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# Disaster Risk Financing: Main Concepts & Evidence from EU Member States

Diana Radu

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# Disaster Risk Financing: Main Concepts and Evidence from EU Member States

Diana Radu

## Abstract

Natural disasters have caused, and will continue to cause, significant losses in the EU Member States. Moreover, climate change is expected to amplify the frequency and intensity of most natural disasters. Governments step-in to cover the disasters-related costs such as emergency relief, recovery and reconstruction. Public authorities also act as insurer of last resort, in particular in those countries where insurance coverage is low. They make payments for legal commitments to cover the costs of disasters, and when there is a moral obligation to provide financial assistance. Natural disasters and climate change thus represent a real and increasing challenge for public finances, adding to fiscal sustainability issues such as a high debt level and an ageing population. There is little evidence on how EU Member States pre-arrange disaster financing and on past disasters financing. This discussion paper aims to provide an overview of relevant concepts for the design of a disaster risk financing strategy. It provides evidence from EU and Member States on disaster financing with a view to inform the debate on strengthening disaster financial resilience.

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**Contact:** Diana Radu, European Commission, Directorate-General for Economic and Financial Affairs, [diana.radu@ec.europa.eu](mailto:diana.radu@ec.europa.eu).



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# 1. INTRODUCTION

**Natural disasters can cause severe human, economic and fiscal losses and their frequency and intensity is likely to increase due to climate change.** The EU is exposed to nearly all kinds of natural disaster risks, such as droughts, earthquakes, windstorms, or floods, which besides human losses cause damage to private and public assets and income by billions of euros. Past economic losses in the EU from weather and climate-related extremes amount to €12 billion per year but conservative estimates show that the current trend in global warming could result in an additional annual loss of at least €170 billion (1.36% of EU GDP).<sup>1</sup> According to the 2021 Intergovernmental Panel for Climate Change report, the frequency and intensity of hot extremes in Europe have increased in recent decades and are projected to keep increasing. The increasing occurrence of such events catalysed by climate changes combined with the pre-existing fiscal sustainability challenges related to an ageing population for example call for reflection on how to enhance financial resilience to disasters and strengthen the capacity to withstand the short- and long-term impacts of disasters on public finances.

**The financial implications of disasters call for a better understanding of their impact on public finances in order to enhance resilience.** The EU Member States have spent significant amounts to meet the urgent health care needs during the Covid-19 crisis, but also to provide assistance to the households and businesses most hit by the pandemic. Technical and financial support was also activated at the EU level. The magnitude of the crisis has resulted in enormous pressure on public finances, with countries' fiscal positions sharply deteriorating. However, EU Member States with pre-existing financial arrangements were able to mobilise the funds faster, while others have had to react to the situation with ad-hoc solutions and in some cases legal changes to the national frameworks. Planning for such events is key for a faster recovery and return to normal conditions. The first step to enhance fiscal resilience to disasters and climate change is to analyse such future risks and their impact on public finances.<sup>2</sup>

**One possibility to secure funds *ex ante* to address the fiscal and economic losses caused by natural disasters and extreme weather events is through disaster risk financing (DRF).** Thus, financial preparedness contributes to increasing a country's financial resilience to disasters and ensures a faster return to pre-disaster conditions. With the EU Member States exposed to nearly all types of natural disasters, most of which are likely to be amplified by climate change, pre-existent financial arrangements should be fit to tackle the challenge of higher frequency and intensity of these events. In its broader sense, disaster risk financing provides a framework to take into account disaster risk in budgetary policy-making, with a view to securing funds commensurate to the financial challenges posed by disasters.

**Disaster risk financing is part of a comprehensive approach to disaster risk management (DRM) and builds on different DRM elements.** A robust DRM framework requires an allocation of sufficient and timely funds throughout the entire process: for risk assessments, prevention and preparedness measures, emergency response, recovery and reconstruction efforts. The more stable and predictable financial needs for pre-disaster phases can be met through specific provisions in the budgets of the responsible authorities. However, dealing with the direct and indirect consequences of disasters requires significantly higher funds that can be effectively secured *ex ante* through a DRF strategy, which can be a combination of budgetary

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<sup>1</sup> <https://ec.europa.eu/jrc/en/peseta-iv/economic-impacts>.

<sup>2</sup> [Financial institutions and supervisors run stress tests for climate change in order to see how such events could affect their balance sheets.](#)

arrangements, risk transfer instruments such as insurance, public-private partnerships and financial instruments. Under certain conditions, the EU funds complement the post-disaster national financial effort.

**The current Covid-19 crisis has revealed gaps in the national and EU DRM structures.** On the one hand, the emergency response to Covid-19 at EU level has activated the available mechanisms and funds and the legislation has been revised to broaden the scope of the existing disaster financing schemes. On the other hand, the national emergency response and the different support schemes for households and companies have been funded mainly through higher deficits and debts. This experience emphasises the need for the EU and Member States to review the existing DRM provisions and practices and make them fit for the future. The statement of the European Council on 26 March 2020 calling for a more “ambitious wide-ranging crisis management system” gives a strong political mandate to launch this reflection. The European Parliament<sup>3</sup> also called on the Commission to strengthen all components of crisis management and disaster response and to enhance European DRM, preparedness and prevention.<sup>4</sup> However, while detailed with respect to risk assessments, prevention, preparedness and emergency response, the existing EU legal provisions cover disaster-financing aspects only to a limited extent.

**Much progress has been achieved with respect to setting European goals for climate change mitigation and adaptation and establishing a common framework for DRM for civil protection purposes, but a common understanding on financial resilience to disasters and climate change is still missing.** Building a European and national disaster risk financing strategies would bridge this gap. The 2021 EU Climate Adaptation strategy<sup>5</sup> is the first one to mention explicitly the macro-fiscal relevance of climate change and natural disasters and to propose specific actions to mainstream DRM and DRF in national budgetary processes.

**Integrating natural disasters and climate risks in budgetary planning and national fiscal frameworks can strengthen a country’s financial resilience.** Governments face multiple challenges when confronted with disasters: public authorities provide immediate disaster relief and contribute to alleviating the socio-economic consequences of disasters; they act as the insurer of last resort when supporting the recovery and reconstruction; and, at the same time, they work under a constrained resources equation as disasters disrupt economic activities and reduce public revenues. When confronted with recurrent disasters, public authorities need to give due consideration to the prevention, mitigation and adaptation measures on top of securing those funds necessary for emergency response and relief. Enhancing financial resilience to disasters is all the more relevant for countries confronted with increasing long-term fiscal sustainability challenges related, for example, to ageing populations. A first step in this direction is quantifying *ex ante* the possible fiscal and economic impact of disasters, in particular the expected damages to private and public assets and economic losses. Including disaster-related fiscal risks in budgetary planning is an important feature of robust DRF and it entails budgetary transparency and liabilities management. Ultimately, such transparency enables the public authorities to assess the disaster-financing gap and to take the necessary measures to reducing or closing it.

**Arguably, society as a whole has a role to play when it comes to financial resilience.** For example, by subscribing to disaster insurance policies, private stakeholders (homeowners, businesses) limit the impact

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<sup>3</sup> European Parliament resolution of 17 April 2020 ([https://www.europarl.europa.eu/doceo/document/TA-9-2020-0054\\_EN.html](https://www.europarl.europa.eu/doceo/document/TA-9-2020-0054_EN.html)).

<sup>4</sup> EU policies for climate action and DRM are based on the Decision 1313/2013 on the Union Civil Protection Mechanism (UCPM), the 2019 European Green Deal, the 2021 Climate Adaptation Strategy and the 2021 Renewed Sustainable Finance Strategy.

<sup>5</sup> COM (2021) 82 final (<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0082&from=EN>).



on public finances as they transfer a part or the whole risk to insurance companies. As a part of the risk is borne by private actors, this helps to ensure that those most affected by disasters can access the limited amounts of public funds. Such set-ups are encouraged by upfront communication on the conditions and amounts of disaster compensation from the public purse.

**Literature on the fiscal dimension of disasters covers the direct and indirect fiscal costs of natural disasters and extreme weather events and the fiscal impact of spending for climate adaptation.**

Literature on the fiscal dimension of climate change is relatively recent. Oberghaus and Reis (2010) have explored the budgetary cost of adaptation to climate change and the analysis has been developed by Bachner, Bednar and Knittel (2019) to include the impact on public revenues. Their conclusion is that overall, the adaptation leads to an improved budget balance as the direct costs of adaptation are more than outweighed by the indirect effects (higher taxes, lower social transfers and post-disaster relief). Besides the impact of fiscal measures to adapt to extreme weather events, the channels of transmission of the disaster effects into the economy and the impact of disasters on public finances have also been explored. Deryugina (2017) provides estimates of the direct (disaster relief) and indirect (social transfers) fiscal costs of extreme weather events (hurricanes) in the US. The author shows that the indirect fiscal cost of disasters outweighs the direct costs and is significant for years after the event. Bachner and Bednar Friedl (2018) provide a country specific analysis applied to Austria by exploring the direct and indirect budgetary impacts of climate change and the implications of the use of counterbalancing instruments. The paper found a significant impact of climate change without counterbalancing through fiscal instruments or foreign lending, driven by higher expenditures for disaster relief and reconstruction and the negative macroeconomic feedback loop lowering revenues. The amount and type of public spending spent before the disaster (on adaptation, prevention) and post-disaster for emergency relief, recovery and reconstruction can influence the magnitude of the disaster fiscal impact and the speed of the return to pre-disaster conditions.

**The main objective of this discussion paper is to provide an overview of disaster risk financing concepts, with examples of practices from the EU Member States.**

Based on a screening of reports, recommendations and guidelines issued by international organisations in the area of DRM and DRF, the paper highlights the breadth and complexity of the concepts used in the design of DRM and DRF strategies. Moreover, the information gathered from budgetary documents, legal acts, national strategies and national risk assessments highlights the diversity of practices of EU Member States with respect to meeting the financing needs for DRM, disaster compensation and post-disaster recovery and reconstruction. The examples provided are not exhaustive and, while the aim was to provide typical approaches to disaster related financing, other cases may broaden the picture further. In looking at country-specific information on disaster-related financing, the paper covers aspects for all types of disasters (natural disasters, man-made disasters and climate change) with the aim of gathering as much information as possible on the procedures, institutional arrangements and legal provisions for disaster financing.

