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ROADMAP

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Second periodical bulletin

ROADMAP in a nutshell

The ROADMAP (EuROpean observAtory on Disaster risk and crisis MAnagement best Practices) Project is a 18 months project funded by DG-ECHO under the call UCPM-2020-KN-AG. The project started on the 1st January 2021 and the main objective is to establish a European "Doctrine on disaster risk and crisis management", funded on the mutual cooperation between scientific communities and DRM authorities. The doctrine, that is intended as "a shared understanding of disaster management between decision-makers and scientific actors", will be based on selected experiences, best practices and implemented solutions in EU Member States.

- **Advisory Group**
  The Advisory Group (https://roadmap.ci3r.it/advisory-group/) is formed by selected experts on both science and decision-making in DRM from several Countries, covering different risks and phases of DRM cycle. The networking activities between the Project Consortium, that is composed by recognized research institutes, competence centres for disaster risk reduction and Civil Protection authorities, and the Advisory Group will result in the establishment of a European think tank/observatory on disaster risk and crisis management good practices that could represent a first step towards a Community of Practice to operate within the Union Civil Protection Mechanism, in collaboration with the Disaster Risk Management Knowledge Center.

Project updates

In these first 7 months of the project many activities have been carried out, in particular:

- the site of the ROADMAP project was created (https://roadmap.ci3r.it/);
- two calls have been launched for researchers wishing to collaborate on the project (https://roadmap.ci3r.it/call-for-researchers-reluis/, https://roadmap.ci3r.it/call-for-researchers-cima-foundation/);
- two experts have been selected to contribute to the writing of the content of the first thematic paper "Good practices in a multi-hazard risk operations according to a scenario-based approach";
- the first Webinar of the ROADMAP project, entitled "The nexus between Scientists and Decision Makers in Disaster Risk Management", was held on June 25th, at 10AM (CET). (https://roadmap.ci3r.it/webinar-the-nexus-between-scientists-and-decision-makers-in-disaster-risk-management/);
- a youtube channel of the project has been created, on which will be uploaded all the videos of the scheduled events (https://www.youtube.com/channel/UC4hXomSR-J8KlMb6ZjjoJ3w);
- work began on the definition of the solution explorer;
- the SC and the AG have actively contributed to the definition of the path to be followed to achieve the objectives of the project.

RISK – Good practices

Earthquake	Forest fires	**Industrial accident**
Hydrogeological	Biological	**Climate**

The main aim of this second ROADMAP bulletin is to report challenges that arise from complex intersections between the threat multipliers observed worldwide since the pandemic onset and to provide experienced good practices to cope with them.

Since the beginning of 2020, people around the world have been living with the consequences of the global coronavirus disease 2019 (COVID-19) pandemic. Most people's mobility was severely restricted. They were instructed to maintain social distancing and to wear face masks in public places. However, at the same time, many regions around the world have been experiencing multiple, integrated natural and/or anthropogenic hazards which acted as true threat multipliers which in many cases disaster managers and civil protection agencies were not prepared to face. The pandemic also placed strain on national and international emergency relief systems. For instance, during an evacuation social distancing can be very difficult to pursue, reflecting in the unintentional risk of aggravating the pandemic by protecting people from a natural hazard. At the same time the COVID-19 pandemic represents an opportunity to reconsider how we can restructure our disaster management systems in a more efficient and integrated way.

Lessons learned during the emergencies of 2020-2021/ The impact of the pandemics on emergency management

