

Synthesis

Table 4.4 provides a compact synthesis of economic instruments assessed and summarises the observations for each indicator. For the most part, instruments appear **very context- and location-specific**; while all EI listed are insurance instruments, there exists a great variety as to how they perform against individual indicators, showing the complexity and importance of considering the economic, social, political, and environmental conditions and effects of the instrument.

In terms of commonalities, far less can be said, other than two general similarities having to do with inequality and incentivising DRM. The effects of insurance instruments on inequality were seen to be mostly low, as it is not the role of insurance to directly reduce inequality. Some potential emerged for indirect effects, but generally, such instruments were seen to be a non-factor in this regard. Conversely, and as possibly expected, the analysis led to suggest that most instruments are beneficial in incentivising DRM, or at least, having good potential to do so, with premiums possibly being linked to DRM implementation and designing of options to be strongly linked to DRM measures.

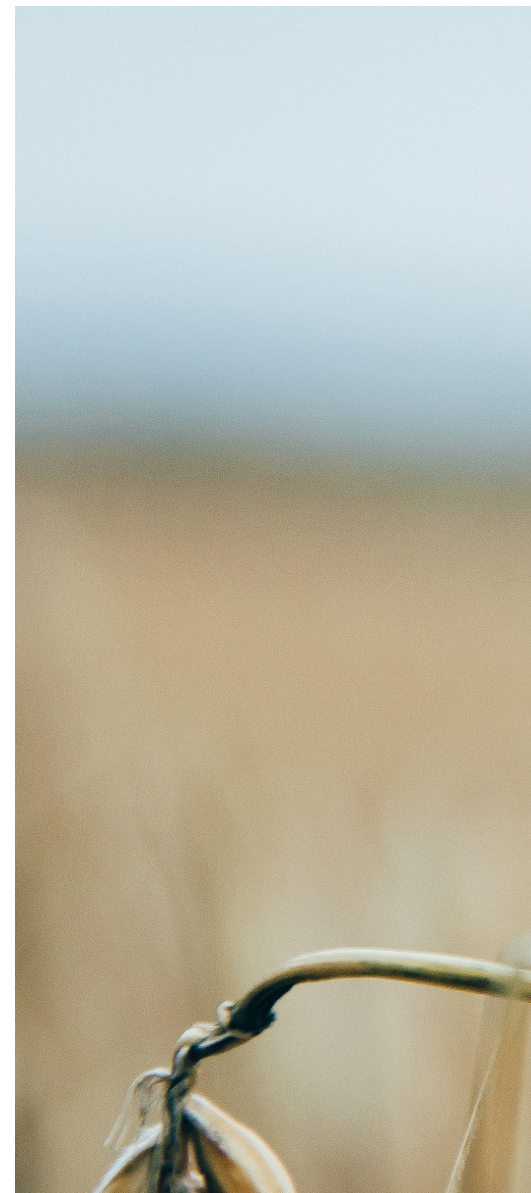
Beyond this, instruments varied from indicator to indicator, with little similarity. Overall, we suggest the synthesis assessment can be useful in that it **provides a common set of criteria**, and when used with a variety of similar instruments such as in this case, **can highlight approaches which are successful at meeting said criteria**, and which are not, benefiting the design of future instruments by learning from the outcomes of others in a structured manner such as here. An example might be improving an option's performance in the environmental dimension; most instruments were seen as not applicable or having very low scores in this regard, with the exception of the fire insurance instrument, which mandated that in order to join the scheme, forest management and fire defence plans must be completed. If other instruments had similar requirements tailored to their individual hazard and context, it could improve their effectiveness in regards to this criterion in the future. At the very least, the synthesis allows us to **highlight areas of 'good' and 'incipient' practice, benefitting future research and policy design.**

Recommendations for policy and research

As mentioned, the synthesis of economic instruments allowed the study team to highlight the diversity in results from case to case and instrument to instrument, providing

a set of examples. This can be interpreted as **a roadmap of practices**, and using a similar set of criteria to assess a number of instruments can lead to identifying examples which work in certain contexts, that can then be tailored to fit others (e.g. the use of forest management plans as an example of how to include an environmental dimension when considering similar plans in the future).

