European Union
Civil Protection

Union Civil Protection Mechanism -
Peer Review Programme
for disaster risk management

Peer Review report

Romania 2023

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Acknowledgements

The peer review team was composed of four peers:

- Captain Laurent ALFONSO, French General Directorate of Civil Security and Crisis Management (DGSCGC), Ministry of the Interior; seconded at the Union for the Mediterranean.
- Sofía GONZÁLEZ LÓPEZ, Spanish Civil Protection.
- Nataša HOLCINGER, Croatian Ministry of Interior, Civil Protection Directorate.
- Carlos MENDES, Portuguese National Authority for Emergency and Civil Protection.

Figure 1 - The peers, representatives from DG ECHO, Raed Arafat (State Secretary, Head of Emergency Department, Ministry of Internal Affairs), representatives of the Department for Emergency Situations, of the General Inspectorate for Emergency Situations, and of Ministries involved in the Romanian National System for Emergency Situations.

Figure 2 - Peer review team and representatives of the Romanian Department for Emergency situation and General Inspectorate for Emergency Situations.

From left to right: Alexandra Oancea (GIES), Sebastian Vlasceanu (GIES), Laurentiu Pasarica (GIES), Bogdan Grigore (GIES), Jaroslav Mysiak (CMCC), Dragos Mihai (GIES), Manuela Tindeche (GIES), Nataša Holcinger (Peer), Cristina Brailescu (DG ECHO), Benone Duduc (GIES), Judith Sørensen (DG ECHO), Giulio Zuccaro (University of Naples Federico II), Sofía González López (Peer), Laurent Alfonso (Peer), Raluca Murg (DG ECHO), Carlos Mendes (Peer), Marius Dogeanu (DES), Daniel Gheorghita (DES), Letizia Monteleone (CMCC), Veronica Casartelli (CMCC), Cristina Pintilie (DES).

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The Department for Emergency Situation (DES), together with the General Inspectorate for Emergency Situations (GIES), has requested to undergo a peer review on disaster risk management in Romania within the UCPM Peer Review Programme 2020-2024. The review specifically focuses on disaster risk reduction governance, risk management planning, risk prevention and some risk preparedness measures.

The infographic below highlights the key thematic areas (hexagons) and topics (wedges) of the Peer Review Assessment Framework (PRAF) covered in this report.

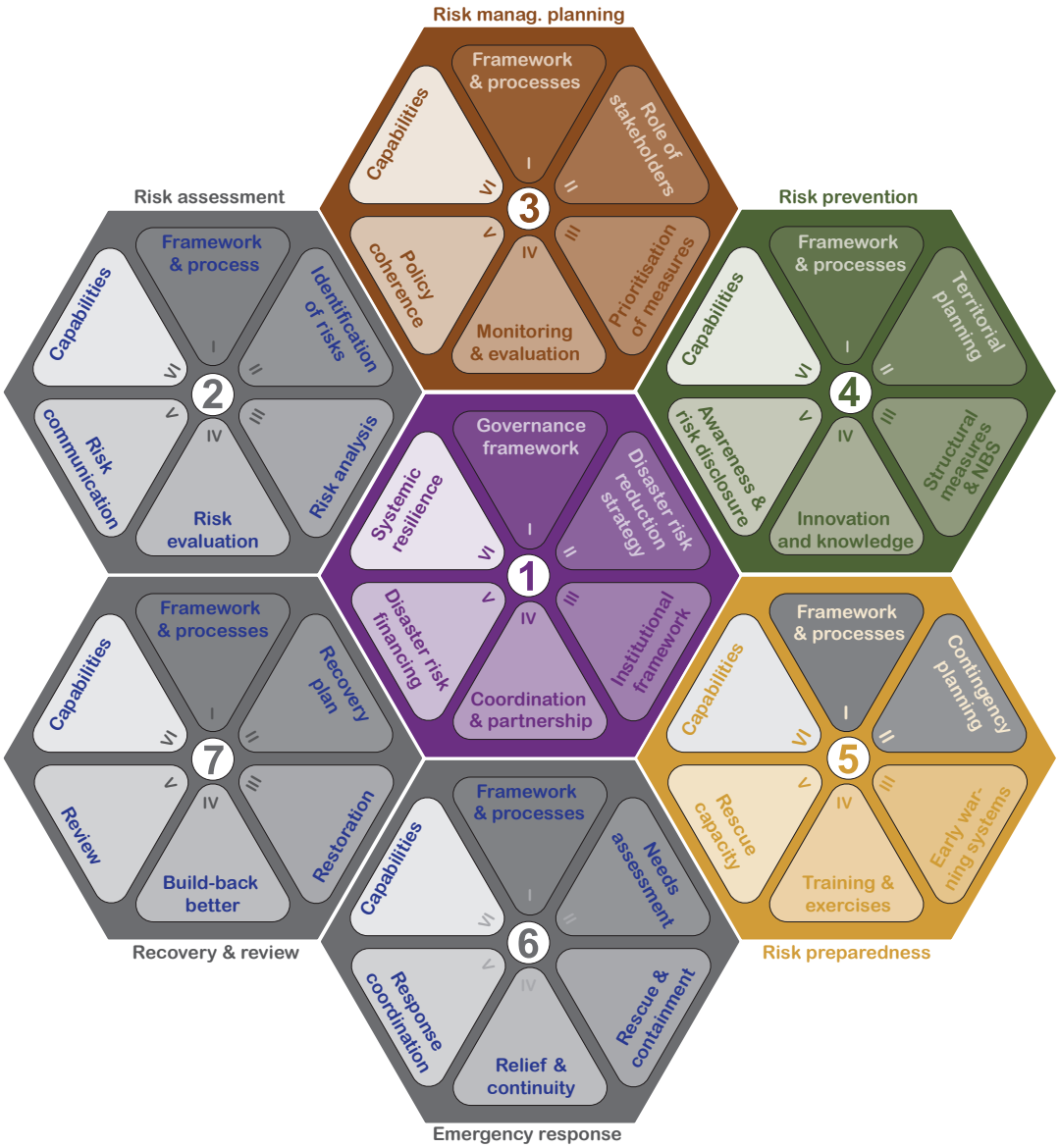


Figure 3 - Thematic areas in the Peer Review Assessment Framework and topics covered in this report.

Executive Summary

The Romanian civil protection system is a modern and integrated networked organisation with decentralised roles and responsibilities and effective horizontal and vertical coordination. This is the result of a radical transformation initiated in the early 2000s, away from a centralised architecture subordinate to the Ministry of Defense and with a focus on consolidating disaster risk management through risk prevention, preparedness, emergency response and recovery.

The government has initiated this paradigm shift from a disaster management to a disaster risk management (DRM) approach by reinforcing the legislative framework dealing with prevention actions and adapting the institutional structure to facilitate more cooperation and collaboration among key actors. Recently, the government's efforts have been additionally supported by numerous technical assistance initiatives aimed at developing Romania's strategic framework for disaster risk management and risk reduction, in line with international standards.

Existing good practices and recommendations are detailed in the report in four main sections, which are the selected thematic focus of the review:

- Governance of disaster risk reduction,
- Risk management planning,
- Risk prevention,
- Risk preparedness.

The most important strengths are summarised below:

GOVERNANCE

- Romania has a **strong legislative basis**, covering all phases of the DRM cycle - although historically focused mainly on preparedness and response - and establishing key responsible authorities for major hazards.

- As a core structure of the National Disaster Management System, the **Department for Emergency Situations**, at the strategic level, has coordinating powers for preventing and managing emergencies, and providing and coordinating the human, material, financial and other resources necessary to cope with emergencies, including qualified first aid, emergency ambulance/aerial rescue services, and pre-hospitalization emergency medical assistance, as well as Mountain and Cave Rescuers public services.

- After the signing of the Sendai Framework for Disaster Risk Reduction (SFDRR) a paradigm shift from a disaster management to a **disaster risk management approach** has been initiated by reinforcing the legislative framework dealing with prevention actions and adapting the institutional structure to facilitate more cooperation and collaboration among key actors.

- A **whole-society approach** underpins the paradigm change, as demonstrated by the government's extensive efforts in engaging all sectors in DRM activities and strategic planning.

- An effective engagement process of the **private sector** in the field of DRM is already ongoing, with excellent results.

- **Horizontal coordination and cooperation** within the central government and across key stakeholder organisations are well managed for emergency response.

- A good **top-down vertical cooperation** from the national to the local level is already in place.

- The establishment of a **wide and well-structured National Platform for Disaster Risk Reduction (NPDRR)** has been facilitating exchanges among key actors, already providing valuable results.

- An overall process aimed at reaching a greater systematisation, coherence and intersectoriality of **national policies and strategies** is ongoing.

- Romania has used **considerable resources** in the form of grants and loans from the European Funds, the World Bank and other international sources for improving disaster risk management and investing in risk reduction.

RISK MANAGEMENT PLANNING

- The **National Plan for DRM** is well structured, and addresses three phases of DRM cycle (prevention, preparedness and response), presenting both general and sectoral measures in relation to the key hazards identified from the results of the National Risk Assessment (NRA).

- **Roles and responsibilities** of stakeholders in managing each hazard type are well defined and regulated by law. For each hazard type, a **lead authority** is identified, as well as institutions with the role of supporting and collaborating with the lead in managing the assigned risk. This is also relevant for planning the disaster response phase and roles/responsibilities in case of emergency.

- The NRA process has triggered several risk assessment activities and a fruitful collaboration with the scientific community. The **RO-RISK Project** has carried out risk assessments for 10 key hazards in partnership with 13 research institutes, universities and authorities.

- The existence of **Operative Centres for emergency situations**, with permanent activity within the various ministries is a good example of the collaboration of technical capacities in national government structures. Their roles include providing operational data to the General Inspectorate for Emergency Situations (GIES), in emergency situations and tasks related to monitoring, evaluation, warning, and alerting.

- The importance of **policy coherence** between DRR, climate change adaptation (CCA) and Sustainable Development Goals (SDGs) is recognised by Romania's recent strategic documents such as the National Disaster Risk Reduction Strategy (NDRRS) and the National Strategy on Adaptation to Climate Change (NSACC) 2022-2030.

RISK PREVENTION

- **Floods**: within the 2nd cycle implementation of the EU Floods Directive (FD), a **catalogue of prevention and protection measures** has been implemented at the national level, along with a publicly available web-viewer with maps and data factsheets for each of the 526 Areas of Potential Significant Flood Risk (APSFRs) identified.

- **Earthquakes:** the **National Seismic Risk Reduction Strategy** was approved in November 2022. It includes the development and implementation of sectoral investment programmes aimed at strengthening the existing vulnerable building fund, developing a monitoring mechanism for the programmes and integrating multi-risk consideration in territorial planning.

- **Structural measures** for prevention are in place for different hazards within sectoral strategies and plans.

- The government has established measures to **reinforce buildings**, to be implemented through different funding programs (e.g. the "Program for consolidating multi-level residential buildings").

- **Green infrastructure and nature-based solutions (NBSs)** are promoted in the Flood Risk Management Plans drafted within the 2nd cycle of implementation of the EU FD, and in the National Strategy on Adaptation to Climate Change, which are yet to be implemented.

- Several **national awareness campaigns** have been implemented over the years, targeting different topics. Attempts are being made to bring awareness actions closer to citizens through the implementation of **successful public-private partnerships** (e.g., "Be Prepared Caravan", "Mobile Centre for Preparedness") and **collaborations with civil society organisations** and **NGOs**.

RISK PREPAREDNESS

- Romania has implemented **sectoral early warning systems (EWSs)** for different hazard-types: extreme weather events, floods, and earthquakes.

- **Extreme weather events**: EWSs are fully operational, providing centralised forecasts and warnings/alerts. A sound collaboration of the National Meteorological Administration (NMA) with the central government (and GIES, in particular) is in place.

- **Floods**: EWS 24/7 is operational with a direct link between the NMA and the National Hydrological Forecasts Centre. Regular data exchange with neighbouring countries for transboundary catchments and the flood extent estimation process derived from Copernicus are good practices.

- **Earthquakes**: EWS is place, allowing for a 20"- 40" pre-warning to GIES, critical infrastructure operators and selected users.

- A Public cell-broadcast Alert System (**RO-ALERT**) is operational and widely familiar to the population. The system has been successfully used in recent years to alert and inform the population on specific major risk scenarios expected and/or ongoing.

- **Standardised curricula** of disaster risk management training courses for military staff and civilians have been established by law and ensure coherent training throughout the Country. Contents of training courses are **updated after major events**.

- A **mandatory training mechanism for mayors** and their local staffs focused on response as well as prevention and preparedness topics, is in place. Representatives from the Ministry of Internal Affairs and other relevant Ministries are involved as lecturers.

- A **good cooperation** is in place at the local level, **between the emergency services and economic activities** (including risk drivers), where private emergency services (PESs) are mandatory by law. PESs are a good tool to avoid overwhelming local ones.

- **Engagement with the civil society** is on good track, with several protocols already established with different organisations, both for response and prevention purposes. Excellent results of this collaboration have been the responses in recent emergencies and the implementation of the collaborative platform.

The most important recommendations are summarised below:

GOVERNANCE

- The legal framework of the **prevention area** needs to be better operationalised. Risk prevention could be stimulated by revisiting the roles and responsibilities across all governance levels.

- The **local level** should be further supported and empowered. A process to reinforce a **bottom-up approach** is needed. Interest of the local level in DRR activities should be stimulated by promoting a **long-term commitment to prevention**.

- **Fine-tuning vertical coordination** by providing dedicated training programmes and guidance material would support local authorities in addressing and fulfilling their duties, as well as ensuring the overall consistency of DRR/DRM activities.

- The **formal adoption of the NDRRS** is needed in the short term, and awareness should be raised to consider the NDRRS as a whole-society pledge. In addition, it is paramount to clearly define the **ownership** of the overall implementation and monitoring process. The NDRRS should encourage systematic foresight and analysis of **emerging risks**.

- The government does not provide financial coverage to operationalize the NDRRS, and so each entity is required to draw up a financial implementation plan to ensure adequate resource allocation. In view of this, a further exploitation of **different sources of funding opportunity** is highly recommended. A **centralised database** of funding opportunities for DRR could help stakeholders find and allocate financial resources for implementing the NDRRS.

- **Procedures** should be defined and put in place to ensure cross-ministerial accountability of expenditure in all DRR/DRM activities.

- A strong incentive to **purchase mandatory insurance** is needed and should be promoted by **awareness** campaigns. **Operating procedures** conducted by local authorities (Mayors) to file claims for state compensation should be fine-tuned.

RISK MANAGEMENT PLANNING

- Formalisation of procedures to ensure the permanent exchange of information and **regular updates of risk assessments** should be agreed upon and put in place.

- The **NPDRR should coordinate and assume responsibility for the NRA updating process**, by organising tasks and collaboration between different actors and the National working group on risk assessment (GLERN), and by becoming fully operational.

- **Risk assessment results** should be better disseminated among citizens: a more "user-friendly" approach could facilitate better communication of the results of immediate risk assessments. Citizens understand more easily a procedure focused more on consequences than on triggering causes, and so an **impact-based approach** is often more appropriate.

- Homogeneous procedures and methods for **disaster loss data collection**, better sharing and central **systematisation** are needed. The implementation of a national GIS repository of geo-referenced data and information accessible to the three levels of operational responsibility and actors (national, county and local) could contribute to conducting better risk assessment, better managing disaster risk and increasing scientific knowledge.

- The **prioritisation of measures requires** developing a common methodology for all risks. A clear methodology for prioritising measures in the plan and strategy would be beneficial in **supporting decision makers** to identify priorities and allocate finances in relation to a given risk.

- Further **policy coherence** could be fostered by including climate change adaptation principles in DRR planning and ensuring that the implementation of these strategies sustains this synergy.

RISK PREVENTION

- The **concept of prevention** within different Romanian strategic documents suffers from a lack of common understanding. Coherence in defining prevention across different strategies and sectoral plans is needed.

- Prevention activities need to be **further promoted** at all territorial levels, also by providing guidelines aimed at the **local level**. A process of **cost-benefit analysis** to support and justify the cost of prevention measures could be useful in raising awareness.

- **Earthquakes**: commitment and trust among the population in **retrofitting programmes** should be raised through targeted risk awareness initiatives.

- **Floods**: promoting **green infrastructures and NBSs** whenever possible is recommended. NBSs could be cost-effective measures and they play a key role in sustainable flood risk management.

- Since climate change is a risk driver, attention should be paid to **changing trends in the risk landscape.** More consideration of prevention measures for floods, drought and forest fire risks should be stimulated.

- The alignment process between risk/hazard maps and territorial planning is unclear and needs to be further clarified and strengthened. Efforts at a more effective **linking of territorial planning to risk assessments** should be enhanced at local and county level, based on existing legislation. Risk and hazard maps at **higher resolution** are needed for land use and urban planning purposes.

- The engagement of the **scientific community** in DRR/DRM activities should be formally clarified. The **science-policy interface** needs to be strengthened to match the needs of policy makers with the research activities.

- Opportunities to further extend **DRM research** and understanding are presented in the EU's available funding for research and in the EU's innovation and knowledge services, which should be exploited.

- **Training programmes** addressing disaster risks in **schools** should be further improved to increase their effectiveness.

RISK PREPAREDNESS

- The implementation of an **impact-based** and **multi-hazard EWS** is highly recommended.

- **Monitoring extreme weather events**: IT infrastructure should be updated and upgraded to improve forecasts.

- **EWS floods**: it suffers from instrument limitations and ageing infrastructures. "New generation" **sensors** for forecasting, monitoring, and now casting in near real time should be added. Also, an additional number of **trained forecasters** should be included in the forecasting centres to increase EWS's technical capabilities and efficiency.

- The **criteria** for issuing public alerts via **RO-ALERT** should be refined by establishing appropriate trigger thresholds (preferably considering impact-based thresholds).

- The implementation of an **e-learning platform** to support a comprehensive **disaster risk management training program** for military staff and civilians at different levels and for different stakeholders would allow a larger number of professionals to be trained in a more cost-effective way.

- There is a need to **improve and increase the training facilities dedicated to disaster risk management** for all types of authorities and organisations.

- A specific framework dealing with the **engagement of civil society organisations** in disaster risk management activities should be formalised to clarify the different roles and responsibilities, along with the manner of activation and collaboration. A targeted **training programme** could be implemented to facilitate its interoperability and establish a common basis for collaboration. The network of civil society organisations dealing with the refugee crisis should be further exploited: their **support in prevention activities** could enhance effectiveness, as they are well connected to local communities.

- **Additional national incentives** should be defined and put in place to **attract young people to the volunteer system**, in addition to those provided by the local level (such as discounts on medical assistance).

- The usage of **IT collaborative platforms** should be extended to the other phases of the disaster risk management cycle, such as prevention.

Rezumat Executiv

Sistemul românesc de protecție civilă reprezintă o organizație modernă și integrată, în rețea, cu roluri și responsabilități descentralizate și o coordonare orizontală și verticală eficientă. Acesta este rezultatul unei transformări radicale inițiate la începutul anilor 2000, de la o arhitectură centralizată, subordonată Ministerului Apărării și axată pe răspuns, la consolidarea managementului riscului de dezastre prin prevenirea riscurilor, pregătire, răspuns și recuperare.

Această schimbare de paradigmă de la abordarea gestionării dezastrelor la o abordare a gestionării riscului de dezastre a fost inițiată de guvern prin consolidarea cadrului legislativ care se ocupă de acțiunile de prevenire și prin adaptarea structurii instituționale pentru a facilita o mai mare cooperare și colaborare între părțile cheie. Recent, eforturile guvernului au fost susținute, în plus, de numeroase inițiative de asistență tehnică menite să dezvolte cadrul strategic al României pentru gestionarea și reducerea riscurilor de dezastre în conformitate cu standardele internaționale.

Bunele practici și recomandările existente sunt detaliate în raport în patru secțiuni principale, care reprezintă tematica selectată pentru această analiză:

- Gestionarea reducerii riscurilor de dezastre,
- Planificarea gestionării riscurilor,
- Prevenirea riscurilor,
- Pregătirea pentru riscuri.

Cele mai importante puncte sunt rezumate mai jos:

GESTIONAREA

- România dispune de o **bază legislativă solidă**, care acoperă toate fazele ciclului de gestionare a riscului de dezastre - deși, din punct de vedere istoric, s-a axat în principal pe pregătire și răspuns - și stabilește autoritățile responsabile cheie pentru riscurile majore.

- Ca structură de bază a Sistemului Național de Management al Dezastrelor, **Departamentul pentru Situații de Urgență**, la nivel strategic, are atribuții de coordonare pentru prevenirea și gestionarea situațiilor de urgență, asigurând și coordonând resursele umane, materiale, financiare și de altă natură necesare pentru a face față situațiilor de urgență, inclusiv primul ajutor calificat, serviciile de ambulanță/salvare aeriană de urgență, asistența medicală de urgență în cadrul unităților de urgență și al compartimentelor de urgență până la spitalizare, precum și serviciile publice de salvatori montani și speologi.

- După semnarea **Acordului Sendai** pentru Reducerea Riscului Dezastrelor a fost inițiată o schimbare de paradigmă de la o abordare de gestionare a dezastrelor la o **abordare de gestionare a riscului de dezastre**, prin consolidarea cadrului legislativ care se ocupă de acțiunile de prevenire și adaptare a structurii instituționale pentru a facilita cooperarea și colaborarea între părţile cheie.

- O **abordare la nivelul întregii societăți** stă la baza schimbării de paradigmă, după cum o demonstrează eforturile extinse ale guvernului de implicare a tuturor sectoarelor în activitățile de gestionare a riscurilor de dezastre și în planificarea strategică.

- Un proces eficient de implicare a **sectorului privat** în domeniul gestionarii a riscurilor de dezastre este deja în curs de desfășurare, cu rezultate excelente.

- **Coordonarea și cooperarea orizontală** în cadrul guvernului central și între organizațiile părților cheie interesate sunt bine gestionate pentru intervenția în situații de urgență.

- O bună **cooperare verticală de sus în jos**, de la nivel național la nivel local, este deja în vigoare.

- Înființarea unei **Platforme naționale pentru reducerea riscului de dezastre** amplă și bine structurată a facilitat schimburile între părţile-cheie, oferind deja rezultate valoroase.

- Este în curs de desfășurare un proces general care vizează obținerea unei **mai mari sistematizări, coerențe și intersectorialități** al politicilor și strategiilor naționale.

- România a utilizat **resurse considerabile sub formă de granturi și împrumuturi** de la fondurile europene, Banca Mondială și alte surse internaționale pentru îmbunătățirea gestionării riscurilor de dezastre și pentru a investi în reducerea riscurilor.

PLANIFICAREA GESTIONĂRII RISCURILOR

- **Planul național de gestionare al riscului de dezastre** este bine structurat și abordează cele trei faze ale ciclului de gestionare al riscului de dezastre (prevenire, pregătire și răspuns), prezentând atât măsuri generale, cât și măsuri sectoriale în legătură cu principalele pericole identificate în urma rezultatelor evaluării naționale ale riscurilor.

- **Rolurile și responsabilitățile** părților interesate în gestionarea fiecărui tip de dezastru sunt bine definite și reglementate prin lege. Pentru fiecare tip de pericol, este identificată o **autoritate principală**, precum și instituții cu rolul de a sprijini și de a colabora cu aceasta în gestionarea riscului atribuit. Acest lucru este relevant și pentru planificarea fazei de răspuns la dezastre și a rolurilor/responsabilităților în caz de urgență.

- **Procesul evaluării naționale a riscurilor** a fost un declanșator pentru mai multe activități de evaluare a riscurilor și o bună colaborare cu comunitatea științifică. **Proiectul RO-RISK** a efectuat evaluări ale riscurilor pentru 10 pericole-cheie în parteneriat cu 13 institute de cercetare, universități și autorități.

- Existența **Centrelor operative pentru situații de urgență** cu activitate permanentă în cadrul diferitelor ministere este un bun exemplu de colaborare a capacităților tehnice în cadrul structurilor guvernamentale naționale. Printre rolurile acestora se numără furnizarea de date operaționale către Inspectoratul General pentru Situații de Urgență, în situații de urgență și sarcini legate de monitorizare, evaluare, avertizare, alarmare.

- Importanța **coerenței politicilor** între reducerea riscului de dezastre, adaptarea la schimbările climatice și obiectivele de dezvoltare durabilă este recunoscută de documentele strategice recente ale României, cum ar fi Strategia Națională de Reducere a Riscului de Dezastre și Strategia Națională de Adaptare la Schimbările Climatice 2022-2030.

PREVENIREA RISCURILOR

- **Inundații -** în cadrul celui de-al doilea ciclu de punere în aplicare a Directivei UE privind inundațiile, a fost implementat la nivel național un **catalog de măsuri de prevenire și**

de protecție, împreună cu un vizualizator web disponibil publicului, cu hărți și fișe de date pentru fiecare dintre cele 526 de zone cu risc semnificativ de inundații identificate.