Globally, during 2020 and the first half of 2021, 70 nations were affected by flooding, there were 203 earthquakes of magnitude greater than 6, there was an explosion of huge size and 51.6 million people suffered damage related to extreme climatic events. All these events occurred in contexts in which cases of COVID-19 were already present.
More in detail:
22 floods have occurred in Africa, 25 in Asia, 8 in Europe, 8 in North America, 2 in Oceania, and 6 in South America. The number of displaced people in some of these floods during the pandemic was very high. By way of example, in South China 634 rivers flooded and nearly 64 million people were affected in some ways while deaths reached 219 and over 54,000 properties were destroyed (as of end of August 2020). Over a hundred thousand people in Uzbekistan and Kazakhstan were evacuated during a dam break flood. Some 81,000 people were evacuated in Somalia and Ethiopia and 78,000 in Democratic Republic of Congo during floods caused by heavy rainfall.
Fiji was hit by a category 5 tropical cyclone, while in Zimbabwe, drought during June–September 2020 prevented millions of people from accessing clean water and posed the population at risk of acute food insecurity and about 431.7 millions of people worldwide have experienced extreme heat[1] conditions during the COVID-19 pandemic. Some key events were reported in Florida and in the southwestern USA, East Asia and Pacific, Sub-Saharan Africa as well as in Central Asia and Europe (e.g. Belgium, France, Germany, Netherlands, Portugal, Spain, Switzerland and the United Kingdom, among others).
Croatia was struck by 2 earthquake, the first in the Zagreb area on March 22, 2020 and the second in the Petrinja area on December 29, 2020 causing a relatively low number of victims (8) but a large amount of damage to the buildings (about 26,000) and consequently a considerable number of evacuated people. An earthquake of magnitude 7 hit the city of Izmir in Turkey causing the death of 117 people and 1034 injured. Moreover, an earthquake of magnitude 6.2 hit the Mamuju Regency, causing the death of 105 people, 3300 injured and the hospital collapse.
On August 4, 2020 a huge explosion (comparable to an earthquake of magnitude 4.5) struck the city of Beirut causing the death of 207 people, the wounding of 7000 people and 300000 people were evacuated. 90% of the city's hotels were damaged, three hospitals were completely destroyed and two others suffered damage and were not able to welcome patients after the explosion.

1 Source: Analysis based on 3CS —, SEDAC, European CDC and national statistics offices.

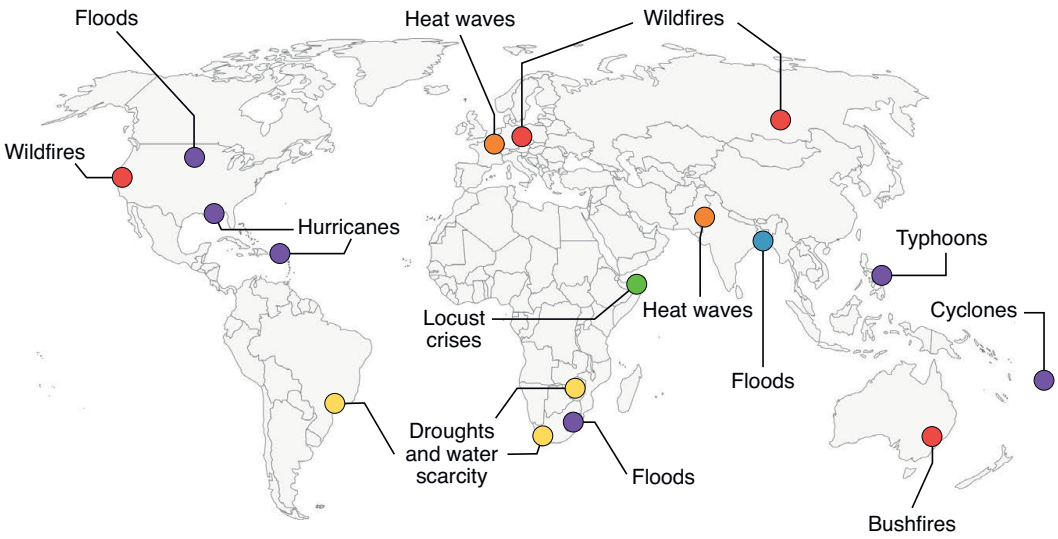

Figure 1 - Likely upcoming climate hazards during the COVID-19 pandemic (Image take from Phillips et al. 2020).

All these events had a significant impact on the Covid-19 pandemic management, as witnessed by the significant increase of COVID-19 infections observed after every calamitous event as reported in the following images.

