Climate Change Centre AUSTRIA

CCCA Fact Sheet #54 | 2025

Climate Change
Mitigation and adaptation

The distributional impact of flood damage compensation policy in Austria

Author: Max Tesselaar (Vrije Universiteit Amsterdam)
Review: Alexander Mürmann (WU Wien), Franz Prettenthaler (Joanneum Research)

This fact sheet highlights the research done in the DISCC-AT project on "social flood risk" hotspots – places where high social vulnerability to flooding and flood hazard overlap. The social flood risk hotspot analysis is important to inform flood risk management (FRM) in addition to traditional flood risk assessments.

Main findings

- Austria faces a substantial flood insurance protection gap. After a damaging flood households and governments need to redirect funding to cover uninsured damages.
- Improvements in flood protection have short-term benefits to reduce the protection gap, but this strategy becomes less effective as the climate changes.
- Effective flood insurance reform to improve coverage requires expanding or limiting coverage by the catastrophe fund. The latter strategy enables higher private flood insurance coverage which may be supported by public reinsurance coverage.
- Government involvement in the provision of flood insurance limits rising inequality in flood vulnerability.
- Mandatory flood insurance is recommended. A limited degree of risk-reflective pricing is beneficial to stimulate adaptation to flood risk.

The insurance protection gap

Flood risk management (FRM) aims to limit the occurrence and impact of floods, which increase due to climate- and socio-economic change. As it is impossible to fully mitigate flood risk, such as by raising flood protection standards, FRM also needs to develop tools to reduce the impacts of remaining risk. An important economic tool in this context is insurance.

In Austria flood risk is predominantly insured through the public catastrophe fund (Katastrophenfonds). However, coverage of flood damages for households is uncertain, as there is no legislation that mandates a degree of compensation. Although empirical evidence suggests the fund compensates between 20-50 % of damages, there have been disasters where this was 100 %. Households are supposed to cover remaining recovery costs themselves, either by saving income or by purchasing insurance coverage. Insurance uptake in Austria is sparse (10-25 % of households[1]), due to barriers such as unaffordability of premiums, the underestimation of risk and the expectation of government compensation. Crowding out of insurance uptake due to anticipated public support is made worse by insured households receiving less compensation through the catastrophe fund [1]. Besides demand-side limitations, coverage by private insurance contracts is often limited to approximately 10.000 €.

The impacts of doing nothing

As a result, Austria faces a considerable flood insurance protection gap - the amount of risk not covered by some form of insurance. Using GLOFRIS, a well-established flood risk model, the total Expected Annual flood Damage (EAD) in Austria is 161,5 million € in 2010, which becomes 498 million € by 2080[2]. Assuming the catastrophe fund covers 30 % of this risk (48,5 million € in 2010 and 149,5 million € in 2080) and Austrian insurers cover 5 %[3] (8 million € in 2010 and 25 million € in 2080), the annual insurance protection gap is 105 million € in 2010 and 324 million € in 2080.

The benefits of policy change

Improving societal flood resilience requires reducing the insurance protection gap. With this aim Austrian FRM may upscale coverage by the catastrophe fund. Another approach is to explicitly limit coverage by this fund, which would create a clear insurance market gap for insurers to fill. Insurance coverage could be stimulated by introducing a public or public-private reinsurance facility[4], as applied in several European countries (e.g. France, Belgium, the UK, Norway). A "public-private" reinsurance system is, together with insurance coverage requirements and limited risk-based premiums, recommended by the Austrian insurance association (VVÖ) in an arrangement dubbed "Modell NatKat".

[1] As approximated by Insurance Europe: https://assets.foleon.com/eu-central-1/de-uploads-7e3kk3/48290/property_catastrophe_insurance_-_austria.9122c134f1a1.pdf (last accessed 01/04/2025)

[2] Using Representative Concentration Pathway (RCP) 4.5, combined with Shared Socio-economic Pathway (SSP) 2. Note that these figures are somewhat lower than estimations in Prettenthaler et al. (2014), which is largely due to the focus on residential damages here and the exclusion of rivers below Strahler order 6.

[3] An approximation based on limited flood insurance uptake by households and limited coverage provided by insurers.

[4] Reinsurance coverage is usually taken by insurers in order to ensure solvability in the case of extremely destructive events.

In DISCC-AT we assessed how these policies to reduce the flood insurance protection gap unequally benefit households from different socioeconomic classes. Spatially detailed socioeconomic data from Statistics Austria was applied in a partial equilibrium model of the flood insurance sector[5] to assess uninsured flood impacts for different income groups under several FRM policy scenarios. We find that improving coverage in a privatized insurance system, where insurance coverage is voluntary and premiums are sensitive to local flood risk, predominantly benefits more affluent households. In the baseline projection (2010) the median of risk-based insurance premiums is 2,776 € (see Table 1). The share of income spent on premiums is less than 11 % for half of the low-income population. For the other half of this income group, premiums as a share of income reach as high as 150 %. Largely due to high costs, insurance coverage is least for the low-income segment of the population. As a result, uninsured damages of a 100-year flood event are relatively more impactful for low- than high-income households (see Table 1). Aside from distributional implications, this insurance strategy may find political resistance, as Austrian politicians perceive an electoral advantage by being able to provide damage compensation after a disaster [1].

