Rostushe⁴².

Plans for the systemic reform of the disaster risk management in the country have been stipulated by the former Government 2020 – 2022 through assessment of the existing conditions and capacities of the system and provision of, while structural reform of the systems for crisis management and protection and rescue through reorganization, equipping and training of operational teams for rapid intervention, while these segments being the foundation in building a resilient society.⁴³ Even though some processes have been initiated accordingly and they are various consultations, the newly elected government has not stipulated it as one of its strategic priorities for the period until 2024. In this sense are the findings and recommendations from the *Peer Review 2018* (funded by European Union Civil Protection and supported by the European Commission) for merging the PRD and CMC in one Civil Protection Directorate within the structure of the Ministry of Internal Affairs. “The Directorate will have two pillars: Operations (formerly PRD) and Strategy (formerly CMC). Each pillar will be headed by a Deputy Director. Both Deputy Directors report to the Director of Civil Protection who oversees the work of both pillars. The Director, in turn, reports to the Minister of Internal Affairs. Consequently, the two existing laws on protection and rescue, as well as on crisis management, should be merged into one new law.⁴⁴ Related to this, the National Platform for Disaster Risk Reduction and its supporting office should also be integrated into the overall DRM system.

Accordingly, the main gaps and challenges for the DRM system in the country can be summarized as the following:

- Persistence of rather reactive DRR approach with emphasis on the preparedness for response, rather than proactive risk reduction with main focus on the prevention and mitigation.
- Absence of strategic framework for DRR e.g. National Strategy for Disaster Risk Reduction.
- Rather obsolete legislative framework.
- Insufficient mainstreaming and inclusion of DRR in sector strategies, programmes and operational planning, especially in the key areas i.e. environment, climate change, land management, agriculture, etc.
- “The strategic and sectoral policies, programs and plans on both national and local levels do not sufficiently include assessments of all other risk and hazard types.”⁴⁵
- Insufficient financing of the risk reduction area, both on national and local levels.
- Lack of knowledge and experience in dealing with complex crises and disasters.
- Lack of resilient recovery framework.
- Insufficiently developed culture of prevention and cooperation with the private sector.

³⁸ <https://tinyurl.com/2p8hfu7p>

³⁹ <https://tinyurl.com/tmxdsn5n>

⁴⁰ <https://tinyurl.com/3rbk2j6t>

⁴¹ <https://tinyurl.com/49s7y5tp>

⁴² <https://tinyurl.com/2p87aj7w>

⁴³ “*Work program of the Government of the Republic of Northern Macedonia in the period 2020-20204*”, Government of Republic of North Macedonia. p.49. Online <https://tinyurl.com/42xmvvvy>

⁴⁴ European Union Civil Protection. *Peer Review – Report North Macedonia 2018*. 2019. p.54. [online] Available at <https://tinyurl.com/y4pxv23m>

⁴⁵ Popovski, Vasko. *Policy study on crisis management*. 2021. p.27. Online <https://tinyurl.com/y96enmte>

3. REVIEW OF THE PARIS AGREEMENT ARTICLE 8 REQUIREMENTS

3.1 Introduction

As mentioned above, subsequent the sustainable development and resilience framework, also the Paris Agreement referred to the need to recognise the importance of averting, minimizing and addressing loss and damage associated with the adverse effects of climate change, including extreme weather events and slow onset events, and the role of sustainable development in reducing the risk of loss and damage. As per Article 8, areas of cooperation and facilitation to enhance understanding, action and support may include early warning systems; emergency preparedness; slow onset events; events that may involve irreversible and permanent loss and damage; comprehensive risk assessment and management; risk insurance facilities, climate risk pooling and other insurance solutions; non-economic losses; and resilience of communities, livelihoods and ecosystems. Following the requirements of the assignment, within this section of the report, a brief analysis of the existing context and situation for these areas is presented below including the way forward recommendations and measures.

3.3 Early warning systems

Early warning is one of the elements of disaster risk reduction and it is an essential part of the disaster preparedness phase resulting in preventing loss of life and reducing the adverse consequences of the disastrous events, as well as contributing to the timely, effective and efficient disaster response. In that sense, the early warning systems are crucial for the collection and dissemination of better climate and weather information contributing to the adoption of risk-informed decisions and actions. They need to be people-centred, multi-hazard, disseminating messages and warnings effectively and efficiently ensuring no one is left behind.

Early Warning System – “An integrated system of hazard monitoring, forecasting and prediction, disaster risk assessment, communication and preparedness activities systems and processes that enables individuals, communities, governments, businesses and others to take timely action to reduce disaster risks in advance of hazardous events.”

Source: UNDRR <https://tinyurl.com/ye299vb2>

Therefore they are in the focus of the Sendai Framework as one of the seven global targets i.e. “(g) Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030.”⁴⁶ In particular, on the national level, it is needed to invest and develop people-centred multi-hazard, multi-sectoral forecasting and early warning systems in a participatory way as per the needs of the end-users, while on the regional level early warning mechanisms can contribute to facilitated sharing and exchange of information across the countries. “Sustainable Development Goal (SDG) 3 “Ensure healthy lives and promote well-being for all at all ages” and SDG 13 “Take urgent action to combat climate change and its impacts” set targets for governments to strengthen early warning systems.”⁴⁷ On the other side, the Paris Agreement recognizes the need for better climate and weather information, including early warning systems through the strengthening scientific knowledge on climate, including research, systematic observation of the climate system and early warning systems, in a manner that informs climate services and supports decision-making (Article 7).

⁴⁶ <https://www.preventionweb.net/files/resolutions/N1516716.pdf>

⁴⁷ <https://mhews.wmo.int/en/about>

Within the national DRM framework, the CMC is mandated by the Law on Crisis Management for “issuing timely information and early warnings” to the authorities and the population based on the collection, analysis and exchange of information from competent institutions, especially with the Hydromet as well as the Ministry of Health regarding the extreme temperatures i.e. heatwaves and cold waves. Nevertheless, the Hydromet is the central institution providing the essential input for climate-related early warning in the country based upon its responsibility to operate an “observation network and provide meteorological and climatological services including hydro-meteorological monitoring, conducting research on the atmosphere, climate, water and soil and providing basic information regarding meteorology, hydrology, air and water quality.”⁴⁸ The breakdown of the hazards and warnings issued by institutions is presented in the table below.

Hazard	Warning issued by
Cold wave	Hydromet/MoH
Drought	Hydromet
Earthquakes	Seismologic Observatory
Flash floods	Hydromet
Forest/wildland fire	MAFWE/CMC
Hailstorm	Hydromet
Heatwave	HMS/MoH
Heavy precipitation	Hydromet
Landslide/mudslide	Hydromet
River flooding	Hydromet
Stormwind	Hydromet
Tornado / cyclone	Hydromet

Figure 15 - Warnings issued for natural hazards in North Macedonia⁴⁹

“Within the Crisis Management Centre, the State Operations Centre functions at the national level 24 hours a day, 7 days a week and the early warning and alert system is also part of the State Operations Centre.”⁵⁰ Additionally, there is a public alerting system in the country consisting of 200 electric, pneumatic and electronic sirens that are grouped in 30 sub-systems for public alert in the City of Skopje and the settlements under the competence of the regional crisis management centres.

Following a disastrous flash flood in Tetovo in August 2015 and the direct impact on the community of Shipkovicica and the broader Municipality of Tetovo, a need for a community early warning system has arisen and consequently, a conceptual design was developed. In addition, within the framework of the UNDP project in Polog, an Early Warning System Design was prepared to serve as a multi-faceted system for forecasting and warning the Upper Vardar River Basin in forecasting critical flood events and

⁴⁸ FAO. *Comprehensive analysis of the disaster risk reduction and management system for the agriculture sector - The Former Yugoslav Republic of Macedonia*. 2018. p.19. Online <https://tinyurl.com/twcn5vxk>

⁴⁹ WMO. 2012. *Strengthening Multi-Hazard Early Warning Systems and Risk Assessment in the Western Balkans and Turkey: Assessment of Capacities, Gaps and Needs*. Geneva. p.310. Online <https://tinyurl.com/4et6e35v>

⁵⁰ <https://tinyurl.com/hky7azj4>

landslides. Furthermore, it can serve as a basis for the development of a regional module for early warning and its potential replication on the national level.

➤ **Key challenges:**

- Lack of clear normative framework and SOPs on the conducting early warning and consequent roles and responsibilities, including the climate hazards related dissemination of notifications.
- In most institutions, the early warning is understood as alerting to an imminent danger rather than a notification to a potential threat from various hazards enabling the at-risk organizations and population to act accordingly.
- There is no specific warning and alerting to the weather-related rapid onset events e.g. flash floods.
- Insufficient human, material-technical resources, ICT equipment, solutions and tools for the advancement of the early warning and alerting and underfinancing of the early warning and alerting sector in general.
- Existing communication between the competent entities is still done through e-mails and mobile lines.
- Mainly stand-alone data collection and the existing databases and platforms of various institutions are not sufficiently integrated.
- Early warning and alerting communication are not customized to reach everyone in the communities i.e. risk communication is not fully integrated into the existing communication channels and platforms.
- The public alert system is not completely functional across the country and the population is not sufficiently familiar with its existence and public alert signals.

➤ **The way forward:**

- Enhancement of the policy, normative and institutional frameworks for early warning and alerting modification of the existing or adopting new legal solutions and operating procedures.
- Design and integrate rapid onset weather-related events solutions.
- To build the required capacities and supply resources necessary for the integrated early warning and alerting, alongside sufficient financing.
- To establish an interactive working communication line between the competent entities.
- To integrate and utilize the E-112 emergency phone line for dissemination of notifications.
- Further mainstream the risk communication in the existing communication channels and platforms, as well as to design new ones reaching whole the communities.
- To better integrate the local DRR stakeholders in the early warning and alerting system.
- “Develop a feedback mechanism where end users can provide inputs on whether the forecast and early warning products are addressing their needs, including the dissemination of warnings to farmers organisations or forums, which help to pass on the alerts to the local people and communities.”⁵¹

⁵¹ FAO. *Comprehensive analysis of the disaster risk reduction and management system for the agriculture sector - The Former Yugoslav Republic of Macedonia*.2018. p.32. Online <https://tinyurl.com/twcn5vxk>

3.3. Emergency preparedness

Preparedness for emergencies and disasters is one of the phases of the disaster risk management cycle which is implemented within the pre-disaster context and consists of various measures and actions implemented by all key stakeholders on all levels, both from public and private sectors, including the citizens aiming to be better prepared for a response and recovery from the adverse events, reducing the losses and damages. The preparedness phase incorporates a range of activities ranging from the above-mentioned early warning, through operational and contingency planning, stockpiling equipment and resources, the conduct of professional and general population training and exercises, risk reduction education, knowledge dissemination and awareness-raising, etc. So, emergency and disaster preparedness is an important part of resilience-building activities given the response, adaptation and continuation aspects.

