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# The All-Hazards Preparedness Approach: How Can We Be Better Prepared for the Next Public Health Crisis?

Series | All-Hazards Preparedness and Response

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[ This document is one of a series of discussion notes addressing fundamental questions about global health. Its purpose is to transfer scientific knowledge into the public conversation and the decision-making process. These documents are based on the best information available and may be updated as new information comes to light. ]

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Photo: Risk map of La Esperanza (Nicaragua). EC/ECHO/Silvio Balladares

The COVID-19 pandemic was, first and foremost, a public health crisis: health systems worldwide were overwhelmed, by March 16th 2023 more than 760 million of cases, almost 8 million of deaths and many more were hospitalized. However, it also had undeniable effects on other areas of society; from the economy to transportation, from gender equality to labour laws, it is difficult to find an aspect of daily life that has not been affected. The pandemic, however, is just one of the latest systemic crises we have had to endure - not the first and surely not the last. Indeed, the last decades have seen **an increase in public health and environmental crises** that may directly

or indirectly threaten our health at different levels.<sup>1</sup> Adding to the existing permanent basal health stresses, including non-communicable diseases,<sup>2</sup> such crises further strain our health systems and the capacities and resilience of communities and society.

Depending on the type of crisis, the impact can be local, regional, national or even global (e.g., the COVID-19 pandemic, the war in Ukraine, or the Chernobyl nuclear accident). It can be restricted to the **direct effects** of the particular hazard (for example the health effect of a particular chemical or biological agent) or, as often observed, have **wide-ranging indirect consequences** on the physical

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<sup>1</sup> Centre for Research on the Epidemiology of Disasters. (2020), CredCrunch 61. Human cost of disasters. An overview of the last 20 years 2000-2019. <https://cred.be/sites/default/files/CRED-Disaster-Report-Human-Cost2000-2019.pdf>  
Centre for Research on the Epidemiology of Disasters and UN Office for Disaster Risk Reduction. (2021), 2020 The Non-Covid year in disasters: Global trends and perspectives. <https://cred.be/sites/default/files/CRED-NaturalDisaster2020-v06-2.pdf>  
Centre for Research on the Epidemiology of Disasters. (2022), Disasters in numbers. [https://cred.be/sites/default/files/2021\\_EM-DAT\\_report.pdf](https://cred.be/sites/default/files/2021_EM-DAT_report.pdf)

<sup>2</sup> WHO Regional Director for Europe. (2022), Statement: The European Region is in a "permacrisis" that stretches well beyond the pandemic, climate change and war. <https://www.who.int/europe/news/item/27-09-2022-statement-the-european-region-is-in-a-permacrisis-that-stretches-well-beyond-the-pandemic-climate-change-and-war>

and mental health of affected populations and on society (e.g., related to people displacement or the interruption of public services).

Whatever their origin, preparedness and response to such crises need to be hand-

led holistically, with a **multisectoral and multilevel approach**, including health systems ●

### Box 1. What is a systemic crisis?



“Systemic crises” are events with the **potential to affect every aspect of our communities**, straining our capacities. They have **cascading effects** that spread within and across systems and sectors [e.g. ecosystems, health, infrastructure, economy, the food sector] via the movements of people, goods, capital and information within and across boundaries [e.g. cities, regions, countries and continents]. Ultimately, they can potentially lead to **widespread consequences** and **system collapse** across a range of time horizons. Globalization contributes to systemic risks affecting people worldwide.<sup>3</sup>

# 1. What Do Major Public Health and Environmental Crises Have in Common?

**“While each type of crisis has its own specific characteristic and impact, past crises show they share essential commonalities, that are crucial to consider for efficient and adequate preparedness and response.”**

Major public health and environmental crises and disasters can be caused by a **variety of hazards**, including:<sup>4</sup>

- Natural events such as volcanic eruptions, hurricanes or earthquakes, and climate-driven events such as droughts, floods, storms and heat waves;
- Biological hazards such as the emergence and re-emergence of agents and vectors transmitting infectious diseases, bioterrorism, epidemics, or the global threat of antimicrobial resistance;
- Chemical and occupational accidents (including those related to terrorist attacks like 9/11 in the USA);
- Radiological accidents; or
- Armed conflicts and war.