- **Cutremure - Strategia națională de reducere a riscului seismic** a fost aprobată în noiembrie 2022. Aceasta include dezvoltarea și implementarea unor programe de investiții sectoriale care vizează consolidarea fondului construit vulnerabil existent, dezvoltarea unui mecanism de monitorizare a programelor și integrarea includerii multiriscurilor în planificarea teritorială.

- În cadrul strategiilor și planurilor sectoriale există **măsuri structurale** de prevenire pentru diferite pericole.

- Guvernul a stabilit măsuri de **consolidare a clădirilor** care urmează să fie puse în aplicare prin diferite programe de finanțare (de exemplu, "Programul de consolidare a clădirilor rezidențiale cu mai multe niveluri").

- **Infrastructura verde și soluțiile bazate pe natură** sunt promovate în planurile de gestionare a riscului de inundații elaborate în cadrul celui de-al doilea ciclu de punere în aplicare a Directivei UE privind inundațiile și în Strategia națională de adaptare la schimbările climatice, care nu au fost încă puse în aplicare.

- Mai multe **campanii naționale de sensibilizare** au fost implementate de-a lungul anilor, vizând diferite subiecte. Se încearcă să se aducă acțiunile de conștientizare mai aproape de cetățeni prin punerea în aplicare a unor parteneriate de succes între sectorul public și cel privat (de exemplu, "Be Prepared Caravan", "Mobile Centre for Preparedness") și prin colaborări cu organizații ale societății civile și ONG-uri.

PREGĂTIREA PENTRU RISCURI

- România a pus în **aplicare sisteme de alertă timpurie sectoriale** pentru diferite tipuri de pericole: fenomene meteorologice extreme, inundații și cutremure.

- **Evenimentele meteorologice extreme**: sisteme de alertă timpurie complet operaționale, furnizând prognoze și avertizări/alerte centralizate. Există o colaborare solidă între Administrația Națională de Meteorologie și guvernul central (și Inspectoratul General pentru Situații de Urgență, în special).

- **Inundații**: sisteme de avertizare timpurie 24/7 sunt operațional, cu o legătură directă între ANM și Centrul Național de Prognoze Hidrologice. Schimbul regulat de date cu țările vecine pentru bazinele hidrografice transfrontaliere și procesul de estimare a extinderii inundațiilor derivat din Copernicus sunt bune practici.

- **Cutremure**: sisteme de avertizare timpurie, care permit o avertizare prealabilă de 20"- 40" pentru Inspectoratul General pentru Situații de Urgență, operatorii de infrastructură critică și utilizatorii selectați.

- Un sistem public de avertizare prin difuzare celulară **(RO-ALERT)** este operațional și bine cunoscut de către populație. Sistemul a fost utilizat cu succes în ultimii ani pentru a alerta și a informa populația cu privire la scenarii specifice de risc major așteptate și/sau în curs de desfășurare.

- **Programele standardizate** ale cursurilor de formare în domeniul gestionării riscurilor de dezastre pentru personalul militar și civil au fost stabilite prin lege și asigură o formare coerentă pe întreg teritoriul țării. Conținutul cursurilor de formare este **actualizat după evenimente majore**.

- A fost instituit un **mecanism de formare obligatorie pentru primari** și personalul local al acestora, axat pe subiecte legate atât de răspuns, cât și de prevenire și pregătire. Reprezentanți ai Ministerului Afacerilor Interne și ai altor ministere relevante sunt implicați în calitate de lectori.

- Există o **bună cooperare** la nivel local, **între serviciile de urgență și activitățile economice** (inclusiv factorii de risc), unde serviciile private de urgență sunt obligatorii prin lege. Serviciile private de urgență sunt un instrument util pentru a evita suprasolicitarea celor locale.

- **Angajamentul cu societatea civilă** este pe drumul cel bun, fiind deja stabilite mai multe protocoale cu diferite organizații, atât în scopuri de răspuns, cât și de prevenire. Rezultatele excelente ale acestei colaborări au fost răspunsurile în situații de urgență recente și punerea în aplicare a platformei de colaborare.

Cele mai importante recomandări sunt rezumate mai jos:

GESTIONAREA

- Cadrul din **domeniul prevenirii** ar trebui să fie mai bine operaționalizat. Prevenirea riscurilor ar putea fi stimulată prin revizuirea rolurilor și responsabilităților la toate nivelurile de guvernanță.

- La **nivel local** ar trebui să fie sprijinit și întărit în continuare. Este necesar un proces de consolidare al **unei abordări de jos în sus**. Interesul la nivel local pentru activitățile de reducere al riscului de dezastru ar trebui stimulat prin promovarea **unui angajament pe termen lung față de prevenire**.

- **Perfecționarea coordonării verticale** prin furnizarea de materiale de formare și de îndrumare dedicate ar sprijini autoritățile locale să abordeze și să își îndeplinească sarcinile și să asigure coerența generală a activităților de reducere a riscului de dezastre/gestionare a riscului de dezastre.

- **Adoptarea oficială a Strategiei naționale de reducere a riscurilor de dezastre** este necesară pe termen scurt și ar trebui să sensibilizeze populația pentru a analiza Strategia națională de reducere a riscurilor de dezastre ca un angajament al întregii societăți. În plus, este extrem de important să se definească în mod clar asumarea **responsabilității** pentru proce-

sul global de punere în aplicare și monitorizare. Strategia națională de reducere a riscurilor de dezastre ar trebui să încurajeze previziunea și analiza sistematică a **riscurilor emergente**.

- Acoperirea financiară pentru operaționalizarea strategiei nu este asigurată de guvernul central, ceea ce impune ca fiecare entitate să elaboreze un plan de implementare financiară pentru a asigura alocarea adecvată a resurselor. Având în vedere acest lucru, ar trebui să se recomande cu insistență exploatarea în continuare a **diferitelor surse de oportunități de finanțare**.

- O **bază de date centralizată** a oportunităților de finanțare pentru reducerea riscului de dezastre ar putea ajuta părțile interesate să găsească și să aloce resurse financiare pentru punerea în aplicare a strategiei.

- Ar trebui definite și puse în aplicare **proceduri** pentru a asigura responsabilitatea interministerială a cheltuielilor în toate activitățile de reducere a riscului de dezastre/gestionare a riscului de dezastre.

- Este nevoie de un stimulent puternic pentru **achiziționarea de asigurări obligatorii**, care ar trebui promovat prin **campanii de sensibilizare**. Ar trebui perfecționate **procedurile operaționale** desfășurate de autoritățile locale (primarii) în timp ce solicită despăgubiri de la stat.

PLANIFICAREA GESTIONĂRII RISCURILOR

- Ar trebui să se convină și să se pună în aplicare formalizarea procedurilor care să asigure schimbul permanent de informații și **actualizarea periodică a evaluărilor de risc**.

- **Platforma națională pentru reducerea riscului de dezastre ar trebui să coordoneze și să dețină procesul de actualizare al evaluării naționale a riscurilor**, prin organizarea sarcinilor și a colaborării între diferitele părți și grupul de lucru național pentru evaluarea riscurilor, devenind pe deplin operațională.

- **Rezultatele evaluării riscurilor** ar trebui să fie mai bine **răspândite** în rândul cetățenilor: o abordare mai „prietenoasă" ar putea facilita o mai bună comunicare a rezultatelor evaluărilor imediate ale riscurilor. Punerea accentului pe consecințe în loc de cauze declanșatoare, adoptând o **abordare bazată pe impact**, este adesea mai ușor de înțeles pentru cetățeni.

- Sunt necesare proceduri și metode omogene de **colectare a datelor privind pierderile cauzate de dezastre**, o mai bună **partajare** și o **sistematizare** centrală. Punerea în aplicare a unui depozit național GIS de date și informații georeferențiate accesibile celor trei niveluri de responsabilitate operațională și părţilor (național, județean și local) ar putea contribui la efectuarea unei evaluări mai bune a riscurilor, o mai bună gestionare a riscurilor de dezastre și sporirea cunoștințelor științifice.

- Stabilirea **ordinii de prioritate a măsurilor** necesită dezvoltarea unei metodologii comune pentru toate riscurile. O metodologie clară de prioritizare a măsurilor din plan și strategie ar fi benefică pentru a **sprijini factorii de decizie** în identificarea urgenței și alocarea de fonduri în raport cu un anumit risc.

- Ar putea fi încurajată și mai mult **coerența politicilor** prin includerea principiilor de adaptare la schimbările climatice în planificarea reducerii riscurilor de dezastre și prin asigurarea faptului că punerea în aplicare a acestor strategii susține această sinergie.

PREVENIREA RISCURILOR

- **Conceptul de prevenire** din cadrul mai multor documente strategice, in România resimte o lipsă de înțelegere comună. Este nevoie de coerență în ceea ce privește definiția prevenirii în cadrul diferitelor strategii și planuri sectoriale.

- Activitățile de prevenire trebuie să fie **promovate** în continuare la toate nivelurile teritoriale, inclusiv prin furnizarea de orientări la **nivel local**. Un proces de **analiză cost-beneficiu** pentru a susține și justifica costul măsurilor de prevenire ar putea fi util în creșterea gradului de conștientizare.

- **Cutremure**: angajamentul și încrederea populației în **programele de modernizare** ar trebui să fie sporite prin inițiative specifice de conștientizare a riscurilor.

- **Inundații**: se recomandă promovarea **infrastructurilor ecologice și a soluțiilor bazate pe natură** ori de câte ori este posibil. Soluțiile bazate pe natură ar putea fi măsuri eficiente din punct de vedere al costurilor și ar putea juca un rol esențial în gestionarea durabilă a riscului de inundații.

- Având în vedere că schimbările climatice sunt un factor de risc, ar trebui să se acorde atenție **tendințelor de schimbare a peisajului de risc**. Ar trebui stimulată o mai mare luare în considerare a măsurilor de prevenire a riscurilor de inundații, secetă și incendii forestiere.

- Procesul de aliniere între hărțile de risc/pericol și planificarea teritorială este neclar și trebuie să fie clarificat și consolidat în continuare. Ar trebui intensificate eforturile de a **corela mai bine planificarea teritorială cu evaluările de risc** la nivel local și județean, pe baza legislației existente. Hărțile de risc și de pericol la o **rezoluție mai mare** sunt necesare în scopul utilizării terenurilor și al planificării urbane.

- Angajamentul **comunității științifice** în activitățile de reducere a riscului de dezastre/gestionare a riscului de dezastre ar trebui să fie clarificat în mod oficial. **Interfața știință-politică** trebuie consolidată pentru a corela nevoile factorilor de decizie cu activitățile de cercetare.

- Oportunitățile de a extinde în continuare **cercetarea** și înțelegerea în materie de **gestionare a riscului de dezastre** sunt prezentate în cadrul finanțării disponibile în UE pentru cercetare și în cadrul serviciilor de inovare și cunoaștere ale UE, care ar trebui exploatate.

- **Programele de formare** care abordează riscurile de dezastre în școli ar trebui să fie îmbunătățite în continuare pentru a le spori eficacitatea.

PREGĂTIREA PENTRU RISCURI

- Se recomandă cu insistență punerea în aplicare a unor **sisteme de avertizare timpurie bazate pe impact** și pe riscuri multiple.

- **Monitorizarea evenimentelor meteorologice extreme**: Infrastructura IT ar trebui să fie actualizată și modernizată pentru a îmbunătăți previziunile.

- **Sistemele de avertizare timpurie în caz de inundații**: suferă de limitări ale instrumentelor și de îmbătrânirea infrastructurilor. Ar trebui adăugați **senzori** de „nouă generație" de prognoză, monitorizare și, în prezent, avertizare în timp aproape real. De asemenea, în centrele de prognoză ar trebui inclus un număr suplimentar de **meteorologi instruiți** pentru a crește capacitățile tehnice și eficiența sistemelor de avertizare timpurie.

- **Criteriile** de emitere a avertizărilor publice prin intermediul **RO-ALERT** ar trebui să fie rafinate prin stabilirea unor praguri de declanșare adecvate (de preferință, luând în considerare praguri bazate pe impact).

- Punerea în aplicare a unei **platforme de e-learning** pentru a sprijini un program cuprinzător de **formare în domeniul gestionării riscurilor de dezastre** pentru personalul militar și civil la diferite niveluri și pentru diferite părți interesate ar permite instruirea unui număr mai mare de profesioniști într-un mod mai eficient din punct de vedere al costurilor.

- Este necesar să **se îmbunătățească și să se mărească facilitățile de formare dedicate gestionării riscurilor de dezastre** pentru toate tipurile de autorități și organizații.

- Ar trebui formalizat un cadru specific care să se ocupe de implicarea **organizațiilor societății civile** în activitățile de gestionare a riscurilor de dezastre, pentru a clarifica diferitele roluri și responsabilități, precum și modalitățile de activare și colaborare. Ar putea fi pus în aplicare un **program de formare** specific pentru a facilita interoperabilitatea și a stabili o bază comună de colaborare. Rețeaua de organizații ale societății civile care contribuie la gestionarea crizei refugiaților ar trebui exploatată în continuare: **sprijinul lor în activitățile de prevenire** ar putea fi foarte eficient, deoarece acestea sunt bine conectate cu comunitățile locale.

- Ar trebui definite și puse în aplicare **stimulente naționale suplimentare** pentru a **atrage tinerii în sistemul de voluntariat**, în plus față de cele oferite la nivel local (cum ar fi reduceri la asistența medicală).

- Utilizarea **platformelor de colaborare IT** ar trebui extinsă și la celelalte faze ale ciclului de gestionare ale riscurilor de dezastre, cum ar fi prevenirea.

1 Introduction

1.1 - Peer review of disaster risk management capabilities

Peer review is a common working method for assessing policy performance and implementation. The European Union Civil Protection Mechanism (UCPM) introduced peer review as a means for improving risk management capabilities[1], stimulating exchange of knowledge, identifying good practices of policy and operations, and fostering integration of risk prevention, preparedness and response. The EC General Directorate for Civil Protection and Humanitarian Aid Operations (ECHO) operates the UCPM Peer Review programme[2]. Since 2013, fourteen countries completed the voluntary peer review assessment, with the objective of facilitating the sharing of good practices in disaster risk management through an analysis carried out by experts (the "peers") selected from different UCPM countries.

1.2 - Scope of the review in Romania

Romania, represented by the General Inspectorate for Emergency Situations (GIES), submitted a request for UCPM peer review in May 2022. The scope of the assessment was co-designed through dialog and consultations which involved organisations and stakeholders of the national civil protection system. ECHO appointed four peers through a call for interest circulated among the UCPM countries. During a field visit organised by GIES and held in October 2022, the peers engaged in discussions with representatives of more than 30 ministries, specialised agencies, academic institutions and civil society organisations (see Annex 4 for a comprehensive list).

The 2021 Peer Review Assessment Framework [1] elaborates on the thematic areas and topics pertaining to risk management capabilities. Countries may choose between a comprehensive review of all areas (see Figure 3): risk governance, risk assessment, risk management planning, risk prevention, risk preparedness, emergency response, recovery and lessons learned – or a tailored thematic review focusing on a relevant selection of these. Romania chose a thematic review focussed on three areas of interest: risk governance, risk management planning and risk prevention. This report is structured accordingly – Chapters 2-4 analyse the policies and practices in the chosen thematic areas. Chapter 5 addresses arrangements which usually fall under risk preparedness, but which are handled in the Romanian risk regulations as a part of the risk prevention. To preserve the consistency with the past and future peer reviews and at the same time fulfil the agreed scope of the peer review in Romania, Chapter 5 addresses risk preparedness to the extent of complementing the previous chapters.

UCPM peer review in the context. UCPM Peer review is not the only initiative for assessing the progress made on DRR in Romania. Romania is undergoing a review of its DRR Strategy, conducted by the United Nations Office for Disaster Risk Reduction (UNDRR), Regional Office for Europe & Central Asia (ROECA). Moreover, the World Bank has developed a draft National Disaster Risk Reduction Strategy and Action Plan that will undergo national consultation and review prior to its adoption by the Romanian Government. UCPM Peer Review is complementary to these initiatives. It addresses accomplishments under the Sendai Framework, but in the context of existing operational arrangements under the UCPM and other European DRR policies. The good practice examples and recommendations described hereafter can serve as inspiration and practical guidance for implementing the DRR Strategy and Plan.

1 Risk management capabilities are defined as the ability of a Member State or its regions to reduce, adapt to or mitigate risks, identified in its risk assessments to levels that are acceptable (UCPM Article 4, point 8).

2 https://civil-protection-humanitarian-aid.ec.europa.eu/what/civil-protection/peer-review-programme_en.

1.3 - Romania – economy, society and environment

Romania is a member of the European Union (since 2007), of the United Nations (since 1955) and of NATO (since 2004).

- **Administrative government.** Romania is a Parliamentary Republic with a semi-presidential regime. The President is directly elected for a five-year mandate. The 465 members of its bi-cameral parliament are elected for a four-year mandate. The intermediate administrative-territorial level is made up of 41 counties (corresponding to NUTS3[3]), with elected county councils. Appointed prefects represent the government at the county level. The lower-local administrative level is made up of 2,861 townships, 217 towns and 103 municipalities (major towns with special status). The capital, Bucharest, holds competences of both, a county and a city. Local and county councils are self-governing, deliberative, local administrative authorities. Eight development regions (NUTS2) have been designated for the purpose of regional development, without administrative-territorial powers.

- **Economic development.** Romania is a developed, high-income country, ranked 53rd in the Human Development Index (in 2021). The Romanian economy is the 13th largest in the EU-27 and second largest (after Poland) among the countries that have joined the EU after 2004. Since the 2000s, the gross domestic product (GDP) has grown steadily at higher than EU average rates, except during the 2008-2010 period of economic and financial crises. In 2019, GDP per capita (in purchasing power standard, PPS) was 72% of the EU average – up from 26% in 2000 – but with large regional disparities. Whereas in Bucharest the regional GDP per capita is almost double the EU average, other counties lag behind and many fall under 50% of the EU average. The less developed regions lack transport infrastructure and have low levels of employment in high-technology sectors [2]. The economy shrank by 3.7% in 2020 as a result of the Covid-19 pandemics but recovered in 2021 (+5% in 2021). Due to high energy prices in late 2021 and Russia's invasion of Ukraine 2022, real GDP is expected to grow at a slower pace (2%) in 2022 and 2023. Romania received EUR 14.2 billion in grants and 14.9 billion in loans under the Recovery and Resilience Facility (RRF), earmarked for green and digital transformation.

- **Social cohesion.** The current population of Romania is 19 million, down from 22.5 million in 2000, and is projected to further decrease to 16 million by 2050. The downward population trend is determined by outward migration and low fertility. An estimated 2.65 million working age Romanians have emigrated since the 1990s, primarily to Spain and Italy [3]. The median age increased from 40.7 in 2014 to 42.8 in 2022, and in some counties, such as Teleorman, to higher than 48. The age dependency index is 53 - up from 47 in 2014 – and in Teleorman 67.5. This means that the ratio between working-age and economically inactive young and elderly people is 2:1 or up to 3:2. Depopulation and aging is markedly pronounced in economically lagging rural and mountain regions, which also suffer from unequal access to health and education services. Romania also has the highest shares of people at risk of

3 According to the EUROSTAT Nomenclature of Territorial Units for Statistics (NUTS), a geocode standard for referencing the subdivisions of countries for statistical purposes.

poverty or social exclusion[4] in the EU (34%, compared to EU average of 22%). The poverty rate is even higher among children (41.5% vs 24% EU average), the elderly and people with disabilities. Income inequality[5] is high: people in the top 20% of the income distribution levels receive 39.8% of equalised disposable income (EU average 38.1%), whereas those in the bottom 20% levels of income distribution receive only 5.6% (EU average 7.9%).

- **Environmental capital.** Romania has a rich biodiversity and a high proportion of intact natural ecosystems. Natural forests and important biological corridors cover 35.5% of the country's land surface[6], among which lie the largest virgin forests in the EU. Romania falls almost entirely within the Danube River basin district, which covers 97.4% of the country (238,397 sq.km) and is split into seven sub-basins; the annual renewable water average is 39,920 million cubic meters. The Romanian coasts are 244 km long, facing the Black Sea, and represent 7.65% of its national border. Romania has more than 1,600 natural protected areas, including the largest natural wetland in Europe, the Danube Delta. The country's terrestrial protected area amounts to 56,000 sq.km (23.5% of land territory), and the marine protected area covers 6,358 sq.km (21.5% of national marine waters). The recent implementation of the Forest Guard and the National Environmental Guard (NEG) has been crucial in forest protection. Overall, Romania is party to most global and regional multilateral environmental agreements (MEAs), and its legislation is harmonized with EU environmental legislation. However, the implementation of such legislation remains the main challenge; the country records the highest number of environmental infringements within the EU [4].

4 Eurostat calculates the risk of poverty as a combination of (1) equivalised disposable income that is below the at-risk-of-poverty threshold, (2) severe material and social deprivation (i.e. inability to afford at least seven out of thirteen deprivation items that are considered necessary for an adequate quality of life, and (3) persons aged less than 65 years living in a household with very low work intensity (i.e. in which adults worked equal to or less than 20% of their total combined work-time potential during the previous twelve months). Source: Eurostat, 2021

5 Eurostat - Income distribution and inequality

6 Eurostat - Share of forest area

2 Governance of Disaster Risk Reduction

2.1 - Governance framework

- Over the past two decades, Romania has reformed and mainstreamed the legislative framework for disaster risk management. While it leans more towards preparedness and response, prevention is stimulated in sectoral legislations and specific hazard-oriented regulations.

- Horizontal coordination and cooperation within central government and across key stakeholder organisations are well managed for emergency response.

- Vertical coordination is hampered by limited administrative, technical and financial capacities to fulfil the tasks and responsibilities at lower, and especially local, governance levels. Risk prevention could be stimulated by revising the roles and responsibilities across all governance levels and equipping the lower-level authorities with adequate resources.

Civil protection is a public service, a component of and pursuant to national security. Since the early 2000s, Romania has implemented a radical transformation of its civil protection, away from a centralised architecture subordinated to defence, to a modern, networked organisation with decentralised roles and responsibilities, and effective horizontal and vertical coordination. The ultimate aim of the reform, not yet entirely accomplished, is to mainstream disaster risk reduction across all development policies and programs, and consolidate risk prevention, preparedness, response and recovery into a single disaster risk entity. Romania is a signatory of the UN Sendai Framework for Disaster Risk Reduction 2015-2030 (SFDRR) and of its predecessor, the Hyogo Framework for Action 2005-2015 (HFA). The principles, goals and objectives of the UN DRR Frameworks and those of the Union Civil Protection Mechanism (UCPM) are to be transposed into national civil protection strategies and plans.

The national civil protection system – in Romania the National Emergency Management System (NEMS) – was instituted by Government Emergency Ordinance 21/2004. It consists of governmental structures, agencies and organisations sanctioned to manage civil (i.e. non-military) emergencies, defined as those threatening the life and welfare of people, the environment, material and cultural values. The NEMS is made up of:

- Committees for emergency situations, established at various governance levels, from the national and ministerial level to the county and local levels.
- The Department for Emergency Situations (DES) is the specialized body of the central public administration, subordinate to the Ministry of Internal Affairs (MoIA). It manages emergency situations at the national level, coordinating and integrating the main response structures as the lead structure in the National Emergency Management System (NEMS) and component of the National Defense System.
- The General Inspectorate for Emergency Situations (GIES), a specialized agency subsidiary to the Ministry of Internal Affairs, which also manages the national operations centre, inspectorates for emergency situations established at the county level and in Bucharest city as decentralised professional emergency services, which also manage county operational centres, and
- Incident commanders (from MoIA) ensuring unified coordination of emergency actions.

The National Committee for Emergency Situations (NCES) is led by the Prime Minister and the Minister of Internal Affairs. The Minister for Development, Public Works and Administration, and the Head of the Department for Emergency Situations are vice-presidents. The Law on Civil Protection

(481/2004) specifies organisation and implementation of civil protection activities, as well as duties and responsibilities of all concerned parties, including public administrations, other public organisations, private companies, employees and citizens. A range of laws, ordinances and government decisions (GDs) has completed and refined the National Emergency Management System. More recently, GD 557/2016 on disaster risk management has identified primary and secondary authorities per hazard-type to define more clearly the roles and responsibilities of different entities within each phase of DRM. It has also laid down the obligation to draw up sectoral plans for specific emergency situations management.

Since the early 2010s, Romania has sought to establish a National Platform for Disaster Risk Reduction, to complement the civil protection organisation, to foster the shift from emergency management to a holistic and whole-society approach to disaster risk management. Initially, the NCES has fulfilled the role of the National Platform. However, it soon became clear that there was a need for a more inclusive entity with fewer formal decision-making rules and processes. Therefore, the Government Decision 768/2016 established the organization and the functioning of the National Platform for Disaster Risk Reduction, comprised of relevant national authorities, risk management working groups and civil society representatives. The National Platform is described more in depth in section 2.4.