Both, the Law on Crisis Management and Protection and rescue refer to continuous preparedness which is operationally elaborated in the protection and rescue and other operational plans. Accordingly, the competencies for disaster preparedness are distributed from the institutions at the national level i.e. CMC, PRD, key ministries, institutions and bodies, and at the local level i.e. municipalities, firefighting brigades, public enterprises, private sector, volunteers, citizens, etc. Municipalities are the most important in applying the “*first responders*” approach to emergencies and disasters at the local level. In general, the policy, normative and institutional frameworks for disaster preparedness are established, but there might be some overlapping of responsibilities, sequencing of actions, procedural gaps and blank spots. “The long-standing economic crisis continues to have a significant impact on the flexibility of action in case of emergency. Overlapping jurisdictions, through horizontal and vertical structures, leads to uncertainty in the functioning of the system.”⁵² This was especially emphasized during the pandemic crisis response, where the previous disaster preparedness proved to be insufficient and therefore, a lot of improvisations are being implemented. In terms of strengthening the disaster and emergency preparedness in the country, activities have been mainly focused on conducting regular activities for the enhancement of the disaster preparedness as per the existing professional curricula and the responsibilities deriving from the obligations of the country as a member of the EU Civil Protection Mechanism⁵³, NATO, DPPI or other regional and cross-regional initiatives. On the other side, these institutions participated in the implementation of several regional programmes e.g. IPA Floods⁵⁴, ongoing IPA Floods and Fires⁵⁵, as well as various national, regional, and international exercises i.e. the open fire rescue exercise BALKAN 18 in Ptolemaida, Greece; mitigation of the aviation accident consequences in Stara Zagora, Bulgaria; regional exercise of evacuation the private medical hospital “Adzibadem Sistina” in Skopje; participation in field exercises within the EUCPM in Spain, Sweden, and Italy; NATO field exercise SERBIA 18 in Mladenovac, Serbia; CMEP simulation exercise VODNO 18, supported by the USA; national field exercise AUTMN STORME, etc.⁵⁶. On the local level, the municipalities are very agile in implementing various small-scale

⁵² European Union Civil Protection. Peer Review – Report North Macedonia 2018. 2019. p.42. [online] Available at <https://tinyurl.com/y4pxv23m>

⁵³ <https://tinyurl.com/hky7azj4>

⁵⁴ <http://dppi.info/sites/default/files/IPA%20FLOODS.pdf>

⁵⁵ <https://www.ipaff.eu/>

⁵⁶ <https://tinyurl.com/hky7azj4>

preparedness actions e.g. eFIDAR⁵⁷, J-Cross⁵⁸, HELP⁵⁹, Construction of systems for the prevention and early warning of floods⁶⁰, Protecting the population in the municipalities of Karbinci and Strumiani and prevention of flood damage⁶¹, Joint forest fire prevention actions in the cross-border region⁶², Cross-Border Cooperation in Forest Fire Fighting⁶³, while the UNDPs Polog Project⁶⁴ is an example of an approach to enhanced disaster preparedness of institutions and communities in the Polog region for effective response, recovery, rehabilitation and reconstruction. Additionally, many small scale activities were implemented throughout the country for testing the preparedness of the schools⁶⁵, kindergartens, specialized schools for children with visual⁶⁶ and hearing⁶⁷ impairments and other similar facilities aiming to improve the capacities and capabilities of the most vulnerable ones. On the other side, there is insufficient attention given to integrated, multi-sector preparedness to the climate-related hazards, aside from the preparedness to floods and wildfires given their current frequency and intensity.

Recently the World Bank and the Global Facility for Disaster Reduction and Recovery within their efforts to enhance the emergency preparedness in the region assessed the emergency preparedness and response capacities in North Macedonia⁶⁸ based on the Ready to Respond (R2R) diagnostic methodology. As per the findings of the report, the preparedness and response system in the country meets the basic requirements with the main challenges being identified in the overlapping competencies and insufficient clarities considering the individual and joint responsibilities. The country's "EP&R system displays considerable differences across criteria and indicators, with the lowest scores given for information management systems and training centres, and the highest scores for emergency social services, information and communications technology, exercises and drills, and legislated accountability."⁶⁹ To be established as a dynamic, integrated, multi-sector preparedness and response system it is necessary to build a joint vision, to encompass new challenges e.g. climate change, emerging risks and threats while developing the essential policy normative and institutional frameworks, building the capacities accordingly, supplying the required resources and applying the necessary technologies.

➤ **Key challenges:**

- Obsolete policy and normative framework including the irregular update of the national and local protection and rescue plans and other operational planning documents.

⁵⁷ <http://www.ipa-cbc-programme.eu/approved-project/87/>

⁵⁸ <http://www.ipa-cbc-programme.eu/approved-project/63/>

⁵⁹ <http://www.ipa-cbc-programme.eu/approved-project/62/>

⁶⁰ <https://tinyurl.com/2p86b9ak>

⁶¹ <https://tinyurl.com/bdh9uuwt>

⁶² <https://tinyurl.com/2p9h5eik>

⁶³ <https://tinyurl.com/3avemhbh>

⁶⁴ <https://tinyurl.com/5dwxeu9z>

⁶⁵ <https://www.youtube.com/watch?v=1cEaMq7CrRE>

⁶⁶ <https://tinyurl.com/ttpa65xf>

⁶⁷ <https://www.youtube.com/watch?v=vQ77tkD-6Ck>

⁶⁸ The World Bank and the Global Facility for Disaster Reduction and Recovery (GFDRR). *Ready2Respond: Diagnostic Report Emergency Preparedness and Response Assessment – North Macedonia*. 2021. Online: <https://tinyurl.com/mw56ubva>

⁶⁹ Ibid. p.9.

- A general approach to disaster preparedness without sufficient specialization in the complex disasters, climate-related hazards, new and emerging risks.
- Insufficient resources i.e. human, material-technical and financial for disaster preparedness.
- Insufficiently developed educational and professional training curriculums.
- Lack of contingency planning on national and local levels.
- Insufficient advocacy, awareness-raising and education of the general population including the most vulnerable ones.

➤ **The way forward:**

- Enhancement of the policy and normative frameworks for disaster preparedness including the missing standard operating procedures.
 - Specialized preparedness approach for climate-related hazards and complex disasters, including pandemic and biohazards.
 - Designing and implementing professional capacity building activities for the emergency responders on the national and local levels.
 - Sustainable financing of the preparedness actions and provision of supply of necessary resources.
 - Further, utilize the existing and apply newly designed ICT solutions for better preparedness.
 - Increased awareness raising, information dissemination and knowledge capacities building of the population.
 - Development of community-based preparedness schemes acknowledging the specific needs and the capacities and capabilities of the community members including the citizens as volunteers.
 - Upgrading of the existing CMCs Operational Center as the National Emergency Operations Center for better coordination, cooperation and communication.

3.4 Slow onset events and events that may involve irreversible and permanent loss and damage

Impacts of climate change include **slow onset events**⁷⁰ i.e. increasing temperatures, land and forest degradation, salinization, loss of biodiversity and desertification and **extreme weather events**⁷¹ i.e. flood, storms, heatwaves, storms, hail, etc. As per the UNFCCC “there are important synergistic interactions between rapid onset and slow onset events that increase the risk of loss and damage, emphasizing the relevance of integrated risk management approaches as well as the necessity to develop both short- and long-term planning.”⁷²

Within the national DRR framework in the country, not all of these events are recognized within the national hazard profile. In that sense, the **slow onset events** are rather incorporated within the environmental framework, and the actions targeting the increasing temperatures, salinization, land and forest degradation, loss of biodiversity and desertification are embedded in the nature protection approach within the competencies of the Ministry of Environment and Physical Planning. The main reason for this rather “silo approach” is the fact that the DRR is not sufficiently in the environment area, while the areas of nature, biodiversity and ecosystem services are also exposed to similar chronic stresses and

⁷⁰ <https://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf>

⁷¹ https://unfccc.int/sites/default/files/resource/online_guide_on_loss_and_damage-dec_2017.pdf

⁷² <https://unfccc.int/resource/docs/2012/tp/07.pdf>

acute shocks with predominantly pressure being by anthropogenic origin. As per the UNECE Third Environmental Performance Review (2019)⁷³, pressures on species and ecosystems among other things includes desertification, logging and deforestation, climate change, etc. Nevertheless, significant progress was made in this regard with the cooperation of the CMC and MoEPP integration of the Nature-based Solutions in the areas of disaster risk reduction and climate change adaptation as presented in the case study below. They are jointly working on addressing the mitigation and rehabilitation measures associated with the slow onset events. On a smaller scale, the phenomenon of the increasing temperatures in the urban areas and the impact from the urban heat islands was researched for the City of Skopje, where an analysis was made and the heat and cold islands were detected. Their appearance differs on different locations considering the surface coverings i.e. concrete, asphalt, buildings or surfaces that absorb, retain and emit heat, unlike the surfaces under greenery and vegetation. For that purpose, a study⁷⁴ has been prepared, which in addition to the identification envisages an action plan with more than 70 measures that would strengthen the urban resilience of the city (e.g. increase of green areas, green roofs and gardens, afforestation of city parks, cold roofs and sidewalks, green infrastructure and green urban development, etc.

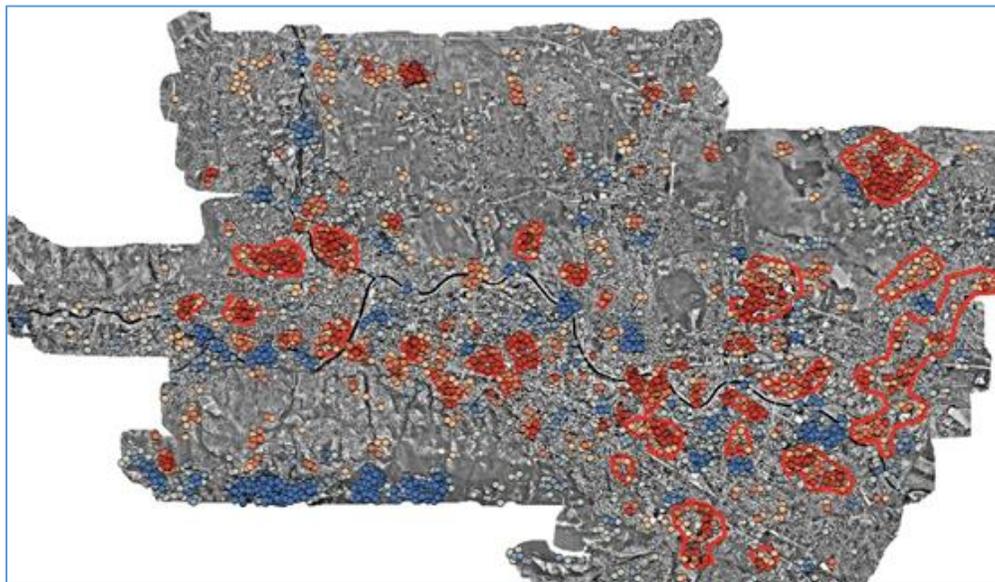


Figure 16 – Map of detected heat and cols islands on the territory of the City of Skopje⁷⁵

The most prominent action to respond to the heat island in the city was through the construction of the green roofs on the structures in the central area of the city where the heat index is the highest i.e. City Shopping Mall⁷⁶ and the House of the civil construction workers⁷⁷. This proved to be an important

⁷³ https://unece.org/sites/default/files/2021-03/ECE.CEP_.186.Eng_.pdf

⁷⁴ <https://tinyurl.com/3wjszati>

⁷⁵ <https://tinyurl.com/277ybaf8>

⁷⁶ <https://tinyurl.com/2kjk9n4s>

⁷⁷ <https://tinyurl.com/4hj9d4wk>

approach to combating the urban heat, and together with the green facades and increased public greenery⁷⁸ is one of the most successful measures and actions.

