

Executive Summary Interconnected Disaster Risks 2021/2022

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In 2021/2022, the world yet again witnessed catastrophic disasters happening around the globe, from record-breaking heat to floods, extreme droughts, wildfires and earthquakes. From Europe to Asia, America to Africa, nowhere is immune. In the past year alone, disasters took around 10,000 human lives and cost over \$280 billion in damage worldwide. Nature also continues to be under grave threat, as species are pushed from their habitats or towards extinction, the true costs of which are much harder to estimate.

Hazards, such as hurricanes and earthquakes, do not need to turn into disasters. Where and how people live, as well as their ability to respond, largely determine whether a hazard becomes a disaster. For example, this report analyses the disaster of Hurricane Ida, where the majority of those who died lived in illegal basement apartments in a flood-prone area of New York. These forms of accommodation are often sought by vulnerable people who do not have access to other types of housing; for example, undocumented immigrants or people who struggle to pay regular rental prices. At the same time, those vulnerable populations are in the weakest position to buffer themselves against the impacts of a disaster because they can, for example, neither afford to purchase insurance nor have the economic means to bounce back once a hazard strikes. The same applies to nature, where a healthy ecosystem can absorb the force of a storm or a flood better than a damaged one. The disasters seen in 2021/2022 could have been either avoided altogether or their impacts significantly reduced if the right kind of solutions had been in place to prevent or better manage them.

The 2021/2022 edition of the Interconnected Disaster Risks report analyses 10 disasters from around the world, which were selected for their notoriety and representation of a larger global issue that has changed or will change lives across the world, and identifies solutions that can help to prevent or better manage them in the future. The 10 selected disasters for 2021/2022 are:

1. British Columbia heatwave – No plan for heat
2. Haiti earthquake – A disaster 300 years in the making
3. Hurricane Ida – Storm of the future catches New York unprepared
4. Lagos floods – Undermining futures
5. Mediterranean wildfires – Learning to fight fire with fire
6. Southern Madagascar food insecurity – Pushed to the limits by environmental extremes
7. Taiwan drought – When the typhoons stop coming, lives and livelihoods must change

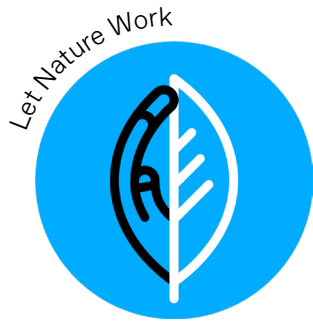
8. Tonga volcano eruption – The Big Bang that took a nation off the grid
9. Vanishing vaquita – Walking into extinction with open eyes
10. Wandering elephants – No space left for wandering giants

To understand the underlying conditions that created the disasters in the first place, it is necessary to look below the surface and identify the drivers that cause disasters to develop, such as deforestation or urbanization. For example, deforestation leads to soil erosion, where a lack of trees and roots means that there is no protection from wind and rain, and the soil is easily washed or blown away. This creates the ideal conditions for multiple disasters, such as the devastating landslides during the Haiti earthquake, the formation of sandstorms in southern Madagascar and the sedimentation of water reservoirs in Taiwan. An even deeper analysis reveals that many drivers are formed by shared root causes, such as our economic or political systems. Deforestation as a driver, for example, can be traced back to the tendency to pursue economic interests without regard for environmental externalities, a root cause defined as “Undervaluing environmental costs.”

These shared root causes and drivers of the disasters from 2021/2022 illustrate how seemingly disconnected disasters link back to the same sources but reveal themselves differently. The good news is that just as the disasters are interconnected, so are the solutions.

One type of solution can prevent or reduce a number of different disaster risks. For example, enhancing early warning systems would have reduced fatalities during the British Columbia heatwave, the Tonga volcano’s tsunami and the flooding in Lagos. Similarly, consuming sustainably can not only reduce the strain on ecosystems we depend on for protection from hazards like the flooding seen in Lagos and New York but also preserve valuable food and water resources in times of scarcity, highlighted by the Vanishing vaquita and Taiwan drought, respectively.