In addition to the above emergency risk governance regulations, sectoral legislative acts and strategies address horizontal cooperation in disaster risk management activities for several key hazards, such as floods, drought, landslides and earthquakes. Annex 2 provides a non-comprehensive list with the key legislation according to different hazard-types.

In relation to vertical cooperation, the governance framework establishes a pivotal role for the local level, in both the response and the prevention phase. The subsidiarity principle underpinning the Romanian disaster management system foresees the local level as the prime responsible authority in charge of response and coordination activities. Furthermore, the local level also defines and implements land-use and spatial strategies and plans on the territory, also considering Law 575/2001 approving the National Territorial Development Plan. Spatial and land-use strategies are recognized as fundamental prevention measures. In view of its primary role, the local level should be further supported and empowered by the national level in advancing its technical, administrative, and financial capacities. The provision of dedicated trainings and guiding material would support local authorities to address and fulfil their duties and to ensure overall consistency in disaster risk reduction and management activities.

2.2 - Disaster Risk Reduction Strategy

- A draft National Disaster Risk Reduction Strategy has been designed in collaboration with the World Bank and through extensive consultation processes involving public institutions, private sector and civil society. The government should adopt and implement the Strategy.

- The Strategy covers eleven major hazards - earthquakes, floods, droughts, extreme weather events, wildfires, landslides, epidemics, epizootics and zoonoses, major industrial accidents involving dangerous substances, nuclear and radiological accidents, and major transport accidents involving dangerous goods.

- A draft Action Plan implementing the Strategy lays down timelines for implementation, responsibilities, and indicators for monitoring the progress.

The draft National Disaster Risk Reduction Strategy 2022-2035 (NDRRS) has been developed in collaboration with the World Bank[7]. The aim of the Strategy is to transpose the principles of multisectoral, multi-stakeholders and a whole-society proactive approach to DRR and to build a disaster-resilient society. The Strategy focuses on specific areas to be addressed, including disaster prevention, preparedness, response, and risk reduction, as well as cross-cutting issues, such as investment priorities for risk awareness, financing mechanisms, climate change, civil protection, social protection, and opportunities to enhance public-private partnerships for building resilience.

The NDRRS's structure is aligned with the Sendai Framework's priorities for action, the Sustainable Development Goals (SDGs) [5], and policy priorities set forth by the European Union. The Strategy considers 11 hazard-types: earthquakes, floods, droughts, extreme weather events, wildfires, landslides, epidemics, epizootics and zoonoses, major industrial accidents involving dangerous substances, nuclear and radiological accidents, and major transport accidents involving dangerous goods. In the selection process, the key risks identified in the national risk assessment (RO-RISK project [6], see Chapter 3) were considered, in addition to those defined in the risk management legislation (GD 557/2016). The Strategy should encourage systematic foresight and analysis of emerging risks, as well as a more transparent and inclusive risk identification process in the future.

A technical advisory group supported development of the Strategy and oversaw the engagement of all key stakeholders. An extensive public consultation process was carried out, involving more than 350 representatives of the private and public sectors at different administrative-territorial levels, including civil society organisations, private sector representatives and academic institutions. Competent authorities were engaged in drafting the Strategy. Feedback on the interim draft report was collected by 47 stakeholders, with the aim of consolidating the final version of the report. The final draft of the Strategy is to be concluded in May 2023, after the integration of the recommendations from the peer review mission and the UNDRR strategy assessment exercise. The legislation process for its formal adoption is expected to be concluded by the end of 2023.

The financial coverage for implementing the Strategy is not provided by the central government, and so each entity must draw up a financial implementation plan to ensure adequate resource allocation. In view of this, a further exploitation of different funding sources is highly recommended.

The NDRRS is complemented by a draft Action Plan covering short (2023-2026), medium (2026-2030) and long-term (2030-2035) actions [7], annexed to the Strategy, which provides expected results, and identifies timeline of implementation, responsible stakeholders, and indicators for the monitoring phase, which will be led by the MoIA and its subordinated structures, while no specific monitoring strategy has been envisaged. Besides this, sectoral implementation plans are expected to be drafted by key stakeholders.

This Action Plan was preceded by an analysis of the legal and institutional framework of DRR in Romania; a study on DRR strategies in 11 other countries among EU Member States, European and non-European countries; and online knowledge exchanges with six of them, to identify international

7 The NDRRS was developed under the Reimbursable Advisory Services Agreement on Disaster Risk Reduction Strategy for Romania.

best practices in drafting and implementing the national strategy that could be applied in Romania. As part of the Advisory Services Agreement, training for GIES staff, National Emergency Management System (NSES) and the National Platform for DRR on how to use the Strategy and Sendai monitoring tools is to be planned after the approval of the Strategy by the Romanian government.

Besides the NDRRS and its action plan, other relevant national strategies and plans related to DRR include, among others, the National Strategy for Civil Protection (2005), the National Strategy on Climate Change for 2013-2020 [8], the Flood Risk Management Plans drafted according to the EU Floods Directive (2007/60/CE) [9], the National Plan for Resilience and Recovery 2021-2026 [10] structured on the six pillars provided by the EU Recovery and Resilience Facility (RRF) Regulation [11], and the National Strategy for the Protection of Historical Monuments 2022-2032, and the National Disaster Risk Management Plan [12], [13].

2.3 - Institutional framework

- The National Emergency Management System is well-articulated and complex. Capabilities at local level should be improved.

- Permanent and temporary response management structures established at different levels are well coordinated. Centres for Coordination and Management of Intervention have proved effective in recent emergencies, such as Covid-19 emergency and the Ukrainian refugee crisis.

- The institutional arrangements for the prevention and preparedness phases of the disaster risk management cycle are designated to complement the emergency response but are hazard specific and fragmented.

The National Emergency Management System (NEMS) involves many organisations at the different territorial governance levels (from national to county and local administrative bodies) and institutes a shared inter-agency responsibility for disaster management. While the responsibility for coordinating response actions falls under the MoIA, depending on the severity of the emergency, NEMS entities at different levels are activated. Components of the NEMS include both permanent and temporary entities, which are activated only in case of emergency.

The permanent entities include:

- The Department for Emergency Situations (DES) is an operational structure without legal personality, established in 2014, and is led by one of the secretaries of state of the MoIA (Figure 4). It is made up of the Directorate General for Civil Protection, the Directorate for Decisional Support, and the Directorate General for Medical Emergencies. Its functions include: coordinating emergency management actions; coordinating activities in the field of community resilience; integrating prevention, preparedness, and response actions in emergency situations; implementing projects; methodological coordination and evaluation of professional training and education activity; coordinating the activities related to international assistance/support; and public communication in the event of emergencies and disasters.
- The General Directorate for Civil Protection (GDCP), established in 2021 under the DES, oversees the coordination of the obligations in the field of civil protection (Figure 4). Its functions

include preventing and reducing disaster risk, improving community resilience, protecting human health, assets, and the environment against disasters and armed conflict, and assisting disaster victims.

- The General Inspectorate for Emergency Situations (GIES) is a specialised body under the MoIA, which ensures the enforcement of legislation in the fields of protection of life, property, and the environment against fires and disasters, as well as implementing civil protection measures and emergency management.
- Professional and voluntary emergency services.

Among the temporary structures and components, activated upon emergency events:

- The National Committee for Emergency Situations is led by the Prime Minister. It proposes when to establish a state of emergency, decides to request/provide international assistance, and coordinates at national level the management of emergency situations. Ministerial Committees, County Committees, and Local Committees inform the National Committee on potential emergencies, assess the level of the ongoing/foreseen emergencies, draft regulations on DRM within their jurisdictions, and approve plans to ensure necessary resources for emergency management at their respective level.
- The Centres for Coordination and Management of Intervention (National and County, see BOX 1). The Centres aim at ensuring an integrated, timely and permanent coordination of response actions in case of major disasters.
- County/local Committees for emergency situations.
- Emergency operative centres (GD 1491/2004).
- Incident commanders, included in the emergency operations centres, who ensure the unified coordination of the action of all forces involved in the actions on the field.

The institutional framework dealing with disaster management is complex, involving different institutions and actors at different territorial levels in relation to the type and scale of the emergency.

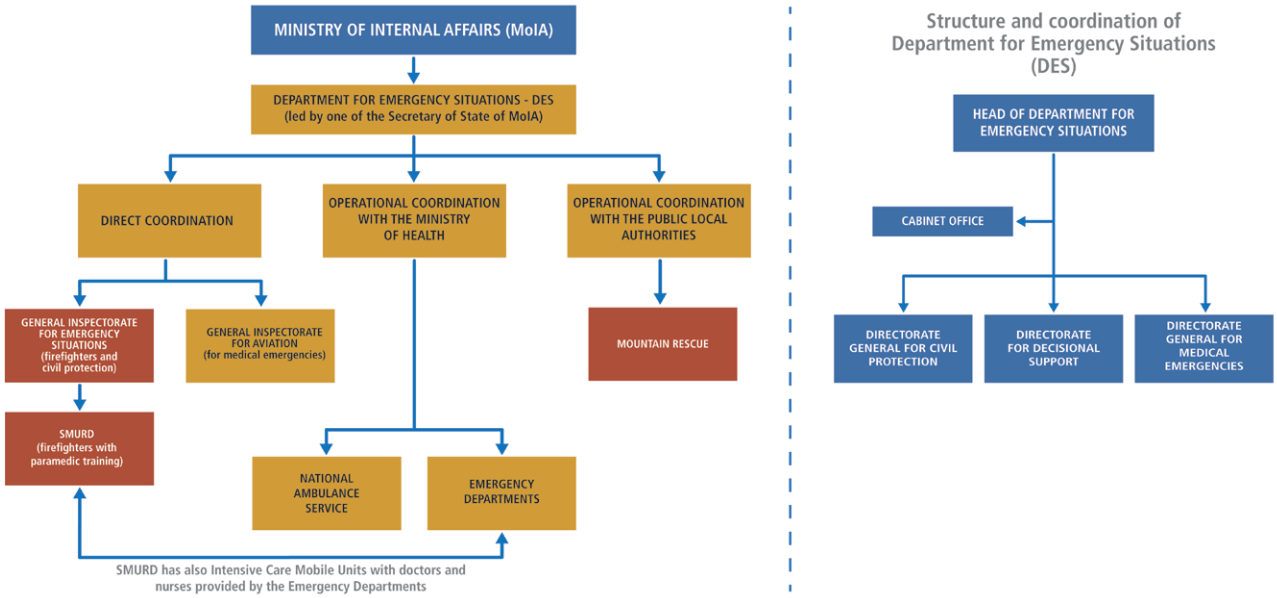


Figure 4 - Components and organisation of the NEMS (left) and structure and coordination of DES (right).

Furthermore, in recent years additional structures have been added (such as the GDCP), making the framework and its application even more complex. Simplifying and restructuring the different roles and responsibilities of both permanent and temporary components and their relationships can be helpful in enabling different stakeholders, including the civil society, to acquire a greater understanding of the system. An adequate level of knowledge of the DRM system is pivotal for enhancing a whole-society approach and initiating an advanced process of citizen empowerment in DRM.

The institutional framework dealing with the non-response phases of disaster risk management is hazard-specific. For each key risk, a flagship entity has been identified as a leading authority for defining and implementing prevention measures. More details on roles and responsibilities of different institutions on key risks are provided in Chapter 3.

BOX 1 - National Centre for Coordination and Management of Intervention

The National Centre for Coordination and Management of Interventions (NCCMI) was established by Government Emergency Ordinance 21 of April 15, 2004. The NCCMI is a temporary structure activated in case of major emergencies when the response phase requires strong cross-sectoral coordination capacities, acting as a decision support hub to ensure a single command and control chain. The centre is well-equipped and located outside Bucharest to provide a secure place in case of earthquakes, which represent the major risk for the capital city. Until March 2020, the venue of the National Centre was mainly used for conducting exercises (such as the 2018 major exercise on seismic risk, aimed at testing the response operating procedures of the key authorities in charge of emergency management and response capabilities of GIES). In March 2020 the NCCMI was activated to deal with the Covid-19 emergency: more than 60 representatives from the DES, GIES, the National Defence, the Ministry of Health and other entities involved in disaster management joined the Centre to ensure unified and effective coordination of response operations. Following the successful experience and considering the lessons learned in 2021, in February 2022 the Centre was activated to coordinate the massive in-flux of Ukrainian refugees triggered by the Russian war of aggression against Ukraine. The logistical hub was established from day 1 of the conflict to provide the refugees with shelter, food, and transportation to other destinations. On March 9, 2022 the humanitarian hub was rendered operational by joint efforts of the Department for Emergency Situations, the General Inspectorate for Emergency Situations, the Ministry of Defence, and the Suceava County Council. Thanks to the activation of the NCCMI, an effective coordination system was established to guarantee an overall management of response operations and facilitate the assistance offered and provided by other Countries, Romanian institutions, volunteers associations, private sector companies, and civil society. Tools to support the coordination activities were implemented and used within the NCCMI, such as shared databases and a decisions support platform to match offers for accommodations and needs of Ukrainian families.

Figure 5 - Visit to the National Centre for Coordination and Management of Intervention during the peer review mission.

2.4 - Coordination and partnership

- A National Platform for DRR is established by law. It is well-defined and promotes a whole-society approach, engaging key actors from public authorities, private companies, and civil society. Its effectiveness is still limited, in part because of the high-level operating procedures underpinning its functioning.

- Both political and technical representatives participate in the Platform. Interinstitutional technical working groups are established to fulfil specific objectives needed to implement the NDRRS, such as the National working group on risk assessment (GLERN). Homogeneous approaches and framework are needed within the Platform to strengthen disaster risk knowledge and management.

- The Platform has a key role in implementing the NDRRS. Priorities of actions, monitoring processes and financial support for the Platform's activity are to be further clarified.

The National Platform for Disaster Risk Reduction (NPDRR) was formally set up by Government Decision 768/2016. It provides a space for collaboration and knowledge exchange among all involved actors – government, public administration, civil society, research institutes, and academic institutions – as well as opportunities to meet, discuss and make recommendations related to disaster risk management, community resilience and actionable solutions for DRR. The NPDRR has an advisory role in establishing strategies and programmes on DRR and builds on 3 main pillars: the National Committee for Emergency Situations, technical and scientific support groups, working groups dedicated to specific risks, and representatives of the civil society.

The working groups focused on specific hazard-types are coordinated by the head of the public authority responsible for managing the respective type of risk (GD 557/2016), while the secretariat coordinating the National working group on risk assessment (GLERN) is assured by GIES.

Key tasks of the NPDRR are:

- Upgrading the understanding of risk and quality of risk assessments.
- Enhancing disaster risk management capabilities of the Romanian DRM system by promoting an interinstitutional collaboration and cooperation, as well as a whole-society approach.
- Promoting a systemic approach in disaster risk management activities.
- Encouraging investments in structural and non-structural measures to reduce disaster risk and increase resilience.
- Improving training of first responders to ensure an effective rapid response to disasters at all territorial levels.
- Promoting a build back better and "sustainable reconstruction" approach in the post-disaster phase.

The NPDRR has already contributed to achieving important objectives, such as developing the National Risk Assessment [14] and the Risk Management Capability Assessment [15], and the country's report on the progress of the SFDRR implementation. Expected results for the near future are improving the national risk assessments methodology and supporting the implementation of the NDRRS, as well as prioritizing its measures.

Although the NPDRR is very well structured (see Figure 6) and includes the key DRM stakeholders, the functioning and effectiveness of the platform leave room for improvement. It is recommended that technical representatives are given more flexibility, thus ensuring the continuous functioning of working groups to facilitate the achievement of their objectives. The top political level should support the platform with overall guidance and coordination. The financial and administrative support for implementing the Platform's activities should be planned and managed by a leading institution, to ensure sustainability of the inter-institutional processes.

Romania initiated an engagement process for the private sector in the field of DRM, with excellent results. Examples of successful public-private partnerships are in place in both response and prevention activities. Besides the Natural Disaster Insurance Pool (PAID, see BOX 2) focused on risk transfer, the "Be prepared" caravan and the "Mobile Centre for Preparedness" are valuable joint activities aimed

at increasing risk awareness and preparedness among the population (see Chapter 4). During the refugee crisis in Ukraine, a collaboration with Microsoft exploited the Teams communication platform in response phase activities that allowed for unified and timely coordination of the operations in the field, enabling the engagement of a large number of actors involved in emergency management (see Chapter 5). The IT platform has also facilitated the involvement of humanitarian organizations, which have played and are still playing a central role in supporting the Ukrainian refugees.

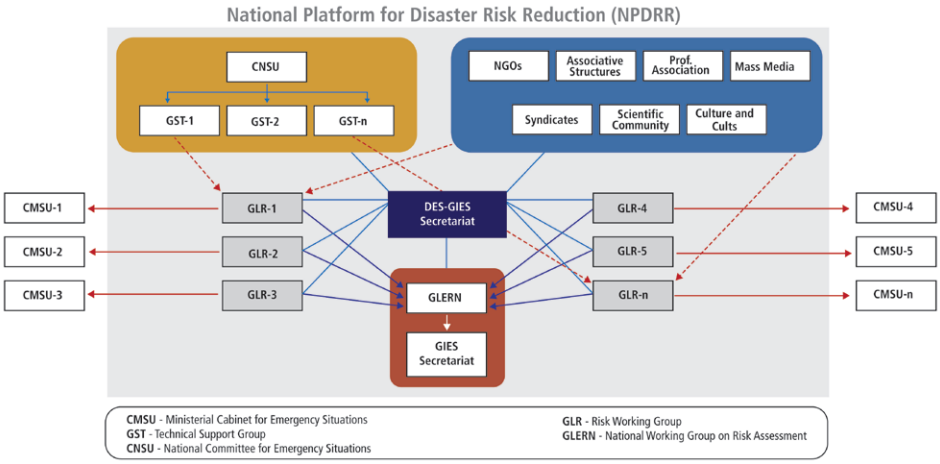


Figure 6 - Structure of the NPDRR.

2.5 - Disaster risk financing

- Disaster risk financing is mostly reactive, with ex-post instruments such as contingency loans, reserves and credits. The proactive, ex-ante instruments play a less important role, except for the mandatory home insurance scheme.

- Romania used considerable resources in form of grants and loans from the European Funds, the World Bank and other international sources for improving disaster risk management and investing in risk reduction.

- Adopting a comprehensive disaster financing strategy is important to avoid macro-economic imbalances and exacerbated public depth, with negative consequences for poverty reduction and sustainable development.

- Procedures should be defined and put in place to ensure cross-ministerial accountability of expenditure in all DRR/DRM activities. A centralised database of funding opportunities for DRR could help stakeholders to raise financial resources for the implementation of the DRR Strategy. The National DRR Platform could be used as an existing horizontal coordination system for financing DRR as well as monitoring DRR financing on the national level, in each of the sectors.

The disaster losses in Romania are high and are due to increase. The aggregate losses from all natural hazards over 1980-2021 amount to over 17 billion Euro (in 2021 prices), which is the 6th highest from across EU countries. Only the losses equivalent to 280 million Euro were insured (2%) which is the fifth lowest in the EU. The annual expected damage from river floods is estimated to be over 300 million Euro and may double by the 2030s[8]. In the 2022-2024 Fiscal Budgetary Strategy, the Ministry of Finance conducted simulations of the impact (up to 2025) of earthquakes, floods,

8 Source: Aqueduct - link

and landslides on macro-fiscal variables, based on the national risk assessment results obtained within the RO-RISK project. However, there is no common methodology for collecting and assessing economic damages and losses inflicted by natural and human induced hazards. Various government institutions have developed their own methods and procedures for collecting loss data in their own policy areas. There is an ongoing project led by GIES to develop a methodology for financial assessment of losses and damages.

Disaster risk finance for preventive, intervention and rehabilitation actions is regulated by Law (500/2002, 273/2006, GD 932/2007) and comes from the State budget, local budget and internal funds from institutions and economic operators, which are obliged to provide for employee protection and ensure business continuity. Investments in disaster risk reduction are provided from State budget for specific investment programmes designed by major risk types. The Ministry of the Environment manages a dedicated budget related to the National Climate Adaptation Strategy.

Law 500/2002 on Public Finances introduced two exceptional spending instruments – the Government Reserve Fund and the Government Intervention Fund. Both reserves are on-budget and are accessed by a governmental decision. The Reserve Fund aims to support the budgets of local authorities for urgent or unexpected expenditure needs occurring during the budget year. The Intervention Fund aims to support the budgets of any public authority in case of natural calamities and to assist affected persons. In the 2020 fiscal year the endowment of the Intervention Fund amounted to 275 million Euro and can be increased or carried through to the next year, as needed. State Reserve contributed to covering additional costs of emergencies such as medication, and temporary shelter.

The central government ministries allocate resources for risk assessment and management, and these are periodically reviewed. The State budget – which is approved by the parliament – does not stipulate any legal requirements for emergency response endowments. GIES has the sole responsibility of managing its own budget and activities for emergencies. The Ministry of Finance has the role of monitoring the overall statements from Ministries (including EU funding statements) but does not monitor and track the DRR finance. Lower territorial governments (county and local councils) have to allocate resources for emergency management. In addition, in line with cautious public spending, the yearly budget of lower-level public entities is reduced by 10% in the first semester, and then the resources are released in the second semester subject to the Government's review of budget execution [16]. Romania has invested around 1.5 billion Euro in improved disaster risk management from various European funds, including from EU's Structural Investment Funds, Next Generation EU and the Recovery and Resilience Facility, Union Civil Protection Mechanism financial support [9], UCPM Tract I/ II and strengthening RescEU capacity, and Asylum, Migration and Integration Fund (AMIF).

Romania has received an amount of around 127.2 million Euro for natural hazard risks and 13.9 million Euro for health emergencies connected to Covid-19 pandemics from the European Solidarity Fund (EUSF) since 2002.

The National Reconstruction and Recovery Plan (RRP) includes a Renovation Wave finance integrated energy-efficiency and seismic retrofitting of buildings. This includes 1 billion Euro dedicated

9 Financing civil protection (europa.eu)

to projects for improving energy efficiency, renovation and strengthening multi-family residential buildings with high seismic risk.

Financing dedicated to administrative capacity building projects co-financed by the European Social Fund 2014-2020 amounted to around 818 million Euro. This included the RO-FLOODS project[10], to strengthen the capacity of the central public authority in the field of water for the implementation of Stages 2 and 3 of Cycle II of the EU Floods Directive; the RO-RISK project, which carried out the first disaster risk assessment at the national level; a project for renovating the buildings nationwide with a view to the fulfilling European obligations regarding energy efficiency in buildings and the efficiency of the Ministry's actions in the field of seismic risk; a project to improve climate change policies and adaptation to the effects of climate change, including the development of a National Climate Change Adaptation Platform – through RO-ADAPT, with specialised information and data on the effects climate change.

Under the 2014-2020 Cohesion Policy, and related ongoing projects, Romania was to receive a contribution of around 478 million Euro for interventions in the fields of adaptation to climate change, prevention and management of climate and non-climate related natural risks, and risks related to human activities. The VISION 2020 project funded by the EU Cohesion Fund invested around 580 million Euro in improved disaster-response capacity in Romania, including acquisition of equipment for emergency and search-and-rescue operations, firefighting trucks and other special vehicles, helicopters, multi-role vessels and riverboats.

With regard to the new programming period 2021-2027 of the Cohesion Policy, Romania has been allocated 31.5 billion Euro to promote the economic, social, and territorial cohesion, and green and digital transition. Under the national programme for sustainable development, over 415 million Euro are foreseen to be invested in adaptation measures to climate change, and prevention and management of climate related risks. These actions target the risk of floods and landslides, fires and other climate risks such as drought and storms, and include investments in awareness raising, civil protection and disaster management systems, infrastructures and ecosystem-based approaches. The European funded Programme under the Cohesion Policy is the (Interreg VI-A) IPA Romania-Serbia Programme, worth 74 million Euro. The programme will finance investments in energy efficiency measures, restoration for natural areas to prevent floods, and landslides, among others.

More coordination is needed in order to allocate resources according to the government's priorities, the Disaster Risk Management Plan and the DRRS, especially for significant funds such as Structural, Recovery, and Cohesion.

Besides European funds, Romania benefited from considerable loans from the World Bank and funding from other international sources (such as the Norwegian financing mechanism). Dedicated loans were granted from the World Bank under the Catastrophe Deferred Drawdown Option (CAT-DDO) under the 2018 World Bank Development Policy Loan [17] and under Reimbursable Advisory Services Agreements, which supported several programmes in the field of DRR, often by providing advice from their consultants.

10 Strengthening the capacity of the central public authority in the hydrology field in order to implement the 2nd and 3rd stages of the 2nd Cycle of the EU Floods Directive – RO-FLOODS.