Considering the **extreme weather events**, the situations are significantly different, since they are part of the palette of natural hazards that are within the framework of the DRR and accordingly, they are included in the integrated risk and hazard assessment and operational planning. Flood is the number one natural hazard on most of the local and national profiles, following the unprecedented impacts of the pandemic crisis and the security risks from the migrant and refugee crisis. Nevertheless, the drought is less assessed from the aspects of the risk reduction, and even though it has caused significant effects in the past and there are frequent dry periods, it is not fully mainstreamed within the risk reduction framework. On the other side, following the deadly floods from 2015 and 2016, the approach to assessment and mitigation was significantly improved, mostly on the side of prevention and mitigation, as well as resilient recovery.

❖ **Case Study – Nature-based Solutions**

ADAPT: Nature-based Solutions for resilient societies in the Western Balkans⁷⁹ is a project funded by the Swedish International Development Cooperation Agency (SIDA) and implemented by IUCN. It aims to increase ecosystem and community resilience to climate change and environmental degradation in the Western Balkans. This regional umbrella initiative works with the six Western Balkan economies, regional and local partners. The project will be implemented through the following three strategies:

1. Enhance knowledge and awareness of nature-based disaster risk reduction solutions among decisions: makers, natural resource managers and local communities with a specific focus on gender;
2. Integration of Nature-based Solutions and equitable climate-smart planning into adaptation and disaster reduction policy; and
3. Implementation of Nature-based Solutions for disaster risk reduction and their scale-up.

In North Macedonia, the focus of activities is on knowledge generation and awareness-raising on the Nature-based Solutions through targeted education and publishing the Standard⁸⁰ and the Guidance⁸¹ for their implementation, planning and policy development through mainstreaming of the NbS into the strategic, policy and normative frameworks, as well as the development of a comprehensive tender dossier for Nature-based solutions projects on an identified site location where NbS standard approach shall be applied for reduction of the existing and mitigation of the future disaster and climate risks. The project works at multiple levels and involves government agencies, research institutions and civil society, which offers opportunities for knowledge exchange, wider capacity building and institutional strengthening as well as the potential for scaling up. The main institutional partners in North Macedonia are the Ministry of Environment and Physical Planning and the Crisis Management Center.

➤ **Key challenges:**

- Insufficient inclusion of the slow onset events in the DRR framework in the country with the predominantly stand-alone approach in the implementation of actions.

⁷⁸ <https://tinyurl.com/33z9snts>

⁷⁹ <https://tinyurl.com/2p9cd24p>

⁸⁰ <https://portals.iucn.org/library/sites/library/files/documents/2020-020-Mk.pdf>

⁸¹ <https://portals.iucn.org/library/sites/library/files/documents/2020-021-Mk.pdf>

- Insufficient DRR mainstreaming in the environment area and absence of the guidances for DRR mainstreaming.

- Lack of specialized knowledge and awareness, both on the sides of the DRR and environment practitioners.

- Insufficient financing of the area.

➤ ***The way forward:***

- Improvement of the policy and normative framework and technical guidances on DRR mainstreaming into the environment and climate change areas.

- Sensitization and targeted education of the key policy- and decision-makers, as well as practitioners.

- Multi-risk, multi-hazard and multi-risk approaches in the assessment of the slow onset events and extreme events enable the adoption of risk-informed policies and decisions.

- Stimulating intra-sectorial coordination and cooperation in this sense.

- Better access to existing and new financing mechanisms, through increased technical cooperation and development of comprehensive programmes and projects.

3.5 Comprehensive risk assessment and management

Comprehensive risk management approaches include risk assessment, risk reduction, financial risk transfer and risk retention and this enhanced cooperation and facilitation aims at addressing and building long-term resilience of countries, vulnerable populations and communities to loss and damage, including to extreme and slow onset events, inter alia, through emergency preparedness, including early warning systems; measures to enhance recovery and rehabilitation and build back/forward better; social protection instruments, including social safety nets; and transformational approaches.⁸² Comprehensive risk assessment, risk insurance facilities and climate risk pooling are important tools not only for the Paris Agreement but also for the Sendai Framework.

➤ ***Risk Assessment***

The risk assessment is a departing point in the overall disaster and climate risk management providing the key contribution to the adoption and implementation of the risk-informed decisions and actions. Considering the risk and hazard assessment in the country it can be pointed out that they are integrated within the crisis management and protection and rescue frameworks. In that sense, both, the Crisis Management Centre and the Protection and Rescue Directorate are implementing the assessment of risk and hazards based on the adopted methodological frameworks resulting in having national and municipal integrated risk and hazard assessments. They enable them to profile the existing hazards, assess and analyze the exposure and vulnerability of the population and the critical infrastructure and services to prevailing risks and consequently spatially locate them, as well as identify and prioritize operational measures for mitigation, preparedness, response and recovery. In this sense, the risk and hazard assessment conducted by the Crisis Management Centre is a broader regional example of how to conduct multi-risk, multi-hazard and multi-sector assessments with support of the ICT solutions.

⁸² <https://unfccc.int/wim-excom/areas-of-work/crm-approaches>

❖ ***Case Study: Integrated risk and hazard assessment using ICT solutions***

CMC has established the most comprehensive and systematized ICT system in the country for support of the disaster risk reduction system in the country consisting of various web applications and databases of all risk elements i.e., inventORIZATION of the critical infrastructure and other elements at risk, demographic data (population), registry of capacities and resources of the CMS, Information and Documentation Database, Eco-DRR Module, Nature-based Solutions module (incl. risks from erosions, landslides, torrents). These systematized databases are integrated into a web-based platform providing essential support to the national and local risk assessment process. Accordingly, a web-based system for risk and hazard assessment “E-assessment” is established for unified preparation and updating of the national and local (80 municipalities and the City of Skopje) assessments from all risks and hazards. As a part of the risk and hazard assessment process, the E-assessment contains the hazard profile and the level of risk for the country and the 81 local self-government units (80 municipalities and the City of Skopje). The approach to the risk and hazard assessment was designed to be bottom-up, meaning that first the local risk and hazard assessments were done and consequently, the national one synthesized the analysis on the overall national level. “The system for national risk assessment built on local risk assessments forms a robust evidence base to identify capability needs across the country as a whole.”⁸³ Consequently, risk mapping is organized by using web-based GIS platforms for geospatial presentation and visualization of the risk assessment results. “CMC’s risk mapping and risk assessment tools give the organisation a good direct data feed from across North Macedonia about emerging and developing risks. We recommend that the CMC should work with all other stakeholders in the risk and crisis management system to ensure access, and encourage active participation to generate accurate and up-to-date data in the system.”⁸⁴

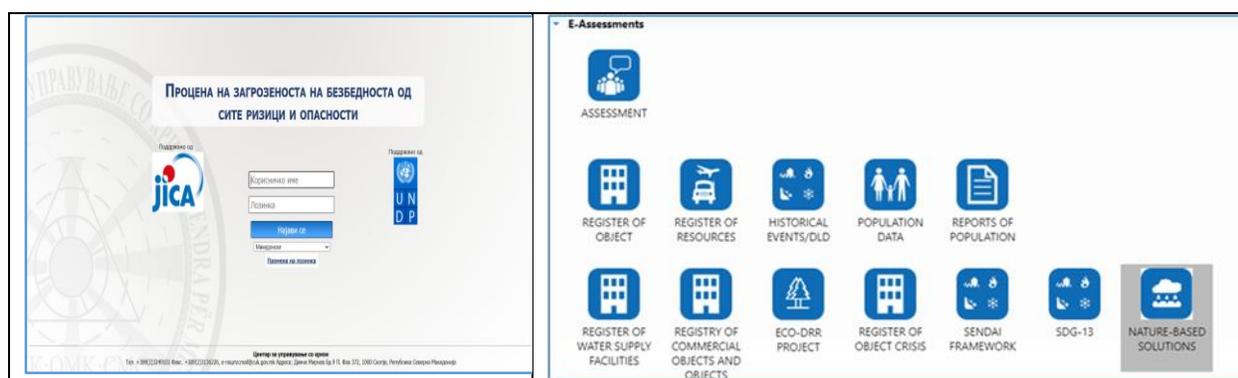


Figure 17 – E-Assessment web page⁸⁵ and the E-Assessment Platform modules

This risk and hazard assessment are dynamic, implemented continuously and before risks are manifested. It is multi-risk since it is taking into consideration the broader palette of risks and their cascading effects, identifying the consequent roles and responsibilities of the key stakeholders. The existing risk assessment process is collaborative, cross-disciplinary and cross-sectoral, both at the national and local levels,

⁸³ European Union Civil Protection. *Peer Review – Report North Macedonia 2018*. 2019. p.41. Online <https://tinyurl.com/y4pxv23m>

⁸⁴ Ibid. p.41.

⁸⁵ <http://procena.cuk.gov.mk/Login.aspx?ReturnUrl=%2f>

involving the key stakeholders at these levels. They are seen as *modus operandi* for enabling risk-informed strategic and programming development both at the national and local levels.

➤ ***Risk reduction***

“Risk reduction represents another component of comprehensive risk management. It is the concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.”⁸⁶ It can be achieved through a range of structural and non-structural measures. “*Structural measures* are any physical construction to reduce or avoid possible impacts of hazards, or the application of engineering techniques or technology to achieve hazard resistance and resilience in structures or systems. *Non-structural measures* are measures not involving physical construction which use knowledge, practice or agreement to reduce disaster risks and impacts, in particular through policies and laws, public awareness-raising, training and education.”⁸⁷ The former ones usually include construction of new physical structures for reduction of the risk e.g. dams, flood levies, earthquake-resistant construction or retrofitting of the existing, whether the latter ones refer to policy and legislative frameworks, building codes and standards, law enforcement, planning, public awareness and knowledge and information dissemination programmes, early warning systems, etc.

Considering this approach many initiatives are supporting risk reduction in the country, especially on the local level, through the implementation of various structural and non-structural measures. The importance of risk reduction is recognized and many stand-alone initiatives are being implemented as mentioned above. Most of these initiatives include prevention and mitigation actions combining the adoption of planning documents or guidances alongside the physical works and provision and supply of resources. The most prominent ones include the resilience recovery works and measures implemented following the flooding events from 2015 and 2016⁸⁸ when the critical infrastructure was rehabilitated using the Build-Back-Better principle⁸⁹. In this sense, the ongoing Polog flood risk reduction programme is an example of a comprehensive and inclusive approach towards overall risk reduction.

❖ ***Case study: Improving Resilience to Floods in the Polog Region***

The project’s ambitious goal is to instigate transformational change in managing flood risk in the region, accelerating the shift from purely reactive responses to floods to integrated systems to manage hazards, vulnerabilities and exposure of communities and assets to prevent/mitigate losses and alleviate the impact of future floods. It aims to substantively support achieving: a) improved knowledge of region’s flood risk, causes and appropriate responses among authorities and other stakeholders; b) an inclusive approach to flood risk management planning in line with EU legislation that is sensitive to the specific needs of different vulnerable social groups; c) a better preparedness for flood risks and strengthened

⁸⁶ Executive Committee of the Warsaw International Mechanism for Loss and Damage. *Compendium on Comprehensive Risk Management Approaches*. 2019. p.16. Online <https://tinyurl.com/39jb5r2s>

⁸⁷ <https://www.undrr.org/terminology/structural-and-non-structural-measures>

⁸⁸ <https://tinyurl.com/4wrm4p3s>

⁸⁹ <https://tinyurl.com/2r2awxv3>

recovery capacity thanks to improved governance; d) progress toward flood risk-based urban and economic development; e) a reduction in the adverse consequences of future floods in high-risk areas through the repair or construction, as demonstration projects, of flood control infrastructure in line with contemporary approaches and techniques; f) creation of a flash-flood early warning and public-alert system, and g) progress in the adoption of the objectives and principles of the EU Floods Directive and the Sendai Framework for Disaster Risk Reduction.⁹⁰

In particular, the project combines the integrated approach in flood risk reduction through a combination of non-structural i.e. development of studies e.g. Feasibility study on basin-scale sediment management options for the Upper Vardar River Basin, updating the Flood Risk Management Plan, the establishment of the Resilient Polog Network, integrated approach to flood and sediment and flood risk mitigation through land use management and urban planning concept, designing an early warning system, regional Preparedness Plan, urban run-offs studies, National-level flood mitigation strategy and an action plan, A roadmap for implementation of risk financing and risk transfer component, and planning risk mitigation investments, and structural measures logically sequenced e.g. rehabilitation of riverbeds and torrential streams, as well as stabilization of landslides.