This paper is structured as follows: Section 2 reviews the concepts and definitions used for DRM and DRF in the international fora. Section 3 provides examples from EU Member States. Section 4 concludes.

## 2. MAIN CONCEPTS AND DEFINITIONS

**International and national frameworks have been key to promote financial resilience to natural disasters<sup>6</sup> and climate change.** Over time, international organisations and fora (World Bank, IMF, OECD, G20) as well as the European Commission have produced different guidelines and tools to help policy makers design financial management strategies to deal with the consequences of disasters. These are, for example, the IMF transparency code (IMF, 2018), the G20/OECD guidelines on how to develop disaster risk financing strategies (OECD/G20, 2012) or the World Bank disaster response public financial management review toolkit (World Bank, 2019). The EU-World Bank project on DRF produced an analytical tool<sup>7</sup> to support developing countries wishing to increase financial resilience to natural disasters. These tools can complement national liability management strategies and they build on existing frameworks for the management of fiscal risks (OECD, 2010)<sup>8</sup>.

Financial resilience to disasters builds on three key elements: reliable disaster loss data, quantitative disaster risk assessments and a DRF strategy tailored to the risk profile and fiscal sustainability prospects of the country and challenges related to an ageing population. Beyond damage to physical assets, DRF should take into account the number of people vulnerable to disasters because of their location or economic situation. Figure 1 below presents the interplay between these three building blocks and the key underlying concepts.

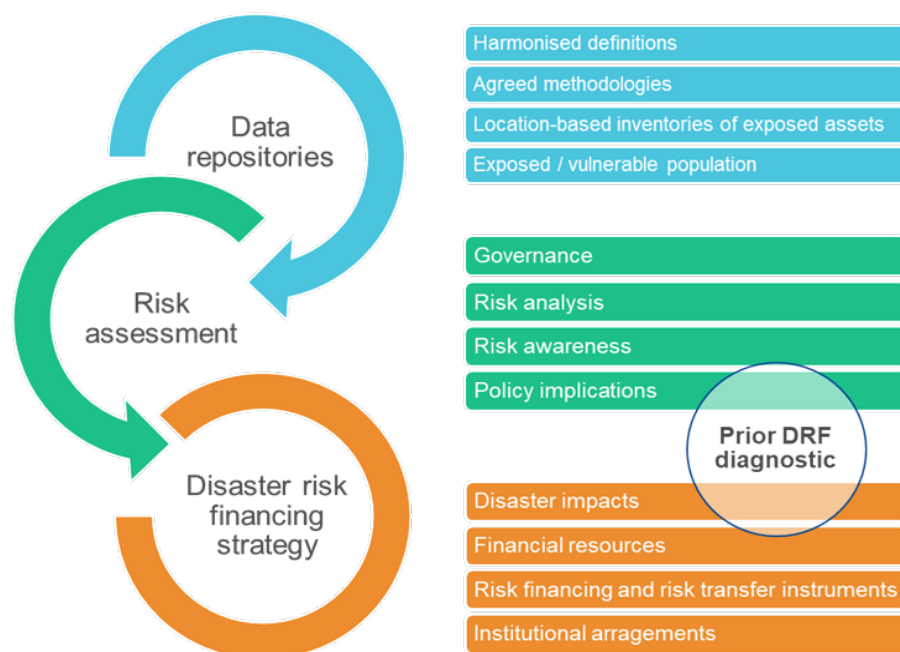
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<sup>6</sup> A disaster is an occurrence disrupting the normal conditions of existence and causing a level of suffering that exceeds the capacity of adjustment of the affected community (WHO). One can distinguish between natural disasters - geophysical (earthquakes, volcanic activity), weather related (extreme temperatures, storms); hydrological (floods); climatological (drought, wildfire); or biological (epidemics, insect infestation) events, technological or man-made (industrial or nuclear incidents, terrorist or cyber-attacks).

<sup>7</sup> <https://www.gfdrr.org/en/drif-analytics>.

<sup>8</sup>Five-Pillar Disaster Management Framework (World Bank-GFDRR): (1) risk identification, (2) risk reduction, (3) preparedness, (4) financial protection [GFDRR supports countries in developing and implementing financial protection strategies for their specific risk profile to enable private and public actors to respond quickly to disasters] and (5) resilient recovery.

Figure 1. Key steps in designing a DRF strategy



Source: European Commission, World Bank.

## 2.1 DATA REPOSITORIES

Data repositories on past disaster losses, while not being a perfect predictor of future disaster losses, enhance the accuracy of risk assessments and inform the empirical approaches to estimating the financial impact of disasters and managing disaster risk.

**Available historical information on disaster losses is incomplete and heterogeneous.** There are different databases collecting information on past disasters (EM-DAT, UN DRR DesInventar, NatCatService of MunichRe and Sigma of SwissRe). However, this information needs to be used with caution as the measurement of the events differs by data provider and so do the rules for including them, particularly as regards the thresholds, which could exclude less severe but more frequent events. While relevant for budgetary policy makers, in the existing databases it is currently not possible to disentangle private assets losses from public assets disaster-related losses and access to them is not public.

**Several OECD recommendations for disaster loss data propose actions to set up asset inventories, dialogue among stakeholders and access to information.** The *OECD Council recommendations on critical risks* (OECD, 2014) call for the collection and analysis of disaster loss data and the development of location-based inventories to trace assets, populations and infrastructures exposed to disaster risks. The recommendations also call for dialogue on risk among stakeholders and public access to risk information. These recommendations have been complemented by the *OECD recommendations on DRF Strategies*

(OECD, 2017), which provide guidance on the strategies for the financial management of disaster risks and call for the set-up of national loss databases on which Member States are expected to report by 2023.

**The European Commission has also contributed to these recommendations through four sets of legal initiatives.** The reporting guidelines<sup>9</sup> for a summary report under the UCPM (Union Civil Protection Mechanism) aim to provide more clarity on the reported disaster loss data. In particular, they include questions on (i) methods to report damage, (ii) whether the data is collected by risk or by disaster loss type, (iii) who contributes to damage reporting and (iv) whether and how this data is shared. Moreover, the 2021 revision of the UCPM<sup>10</sup> triggered by the Covid-19 crisis also explicitly requires Member States to improve disaster loss data collection at the national or appropriate sub-national level to support evidence-based disaster scenario building. Furthermore, the 2018 European Union Energy Governance Regulation<sup>11</sup> requires Member States to report by 15 March 2021, and every two years thereafter, on institutional arrangements and governance at the national level for the collection, ownership and re-use of relevant data, and access to it. Finally, the 2021 EU climate adaptation strategy<sup>12</sup> calls for action with respect to disaster loss data collection and estimates. To date, there is no legal requirement for EU Member States to record climate-related disaster loss data according to a specific methodology.

**To improve loss data recording standards, the Commission agreed on a set of recommendations proposed by loss data experts.**<sup>13</sup> These recommendations provide a harmonised structure to the evaluation of exposure and losses across hazards and threats. The Commission has also published “Science for DRM 2020” (Casajus Valles and al.), a compilation of worldwide knowledge on post-event impact assessment and is supporting the development of the Risk Data Hub<sup>14</sup>, an online platform of European risk data and methodologies for disaster risk assessment. However, available loss data remains fragmented and the lack of uniformity in data specifications makes comparisons less reliable and the statistics inconsistent.

## 2.2 RISK ASSESSMENTS

**Risk assessments are a key step to enhance financial resilience and promote disaster risk financing strategies.** They guide the allocation of funds to the different phases of DRM and inform policy makers about the impact of disasters. Such assessments are currently very diverse, a situation that underlines the strong national dimension in DRM, also driven by the type of disaster risks prevalent for each Member State. The general stance on risk assessments aims primarily to ensure that such reports are robust, follow best practices and provide relevant information to public authorities in charge of DRM (2012 G20/OECD, EU). However, the 2012 G20/OECD recommendations go beyond the basic features of disaster risk assessments and propose to expand their content and role to include:

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<sup>9</sup> [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52019XC1220\(01\)&from=ES](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52019XC1220(01)&from=ES).

<sup>10</sup> [https://ec.europa.eu/echo/sites/echo-site/files/com\\_2020\\_220\\_en\\_act\\_v13.pdf](https://ec.europa.eu/echo/sites/echo-site/files/com_2020_220_en_act_v13.pdf).

<sup>11</sup> Annex VIII on Article 19 reporting in Implementing Act (<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R1999&from=EN>).

<sup>12</sup> COM/2021/82 final (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2021:82:FIN>).

<sup>13</sup> In 2013, an EU expert Working Group on disaster damage and loss data was established to identify the gaps and challenges for recording loss data in the EU and establish a common framework in the EU for recording disaster damage and loss data. The group has worked with participants from Member States, UNISDR, and academia, and has addressed many of the technical and institutional challenges associated with loss data collection, recording, and sharing.

<sup>14</sup> <https://drmkc.jrc.ec.europa.eu/risk-data-hub/>.

1. **Governance of the risk assessment process.** The analysis of disaster risks should be based on a well-established process with a clear attribution of responsibilities between public authorities, experts and academia, using a set of relevant data that would facilitate the estimation of expected disaster impacts;
2. **Raising risk awareness.** The results of the risk assessments should not only target civil protection agencies, but also assist decision-makers and other relevant stakeholders. Risk assessments should benefit from more visibility and be presented to the highest political level to ensure the appropriate treatment of risks;
3. **Disaster impact analysis.** The quantification of disaster costs and assessment of financial capacity to deal with them would contribute to the design of the disaster financing strategy;
4. **Policy implications.** If the risk analysis phase finds that the government needs to intervene to address financial vulnerabilities or rectify problems in risk financing and/or risk transfer markets, the appropriate action should be indicated in the risk assessments.