Mandatory Nat Cat home insurance programme for earthquakes, floods, and landslide risk

Romania introduced a mandatory housing insurance as a public-private partnership (Law 260/2008 - amended in 2010, 2013, and 2015) (BOX 2). The Law obliges private owners of rural and urban housing to insure their property against damages caused by earthquakes, landslides, and floods. The first seismic risk class buildings are not insurable until retrofitted. Voluntary insurance policies covering other risks and further damages can be added after having stipulated the mandatory policy. However, only about 19% of buildings are covered, a situation that highlights the challenges of the Nat Cat resilience mechanism. The low penetration seems to be due to a lack of risk awareness and problems associated with enforcement. When a disaster strikes, the compensation claims are not verified for eligibility. GIES and PAID are implementing awareness campaigns targeted to population and local authorities. Recently, the penetration rate increased among well-educated middle-aged urban dwellers, while remaining very low in rural areas. Despite the challenges, the insurance scheme represents a good example of public-private partnership. A viable insurance mechanism can bring financial relief for public budgets, so that, after a disaster, funds could be targeted to address other needs, for example the recovery of infrastructure and essential services. In addition, the insurance system is an important step towards a proactive disaster risk management and a more resilient society. For the sake of leaving no one behind, particular attention should be dedicated to rural communities, which seem to need more intervention at the national level in terms of accountability and empowerment.

BOX 2 - The Natural Disaster Insurance Pool (PAID) and the National Association of Insurance and Reinsurance Companies in Romania (UNSAR)

The PAID was established in 2009 by Law 260/2008 on compulsory home insurance against earthquakes, landslides and floods. PAID is a public-private partnerships entity owned by insurers entitled to underwrite home insurance, with state guarantees and enforcement. PAID offers two types of affordable residential policies: type A) for houses built with resistant material the uniform annual premium amounts to Euro 20; type B) houses made with material that is not very resistant, or not thermally or chemically protective, for which the annual premium is Euro 10. The insurance has no deductible and covers a maximum of Euro 20,000 (building type A) and Euro 10,000 (building type B). PAID has implemented a Mass Claim Plan for effective management of claims filed after major events. An updated IT infrastructure allows a high-level automation process to ensure effective and timely management of large amounts of data (the Plan is calibrated for 200.000 filed claims). Along with IT tools, PAID has implemented standard operating procedures for inspectors to conduct homogeneous and rapid damage assessments after major events.

The UNSAR is a non-profit organisation, set up in 1994 to represent the interests of Romania's insurance and reinsurance sector and to promote the insurance market. UNSAR conducts sociological and perception studies, including those identifying the causes for low insurance penetration, which a study from 2019 found to include lack of economic resources, adequate information and overall interest in insurance, lack of awareness of the consequences of risk, and insufficiently small fines [18].

2.6 - Systemic resilience

- The importance of coherent and interlinked cross-sectoral strategies is recognised by the Romanian government, which has established a Coordination of Policies and Priorities Directorate within the General Secretariat of the Government. The Directorate implements a repository of national strategies and assesses the correlation of proposed and/or existing public policies to avoid duplication, overlapping and incoherence.

- The sectoral approach to strategies and policies adopted by Romania in the past is still reflected in several strategic documents. A path toward a more holistic and cross-sectoral approach has

already started, aiming to ensure consistency, coherence and coordination among different strategies and to avoid overlaps.

- A homogeneous approach is needed to ensure consistency among different strategies. The Government has established by law a logical framework for developing strategic documents.

Country systemic resilience is ensured to a large extent through coherent and interlinked cross-sectoral strategies development and implementation. The General Secretariat of the Government (GSG) through its Coordination of Policies and Priorities Directorate is responsible for implementing an overall system to guide and monitor the definition of national strategies, policies, and acts whose final aim is to verify and ensure coherence in national-level strategic planning. The Directorate implements an inventory of national strategies and assesses the correlation of proposed and/or existing public policies to avoid duplication, overlapping and incoherence. Moreover, it has a central role in fostering the planning and implementing the capacity of ministries.

The key role of the GSG towards achieving systemic resilience is highlighted in a recent analysis conducted by the government, which has revealed several areas for improvement in the current system. Above all, its review of Romania's strategic documents outlined the existence of redundant strategies and/or inadequate objectives and priorities. Moreover, it stressed issues related to the funding sources needed to implement strategies, which often could not even be identified. Also, the study highlighted the sectoral approach adopted in the past, showing that almost half of government strategies were developed following the sectoral interests of a single ministry, hence not addressing specific issues in a holistic and cross-sectoral way.

The enforcement of GD 379/2022, approved in March 2022, is the first attempt to overcome the lack of coordination and collaboration between key actors by defining the logical framework for the development of strategy documents. The GD defines the main phases that must be envisaged in developing each strategy: an inception phase, in which the decision to draw up the strategy document is taken, followed by stakeholder engagement; the development of the strategy and its approval; the implementation and monitoring phase; and the evaluation and updating processes. In addition, the GD defined a compulsory minimum structure for each strategy, which should include the needs, period and institutions involved; the overall vision; existing priorities, policies, and legal framework; objectives; programmes and linkage with ministry programmes; results; indicators; monitoring and evaluation; implications for the legal framework; and an action plan.

The Romanian government has thus undertaken a virtuous step toward greater systematization, coherence and intersectorality of national policies and strategies, which will facilitate the achievement of systemic resilience.

Over the next years, particular attention should be given to relevant cross-cutting issues, especially related to the protection of most vulnerable communities, with a special focus to rural areas, nationwide protection of critical infrastructures, and the implementation of business continuity plans in both the private and public sectors.

With reference to the NSDRR, the structure and its objectives are aligned with the four priorities areas of the SFDRR, to ensure alignment with international good practices and a standardised approach

across different hazards/topics. The mentioned Strategy is also recognised to be contributing to several SDGs [7], including SDG 1 (No poverty), SDG 9 (Industry, innovation, and infrastructure), SDG 11 (Sustainable cities and communities), SDG 13 (Climate action), and to be achieving policy priorities set out by the European Green Deal.

The NDRRS draws on and complements other government strategies and programs. This is in line with GD 870/2006 on Approving the Strategy for improving the system of development, coordination, and planning of public policies at the central public administration level, with an emphasis on the cross-sectoral and cross-cutting nature of the DRR policy agenda.

2.7 - Conclusions

Romania has a strong legislative base covering all phases of the disaster risk management cycle, although historically it has been focused mainly on preparedness and response. After the signing of the SFDRR, the government has initiated a paradigm shift from a disaster to a disaster risk management approach, by reinforcing the legislative framework dealing with prevention actions and adapting the institutional structure to facilitate more cooperation and collaboration among key actors. However, an overall comprehensive framework for ensuring more coherence and effectiveness, mainly in the prevention phase, is still needed, along with a further definition of different roles and responsibilities in DRM activities at different territorial levels, to help clarify the risk management governance structures, avoid overlaps, and make better use of existing capacities.

Horizontal cooperation has improved in recent years, and excellent collaborations among key institutions at the national level has been leading the whole country towards becoming a more disaster-resilient society. Moreover, a whole-society approach is underpinning the paradigm change, as demonstrated by the government's extensive efforts in engaging all sectors (public authorities, private companies, and civil society organizations) in DRM activities and strategic planning. The extensive consultation in the drafting process of the NSDRR, still in the drafting stage, is an evident example of this valuable approach.

An effective engagement process of the private sector in the field of DRM is already ongoing with excellent results. Examples of successful public-private partnerships in both response and prevention activities have been implemented in recent years and could be further exploited in the near future.

An effective vertical cooperation is already in place; however, it is mainly driven by a top-down approach from the national to the local level. A process to reinforce a bottom-up approach would be pivotal to empower the local level, which often seems to still have limited technical, administrative, and financial capacities to fulfil its primary role in disaster management and prevention activities.

The establishment of a broad, well-structured NPDRR, aimed at governing and driving all DRR processes under the guidance of the MoIA, has been facilitating exchanges among key actors, and has already provided valuable results. The effectiveness of the NPDRR could be further improved by simplifying its operating procedures, especially in relation to the technical working groups. The political representation should govern and guide the overall processes, in order to give more flexibility to the technical structures, which, with the facilitation of an administrative unit focused on the Platform's activities, should autonomously organise and participate in regular meetings to achieve their goals. In addition, a financial support mechanism for the Platform's activities could help the government

operationalize the NDRRS and recognise its full ownership of the overall implementation and monitoring process, which includes advocating for DRR and monitoring DRR activities, DRR Strategy implementation and DRR financing. The formal adoption of the Strategy is needed in the short term, and awareness should be raised to consider the NDRRS as a whole-society pledge. In addition, communication campaigns on the NPDRR and NDRRS activities to relevant stakeholders and the public could help in engaging more key actors, in particular at the local and civil society levels.

In recent years, Romania has taken a virtuous step toward achieving a whole-society systemic resilience by initiating an overall process aimed at reaching a greater systematization, coherence and intersectorality of national policies and strategies. More efforts by the central government could enhance an interinstitutional approach, especially on cross-cutting issues, such as critical infrastructure resilience and business continuity planning in both private and public sectors. Also, particular attention over the next years should be given to protecting most vulnerable communities, with a special focus on rural areas.

Disaster risk financing in Romania is mostly reactive, with ex-post instruments such as contingency loans, the Government Reserve Fund, the Government Intervention Fund, and credits. Proactive, ex-ante instruments play a less important role, except for the mandatory home insurance scheme. Adopting a comprehensive disaster financing strategy is important to avoid macro-economic imbalances and exacerbated public debt, with negative consequences for poverty reduction and sustainable development. In the Fiscal Budgetary Strategy 2022-2024, the Ministry of Finance conducted simulations of the impact (until 2025) of earthquake, floods, and landslides on macro-fiscal variables.

However, neither the Strategy nor the State budget stipulates any legal requirement for emergency response endowments for central government ministries, which have the decisional power to allocate resources for risk assessment and management, and to monitor of them. Investments in disaster risk reduction are provided from State budget for specific investment programmes designed according to major risk types. The Ministry of the Environment manages a dedicated budget related to the National Climate Adaptation Strategy. Procedures should be defined and put in place to ensure cross-ministerial accountability of expenditure in all DRR/DRM activities. A centralised database of funding opportunities for DRR could help stakeholders raise financial resources for the implementation of the DRR Strategy. The National DRR Platform could be used as an existing horizontal coordination system for financing DRR, as well as to monitor DRR financing at the national level, in each of the sectors.

Besides national funding, Romania has used considerable resources in the form of grants and loans from the European Funds, the World Bank and other international sources for improving disaster risk management and investing in risk reduction.

The penetration of the Nat Cat home insurance programme is limited, partly due to the lack of enforcement of legislation and engagement of local authorities. A strong incentive to purchasing mandatory insurance is needed and should be promoted by awareness campaigns explaining the added value of insurance as a risk transfer mechanism. Citizens should be encouraged to perceive their homes not only as an individual property, but also as a contribution to collective resilience, especially in rural areas where the insurance penetration rate is very low. Besides this, operating procedures conducted by local authorities (Mayors), while filing claims for state compensation, should be fine-tuned to ensure that state compensation covers only buildings with PAD policies.

Figure 7 - Plenary session during the peer review mission (Credits © GIES).

3 Risk Management Planning

3.1 - Legislative framework and processes

- The National Plan for Disaster Risk Management (NPDRM), along with a range of sectoral and hazard-specific strategies and regulations provides the legal framework for risk management planning in Romania. A draft Action Plan and monitoring frameworks are foreseen in the NDR-RS, to be further prepared and implemented by stakeholders in line with their responsibility.

- The NPDRM builds upon the National Risk Assessment (NRA). The methodology for selecting the five key hazards out of the 10 identified in the NRA could be further clarified in the NPDRM. Procedures for regular updates of the NRA are needed.

- The planning of the disaster response is well regulated. The disaster management structure and roles/responsibilities in case of emergency are clearly defined by law. The structure of the National Emergency Management System (NEMS) and the collaboration between various entities established at different territorial levels has been proven effective for management of recent emergencies.

In 2021 Romania formally adopted a National Plan for Disaster Risk Management (NPDRM) to cover an 8-year time horizon (2021-2027)[11]. This strategic document was developed in consultation with the NPDRR with the purpose of *improving the integration of the NEMS and addressing in a systematic and inter-institutional manner the actions needed to ensure adequate prevention, preparedness, and response, in line with international guidelines and Romania's obligations to the European Union and the UN on disaster risk reduction* [19].

Although the NPDRM mainly presents a sectoral approach, thus including sectoral measures for each type of risk, it promotes a systemic and holistic approach. Flagship ministries in charge of different hazards should be engaged in a joint effort aimed at covering the whole dimension of disaster risk (transition from sectoral to integrated approach).

Out of the 10 key risks analysed in the National Risk Assessment (NRA) (BOX 3), the NPDRM focuses on 5 hazards (earthquakes, floods, forest fires, epidemics, and drought), and defines several measures to prevent from, prepare for, and respond to their potential impacts. Although the methodology used for conducting the hazard selection is not clarified, a comparison with the NRA risk matrix outlines that the NPDRM excludes risks with low probability and low impact as well as the risk of landslides. The reason declared during the peer review mission for excluding landslides is that the associated risk is mainly local and already has a management plan.

The Plan includes risk scenarios and reports on the main objectives identified as weakness in the NRA: improving the institutional framework for risk management; strengthening and developing infrastructure and logistics for prevention, operational and response capacity; improving the quality of human resources involved in risk management activities and level of preparedness of the population. The Plan gives an overview of the measures and programmes already implemented at the national level and per type or risk. The annexes to the Plan provide information on the timeline of each project that has already started its implementation, and on the type of funding. The financing mechanisms,

11 Decision 13 26.02.2021 of the National Committee for Emergency Situations.

costs approved, and sources of funding are also described. According to the organisation of the NEMS, each institution responsible for one or more types of risk must also provide the funding to carry out specific risk management activities. The DRM Plan provides a breakdown of the amounts provided through the budgets of the authorities involved in the management of emergency situations for 2019, 2020, 2021 and a provision up to 2027.

The NDRRS, drafted after the Plan, incorporates its main priorities, thus ensuring the alignment between these key documents. In addition, information on ongoing programmes and financing included in the DRM plan were included in the draft NDRRS Action Plan (2023-2026).

Besides the NPDRM, GIES has drafted national response concepts for risks with major impacts on human health, environment, and communities. To date, four concepts (earthquakes, floods, nuclear and/or radiological accident and forest fires) have been endorsed with the approval of the DES, and the one focused on epidemics will be endorsed by the end of 2022. These plans were tested at the national, regional, and county level through complex exercises. All concepts were drafted with the support of the other responsible authorities involved in emergency management and operations on the field in the response phase. Regulations focused on the emergency management specific to different hazard-types are also in place.

The planning of response phase activities and standard operating procedures to be followed in case of emergency are well defined under GD 557/2016. Management responsibility falls under different entities within the NEMS, depending on the severity and extent of the emergency situations. The components of the NEMS include permanent entities, and structures that are activated in case an event strikes (see Chapter 2). Among these, Centres for Coordination and Management of Intervention are foreseen at the national (Chapter 2, BOX 1), county and Bucharest level. A good level of collaboration between the different components ensures a timely coordination of response actions.

Other structures involved in emergency management are the Operative Centres for Emergency Situations. These technical and operational centres are set up within a number of ministries and central public institutions to prepare for and respond to emergency situations mainly through assessment, monitoring, and warning activities for an effective coordination of operational technical response actions. Those Centres represent a good example of bringing technical expertise into national structures.

The planning of prevention measures is mainly conducted at the sectoral level. The responsibilities of national institutions in managing each key hazard are regulated by GD 557/2016 (Table 1). Each flagship authority is in charge of setting up and implementing actions to manage the risk under their responsibility. This approach is also enforced by sectoral legislation related to each hazard-type.

The following paragraphs provide an in-depth view the risk management planning organisation for specific hazards addressed during the peer review mission.

Hazard	Main responsible authority
Flood, Heatwave, Extreme winter conditions, Severe storms, Wildfire, Hydrological drought	Ministry of Environment, Water and Forests
Pedological drought	Ministry of Agriculture and Rural Development
Earthquake	Ministry of Development, Public Works and Administration
Landslide	
Human infectious disease	Ministry of Health
Animal and plant infectious disease	National Sanitary Veterinary and Food Safety Authority
Industrial accident	Ministry of Economy, Entrepreneurship, and Tourism
Nuclear accident	National Commission for the Control of Nuclear Activities
Transportation accidents involving dangerous goods	Ministry of Internal Affairs

Table 1 – Main responsible authority for each hazard type (own elaboration).

Earthquakes

According to the RO-RISK project and the NRA, seismic risk is identified as a low probability (2) - high impact (5) risk for Romania (see BOX 3 and Annex 3). The losses and damages recorded after major seismic events in recent history outline the high physical vulnerability of Romanian buildings and identify Bucharest as one of the most seismically vulnerable cities in Europe.

The Ministry of Development, Public Works and Administration (MDPWA) is designated as the lead authority in seismic risk management, focusing mainly on territorial and urban planning and optimisation of the legislative, regulatory, and strategic framework.

An important step toward an effective seismic risk management is the National Strategy for Seismic Risk Reduction, approved at the end of November 2022, which aimed at increasing Romanian resilience against earthquakes until 2050. In addition, during 2022 the Ministry launched two initiatives targeted at streamlining investment programmes to reduce the seismic vulnerability of existing buildings, considered a crucial measure to increase the Country's resilience against earthquakes.

The MDPWA promoted a recent reform focused on the optimisation of the regulatory framework in the field of construction facilities to fulfil EU legislation requirements, with a focus on educational and health facilities. The updating of technical regulations for the seismic safety of buildings included the updating of building codes on the basis of provisions for the seismic design of new buildings in 2013, and the building code based on provisions for the seismic evaluation of existing buildings in 2019. These regulations are still not yet in line with Eurocode 8 [20] (to be implemented in 2025).

To support seismic vulnerability reduction activities, the MDPWA is developing a national digital building registry with information on the building structures and their energy efficiency, which will complement data from the cadastre. The cadastre database is managed by a dedicated Cadastre Agency, an institution established in 2004 under the MDPWA, and with a dedicated budget. This Agency regularly maintains and updates the cadastre database, by collecting information on buildings and land at the national level. According to the Cadastre Agency, the cadastre database registers 20 million buildings, and currently holds information on their structure for two-thirds of them. The

data recorded follows INSPIRE technical specification (including seismic data specification for buildings), and it is available to all public authorities. It would be useful to connect the data collected and the maps created for risk assessment in the RO-RISK project to the cadastre in order to evaluate exposure and impact at a smaller scale.

Additional actions led by the MDPWA to improve and support local authorities and stakeholders in seismic risk reduction include: developing a methodology for rapid damage and safety assessment of buildings in the post-disaster phase; developing best practice guidelines on designing adaptation measures to existing and new buildings in flood-prone areas; integrating single- and multi-risk considerations in territorial and urban planning. Moreover, the MDPWA participates, through its departments and the State Building Inspectorate, in damage assessments after disasters triggered by natural hazards, and collects and disseminates data and information on the effects and impacts through its Emergency Operations Center.

Floods

According to the RO-RISK project and the NRA, flood risk is identified as a medium probability (3) - medium impact (3) risk for Romania (see BOX 3 and Annex 3).

The Ministry of the Environment, Water, and Forests (MEWF) is the lead authority in flood risk management. Together with other institutions, such as the National Administration of Romanian Waters (NARW), the National Institute of Hydrology and Water Management (NIHWM) and 11 River Basin Administrations (RBAs), the MEWF is in charge of implementing the EU Floods Directive (2007/60/EC – FD) [21], thus developing Preliminary Flood Risk Assessments (PFRA), Flood Hazard and Risk Maps (FHRMs) and Flood Risk Management Plans (FRMPs). Romania is expected to complete the second cycle implementation of the FD in 2023. In this context, the MEWF funds several projects for flood protection and prevention. Among others, activities targeted at promoting green infrastructure and Nature-Based Solutions (NBSs) in all river basins are training for RBAs and drafting guidelines for integrating green measures in FRMPs.

The MEWF is also the lead public authority responsible for the overall coordination of policies, strategy, and actions for climate change adaptation and mitigation. In the context of climate change adaptation, the MEWF is currently working on revising the National Strategy on Adaptation to Climate Change (NSACC) for the period 2022-2030 and on developing a new National Action Plan (NAP), within the RO-ADAPT Project [22].

Nuclear and radiological accidents

According to the RO-RISK project and the NRA, nuclear and radiological accidents are identified as a low probability (1) - high impact (4) risks for Romania (see BOX 3 and Annex 3).

The National Commission for the Control of Nuclear Activities (NCCNA) has a leading role in managing and assessing nuclear and radiological risks, while the MoIA is the competent authority for response activities. Several safety norms on the assessment and control of nuclear and radiological activities and related risks were published and enforced by the NCCNA and MoIA through the development of the Nuclear Risk or Radiology Emergency Management Regulation[12]. This also regulates the allocation of responsibilities at the level of national and local authorities, as well as that of private

12 MoIA Order 523/2018: www.cncan.ro/assets/NUR/02.07.2018Ordin-MAI-si-CNCAN-61113.pdf

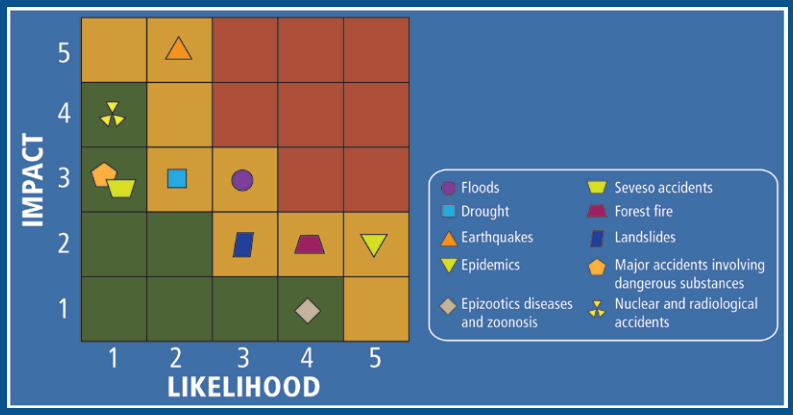
BOX 3 - National Risk Assessment and the RO-RISK project

The process of drafting a National Risk Assessment (NRA) started in 2010, in line with the European Commission's requirements from Art.6 of the Decision No 1313/2013/EU, and it advanced with the RO-RISK project [6], implemented from 2015 to 2018. This project, co-funded by the European Social Fund under the Operational Programme for Administrative Capacity (POCA), carried out preliminary risk assessments for 10 key hazards following the EU methodology published in 2010 [23].

The RO-RISK project was coordinated by GIES in partnership with 13 research institutes, universities, and authorities at different administrative levels. A sectoral approach was applied to conduct the NRA: each institution carried out the assessment for the type of risk which they are responsible for, following the Commission guidelines and recommendations for the risk assessment methodology.

The 10 key hazards assessed in the NRA were identified out of the 24 types of risk outlined in GD 557/2016 as having destructive potential on the country. This evaluation was based mainly on historical data specific to sectoral analysis. The NRA also identified risks that could have a cross-border impact, risks with low probability and high impact, risks related to the impact of climate change and key emerging risks. The methodology applied to conducting risk analysis was scenario-based. Probability of occurrence and impact scores were assigned to each scenario, using quantitative data or through a consultation process with stakeholders and experts, depending on the availability of quantitative information.

The RO-RISK project resulted in risk maps at the national level, and a risk matrix. The matrix was developed by aggregating the impact scores (physical, economic, and psychosocial) and the probability of occurrence of different scenarios related to each hazard, quantified on a scale (1 - low; 5 - high). The evaluation of risks was reflected in the positioning of the scenarios on the matrix, which ranked the risks as acceptable or unacceptable.



The analyses of the RO-RISK project were disseminated in several meetings with academia and on Civil Protection Day. The results were publicly available for a period, together with the indicators used in risk analysis and output maps, on dedicated GIS databases and GIS portals for visualisation, until the web platform became inaccessible.

The RO-RISK project was a trigger for establishing a fruitful collaboration between GIES and the scientific community. After the project ended, the inter-institutional Working Group on National Risk Assessment (GLERN) was created within the NPDRR (see Chapter 2). The Working Group is regulated by legislation, and is responsible for monitoring and updating risk assessments at the national level. However, risk assessments are not currently implemented on a regular basis within the NPDRR Procedures should be adopted to ensure the permanent exchange of information among key entities and regular updates of risk assessments.

In 2018 a new risk assessment process started with the financial support of World Bank. It includes the review of the current assessment, the development of a loss and damage collection methodology, an IT system for loss and damage management, and the assessment for 6 multi-hazard and multi-risk scenarios.

