

Indicator metadata: Aggregated natural hazard values for five hazards

The normalized hazard indicator values for river floods, windstorms, droughts, seismic hazards, and landslides were multiplied with the relative weight for each hazard, summed up and normalized. Those areas that have an incomplete data coverage for all five hazards area shown as “no data”.

The relative weight of each individual natural hazard was calculated by using the cumulative damage costs from EM-DAT for the period 1981-2010 for the ESPON space (EU member states, Iceland, Liechtenstein, Norway, Switzerland, United Kingdom of Great Britain and Northern Ireland). The relative weights of the five ESPON-TITAN indicators: storms 38,8%, riverine floods 37,1%, droughts 12,7%, earthquakes 11,2%, landslide 0,1%.

To convert the values from US dollars (as in the EM-DAT database), the exchange rates from US dollars to ECU (European Theme(s): Environment and Energy - Environment, Climate and Energy

Introduction

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Territorial information:	Nomenclature			
	Spatial Extent	name	version	level
	EU28+4+CandidateCountries	NUTS	2013	3

Years: 1981-2010

Download

File

- Data (JSON, browse webservice) (/api/public/indicator-data/2178/)
- Metadata INSPIRE (XML) (/indicator/2178/metadata-inspire.xml)
- Metadata ESPON (printable) (/indicator/2178/metadata-espon/)
- Indicator package (CSV+XLS) (ZIP 138.8 KB) (/private-media/object/2178/ind_2178_agg_nhaz_csv.zip)
- Indicator package (SHAPE) (ZIP 2.3 MB) (/private-media/object/2178/ind_2178_agg_nhaz_shp.zip)
- Project package (all data of the related project) (/private-media/object/2304/project_titan-territorial-impacts-of-natural-disasters_sOgi5Tw.zip)

Right

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- Constraints - Use constraint: copyright (default)

Methodology

The source of data used to weight the individual hazards for the aggregated hazard indicator was EM-DAT database (EM-DAT 2020, Centre for Research on the Epidemiology of Disasters, CRED). EM-DAT data gives the estimated damage costs of natural hazards in US dollars in the value of the year of occurrence. To convert the values from US dollars, the exchange rates from US dollars to ECU (European Currency Unit, used as a monetary unit from 13.3.1979 to 31.12.1998) and from US dollars to EUR (Euro, used from 1.1.1999) and. A consistent set of exchange rates from 1971 to 2019 is

provided by Eurostat (https://ec.europa.eu/eurostat/en/web/products-datasets/-/ERT_BIL_EUR_A). Converting the total damage costs from US dollars to euros was done by multiplying each hazard's total damage cost in US dollars with the EUR/ECU exchange rate of the year of the event.

After converting the values from US dollars to euros, all the EM-DAT price estimates of the total damages were brought to the reference year 2015 for summing the economic losses from different years by using the Harmonized Index of Consumer Prices (HICP), provided by the European Central Bank (ECB).

The relative weight of each individual natural hazard was calculated by using the cumulative damage costs from EM-DAT for the period 1981-2010 for the ESPON space (EU member states, Iceland, Liechtenstein, Norway, Switzerland, United Kingdom of Great Britain and Northern Ireland). Relative weight means a percentage between 0 % and 100 % that is assigned to each individual ESPON-TITAN hazard. The relative weights for the chosen hazards were: windstorms 38,8%, riverine floods 37,1%, droughts 12,7%, earthquakes 11,2%, landslide 0,1%.

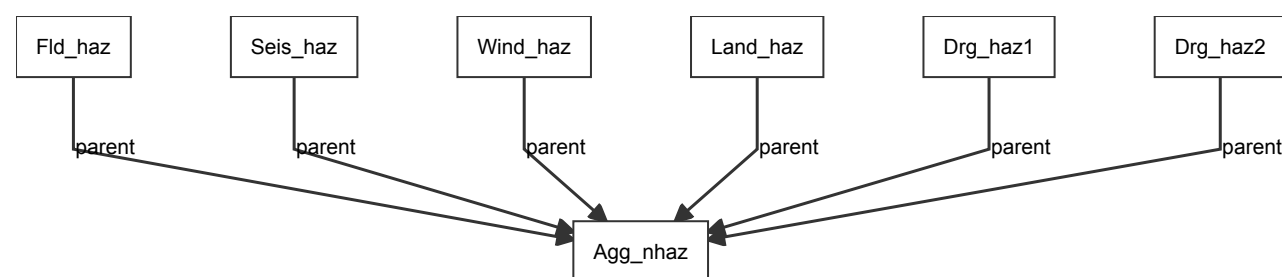
In the EM-DAT database, many of the floods and storms are not further specified, i.e. there is no information available about the type of flood or storm. All unspecified floods were taken off from the calculations if there was no specified triggering origin mentioned for the disaster in the EM-DAT database. Each individual unspecified storm that had an event name in the EM-DAT database was studied using storm databases (e.g. Extreme Wind Storms Catalogue) to find out if they were winter storms or other storms. From that base, the named storms were specified as either ESPON-TITAN hazards (winter storms and extra-tropical storms) or other natural hazards. Unnamed storms were taken off from the calculation.

The normalized hazard indicator values (0-1) were multiplied with the calculated relative weight for each hazard of the chosen five ESPON-TITAN hazards. The summed resulting values are shown at NUTS3 as an aggregated hazard indicator. Those areas that have an incomplete data coverage for all five hazards areas shown as “no data”.

The indicators for riverine floods, storms, earthquakes, and landslides, could be directly normalised because the respective hazard maps are at NUTS3 and show only one indicator. The two indicators for droughts were transferred from NUTS0 (national level) to NUTS3, normalized and summed equal weights for the number of droughts and the number of drought months. The resulting merged indicator was normalized as input for the aggregated hazard indicator.

Genealogy

Graph



Parents

- 100-year river flood (flooded area in percentage of NUTS3 area) (/indicator/2191/)
- Seismic hazard (maximal peak ground acceleration as fractions of standard gravity) (/indicator/2193/)
- Windstorm hazard (maximum wind speed for three-second gusts, 1981-2010) (/indicator/2192/)

- [Landslide susceptibility \(/indicator/2194/\)](#)
- [Drought hazard \(number of droughts 1981-2010\) \(/indicator/2195/\)](#)
- [Drought hazard \(number of drought months 1981-2010\) \(/indicator/2219/\)](#)

Child

None!

Other attributes

Id:	2178
Status:	Key indicator
Name:	Aggregated natural hazard values for five hazards
Code:	Agg_nhaz
Is standard?:	True
Is base indicator?:	False
Type:	Single
Data type:	Float
Unit of measure -	None
Numerator / Denominator	
Name:	
Unit of measure -	1
Numerator / Denominator	
Scale:	
Is a ranking?:	False
Main Theme:	Environment and Energy - Environment, Climate and Energy
Nature type:	Composite
Labels:	None