➤ ***Financial risk transfer (risk insurance facilities, climate risk pooling and other insurance solutions)***

Increased number of disastrous events led by the severe weather events in 2021 resulted in overall economic losses of 280 billion USD, which is the fourth-highest annual total and according to Munich Re estimates it is the second-costliest year ever for the insurance market alongside 2005 and 2011 with the total cost of 120 billion USD. Nevertheless, the insurance gap, between economic and insured losses, remains an issue. These numbers confirm both the evident increased impact of the climate-related events, as well as the inevitability of establishment of sound loss preparedness and climate protection practices and well-functioning risk transfer mechanism i.e insurance, where the insurance companies apply risk-adequate premiums while limiting the losses.⁹¹ On the national level, in North Macedonia, there is no systematic analysis of the total costs of the various disastrous events, but only the wildfires from June to September resulted in damages and costs of 42.653 million USD. On the level of the insurance companies, the gross written premium for insurance policies for fires and other events, for the first nine months of 2021 equals 14.36 million USD (7.63% of the total annual one)⁹², while the gross settled claims were in the value of 1.1 million USD (01.01.2020-30.09.2020).⁹³

In general, there is no systematic disaster and climate risk insurance system in the country with the interest of the citizens and businesses for covering the natural hazards being low. This existing practice is reactive with submitting claims to the government for payment of damages and losses in the event of disasters, rather than proactive with payment in advance for the insurance policies and being financially protected from the adverse effects of the natural and human-made hazards. In that sense, the **key**

⁹⁰ <https://tinyurl.com/2p9xnhfb>

⁹¹ <https://www.artemis.bm/news/2021-insured-cat-losses-120bn-december-tornadoes-4bn-munich-re/>

⁹² https://aso.mk/wp-content/uploads/2021/11/godisen-izvestaj-2020-mk_mala-rezolucija.pdf

⁹³ <https://tinyurl.com/yc89847p>

challenges for the disaster risk insurance in the country can be summarized from the side of the key stakeholders' groups involved in the insurance scheme as the following:

Institutions	Insurance companies	Consumers
<ul style="list-style-type: none"> • Insufficient partnership and cooperation between the competent government institutions and the insurers on the risk insurance; • Lack of strategic approach for risk transferring; • Insufficient cooperation and inclusion of the insurers in the risk and hazard assessments; • Not sharing the risk and hazard assessment documents with insurers; • A reactive approach to risk financing i.e. ex-post rather than ex-ante. 	<ul style="list-style-type: none"> • Low interest from the insurers for the risk insurance; • Lack of technical capacities and human resources; • Lack of risk and hazard assessments and disaster risk models; • Lack of insurance ICT solutions; • Lack of adequate insurance products; • High cost for the insurance provider. 	<ul style="list-style-type: none"> • Absence of general culture for insurance in the country; • Prevalence of ex-post compensation by the state rather than ex-ante insurance practices; • Low level of awareness of the citizens for insurance benefits; • Lack of specialized education on the risk insurance; • Poor purchasing power.

Figure 18 – Key challenges for risk insurance in the country

The insurance market in the country consists of 16 insurance undertakings (11 non-life and 5 life), 40 insurance brokerage companies, 10 insurance agencies and 7 banks that act as insurance agencies. The gross written premium for 2020 amounted to 188.04 million USD (163.55 million USD non-life and 24.49 million USD life).⁹⁴ Even though the pandemic 2020 is not the most representative year for understanding the level of the development of the insurance market in the country, these numbers are relatively close to the previous year – 2019, with an average decrease of 5% of operations resulting from the pandemic crisis impact. Nevertheless, the overall penetration and density of insurance in North Macedonia in comparison to other countries in the SEE region and Europe is still very low with the gross written premium being only 1.52% of the GDP and the gross written premium equaling to only 78 EUR per person. For example, for the former, SEE penetration is 2.79% the European one is 8.28% of the GDP and the density in SEE is 209 EUR, while in Europe it is 2,135 EUR.⁹⁵ Concerning the insurance against catastrophic risk and based on the available data from November 2018, out of the total gross written premium for the property insurance for that year i.e. 27 million USD (19% of the non-life insurance), only 4.84% referred to the CAT risks (1.34% earthquake, 0.92% flood, 2.58% hail and frost), whether the division of beneficiaries of insurance policies was as the following: 1.62% of legal entities had an earthquake and 3.71% flood insurance; 0.92% of public and state institutions had an earthquake and 4.77% flood insurance, and only 0.84% of householder residencies had an earthquake and 1,47% flood insurance.⁹⁶ A

⁹⁴ https://aso.mk/wp-content/uploads/2021/11/godisen-izvestaj-2020-mk_mala-rezolucija.pdf

⁹⁵ Nadica Jovanovska Boshkovska. *Disaster Risk Finance (DRF) – Agriculture Insurance System as a Risk Pooling Model in N. Macedonia*. Presentation at the DPPI SEE REGIONAL MEETING Advisory Board Session 13th December 2021 Online. <https://tinyurl.com/2p89rsc>

⁹⁶ <https://tinyurl.com/cbtphzh6>

similar situation can be identified in November 2019, where the flood insurance is only 0.7% or 10,000 USD of the overall property insurance which totalled 1.4 million USD.⁹⁷

An exception for this is agricultural insurance where the government is subsidizing part of the premium (60%) of the crop insurance. In general, the agricultural sector is one of the key sectors in the country (it contributed 8.6% in the 2020 GDP) which is also vulnerable to a palette of natural hazards, predominantly weather-related ones e.g. floods, storms, hail, extreme temperatures, drought, erosion, etc. Same as in the case of the other type of insurance schemes for the citizens, the interest of the farmers is very low i.e. 3.5% in 2015 and 2% in 2020. On the other side, both the agricultural insurance premiums are increasing⁹⁸ (2021 – 7.4 million USD, 2020 – 6.1 million USD and in 2019 – 4.5 million USD), as well as the damages and losses resulting from these events, predominantly from hail and frost i.e. during the first six months of 2021 in total 2.2 million USD were paid in damages and losses to the registered farmers.⁹⁹ Agricultural insurance can be indemnity-based crop insurance (claim payment is based on the actual loss incurred by the insurance policyholder) and parametric (a non-traditional insurance product that offers pre-specified payouts based upon a trigger event). The former one is implemented by the national insurance companies and the latter one was introduced by Europa Re as part of the below mentioned CRIF project as an Area-Yield Parametric Insurance for 4 types of crops (maize, wheat, barley and vine grapes) enabling farmers to collect claims if the overall performance of the respective crop(s) in the relevant municipality is poor, as specified apriori through the trigger mechanics of the policy.¹⁰⁰

Considering all of this mentioned above, as well as the advancement of disaster risk management in the country, two main interventions for mainstreaming disaster risk insurance can be identified during the period of the review. The first one is the regional Southeastern Europe and Caucasus **Catastrophe Risk Insurance Facility (CRIF)** implemented by Europa Reinsurance Facility Ltd (Europa Re) in collaboration with the World Bank, aimed to assist the participating countries in developing the catastrophe and weather risk insurance markets, as well as provide local population and companies to buy disaster insurance product and to access web-based insurance production and claims settlement technologies that support sales of these complex catastrophe and weather risk insurance products. During the period of implementation 2014 – 2020 “Europe RE achieved the following results:

- developed high-resolution catastrophe-risk models exclusively designed for the local markets;
- endorsed sound and reliable pricing catastrophe and weather insurance products to encourage massive participation;
- increased access to financial protection through affordable individual catastrophe and weather risk insurance products as well on the sovereign/sub-sovereign level;
- provided dedicated reinsurance capacity for the risks arising out of sales of its endorsed insurance products;

⁹⁷ Rom Aviv, Darko Blazevski. *Flood Risk Financing and Risk Transfer in North Macedonia (Final Report)*. UNDP. November 2020. p.8.

⁹⁸ <https://tinyurl.com/4r8u4cef>

⁹⁹ Rom Aviv, Darko Blazevski. *Flood Risk Financing and Risk Transfer in North Macedonia (Final Report)*. UNDP. November 2020.

¹⁰⁰ Ibid. p.9.

- developed a web-based automated production platform on the most advanced and innovative technologies to enable automated sales of insurance policies and ensured quick and proper payments of claims;
- supported the local insurance companies by providing training of their sales force;
- enabled the first online sales platform of the insurance products in the markets of operation;
- developed a unique interactive awareness and education consumer's platform to raise public awareness and provide families and businesses with informed decisions with regards to their catastrophe risk mitigation;
- increased public awareness against earthquakes and floods by extensive awareness campaigns via mass media channels and launching the CATMonitor.¹⁰¹

The second one is the ongoing **Disaster Risk Finance and Insurance Program**¹⁰² aiming to ensure that the farmers are financially protected in the event of a disaster, the abilities of the national and local governments and farmers including the low-income rural population to respond quickly and efficiently to disasters and inclusion of the farmers in the system through their participation in risk management and financial protection. It is implemented through the establishment of the first risk-pooling system in the country (October 2020) to transition from the ex-post disaster relief to an ex-ante agricultural insurance system which is the comprehensive weather risk pooling solution for the farmers. Its main characteristics are the following:

- It is mandatory for all registered farmers that submit applications for subsidies based on the Law on Mandatory Agriculture Insurance (to be adopted in June 2022).
- Risks to be insured: hail, fire, lightning, spring frost (for fruits). Accordingly, insurance products will be developed for crop and livestock farmers.
- The Government will subsidize 20% of the premium, with 30% cost-sharing by the farmer.
- Insurance companies can participate if interested.
- Cost-efficient and swift claims management, and
- Public system (Agricultural Insurance Fund) where certain operations, mainly the management of distribution channels will be transferred through long term contractual arrangements to the Insurance Pool. It will collect the premium from the insurance policies and bear the full insurance risk. A regulated fixed commission will be paid to the insurance companies that joined the System and sell policies on its behalf.
- The system is expected to be operational starting January 2023.

The **way forward** for the risk insurance in the country is to enable greater insurance penetration and density that can be beneficial for the citizens and businesses to cope with the financial consequences of disasters facilitating their resilient recovery. The set of recommendations are given based on the key challenges matrix and the summary made by Aviv and Blazevski (2020) mainly for flood risk insurance, but they can be projected also for the overall risk insurance in the country:

- Enhancement of the policy, normative and institutional frameworks i.e. adoption of a strategic approach to risk insurance, adoption of the necessary and modification of the existing normative acts,

¹⁰¹ <http://www.europa-re.com/seec-ta-crif>

¹⁰² Nadica Jovanovska Boshkovska. *Disaster Risk Finance (DRF) – Agriculture Insurance System as a Risk Pooling Model in N. Macedonia*. Presentation at the DPPI SEE REGIONAL MEETING Advisory Board Session 13th December 2021 Online. <https://tinyurl.com/2p89rsc>

partnership between the national and local authorities with the insurers on the risk insurance aspects, the contribution of the actuaries in preparation of the integrated risk and hazard assessments, joint development of risk models for various hazards, the establishment of the National Insurance Pool aimed at limiting the ex-post risk insurance approach, professional education of the practitioners and personnel from the insurers, etc.

