



FIRE-RES



INSTITUTO
SUPERIOR D
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Universidade de Lisboa



DecisionES
2025
Symposium on
Ecosystem Services,
Forest Management and
Decision Making
Porto Seguro
Jun 30th to Jul 4th BR

Creating resilient landscapes: Risk Management and Adaptive Planning

The FIRE RES contribution to the IWFRM Strategy for the EU

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Porto Seguro, July 2 2025

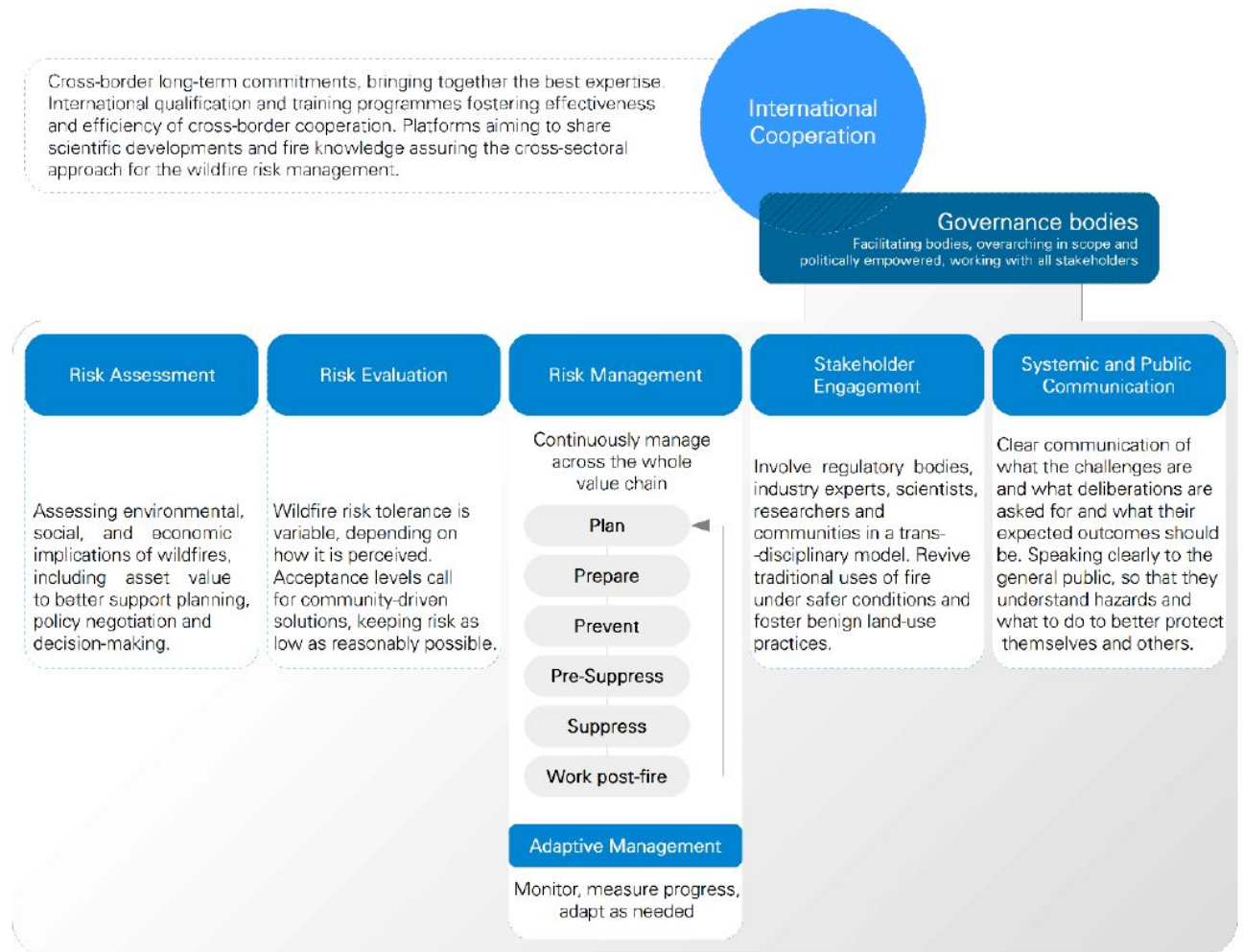


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Landscape Fire Governance Framework 2023



A summarized diagram view of a landscape fire governance continuum

A legally non-binding, voluntary, set of guiding principles, goals, and *governance* proposals, for adjusting strategies, policies, and *landscape fire management*