**As for disaster loss data, the UCPM and the associated legislation establish the voluntary production of national risk assessments (NRAs).** NRAs are currently the main tool to inform DRM strategies in EU Member States<sup>15</sup> and include some predefined elements. NRAs are used to define the type and level of natural or man-made risks, to inform the policy makers about the country's vulnerabilities and therefore to determine the appropriate allocation of resources before and after the disaster strikes. Member States are encouraged to build these NRAs on the basis of empirical evidence from past disaster data, established quantitative models on impact and informed opinions, all data sources and assumptions needing to be documented. The NRAs should deal with data and model uncertainty and run sensitivity analysis to determine the size of risks to changes (European Commission, 2020).

## 2.3 THE DISASTER RISK FINANCING STRATEGY

**Building a disaster risk financing strategy from scratch or strengthening it, calls for prior stocktaking.** This step provides visibility on the allocation of disaster costs and creates incentives to reduce the risks or design a disaster risk financing strategy (2012 G20/OECD, OECD 2014). For those countries aiming to strengthen their DRF strategy, the EU and the World Bank<sup>16</sup> tool proposes a set of questions for a prior diagnostic of the DRF. Such a diagnostic would allow the authorities to take stock of how different layers of disaster risk response are financed:

- a. What is the legal and institutional framework that determines and governs DRF?
- b. What is the definition used for “disaster” and who declares it?
- c. What financing mechanisms are currently in place to meet the costs of disasters?
- d. Are there processes and procedures for spending money post-disaster such as emergency procurement rules?

**Disaster risk financing encompasses a wide array of elements including some developed outside the budgetary frameworks.** It builds on DRM information, on information from the insurance industry, it is framed by existing budgetary procedures and involves various public and private stakeholders. The disaster

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<sup>15</sup> Pre Covid-19, some EU Member States at the time of the reporting (for example Denmark, Finland, Ireland, The Netherlands, the United Kingdom) have identified a pandemic (virulent disease, pandemic influenza, infectious disease, pandemic flu) as a risk over the short to medium term in their NRAs (2017 or 2018). The assessment provided was mainly qualitative and expressed in likelihood with different degrees of confidence (low, medium, high), but in a manner similar to more common risks.

<sup>16</sup> <https://www.gfdrr.org/en/drif-analytcs>.

risk financing strategy relies on information produced at different stages of disaster risk management about spending for prevention, preparedness, emergency response and recovery. Data on disaster insurance availability and coverage are other relevant elements as they provide complementary information about the extent to which the private sector is prepared to bear the costs of disasters.. Past disaster loss data for the public and the private sector are important to draw lessons on how disaster compensation was done for past events and on the mix of risk financing and risk transfer instruments used for that purpose.

**Budgetary frameworks that factor in relevant disaster risk information contribute to a more robust appreciation of the financing gap.** An indication of the robustness of the management of disaster risks and their macro-fiscal impacts is the extent to which the national fiscal framework and budgetary planning are endowed with flexibility and take into account elements such as ex-ante quantitative disaster risk assessments, reporting fiscal risks, including explicit and, when possible, implicit contingent liabilities. From there, the authorities are able to estimate the disaster financing needs with a certain degree of confidence. Then, the budgetary tools and arrangements available to deal with disasters would provide information on the disaster financing capacity that is already embedded in the budget and what would need to be raised from other available sources. Finally, by comparing the disaster financing needs with the financing capacity, one can determine the disaster financing gap.

**A step-wise approach covering the phases of a disaster financing strategy is warranted.** The World Bank report on the fiscal and economic impact of disasters in the EU Member States (World Bank, 2021) makes a first proposal for a structured approach to the assessment or design of a financing strategy at regional and national level. The analysis of the report applied to floods and earthquakes determines the national and EU financing gap with respect to these two types of disasters. Despite the shortcomings stemming from its disaster coverage and types of public spending under consideration, the World Bank approach is a valuable development and includes evidence on disaster financing in the EU.

**The financing gap can serve as a starting point in the reflection on the robustness of the existing DRF strategy and the need to enhance financial resilience to disasters.** To bridge this gap, the authorities can opt for a mix of disaster risk financing and risk transfer instruments. Risk transfer instruments such as insurance help mitigate the impact of disasters (Fache Rousova and al., 2021). Moreover, beyond the financing gap, an assessment of the resources allocated to the pre-disaster DRM phases is also warranted as prevention and preparedness measures can limit the disaster impact or contribute to a speedier return to pre-disaster conditions. A clear allocation of responsibilities to the public authorities facilitates faster disaster response: it reduces uncertainty and the funds can thus be arranged in advance.

### 2.3.1 Fiscal risk reporting and disclosure

**The design of DRF strategies relies on information produced in two distinct processes, the national risk assessment and fiscal risk reporting.** Because disaster risk information provided by disaster risk assessments is mainly qualitative, it does not sufficiently support the budgetary decision-making. Moreover, in the EU Member States, disclosure, analysis and active management of disaster-related fiscal risks have been limited so far. This calls for further reflection on how to give more prominence to the two processes and embark on risk informed budgeting.

The fiscal management of disaster risks entails the quantification of potential budgetary impacts and planning for financial capacity to deal with the post-disaster needs for emergency response, targeted financial assistance and reconstruction of public assets and infrastructure (G20/OECD, 2012).

**To assess country practices, the IMF proposes a three-tier classification for risk disclosure and analysis.** For risk disclosure and analysis, governments should publish regular summary reports on risks to

their fiscal forecasts whereby the authorities identify and analyse the various types of fiscal risks weighing on public finances. Among them, *specific fiscal risks*<sup>17</sup> can become the subject of a dedicated analysis in regular forecast reports. Specific risks to public finances such as disaster risks and the associated contingent liabilities should be regularly monitored and disclosed (IMF, 2018). This translates into analysis, quantification and disclosure of potential fiscal exposure to natural disasters and other major environmental risks/climate change (see Table 1).

Table 1. IMF classification of transparency practices for disaster risks

	BASIC PRACTICE	GOOD PRACTICE	ADVANCED PRACTICE
<b>Risk disclosure and analysis</b>	The main <i>specific risks</i> to the fiscal forecast are disclosed in a summary report and discussed in qualitative terms	The main <i>specific risks</i> to the fiscal forecast are disclosed in a summary report along with estimates of their magnitude	The main <i>specific risks</i> to the fiscal forecast are disclosed in a summary report along with estimates of their magnitude and, where practicable, their likelihood.

Source: 2018 IMF Fiscal Transparency Handbook.

**In the same vein, the OECD has put forward recommendations and principles for fiscal risk assessment.** The OECD Council recommendations on budgetary governance (OECD, 2014) refer to fiscal risks. In particular, the OECD principle 9 on budgetary governance requires that fiscal risks, including contingent liabilities, are identified, explained and classified by type. Fiscal risks should also be quantified and reported in the context of the annual budget. This would promote fiscal resilience and mitigate the potential impact from fiscal risks. More specifically, the G20/OECD DRM and DRF methodological framework (OECD, 2012) promotes risk assessments to enable a comprehensive view of disaster risks that would allow public authorities to calibrate the financial management strategies to meet the disaster financial needs.

**The identification, quantification and disclosure of contingent liabilities is therefore a key element of DRF and building disaster financial resilience.** Reconstruction costs of infrastructure and other public assets are an explicit contingent liability for governments and represent a big share in total post-disaster public expenditure. Rules about the post-disaster damage covered by the government allow clarifying the extent of explicit liabilities. Public spending decided on an ad hoc basis is an implicit liability and it can take the form of social transfers, support to local governments or compensation of losses on private assets for example (see Table 2). The uncertainty related to post-disaster public spending is linked mainly to implicit liabilities and to extreme weather events which amplify damages beyond what can be reasonably expected. Therefore, governments need to take action to assess the post-disaster expenditure even under extreme scenarios, to plan for such public expenditure over the medium term and pre-arrange financing for those losses that cannot be covered by the regular budgets.

<sup>17</sup> A *specific fiscal risk* is not directly related to macroeconomic factors. It is narrower and arises from specific sources and triggering events, such as the calling of a guarantee, a natural disaster, or rescue of a bank.



Table 2. **Typology of disaster-related contingent liabilities**

Type of contingent liability	Example
<b>Explicit contingent liability</b> Definition: Legal commitment to compensate losses to private assets, farmers, companies	Relief or disaster specific transfers to local governments Recovery and reconstruction of damaged public assets Government guarantees for SOEs and PPPs
<b>Implicit contingent liabilities</b> Definition: Moral obligation to support citizens and private firms in the aftermath of disasters.	Expanding <i>ex ante</i> commitments Tax reductions Economic support for SMEs

Source: World Bank (2019), European Commission.

The OECD Recommendation on the governance of critical risks (OECD, 2014) includes contingent liabilities under the heading for preparedness actions. The approach to contingent liabilities is developed in four stages.

1. *Ex ante*, establish rules for disaster losses compensation at all levels to ensure that compensation mechanisms are effective;
2. Encourage policies and behaviour whereby all stakeholders (households, businesses, insurers, public authorities) take responsibility for losses according to their means. This translates into availability of a mix of instruments to transfer risk to the insurance or capital markets. The 2012 G20/OECD framework calls for rules governing post-disaster compensation and risk ownership to be clarified *ex ante*. These rules are necessary to ensure that rapid compensation is available, demonstrate solidarity and clarify the expected allocation of disaster costs among stakeholders. These arrangements would promote public adhesion to disaster risk response, reduce moral hazard and provide incentives to manage disaster risks *ex ante*.
3. Evaluate and disclose contingent liabilities associated to disaster impacts in the budgetary process;
4. Establish a framework to assess and record risk related expenditures, ideally at national and local level.

