





Insured Exposure Development for Estimating the Financial Consequences of Windstorm Risk in Europe

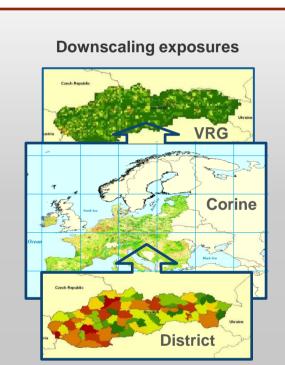
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Gross Property premium vs Total Sum Insured Purchasing power 2008 vs. non-Residential economic exposure vs population 2009 GDP vs. non-residential economic Purchasing power and economic residential exposure **Validation** exposure per capita (excl. NO & LU) residential economic exposure per capita 2009 GDP per capita vs. non-residential Switzerland Total economic residential exposure Independent economic benchmarks. Sum of purchasing power (GfK) Purchasing power per capita: $R^2 = 0.7852$ Heterogeneous relationship. > Well correlated with modelled economic exposure Not a perfect approximation for property Although the UK appears off-trend this is expected to improve with more up to date purchasing power Gives a snapshot for that year. Includes all wealth generation activity, non-tangible assets etc. Gross property premium: Well correlated with modelled insured exposures current weakness of the pound relative Although the UK appears off-trend this is expected to the Euro in 2009 (GDP data on this to improve with more up to date premium data. graph is 2009). **Gross Property Premiums in 2008** 2009 GDP (market prices) per capita Population (GfK 2008) Purchasing power per capita (GfK 2008) **Insured Exposure** Maisons propriétaires occupants By applying country- and peril-specific insurance assumptions on policy conditions and penetration rates, we estimate the insured or industry exposures. ■ To the right are the total sums insured for residential structures by sub line of Insurance Assumptions Maisons propriétaires non-occupants (SFD landlords) ➤ Maisons propriétaires occupants (SFD owner-occupiers) Appartements propriétaires non-occupants (MFD landlords) > Appartements propriétaires occupants (MFD owner-occupiers) In Germany, the take-up rates for ➤ Immeubles (shell of a MFD building) residential structural policies vary ➤ Maisons and appartements locataires (renters, only contents insurance)

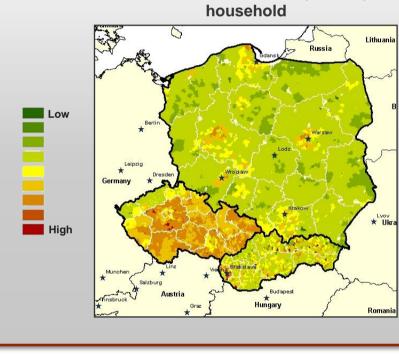
Economic Exposure

- With the number of buildings, average surface areas and the construction costs per square meter, we can now estimate the economic exposure values for all properties at risk in a given country.
 Exposures may have to be downscaled if only low-resolution data is available.
- Exposures may have to be downscaled if only low-resolution data is available (e.g. district). Distribution factors are calculated via remote sensing data (land use/land cover data from Corine) to distribute exposures to Variable Resolution Grid (VRG) cells. From there exposures are re-aggregated to postcode resolution for the IED.
- Validations of the spatial distribution of economic exposures includes mapping the exposure and population density (per km²) and exposure per household as well as per capita.

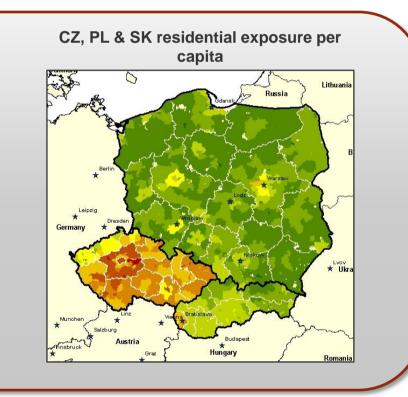








CZ, PL & SK residential exposure per



Insurance Assumptions In Germany, the take-up rates for residential structural policies vary regionally. Historic evidence suggests that in some Bundesländern (for example Baden-Württemberg) there is compulsory insurance. The country-wide average take-up rate is about 85%. For contents policies the take-up rates vary between the West and the former Eastern Bundesländern.