Working Document

An Integrated Wildfire Risk Management Strategy for the EU: developing resilient landscapes and safer communities

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<https://lnkd.in/ddgymV6P>

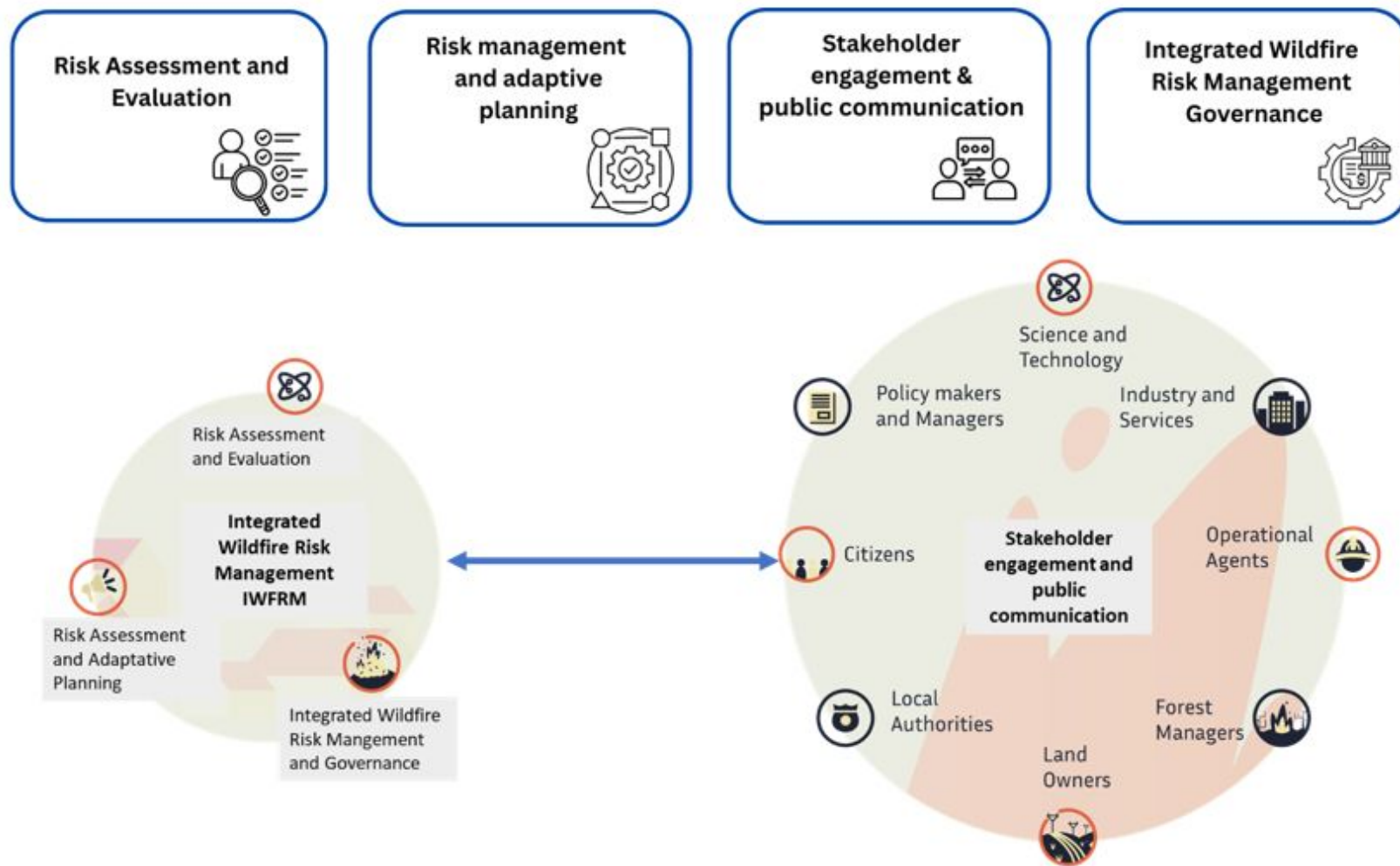


Figure 2: Suggested components of a strategy, building on the LFGF.