**General EU legal provisions for reporting contingent liabilities can be found in the national fiscal frameworks Directive.** The Directive 2011/85 on national fiscal frameworks includes a provision for Member States to publish relevant information on contingent liabilities with potentially large impacts on public budgets. This implies that the national publication of such data is to support the functioning of national fiscal frameworks with some flexibility embedded in the wording used, namely to publish relevant information and referring to major sources of exposure. The list of contingent liabilities is non-exhaustive and allows for disaster related liabilities to be reported if they have the features mentioned in the legal text.



## 2.3.2 Disaster risk financing instruments

**A DRF strategy aims to ensure an optimal allocation of resources for DRM taking into account the level of disaster risk retained.** The risk profile of the country, its fiscal position and national preferences define the DRF strategy. Table 3 below provides a non-exhaustive list of spending for DRM. It underscores the variety of activities where governments can allocate resources in the context to DRM. This would include spending for prevention and preparedness, for example funds allocated to risk assessments, crisis management, early warning systems and measures to protect critical infrastructure and existing private physical assets (houses, etc). Other spending items for prevention and preparedness include investments in the development of protective infrastructure and in ex-ante and ex-post financial arrangements such as subsidies or guarantees for reconstruction funds and subsidies for insurance schemes. Post-disaster spending entails spending for emergency response and supply and for the reconstruction of public assets and financial compensation and assistance provided to households and companies. Public spending in these areas is arguably more difficult to trace as those responsible (different lead ministries or layers of administration) for implementing spending for DRM can be subject to different reporting and accounting standards, but having a pre-set list of spending items facilitates the monitoring of spending for disaster risks and provides a broad picture of the public resources dedicated to DRM.

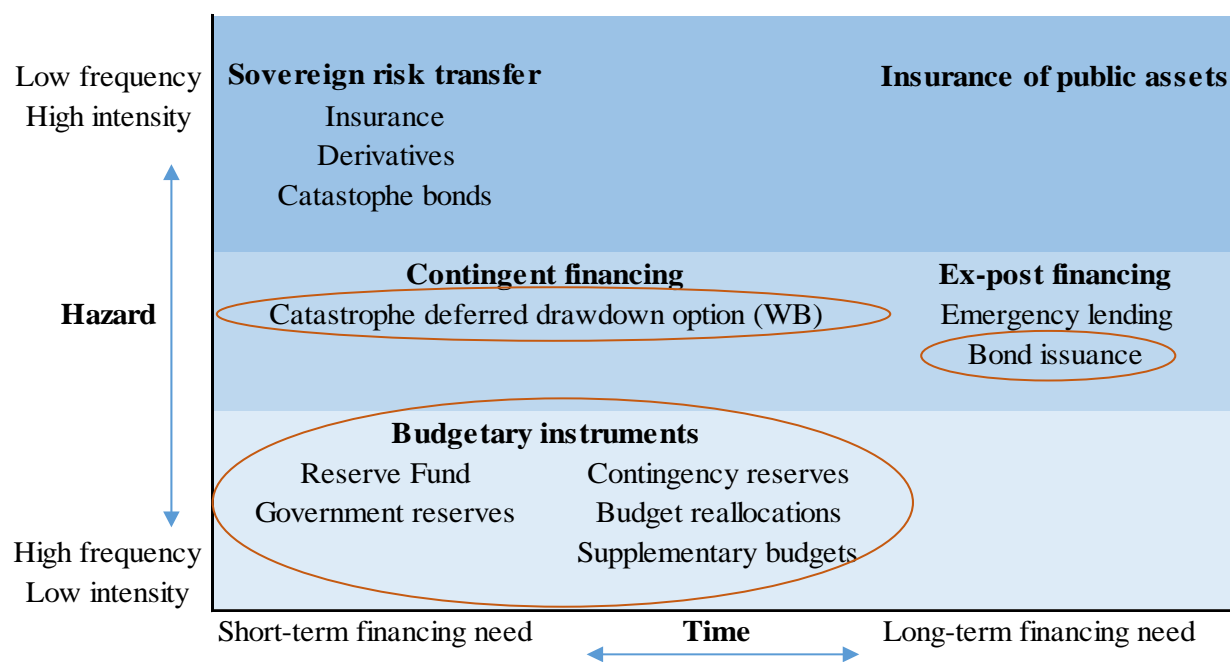
Table 3. Public expenditure for disaster risk management: Overview of cost categories and types

	Sub-category
I. Disaster Risk Prevention and Mitigation	I.1 Strategic Planning I.2 Hazard Identification and Assessment I.3 Risk/Hazard Mapping I.4 Land-use Planning I.5 Planning, Developing and Constructing of Protective Infrastructure I.6 Prevention measures for the existing built environment (houses, etc.) I.7 Prevention measures for critical infrastructure I.8 Risk awareness and communication activities I.9 Risk Transfer Investments by the Public Sector I.10 Other public investments in ex-ante/ex-post financial arrangements (subsidies for reconstruction loans, guarantees for federal compensation funds, subsidies for insurance schemes)
II. Disaster/Emergency Preparedness	II.1 Development of Crisis Management Plans II.2 Early Warning Systems Development, Construction and Management II.3 Evacuation Planning and Management II.4 Emergency Supply Management II.5 Emergency Preparedness/Crisis Management Exercises
III. Disaster/Emergency Response	III.1 Emergency Supplies III.2 Assistance Packages to affected regions, households etc. III.3 Payments to NGO's and other emergency support agencies III.4 Expenditure related to immediate response to public service disruption (energy and water supply, transport, etc.) III.5 Search and rescue operations
IV. Post-Disaster Rehabilitation and Reconstruction	IV.1 Rehabilitation of public infrastructure IV.2 Reconstruction of public infrastructure V. Financial assistance and compensation in support of disaster recovery to households VI. Financial assistance and compensation in support of disaster recovery to businesses

Source: OECD (2018).

**There is no single disaster risk financing instrument for all types of disasters.** Therefore, countries build their strategy with a mix of available risk financing instruments and risk transfer instruments that reflect in the end the level of risk retained: the potential amount of compensation that the government would need to sustain in the aftermath of a disaster. Figure 2 presents the main options at hand along two dimensions: the timing of funding and size and frequency of associated event. High frequency and low impact events are more closely aligned with the profile of past events that have occurred in the EU Member States. Therefore, the paper aims to review those instruments used by EU Member States to address the challenges posed by this type of events and report on other types of financial arrangements when they exist. Circled in red are those categories of instruments that are covered in this paper (in the following section) and for which evidence is available from the EU Member States.

Figure 2. Financing instruments to cover contingent liabilities from disasters



Source: European Commission.

**A robust DRF strategy builds on complex and diverse tools and processes and involves different stakeholders across the public administration and beyond.** It starts with reliable disaster loss data and repositories. Risk assessments can build on disaster loss data on private and public assets and estimates derived from more sophisticated models. The quantitative information of these risk assessments provides a key indication to decision makers: the extent of the possible loss after a disaster. In the next step, national budgetary frameworks take into account the existence of disaster fiscal risks and their influence on the trajectory of public finances over the forecast horizon. Then, the design a DRF strategy is based on the financing gap, part of the disaster losses that would need to be covered by the government. In the end, the DRF strategy will be made of a mix of financial instruments, some to finance disaster losses and others to transfer disaster risk to other stakeholders.

# 3. DISASTER RISK FINANCING – EVIDENCE FROM EU MEMBER STATES

## 3.1 OVERVIEW

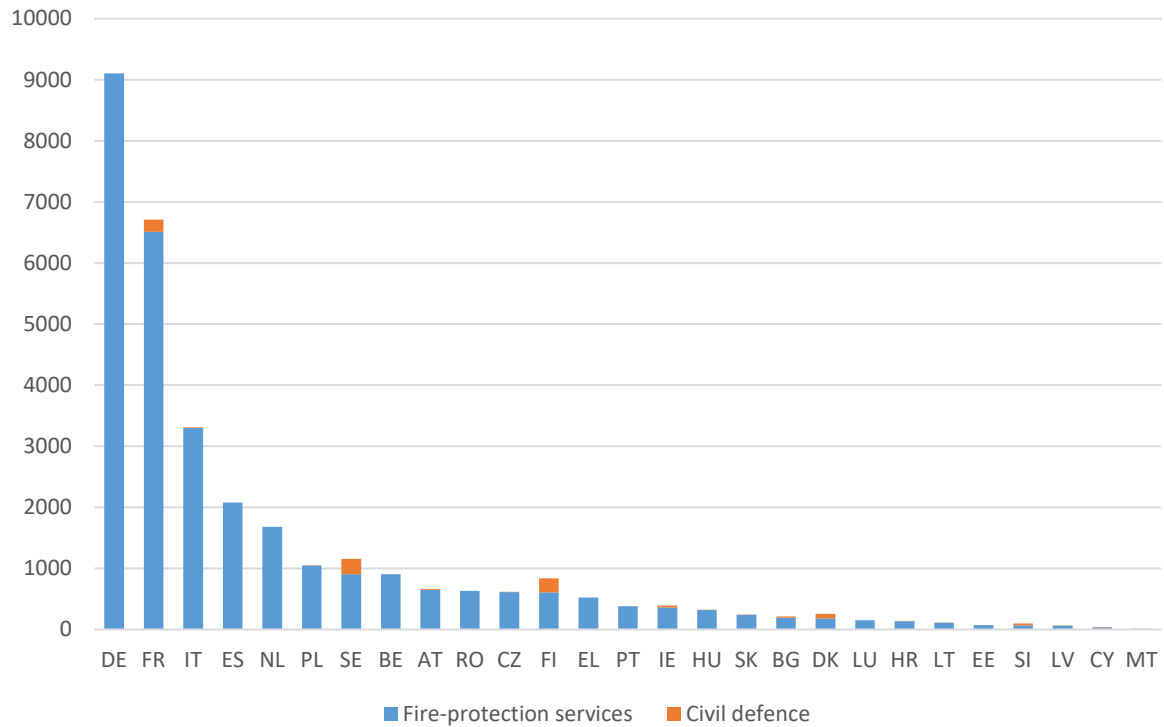
**Information on DRF practices is scattered throughout international datasets, budgetary documents and other public sources.** To provide a first overview of disaster risk financing practices and the allocation of public spending to disaster compensation in the EU Member States, the analysis in this paper relies on budgetary data and other publicly available information. It examines the information on procedures, institutional arrangements, responsibilities and practices for DRM and disaster risk financing available in national budgetary documents, in the legal provisions and in national reports and strategies for disaster risk management. The challenges in gathering such information reflect the country-specific approach to disaster management and financing. At this stage, it is difficult to make cross-country comparisons.