Innovations can include the use of adaptive design, such as floating architecture, that can help reduce the vulnerability of homes to increasing flooding (as seen in the Lagos floods). Preventive techniques that are both effective and beneficial to farmers, such as beehive fences, have successfully been used in Kenya to prevent elephants from entering cropland while at the same time providing honey and improving crop pollination.



Coexisting with natural processes for our overall benefit



Using new ideas and challenging established norms to adapt to or mitigate risk



Modifying our consumption patterns to reflect more sustainable choices



Increasing capacity of institutions to create and enforce risk-reducing initiatives



Having established safety nets to protect people from adverse impacts



Enhancing collaboration across disciplines/stakeholders to view a more holistic picture



Developing risk-aware infrastructure and land-use planning



Enhancing our capacity to predict and communicate risks

Solutions that let nature work include prescribed burning to prevent megafires (Mediterranean wildfires), restoring forest ecosystems to stabilize the soil and prevent land degradation (Haiti earthquake, Taiwan drought, Southern Madagascar food insecurity), or regenerating urban streams and rivers and applying risk-aware urban planning to reduce flood risk (Hurricane Ida). These are measures that harness nature's processes to reduce hazards.

Solutions in these categories not only can be applied to different types of disasters but also are at their most powerful when implemented in a "solution package," where multiple solutions work together to address the different elements of each interconnected disaster. For example, a solution package to address the looming extinction of the vaquita is to work together with local fisher communities to co-manage conservation areas, to innovate and implement more sustainable fishing methods, to raise awareness for sustainable consumption and to enforce regulations to

prevent harmful overfishing and illegal trade. This solution package has a better chance of addressing the problem than if any of the solutions are implemented in isolation.

While the only way to prevent disasters in the future is through the design and implementation of solutions, it is also important to note that solutions cannot take place in a vacuum and have implementation barriers and trade-offs. These trade-offs can for example be environmental. In the case of the British Columbia heatwave, increased access to air conditioning would have reduced heat-related issues, but conventional air conditioning increases greenhouse gas emissions. Trade-offs can also be societal, as in the case of the Wandering elephants, where the creation of habitat corridors or protected areas for Asian elephants would benefit the elephants but might result in a loss of land for people living in those areas. Only by thinking of the interconnectivity of our actions can these trade-offs be properly understood and sustainable solutions found.

Sustainable solutions consider the interconnectedness of disaster risks across time and space, and work together to address different elements of disasters with a long-term perspective.

Different groups are also differently affected by different types of disasters, and any solution package needs to have a special focus on the most vulnerable. For example, children under the age of five are especially vulnerable to the long-term and lasting impacts of food insecurity affecting communities in southern Madagascar, whereas during the heatwave in British Columbia, people over the age of 50 were twice as likely to suffer from heat-related health issues as younger generations. The impacts of the volcanic eruption in Tonga left especially women without income as many of them depend on remittances from abroad, which could not be transmitted due to the interruption of the only undersea cable servicing Tonga. In the very young nation of Nigeria, where almost half of the entire population is under 14 years of age, future generations will suffer from the consequences of today's sand mining.

Not all solutions will be convenient for everyone. The redistribution of resources among generations (Lagos flooding), countries (Haiti earthquake) and groups of people with different vulnerabilities (Hurricane Ida), or requesting the inclusion of stakeholders who are rarely heard (Vanishing vaquita) will mean that some will need to share their resources more broadly than they currently do. Other solutions are yet to be designed and will require a new way of thinking.

As climate change is here to stay and its impacts are increasingly felt, the challenges for disaster risk reduction will only grow in the future and be intensified by the impacts of loss of nature and vanishing biodiversity. Solutions are already being implemented around the world to address risks, but interconnectivity is not yet placed at the heart of solution design and implementation.

Nevertheless, the research on this is clear. Without investing and scaling up smart solutions, the disasters of 2021/2022 are just the beginning of a new normal. The responsibility to make changes rests with all parts of society: the private sector, governments, regional and local decision makers, but also with us as individuals. All of our actions have consequences for all of us. In an interconnected world, we are all part of the solution.