We suggest that the **MCA framework** is also useful in that it **provides a common, structured approach for looking at an instrument**, and that it **emphasises the need to focus on multiple factors**. Assessing multiple options in this manner enables more comparisons to be made, and more learning from others' experience, even if it is not directly relevant (e.g. deals with different hazards or spatial scales etc.) Such a framing could be used when designing



a new instrument, and could be used to catalogue those currently in existence, to provide an easy way to compare options and to find new innovations for improving current instruments or when designing new ones.

Working with an MCA approach has indeed highlighted the need for consistency and understanding when assessing options in terms of criteria and indicators used, and what each entails. What constitutes a cost, or a transaction cost? How does one score an option in regards to incentivising sustainable management? In order to compare options beyond a qualitative assessment, more structured interac-

tion is needed between experts and stakeholders carrying out the analysis. This has important implications for the comparability across case studies – and therefore the results highlighted in Table 4.4 should be seen as an illustration of each case, but not necessarily a comparison across cases. With further work and interaction, the assessment, particularly on the insurance instruments, might be taken forward by moving from qualitative aspects to ranking options numerically as well as weighting their importance, but only after working towards a more thorough understanding of all options involved - an avenue for further research.

Photo by Dominik Martin/Unsplash.



Annex: Table 4.4.

Synthesis assessment of insurance instruments for DRM.

Criteria	Indicator	OX + LSE: Flood insurance	PCC: Fire insurance and market commitments	IVM: Property insurance	IIASA: EU Solidarity Fund
Economic	Cost	Ambiguous - Government's impact assessment states that Flood Re is not value for money, but justifies it as it formalises the previous cross-subsidisation, so not creating a new degree of subsidies. The ABM does not provide a precise estimate of how costly Flood Re will be for the economy.	Low - Premium not affordable due to the absence of information to calculate premiums.	Ambiguous - expansion of insurance can promote growth of the insurance sector or facilitate development of economic activity, however insurance tends to require government support, which can be expensive.	High - Although annual budget is maximised at EUR 500M, can be still costly, considering increasing losses and potential political pressure for compensation.
	Transaction Cost	Ambiguous - Flood Re is the result of a 4-year negotiation between industry and government, the new scheme is a new not-for-profit body with its own administration and its own reinsurance purchasing arm. Qualitative investigation highlights the complexities of the negotiations (Surminski and Eldridge 2015).	Not relevant	Moderate - can be low due to large number of policyholders resulting in economies of scale, but high if stronger link to DRM is introduced due to greater monitoring and enforcement costs. Private insurers state transaction costs as reason for not strengthening link between premiums and DRM. Competitive markets can help to keep transaction costs as low as possible.	Moderate - Standardised procedure has been simplified by the recent reforms, but reporting requirements and monitoring are extensive.
	Incentivise DRM	Moderate - Flood Re itself not designed to incentivise DRM, but modelled results show insurers could create incentives for homeowners to implement DRM measures.	High - insurance application requires a Forest Management Plan and a Plan for Forest Fire Defense.	Ambiguous - can score very highly incentivising household level DRM if there is strong link between DRM and insurance premiums in areas of high risk. In areas where link with DRM is weaker or risk is not high, insurance is not able to incentivise DRM.	Moderate - Recent reforms better linked the Fund with DRM but only in the context of flood risk. Link could be further strengthened.

Social	Reduce Inequality	Moderate - Success of the scheme should be visible in terms of stability in local housing markets, which can be linked to inequality where residents in deprived or less affluent areas may be concentrated in areas at higher risk of flooding. Modeling shows scheme alleviates unaffordable insurance premiums - marginal effect on number of mortgage payments becoming unaffordable / house repossessions.	Low - It does not reduce inequalities at this stage since it only benefits owners of large properties. No subsidies are in place.	Low - It is not a role of insurance to directly reduce inequality. Insurance may have display a minor role in preventing the worsening of inequality after a disaster by providing compensation payments to help people get back on their feet, but role would only come into play after a disaster.	Low - Considering current rules, the Fund allocates more aid as a percentage of eligible costs to those countries most able to withstand the financial impact of disasters.
	Affordability	Moderate - Qualitative analysis suggests that this is the overarching aim of Flood Re. The ABM indicates that Flood Re will succeed, even under climate change scenarios, but the technical price and the subsidised price for insurance are expected to diverge more and more, raising questions about the temporary nature of Flood Re and its aim to lead to a free market system.	Low - Affordable only for large properties in good economic situation.	Moderate - Affordability can prove problematic for some (potential) policyholders if the link with risk if increased as proposed then high risk households (with risk adverse insurers) will face very high premiums. However, the increased use of risk based pricing means less cross subsidisation and lower insurance premiums for those at lower risk.	High - Easily affordable for most MS as they contribute based on economic performance.