**From a statistical/accounting perspective, available and standardised datasets do not provide a clear and comprehensive view on public spending for disaster management and compensation.** Public spending for disasters can fall into different COFOG categories: social protection, economic affairs, civil defence, fire protection services and housing development. However, the level of detail of the reported data is not sufficient and categorisation is not straightforward. For example, spending for civil defence includes warning and alarm systems. Yet, expenditure related to the alarm system can be reported under fire protection services if the alarm system is integrated. For compensation of damages to private property, government payments to households and farmers fall in the social protection category. However, post-disaster compensation to companies is reported in the economic affairs category. Finally, public spending for households' disaster preparedness would fall under the housing development category while flood control agencies and forest fire units belong to the economic affairs.

**Currently, the Eurostat COFOG database provides data on some categories of disaster related expenditure with series starting in 1995.** Data for civil defence and fire protection services is available since 1995 for most countries (see graph 1). The reported amounts, however, cover operational expenditure, wages, investments in prevention and preparedness measures and emergency funds. It is therefore not possible to have a clear overview of funds allocated to the different phases of disaster risk management and to disaster risk financing. Moreover, with the responsibilities for disaster management and compensation fragmented across administrations, it is important to form a clear picture on the distribution among public authorities of the financial effort for emergency response, recovery and reconstruction. Information on a small share of disaster-related expenditure by public administration is available (graph 2).

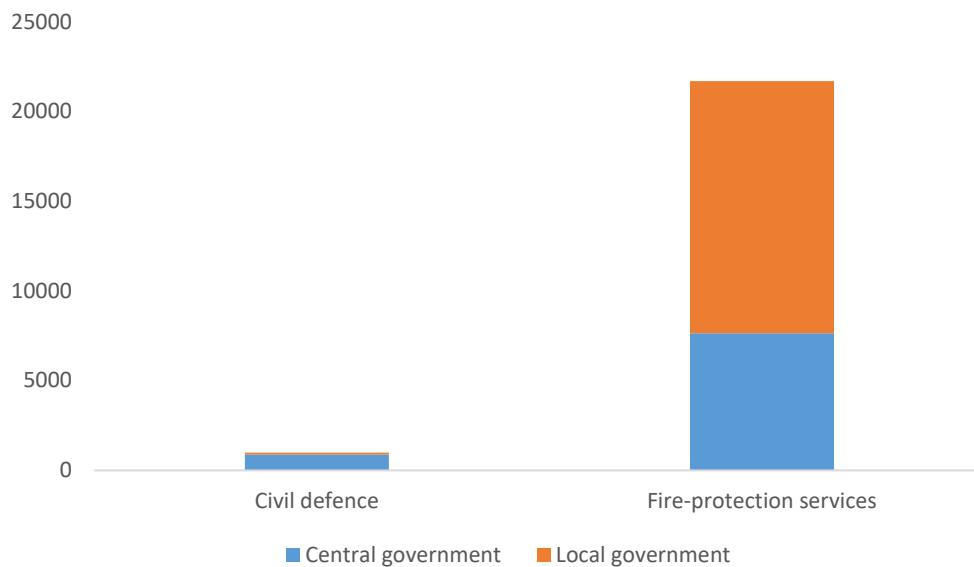
Graph 1. Public spending for civil defence and fire protection services

(2019, million euro)



Source: Eurostat, COFOG database.

Graph 2. Central vs local government spending for civil defence and fire-protection services EU 27 (2019, million euro)



Source: Eurostat, COFOG database.

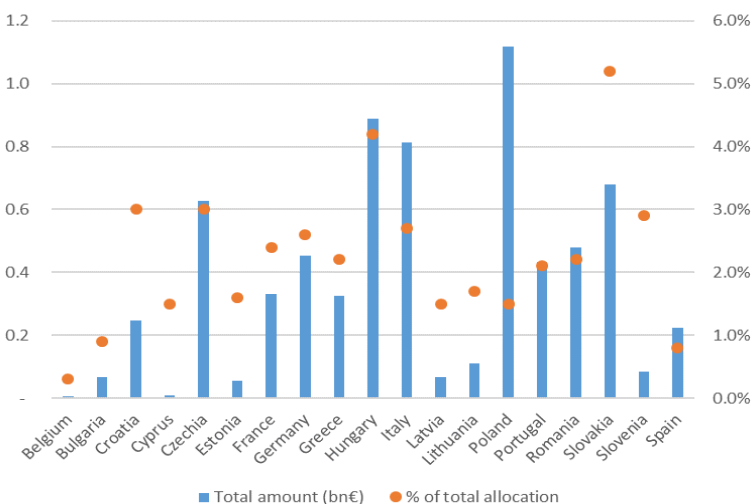
### 3.2. DISASTER RISK FINANCING AT EU LEVEL

**At the EU level, the legal framework aims at supporting and complementing the Member States' actions to ensure effective DRM.** The UCPM and the New EU climate adaptation strategy<sup>18</sup> promote a shared view on reporting and a common approach to disaster and climate action, covering most elements of disaster risk management. Several permanent European funding schemes address the costs of natural disasters, extreme weather events and climate change and disaster risk management. These funds target *ex ante* financing for prevention and preparedness or *ex post* financing for emergency and reconstruction.

**The EU budget makes a significant contribution to the fight against climate change through climate mainstreaming.** Under the climate mainstreaming approach, all EU programmes implement two types of measures: adaptation, which involves solutions to enhance preparedness and resilience to climate change and measures to prevent or minimise the damage and mitigation involving the reduction of emissions of greenhouse gas. Over the 2014-2020 multiannual financial framework (MFF), the EU has spent 20% of available funds (€16 billion) on climate-related issues and has increased the share for climate mainstreaming to 30% over the 2021-2027 MFF. Under the broad umbrella of fight against climate change, some EU funds aim specifically to improve physical or financial resilience to climate change.

**The European Cohesion Policy programmes<sup>19</sup>** co-finance a wide variety of DRM activities, in particular in disaster prevention and management. The cohesion policy is one of the most important sources of European funding for climate change adaptation, disaster resilience, risk prevention and management, with €8 billion spent over 2014-2020. The 2017 changes to Regulation (EU) No 1303/2013 have introduced some flexibility in some EFRD national programmes giving Member States higher co-financing rates for the response to major national or regional natural disasters. Data on the funds allocated specifically to these actions under the 2021-2027 MFF is not available.

Graph 3. Country allocation to the objective Climate change and risk prevention under the EU Cohesion Policy programmes for 2014-2020



Source: European Commission ([https://ec.europa.eu/regional\\_policy/en/policy/themes/climate-change/funding-risk-prevention/](https://ec.europa.eu/regional_policy/en/policy/themes/climate-change/funding-risk-prevention/)).

<sup>18</sup> The reporting guidelines for Climate change adaptation are set out in an implementing act to the regulation, whilst the reporting guidelines for the UCPM are voluntary and set out in a Commission Notice.

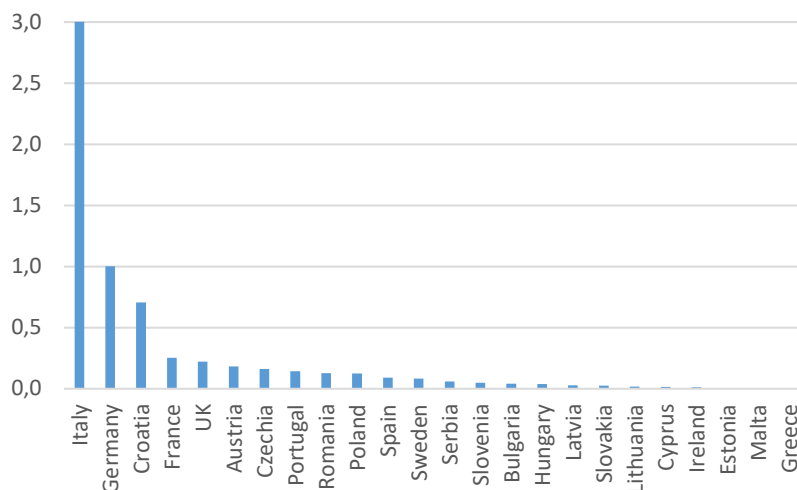
<sup>19</sup> For example, the Cohesion Fund, the European Regional Development Fund (ERDF) and the European Social Fund-ESF (renamed European Social Fund plus-ESF+ for the period 2021-2027)

**Interreg** is part of the European territorial cooperation policy and the total budget for 2014-2020 amounted to €10.1 billion. One of its 11 investment priorities is combating climate change and is funded through the European Regional Development fund (ERDF).

The **LIFE programme** is the EU funding instrument for the environment and climate action created in 1992. For the 2014-2020 funding period the programme amounted to €3.4 billion which the European Commission proposed to raise to €5.4 billion under the 2021-2027 MFF. Around a quarter of the programme is allocated to climate change mitigation, climate change adaptation, climate governance and information.