- Introduction of mandatory or quasi-mandatory risk insurance with the establishment of the National Risk Pool which will result in a bigger number of premiums and consumers leading to increased risk transfer from the state to the insurers and ex-ante coverage of the potential damages and losses.
- Better utilization of the national and local budgets and 3% contingency reserve with greater financing of the mitigation activities, supporting the greater insurance and their use as the ultimate source for resilient recovery.
- Use of Disaster-Linked Contingent Credits as a WB mechanism to provide a financial safety net in times when it is needed most allowing the country to disburse a loan following a disastrous event for immediate disaster response and relief activities.
- Insurance-linked securities “are essentially financial instruments which are sold to investors and whose value is affected by an insured loss event. The term insurance-linked security encompasses the asset class, which consists of catastrophe bonds, collateralized reinsurance instruments and other forms of risk-linked securitization.”¹⁰³ In this sense, the CAT bonds is an insurance instrument that is transferring the disaster risk from the issuer to capital market investors. It is recommended for the country given the specific hazard profile and the risks from the earthquake and extreme weather events.

- **Risk-retention**

Risk-retention means that a country, community, or organization explicitly or implicitly chooses to absorb the impacts of a hazard if it occurs, so the risk is retained. It can take a variety of forms i.e. financial or organization planning, provision of financial sources from different sources, ex-ante reserve funds, etc. So, it can be in the form of contingency financing and planning, contingency reserves and budgets, social protection, non-financial risk retention on the community levels, etc.¹⁰⁴ Nevertheless, this mechanism is rather complex and is better to be combined with the risk-transfer one.

In the context of North Macedonia, “in terms of financing, all institutions in the area of DRR, from local to the state level, should plan budget funds for this purpose within their activities that are implemented on DRR issues”¹⁰⁵, but the budgets of the state and the units of the local self-government units do not have “specifically allocated funds to risk reduction per se”¹⁰⁶. Many of the activities are financed by these budgets but they are not having the DRR tag to be easily identified and to systematize the risk reduction financing. On the other side, the national and local budgets allocate 3% of their total amount as

¹⁰³ <https://www.artemis.bm/library/what-are-insurance-linked-securities/>

¹⁰⁴ Executive Committee of the Warsaw International Mechanism for Loss and Damage. *Compendium on Comprehensive Risk Management Approaches*. 2019. p.49. Online <https://tinyurl.com/39jb5r2s>

¹⁰⁵ European Union Civil Protection. Peer Review – Report North Macedonia 2018. 2019. p.40. Online <https://tinyurl.com/y4pxv23m>

¹⁰⁶ UNDP. *Disaster Risk Reduction Capacity Assessment Report for Former Yugoslav Republic of Macedonia*. 2011. p.. Online <https://tinyurl.com/3cxxw9s2>

contingency budget reserves for covering the response and disaster relief. They are allocated on an annual basis, without having the possibility for their accruing and re-allocation for other purposes. If they are not sent during the financial year, then they are deleted from the financial balance and re-appear in the same amount in the next-year budget. Considering the mandatory insurance of the critical infrastructure assets, only a limited number of facilities are insured e.g. schools, hospitals, administrative buildings, etc. against the general risks and some of the natural hazards e.g. fire, flood, storms, hail, limited earthquake insurance, etc. The budget funds cannot be used for insurance purposes. “As such, risk transfer tools for infrastructure do not exist and there is dependence on donors that appear to assist in post-disaster situations. For instance, after the 2015 floods that took place in the Pelagonija region (east and southeast of North Macedonia), the EU supported the state with EUR 10 million funds that were used by the UNDP for a flood recovery program focused on the reconstruction and improvement of critical transport and flood control infrastructure. The implementation of ex-ante financial risk transfer measures would decrease the dependence on exogenous sponsors and improve resilience.”¹⁰⁷

Furthermore, even though the Sendai Framework refers to the establishment of social protection safety nets, they are still not being utilized in the country, alongside the other forms of risk retention. Nevertheless, the process of **climate budget tagging** was initiated and can be utilized for better risk reduction annual budgeting and financing, as well as providing a basis for the application of many other financial solutions. Essentially, the climate budget tagging’s objective is “to enable the government to make an informed investment decision, facilitate better integration of climate change into national and sub-national plans and allow tracking and monitoring of resource allocations that are relevant to climate change in the budget system. The benefits of Climate Budget Tagging i) identify Climate Change budget being mobilized and report on CC-relevant expenditure; ii) enable the government to make informed decisions and prioritize climate investments; iii) enable public scrutiny on government spending on climate responses to improve accountability and transparency; iv) mobilise climate-related action across government sectors by providing evidence of on-going climate-related activities, and v) raise public awareness about climate change issues and government’s climate responses. vi) capture all expenditures made through the programmes that are on-budget-on-treasury including projects funded by international sources under SDGs, Enhanced Nationally Determined Contributions and DRR. vii) produce separate budget and expenditure information for mitigation, adaptation, and mixed programmes that have both mitigation and adaption functions.”¹⁰⁸ In particular, it refers to the disaster prevention and preparedness for a palette of natural hazards, out of which the most are climate-related e.g. floods, drought, heat/cold waves, flood prevention and management and erosion control. A novel mechanism should support the designing and application of a range of mitigation measures which range from the establishment of an early warning system, through the implementation of preventive measures and works, preparedness, up to resilient recovery practices. They will be captured by the budget tagging exercise and can provide a basis for resource mobilization and allocation.

¹⁰⁷ Rom Aviv, Darko Blazevski. *Flood Risk Financing and Risk Transfer in North Macedonia (Final Report)*. UNDP. November 2020.

¹⁰⁸ Madhukar Upadhya, Aleksandar Naumoski. *Guidelines Implementing Climate Budget Tagging in the Republic of North Macedonia*. 2021. p.6. Online <https://tinyurl.com/334svj7s>

- **Enabling environment**

“The existence of an enabling environment means having certain conditions in place that allow for the effective implementation of comprehensive risk management. Many components of disaster preparedness or risk reduction contribute to an enabling environment which in turn allows for further risk management activities.”¹⁰⁹ There is a wide range of factors contributing to the enabling environment which are projected throughout the phases of the disaster risk management cycle intersecting with the climate change adaptation such as the “all of society” and “whole of the government” approaches to resilience, gender mainstreaming and women empowerment for risk reduction, integration of different knowledge sources and practices, etc. One of the biggest problems countries are facing, when it comes to developing policies that should intersect gender and climate change, is the lack or absence of sex-disaggregated data, and respectively gender indicators in areas related to climate change, as well as lack of analysis of gender roles which are defining the gendered needs, obstacles, opportunities of women and men to mitigate and adapt to climate change. As the opposite of that, the CBIT project succeeded to design and gather, both gender indicators and getting an insight into gendered roles in family and society in different climate change-related areas - tailored by women and men at a very grassroots level. Additionally, a practice implemented recently contributed to the transformation of the risk reduction system in the country. It is the development of comprehensive flood models which integrates several practices i.e. flood risk assessment, flood modelling, cost-benefit analysis for the implementation of the flood mitigation measures. The case of the City of Skopje is presented below.

❖ **Case Study: Numbers and narratives are equally gender unequal - when it comes to climate change**

Like in many other countries and territories globally, lack or insufficient use of sex-disaggregated data impacts the policy and normative development of climate change resulting in missing the gender dimension with women being often excluded from the risk reduction main processes. Therefore, to overcome this gap and to insight the gendered roles in the society and communities in climate change mitigation and adaptation, within the CBIT project, two very essential processes were realized by developing the *Gender indicators in climate change in the Republic of North Macedonia*¹¹⁰ and *Narrative Study – Gender and Climate Change, Macedonia – micronarratives*¹¹¹. The former one profiles the Macedonian gender and climate change indicators enabling the gender dimensions to be integrated into the UNFCCC related documents, as well as the national strategic and policy documents with a special set of indicators related to the BURs i.e. I. Sex-disaggregated data and gender indicators in National Mitigation Assessment and respectively NDC report; II. Sex-disaggregated data and

“Micronarrative Title: Flood. Experience: It rained a lot for several days. From the heavy rain, the water entered my hook and completely destroyed everything I had, both furniture and appliances. The moment water entered, I was unable to deal with the situation”, Female, aged 30-49, Divorced/Separated, Urban area, Macedonian.

Source: <https://tinyurl.com/4zt2vxpa>

¹⁰⁹ Executive Committee of the Warsaw International Mechanism for Loss and Damage. *Compendium on Comprehensive Risk Management Approaches*. 2019. p.65. Online <https://tinyurl.com/39jb5r2s>

¹¹⁰ <https://tinyurl.com/2p8c2dec>

¹¹¹ <https://tinyurl.com/297wrnvv>

gender indicators in Vulnerability and Adaptation assessment, III. Gender-responsive measures in legal and strategic framework intersecting gender and climate change, IV. Gender data in the energy and transport-related governmental subsidies (Mitigation activities) and V. Gender and the National GHG Inventory. The latter one provides a perspective on the everyday challenges of the citizens to climate change serving as an atypical consultative tool for policy development and decision-making. Once they were compared and crossreferenced, it was confirmed that there is a serious gender disparity in the climate change areas, and that must be properly addressed. As a result, a series of **micro-narratives blogs** contributed to introducing a systematic approach and methodology gender-responsive climate change policies, and vice versa development of climate-resilient gender equality policies. Consequently, it was identified that women are less represented in the decision-making processes for designing the climate change national policies and measures as well as at the home level decisions making, and at the same time it is obvious that their potential, as real agents of change, is not fully recognized in the efforts to combat climate change. Therefore, the policy and programme frameworks need to be gender-informed, institutional capacities to be strengthened and gender-aware, and the resources for the financing of climate actions to be gender-friendly.¹¹² Considering the climate change mitigation, the blog deals with the (non) existing gender structure and dimension of the mitigation measures, which has to be seriously addressed by clearly defining different climate-related vulnerable groups in different climate-related sectors and ultimately cross-referenced by gender.¹¹³ Finally, GHG emissions are male-dominated and it is necessary to incorporate gender dimensions in the GHG emitters on all levels, aiming to develop effective gender-friendly mitigation and adaptation measures that will not only lead to decreased emissions but also reduction of the existing gender inequalities.¹¹⁴

❖ **Case Study: The City of Skopje Flood Model**

“The key objective of the study is to identify and map the existing and potential future flood hazard and risk areas within the Skopje City region, build a strategic information base necessary for making informed decisions concerning managing flood risk in the area, as well as to identify viable structural and non-structural measures and options for managing flood risks for localized high-risk areas within the entire territory of the City of Skopje. The modelling effort resulted in the preparation of GIS-based maps that are used for the development of different scenarios of eventual future flood waves, and thus supports the flood risk assessment process through improved preparation of scenarios and plans for floods on the territory of Skopje.”¹¹⁵ Alongside the ongoing integrated risks and hazard assessment, this study serves as one of the basic decision-making tools for flood risk-informed decisions by the city administration, CMC and other national institutions.