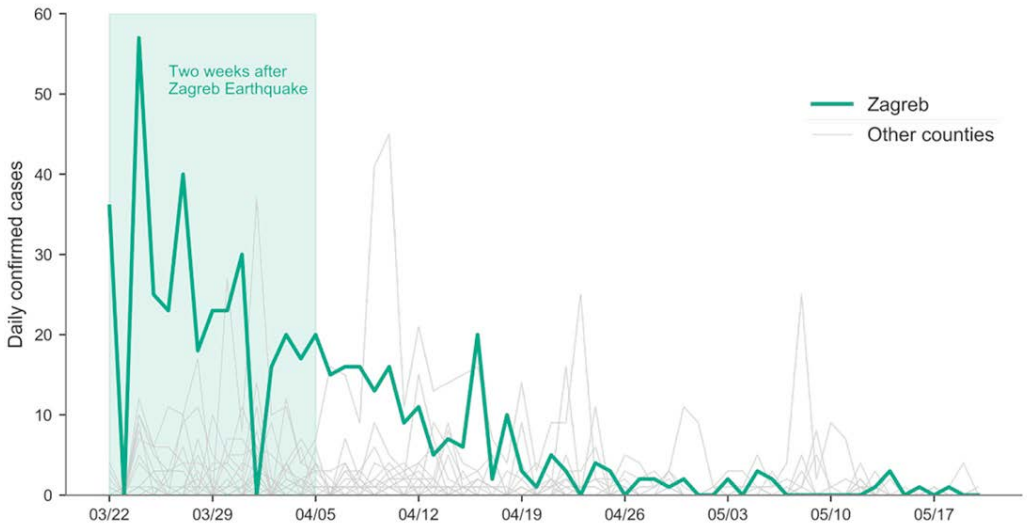

Figure 2 - Incidence of daily COVID-19 cases following the Zagreb earthquake (image take from Silva and Paul 2021).

By analysing the data, it appears evident that current practices in managing multiple hazards are mostly focused on one hazard at a time which may not be sufficient for addressing challenges of multi-hazard management. It is clear that the simultaneous occurrence of calamitous events and virus pandemic amplified the disaster itself and that there is a need for a paradigm change in disaster management approaches, moving from disaster vulnerability to disaster resilience where the latter can be seen as a more proactive and positive approach. This approach should include consideration of the whole region being affected, explicit incorporation of all costs and benefits, development of alternative solutions, and the active and early involvement of all stakeholders in the decision-making.
Given the high dynamic character of these events plans must be flexible to start with and then adapted to evolving circumstances. Multidisciplinary approaches are needed to draft such plans accounting for evolving of different crises. In a nutshell, as suggested by Simonovic et al. (2020), the disaster resilience approach may be implemented through

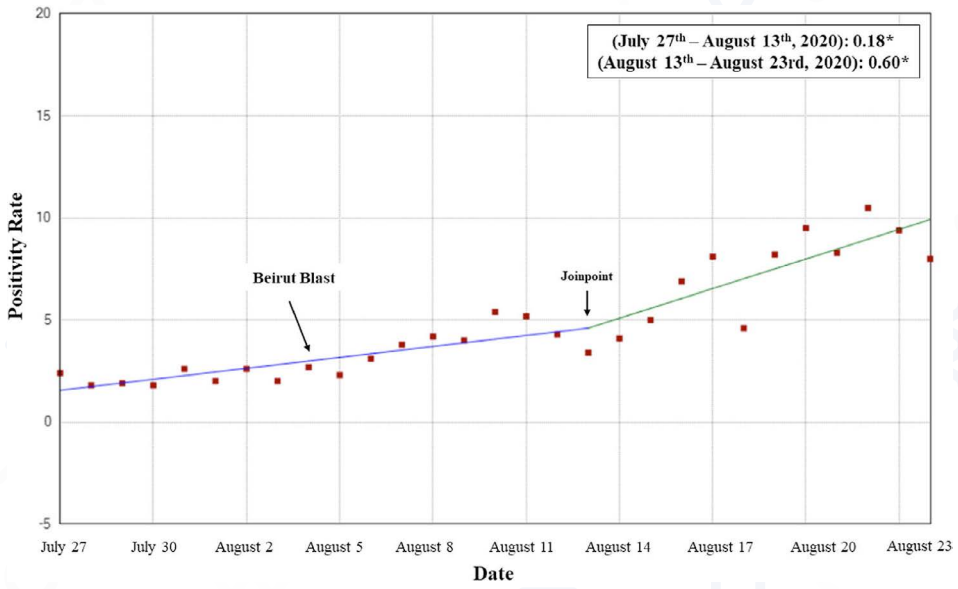

Figure 3 - Positivity rate in Beirut before and after the explosion (image take from Fares et al.2021).

(i) the development of a detailed simulation model of the system; (ii) selection of different adaptation options; and (iii) comparison of adaptation options using quantitative resilience as a decision-making criterion. Quantitative resilience estimates for the base case can then be compared to other resilience values corresponding to different choice of adaptation measures, thus supporting the decision-making process and assisting the response activities.

Lessons for the future can be drawn as follows:

- A resilience approach is needed in response to hazards in a pandemic context. This entails the acceptance that the event will occur, ensuring that the resilience is enhanced and impacts are mitigated. This also means accepting that the socioeconomic system will not necessarily return to the previous conditions, rather the system needs to adjust to a "new normal".
- Societies are diverse in many ways and within a population there are widely varying attitudes to risk, resilience and uncertainty. Thus, understanding people's differences and behaviors is crucial to effectively communicate resilience and make the population ready to respond to the events.
- Beside defense, preparation is vital. The responsible actors must be prepared with action plans and command structure, while the population must be proactively involved in the discussions so as to be aware of the resilience level and the reasons for the actions they must take to increase it.