**The EU Solidarity Fund (EUSF)** was established after the floods in central Europe in summer 2002 with the objective to provide aid upon request from the affected Member State or accession country in the event of a *major natural disaster*. The EUSF is not a rapid response instrument, its application and budgetary process can take months to complete. The fund may cover costs for emergency and recovery operations incurred by public authorities. The EUSF may cover financial aid for emergency measures in the event of a natural disaster and post-disaster reconstruction operations when total direct damage exceeds either 0.6% of GNI or 1.5% of the GDP of the affected region. It can cover non-insurable losses and provides assistance for critical infrastructure, temporary accommodation for disaster victims, emergency services and clean up of affected areas. There is no equivalent fund to addressing drought and water scarcity, however. Under the 2014-2020 MFF, the annual budget for the EU Solidarity Fund was of €500 million in addition to any unallocated funds from the previous year. One quarter of this amount had to remain available at 1 October of each year in order to ensure sufficient funds for the remainder of the calendar year. In case of shortfall, additional funds could be mobilised from the following year's budget. Under the 2021-2027 MFF, the EUSF became part of the Solidarity and Emergency Aid Reserve (SEAR). SEAR can be used to finance major disasters covered by the EUSF and rapid responses to specific unforeseen emergency needs. The overall annual allocation of the SEAR cannot exceed a maximum amount of €1.2 billion (in 2018 prices). In response to the Covid-19 outbreak, the scope of the EUSF has been extended as of 1 April 2020 to encompass *major public health emergencies*.

Graph 4. EUSF –beneficiary countries by financial support (€ bn)



Source: <https://cohesiondata.ec.europa.eu/stories/s/An-overview-of-the-EU-Solidarity-Fund-2002-2019/qpif-qzyn>, European Commission.

**The Union Civil Protection Mechanism** was established in October 2001. The Mechanism aims to strengthen cooperation between the EU Member States and six participating States on civil protection to improve prevention, preparedness and response to disasters. When an emergency overwhelms the response capabilities of a country in Europe and beyond, it can request assistance through the Mechanism. The physical emergency response assistance is then provided via the **European Civil Protection Pool (ECPP)**, when a disaster-struck country activates the Mechanism and asks for such assistance. The European Commission plays a key role in coordinating the disaster response, contributing to at least 75% of the transport and/or operational costs of deployment of civil protection resources from EU Member States and participating states. More than €574 million have been allocated to the Mechanism over 2014-2020 and €379 million in the new MFF. **RescEU** is part of the UCPM and offers a pool of assets as an assistance of last resort in the EU if national assets and ECPP are not sufficient. A total of €3.3 billion was proposed for RescEU/UCPM over the next multiannual financial framework from 2021 to 2027.

**The Emergency Support Instrument (ESI)** complements ongoing national efforts and provides fast and targeted actions to support Member States in extraordinary circumstances. In the context of the coronavirus pandemic, the EU has allocated **€2.7 billion** to support EU Member States in their immediate response, exit and recovery phases from the pandemic. Between April and September 2020, ESI provided €150 million to 18 Member States and the UK for the transport of essential medical items.

**Several EU funding schemes cover partially the needs arising in the different DRM phases in the EU Member States.** Such schemes ensure that material, technical or financial support is available to EU Member States in case of disaster. Regarding the post disaster financing needs, such funding is conditional, available with a certain delay and covers partially the national cost of disasters. Some funds do not cover disasters with a slower onset (droughts for example), which will be amplified by climate change.

### 3.3. DISASTER RISK FINANCING- EVIDENCE FROM EU MEMBER STATES

**There is currently no EU Member State with a comprehensive disaster risk financing strategy.** The building blocks of national disaster risk financing strategies are scattered around different policies such as disaster risk management, environment, agriculture, etc.; provisions for disasters in budgetary planning concern mainly stable, predictable and contained expenditure for risk assessments, prevention, and preparedness and to a certain extent emergency response. Past spending patterns for disasters fit the spending profile for low impact high frequency disasters but few arrangements are made to deal with high impact low frequency events. This situation can be explained by the opportunity cost of building fiscal buffers versus spending those funds for projects and policies with visible impact over a shorter time horizon.

#### 3.3.1 Legal provisions and fiscal risk reporting

**At the national level, there is a limited number of EU Member States with laws covering partially climate financial resilience and DRF.** In general, legal acts cover specific disaster risk financing instruments such as the 2016 Decree on the use of the climate change fund in 2017-2018 in **Slovenia**, the 2018 World Bank Development Policy Loan with Catastrophe deferred drawdown option in **Romania**<sup>20</sup> or the 1996 Act establishing the catastrophe fund in **Austria**.

**The declaration of disaster is generally underpinned by a legal provision or linked to an official declaration.** This is an important element in DRM and DRF as this activates certain disaster support and compensation schemes. In **Hungary**, the state of emergency related to a natural disaster is declared by the

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<sup>20</sup> The trigger would be a declaration of catastrophe according to the Government Emergency Ordinance no. 21/2004 on the National Emergency Situations Management System.



Government. In a similar way, in **Belgium** the declaration of a natural calamity is made by the Director of Calamities after seeking a scientific opinion regarding the potential classification of the event as a national calamity. Subsequently, approval must be received by the Ministry of the Interior and Council of Ministers. A Royal Decree is created, signed by the King and published in the Belgium Official Gazette. In **Romania** natural calamities are defined by Law 381/2002, while in **Czechia** this is done in Act No. 240/2000 on Crisis Management.

**In the EU Member States, disaster fiscal risk reporting is scarce.** There is no unitary view on the fiscal risks to the budget as various reports cover different fiscal risks, including different types of natural disaster risks. In **Romania**, the budget reports do not mention disaster risk despite a significant risk of natural disasters which had a substantial impact in the past<sup>21</sup>. In **Portugal**, the 2014 fiscal risk statement included in the budget *Orçamento do Estado, Análise de Riscos Orçamentais* does not cover natural disaster risks. The national environment agency discloses basic and qualitative information about such risks. Qualitative information on natural disaster risks is available for **Finland** in the Security Strategy for Society and for **Malta** and **Lithuania** in the National Risk Assessments. Additionally, the Lithuanian Law on the Budget Structure requests the government to present the medium-term fiscal risks and an assessment on an annual basis. The disaster fiscal impacts for **Austria** are estimated at 0.1% of GDP in its Natural Disaster Fund Report and the 2020 National Crisis and Disaster Management (SKKM) strategy provides additional information on natural disaster risks and disaster risk management and was produced by the Ministry of Internal Affairs.

**Climate change will exacerbate some of the natural disaster risks and their direct and indirect fiscal implications.** This calls for a structured approach to managing and financing disaster fiscal risks. Financial management of natural disaster risks also entails promoting, practicing and incentivising insurance of public and private assets against disaster risks, setting clear conditions for disaster compensation from public schemes and managing residual disaster risks. The management of residual disaster risks falls under DRF and encompasses different actions: including budgetary instruments such as contingency and budgetary reserves and rainy day funds for immediate financing needs and more sophisticated financial instruments to meet longer-term recovery and reconstruction needs.

### 3.3.2 Public compensation schemes

**Evidence of active management of natural disasters fiscal risk is limited and mainly targeted to address immediate disaster financing needs.** Some of the country examples below come from secondary data sources such as the OECD survey on DRF practices and challenges (OECD, 2015), which provides an overview of the approaches that the economies facing various levels of disaster risk have taken to manage the financial impacts of natural and man-made disasters.

**Different approaches to disaster insurance reflect national choices for risk retention and risk transfer.** A high degree of disaster insurance penetration reduces the implicit liability that the authorities would have to manage in case a disaster strikes. Therefore, in some EU Member States private insurance against disasters is encouraged or compulsory. In **Romania**, Law no. 191/2015 amending Law no. 260/2008 on compulsory insurance against earthquakes, landslides and floods requires all private owners to insure property against such disasters. The same law established the private reinsurance company - a pool of insurance companies - providing contracts for the specific disaster risks. The insurance companies

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<sup>21</sup> In Romania, damages from disasters have amounted to € billion over 2005-2010 or around 4% of GDP. <https://documents.worldbank.org/pt/publication/documents-reports/documentdetail/553621468294622554/romania-schimbari-climaticice-si-programul-de-dezvoltare-ecologica-cu-emisii-reduse-de-carbon-componenta-b-raport-sectorial-evaluare-rapida-a-agriculturii-si-dezvoltarii-rurale>.



contribute to the enforcement of this law by regular reporting to the municipality on uninsured property. In 2014, **Finland** introduced a private insurance-based compensation scheme for flood damages included in the package for home insurance. The compensation is provided for floods above a pre-defined threshold. In other EU Member States such as **Austria**, insurance against natural disasters is uncommon and only some household or building insurance policies provide coverage for natural disasters. While public assets represent an explicit liability for governments, evidence of disaster insurance is largely unavailable. In the case of road concessions, there can be contractual obligations to subscribe to insurance but if such a product is not available, then it is the State taking over responsibility. In **France**, public assets are insured via CatNat, the public insurance scheme guaranteed by the State.

**Responsibilities for DRM and DRF across the administration are fragmented and make tracing disaster-related spending more complex.** In one example, the repartition of disaster management tasks for 15 different types of risks is spread across nine different ministries, excluding the Ministry of Finance. Tracing disaster financial compensation or even DRM funding is challenging, as one would need to account for the different types of spending that the authorities engage in the process (see table 1). An integrated approach to financial management of disaster risks across all levels of government is therefore desirable although it does not come out as standard practice in the EU Member States.

**Post-disaster compensation and assistance are important in particular in countries where disaster insurance penetration is low because it is either not available or not affordable.** *Ex ante* compensation arrangements have several advantages, such as providing clarity about the access to such funds and the beneficiaries, increasing transparency and individual financial planning. Moreover, they limit the explicit contingent liabilities for the government and facilitate budgetary planning. Absence of such arrangements increases the expectation that ad hoc financing would be provided by the authorities and may be a disincentive to building individual disaster protection, either by subscribing to disaster insurance or by building personal financial reserves. By announcing upfront the conditions for and exclusions<sup>22</sup> from compensation, the authorities reduce moral hazard and provide space for private insurance markets to develop. For example, in **Sweden**, the Act (2006: 544) on Extraordinary Events establishes the financial responsibilities of the State with respect to the responsibilities of municipalities and regions. A special agreement between the State and the Swedish Association of Municipalities and Regions spells out the rules to grant State aid. In **Poland**, the Act on Crisis Management establishes that the role of the State in post disaster financial compensation is to provide the resources for crisis management at national level and part of the funds for regions.