¹¹² <https://klimatskipromeni.mk/article/663#/index/main>

¹¹³ <https://klimatskipromeni.mk/article/678#/index/main>

¹¹⁴ <https://klimatskipromeni.mk/article/712#/index/main>

¹¹⁵ Pointpro. *Flood Modelling Study for the City of Skopje*. UNDP. 2017.p.13. Online <https://tinyurl.com/55ddf9h3>

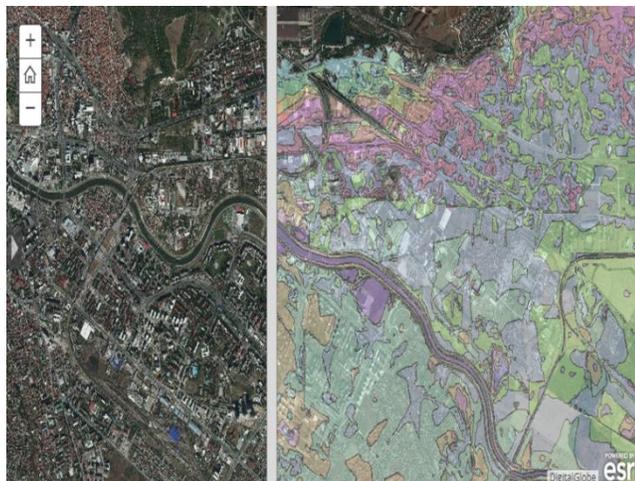


Figure 19 - Skopje Flood Model – Demolition of Kozjak Dam & flooding of the urban areas¹¹⁶

Considering the cost-benefit analysis following individual case studies¹¹⁷ were analyzed as the most prioritized ones:

- *Case 1: Flood occurrence in City of Skopje urban zone* – the current level of flood protection in the urban part of the city is still acceptable for the floods Q250 to Q500 and therefore the regular maintenance and cleaning of debris, deposited materials, etc is estimated at 200,000 EUR per annum.
- *Case 2: Flood occurrence with different return periods/risks in City of Skopje rural zone* – It has a ratio of 2.62 for a flood protection scheme against Q100 flood (P1%) and is considered as a medium flood protection level.
- *Case 3: Flood occurrence with different return periods/risks along the Lepenec River* – the degree of protection ranges from 10-years flood protection (Q10, P10%) in the minimum measures alternative to protection from 1000-year water (Q1000, P0.1%) in the high protection alternative and the estimated investment ranges between 3,100,000 EUR for the minimum measures and 6,150,000 EUR for the high protection project.
- *Case 4: Flood occurrence from torrents in Skopje* – these four torrents on the southern side of the city i.e. the northern slopes of the Vodno Mountain with a probability of occurrence of Q100 affects 60.9 ha in total, out of which 69.5% are residential areas, 17% industrial area, 2.5% agricultural land and 11% transport infrastructure.
- *Case 5: Flood protection in Upper Vardar/Rashche* – for the protection of the main water supply spring of the City of Skopje, it is necessary to regulate the Vardar riverbed near the village of Rashche in the protection zone of the Rashche Spring area with a total length of 5,76km.

➤ **Key challenges:**

- Data collection of key DRR stakeholders is still fragmented, even though the CMCs approach to risk assessment is most comprehensive, in terms of data sources, data sets and types of analysis.

¹¹⁶ <https://tinyurl.com/4rjvarif>

¹¹⁷ Pointpro. *Flood Modelling Study for the City of Skopje*. UNDP. 2017.p.57-63. Online <https://tinyurl.com/55ddf9h3>

“Nevertheless, most institutions seem to have insufficient, outdated and inadequate material and technical resources and be unable to follow European standards.”¹¹⁸

- Lack of probabilistic modelling.
- Climate scenarios, services and models are not sufficiently integrated with the existing risk and hazard assessment process.
 - Lack of a common understanding of slow onset events and their integration into the disaster risk assessment framework.
 - Insufficient inclusion and participation of the at-risk communities during the process of comprehensive risk and hazard assessment.
 - Low level of integration of the risk and hazard assessments into the national and local strategic and development programming and planning.
 - Risk and hazard assessments are not shared with the insurance companies, banks or other private sector entities to complement their risk reduction related operations and services.
 - Results and findings from the risk and hazard assessments are not shared with the at-risk communities and the general public.
 - The systemic nature of the risk is not considered within the comprehensive risk assessment and management.
 - Prevention and mitigation measures and works are not sufficiently mainstreamed across the strategic, policy and financial planning documents and processes.
 - Comprehensive risk reduction interventions (e.g. Polog project) are still stand-alone initiatives without being institutionalized on national or local levels with continuing budget allocations.
 - Climate risk analysis is insufficiently integrated into the design and implementation of comprehensive disaster risk reduction actions.
 - Risk reduction measures mainly relate to extreme weather events rather than slow onset events.
 - The existence of a rather reactive, ex-post insurance system in the country and the key challenges are identified in the Financial risk transfer section.
 - Incomplete enabling environment for financial risk transfer.
 - Contingency planning is insufficiently developed and applied and cannot be linked successfully with the risk transfer mechanisms.
 - Insufficient budget allocations for risk reduction purposes both at the national and local levels.
 - Risk-retention instruments are not fully recognized and developed in the country.
 - Existing financial rules and procedures are not following the dynamics of emergencies and disasters contributing to slower disbursement for disaster relief.
 - Inefficient support from the key national and local policy- and decision-makers for the overall risk reduction in the country.
 - Involvement and empowerment of all stakeholders especially the vulnerable groups of citizens are continuous like in other development areas, but it is rather considered to be stand-alone participation.

¹¹⁸ European Union Civil Protection. *Peer Review – Report North Macedonia 2018*. 2019. p.39. Online <https://tinyurl.com/y4pxv23m>

of damage and loss strategies and policies within the normative and institutional frameworks were emphasized.

In North Macedonia, the assessment of the damages and losses is regulated with the *Law on Protection and Rescue*¹¹⁹ as well as the *Methodology for damage assessment from natural disasters and other accidents*¹²⁰. Article 143 - 145 from the Law stipulate the general profile of the damage assessment. So, the assessment of the damages caused by natural disasters and other accidents are carried out by commissions established by the government, councils of the local self-government units, the management bodies of various legal entities. The time framework for the damage assessment is 360 days from the end of the disastrous event during which the relevant commission is preparing a report and submitting it to the Commission for assessment and determination of the amount of the damages from the natural disasters and other accidents. The assessment and determination of the amount of damage cover the type, scope and the amount of damage expressed in kind and value indicators, according to area, activity, property, ownership, time and reason for an occurrence to the damage.

Furthermore, the above-mentioned Methodology is prescribing the procedural aspects of the damage assessment process and in particular, regulates the assessment of the damages from natural hazards and other accidents. As natural hazards following are stipulated: earthquake, flood, landslide, snowdrifts and avalanches, frost, hail and drought, whether the other accidents are fires, transport accidents, mine and industrial incidents and accidents, as well as other technical and technological accidents. The subject of the assessment is assets and other goods that have been destroyed and damaged, as well as the expenses caused by the damages and the damages due to the reduced production or lost incomes of legal and physical entities. The former one can be basic assets (land, construction facilities, equipment, long-term crops, basic herd, forests and venison), current assets (raw materials and intermediate goods, semi-finished and unfinished products, agricultural production, final products and trade stocks), cultural goods and households' assets and goods. The latter one refers to expenses caused by damages (expenses for protection and rescue, sheltering of the population, animals and material assets and goods and health services), and damages due to the reduced production or lost incomes (loss resulting from the natural hazard and other accident). Furthermore, damages caused to the environment are considered as a measurable negative change of the natural resource or indirect measurable disruption of the function of that natural resource concerning other resources or the public interest.

Contrary to this, as per the WIM's *Online Guide to Loss and Damage*¹²¹, there are economic and non-economic losses. The former ones are recognized as the loss of resources, goods and services that are commonly traded in markets and they can be *income-related* i.e. business operations, agricultural production and tourism and *physical assets* i.e. infrastructure and property. The latter refers to the remainder of the items that are not commonly traded in markets and they can be individual (life, health, human mobility), societal (territory, cultural heritage, indigenous knowledge and societal and cultural identity) and environmental (ecosystem services and biodiversity).

¹¹⁹ http://www.dzs.gov.mk/public/storage1/files/zakon_2.pdf

¹²⁰ <https://www.slvesnik.com.mk/Issues/2b7abe6c6301463ebd645ad4c842ee71.pdf>

¹²¹ https://unfccc.int/sites/default/files/resource/Online_Guide_June_2021.pdf

Considering the global practice of applying the Post-Disaster Needs Assessment methodology¹²² following the disasters, it has not been applied in the country. There was one effort to conduct a PDNA following the 2016 Skopje Floods, but only a draft version of the report was prepared and it was not officially adopted by the Government due to the political instability in that time and its change. Only a full Rapid Needs Assessment based on the principles of the Post-Disaster Needs Assessment methodology with support from the World Bank was conducted following the floods from January to March in 2015. Furthermore, “the current methodologies employed are not in line with the Post-Disaster Needs Assessment (PDNA) approach, which includes damage and losses assessment, as they mainly lack verification, assessment of the human dimension impact or any consideration for disaster risk reduction, which seems to be evident also from the recurring character of the disaster, affecting largely the same population.”¹²³

Following a disastrous event, the ad-hoc reimbursement scheme is applied through the municipal and national commissions for damage assessment and is in line with the Law on protection and rescue and the Methodology for damage assessment from natural disasters and other accidents. As it can be seen on the graph below, the procedure is initiated by the individuals or the legal entities, following which the commissions are conducting the post-disaster assessments of the affected sectors, preparing a cumulative report with cost-estimations (an Elaborate) and submitting it to the municipal council for adoption. Following its adoption, the Elaborate is sent to the Government i.e. the Commission for assessment and determination of the amount of the damages from the natural disasters and other accidents. Once it is approved by the Commission it is forwarded to the Ministry of Finance for calculation of the compensation and payment i.e. usually up to 15% of the assessed damages. “A clear methodology for the aggregation of the damages from all the affected municipalities is not available and there is currently an ad hoc support system in place, which allows farmers to report their damages and losses, however, the government decides on an ad hoc basis whether it compensate them, which depends on the available budget.”¹²⁴

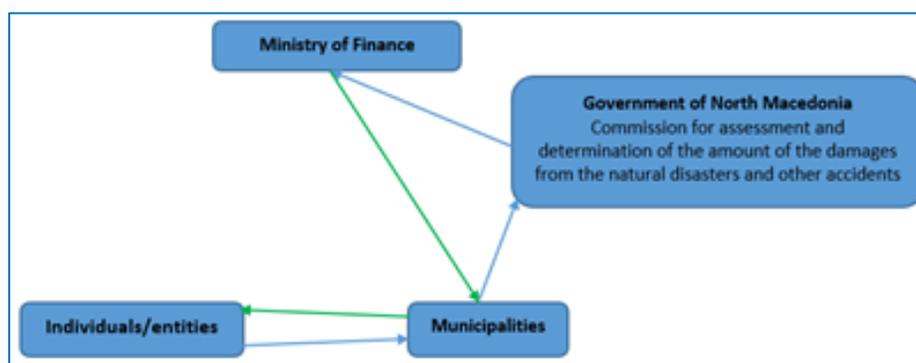


Figure 19 – Damage reimbursement scheme

¹²² https://www.recoveryplatform.org/pdna/about_pdna

¹²³ FAO. *Comprehensive analysis of the disaster risk reduction and management system for the agriculture sector - The Former Yugoslav Republic of Macedonia*. 2018. p.23. Online <https://tinyurl.com/twcn5vxk>

¹²⁴ Ibid. p.24.