While each type of crisis has its own specific characteristic and impact, past crises show they share **essential commonalities**, that are crucial to consider for efficient and adequate preparedness and response:



### 1. Direct and indirect physical and mental health impacts in the short- and long-term

While the direct health impact of different types of crises may differ (injuries, burns, radiological health effects, infections, cancer, among others), their indirect health effects can be very similar, both in terms of physical health (epidemics due to less than desirable sanitary conditions, exacerbation of chronic diseases and im-

<sup>3</sup> United Nations Office for Disaster Risk Reduction. (2017), PreventionWeb, Understanding Disaster Risk: Hazard. <https://www.preventionweb.net/understanding-disaster-risk/component-risk/hazard>

<sup>4</sup> United Nations Office for Disaster Risk Reduction. (2017), PreventionWeb, Understanding Disaster Risk: Hazard. <https://www.preventionweb.net/understanding-disaster-risk/component-risk/hazard>

pact on maternal-child health related to due to the disruption of health services) and mental health (anxiety and depression in the face of uncertainties, threats and changes in the social environment, or post-traumatic stress disorder). As an example, the COVID-19 pandemic had a direct effect on people's physical health, leading to a surge in hospitalization and deaths from SARS-CoV-2 infection. But, in addition, it has had enormous mental health effects due to social distancing, lockdowns, uncertainties, fear of the disease itself, and loss of jobs and livelihood. The disruption of health systems also had major indirect effects on the physical health of the population in most countries and regions, with increased morbidity and mortality due to delays in the diagnosis and treatment of other diseases, in particular chronic diseases and cancer, and postponement of non-urgent surgeries.<sup>5,6</sup>



## 2. Frequently unknown health effects

Major crises and unexpected disasters can affect many thousands and even millions of people. The scale of these crises can hinder the implementation of surveillance and follow-up strategies to ensure adequate identification, support and treatment of affected populations as well as provide data to evaluate the impact of the crisis and mitigation strategies. For example, there could be delays in assessing the long-term impacts or the consequences of a massive evacuation after a nuclear accident.



## 3. The strain on healthcare services

Crises can produce an overwhelming usage of healthcare services, as the COVID-19 pandemic has shown. The disruption of healthcare services and the increase in demand called for additional human resources and supplies that often were not readily available. This is also seen as a result of armed conflicts, major environmental disasters (including hurricanes, earthquakes, or volcano eruptions) and major nuclear accidents, with large numbers of injured and displaced persons, destruction of health

infrastructures and limited healthcare resources available.



## 4. Communication challenges

Both the COVID-19 pandemic and the accidents at the Chernobyl and Fukushima nuclear power plants have shown the importance of clear and reliable communication. In all those cases, the initial downplaying of the seriousness of the situation and contradictory information from different sources, or later the unclear communication about protection measures created confusion in the affected populations and led to disinformation and mistrust of authorities.<sup>7</sup>

As citizens are typically eager to be informed and understand their risk and the impact of the crisis, they will rely on the different sources of information available to them, often from social media and not always scientifically founded. Due to globalization and the widespread use of social media, we are more susceptible to misinformation and disinformation campaigns than ever before. The overabundance of information shortly after a crisis and growing exponentially thereafter, makes it hard for the population to know what is accurate and not. This is what has been called infodemics.<sup>8</sup>



## 5. Many stakeholders are involved

Response to a major public health and environmental crisis involves numerous different stakeholders including government authorities in different areas and at different levels, public health authorities, emergency responders, healthcare workers, scientists, mainstream media, community-based organizations, NGOs and humanitarian organizations, pharmaceutical and biotechnological companies, and many more. The COVID-19 pandemic exemplified the difficulties in developing a coordinated approach, with different stakeholders advocating for different approaches in different countries/regions, without a common strategy globally, despite having recommendations by WHO or

<sup>5</sup> Impact of COVID-19 pandemic on chronic diseases care follow-up and current perspectives in low resource settings: a narrative review. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8310882/>

<sup>6</sup> Impact of COVID-19 on Cancer Care: How the Pandemic Is Delaying Cancer Diagnosis and Treatment for American Seniors <https://ascopubs.org/doi/full/10.1200/CCI.20.00134>