**Some public compensation schemes are designed to provide financial assistance for emergency or reconstruction needs.** Such is the case in **Czechia**, where the government provides partial compensation for disaster losses. Disaster financing involves several ministries (regional development, environment, agriculture, transport, social affairs). Some form of tax deduction was also allowed in the past on the basis of the losses estimated by insurance companies or by experts in the case of uninsured assets (2013 floods). In **Belgium**, compensation is granted to individuals and public entities under the National Calamity Fund (*Caisse Nationale des Calamites*) and the National Agricultural Calamities Fund if there is a declaration of state of national calamity. Certified experts provide the estimates for disaster losses which are used for compensation. In **Austria**, the national disaster fund (*Katastrophenfonds*) contributes to various stages in disaster management and provides funding for emergency intervention equipment and aid to injured people, compensation for individuals and companies and infrastructure reconstruction (up to 50% of the loss). In **Romania**, compensation from the State or local budget is only possible for insured assets, as specified in Art 22(1) of Law no. 260/2008 on compulsory disaster insurance. The reserve fund or the budget of the lead ministry (Ministry of Agriculture for example for farmers' compensation after droughts and floods)

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<sup>22</sup> Such exclusions could be linked to the fact that the property already insured or that disaster insurance is available but not subscribed to.

(IMF, 2015) cover compensation for natural disasters such as droughts, floods affecting crops, private and public assets. In **Cyprus**, the government provides compensation for disaster loss on the basis of income, which is an incentive for the population to undertake insurance. For privatised infrastructure, the managing companies insure the assets or fund themselves the cost of post-disaster reconstruction.

**Other public compensation schemes cover losses on uninsurable assets.** Where risk transfer is not possible, governments act as relief provider of last resort. The **Hungarian** compensation fund for flood and inland waters protection (*Wesselenyi Miklos*) offers protection to owners of uninsurable assets against a contribution to the fund. The resources of the fund are topped-up with public funds. In the **Netherlands**, the Calamities and Compensation Act (*Wet Tegemoetkoming Schade bij rampen en zware ongevallen, in short: WTS*) provides the legal basis for disaster loss compensation up to a total of €450 million for uninsurable disasters such as major floods (not included in the general house insurance policy against water damage), earthquakes or catastrophe. In **France**, there are various systems to provide compensation for disaster losses on public assets under CatNat, the national insurance scheme that benefits from State Guarantee.

### 3.3.3 Budgetary arrangements

**Financing of emergency measures can be covered on an ad hoc basis via the flexibility embedded in the budgets, via provisions for emergency funding or via dedicated funds such as contingency or budget reserves.** Emergency measures require fast mobilisation of resources and the funding can be provided through dedicated funds, budgetary reallocations or supplementary budgets. Virtually all EU Member States recurrently set aside contingency reserves (resources to finance unanticipated events/natural disasters). Besides these funds, most of the countries establish in the budget some type of policy or earmarked reserves (associated with the realisation of specific fiscal risks). During the Covid-19 outbreak, the budgetary reallocations have been frequently used as also reported by the EU Member States.

**The flexibility embedded in the national budgetary frameworks allows a rapid availability of funds in particular for emergency needs.** Such practices are widespread across the EU Member States. In **Sweden**, budgetary reallocations are possible upon approval by the Riksdag. The Ministry of Home Affairs and the HCPN (*Haut Commissariat a la protection nationale*) of **Luxembourg** have flexible budgets to ensure financing is available in case of disaster. In **Hungary**, there are procedures that allow for a flexible allocation of funds to cover emergency response and in **Slovenia** such flexibility is granted in case of a natural disaster. **Finland** is an example where no flexibility is allowed in the budgetary framework for emergencies. Appropriations can be reallocated within the spending limits set over the medium term in a supplementary budget. In practice, meeting emergency financing needs translates mostly into borrowing. A recent measure taken in 2019 introduced more flexibility to address financing needs from extraordinary circumstances allowing for spending limits to be increased by up to €500 million.

**The treatment of additional expenditure related to major natural disasters under the EU fiscal surveillance framework reflects the Stability and Growth Pact legislation and past practice.** In particular, the nature and characteristics of the specific measures adopted<sup>23</sup> is analysed, distinguishing between two types of costs related to natural disaster:

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<sup>23</sup> Expenditures related to disasters financed by EU funds do not affect fiscal surveillance.

- i. Short-term emergency costs in response to natural disasters and expenditure made within a reasonable timeframe from the event with a clear, direct and immediate link to it can be classified as one-off<sup>24</sup> and therefore be deducted from the calculations of fiscal indicators relevant for the assessment of compliance with EU fiscal rules<sup>25</sup>;
- ii. Medium-term investment programmes aimed to prevent or contain future damage from disasters have a structural nature, may be necessary irrespective of disaster occurrence and cannot be treated as one-off measures. For the additional costs compared with the previous year (“incremental costs”), related to these investment programmes, Member States can request flexibility in the application of EU fiscal rules for an unusual event outside the control of the government.<sup>26</sup>

**National budgets include provisions for emergency funding when certain conditions are met.** In **Denmark**, the National Finance Act (state budget) and the budgets of the competent authorities are the main funding sources for emergency needs. The involvement of different administrative layers in emergency funding can be formalised in law. In **Germany**, these provisions cover the emergency funding from the budgets of the Laender. In **Czechia**, according to Act 218/2000 and Act 250/2000, ministries and other central administrative authorities along with regions and municipalities allocate financial resources needed to ensure preparation for emergencies in their budgets. **Belgium** allocates permanent budgets to emergency and crisis management and supplementary budgets from a reserve that can be tapped under certain circumstances (including emergency). In **Poland**, if the financial resources of local and regional authorities become insufficient to cover post-disaster emergency intervention costs, the state budget can provide complementary funds. In **Hungary**, the conditions and rules for municipalities to request State aid for force majeure are detailed in the government decree 9/2011 (II.5).

**Budget reserves are pools of funds immediately available but that are not specifically designed to meet emergency needs.** In **Bulgaria**, a reserve for unforeseen and/or urgent expenditure is planned annually under the State Budget Act for the prevention, containment and management of the consequences of disasters. In **Czechia**, with the reserve for extraordinary expenses under the Integrated Rescue System Act and the Government Budget Reserve under the Crisis Act, additional funds for crisis situations are allocated within the state budget in a special-purpose reserves in the General Treasury Administration chapter. In **Poland**, an annual reserve for general contingencies in the State budget of up to 0.2% of GDP covers prevention and emergency intervention and an additional 0.5% of GDP spending for emergencies and disasters is foreseen in the budget. The State reserve in **Estonia** is to be used in case of emergency. The Estonian State budget draws the financing plan for DRM over 4 years and the responsible ministry includes funding for emergency in its own budget.

**Contingency reserves, disaster funds and reserves for extraordinary measures are funding schemes that can be mobilised swiftly to address post-disaster financing needs.** Disaster reserve funds contribute to reducing the fiscal impact of disasters by providing rapid funding and reduce the need for budgetary

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<sup>24</sup> Budgetary measures are one-offs if they present the following characteristics: i) a temporary and non-recurring nature and ii) are triggered by exceptional events outside the control of the government, to which it is forced to react. The treatment of short-term emergency costs related to major natural disasters has been detailed in the 2015 Public Finances Report, section 3.3.8 ([Report on Public Finances in EMU 2015 \(europa.eu\)](#)).

<sup>25</sup> The indicators used to assess compliance with the Stability and Growth Pact are the structural fiscal effort and the expenditure benchmark.

<sup>26</sup> For information on the unusual event clause please consider the Vade Mecum on the Stability & Growth Pact 2019 edition at pages 25-26: [https://ec.europa.eu/info/sites/default/files/economy-finance/ip101\\_en.pdf](https://ec.europa.eu/info/sites/default/files/economy-finance/ip101_en.pdf).

reallocations or borrowing, including *ex post* sovereign borrowing. Some Member States choose to specify the conditions for the disbursement of funds, while others do not define access criteria. In **Malta**, an annual contingency reserve in a range of 0.1 to 0.5% of GDP was established by the 2015 Fiscal Responsibility Act. It is stated that drawdowns from the contingency reserve can only be made in case of “urgent, temporary and unforeseen circumstances” - therefore with no reference to natural disasters - and approved by the House of Representatives. In normal times, the funds of the contingency reserve are invested in top-rated short-term liquid assets. As of 2018, the contingency reserve<sup>27</sup> stood at less than 0.3% of total expenditures, which is low by international comparison. **Lithuania** had four contingency reserves in 2017 of about 0.5% of total expenditure for different events outside the control of the authorities. These reserves are either general contingency funds or specifically designed for social security and health insurance. Governance, investment are clearly stated and they are subject to regular reporting and audit. As of 2021, **Ireland** had a contingency reserve of €2.1 bn and a recovery fund of €3.4 bn. The Rainy day Fund of €1.5 bn established in 2019 has already been drawn down for the full amount to mitigate exceptional circumstances arising from Covid-19. In **Spain**, 2% of expenditure aims to keep the annual budget in line with the plans, which is similar to the **French** precautionary reserve. In **Latvia**, the fiscal safety reserve is set on the basis of quantifiable fiscal risks to at least 0.1% of GDP. In **Sweden**, it can be used when certain fiscal risks materialise. In **Hungary**, the Budget law sets aside a reserve for extraordinary measures that can be used after approval through a decree adopted by the government. A provision for recovery and reconstruction of €500 000 is included in the budget of **Cyprus** each year and responsible ministries/departments can apply for additional funds if they exceed the budgets in dealing with disasters. **Romania** currently uses a combination of *ex ante* and *ex post* disaster financing mechanisms. First, it has the Intervention Fund, a budget line dedicated to post-disaster expenditure. If disaster costs exceed the allocation made to the Intervention Fund at the start of the fiscal year, it can be supplemented from the government State Reserve Fund; or it can be topped up through budgetary rectifications per Article 30 of Law No. 500/2002. The National Recovery Fund is managed by the **Finnish** Ministry of Finance and can provide support to municipalities in case disaster damages exceed the municipal budgets.