➤ **Key challenges:**

- This type of assessment is an ex-post type of reimbursement of damages and the procedure is lengthy with only a portion of the assessed damages and losses being compensated.
 - Some of the slow-onset events and extreme weather events are not included in the existing damage assessment framework e.g. desertification, loss of biodiversity, land and forest degradation, salinization, heatwaves. Additionally, climate change impact-related losses and damages are not assessed.
 - Definition of damages differs from the PDNA's terminological framework and the repairing costs are not included.
 - Lack of anticipatory approach to reduction of the risks from damages and losses
 - There are no pre-disaster baselines, damage and losses indicators and updated prices catalogue.
 - For the natural hazards, the process is still manual i.e. "Damage and loss accounting for floods is still done manually and records are in paper format and not accessible or useable in detailed damage and loss assessment."¹²⁵
 - The existing assessment framework does not include socio-economic sectors and human development including the needs of the population, as well as the cross-cutting issues e.g. gender, DRR, etc.
 - "There is no precise data on the methods implemented for losses assessment and loss adjustment. In particular, it is not clear what portion of the submitted loss notifications was approved and what occurred to be the ultimate loss."¹²⁶
 - The recovery framework is missing and the Build Back Better principle is applied only within the scope of the stand-alone project interventions without being mainstreamed in the existing normative framework.
 - Absence of encompassing losses and damages disaster database.
 - No clear guidance on the assessment of damages and losses related to the critical infrastructure.
 - "Detailed information on post-disaster damages, losses and needs disaggregated by sex, age and other social determinants are often lacking or inadequate."¹²⁷

➤ **The way forward:**

- Transformation of the approach to damage and loss through an enhancement of the normative framework, practical procedure, integration of the needs of the population, as well as climate change impacts related damages and losses.
 - Development of damage and losses indicators, catalogue of prices and pre-disaster baselines through collection and validation of the baseline data that can facilitate the damage and loss assessment process.
 - Digitalization of the damage and assessment process with design and application of the ICT solutions and tools and development of repository damage and loss database followed by the development of appropriate forms and templates.

¹²⁵ Adaptation Fund. Proposal for Albania, The Former Yugoslav Republic of Macedonia, Montenegro. 2019. p.49. Online <https://tinyurl.com/3bj6zche>

¹²⁶ Rom Aviv, Darko Blazevski. *Flood Risk Financing and Risk Transfer in North Macedonia (Final Report)*. UNDP. November 2020. p.6.

¹²⁷ United Nations in North Macedonia, Government of the Republic of North Macedonia. *Sustainable Development Goals. Voluntary National Review North Macedonia*. 2020. p.26. <https://tinyurl.com/zu5pskrz>

- Strengthening the capacities of the relevant experts and practitioners involved in the damage and losses assessment.
- Integration of the Post-disaster Needs Assessment and establishment of the Recovery Framework.

3.7 Resilience of communities, livelihoods and ecosystems

The starting point is to understand the notion of resilience, since as a new concept that marks the recent developments in sustainability and resilience fora. The Sustainable Development Agenda does not stipulate a separate definition of resilience, while it is embedded in the goals, targets and indicators. Also, the Paris Agreement does not stipulate a separate one, but it is referring to the definition provided in the special report of the Intergovernmental Panel on Climate Change, *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*, resilience can be defined as “the ability of a system and its parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration, or improvement of its essential basic structures and functions.”¹²⁸ On the other side, the Sendai Framework is applying the definition by UNDRR i.e. “the ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management.”¹²⁹ Still, despite these slight differences, resilience considers the unifying concept and enabler of a coherent approach to adaptation, sustainable development and disaster risk reduction. By placing resilience at the core of the sustainability and resilience planning process, it provides the relevant actors and stakeholders with an opportunity to design and adopt risk-informed decisions, fostering better integration while leaving no one behind. “Resilience to climate variability and climate change provides common ground for DRR and CCA upon which more coherent actions can be built. Building the culture and practice of resilience goes beyond reducing the consequences of foreseeable events, but also builds resilience into systems to recover and adapt when adverse events occur. Climate change – both mitigation and adaptation – actions contribute to closing the “resilience gap” by managing unavoidable and helping to avoid unmanageable changes.” (Mysiak et al. 2018)¹³⁰ In the national context, resilience as a notion is a new one and it is not sufficiently mainstreamed in disaster risk reduction or climate change-related normative frameworks. As a term, it is only defined in the By-law on the Methodology for preparation of the assessments by all risks and hazards.¹³¹ Namely, **resilience** is defined as “*the ability of a crisis management system, local community or community exposed to dangers, to resist, to absorb negative influences, to adapt to change and start the recovery process from the effects*

¹²⁸ https://www.ipcc.ch/site/assets/uploads/2018/03/SREX_Full_Report-1.pdf

¹²⁹ <https://www.undrr.org/terminology/resilience>

¹³⁰ Mysiak, J., Castellari, S., Kurnik, B., Swart, R., Pringle, P., Schwarze, R., Wolters, H., Jeuken, A. and van der Linden, P. (2018): *Brief communication: Strengthening coherence between climate change adaptation and disaster risk reduction*. *Natural Hazards and Earth System Sciences*, 18: 3137–3143. DOI: 10.5194/nhess-18-3137-2018 Online: <https://tinyurl.com/2ndnxcpx>

¹³¹ The long title of the by-law is the following: *Regulation on the Methodology for preparation of the assessment of the security threat to the Republic of Macedonia by all risks and hazards, its content and structure, method of storage and update as well as the determination of entities in the management system with crises to which a full or excerpt of the assessment is provided.*

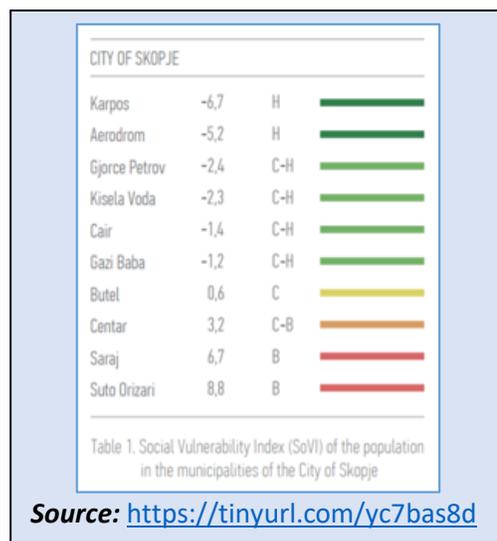
of danger, in a timely and effective manner, by maintaining and restoring their core structures and functions.”¹³²

Considering the resilience of the communities, a breakthrough was achieved in incorporating for the first time the resilience aspect of the communities in strategic documents. For example, the *Resilience Skopje – Climate Change Strategy*¹³³ emphasized the need for joint action for strengthening the urban resilience of the City of Skopje reviewing the palette of the implemented interventions, identifying the vulnerable sectors for adaptation i.e. water, health and disaster risk reduction, as well as profiling the way forward until 2030 proposing a set of measures and actions to be taken during the next decade to build adequate urban resilience capacities to cope with the disaster and climate risks.

On the other side, given the alignment with the Sendai Framework targets, the strategic plans developed for eight local self-government units i.e. Konche, Karbinci, Kavadarci, Veles, Mavrovo-Rostushe, City of Skopje, Gostivar and Kichevo not only contributes to the fulfilment of the Target E: “Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020.”, but also lay down the foundations for their sustainable and resilient development. These plans provide a strategic framework for the development of the approach to reducing the risk of disasters at the local level, as well as for taking many measures and activities that are realistic, practical and applicable and that will further strengthen the resilience of municipalities and citizens. of long-term resistance to the existing and new risks and dangers in the area of the municipality. The vision is to have cities and municipalities that are adapted to climate change ensure sustainable and resilient development and well-being of their citizens by managing the challenges of disaster resilience while improving local risk governance through the implementation of sets of measures and activities, with full involvement and support of relevant entities and the community.

❖ **Case Study: Socioeconomic Vulnerability and Climate Risks – The Case of the City of Skopje**

The analysis of socio-economic vulnerability and climate risks, which was prepared within the framework of the Resilient Skopje - Climate Change Strategy pointed out that based on a qualitative analysis of the structure of the population, as well as the determined demographic ageing, the population in the city is significantly vulnerable to the consequences of disasters. Namely, the municipalities were ranked according to their socio-economic vulnerability grounded on the Social Vulnerability Index based on the following indicators: rapid population growth, average annual population growth rate in the municipality, young population, elderly population, ethnicity, population with special needs, employment, housing conditions, water supply system, housing conditions, wastewater and environmental drainage system, access to health services. According to the



¹³² Official Gazette of the Republic of Macedonia, 13/2011. Online: <https://tinyurl.com/ysnt4pwx>

¹³³ <https://skopje.gov.mk/media/4051/resilient-skopje-strategy-eng.pdf>

assessment made, within the City of Skopje, the municipalities of Suto Orizari and Saraj have the greatest social vulnerability, and Karposh and Aerodrom have the least. The high level of vulnerability of the population in the municipality of Šuto Orizari compared to other municipalities in the City of Skopje is primarily due to the high concentration of Roma population, higher average annual population growth rate, higher percentage of population under 6 years in the total population of the municipality, a larger number of registered unemployed per 100 persons able-bodied population and a smaller number of doctors in general medicine offices per 10,000 inhabitants. The high level of vulnerability of the population in the municipality of Saraj compared to other municipalities in the City of Skopje is primarily due to the higher average annual growth rate of the population, higher percentage of the population under 6 years of age in the total population of the municipality. relation to the water supply system and the connection to the public sewerage network, as well as a smaller number of doctors in general medicine offices per 10,000 inhabitants. Consequently, resilience texture in these municipalities is significantly weakened and requires streamlined actions.

❖ ***Case Study: Economic aspects of coping with climatic change - livelihood vulnerability index***

Within the broader scope of the resilience of communities and livelihoods to Climate Change, an analysis of the *Livelihood Vulnerability Index* was conducted for all municipalities. Variables were grouped into three components: exposure, sensitivity and adaptation capacity. Each component has a set of additional indicators or sub-components e.g. the adaptation capacity includes socio-demographic characteristics and social networking; the sensitivity component includes aspects of food, health and water; exposure refers to the soil, precipitation and temperature. Assessing climate vulnerability through life vulnerability indices is proving to be a useful tool for multidimensional analysis, providing evidence for the programming and implementation of tailored policy instruments and needs-solving measures at a more specific territorial level. Policies should take into account the uneven distribution of impacts across different territorial units and populations in different regions and municipalities, as the multidimensional nature of the effects of climate change requires a comprehensive understanding of the specifics of economic, social and environmental vulnerability. The three methodological procedures provide an opportunity for different perceptions and summarizing of the results - overlap/deviation in certain components. Additionally, the possibilities for further analysis can be as the following: a possibility for traceability with regular updating of data, as well as additional relevant variables for more accurate estimation in the future or an opportunity for micro-level research (e.g. survey).¹³⁴ Accordingly, on the images below the existential vulnerability differences can be observed on the territories of different municipalities, with the ones in the northeastern part being the most vulnerable.