<sup>7</sup> PAHO Understanding the infodemic and misinformation in the fight against COVID-19. [https://iris.paho.org/bitstream/handle/10665.2/52052/Factsheet-infodemic\\_eng.pdf](https://iris.paho.org/bitstream/handle/10665.2/52052/Factsheet-infodemic_eng.pdf)

<sup>8</sup> PAHO Understanding the infodemic and misinformation in the fight against COVID-19. [https://iris.paho.org/bitstream/handle/10665.2/52052/Factsheet-infodemic\\_eng.pdf](https://iris.paho.org/bitstream/handle/10665.2/52052/Factsheet-infodemic_eng.pdf)

on a regional and local level, difficulties in accessing data on the extent and evolution of the pandemic or following similar policies across regions or localities. It also highlighted the difficulties encountered

when accessing medical countermeasures such as diagnostic tests, therapeutics or vaccines with huge inequalities across countries ●

## 2. What Are Some of the Common Preparedness and Response Needs?

**“It is crucial to have robust and resilient health systems that offer healthcare to the affected population throughout the duration of the crisis, but also in the long term.”**

The commonalities outlined above clearly emphasize the fact that different crises types have shared needs for effective preparedness and response, in particular:



### 1. Robust and resilient healthcare systems

It is crucial to have strong and robust health systems that offer healthcare to the affected population throughout the duration of the crisis, but also in the long term. This means that further investment in health systems and strengthening policies is imperative to ensure health services are prepared to mitigate the direct and indirect physical and mental health impacts of crises. The services will depend on the type of crisis, but also on the existing infrastructure and policies. For instance, a crucial need in armed conflicts is continued access to health services, either for acute injuries or chronic conditions.



### 2. Strategies for the identification and follow-up of affected populations

It is very important to have systems in place to identify early and monitor possible exposures that could pose a hazard to the population, to monitor trends in diseases and to follow up with affected populations. All of these are important aspects of an epidemiological surveillance system.

Quickly and systematically identifying people affected by the crises (responders

and communities) is also essential so that their exposures and health can be monitored in the short and, where needed, long-term, and appropriate medical surveillance and interventions can be planned to minimize the adverse effects of the crisis. Unfortunately, usually there is no adequate systemic data collection, making it difficult to evaluate the effects and response strategies for each crisis. This evaluation could allow the understanding of the short and long-term effects of the crises to be able to develop effective and evidence-based mitigation tools to respond to future events.

It is also necessary to invest in the development of protocols for the identification and follow-up of victims, a task to be done during peacetime.

Special attention should be paid to **vulnerable populations** (due to age, medical or social conditions) as they may be more affected by particular crises and may require specific policies for their protection. During the COVID-19 pandemic, older and immunocompromised persons had a higher risk of infection, severe disease and death than others, and specific measures were taken rapidly to enhance their protection, including priority for vaccination. Other vulnerable groups that need to be considered include refugees and migrants, unemployed/homeless persons, prisoners, as well as those who may have limited access or knowledge of available protection measures and resources, such as people with disabilities or older people.



### 3. Data needs: Epidemiological surveillance and early warning systems

There are international recommendations that promote the collection of data for epidemiological and health surveillance to understand disaster risks. One of them is the Sendai Framework for Disaster Risk Reduction 2015–2030<sup>9</sup> which aims to reduce the impacts of disasters by reinforcing policies and practices of governments and stakeholders to manage disaster risk. To achieve their global targets they proposed the use of several systems of health indicators and called for the strengthening of capacities for disease surveillance such as the International Health Regulations (IHR).<sup>10</sup>

There is a need to strengthen and harmonize public health/epidemiological surveillance systems to allow the continuous, systematic near-real-time collection, analysis and interpretation of health-related data from communities, supporting responders and researchers, often and ideally in conjunction with environmental and climate monitoring data. Such a system has the following advantages:<sup>11</sup>

- serves as an early warning system for impending outbreaks that could become public health emergencies (early containment or mitigation strategies could help save lives and reduce the impacts of a crisis). Establishing epidemiological intelligence systems that assesses the population's health and well-being is important and could be useful to identify threats by linking data from the sources specified above.
- enables monitoring and evaluation of the impact of an intervention, helps track progress towards specific goals and feeds into policy; and
- enables understanding the epidemiology of health problems, guiding priority-setting, planning and evaluation of public health policy and strategies.