At the local level, authorities are obliged to develop Risk Analysis and Coverage Plans (PAARs) at the administrative territorial unit (ATU) level. These plans are based on studies of risk factors at the local territorial level and do not seem to consider NRA results. Legislation and methodology for the development of hazard and risk maps as well as PAARs could be updated and improved.

entities so that a coordination mechanism is put in place. To improve the resilience and preparedness of communities, the NCCNA is implementing a capacity building project "Enhancement of Nuclear Safety and Security in Romania- Improvement of Disaster Resilience and Preparedness for Radiological and Nuclear Events". At the end of the project, as result, it is expected to be in place a new Emergency Operation, Information and Training Centre will be established and the National nuclear and Radiological Emergency Response Plan will be revised[13], among others.

13 www.cncan.ro/norway-project-2019-2024/activity-3/

3.2 - The roles of stakeholders

- The roles and responsibilities of stakeholders in planning disaster risk management measures according to each hazard-type are well defined and regulated by law. For each key risk, a flag-ship authority is identified, as well as supporting and collaborating entities.

- Stakeholders and the scientific community were involved in the NRA process within the RO-RI-SK project, which was the trigger for a good collaboration.

- The participation of the civil society in the NPDRM drafting process could be improved.

The development of the NPDRM was carried out in consultation with the NPDRR and an extensive consultation process with stakeholders from public institutions, the private sector and the civil society was undertaken during the drafting of the NDRRS (see Chapter 2).

As already mentioned, the responsibilities of lead authorities (Table 1) and of institutions with secondary and supporting roles in risk management according to different hazard-type are formally set by the GD 557/2016. During the peer review mission, the collaborations of stakeholders were explored specifically with regards to specific risks.

The MEWF, the lead authority in planning flood risk management activities, collaborates with a number of institutions, such as the NARW, the NIHWM and 11 RBAs. Within the implementation of the FD, a consultation process with stakeholders is conducted according to European requirements. Stakeholders are therefore engaged in defining PFRAs, maps, and in defining and prioritising flood risk management measures.

With regard to nuclear risks, a good collaboration is established between GIES and the NCCNA. The responsibility for implementing safety norms falls on national authorities, local authorities and private entities, and is enforced by the NCCNA. The establishment of a new Information and Training Centre for the population and the development of a national public communication strategy on nuclear risk will contribute to strengthening the engagement of the public in this field.

In the event of major accidents involving dangerous substances, private entities are responsible for implementing specific disaster risk management measures, as required by the EU Seveso Directive [24]. Private companies responsible for Seveso plants are expected to run joint drills with GIES every three years, and regularly update internal emergency plans and documentations. Private services for emergency situations are permanently available on site, and in the event of emergency alerts to GIES are sent automatically. The collaboration between companies responsible for Seveso plants and GIES shows a good relationship between public-private sectors in managing technological risks.

Figure 8 - Visit to a Seveso plant in Jilava during the peer review mission.

3.3 - Prioritisation of measures

- The NRA results are considered in the drafting of the DRM documents, however a common criterion for prioritisation of measures in the NPDRM is not applied.

- Different methods for prioritizing measures are applied according to different risks, however those methods are unclear.

- To reduce seismic risk, prioritisation criteria were applied in the selection of educational infrastructure to be retrofitted under the Safe Inclusive Sustainable School project.

The NPDRM is drafted on the basis of the NRA and provides measures for managing five risks: earthquakes, epidemics, floods, nuclear and/or radiological accidents, and forest fires. The NDRRS focuses on 10 hazards in the NRA, plus extreme weather events. A clear methodology for prioritising measures in planning and strategizing would be beneficial in supporting decision and policy makers in their efforts to identify urgency and allocate finances in relation to a given risk.

On a sectoral level, during the peer review mission the methods underpinning the prioritisation of measures were covered mainly in relation to floods and earthquakes.

Second-cycle FRMPs include identifying and prioritising flood risk reduction measures for each Romanian Unit of Management (UoM). The prioritisation process is based on Multi-Criteria-Analysis (MCA) and Cost-Benefit-Analysis (CBA) and takes into account, among other factors, risk maps, expert judgement, unit cost database and stakeholders' consultations. To allow comparison across all UoMs an Appraisal Summary Table is under development.

With regard to seismic risk, since 2015 a Working Group on Earthquake and Landslide Risk analysis has been established to evaluate the priorities to tackle for reducing risk within the SFDRR. The National Strategy on Seismic Risk Reduction, approved in December 2022, proposes mobilising investments based on prioritisation criteria, taking into account the structural vulnerability of buildings, the level of exposure of communities, and estimating the benefits of seismic risk reduction actions.

In addition, under the Safe Inclusive Sustainable School project [25], methodology and prioritisation criteria for retrofitting educational facilities were developed and applied in the 2019 SIIIR database managed by the Ministry of Education. Retrofitting costs were estimated for each building built before 1977 and not yet retrofitted. The buildings considered in the study were divided into three categories, based on the level of prioritisation. It was estimated that 60% of the buildings (around 9.929 buildings) considered need to be retrofitted. A bid for a pilot project comprising 100 school buildings was recently launched in the construction sector.

3.4 - Monitoring, evaluation, and reporting

- The General Secretariat of Government is responsible for monitoring the implementation of overall national strategies. Monitoring and reporting processes according to specific risks fall under the responsibility of the lead authority.

- Data for conducting risk assessments and disaster loss data are scattered among several entities at different territorial levels, presenting heterogeneous and inconsistent characteristics. A process of data harmonisation and standard operating procedures in collecting and sharing data is needed to ensure coherence and consistency among datasets. A geospatial national repository should be implemented to ensure a better knowledge and exploitation of disaster loss data, serving national and international processes (such as Sendai monitoring and DesInventar).

The GSG has the role of overseeing the development and coordination of national strategies. In accordance with the Government Decision 379/2022, which outlines the logical framework for developing strategic documents, a phase of monitoring and evaluation is foreseen and required in every new strategy (Chapter 2). While the GSG is not responsible for the contents, it oversees the overall monitoring of their implementation.

The NDRRS identifies and proposes indicators that could be used to establish a monitoring and evaluation (M&E) plan to check the progress of implementation of the proposed Plan of Action [7]. Designated institutions will be responsible for preparing, implementing and monitoring the plan of action relevant to each specific hazard, including collecting, managing, processing and reporting information to the NPDRR, which is responsible for monitoring the overall progress of the NDRRS's implementation.

BOX 4 – Disaster Loss Data collection

In accordance with GD 1492 (09.09.2004), the organization and management of the emergency situations database is carried out by GIES at the national level, and at the local level by County level Inspectorates for Emergency Situations (CIES). When a disaster strikes, the Local Committee for Emergency Situation immediately drafts an operative report and sends it to the County Operational Centre. Local Committee for Emergency Situations are emergency committees set up at the sectoral levels for Bucharest and municipalities. Their role is regulated by the GD 1491 (09.09.2004) and they are temporary institutional components set up by order of the mayor with the approval of the prefect. These include the representative of public services, the secretary of each municipality, the representative of economic operators, and the technical consultants. Their responsibilities include informing the National Committee on potential emergencies, evaluating emergencies, elaborating regulations in their area of competence, and approving their own plans to ensure necessary resources for emergency management at each respective level.

Depending on the damages registered, a special commission can be appointed to evaluate damages, evaluate the operative reports, and draw up a synthesis report to be approved by the County Operational Centre/CIES.

Generally, institutions involved in the response phase are responsible for collecting disaster loss data in analogic or digital format. Key data are collected immediately in the response report after the intervention actions, and are transmitted to the upper echelon through the Information Management System for Emergency Situations (IMSES) – a disaster losses database developed with the financial support of the World Bank. The access to IMSES is granted to any operational centre and can be used for decision making, analysis, and substantiating the projects with external financing. During the post disaster phase, disaster data collected at a centralised system is used for impact overview and funding requests, and it represents the official figures with outside and international partners (EU, UN, NATO, OECD).

Many gaps have been identified in GIES's data collection process. In general, there is no consistent methodology and established nationwide disaster loss databases for wildfires, earthquakes, landslides, human/animal/plant infectious diseases, or technological risks, and there are gaps related to standardised damage assessment processes. However, Romania is currently developing a unified methodology and has started two projects specific to data collection The first, in collaboration with the World Bank, aims to develop a methodology for damage and loss assessment and a software to record disaster losses and calculate damages. The second, funded by the EU, aims to implement the DesInventar, through which GIES will produce periodic reports for Sendai Monitor. The IT system developed will integrate both the results collected by using the Unitary Damage Assessment software developed by the first project, as well as other information on the economic impact of disasters.

The NDRM plan does not indicate a framework for monitoring its objectives, while it states that it shall be reviewed and updated every 3 years, or after each significant change to sectoral strategies, lines of action or objectives. The amendments will be prepared by the ministries/public institutions responsible for managing each type of risk, in consultation with the NPDDR and will be operated by the Secretariat of the Platform.

At the sectoral level, monitoring tasks are assigned to specific ministries and their Operative Centres, based on risk types and sectoral regulation. With regard to floods, the European Commission's monitoring, evaluation and reporting process is foreseen by the EU FD and transposed into national legislation. The National Strategy for Seismic Risk Reduction foresees the establishment of a mechanism to monitor the implementation progress for seismic risk reduction actions overseen by the MDPWA.

3.5 - Policy coherence

- The NDRRS is structured and aligned with the SFDRR 2015-2030 and is expected to contribute to the SDGs, as well as to the EU's Green Agenda.

- The National Strategy on Adaptation to Climate change is in line with the Paris Agreement's Global Goal on adaptation and the principles in the EU Adaptation Strategy and takes into consideration Goal 13 on the climate action of SDGs. The National Adaptation Plan includes measures that integrate disaster risk reduction and climate change adaptation.

- Further policy coherence could be fostered by including climate change adaptation principles in DRR planning and implementation of recent drafted strategic documents, as well as by utilising the National DRR Platform's potential to unite policies and sectors within a coherent working group.

Policy coherence between DRR, climate change adaptation (CCA) and Sustainable Development Goals (SDGs) in strategies and plans can foster risk management. The CCA can support efforts to prevent climate-related disasters and integrating sustainable development strategies within risk prevention and preparedness planning is key to reducing disaster risk. During the peer review mission, synergies and coherence between CCA and DRR were explored.

The importance of policy coherence between DRR, climate change adaptation (CCA) and Sustainable Development Goals (SDGs) is recognised by Romania's recent strategic documents, whose implementation and planning of actions will need to foster this synergy. DRR policy and actions are taking place in parallel with broader efforts related to climate change mitigation and sustainable development. The NDRRS content is aligned with the SFDRR 2015-2030 and is expected to contribute to broader achievement of the Sustainable Development Goals (SDGs) as well as the EU's Green Agenda, by creating co-benefits in terms of sustainability, inclusivity, and well-being. The contribution of the NDRRS to a number of SFDRR priorities and SDGs goals is provided in the strategic document.

In the context of climate change adaptation, the Romanian MEWF is working on the revision of the National Strategy on Adaptation to Climate Change (NSACC) for the period 2022-2030 and on the development of a new National Action Plan (NAP), within the RO-ADAPT Project [22]. The aim of the NSACC and the NAP is in line with the principles of the EU Climate Change Adaptation Strategy [26], and it also takes into consideration Article 7 of the Paris Agreement [27], regarding the Global

Goal on adaptation, Article 8 on Loss and Damage, and Goal 13 on climate action of the Sustainable Development Goals [5].

The new Romanian Strategy will prioritise agriculture, water issues, and disaster risk reduction, as well as monitoring and evaluating processes, risk assessment and the "do no harm" principle. A relevant sectoral objective of the new NAP is "Adapting the Water Resources sector to climate change": its measures focus on flood risk reduction and include the establishment of buffer strips along water courses in vulnerable areas; nature-based solutions; measures to increase flood resilience through improvement of preparation and response in emergency situations; measures to improve the level of awareness; improvement of the Nat Cat insurance mechanism through PAID.

While, on one side, the Strategy and the Action Plan operate to implement the Paris Agreement and the public policies adopted at the European level (the Green Deal [28]), as well as the 2030 Agenda and the Sendai Framework, on the other side these documents also take into consideration Romania's existing strategic documents relevant for achieving such objectives, and assuring a horizontal cooperation at the national level.

The importance of climate change adaptation is also stressed at the local level, where the municipal adaptation strategies set the framework for promoting resilience practices. In addition, Romanian cities are aware of the technical knowledge on adaptation to climate change and the information platforms and tools made available by the European Union; moreover, 183 cities and municipalities participate in the EU Covenant of Mayors on implementing EU climate objectives, in line with other major Western countries.

3.6 - Conclusions

The Romania's DRMP is the key strategic document for risk management planning, along with the newly drafted NDRRS. The Plan covers an 8-year timeline, is well structured, and addresses three phases of the disaster risk management cycle (prevention, preparedness, and response), presenting both general and sectoral measures in relation to the key risks considered. The Plan focuses on five main risks from the 10 identified and studied in the NRA, however the methodology for the decision to prioritise risks in the plan is unclear.

For an adequate DRM, it is important to develop and define DRM plans on the basis of sound risk assessment findings. As outlined in BOX 3, the NRA is the output of the RO-RISK project, which ended in 2018 and involved different stakeholders and research entities. While the NRA process triggered several risk assessment activities and a good collaboration with the scientific community, since the project ended risk assessment has not been performed on a regular basis and stakeholders have not been involved in any further steps. A second cycle of the NRA has started and is planned to end in 2025; to ensure the permanent exchange of information and regular updates of risk assessments, the formalisation of procedures should be agreed upon and put in place. The NPDRR should coordinate and take full responsibility for this process, by organising tasks and collaboration between different actors and the GLERN working group, and by becoming fully operative also in monitoring and updating risk assessments at the national level.

In addition, the results of risk assessment could be better disseminated among citizens: for example, a more "user-friendly" approach could facilitate a better communication of the results of immediate

risk assessments. Putting the spotlight on consequences instead of triggering causes adopting an impact-based approach is often more understandable for citizens.

Data needed for conducting risk assessment and disaster loss data are scattered among different entities at different territorial levels, and present inconsistent characteristics. Homogeneous procedures and methods for data collection, better sharing and central systematisation are needed. The implementation of a national GIS repository of geo-referenced data and information accessible to the three levels of operational responsibility and actors (national, county and local) could contribute to conducting better risk assessment, improving disaster risk management, and increasing scientific knowledge.

The existence of an Operative Centre for Emergency Situations, with permanent activity within the various ministries, is a good example of the collaboration of technical capacities in national government structures. Their roles include providing operational data to GIES, in emergency situations and tasks related to monitoring, evaluating, warning and alerting.

The prioritisation of measures requires the development of a methodology common for all risks. The NRA results are considered in the drafting of the DRM documents when selecting the risks to address in the Plan, while different methods for prioritizing measures are applied, according to different risk types. For example, in the Flood Risk Management Plans measures are identified and prioritised through Multi-Criteria Analysis and Cost-Benefit-Analysis approaches; and to reduce seismic risk, prioritisation criteria were applied in selecting the educational infrastructure to be retrofitted under the Safe Inclusive Sustainable School project.

Besides the DRM Plan, the DRR Strategy foresees and provides a draft action plan (2023-2026), with suggested actions to be financially planned for and implemented by key authorities responsible for the type of risk. A clear methodology for prioritising the measures in the plan and strategy would be beneficial in supporting decision making to identify urgency and allocate finances in relation to a given risk. Besides this, clarifying within the newest adopted document the correlation between the DRM Plan and the Action Plan would facilitate implementation and coordination of the two.

While the importance of policy coherence between DRR, climate change adaptation (CCA) and Sustainable Development Goals (SDGs) is recognised by Romania's recent strategic documents such as the NDRRS and the National Strategy on Adaptation to Climate Change (NSACC) 2022-2030, further policy coherence could be fostered by including climate change adaptation principles in DRR planning, and ensuring that the implementation of these strategies sustains this synergy.

4 Risk Prevention

4.1 - Legislative framework and processes

- The concept of prevention within different Romanian strategic documents suffers from a lack of common understanding and incoherence. The NPDRM lists among prevention several measures that are linked with a preparedness phase. Coherence in the prevention definition across different strategies and sectoral plans is needed.

- The prevention phase and its legal framework seem to be weak compared to the response phase under the disaster risk management system currently in place. Prevention activities need to be further promoted at all territorial levels (national, county, and local). Cost-benefit analyses could be useful in raising awareness on the crucial importance of prevention measures in DRR.

- Specific risk prevention measures are envisaged in sectoral plans and strategies. An overall harmonisation of prevention actions could strengthen their effectiveness.

This report follows the structure of the Peer review Assessment Framework (PRAF), as key reference for conducting EU Peer reviews within the 2020-2024 cycle. Therefore, this chapter focuses on territorial planning, structural measures and NBSs, innovation and knowledge services, and awareness and risk communication; thus, leaving EWSs, training and rescue capacities to the preparedness section.

The concept of prevention within different Romanian strategic documents suffers from a lack of common understanding and alignment with key UCPM legislation. The NPDRM and current legislation on prevention (MoIA Order 89/2013) lists among prevention several measures that are linked with the preparedness phase, such as increasing the institutional and community response capacity by raising awareness on risks and how to behave in case of emergency. Instead, according to the DRR Strategy, prevention is defined as activities and measures to reduce vulnerability to risk. Coherence in the prevention concept and definition is therefore needed to ensure consistency across different strategies and sectorial plans.

The central public administration coordinates actions and measures regarding prevention, based on GO 21/2004 and GD 557/2016. Locally, prevention actions are led by the mayor of a municipality. The National Strategy for the Prevention of Emergencies (2008) created the legal framework for including in policies and programmes specific measures and actions aimed at reducing the impact of specific risk on people, assets, and the environment. Prevention specialized structures are established and carry out prevention activities according to MoIA Order 89 of June 18, 2013, regarding the approval of the Regulation on planning, organization, preparation and implementation of emergency prevention activities carried out by the GIES and subordinate structures. Additionally, a Prevention Concept is designed at the central and the county level as a strategic document for organising the prevention in a unitary way. Despite these, the prevention phase still seems to be weak compared to the preparedness and response phases under the disaster risk management system currently in place. Prevention activities need to be further promoted at all territorial levels (national, county, and local). Cost-benefit analyses to support and promote prevention measures could be useful in raising awareness of their crucial importance.

On a sectoral level, within the review mission, prevention aspects were addressed mainly in relation to specific hazards, namely floods and earthquakes.

Regarding floods, within the 2nd cycle implementation of the EU FD, a catalogue of prevention and protection measures was implemented at the national level, along with a publicly available web-viewer with maps and data factsheets for each of the 526 APSFR identified.

With reference to earthquakes, the National Seismic Risk Reduction Strategy was approved in November 2022. It includes the development and implementation of sectoral investment programmes aimed at strengthening the existing vulnerable built fund, the development of a monitoring mechanism for the programmes, and integration of a multi-risk consideration in territorial planning (see also Chapter 3).

4.2 - Territorial planning

- Romania's general urban regulation provides rules for building in natural and technological hazard prone areas. However, the alignment process between risk/hazard maps and territorial planning is unclear and needs to be further clarified and strengthened.

- Higher resolution risk and hazard maps are needed to be effectively taken into consideration for land use and urban planning purposes. Ongoing collaboration with national research institutes would facilitate the technical support to improve risk assessment outcomes.

- Efforts in better linking territorial planning to risk assessments are ongoing and should be systematised and regulated by law.

According to Law 575/2001 approving the National Spatial Planning Plan - Section V Natural Risk Areas, county councils and the General Council of Bucharest are required to draw up risk maps for earthquakes and landslides (following the method established by GD 447/2003 and 663/2013) and include that information in urban plans and local planning regulations, as well as in county land-use plans. The general urban regulation (GD 525/1996) provides rules for building in natural and technological hazard prone areas, along with GD 382/2003, which approves the methodological norms for the minimum content on risk areas required for land use planning. Following these regulations, local authorities issue building permits. While legislation is in place for territorial planning, its implementation should be improved at the local level. To this end, and to draft territorial plans that efficiently consider risks, it is fundamental to develop local level risk assessment at high resolution. While the available and most updated risk maps from the RO-RISK Project (2018) are insufficiently detailed for spatial planning purposes, as they are drawn up at national scale, local authorities should exploit the opportunity to develop these further.

A stronger collaboration with the Romanian research institutes (for example the Institute of Geography of the Romanian Academy and the Technical University of Civil Engineering Bucharest) could capitalise on available technical capabilities available throughout the Country, and support risk analysis and scenario building at different scales. So far, they are involved and consulted on an occasional basis with no established clear framework regulating their collaboration and cooperation

with public authorities in the field of DRM. A formal clarification of type and way of involvement of the scientific community in DRR/DRM is needed and deemed explicitly necessary by universities and research centres participating in the peer review as invited stakeholders the Italian model of Centres of competence has been mentioned by Romanian institutions as a good practice to follow.

Some of the relevant projects run by the MDPWA included the "Development of urban policy as a tool to strengthen the administrative capacity and strategic planning of urban areas in Romania" implemented between 2019 and 2021 and aimed at developing urban policy as a tool to increase the resilience of cities, limit the consequences of disasters, and accelerate post-event reconstruction. Also, the project "Systemising legislation in the field of spatial planning, urban planning and construction, and strengthening the administrative capacity of specialised structures in central public institutions with responsibilities in the field", which was run between 2018 and 2021, realised a set of measures to ensure the systematised and optimised legislative framework by drawing up the Code of Spatial Planning, Urban Planning and Construction and to provide methodological, operational and information and communication tools for the implementing the amended legislation. The outcomes of these two valuable projects will be included in the current framework.

Floods

In the field of flood risk, on-going projects partially funded by the EU are dedicated to facilitating the implementation of FRMPs' measures. These include developing a training programme for public authorities on how to integrate FRMPs in urban planning and apply measures for aligning territorial planning strategies and urban development plans with FRMP.

Earthquakes

Seismic risk maps are available at the administrative territorial unit (ATU) level, while for Bucharest the data is available to users at the building level in pdf format. These maps are insufficient for civil protection and spatial planning purposes, as they consider only some buildings and collect partial information, such as building date, type of construction, year of assessment and vulnerability class, and these only for buildings considered at highest risk.

Wildfires

The Romanian forestry code (Law 46/2008) include several prevention measures to increase resilience against forest fires. Also, GIES signed a cooperation protocol with the Paying and Intervention Agency for Agriculture and the National Environmental Guard, to monitor farmers' compliance with good agricultural conditions when burning stubble and crop debris, penalising those who burn them in an uncontrolled manner. To reduce wildfires caused by agriculture activity (fire intentionally caused by farms to get rid of crop remains), the use of woodchippers (which fertilise the soil and reduce risk of fires) should be encouraged. Moreover, it would be recommended to raise awareness among farmers and establish a set of rules to be followed when burning stubble (considering weather conditions, season of the year, range of distance from the forest area, availability of extinguishing devices, etc.).

Drought

The National Strategy for reducing the effects of drought proposes measures to reduce land degradation and desertification. The Strategy includes actions of active interventions in the atmosphere

that are effective in combating drought by increasing rainfall. Both types of interventions use cloud seeding with silver iodide particles through a complementary technological mix: rockets, aircrafts, and ground generators. Dedicated projects for combating desertification include actions to establish forest curtains and improve irrigation, such as the Irrigation Investment Strategy with the 2018-2028 implementation period and the 2021-2027 CAP National Strategic Plan. Nature based solution measures such as the large programme of afforestation are recommended for preventing the risk of drought and erosion.

Given that climate change is a risk driver, attention should be paid to changing trends in the risk landscape. More consideration of prevention measures for floods, drought and forest fire risks should be stimulated. Moreover, the link between disaster risk reduction and nature conservation should be further promoted, as measures to protecting natural wildlife and ecosystems are also beneficial in reducing disaster risk, especially since Romania presents a high level of biodiversity and the largest area of virgin forest in the EU.

4.3 - Structural measures and nature-based solutions

- Structural prevention measures are in place for different hazards within sectoral strategies and plans. Green infrastructures and NBSs are promoted in FRMPs and in the National Strategy on Adaptation to Climate Change, which are yet to be implemented. Promoting green infrastructures and nature-based solutions whenever possible, including by providing guidance to local authorities on the use and value-added of these measures, is recommended, as they often are cost-effective measures playing a key role in sustainable flood risk management.

- The government has established measures to reinforce buildings, to be implemented through different funding programs, such as the National Programme of building retrofitting to reduce seismic risk. The ongoing process of establishing criteria for prioritising buildings to be retrofitted and of envisioning the combination of seismic retrofitting with energy saving interventions will further improve the programme.

- Prevention measures are defined and implemented according to specific risks by flagship institutions. No overall coherent framework is governing the process.