¹³⁴ Aleksandra Martinovska Stojcevska, Lazo Dimitrov. *Presentation of the sectoral report on the agriculture and forestry for the 4th National UNFCCC Communication*. 2021.

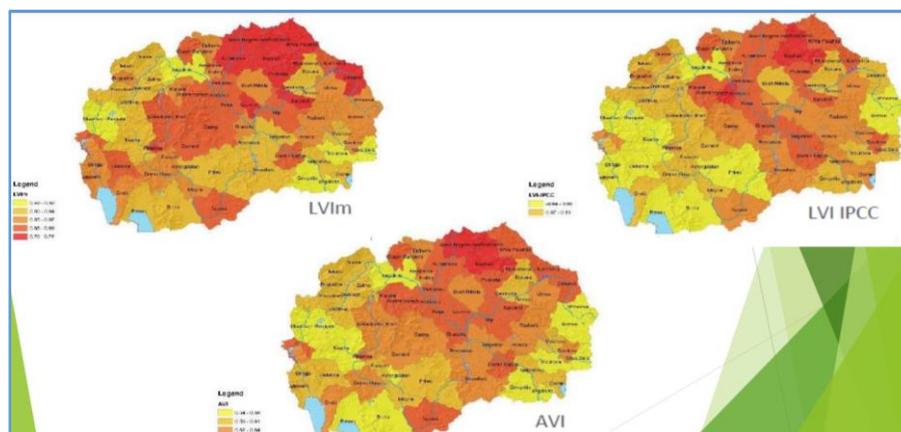


Figure 20 –Climate Change livelihood vulnerability index¹³⁵

“Like resilience, ecosystems can function as a common concept that brings together adaptation, sustainable development and disaster risk reduction, and therefore provide an opportunity to encourage further integration between the three post-2015 agendas through ecosystem-based planning approaches.”¹³⁶ Recently, ecosystems resilience is climbing higher on the risk reduction agenda in the country with several interventions implemented, while the Eco-DRR approach is piloted and mainstreamed in the overall resilience-building efforts in the country. The most prominent one is the “Capacity building for Ecosystem-based Disaster Risk Reduction (Eco-DRR) through sustainable forest management in the Republic of North Macedonia” project supported by JICA and implemented by CMC in cooperation with PE National Forests and other stakeholders.

❖ **Case Study – Ecosystem-based Disaster Risk Reduction through sustainable forest management**

The major and most frequent natural disasters in North Macedonia are floods, forest fires, soil erosion, landslides caused by torrential rains, etc. In recent years, floods have been the cause of the greatest human losses and physical damages. Due to frequent and intensive torrential rains, possibly related to recent climate change (abnormal weather pattern), and forest destruction (by forest fires and illegal logging) of the upper river catchments, rainwater in the steep mountainous region of the upper basins rapidly concentrates in the lower basins causing floods and damages in downstream areas and cities almost every year in the country. Therefore, the purpose of this project is to develop an Eco-DRR model project against floods, landslides, soil erosion, and forest fires by utilizing multiple forest functions and enhancing sustainable forest management. The overall goal is to significantly reduce the disaster risks from flood, landslides, soil erosion and forest fires in North Macedonia through mainstreaming of Eco-system based DRR measures and activities in synergy with sustainable forest management. The expected positive impacts in terms of risk reduction include:

¹³⁵ Aleksandra Martinovska Stojcevska, Lazo Dimitrov. *Presentation of the sectoral report on the agriculture and forestry for the 4th National UNFCCC Communication*. 2021.

¹³⁶ UNFCCC. *Opportunities and options for integrating climate change adaptation with the Sustainable Development Goals and the Sendai Framework for Disaster Risk Reduction 2015–2030*. 2017. p.5. <https://tinyurl.com/2p8mdmz2>

- Coordination of the national crisis management system through the use of ICT solutions for torrents, landslides, erosions is strengthened.
 - National forest management and planning capacities for Eco-DRR promotion through the introduction of the new sub-components for the protective forests are enhanced.
 - Eco-DRR measures and activities in risk reduction aiming at the implementation of green and grey solutions and enhancement of the national and local capacities to carry out Eco-DRR related activities are mainstreamed.
 - Eco-DRR public awareness is raised.
- **Key challenges:**
- Still, the resilience-building of communities and livelihoods are considered to be novel approaches that are outside the general risk reduction narrative in the country, even though there are regionally prominent project interventions.
 - Resilience is not sufficiently introduced and mainstreamed into the strategic, policy and normative documents and is not in the policy and legislative mainstreamed focus.
 - Resilience-building is not recognized as a distinctive sustainable development path of society and communities.
- **The way forward**
- The starting point is the terminological harmonization and consequent application across the disaster and climate risk reduction policies and documents.
 - Using the momentum and deeper integration of the resilience in the existing disaster risk management framework, both on the side of the strategies, policies and normative documents, as well as on the supporting the overall resilience-building efforts in the society and especially in the communities.
 - Sensitization and awareness-raising for the resilience of the policy- and decision-makers, as well as the practitioners and the general population.
 - Integration of the various resilience-building programmes and projects with the disaster and climate risk reduction narrative.

3.8 Country engagement in the WIM

As mentioned above the WIM was established at COP19 to address loss and damage associated with climate change impacts, including extreme events (e.g. floods, drought, hurricanes, heat waves, etc.) and slow onset events (e.g. extreme temperatures, desertification, sea-level rise, etc.) in developing countries that are particularly vulnerable to the adverse effects of climate change. Accordingly, parties to the UNFCCC can benefit from many facilitated actions, including the ones to address gaps in understanding of various topics related to addressing loss and damage, collection, sharing, management and use of relevant data and information or provision of overviews of best practices, challenges, experiences and lessons learned. For that purpose, the WIM will enhance action and support by “providing technical support and guidance on approaches to address loss and damage, catalyzing relevant information and recommendations to the operating entities of the financial mechanism of the Convention, facilitating the mobilization and securing of expertise, and enhancement of support, including finance, technology and

capacity-building, to strengthen existing approaches and facilitate development and implementation of additional approaches to address loss and damage.”¹³⁷

Consequently, the parties including North Macedonia can undertake or enhance existing actions¹³⁸ on the assessment of the risk of loss and damage, identification of options and design and implement country-driven risk management strategies and approaches, systematic observation and data collection of the climate change impact, implementation of comprehensive climate risk management approach, including scaling up and replicating good practices and pilot initiatives, promotion of an enabling environment that would encourage investment and the involvement of relevant stakeholders in climate risk management, involvement of the vulnerable communities and populations, civil society, the private sector and other relevant stakeholders, in the assessment of and response to loss and damage, end enhancement of the access to, sharing and the use of data, at the regional, national and subnational levels, to facilitate the assessment and management of climate-related risk. In particular, this mechanism should contribute to a better understanding of the climate change impacts related to the overall disaster risk reduction, enhancement of the national and local policies, processes, ICT solutions and methodologies and tools, strengthening the relevant capacities, mobilization of resources and access to financial sources contributing to the prevention of disruptive shocks to the sustainable and resilient development of the country and the communities. Consequently, the identified actions can be identified as the following:

- **Appointment of a loss and damage contact point** – COP 22 recommended that the Excom invite interested Parties to establish a Loss and Damage contact point to enhance the implementation of approaches to address loss and damage at the national level.¹³⁹ Loss and damage contact points, alongside other relevant channels, play an important role in raising awareness of, and enhancing coordination, action and support for, averting, minimizing and addressing loss and damage associated with the adverse effects of climate change. Until now only 46 countries and territories have appointed the contact points for loss and damages through the UNFCCC national focal points and the country is not on the list. Therefore, for better interaction with these structures, information sharing and enhanced implementation of solutions and practices of addressing the losses and damages, it is recommended the national contact point be appointed.

As presented above, in the country the loss and damages aspects are not comprehensively regulated with the competencies and responsibilities being distributed among several institutions, both on the national and the local levels, without having the National Loss and Data Observatory being established. Nevertheless, the establishment of the Sendai Framework and SDG 13 Module and the established close cooperation and coordination between the CMC and MoEPP, with the participation of other key stakeholders on the national and local levels, provide an excellent foundation for improving this segment. Given the current normative framework, the scope of competencies and responsibilities, as well as data availability, it is recommended the representative from MoEPP be appointed as the loss and damage contact point. At the moment, the damage and loss are regulated with the Law on protection and Rescue, whether with the establishment of the above-mentioned modules, the CMC E-Assessment platform will serve as a repository on loss and damage data. So, given this complex context and system workflow, the

¹³⁷ <https://unfccc.int/sites/default/files/resource/docs/2013/cop19/eng/10a01.pdf>

¹³⁸ <https://unfccc.int/topics/resilience/resources/questions-and-answers-ld-mechanism>

¹³⁹ https://unfccc.int/files/meetings/marrakech_nov_2016/application/pdf/auv_cop22_i7_wim2.pdf

best option is to have a person nominated by MoEPP (from its senior professional staff) since the ministry and its competent staff shall have access to the loss and damage database and with support from CMC can generate relevant reports and data. In this endeavour, the national contact point will be supported by the CMC and the PRD.

- **Participation in the WIM bodies and working groups** – As the Non-Anex I Party, the country is strongly encouraged to nominate to the Executive Committee experts with the diversity of experience and knowledge relevant to the topic of loss and damage associated with climate change impacts. Half of the members are elected initially for a term of three years, and a half for a term of two years. North Macedonia is within the group of the “2 additional members from non-Annex I Parties” and needs to consult with the regional group constituency and can submit the nomination for membership to the respective Chairs and Coordinators. Additionally, national experts can be part of the several technical groups: Technical expert panel/group to improve the knowledge base on and develop recommendations for approaches for addressing slow onset events, Expert group to develop inputs and recommendations to enhance data on and knowledge of reducing the risk of and addressing non-economic losses and Technical expert group to enhance knowledge and understanding of comprehensive risk management approaches, including issues related to finance, data, technology, regulatory environments and capacity-building.

- **Access to Santiago Network on Loss and Damage¹⁴⁰** - It was established in 2019 as part of the WIM for averting, minimizing and addressing loss and damage associated with the adverse effects of climate change, to catalyse the technical assistance of relevant organizations, bodies, networks and experts, for the implementation of relevant approaches at the local, national and regional level, in developing countries that are particularly vulnerable to the adverse effects of climate change.¹⁴¹ Once it is fully operationalized, it can be accessed for information sharing on the technical aspects of the loss and damage.

- **Access to FIJI Clearing House for Risk Transfer¹⁴²** - It is a clearinghouse for risk transfer that serves as a repository for information on insurance and risk transfer, to facilitate the efforts of Parties to develop and implement comprehensive risk management strategies. It connects experts and those looking for risk transfer solutions to build tailor-made responses, to foster climate-resilient sustainable development. Through *RISK TALK*¹⁴³, an interactive online community on climate change risk transfer, one can ask specific questions and get tailor-made answers. Furthermore, it provides a palette of case studies and lessons learned, types of funding and access, as well as various literature on losses that can be beneficial for the national practitioners, academia and private sector. Also, there is an opportunity for the national experts and organizations i.e. ensuring companies, NGOs, financial associations, etc. to be included in the networks of experts and organizations.

¹⁴⁰ <https://unfccc.int/santiago-network/about>

¹⁴¹ https://unfccc.int/sites/default/files/resource/cma2_auv_6_WIM.pdf

¹⁴² <http://unfccc-clearinghouse.org/>

¹⁴³ <http://unfccc-clearinghouse.org/find-solution>