The COVID-19 pandemic has stressed the need to build stronger and better

integrated epidemiological surveillance systems, with access to real-time or near-real-time data, and has seen the more widespread use of existing resources—such as wastewater surveillance networks to monitor the spread of new variants and forecasting cases surges, or drug prescription databases to monitor the mental and physical health impact of the crisis— as well as novel data sources, such as social media, for monitoring and forecasting disease outbreaks.<sup>12</sup>

There is the need to develop dynamic preparedness indicators that will allow a continuous evaluation of the preparedness of the systems. Indeed, the indicators used before the COVID-19 pandemic did not provide an adequate evaluation, as countries thought to be better prepared did not in fact respond adequately and vice versa.<sup>13</sup>



### 4. Communication and trust

Affected communities need to have rapid access to clear and reliable information in order to make decisions for their own safety in times of crisis. Unfortunately, the amount and the availability of reliable information when a crisis strikes is often sparse, and gathering direct scientific evidence takes time.

Authorities and experts need to be transparent, to provide citizens with the best information and recommendations possible at any given time (stressing the inevitable uncertainties and evolving situation, particularly in the early stages of a crisis), for building trust and compliance.



### 5. Building a preparedness culture

Related to the above section, it is important in preparation for possible future crises to foster a culture of disaster preparedness, ensuring that citizens are aware of potential hazards that could impact them and knowledgeable of existing preparedness and response strategies.

The culture of prevention consists on maintaining populations informed about

<sup>9</sup> United Nations Office for Disaster Risk Reduction. (2015), Sendai Framework for Disaster Risk Reduction 2015–2030. [https://www.preventionweb.net/files/43291\\_sendiaframeworkfordren.pdf](https://www.preventionweb.net/files/43291_sendiaframeworkfordren.pdf)

<sup>10</sup> Maini, R., Clarke, L., Blanchard, K. *et al.* (2017), The Sendai Framework for Disaster Risk Reduction and Its Indicators—Where Does Health Fit in?. *Int J Disaster Risk Sci* 8, 150–155. <https://doi.org/10.1007/s13753-017-0120-2>

<sup>11</sup> World Health Organization. (2022) Emergencies: Surveillance. <https://www.who.int/emergencies/surveillance>

<sup>12</sup> Wilson, A., Lehmann, C., Saleh, S., Hanna, J., & Medford, R. (2021), Social media: A new tool for outbreak surveillance. *Antimicrobial Stewardship & Healthcare Epidemiology*, 1(1), E50. <https://doi.org/10.1017/ash.2021.225>

<sup>13</sup> Kandel N *et al.* Dynamic preparedness metric: a paradigm shift to measure and act on preparedness. *Lancet Glob Health*. 2022 May;10(5):e615–e616.

their risks, what are the plans for response and what they can do to protect themselves is crucial for risk management. Engagement with communities and effective communication creating a trustworthy relationship will promote compliance with the authorities' response.

Building the capacity to develop effective infrastructures and training relevant actors on how to respond efficiently to crises or disasters is also important. This includes developing and enhancing the use of drills or exercises that simulate near-real-world experiences, with specialized personnel dedicated continuously to these tasks.

The European Commission (EC), for example, is trying to reinforce the role of citizen preparedness and building a preparedness culture across all society's sectors. In addition to the creation of the Health Emergencies Preparedness and Response Authority (HERA), calls for research proposals on this important topic through their Horizon Europe framework programme.<sup>14</sup>



## 6. Coordination and Cooperation

International cooperation and coordination including data sharing are needed to identify the best optimal strategies in risk prevention and managing of public health crises. This also encompasses the creation of optimal legal and technical frameworks to be able to share data among different parties in a safe and ethical way. One example is the Pandemic prevention, preparedness and response accord, the so-called "Pandemic Treaty" which is currently being finalized and expected to be ready at the 7th World Health Assembly in May 2024.<sup>15</sup>



## 7. Research

Science and innovation must play a key role in the response to health crises, including advances in the areas of risk identification, risk assessment, risk management and countermeasures and providing input for evidence-based poli-

cy decisions by the authorities that would also yield better acceptance among the public. The role of science and innovation in the response to COVID-19 has allowed us to have diagnostic tools, therapeutics and vaccines in record time. Still, much more is needed to have equitable access to research and innovation outputs globally and as a whole in society.