Floods and NBSs

Structural, green infrastructure measures and NBSs are included in the new FRMPs, which are about to be finalised by Romania within the second cycle of the FD implementation. Specific guidance for integrating green measures during screening and packaging of measures was drafted and disseminated.

In the context of the National Strategy on Adaptation to Climate Change 2022-2030 and the National Adaptation Plan (NAP) for its implementation, NBSs are considered to meet the sectoral objective of "Adapting the Water Resources sector to climate change". The NAP mentions measures such as the establishment of buffer strips along water courses; large afforestation of watersheds; provision of watercourse mobility space, watercourse restoration works, and natural water retention areas. Promoting green infrastructures and NBSs whenever possible is recommended, especially in relation to landslides and flood risks, whose frequency represents major risks. NBSs are often cost-effective

measures and play a key role in sustainable flood risk management. However, it seems that the perception of their importance and, therefore, their implementation is still limited.

Earthquakes

One of the most important prevention measures for reducing seismic risk is the process of reinforcing and retrofitting buildings and infrastructures (see Chapter 3).

Measures to reduce seismic vulnerability of existing buildings are regulated by Law 212 (12.07.2022). The government has established retrofitting programmes to be implemented through different funding mechanisms.

The assessments conducted in Bucharest identified hundreds of inhabited buildings as highly vulnerable and have been marked with a red stamp (Figure 9).

To reduce seismic risk, a national programme of building retrofitting funded by the State budget has been in place with an average annual budget of approximately RON 20 million financing intervention projects on an average of 90 buildings/year. The programme started a few years ago, financing the retrofitting of multi-storey residential buildings classified in seismic risk class I. In the initial phases of the programme, the government financed the consolidation works, with 25-year repayment terms. Involvement in the programme was based on a first come, first serve priority. However, the programme was not successful, so new legislation was approved in 2022 (Law 212/2022), updating the terms of the national programme for consolidating buildings with high seismic risk. According to the new regulation, owners are not required to repay the retrofitting, which is financed by national budgets and funds from the NPRR, on condition that the building is not sold for at least 25 years. Otherwise they are required to repay the full amount.

The new regulation also introduces rapid visual assessment (the methodology is currently being developed) to obtain a first vulnerability assessment of building stock and prioritisation of intervention, and envisages extending the programme to public buildings of education and health.

To improve the effectiveness of these prevention programmes, commitment and trust among the population in retrofitting programmes on residential buildings should be encouraged through targeted risk awareness initiatives. Other retrofitting projects/programmes targeting specific sectors, such as educational and cultural facilities, are ongoing.

The UTCB implements the Safe Inclusive Sustainable Schools project, funded by a World Bank loan, in collaboration with the Ministry of Education. The project works on improving the resilience, energy efficiency, and learning environment of selected schools by retrofitting the buildings and increasing institutional capacity for integrated investments in Romania's schools. The resilience of education infrastructures was assessed based on 2019 data from the SIIIR (Integrated Information System), a database of educational buildings managed by the Ministry of Education. Methodology and prioritization criteria for retrofitting were developed and applied to each building built before 1977 and not yet retrofitted. Also, exposure and retrofitting costs were estimated. It was estimated that 60% of the buildings (around 9,929 buildings) assessed the need to be retrofitted, showing a high level of vulnerability. A bid for a pilot project comprising 100 school buildings was recently launched to the construction sector.

The National Programme for the Restoration of Historical Monuments, financed by the State budget through the Ministry of Culture and managed by the National Institute of Heritage, allocates around RON 9 million yearly to finance protective interventions on national cultural heritage sites. In 2020, conservation, restoration and emergency projects were carried out on 89 historical monuments. The Ministry of Culture collects data on national heritage sites, and produces normative codes for structural safety of historical buildings in collaboration with MDPWA. Another project being developed over a 2-year period aims to create an inventory of national heritage, including both national monuments and archaeological sites/buffer zones, as well as UNESCO world heritage sites, which will provide information to the cadastre.

Figure 9 - A first seismic risk-class building in Bucharest marked with the red stamp.

4.4 - Innovation and knowledge services

- Many research programmes on disaster risk are in place, though the science-policy interface needs to be strengthened to match the needs of policy makers with the research activities. A consolidated framework for research in DRM is needed, as well as a stronger interlinkage between DRM Authorities and the Research/Academia community.

- More EU funding opportunities in DRM research should be further exploited.

- The exploitation of EU innovation and knowledge services should be increased.

Romania has a dedicated Agency for Higher Education, Research and Development and Innovation Funding under the Ministry of Research Innovation and Digitalisation through which research institutions, enterprises and universities can apply for funding.

While in the National Plan for R&DI 2022-2027 there is no dedicated objective to fund research on disaster risk reduction, the UEFISCDI estimates a large share of funding to be dedicated to seismic risk reduction for buildings in the next R&DI plan.

Research projects on risk management and/or disaster topics are funded by the national budget, Horizon 2020 and other funds. This topic of research developed after 2012, raising less interest in the most recent years and showing limited interconnectedness between the various research projects in this area. Related to this, most of the recently published papers (since 2018), touch on the topics of risk assessment, floods, landslides, and disaster management. The topics of climate change, risk

perception and floods have gained their greatest importance since 2020. The Romanian institutions publishing scientific papers on risk management topics include the University of Bucharest, the Romanian Babeș-Bolyai University of Cluj-Napoca, the Institute of Geography of the Romanian Academy and the Technical University of Civil Engineering in Bucharest.

Strong technical capabilities in risk assessments and research on DRR are represented by the different research entities and academies in Romania. As a result, scientific projects related to DRM have been successfully carried out in the last decade. However, the exploitation of their results and products is limited. A key factor in improve this is to strengthen the science-policy interface by a consolidated framework and by matching the needs of policy makers with the intentions of the R&D community. In addition, a better dissemination of scientific research projects should be achieved to help in exploiting the results of already existing research projects.

With regard to exploiting EU innovation and knowledge services, Romania regularly takes advantage of Copernicus services and tools.

The Copernicus Emergency Management Service (EMS) [29] is used in Romania for its early warning component. Since 2020, the authorities responsible for managing different risks (MMAP, ANM, INHGA, IGSU) have made periodic use of: the European Flood Awareness System (EFAS), which provides overviews on ongoing and forecasted floods in Europe up to 10 days in advance; the European Forest Fire Information System (EFFIS), which provides near real-time and historical information on forest fires; sand the European Drought Observatory (EDO), which provides drought-relevant information and early-warnings for Europe.

In the past 10 years, GIES has activated the Copernicus EMS rapid mapping service for a limited number of times: five flood emergencies, one forest fire and one emergency related to Salt Mining at the Ukraine-Romania border. The estimation of flooding extent by satellite imagery using Copernicus has been carried out twice over the last ten years. An extension of the use of Copernicus is planned by PAID to estimate the costs of disasters and the funds to be mobilised after major events.

The National Institute for Earth Physics uses Aristotle project tools for conducting seismic risk analyses and visual assessment tools for estimating building damage.

While the use of the Copernicus tool by Romanian authorities has slightly increased over the years, the knowledge and exploitation of the EU Risk Data Hub has not yet started. The exploitation of this tool implemented by the Disaster Risk Management Knowledge Centre (DRMKC) would be beneficial in building a comprehensive database of disaster losses and supporting decision-making and risk analysis.

4.5 - Awareness and risk communication

- Risk communication activity during emergencies is regulated by law. Public institutions must implement the National Strategy for Communication and Public Information for Emergencies and include a Guide of Emergency Communication into their risk analysis and contingency plans (PAARs).

- The paradigm shift from disaster management to disaster risk management undertaken by Romania is mirrored in its education, awareness, and risk communication activities. In the last decade, several initiatives focused on risk prevention have been organised and implemented at national level.

- Several national awareness campaigns have been organised over the years, targeting disaster risk topics. Attempts are being made to bring awareness actions closer to citizens through the implementation of successful public-private partnerships and collaborations with civil society organizations and NGOs. DRM lessons and two specific educational programmes are included in the school curricula and boosted by extracurricular activities.

The Public Relations Concept of the Ministry of Internal Affairs 2017-2020 and the National Strategy for Communication and Public Information for Emergencies (Order 632/2008) focused on communication and public information activities during emergencies, represent the Romanian key legal regulations on risk information and communication. Public institutions are obliged by law to implement the Strategy and to include a Guide of Emergency Communication into their risk analysis and contingency plans.

The paradigm shift from disaster management to disaster risk management undertaken by Romania is mirrored in its education, awareness and risk communication activities. In the last decade, several initiatives focused on risk prevention have been organised and implemented at the national level.
Dissemination and education on disaster risk topics in schools is foreseen in the national legislation. The Ministry of Education is in charge of planning the overall activity, in collaboration with GIES and MoIA. A specific Memorandum of Understanding on civil protection training for students in is in place between GIES and MoE.

DRM lessons and two specific educational programmes are included in the school curricula. Risk education is also boosted by yearly extracurricular activities (e.g., firefighter camps and national competitions), considered a good opportunity to increase risk awareness among the younger population. The MoE provides training for teachers on disaster risk topics by organising dedicated workshops and disseminating manuals focused on prevention and awareness. To increase the effectiveness of risk education in schools, additional training on the key risks identified in NRA and the priorities defined by the NDRRS may be recommended. Regarding administrational capacities, there is huge potential to leverage on the expertise of local Universities by creating "DRR and sustainable development" programmes for local and national government officials.

Other education and dissemination activities on specific risks are also carried out by national institutions, such as the Institute of Geography, the MEWF - which disseminate guidance brochures on flood risk, and the National Institute of Earth Physics - whose initiatives on seismic risk awareness include the Mobile Earthquake Exhibition (MOBEE), Bucharest and earthquakes guided tours, and educational activities with children.

IT tools have also been implemented to support risk information activities, among others: the Be Prepared online platform providing information on behaviours to adopt in emergencies and the National Emergency Preparedness Platform, the official source of information to help citizens better

understand risks. Information is also spread to the population via governmental websites, the mobile 'DES app' and social media, such as the 'Safety Romania' Facebook page.

Several risk awareness initiatives have been successfully organised at the national level in Romania in the last decade. On average a new awareness campaign is implemented each year. These campaigns are mainly targeted at raising awareness among citizens on hazards that might affect them and on safe behaviours that should be adopted in different contexts. Different channels are used to spread the messages of the campaigns; TV and radio are expensive, for this reason efforts are being made to formally consider those campaigns as "public interest campaigns" in order to lower costs.

In 2020 a study was carried out to assess the impact of awareness activities implemented so far. The results highlighted that the public greatly appreciate these initiatives, demonstrating a clear interest in this topic, which is considered pivotal in reducing the number of emergencies. More human resources could allow more activities and thus reach more people, especially in the most vulnerable contexts, such as rural areas.

More than 4,500 practical exercises and training programs specifically aimed at preparing the population for earthquakes have been implemented by GIES and civil society organizations. Also, two mobile training centres have been implemented, providing excellent results in raising awareness on risks among students and the general public. The "Be Prepared" caravan, established with the support of the SMURD foundation and Vodafone Romania, consists of a caravan in which training courses for the population are organized for providing first aid training in the event of emergency situations. The "Mobile Centre for Preparedness" (Figure 10), implemented by SMURD Foundation and Kaufland Romania, moves around the country, and trains the population on how to identify and react to simulated emergency situations.
Both initiatives are the outcomes of an excellent collaboration between GIES, the private sector and civil society in the field of disaster risk management that should be further explored and exploited.

Figure 10 - Mobile Centre for preparedness visited during the peer review mission.

4.6 - Conclusions

A paradigm shift from a disaster management to a disaster risk management approach has significantly accelerated since the signing of the SFDDR. Improvements have already been undertaken at the national level, highlighting efforts in strengthening prevention activities to reduce disaster risk and improving resilience. However, the concept of prevention within the legislative framework and strategic documents still suffers from a lack of common understanding and consistency. The NPDRM lists among prevention several measures that are linked to the preparedness phase, while the NDRRS uses a definition aligned with UCPM's. Consistency in defining prevention is therefore needed across different strategies and sectoral plans. In addition, the prevention phase and its legal framework seem to be weak compared to response under the disaster risk management system currently in place. Prevention activities need to be further harmonised and promoted at all territorial levels (na-

tional, county, and local), for example by raising awareness on their importance through cost-benefit analyses and results.

Specific risk prevention measures are envisaged in sectoral plans, and strategies are implemented by flagship institutions. For example, green infrastructure and nature-based solutions (NBSs) are promoted in the flood risk management plans drafted within the 2nd cycle of implementation of the EU FD, and in the National Strategy on Adaptation to Climate Change, which are yet to be implemented. Promoting green infrastructures and NBSs whenever possible is recommended, since they are often cost-effective measures playing a key role in sustainable flood risk management, as well as prevention of drought risk and land erosion. Additionally, measures to reinforce buildings are envisaged by the National Seismic Risk Reduction Strategy to be implemented through different funding programs, such as the National Programme for retrofitting buildings to reduce seismic risk. The ongoing process of combining criteria for the prioritisation seismic retrofitting of buildings and energy saving interventions will further improve the programme.

Taking into account hazard and risk assessment in territorial and urban planning processes is key to prevent and reduce disaster risk. Romania's general urban regulations provide rules for building in natural and technological hazard prone areas, and local authorities are responsible for granting building permits. However, the alignment process between risk/hazard maps and implementing territorial planning regulations at the local level could be strengthened. In this case, economic support to the municipalities should be considered for the development of risk maps and preventive measures at the local scale, despite its often being an expensive operation, in order to avoid inequalities among local administrations.

To improve these risk assessment outcomes, an ongoing collaboration with national research institutes already involved in the RO-RISK project and in the NPDRR would provide the technical support needed. A formal clarification of the type and manner of involving the scientific community in DRR/DRM is needed, and is deemed explicitly necessary by universities and research centres participating in the peer review as invited stakeholders. The Italian model of Centres of competence has been mentioned by Romanian institutions as a good practice to follow. In addition, the ongoing efforts in better linking territorial planning to risk assessments within some projects run by the MDPWA should be systematised and regulated by law.

The promotion and use of research, innovation and knowledge services are essential for understanding and managing risk. In Romania, many research programmes on disaster risk are currently in place, but the science-policy interface needs to be strengthened to match the needs of policy makers with the research activities. A consolidated framework for research in DRM is needed, as well as a stronger interlinkage between DRM Authorities and the Research/Academic community. Opportunities to further extend DRM research and understanding are presented in the EU's available funding for research and its innovation and knowledge services, which should be exploited.

The shift towards a disaster risk management perspective is also mirrored in Romania's education, awareness and risk communication activities. While the legislation only regulates communication activities during emergencies, requiring public institutions to implement the National Strategy for Communication and Public Information for Emergencies and including a Guide of Emergency Communication into their risk contingency plans, in the last decade several initiatives focused on risk prevention have been implemented at the national level. Many national awareness campaigns have

been implemented over the years, with yearly regularity, targeting disaster risk topics. Attempts are being made to bring awareness actions closer to citizens by implementing successful public-private partnerships and collaborations with civil society organizations and NGOs. In addition, DRM lessons and two specific educational programmes are included in the school curricula and risk education boosted by extracurricular activities. Regarding the administration's capacities, there is a huge potential to leverage the expertise of local Universities by creating "DRR and sustainable development" programmes for local and national government officials.The peer review focused on some key topics related to preparedness, such as early-warning systems (EWSs), emergency preparedness exercises and training, and the engagement of volunteers and civil society organizations within disaster risk management. Other topics that determine risk preparedness fall outside the scope of the requested peer review.

Figure 11 - Visit to Seveso plant in Jilava during the peer review mission (Credits © GIES).

5 Risk Preparedness

5.1 - Early Warning Systems

- Early warning systems (EWSs) are fully operational for some risks, such as extreme weather events, floods, and earthquakes. The implementation of multi-hazard and impact-based EWSs can enhance institutional and community preparedness.

- Two different institutions are in charge of EWSs for extreme weather events and floods. A very fruitful collaboration is currently in place, based on the sharing of real-time data and information. Cross-border exchanges with neighbouring countries increase Romania's capacity to prepare for and respond to major transboundary floods. The ongoing efforts to improve information and communications technologies and infrastructures are laudable and will contribute to improving EWS performance.

- The RO-ALERT cell-broadcast system has been operational since 2019. The system was successfully used during recent emergencies to inform the population on expected and/or ongoing scenarios. A better calibration of threshold values triggering alerts can increase the efficiency and trustworthiness of the system.

Romania has implemented sectoral early warning systems for different hazard-types: extreme weather events, floods, and earthquakes.

Extreme weather events

The National Meteorological Administration (NMA), a member of the World Meteorological Organization (WMO), runs operational activities in the field of weather forecasts and warnings, through a distributed system consisting of a National Forecasting Centre in Bucharest and a network of 7 Regional Forecasting Centres.

The EWS run by the NMA is not impact-based, nor is multi-hazard. It disseminates forecasts and warnings on severe weather events through different channels, such as websites, media, and text and email messaging. Forecasts and warnings are provided by the NMA to both public authorities and private companies working in different fields of activities. In the private sector, the NMA stipulates contracts for providing tailored forecasts and messages for a fee.

The National and Regional Forecasting Centres work 24/7 on three main activities: forecast, monitoring and warning. In the forecasting phase, the centres provide very short- (nowcasting 0-6 hour), short- (24 - 48 hour), and medium-term (3 - 5 day) range weather forecasts, and precipitation at the national and regional levels. Monitoring is performed 24h/7 using data from a surface measurement network, a meteorological radar network and satellite imagery products from EUMETSAT. Warnings and alerts are disseminated in a colour code ranging from yellow, orange and red, as a function of the events' severity, in line with the European Standards.

The warnings issued 24-36 hours before the event onset contain an explanatory text and a map with coloured targeted counties. Those messages are drafted by forecasters and transmitted automatically to a predefined list of stakeholders that comprises relevant authorities, such as GIES. The last mile dissemination to citizens remains a mayor's responsibility. In case of orange and red weather alerts, cell broadcast messages on expected phenomena and behaviours to be adopted are sent directly to the population through the RO-ALERT system (see BOX 5).

The government recognizes the NMA's primary role, foreseeing an NMA representative in most national committees established to address specific hazardous events (e.g. Committee on drought). Also, a fruitful cooperation is established with GIES, by exchanging data and information, and conducting joint projects.

The effectiveness and efficiency of the extreme weather event EWS can be further improved by updating and empowering the current IT infrastructure and capabilities, and investing in new generation sensors. Actions in this regard have already been undertaken by the NMA and are currently being implemented.

Figure 12 - Visit to the National Meteorological Administration during the peer review mission.

Floods

The Romanian National Hydrological Forecast Centre (NHFC) is part of the National Institute of Hydrology and Water Management (NIHWM), and is in charge of the operational hydrological short-range, medium, and long-range forecasts and flood warnings in Romania. If needed, at the basin-level (for the 11 major river basins) the short-range forecasts are downscaled by the River Basin Hydrological Services of the eleven branches of the Romanian Water National Administration (RWNA). The methods and procedures used for implementing hydrological forecasts vary from empirical relations to complex models.

The hydrological forecasting and warning activity is mainly based on hydrometeorological data and information from the national hydrological network managed by the RWNA; meteorological data, radar products, and weather forecasts from the national meteorological network of the NMA; data on water levels, discharges, ice, snow cover, air temperature, precipitation, as well as discharges and water levels forecasted by hydrological services of neighbouring countries in case of transboundary rivers.

The Romanian National Hydrological Forecasting and Modelling System was implemented within the DESWAT National Project. The system includes a Flash-Flood Guidance component for operational flash flood warning. Two main categories of hydrological warnings are currently issued, in accordance with the legislation:

- national warning messages with descriptive text messages and maps of the affected rivers for floods with lead time > 6 hours, wide spatial extent, and duration > 12 hours;
- hydrological warning with only descriptive text messages for floods with lead time > 10 minutes, mainly related to flash floods in small river catchments, and duration < 12 hours.

A hydrological forecasting system is in place for the Danube River and is based on 2 hydrological models elaborated by the NIHWM. The NHFC elaborates hydrological forecasts on a daily basis for the following 7 days, assessing the discharge at the Bazias section (the first section at the entrance into the country), as well as water levels and discharges at the main hydrometric stations on the Romanian sector of the Danube. Long-term hydrological forecasts are carried out on a monthly basis for medium and extreme discharges at the Bazias section for the following 3 months. When extreme flood events are expected, hydrological forecasts are issued with a 10-days notice.

A cross-border collaboration for hydrological forecasting is well-established with the neighbouring countries. In case of transboundary river basins, bilateral agreements regulate real-time data exchange for both hydrological forecasting and water management. In case of expected extreme flood events, direct contacts are established for sharing additional information. General assessments of potential severity of flood events in transboundary river basins are performed by using shared real-time data and other products from the existing regional systems (such as EFAS), and the available NWP models.
Bilateral meetings are organised to identify gaps and exchange information for a general improvement of the system. Ongoing and planned activities to enhance the Romanian National Hydrological Forecasting and Modelling System are focused, for instance, on improving flash flood forecasting and warning methodology, the training and "assisting of" forecasters, the implementation of an ensemble hydrological forecasting, and others.

BOX 5 – RO-ALERT

The RO-ALERT system is implemented on the Romanian territory by the MoI, through its GIES and the technical support provided by the Special Telecommunications Service, as per Emergency Ordinance 72 of October 5th, 2017. The system implements article 110 of the European Electronic Communications Code (EECC), which requires all EU countries to operate a public warning system that can send geo-targeted emergency alerts to all mobile phone users located in the affected area during a natural or man-made disaster. The RO-ALERT was officially used for the first time on November 15, 2018 and make it possible to send Cell Broadcast messages to warn and alert the public in case of serious life-threatening emergencies, such as extreme weather events, major floods, terrorist attacks and CBRN accidents.

RO-ALERT operators disseminate cell broadcast messages to warn people in a preselected area. The content of the alert, as well as the information on the area where it must be sent, are carried through private RO-ALERT interconnections with mobile phone operator networks. Cell Broadcast technology enables mobile communications antennae in the selected area to send the alert to all mobile phones found in the respective area. The users' names and phone numbers are not necessary and remain unknown. Other information on an emergency alert sent to the mobile communication networks, includes message validity and the number of re-sent messages as well. A mobile phone having already received an alert will no longer get the same message again. RO-ALERT messages can be received on the entire Romanian territory, wherever there is 2G/3G/4G GSM signal. No special app need be installed on mobile phones.

Figure 13- Plenary session on RO-ALERT during the peer review mission.

RO-ALERT is designed, developed, and run 24/7 by the MoIA through its DES and GIES components in accordance with legal provisions. A list of sectoral risk authorities (e.g. Meteo and Water Authorities), as well as local authorities, such as mayors, can request CIES to issue public warnings. In 2021, the system issued 4112 messages (95 in Bucharest): mostly regarding the presence of wild animals (2588); for COVID-19 (915); and storms (412). The high number of activations seems to have generated complaints among the population. In this view, a better calibration of triggering thresholds could increase consideration and trust in the system.

The Romanian flood EWS has established fruitful partnerships at the national and international levels. The strong collaboration with the NMA allows for a high level of efficiency of the system. A mechanism for exchange of experts between NMA and NHFC could be helpful in boosting the connection of the two administrations, whose cooperation is key for the effectiveness of the two EWSs. Also, the cross-border collaborations currently in place are pivotal for an adequate preparedness of the emergency management system and the whole community.

At the present moment the major critical issues are mainly related to forecasting and monitoring flash floods and short-lead time flood events. The ongoing empowerment of the hardware and software infrastructure, together with specific training of forecasters will advance the system. In addition, the NHFC is making special efforts to improve the working conditions of the flood forecasters, since they are the key component of the EWS, with the aim of attracting more personnel and increasing the sustainability of the system.

Earthquakes

The National Institute for Earth Physics (NIEP) operates the Romanian Seismic Network and the National Seismic Data Centre made up of 173 real-time stations in free field, and 22 monitored buildings in Bucharest, with sensors on the ground and the top floors. The NIEP run the seismic EWS, providing alerts and shake maps that follow an official procedure established at national level.

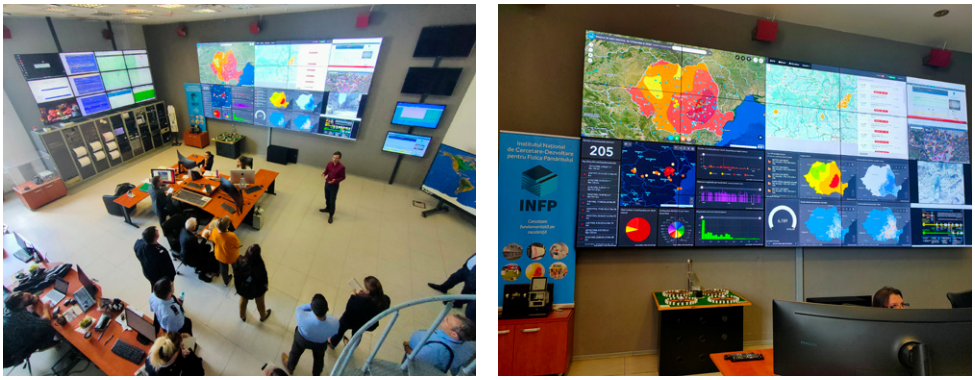


Figure 14 - Visit to the National Institute for Earth Physics during the peer review mission.