Improving flood protection infrastructure, so that everywhere dykes can withstand at least a 100-year flood, will notably lower the flood insurance protection gap. However, this improvement is largely nullified when considering climate change impacts. A more effective policy is to instate mandatory insurance coverage and enforce a degree of risk-sharing to limit unaffordability. With full coverage of flood risk by the catastrophe fund, annual premiums are approximately 1 % of the income of low-income households. This figure is 2,5 % if, instead, a limited degree of risk-sharing amongst policyholders is maintained, such as in the proposed "Modell NatKat". Aside from these measures to improve the affordability of premiums in high-risk zones, flood premiums may be subsidized through the catastrophe fund, similar to the Austrian agricultural hail insurance arrangement [3]. With mandatory insurance coverage uninsured flood damages are limited to potential deductible levels, meaning the relative impacts of a flood are notably less disparate between income-categories. Mandatory flood coverage can be realized by bundling this with standard homeowner insurance policies, which is already mandatory for Austrian homeowners.

A downside of the current catastrophe fund, or a change towards mandatory flood insurance with risk-sharing, is that all 4,1 million households residing in Austria pay for flood risk, instead of only the 420.000 that are located in floodplains. In the long-term this may negatively impact the development of risk, as no financial incentive is given for households to avoid or reduce flood risk. However, in our assessment of household-level adaptation effort, the amount of flood risk that can realistically be reduced as a result of insurance incentives is limited, and is likely outweighed by the advantages of mandatory insurance and risk-sharing. Limited risk-based premiums may be able to combine the objectives of affordable coverage and risk-reduction incentives.

Policy scenario	Median premium in €(2010)	Income group	Median premium as a % of household income	Uninsured impact of a 100-year flood as a % of household wealth	% of DRR incentivized by insurance
Private	2776 (3672 - 4075)	Low	11 (15 - 19)	100 (100 - 100)	4 (2 - 2)
		Middle	6 (9 - 11)	42 (45 - 45)	7 (6 - 8)
		High	5 (6 - 8)	27 (29 - 28)	6 (9 - 14)
Private with improved flood protection	1587 (3434 - 3628)	Low	7 (14 - 16)	NA	NA
		Middle	2 (8 - 10)	NA	NA
		High	1 (6 - 7)	NA	NA
Public	116 (260 - 329)	Low	1 (1,2 - 1,5)	30 (32 - 77)	2 (0 - 0)
		Middle	0,5 (0,7 - 1)	16 (17 - 42)	4 (2 - 3)
		High	0,4 (0,5 - 0,6)	11 (11 - 24)	4 (6 - 10)
Public-Private	506 (509 - 539))	Low	2,5 (2,5 - 2,5)	29 (31 - 76)	4 (2 - 2)
		Middle	1,6 (1,6 - 1,6)	16 (16 - 36)	7 (6 - 8)
		High	1 (1 - 1)	11 (11 - 22)	6 (9 - 14)

Table 1: Premiums, affordability, risk reduction and the protection gap under various insurance systems. "Private" insurance assumes voluntary uptake and risk-based pricing. "Improved protection standards" implies that these are increased to 100-years in regions where they are currently not. "Public" insurance implies an extension coverage by the public catastrophy fund. "Public-private" insurance implies the general components of the "Modell NatKat", including mandatory insurance and limited risk-based premiums. All insurance systems assume a deductible of 15 %. Values are projected outcomes in 2010, and in brackets two projections for 2080, firstly using an average global warming scenario (RCP 4.5), secondly using a severe global warming scenario (RCP 8.5).

[5] See Tesselaar & Botzen (2025) [2] for a detailed description of how this was done

References

[1] Parth, A. (2025). Taking Eco-Social Risks Seriously: Explaining the Introduction of Compulsory Insurance for Natural Hazards. *Regulation & Governance*, 0, 1-16. [2] Tesselaar, M., & Botzen, W. J. W. (2025). Inequality in Flood Insurance Arrangements to Finance Flood Recovery under Climate Change. DISCC-AT Working Paper #5. Available at https://wegcwp.uni-graz.at/discc-at/outcomes/. [3] Perner, S., & Walther, A. (2025). *Versicherungsrecht und Naturkatastrophen*. VRW. https://rdb.manz.at/document/rdb.tso.LIvrw20250104. [4] Prettenthaler, F., Kortschak, D., Hochrainer-Stigler, S., Mechler, R., Urban, H., & Steininger, K. W. (2015). Catastrophe Management: Riverine Flooding. In K. W. Steininger, M. König, B. Bednar-Friedl, L. Kranzl, W. Loibl, & F. Prettenthaler (Eds.), *Economic Evaluation of Climate Change Impacts* (pp. 349–366). Springer International Publishing.

Weitere Informationen auf: www.discc.at

Impressum: CCCA, Dänenstraße 4, A-1190 Wien, servicezentrum@ccca.ac.at, www.ccca.ac.at
ZVR: 664173679, ISSN 2410-096X, Stand: Mai 2025