## 8. Financial needs

All these preparedness and response strategies call for important investments, at least in the areas listed above. The investments should be prepared in peacetime, sustainable in time and not only reactive to a crisis. High-income countries could have difficulties establishing some of these programmes but, for low and middle-income countries, it would be even harder and will need to build new capacities or strengthen the existing ones. Hence the importance of the new financial arrangement that has been set up by the World Bank and the WHO, the Pandemic Fund.<sup>16</sup> This intermediary fund finances critical investments to strengthen pandemic prevention, preparedness, and response capacities at national, regional, and global levels, focusing on low- and middle-income countries. Although it is focused on pandemics, many of the capabilities would have a use for other types of disasters. Regardless of the region or action level, there is a need to mobilise civil society and to create alliances between academia and the private sector to ensure that preparedness is maintained as a priority in public policies and thus ensure its sustainability.



## 9. Equity and sustainability

Besides the necessity to provide the means and protection to vulnerable populations, there is a need to develop policies and strategies that aim to eliminate inequities in the preparedness and response capabilities globally. In addition, the reinforcement of such capabilities in countries and communities at higher risk for threats and hazards must be prioritized. Additionally, there is a need to integrate preparedness and response strategies in

<sup>14</sup> European Commission. (2022), Horizon Europe Framework Programme (HORIZON), Enhanced citizen preparedness in the event of a disaster or crisis-related emergency. <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl3-2022-drs-01-01>

<sup>15</sup> WHO. (2023), Pandemic prevention, preparedness and response accord: Q&A. <https://www.who.int/news-room/questions-and-answers/item/pandemic-prevention--preparedness-and-response-accord>

<sup>16</sup> The World Bank. (2023), Financial Intermediary Fund For Pandemic Prevention Preparedness And Response: Pandemic Fund. <https://www.worldbank.org/en/programs/financial-intermediary-fund-for-pandemic-prevention-preparedness-and-response-ppr-fif>

the sustainable development goals from a one health or planetary health perspective,

also considering other aspects beyond human health ●

## 3. An All-Hazards Policy Brief Series

**“An all-hazards approach relies on the development of core protocols and action plans that can be rapidly adapted to a particular crisis situation.”**

The COVID-19 pandemic has been only a drill: future epidemics and pandemics will emerge more frequently, from anywhere in the world and may spread even further, possibly causing more economic damage and killing more people than COVID-19. Public health and environmental crises, whether they cause a systemic crisis or not, share a set of common characteristics that make it possible and desirable to prepare for, and respond to them in similar ways, no matter the origin of the event, using an **“all-hazards approach”**. According to the WHO: “an all-hazard approach acknowledges that while hazards vary in the source (natural, technological, societal), they often challenge health systems in similar ways and demand a multisectoral response. Thus, risk reduction, emergency preparedness, response actions and community recovery activities are usually implemented using the same model, regardless of cause”.<sup>17</sup>

The advantage of such an approach is that it does not require planning for every kind of possible crisis but, rather, relies on the development of **core protocols and action plans that can be rapidly adapted to a particular crisis situation**. This allows for better and faster deployment of resources in the face of unpredictable new threats. Authorities and first responders in charge of preparedness and response activities should have contingency plans for different types of emergencies and should base them on lessons learned and commonalities from

