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Climate Change Impacts on the Affordability and Market Penetration of Flood Insurance in the EU

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Flood insurance coverage can enhance resilience of households to flood risk. However, the uptake of flood insurance in voluntary markets may decline if flood risk increases as a result of climate change. Purchasing flood insurance can become less attractive when premiums increase substantially in the face of increasing risk, and can even become unaffordable for low-income households. This study evaluates issues concerning the unaffordability of premiums and the uptake of flood insurance in EU countries up to 2080 under scenarios of climate change. For this, the "Dynamic Integrated Flood Insurance" (DIFI) model is applied, which integrates flood risk simulations with an insurance sector and a consumer behavior model. Our results show that unaffordability of premiums rises with a factor of 7.2, on average, under the "low" climate change scenario, which rises to 30 under the "high" scenario. The problems with premium unaffordability contribute to a declining insurance uptake of, on average, 15% up to 2080 for both climate change scenarios, while flood insurance demand even reduces to zero for some regions and flood insurance market structures. Reforms of flood insurance arrangements, which include introducing public reinsurance, purchase requirements and a stronger risk-sharing mechanism, considerably improve affordability (up to 99% compared to voluntary insurance systems in 2080). These reforms enhance future flood insurance coverage, and hence contribute to resilience against floods.