

AN APPEAL FOR DATA

The GRI is based on publicly available global datasets. There has been a rapid proliferation of datasets that we can use, thanks to recent developments in Earth Observation, crowd-sourcing projects like OpenStreetMap and publicly funded modelling activities. The GRI would not have been possible without these innovations.

Nonetheless, the GRI would be much more useful if we were able to improve the input data and fill data gaps. *We invite innovators and data providers worldwide to help us to improve the GRI.*

We welcome offers from data providers to improve upon the GRI's datasets in the following areas:

	What we have	What we need
Climate hazards	The GRI covers flooding ⁱ , cyclones ⁱⁱ , extreme heat and droughts ⁱⁱⁱ . Some of these hazard datasets include future climate scenarios from multiple climate models.	We are always seeking more accurate and higher resolution hazard datasets. We wish to fill the gap in mapping wildfire, landslide hazards and groundwater salinization. We are keen to incorporate spatial event sets that are necessary for accurate climate risk analysis.
Human exposure and vulnerability	The GRI contains geospatial data on population ^{iv} density worldwide.	We wish to associate more attributes with this population data, to better describe peoples' vulnerability to climate-related hazards, including the assets that they own, their wealth, age, health status and disability. We wish to be able to map these attributes at a high spatial resolution.
Exposure and vulnerability of infrastructure and the built environment	The GRI is unique in its representation of climate damage to transport ^v , energy ^{vi} and water infrastructure worldwide. The GRI contains a global map of building ^{vii} locations and is keeping track of rapid developments in mapping human settlements.	We are particularly keen to have more information about the attributes of buildings that make them more or less vulnerable to climate risks like flooding, wind storms and over-heating. In order to understand better the consequence of infrastructure failure, we need more information on use of infrastructure services e.g. trade and passenger flows on transport networks.
Exposure and vulnerability of the natural environment	The GRI contains global data on land cover ^{viii} and natural assets ^{ix} .	We are seeking better geospatial information on the vulnerability of natural assets to climate hazards.
Validation of risk estimates		It is crucial that the GRI's risk estimates are validated against observed loss and damage. We are seeking more information which combines details of large-scale hazard events with records of the damage and disruption caused.
Adaptation options' benefits and costs	The GRI aims to inform action that will enhance resilience of people, property and nature.	We need more information about the costs of a wide range of adaptation interventions and quantification of their benefits in reducing climate impacts.

All datasets should be freely available under an open data license. They will be fully acknowledged.

Future development of the GRI

Rapid progress has been made with developing the GRI to a point where it gives sub-national estimates of exposure to climate hazards, and quantification of selected climate risks. This analysis has been embedded in a [web-based viewer](#), enabling free access from anywhere in the world.

We wish to maintain the rapid momentum with developing the GRI, with the following action tracks:

- **Track 1: Continuous improvement to GRI datasets:** We will continue to add to and enhance the contents of the GRI using the best openly available global datasets.
- **Track 2: GRI climate risk analysis and validation:** We will continue to improve the GRI's calculations of climate risk and rigorously validate these risk estimates against observed loss and damage.
- **Track 3: GRI use cases:** We will customise use cases for the GRI, including cases of physical climate risk disclosure, pricing climate risk in infrastructure investments, and adaptation investment prioritization.
- **Track 4: GRI tools functionality:** Building on the platform that was launched at COP27 in Sharm El Sheikh, we will add to the GRI's analytical functionality, providing a wider range of decision-relevant metrics, maps and future projections.

GRI has been financially supported the UK Centre for Greening Finance and Investment, the Insurance for Development Forum, the World Bank and Willis Towers Watson. We seek growing financial support to accelerate the GRI's journey towards becoming the trusted and open resource for physical climate risk analytics worldwide.

ⁱ WRI Aqueduct River and Coastal Flood Hazard Maps

ⁱⁱ STORM tropical cyclone wind speed return periods

ⁱⁱⁱ ISIMIP, Lange et al (2020) DOI: 10.1029/2020EF001616

^{iv} JRC Global Human Settlement Layer GHS-POP R2022A

^v OpenStreetMap

^{vi} Arderne et al (2020) DOI: 10.1038/s41597-019-0347-4 and WRI (2021) Global Power Plant Database v1.3.0

^{vii} JRC Global Human Settlement Layer GHS-BUILT-S R2022A

^{viii} ESA CCI Land Cover DOI: 10.24381/cds.006f2c9a

^{ix} UNEP-WCMC and IUCN (2022), Protected Planet: The World Database on Protected Areas (WDPA)