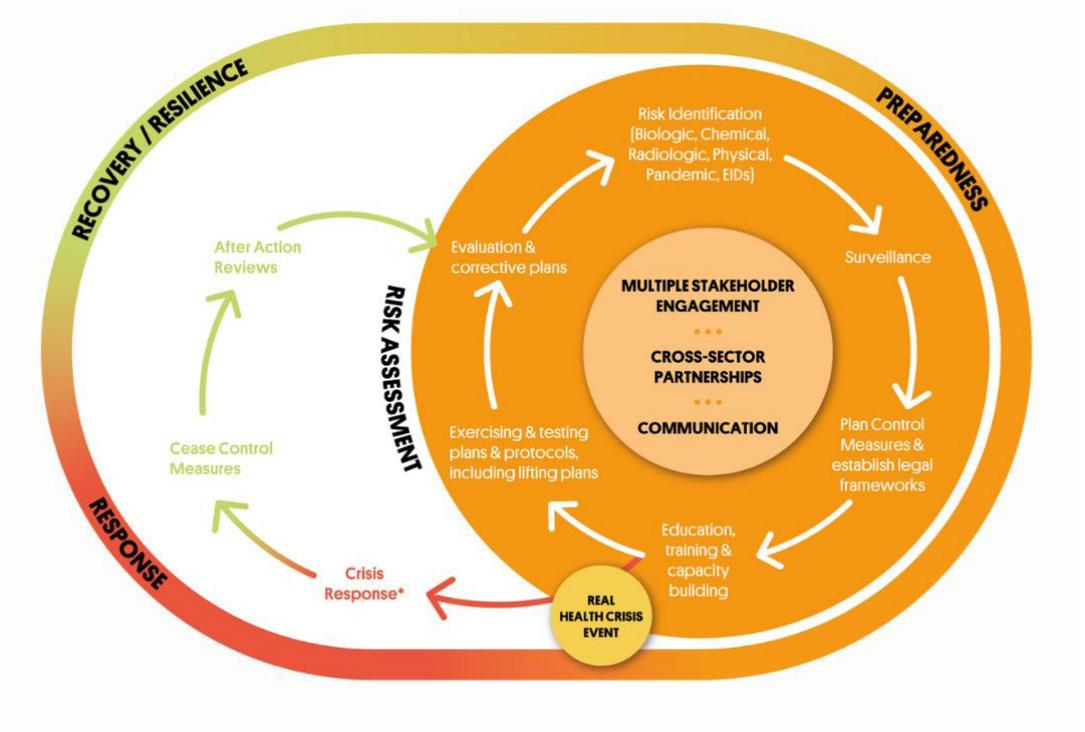
our past experiences. Unfortunately, as the probability of many of these hazards is low, there are usually no updated and integrated plans. The development of an all-hazards preparedness and response framework calls for the evaluation of the direct and indirect effects of these types of disasters and their specific needs.

**ISGlobal has coined the term Preparedness, Response, Recovery and Resilience (PR<sup>3</sup>)** as a concept that combines different phases for the efficient preparedness and response to health crises (see details in our [Policy Paper](#)) within an all-hazards preparedness and response framework.

In order to understand the challenges and the gaps in preparedness and response to public health and environmental crises, this ISGlobal **Policy Brief series** will review, over the next months, the lessons learnt and needs for PR<sup>3</sup> for different types of crises, including radiological, chemical and occupational accidents, epidemics and pandemics, climate-driven disasters and war. The series will end with a final Policy Brief, drawing upon the lessons learnt, with recommendations for an integrated and comprehensive all-hazards preparedness and response framework ●

<sup>17</sup> WHO. (2023), Emergencies: Key approaches to strengthening emergency preparedness and response. <https://www.who.int/europe/emergencies/our-work-in-emergencies/key-approaches>

**Figure 1. Diagram of PR<sup>3</sup> Concept (Preparedness, Response, Recovery and Resilience)**



Source: ISGlobal.

### TO LEARN MORE

- All-hazards Preparedness Guide: [https://www.cdc.gov/cpr/documents/ahpg\\_final\\_march\\_2013.pdf](https://www.cdc.gov/cpr/documents/ahpg_final_march_2013.pdf)
- How can we better prepared for the next public health crisis. Lessons learned from the COVID-19 pandemic <https://www.isglobal.org/en/-/how-can-we-be-better-prepared-for-the-next-public-health-crisis-lessons-learned-from-the-covid-19-pandemic>
- What is the All-Hazards Approach to Emergency Preparedness? <https://www.everbridge.com/blog/what-is-the-all-hazards-approach/>
- The All-Hazards Approach to Emergency Planning Explained <https://www.alertmedia.com/blog/all-hazards-approach/>

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