In the event that an earthquake with magnitude > 3Mw strikes inside Romanian territory, or > 4Mw in the Vrancea region, the EWS is activated and GIES is immediately alerted. Within a few minutes of the event, NIEP implements and disseminates seismic data, shake maps (within 10 minutes) and preliminary assessment of estimated casualties at the national level (within 30 seconds for earthquakes over 4.5Mw and 15 minutes in the case of lower magnitude) to a list of pre-defined authorities. When an earthquake with magnitude between 3-4Mw strikes, within 3 minutes a first map is available and after 9 minutes a first map of ground shaking and possible effects is shared with the public. Preliminary reports are ready within 30 minutes and then updated after 12-24hours.

In addition to actions performed after an earthquake, NIEP runs a seismic early-warning system that would allow for pre-warning of an earthquake, at least 20 seconds before the population feels the first wave. Alerts are sent to the government, to nuclear power plants, and to critical infrastructure operators. Dissemination to the general population is not in practice at this stage, due to concerns that it could generate panic.

NIEP is also part of the Aristotle initiative for earthquakes and tsunamis, under which it submits a comprehensive situation report to the Emergency Response Coordination Centre (ERCC) within 3 hours.

There is a process in place for collecting geo-localized data on the population's perception after an earthquake. So far, data was collected after earthquakes in April 2020 and May 2021.

5.2 - Training and exercises

- A network of training centres, the National Centre for Improving Training in Emergency Situations Management, and 3 Zonal Training Centres for Civil Protection, is currently in place with the responsibility of organising and implementing basic and advance courses for the military and civilian personnel involved in emergency and management response. There is a need to improve and increase the training facilities dedicated to disaster risk management for all types of authorities and organisations.

- Standard curricula of basic and advanced training courses are defined and approved by GIES, thus ensuring a coherent training throughout the Country. Also, curricula are usually revised after major disasters to update them with relevant topics. Improving and increasing the number of training facilities at the national level, along with implementing online courses and exploiting new IT tools, such as virtual reality, could enhance the effectiveness of the training and attract more people.

- Mandatory courses for mayors are envisaged in the training mechanism. More attention to prevention topics could be dedicated to raise awareness and knowledge among the local authorities on their key role within this phase.

The National Centre for Improving Training in Emergency Situations Management (NCITES) in Ciolpani ensures the basic and the advanced training of the personnel involved in emergency and management response. Besides the national centre, 3 Zonal Training Centres for Civil Protection have been established in Cluj, Craiova, and Bacau.

The main activities of the centres are: training professionals involved in emergency response within operational and operative centres at all territorial levels; training personnel of local public administrations involved in emergency management; organising and implementing basic and advanced training courses for disaster assessment experts, response coordination experts and incident commanders; supporting in the coordination of implementation of standard operating procedures.

Training courses are organized both for military staff and civilians having responsibilities in managing emergency situations at the local public administration level, public institutions, volunteers, and private companies considered as risk drivers, such as Seveso plants.

Most personnel trained within the centres belong to military staff, who attend basic (3 months, 2 in the training centre and 1 in their home unit) and advance specialised training (3-4 weeks) mainly focused on CBRN, USAR and pyrotechnic activities. Training for civilian staff is shorter and consists of a 4-weeks course for volunteers and a 5-day mandatory course for mayors and their staff.

Mandatory training courses for mayors are held within the centres: each mayor should attend a compulsory course at least once in 4 years (usually in the first year of their mandate). Personnel from key ministries in charge of managing specific risks are invited as lecturers within these courses. Although prevention and preparedness aspects are already covered, more attention to these topics is desirable to raise awareness and knowledge among the local authorities on their key role within this phase.
The standard curricula of all training courses are defined and approved by GIES, and a review is usually done after major disasters have occurred. If deemed appropriate, new topics are added in the training courses (e.g, after Covid-19, new subjects have been introduced).

At present, the maximum training capacity of the Centres is 3000 people/year, significantly lower compared to actual needs. More facilities and staff are needed to improve the national training capacity. For this reason, the NCITES is currently constructing new training facilities in the framework of the Resilience project (Increasing resilience to disasters by improving training for Search and Rescue missions and unexploded ammunition from World War I and II), funded by the Norwegian Financial Mechanism 2014-2021, Axis nr.23 – Prevention and intervention in case of disasters. New training facilities for SAR activities and unexploded ordnance (UXO) removal missions as well as theoretical training spaces and student accommodation will soon be available.

Figure 15 - The National Centre for Improving Training in Emergency Situations Management (left) visited during the peer review mission and new training facility under construction for SAR activities (right).

At the moment, IT tools, such as virtual reality, are not used within the training, and on-line courses are currently not implemented. The future implementation of these tools would allow a larger number of professionals to be trained in a more cost-effective way.
Strengthening the preparedness capacities of the CP system and professionals, and voluntary forces is one of the objectives of NDRRS.

A pivotal tool is represented by exercises that have been regularly organised and implemented in Romania, with outstanding results in recent years. International, national, and bilateral exercises are increasing the preparedness for response activities of the whole system, e.g., an annual national exercise program for preparedness of intervention forces in case of disasters.

In the period 2016-2019 Romania organised and conducted 15 national and international exercises (9 full scale exercise and 6 command post exercise), on earthquakes, floods, forest fires, radiological accidents or nuclear scenarios with a national impact. Two are worth mentioning: the "EU ModEX 2018", the largest major earthquake simulation exercise in Romania, and the "VIGOROUS WARRIOR 19", considered the most complex military-civilian exercise organised by NATO. In addition, training activities for cross-border risks are regulated by Joint Intervention Plans: as an example, joint exercises are regularly carried out with Bulgaria.

5.3 - Rescue capacity - engagement of the civil society and voluntary services

- Rescue capacities in Romania include GIES and their subunit of professional forces (CIES), Voluntary Emergency Services and Private Services for Emergency Situations. Although well structured, the Romanian volunteer system needs further improvement in terms of technical, administrative, and financial capacities. Incentives to attract new generations of volunteers could increase the number of young personnel and the efficiency of the system.

- A good level of collaboration with civil society organizations is already in place, with excellent results obtained in recent emergencies. A clear legislative framework governing the collaboration between public authorities, and the civil society could increase the efficiency and effectiveness of this collaboration. Moreover, this valuable collaboration could be further extended to activities dealing with prevention and preparedness.

- The Microsoft Team's collaborative platform, implemented as a successful public/private partnership to facilitate the management of recent emergencies, has proved to be an effective tool. Extending its use to other phases of disaster risk management, such as prevention, could help strengthen and expand the valuable collaboration with the civil society.

This section on rescue capacity includes topics related to civil society engagement and voluntary services, as well as cross-cutting themes, which were addressed in the peer review mission. Other issues falling under rescue capacity were not included. Rescue capacities in Romania include the GIES and their subunit of professional forces (CIES), Voluntary Emergency services and Private Services for Emergency Situations.

Volunteer system

At the local level, GD 1579/2005 defines the statute and functioning rules of voluntary services, including training, equipment, and capabilities.

In Romania, there are two categories of volunteers: "Volunteers within the volunteer service for emergency situations" under the authority of town halls, and "Rescuers for passion" under the county inspectorates for emergency situations (CIES). In the first category volunteers need to be at least 18 years old and it numbers nearly 60,000 people. The second category was established in 2016, requires a minimum of 16 years of age, and numbers around 6,600 people. Rescuers for passion are involved principally in medical first aid as paramedics under SMURD, and involve mostly students. Volunteers are under the authority of villages, towns, and municipalities. Depending on the number of inhabitants and the MoI ordinance, there can be three different types of voluntary services (V1-2-3). The lower tier (V1, for example in Jilava) implies having a service leader, a compartment for prevention, and specialised teams. The second tier (V2) should also have one response team with a fire truck; type V3 has two or more additional response teams and a repair shop.

For municipalities with a GIES subunit operational within 25 km, such as Jilava, no additional equipment is required, and volunteers mostly focus on prevention activities, such as a door-to-door awareness campaign and drafting of contingency plans.

The training of volunteers at the local level is carried out by the chief of volunteers at the town hall. Professional competitions of voluntary services are organised annually and include tests on skills, using extinguisher systems with motor pumps, and relays.

Although well structured, the Romanian volunteer system needs further improvement in terms of technical, administrative, and financial capacities. Financial support to local volunteer groups and the systematic inclusion of the head of voluntary services within the local public administration organisational chart could significantly improve the functioning of the system.

One critical aspect concerns the number of volunteers, which is currently limited and likely to even decrease in the coming years due to aging of personnel and insufficient turnover. Some incentives to attract new generations are already in place, such as free public transport at the local level. Additional benefits and information campaigns among the younger population could facilitate the engagement of new personnel to be dedicated to both response, and prevention and preparedness activities.

DES is currently developing a website and a mobile app designed to provide a full picture of available resources and to manage them in case of a natural disaster occurring in Romania.

Private emergency services

Along with the voluntary emergency services, private Emergency Services are mandatory by law in economic activities considered as risk drivers (such as chemical industries, Seveso plants) or in buildings that receive a large number of the public (e.g. universities that have more than 10,000 students or hospitals with more than 300 beds). However, action of the private emergency services is mainly focused on fire, and they cannot act outside their respective installation.

Collaboration with the civil society

Under the GDCP, and within the Resilience Requirements Coordination and Implementation Department, a Civil Society Relations Section is dedicated to identifying bodies and non-governmental organisations that can support the Department in the field of civil protection. Moreover, it supports agencies and representatives of the civil society in implementing resilience requirements, conducts analysis and evaluation of the civil society's agencies and representatives, and ensures their participation in exercises and training programs.

In 2016, DES started to sign protocols with civil society organisations. So far, 30 protocols are in place (16 for response, 12 for prevention, and 2 for IT/radiocommunications) to increase preparedness, awareness, and resilience of the population. The collaboration ensures an active involvement of the civil society in activities specific to the field of civil protection, and promotes resilience training programs and recovery capacity.

The partnership established with NGOs helps the DES and its subordinated structures to get closer and establish strong connections with the local level and the population. Social workers are well connected to the communities, in particular with the most vulnerable ones, and represent a fundamental bridge between national and local authorities and citizens. For this reason, NGOs often play a pivotal role in citizens' engagement activities. As an example, seismic risk awareness and perception of the population were the key topics covered by projects run by Re:Rise, a Bucharest-based non-profit association working towards reducing seismic risk by raising awareness, transposing scientific rese-

arch into applications and collaborating with authorities on improving the responsiveness of rescue efforts.

So far, there is no clear legislative framework regulating the civil society's engagement in disaster risk management. Clarifying roles and responsibilities, types of collaboration and operating procedures could advance the effectiveness of joint activities. Furthermore, a targeted training programme in disaster risk management for civil society organizations could be implemented at the national and local levels to establish a common basis for collaboration and ensure interoperability.

An excellent example of successful collaboration with civil society organizations and NGOs is the management of the Ukrainian refugee crisis. Many organisations got involved in response activities frome day 1 of the emergency, providing a valuable contribution. The fact that some of them were already actively working in cross-border areas when the crisis started, represented an important added value.

The management of response activities run by both institutions and the civil society was carried out through a collaborative platform set up on Microsoft Teams from the second week of the emergency. This remarkable example of public-private partnership contributed to the efficiency of disaster management and the coordination of the activities in the field. Different channels and coordination cells involving institutions at different levels, high-level representatives, volunteers, UN agencies and civil society organization were created on the platform to facilitate the collaboration of more than 600 people. Relevant documents for disaster management, such as daily reports, weekly meetings and infographics were shared in real-time through the platform, providing updated and official information to better manage and support the activities in the field.

Both the collaboration with civil society and the exploitation of such collaborative platforms could be extended to activities dealing with prevention and preparedness. At the local level, this collaboration could help authorities strengthen the relationship with the population and enhance consciousness raising.

5.4 - Conclusions

The Peer review mission addressed some key topics related to preparedness, namely EWSs, training and exercises, and engagement of volunteers and civil society organizations in disaster risk management activities.

A single-risk approach is at the basis of implementing EWSs in Romania, where sectoral EWSs are fully operational for extreme weather events, floods, and earthquakes. Currently, there is no multi-hazard or impact based EWS at the national level.

Two different institutions are in charge of running extreme weather events and flood EWSs, and an excellent collaboration is in place with a real-time sharing of data and information. The ongoing improvements to the IT software and hardware infrastructure serving both those EWSs will ensure better and more timely alert performance. Also, cross-border exchanges with neighbouring countries in case of transboundary catchments are pivotal to efficiently preparing for and responding to major floods.

A cell-broadcast alert system (RO-ALERT) has been operational throughout the country since 2019 and has been used successfully in recent years to alert and inform the population on specific expected and/or ongoing major risk scenarios. Some issues remain in relation to the high number of activations, which seem to disturb the population, with potential implications regarding trust and consensus. A better calibration of the triggering thresholds could increase the efficiency of the system and avoid disseminating too many alerts. Also, targeted information campaigns on this tool would be helpful in explaining its functioning to the general public.

Besides EWSs, a key measure for increasing Romania's institutional and community preparedness to disasters is represented by training and exercises. A network of training centres, made up of a National Centre for Improving Training in Emergency Situations Management, and 3 Zonal Training Centres for Civil Protection, is in charge of organising and implementing basic and advance courses for military and civilian personnel involved in emergency management. The ongoing process of increasing training capacity and building new training facilities at the national level will enable more personnel to be trained each year.

Standard curricula of basic and advanced training courses are defined and approved by GIES, thus ensuring a coherent nationwide training process. Also, curricula are usually revised after major disasters, and updated with relevant topics. Implementation of online courses and the exploitation of new IT tools, such as virtual reality, could enhance the effectiveness of the training process and attract more people.

In mandatory courses for mayors more attention to prevention topics could raise awareness and knowledge among the local authorities on their key role in implementing disaster risk reduction and resilience activities.

Rescue capacities in Romania include GIES and their subunit of professional forces, Voluntary Emergency Services and Private Services for Emergency Situations. Although well structured, the Romanian volunteer system needs further improvement in terms of technical, administrative, and financial capacities. Incentives to attract new generations of volunteers could increase the number of young personnel and the efficiency of the system.

A good level of collaboration with civil society organizations is already in place, with excellent results obtained in recent emergencies. A clear legislative framework governing the collaboration between public authorities and civil society could increase the efficiency and effectiveness of this collaboration. Moreover, this valuable collaboration could be further extended to activities dealing with prevention and preparedness.

The Teams collaborative platform, implemented as a successful public-private partnership to facilitate the management of recent emergencies, has proved to be an effective tool. Extending its use to other phases of disaster risk management, such as prevention, could help strengthen and expand the valuable collaboration with the civil society.

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Annex 1 – Acronym table

AMIF	Asylum, Migration, and Integration Fund
APSFR	Areas of Potential Significant Flood Risk
ATU	Administrative Territorial Unit
CBA	Cost-Benefit-Analysis
CBRN	Chemical, Biological, Radiological, and Nuclear
CCA	Climate Change Adaptation
CIES	County Inspectorate for Emergency Situations
COVID-19	Disease caused by the new coronavirus SARS-CoV-2
DES	Department for Emergency Situations
DESWAT	Destructive Water Abatement and Control of Water Disasters
DG ECHO	Directorate-General for European Civil Protection and Humanitarian Aid Operations
DRM	Disaster Risk Management
DRMKC	Disaster Risk Management Knowledge Centre
DRR	Disaster Risk Reduction
EC	European Commission
EDO	European Drought Observatory
EECC	European Electronic Communications Code
EFAS	European Flood Awareness System
EFFIS	European Forest Fire Information Service
EMS	Emergency Management Service
ERCC	Emergency Response Coordination Centre
ESF	European Social Fund
ESIF	EU Structural Investment Funds
EU	European Union
EUMETSAT	European Organization for the Exploitation of Meteorological Satellites
EUSF	European Union Solidarity Fund
EWS	Early Warning System

FD	Floods Directive
FHRMs	Flood Hazard and Risk Maps
FRMP	Flood Risk Management Plan
GDCP	General Directorate for Civil Protection
GD	Government Decision
GDP	Gross Domestic Product
GFDRR	Global Facility for Disaster Reduction and Recovery
GIES	General Inspectorate for Emergency Situations
GIS	Geographic Information System
GLERN/ WGNRA	Working Group for National Risk Assessment
GSG	General Secretariat of the Government
IGAR	Institute of Geography of the Romanian Academy
IMSES	Information Management System for Emergency Situations
M&E	Monitoring and Evaluation
MCA	Multi-Criteria-Analysis
MDPWA	Ministry of Development, Public Works, and Administration
MEWF	Ministry of Environment, Water, and Forests
MFF	Multiannual Financial Framework
MOBEE	Mobile Earthquake Exhibition
MoE	Ministry of Education
MoIA	Ministry of Internal Affairs
MTR-SF	Midterm Review Assessment of Sendai Framework for Disaster Risk Reduction
NAP	National Adaptation Plan
NARW	National Administration of Romanian Waters (Administrația Națională Apele Române)
NATO	North Atlantic Treaty Organization
NBS	Nature-Based Solution
NCCMI	National Centre for Coordination and Management of Interventions

NCCNA	National Commission for the Control of Nuclear Activities (in Romanian abbreviated as CNCAN – Comisia Nationala pentru Controlul Activitatilor Nucleare)
NCES	National Committee for Emergency Situations
NCITES	National Centre for Improving Training in Emergency Situations Management
NDRRS	National Disaster Risk Reduction Strategy
NGO	Non-Governmental Organisation
NHFC	National Hydrological Forecasts Centre
NIEP	National Institute for Research and Development of Earth Physics (in Romanian abbreviated as INCDFP)
NIHWM	National Institute of Hydrology and Water Management (in Romanian abbreviated as INHGA)
NIMP	National Research-Development Institute for Materials Physics
NMA	National Meteorological Administration (in Romanian abbreviated as ANM)
NPDRM	National Plan for Disaster Risk Management (Planul Național de Management al Riscurilor de Dezastre)
NPDRR	National Platform for Disaster Risk Reduction
NRA	National Risk Assessment
NSACC	National Strategy on Adaptation to Climate Change
NEMS	National Emergency Management System
NPRR	National Plan for Reconstruction and Recovery
NSPES	National Strategy for the Prevention of Emergency Situations
NUTS	Nomenclature of Territorial Units for Statistics
NWP	Numerical Weather Prediction
OECD	Organisation for Economic Co-operation and Development
PAAR	Risk Analysis and Coverage Plan (Planul de Analiză și Acoperire a Riscurilor)
PAID	Natural Disaster Insurance Pool (Pool-ul de Asigurare Împotriva Dezastrelor Naturale)
POCA	Operational Programme for Administrative Capacity
PFRA	Preliminary Flood Risk Assessment
PRAF	Peer Review Assessment Framework
R&DI	Research and Development and Innovation

RBAs	River Basin Administrations
ROECA	Regional Office for Europe & Central Asia
RRF	Recovery and Resilience Facility
RWNA	Romanian Water National Administration
SAR	Search And Rescue
SDGs	Sustainable Development Goals
SEEFFG	South-East Europe Flash Flood Guidance
SFDRR	Sendai Framework for Disaster Risk Reduction
SIIIR	Integrated Information System of Education in Romania
SMURD	Mobile Emergency Service for Resuscitation and Extrication (Serviciul Mobil de Urgență, Reanimare și Descarcerare)
UCPM	Union Civil Protection Mechanism
UEFISCDI	Executive Unit for Financing Higher Education, Research, Development and Innovation (Unitatea Executiva Pentru Finantarea Invatamantului Superior a Cercetarii Dezvoltarii si Inovarii)
UN	United Nations
UNDRR	United Nations Office for Disaster Risk Reduction
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNSAR	National Association of Insurance and Reinsurance Companies in Romania
UoM	Unit of Management
USAR	Urban Search and Rescue
UTCB	Technical University of Civil Engineering of Bucharest
UXO	Unexploded Ordnances
WMO	World Meteorological Organization

Annex 2 – List of key legislations

LAW	CONTENT
Law 481/2004 on Civil Protection.	Regulates the Civil Protection's activities and obligations.
GEO 21/2004 on the National System for the Management of Emergency Situations	Establishes the National System for Emergency Situations, its organization and operation in the field of prevention and management of emergency situations. The GEO has been subsequently amended and additions have been made.
GD 557/2016 on the management of risk types.	Ensures the management of risk types and establishes specialised authorities and economic operators who are required to manage risks and perform support functions. Per risk, it identifies lead and secondary authorities, to delineate competences. It also lays down the obligation to draw up sectoral plans for specific emergency situations management, and the operating duties of the incident commander during the response phase.
GD 762/2008 on the approval of the National Strategy for the Prevention of Emergency Situations.	Assesses the current presence of risk factors and sets forth principles and priority measures for disaster risk prevention.
Art. 4 of GD 768/2016 on the organisation and functioning of the National Platform for Disaster Risk Reduction (NPDRR).	Regulates the direction for actions according to SFRRD and Hyogo HFA and the setting of NPDRR.
The Water Law 107/1996.	Core legislation establishing the legal framework for the activities and responsibilities for water resources management at the national and river basin level. This law has been subsequently amended.
Government Decision 846/2010 approves the National Medium and Long Term Flood Risk Management Strategy 2010-2035.	Establishes the responsibilities of the central, county, and local public authorities, as well as of other organisations with a role in the plan of measures for flood risk management.
National Strategy for Combating the Effects of Drought published by Official Gazette of Romania 565 of August 16, 2007 approved by GD 923/2007.	Drawn up in 2010, it establishes the objectives of resources allocated to prevent and mitigate effects of drought, ensuring drinking water supply and short and medium term approach to drought management.
Government Decision 739/2016 for the approval of the National Strategy on Climate Change and of the National Action Plan for economic growth based on low carbon emissions for 2016-2020.	Approves the National Strategy on Climate Change for 2013–2020, which emphasises the impact of climate-related phenomena that have occurred recently and the measures necessary to adapt to changes in extreme weather events due to climate change.

Law 212 (12.07.2022) regarding measures to reduce seismic risk of buildings.	Establishes measures for reducing seismic risk of existing buildings.
Law 260/2008 on compulsory housing insurance against earthquakes, landslides and floods.	Regulates the conditions of compulsory insurance against earthquakes, landslides and floods. This law has been amended in 2010, 2013, and 2015.
Joint Order 1995/18.11.2005 of the Minister for Transport, Construction and Tourism and of the Minister of Administration and Interior 1160/30.01.2006 approving the Regulation on the prevention and management of seismic and landslide risks.	The Regulation sets forth all the actions and measures for prevention, protection and immediate intervention, recovery and rehabilitation to limit the effects of earthquakes/landslides, as well as the structures involved in managing earthquakes/landslides emergencies.
GD 1490/2004 on regulations of organization and functioning of the General Inspectorate for Emergency Situations.	Regulates the organization and functioning of the General Inspectorate for Emergency Situations.
GD 1491/2004 on regulations on organisation, functioning, tasks, and endowment of Committees and Operative Centres for Emergency Situations.	Approves the Framework Regulation on the organisational structure, tasks, operation and equipment of the Committees and Operative Centres for Emergency Situations.
GD 1492/2004 on organisational principles, functioning and tasks of the Professional Emergency Services.	Approves the establishment of county emergency situations inspectorates, devolved under the General Inspectorate for Emergency Situations, in the counties and in the municipality of Bucharest for the purpose of managing emergency situations according to the types of risk within their competence.
Law 78/2014 on the participation in voluntary activities.	Governs the participation of citizens in voluntary activities carried out for the benefit of other persons or of the company, organised by legal persons governed by public law or private law on a non-profit basis.
GD 1579/2005 on the statute and functioning rules of voluntary services for emergency situations.	Governs the selection, promotion and facilitation of voluntary staff participating in actions organised by local public administration authorities within the voluntary emergency services, as well as their rights and obligations.
Order 75/2019 on the definition, establishment, staffing and diversification of responsibilities for voluntary and private emergency services.	Regulates the establishment, deployment and equipment of voluntary and private emergency services.
GD 94/2014 on the organisation, functioning and composition of the National Committee for Special Emergency Situations.	Establishes the National Committee for Special Emergency Situations, as well as its functions and composition.