Good practice update

The experiences acquired during these two years of pandemic led to upgrades on the emergency management by civil protection operators. Numerous reports, scientific papers and webinars have been dedicated to the experiences and the lessons learned from the management of the emergencies that occurred during the pandemic. By way of example you can refer to the reports published by the International Federation of Red Cross and Red Crescent Societies and OCHA on emergency management in Lebanon[2] and on the emergency management for the extreme events[3] and the UNDRR news[4] and webinar organized on DRR).

Moreover, many civil protection bodies updated their intervention protocols bringing them to a multi-risk vision (e.g. the Italian Department of Civil Protection updated intervention protocols for managing other emergencies in connection with the COVID 19 epidemiological emergency) and have, also, begun to update the good practices aiming at population protection (e.g. the American Red Cross web page "Preparing for Disaster During COVID-19[5]").

2 https://media.ifrc.org/ifrc/techbiohazards/beirut-explosion/
3 https://media.ifrc.org/ifrc/document/climate-related-extreme-weather-events-covid-19-first-look-number-people-affected-intersecting-disasters/
4 https://www.undrr.org/news/earthquake-zagreb-amid-covid-19-pandemic-opinion
5 https://www.redcross.org/get-help/how-to-prepare-for-emergencies/types-of-emergencies/coronavirus-safety/preparing-for-disaster-during-covid-19.html

The main lesson learned during these emergencies management could be summarized as follows:

- the importance of the efficient preparedness, relief and recovery plans, that analyse territory in a multi-risk perspective and with an integrated and multidisciplinary approach;
- the cooperation between all the operators involved;
- the preparation of the involved operators;
- raise awareness among the population of all those behaviours that can make emergency management safer and more effective;
- the importance of effective support from the institutions.

DRM Initiatives & News

With the ROADMAP project perspective of establishing a European observatory on disaster risk and crisis management best practices, some recent initiatives at European level have been scanned and pertinent information were collected and hereafter briefly summarized.

- **Community of European Research and Innovation for Security (CERIS)**[6]
  Aiming at facilitating interactions within the security research community and users of research outputs, in 2014 the Commission established the Community of Users for Safe, Secure and Resilient Societies (CoU). This informal platform included around 1,500 registered stakeholders (policy makers, end-users, academia, industry and civil society) and regularly held thematic events with the security research community.
  In light of the Horizon Europe developments between 2021-2027, the CoU has enlarged its scope to become the Community for European Research and Innovation for Security (CERIS). The objectives of CERIS are to:
  - analyse identified capability needs and gaps in the corresponding areas;
  - identify solutions available to address the gaps;
  - translate capability gaps and potential solutions into research needs;
  - identify funding opportunities and synergies between different funding instruments;
  - identify standardisation research-related needs;
  - integrate the views of citizens.

- **INFORM**[7] **– Sharing Crisis analysis**
  INFORM is a multi-stakeholder forum for developing shared, quantitative analysis relevant to humanitarian crises and disasters. INFORM includes organisations from across the multilateral system, including the humanitarian and development sector, donors, and technical partners.
  INFORM is developing a suite of quantitative, analytical products to support decision-making on humanitarian crises and disasters. These help make decisions at different stages of the disaster management cycle, specifically prevention, preparedness and response. INFORM develops methodologies and tools for use at the global level and also supports their application at subnational level.

- **Risk Data Hub, by DRMKC**[8]
  Risk Data Hub, by DRMKC is a GIS web platform with the purpose of setting the bases for knowledge for DRM at local, national, regional and EU-wide level. This platform is expected to be a point of reference to collect and produce an inventory of relevant methodologies and datasets will set the bases for qualitative evaluation of science-based approaches on risk assessment and will locate and propose alternative sources.

- **ECCA 2021**[9]
  The 5th European Climate Change Adaptation Conference (ECCA 2021) took place from 25 May to 22 June 2021. A series of 9 webinars was organised from 25 May to 10 June, in the run-up to a high-level event on 22 June. All the sessions recordings are available at the following link (**https://www.ecca21.eu/page-3911**). The event was hosted by the European Commission.

6 https://www.securityresearch-cou.eu/home
7 https://drmkc.jrc.ec.europa.eu/inform-index
8 https://drmkc.jrc.ec.europa.eu/risk-data-hub#/
9 https://www.ecca21.eu/