Political and Institutional	Coverage	Moderate to high - Scope and coverage of Flood Re extended to cover a wider range of property types, but excludes new built (post 2009) as well as SMEs.	Low - Only applies for associates of forest organisations in the South of Chamusca (large properties).	Low to moderate - Insurance is targeted against specific perils to compensation if the peril occurs providing limited problem coverage. In the presence of a strong link between DRM and insurance premiums insurance may additionally increase the prominence of DRM activities in society.	Moderate to high - Covers a wide range of hazards, but not all events qualify for aid.
	Institutional feasibility	N/A	Moderate - Legal framework exists but not associated to support from EU or domestic institutions to decrease premium costs.	High - Several countries have developed the required institutions for a viable insurance market with risk based premiums. Feasibility of increasing the link with DRM will be dependent on the extent to which the market deviates from risk based premiums.	High - Full feasibility
	Consistency with other instruments	Moderate - Investment in SUDS or combination of SUDS and PLPMs can stabilize insurance premiums over time, a clear indicator that surface water risk management is essential to maintain viability of flood insurance.	Low - No consistency with other instruments.	Ambiguous - Dependent with the link of DRM. The stronger the overall link with DRM the more able insurance is reinforce the increased resilience against natural hazards.	High - Consistent
	Acceptability to other interest groups	High - ABM highlights that property developers and local gov could contribute to flood risk reduction; benefits seen as surface water flood risk is reduced in modelled area, and where these investments are considered by insurer, households benefit from lower premiums.	Moderate - Possibly well accepted by other interest groups besides current users if premiums would be lowered.	Ambiguous - The scoring is dependent on the interest group. The possible reforms will result in certain premiums will increase (reduce) limiting (improving) the acceptability of the reform.	Moderate - Strong concerns from some stakeholders – e.g. insurance industry.
	Conditions and barriers	Ambiguous - Investigated in the context of DRM incentives, ABM explores different conditions for the Flood Re scheme, found differing results depending on scenario.	High - Absence of information on risk; small properties not enticing to insurance companies; management areas not developed to large enough degree companies.	High - Potential hikes in premiums forms a strong barrier. Stakeholder buy in limited without considerable time and patience expended on discussion process	Low
Environment dimension	Decrease resource quality	N/A	High - Resource quality should increase due to adequate forest management.	Scores very low as property insurance is not tied to environmental resource quality.	N/A
	Decreases resource quantity	N/A	Moderate – improved resource quality may lead to increased extraction rates.	Scores very low as property insurance is not tied to environmental resource quantity.	N/A

	Incentivises more sustainable management	Mixed - Qualitative work indicates missing focus on broader flood risk context (Surminski and Eldridge 2015), including land-use management. Modeling highlights that most beneficial results in terms of reduced flood risk are realised when full range of development and government conditions are implemented together. Also highlights importance of coordinating developer and local government risk reduction strategies.	High - Forest Management Plans required	Moderate - in the sense of promoting DRM activities. Greater interaction between insurers and planning agencies can provide guidance on the land use management strategies that would alter the overall risk in an area.	NA
	Enhance biodiversity protection	N/A	High - Enhances protection against wildfires.	Very low – property insurance not directly tied to protecting biodiversity.	N/A
	Decrease negative externalities related to human health	N/A	High - decreases wildfire impacts through the application of the Plan for Forest Fire Defense.	Very low - May be negative implications, as property insurance can facilitate economic activity leading to an increase in the magnitude of externalities.	N/A
	Increase use of linked resources	N/A	High - increases most ecosystem services through the application of the Forest Management Plan.	Very low - May be negative implications, as property insurance can facilitate economic activity leading to increase in the magnitude of externalities.	N/A

(*) UPV also analysed the vulnerability during drought periods of agriculture to prices and water availability through an econometric approach