Annex 3 – Romania Country Profile

Overview

Romania is a republic located on the Black Sea in Southeastern Europe. The country shares borders with Ukraine, Moldova, Bulgaria, Serbia, and Hungary and 245 km of coastline with the Black Sea. Romania is divided into 41 counties, including the municipality of Bucharest, which is the capital and largest city. Romania counted 19 million inhabitants in 2022. The total area is 238 390 km^2, 5.3% of the EU area. The country is ranked very high in terms of Human development Index (53rd) with 72.9 years life expectancy at birth, and GDP per capita of €9 550 (in current prices). In 2019, the per capita GDP (in purchasing power standard, PPS) was 72% of the EU average but with large regional disparities.

Romania is a Parliamentary Republic with a semi-presidential regime, in which the president is elected every five years. Each of its 41 counties is administered by a county council, responsible for local affairs, and a prefect responsible for administering national affairs at the county level. The local administrative level is made up of 2,861 communes. The city of Bucharest holds competences as both a county and a city.

Romania has been an EU member country since January 1, 2007. It is member of the United Nations (since 1995), of NATO (since 2004), and is in the process of joining the Shengen area.

Figure 1 - Map of Romania. Source: European Commission JRC/DG ECHO.

Romania	**2021** (Source EUROSTAT)
Population, million (2022)	19.0
GDP per capita, current €	9 550
GDP per capita, PPS (Average EU area=100)	73
Life Expectancy at Birth, years	72.9
Language	Romanian
Capital	Bucharest
Time Zone	UTC +2

Figure 2 - Romania baseline data. Source: EUROSTAT.

Romania's natural landscape is diverse and divided between mountains (from 800m), which cover 31% of the area, plains (33%) and hills and tablelands (36%). In the centre of the country lies the Transylvania Plateau, the largest tableland in the country, surrounded by the Eastern Carpathian, the Southern and Western Carpathian mountains. Hills and plateaus are intermediate relief forms situated inside and outside the Carpathian arch. Among these, the Baragan or Romanian plain in the South is the country's main agricultural zone. In the South, the Danube River forms the frontier with Serbia and Bulgaria, before flowing into the Black Sea. The Danube is the main collector of the network of rivers that forms from the Carpathian Mountains, and the Danube River's basic district covers 97.4% of the country. Romania has a rich biodiversity and a high proportion of natural ecosystems. Of particular importance are its natural forests, which cover 35.5% of the country's land surface and the over 1,600 natural protected areas, including the Danube Delta, the largest natural wetland in Europe.

It has a temperate, continental climate, with annual average temperatures varying between 8°C in the North and 11°C in the South. In January the average temperature is 1.1°C and 20.6°C in July. Romania experienced a 1°C increase in its average annual air temperature between 1901 and 2019, with an increase of 2-3°C in summer air temperatures in the south of the country since 1961. A study by De Rosa and Murisic estimates that Romania's changing climate will increase losses up to six times higher than the current rate.

Disaster risk profile

Romania is at risk of a range of hazards, including natural ones (earthquakes, floods, droughts and extreme weather), technological ones (chemical, nuclear accidents, accidental pollution) and biological ones. Between 1900 and 2022, the international disaster database EM-DAT records 127 major disasters, including 53 floods, 20 extreme temperature events, 11 earthquakes, 11 storms and two droughts. Their impact amounted to US$ 17.9 billion, with over 2 million people affected and 5, 681 deaths[1].

Historically Romania's most deadly floods occurred in 1926, with 1000 fatalities, and 1970, with over 200 fatalities. More recently, in 2005 and 2010, floods caused 60 deaths (2005) and significant losses: US$ 1 billion in 2005 and US$ 2 billion in 2010. In April-May 2014 floods in the area of the

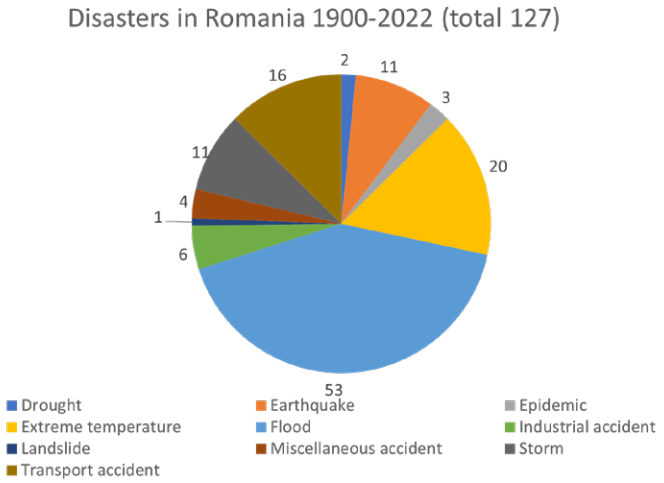
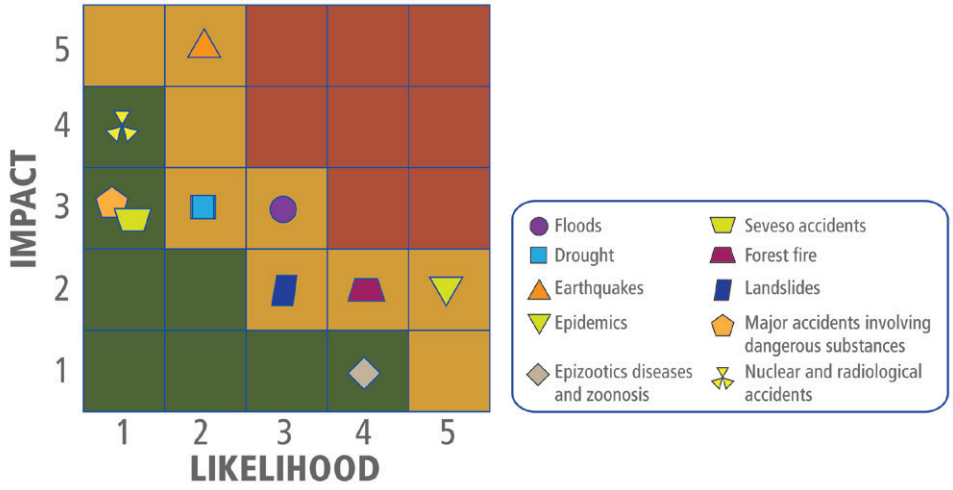


Figure 3 - Disasters in Romania 1900-2022. Source: EM-DAT data, author's elaboration.

1 EM-DAT, The Emergency Events Database, Université Catholique de Louvain–CRED (EM-DAT, CRED / UCLouvain), D. Guha-Sapir. Brussels, Belgium. (last access 26.04.2022): https://public.emdat.be/data

Vedea basin led to a financial impact of €167.9 million (April), and €172 million (May), and 125 homes and 8,745 of agricultural areas flooded. According to the EM-DAT database, the total number of flood deaths in Romania is 15.3 percent of the total flood deaths in Europe (including Russia) between 1990-2020. Regarding earthquakes, the most severe one affecting the Romanian territory, with a magnitude of Mw> 7 in the last century, occurred on October 6, 1908 (Mw= 7,1, h = 125 km), November 10, 1940 (Mw= 7,7, h = 150 km), March 4, 1977 (Mw= 7,4, h = 94 km), and August 30, 1986 (Mw= 7,1, h = 131 km).



In the country, 536 areas have been identified as Areas with Potential Significant flood Risk (APSFR)2. In addition, approximately 75 % of the population (of which 65 % of the urban population) and 45 % of critical networks are at risk of earthquakes. Romania's territory presents 14 seismic sources, the Vrancea being the most active and affecting more than two thirds of Romania (65% of the population), and part of the territory in Moldova and Bulgaria. The average annual number of earthquakes in Vrancea, with a magnitude greater than 5Mw, is 1.8 earthquakes/year.

The national disaster risk assessment has identified the impact of climate change directly related to floods, drought, fires, landslides, epidemics, and zoonosis.

Figure 4 - INFORM Global Risk Index scores for Romania, according to each component of risk. Source: INFORM Risk Index website (Last access November 2022).

According to the INFORM Global Risk Index, Romania's risk class is low (2.4/10), but higher than the EU regional average (1.9), especially in relation to hazard & exposure (2.6 against 1.8 in the rest of Europe), and of the average of its income group (upper-middle income). The major hazards the country is exposed to are earthquakes and floods[3].

2 NDRRS, referencing Technical Support for the Preparation of Flood Risk Management Plans for Romania World Bank's project

3 INFORM Index (last access 26.04.2022): https://drmkc.jrc.ec.europa.eu/inform-index/INFORM-Risk/Country-Risk-Profile

According to this Index, Romania has a low structural risk for humanitarian crisis. However, the climate change analysis shows increasing risk of a humanitarian crisis in Romania by mid-century, under both optimistic (RCP4.5-SSP1) and pessimistic scenarios (RCP8.5-SSP3), due to significant increases in drought and exposure to epidemics. Accordingly, by mid-century between 3 to 5.2 million and 2.6 to 4.4 to million additional people will be exposed to droughts and epidemics (vector borne diseases), respectively. In addition, the risk of conflict may increase under all scenarios except SSP5 (fossil fuel development).

According to the Global Facility for Disaster Reduction and Recovery (GFDRR)'s Resilience Indicator (updated to 2015), the annual average risk to assets in Romania is 0.41 percent GDP, and the well-being risk is 0.58 percent of GDP. Putting the indicator into perspective, this results in Romania's assets and economic activity facing double the risk of disasters as compared to Poland, in Romania having 70 percent of the assets of poor people vulnerable to destruction as compared with 43 percent in Poland, and in the assets of Romania's non-poor population being three times more vulnerable than that of Poland. From Figure 5 it can be noted that the highest losses occur in the most economically vulnerable counties.

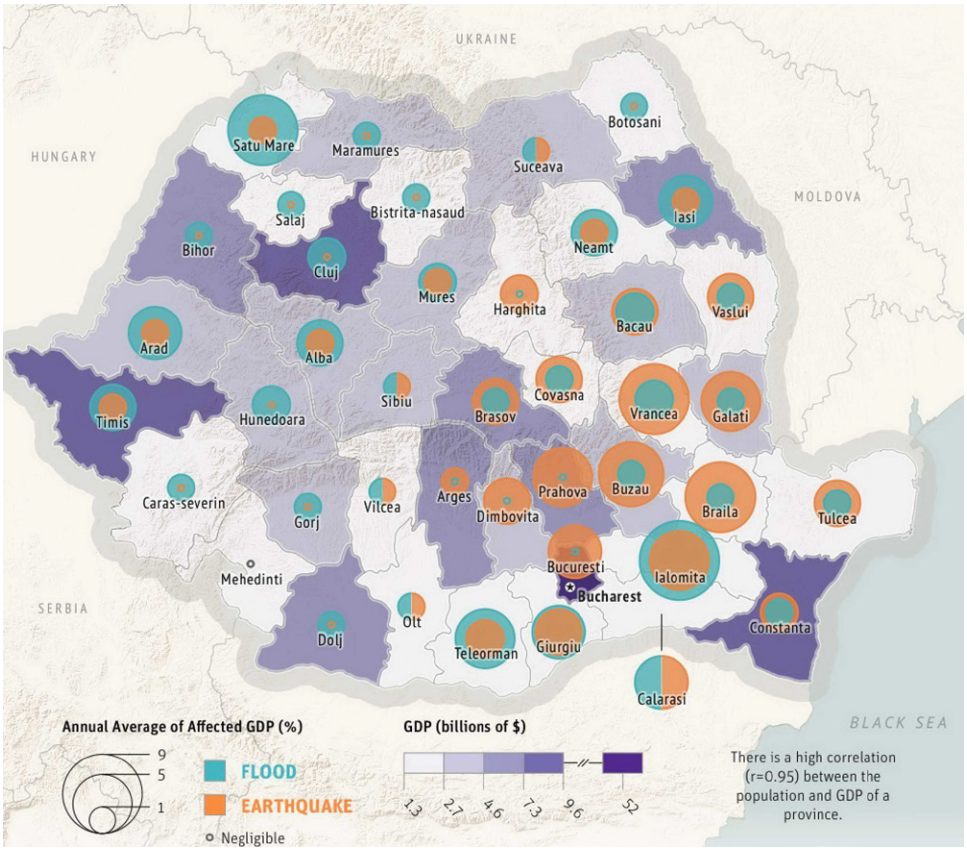


Figure 5 - Disaster Risk Profile, GFDRR (2017); data estimated for 2015.

In addition, the GFDRR predict an upward trend of economic losses relative to GDP that can reach a threshold of 60% in 2080 compared to 2015 (Figure 6).

Boosting Romania's adaptive capacity could contribute to reducing adverse impacts of future climate change and increasing resilience in the country. Improving its adaptive capacity means addressing structural deficits in economic resources, knowledge and technology, infrastructure and institutional capacity. According to the Adaptive Capacity Index at the European scale, Romania is characterised

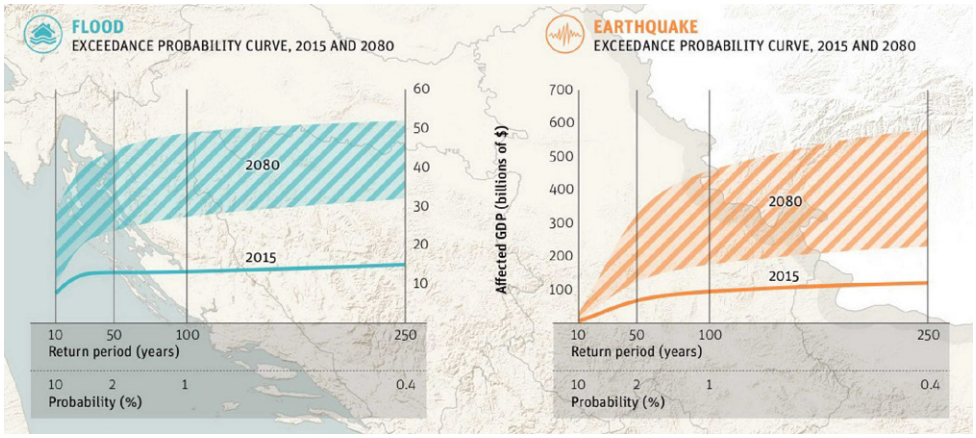


Figure 6 - Evolution of annual economic losses to GDP, GFDRR (2017); data estimated for 2015.

by a very low adaptive capacity compared to other European countries (Figure 7), with its lowest performance in institutional capacity (quality of governance index), and knowledge and technology factors (e.g. R&D expenditure, personnel and patents). This deficit is heterogeneously distributed at the lower administrative units (Figure 8). Accordingly, the eastern regions of Romania show a lower adaptive capacity than its central and western regions. The structural capacity in its eastern regions could worsen from long-term impacts of external shocks, such as migration flows (counting 4,178,694 people from Moldova border only as of October 2022).

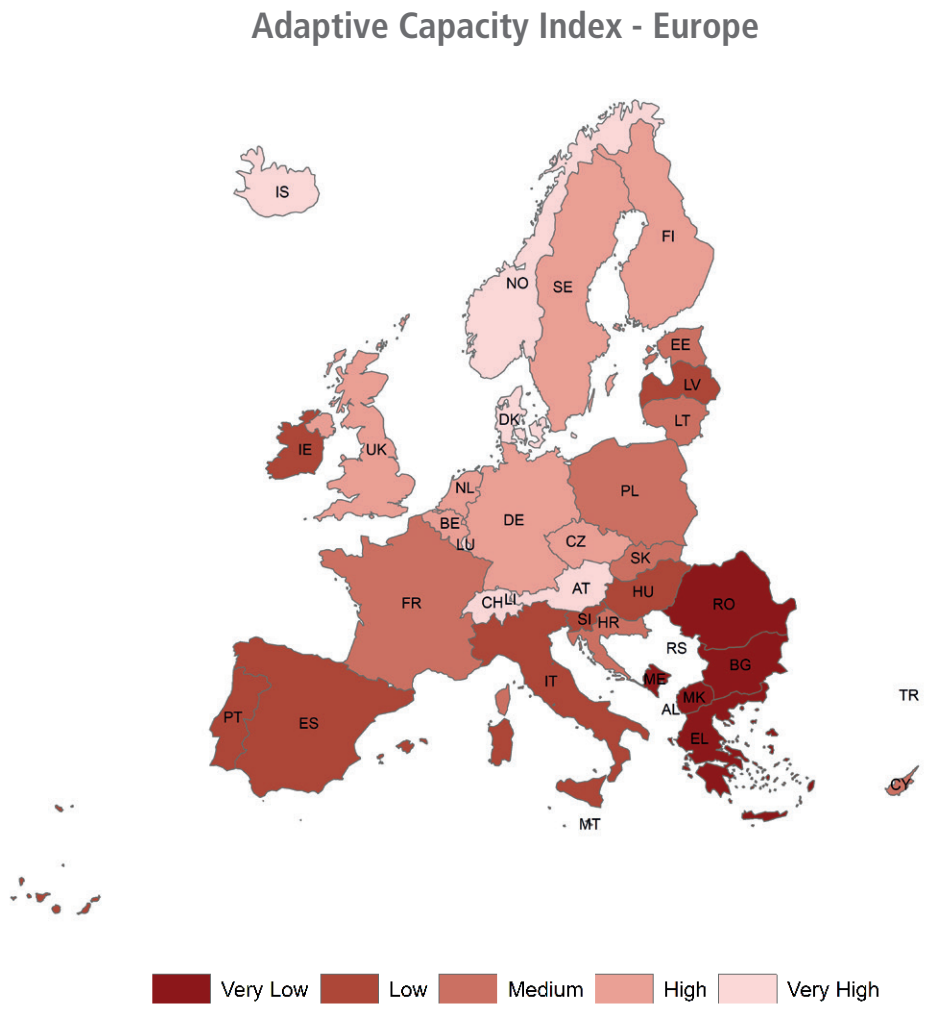


Figure 7 - Adaptive Capacity Index for Europe - elaboration by S. Marzi, 2022 based on Sepehr Marzi, & Jaroslav Mysiak (2021) [30].

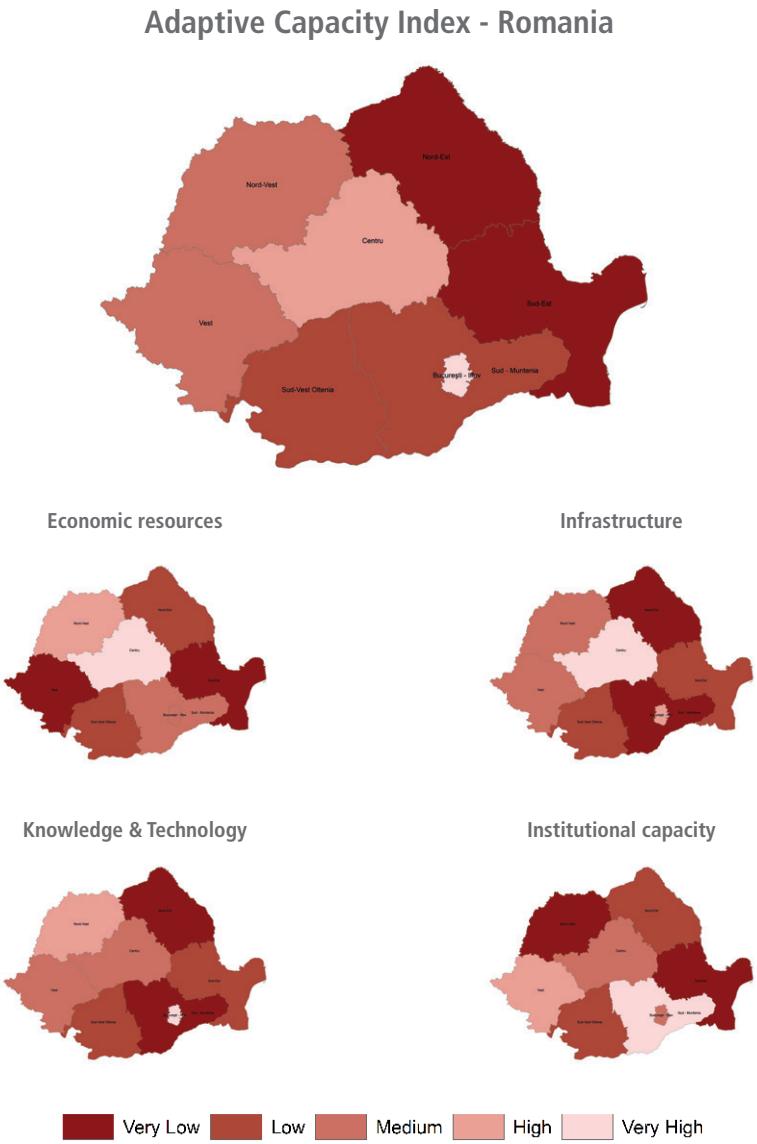


Figure 8 - Adaptive Capacity Index for Romania - elaboration by S. Marzi, 2022 based on Sepehr Marzi, & Jaroslav Mysiak (2021)[30].

UCPM participation

Romania is an active participant of the Union Civil Protection Mechanism. Since 2016, Romania has requested assistance via the UCPM following 6 emergency events and responded to 23 emergencies. The UCPM platform is also used for certifying and training IGSU staff and national modules for the European Civil Protection Pool.

	Between 2016 and 2022
Assistance requested	6 emergencies
Assistance provided to other countries	23 emergencies
Experts deployment	9 experts
UCPM trained experts	104 experts
European Civil Protection Pool (ECPP) registered	3 modules (MUSAR, HCP)
European Civil Protection Pool (ECPP) with ongoing registration	5 modules (MEVAC, EMT, CBRN det, GFF-V)

Figure 9 - Romania involvement in UCPM. Romania EU Civil Protection country profile (January 2023), author's elaboration.

Annex 4 – List of stakeholders consulted in the Peer Review mission

Abbreviation	Stakeholder	Website
MDPWA	Ministry for Development, Public Works and Administration	www.mdlpa.ro/
MoC	Ministry of Culture	www.cultura.ro/culturaro
MoF	Ministry of Finance	https://mfinante.gov.ro/ro/web/site
MEWF	Ministry of Environment, Waters and Forests	www.mmediu.ro/
MoE	Ministry of Education	www.edu.ro/
MTI	Ministry of Transport and Infrastructure	www.mt.ro/web14/
MoIA	Ministry of Internal Affairs	www.mai.gov.ro/
Ministry of National Defense	Ministry of National Defense	www.mapn.ro/
MoE	Ministry of Economy	www.economie.gov.ro/
MoEN	Ministry of Energy	https://energie.gov.ro/
MARD	Ministry of Agriculture and Rural Development	www.madr.ro/
MIEP	Ministry of Investments and European Projects	https://mfe.gov.ro/
MLSS	Ministry of Labour and Social Solidarity	http://mmuncii.ro/j33/index.php/ro/
MoH	Ministry of Health	www.ms.ro/
MET	Ministry of Entrepreneurship and Tourism	www.imm.gov.ro/ro/
MRID	Ministry of Research, Innovation and Digitalization	www.research.gov.ro/
MFYEO	Ministry of Family, Youth and Equal Opportunities	https://mfamilie.gov.ro/1/
NCITES	National Centre for Improving Training in Emergency Situations Management, Ciolpani	www.cnppmsu.ro/
DES	Department for Emergency Situations	www.dsu.mai.gov.ro/
NHI	National Institute of Public Health	https://insp.gov.ro/
GIES	General Inspectorate for Emergency Situations	www.igsu.ro/
National Institute for Cultural Heritage	National Institute for Cultural Heritage	https://patrimoniu.ro/

ANCPI	National Agency for Cadastre and Land Registration of Romania	www.ancpi.ro/
PAID	Natural Disaster Insurance Pool	www.paidromania.ro/
UEFISCDI	Executive Unit for Financing Higher Education, Research, Development and Innovation	https://uefiscdi.gov.ro/
NMA	National Administration for Meteorology	www.meteoromania.ro/
INHGA	National Institute for Hydrology and Water Management	www.inhga.ro/
INCDS	National Institute for Research and Development in Forestry Marin Dracea	www.icas.ro/
NIEP	Institute of Earth Physics	www.mhtc.ro/national-institute-earth-physics/
UTCB	Technical University of Civil Engineering of Bucharest	https://utcb.ro/
IGAR	Romanian Academy Institute of Geography	www.geoinst.ro/
URBAN-INCERC	National Institute for Research and Development in Construction, Urban Planning and Sustainable Spatial Development	www.incd.ro/
Firefighter Faculty	Firefighter Faculty	https://old.academiadepolitie.ro/facpmp/index.html
MTA	Military Technical Academy Ferdinand I	https://mta.ro/
National University for Defense	National University for Defense	www.unap.ro/index.php/ro/
Jilava Mayor	Jilava Town Hall	http://primariajilava.ro/
Sector 2 Town hall	Bucharest District 2 City Hall	www.ps2.ro/
Local police	Local police of Jilava Town Hall	http://primariajilava.ro/politie-locala/
CIES Bucharest-Ilfov	County Inspectorate for Emergency Situations Bucharest-Ilfov	https://isubif.ro/local/