**International funding is one of the *ex ante* financing options of disaster risk that could not be transferred to the insurance market.** Among the EU Member States, only **Romania** has in place such an instrument since 2018, a catastrophe deferred drawdown option (CAT-DDO), which is a loan from the World Bank amounting to €400 million. The loan was called upon in line with the national legal provisions in order to help the response to Covid-19.

**Evidence on disaster financing in the EU Member States shows that such financing matches the profile of high frequency-low impact disasters.** The most frequent examples include contingency reserves, natural disaster funds and budgetary arrangements such as flexibility in the allocation of spending or supplementary budgets. Disaster insurance covering mostly private assets and compensating arrangements complement the funds available through the regular budgets. There are very few examples of financial instruments that would meet the spending profile of low frequency-high impact events. This financing profile does not appear to fully reflect the projected impacts from climate change and extreme weather events, and calls for further reflection on the mix of instruments that could be used by the EU Member States.

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<sup>27</sup> The first transfer to the Maltese contingency reserve took place in 2017 for about €9.8 million (around 0.1% of GDP).

## 4. CONCLUSION

**EU initiatives promoting climate action and resilience to climate change and the occurrence of several large disasters have made climate financial resilience more topical.** Several existing European financing schemes have been activated and others were established to provide funds that top-up national funds for DRM or climate action. However, at the national level, as the nature of public expenditure engaged to deal with disasters is very diverse, it is difficult to identify all public spending lines that could be used in the event of a disaster or that were used in the past for similar events. Moreover, the information is scattered across different policies as DRM responsibilities are shared and a focal point for DRM and DRF is missing. Progress in presenting comparable DRM information has been achieved with the introduction of national risk assessments under the UCPM provisions but the quantitative and fiscal information of these reports is limited as they have been designed for civil protection purposes.

**Disaster loss data is heterogeneous and access to it is limited .** Collection and sharing of disaster loss data are a key input to the design DRF strategies and to risk based budgeting. Some insurance companies maintain disaster loss databases but they can follow different loss reporting rules and thresholds. Recommendations or standards on how to report disaster loss data are an important step towards collecting more homogeneous and comparable information across Member States. In this respect, existing local initiatives for the collection of loss data can already offer insights on the implementation of disaster loss reporting and collection at larger scales. However, the collection of loss data on public assets represents an important challenge. The establishment of national inventories of public assets and periodical updating would provide the baseline for the assessment of losses on public assets. Finally, a clear allocation of roles of the private and public stakeholders could be conducive to a higher ownership of the process.

**Some elements and institutional features of DRF have emerged during this review for many EU Member States.** Heterogeneous disaster loss data at national level does not allow for cross-country comparisons. Nevertheless, reporting on national risk assessments could be the starting point for broadening the approach beyond DRM to cover macro-fiscal considerations, involving a wide range of stakeholders at national level. National budgetary frameworks reflect disaster fiscal risks to a limited extent, mainly through general provisions for contingent liabilities and escape clauses for compliance with the national fiscal rules in exceptional circumstances. The more frequent disaster financing arrangements correspond to high frequency/low impact events, which constitutes a challenge, as future events are likely to have higher impacts.

**At the national level, more thought could be put into the design and articulation of disaster risk financing with the national budgetary process.** The Ministry of Finance would play a key role in the oversight of the management of residual disaster fiscal risks. This process would entail prior reflection on the management of public assets and liabilities as well as of the residual disaster risk and on the chosen combination of *ex ante* and *ex post* disaster financing instruments according to the country risk profile, its fiscal position and budgetary procedures. Cooperation across ministries and administrative levels seems also warranted as disaster compensation can be provided by different ministries (e.g., agriculture, social affairs, and interior affairs). Finally, the involvement of private stakeholders from the insurance industry and capital markets is necessary to ensure that the supply of risk transfer instruments is adapted to the needs and, if not, the authorities may need to step in to provide incentives or adapted regulations.

**At the Union level, European funding is available in complement of the national effort to cover disaster losses.** Several EU schemes provide funding for DRM and cover disaster losses in Member States. EU funding is conditional and covers part of the disaster cost. The disbursement can take time due to specific procedural steps and such funding is therefore available to cover the emergency relief costs with a

lag. However, tackling the future impacts from natural disasters and climate change will entail larger economic and fiscal costs. A permanent European risk-financing instrument is already available in the form of the EUSF, but further reflection is warranted on its funding capacity, the conditions to access it and the timeline for disbursement in order to enhance the financial resilience of Member States and of the Union as a whole.

**By presenting evidence on DRF in the EU and Member States, this paper contributes to informing the debate on enhancing disaster financial resilience.** The paper presents the main building blocks of robust DRM and DRF and elements that enhance financial resilience, such as governance, institutions and rules. Practices in the EU Member States highlight different approaches to tackling similar challenges and could serve to inform the reflection on a more developed and structured approach to financing disaster risks. Complementary aspects to DRF such as the participation of the insurance sector to increase disaster insurance coverage for private and public assets and the possibility of sovereigns to issue specific risk transfer instruments on the capital markets would deserve to be explored further.

## 5. REFERENCES

- Bachner, G., Bednar-Friedl, B., 2018. The Effects of Climate Change Impacts on Public Budgets and Implications of Fiscal Counterbalancing Instruments, Environmental Modelling and Assessment, June 2018.
- Bachner, G., Bednar-Friedl, B., 2019. How does climate change adaptation affect public budgets? Development of an assessment framework and a demonstration for Austria, Mitigation and Adaptation Strategies for Global Change (2019) 24:1325–1341.
- Burke, M., W.M. Davis, and N.S. Diffenbaugh, 2018. Large potential reduction in economic damages under UN mitigation targets. Nature.
- Casajus Valles, A., Marin Ferrer, M., Poljanšek, K., Clark, I. Science for Disaster Risk Management 2020: acting today, protecting tomorrow, Publications Office of the European Union, Luxembourg, 2020.
- Clarke, D., Dercon, S., 2016. Dull Disasters. Oxford: Oxford University Press.
- Deryugina, T., 2017. The fiscal cost of hurricanes: Disaster aid versus social insurance. American Economic Journal: Economic Policy.
- European Commission, 2014. 2014 Finland Peer Review – Building resilience to disasters: Implementation of the Hyogo Framework for Action (2005-2015), UNISDR, EC, OECD.
- European Commission, 2020. Public Finances in EMU – 2020, European Economy 2020.
- European Commission, 2021. Forging a climate-resilient Europe – the new EU Strategy on Adaptation to Climate Change. 24.02.2021 COM(2021) 82 final.
- European Commission, 2021. Closing the climate protection gap - Scoping policy and data gaps, Brussels, 27.5.2021 SWD(2021) 123 final.
- Gamper, C., Alton, L., Signer, B, Petrie, M, 2017. Managing disaster risk related contingent liabilities in public finance frameworks, OECD Working Papers on Public Governance, No 27, OECD Publishing, Paris.
- Hallegatte, S., Rentschler J, Rozenberg J., 2020. Adaptation Principles: A Guide for Designing Strategies for Climate Change Adaptation and Resilience. World Bank, Washington, DC.
- International Monetary Fund, 2013. Fiscal Transparency report Ireland.
- International Monetary Fund, 2015. Fiscal Transparency report Finland.
- International Monetary Fund, 2015. Fiscal Transparency report Portugal.
- International Monetary Fund, 2018. Fiscal Transparency report Austria.
- International Monetary Fund, 2018. Fiscal Transparency report Malta.

International Monetary Fund, 2018. Fiscal policy note: How to manage fiscal costs from natural disasters.

International Monetary Fund, 2018. IMF Fiscal Transparency handbook.

International Monetary Fund, 2019. Fiscal Transparency report Lithuania.

IPCC, 2018. Global Warming of 1.5°C. Intergovernmental Panel on Climate Change - Special Report. Summary for Policy Makers, Geneva, Switzerland.

IPCC, 2021. Climate Change 2021: The Physical Science Basis, Intergovernmental Panel on Climate Change - Special Report. Summary for Policy Makers, Geneva, Switzerland.

Oberghaus, D and Reis, C., 2010. Total Costs and Budgetary Effects of Adaptation to Climate Change: An Assessment for the European Union, Discussion Paper 10/046.

OECD, 2010. Recommendation of the OECD Council on Good Practices for Mitigating and Financing Catastrophic Risks.

OECD / G20, 2012. Disaster risk assessment and risk financing. A G20/OECD methodological framework.

OECD, 2014. Recommendation of the Council on the governance of critical risks.

OECD, 2014. Recommendations of the Council on budgetary governance.

OECD, 2015. Disaster risk financing: A global survey of practices and challenges, OECD Publishing, Paris.

OECD, 2017. OECD Recommendation on disaster risk financing strategies.

OECD, 2018. Assessing the real cost of disasters. The need for better evidence, OECD Reviews of risk Management policies, OECD publishing, Paris.

OECD, 2019. Fiscal resilience to natural disasters. Lessons from country experiences.

Fache Rousova, L., Giuzio, M., Kapadia, S., Kumar, H., Mazzotta, L., Parker, M., Zafeiris, D., 2021. Climate change, catastrophes and the macroeconomic benefits of insurance.

World Bank, 2016. Sovereign Disaster Risk in Middle Income Countries. A partnership with the Swiss State Secretariat for Economic Affairs (SECO).

World Bank, 2018. Program document for a proposed disaster risk management development policy loan with a catastrophe deferred drawdown option in the amount of EUR 400 million to Romania for building disaster and climate resilience program.

World Bank, 2019. Disaster response – A public financial management review toolkit.

World Bank, 2021. Economics of Prevention and Preparedness: Investment in Disaster Risk Management in Europe Makes Economic Sense.



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