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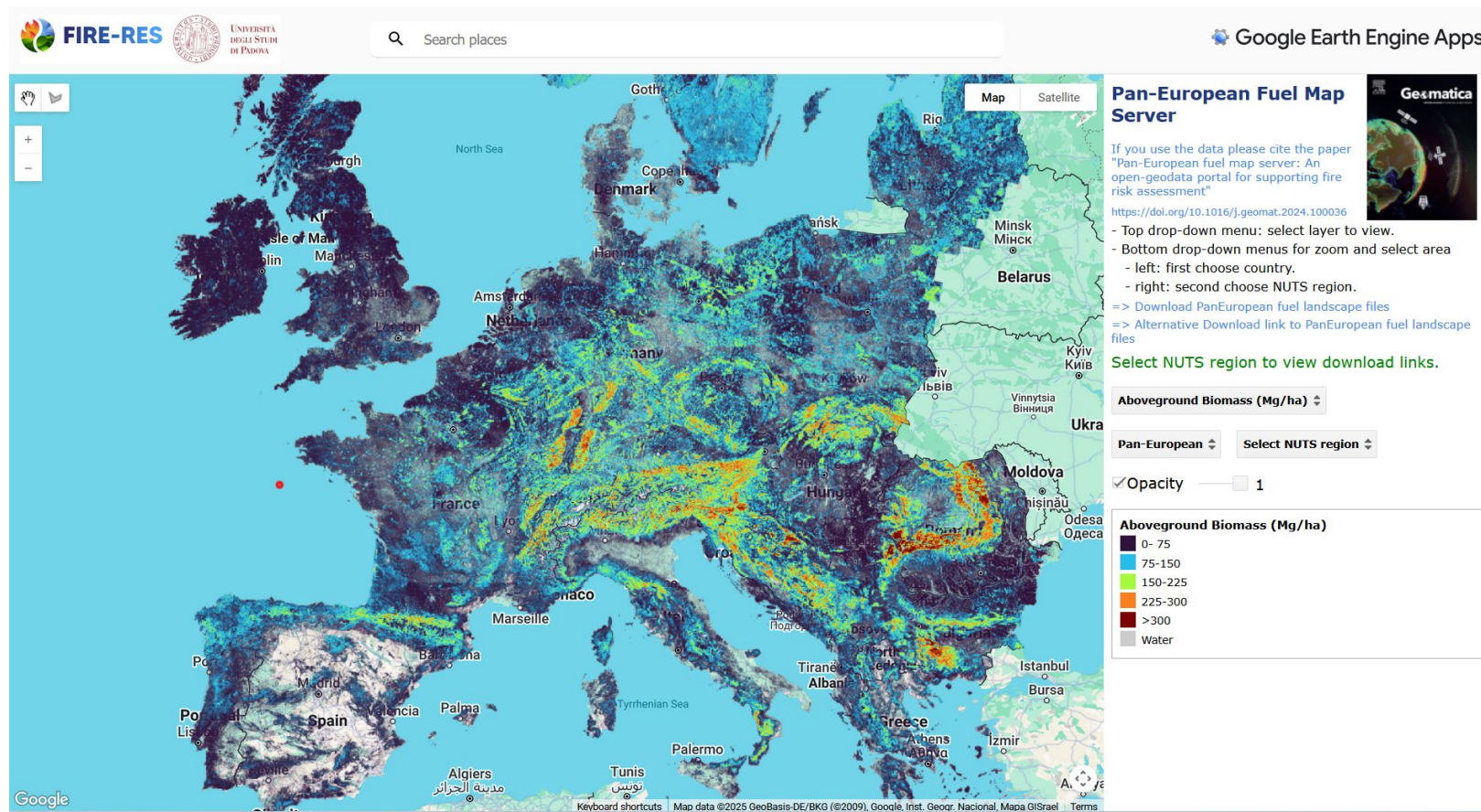
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Risk assessment and evaluation

A web-GIS server delivers a comprehensive suite of geospatial datasets, essential for wildfire simulation and risk assessment



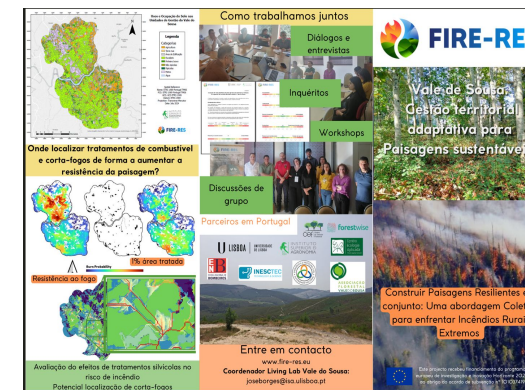
<https://www.cirgeo.unipd.it/fire-res/app/>

<https://www.sciencedirect.com/science/article/pii/S1195103624005615?via%3Dihub>



Landscape design, risk management and adaptive planning

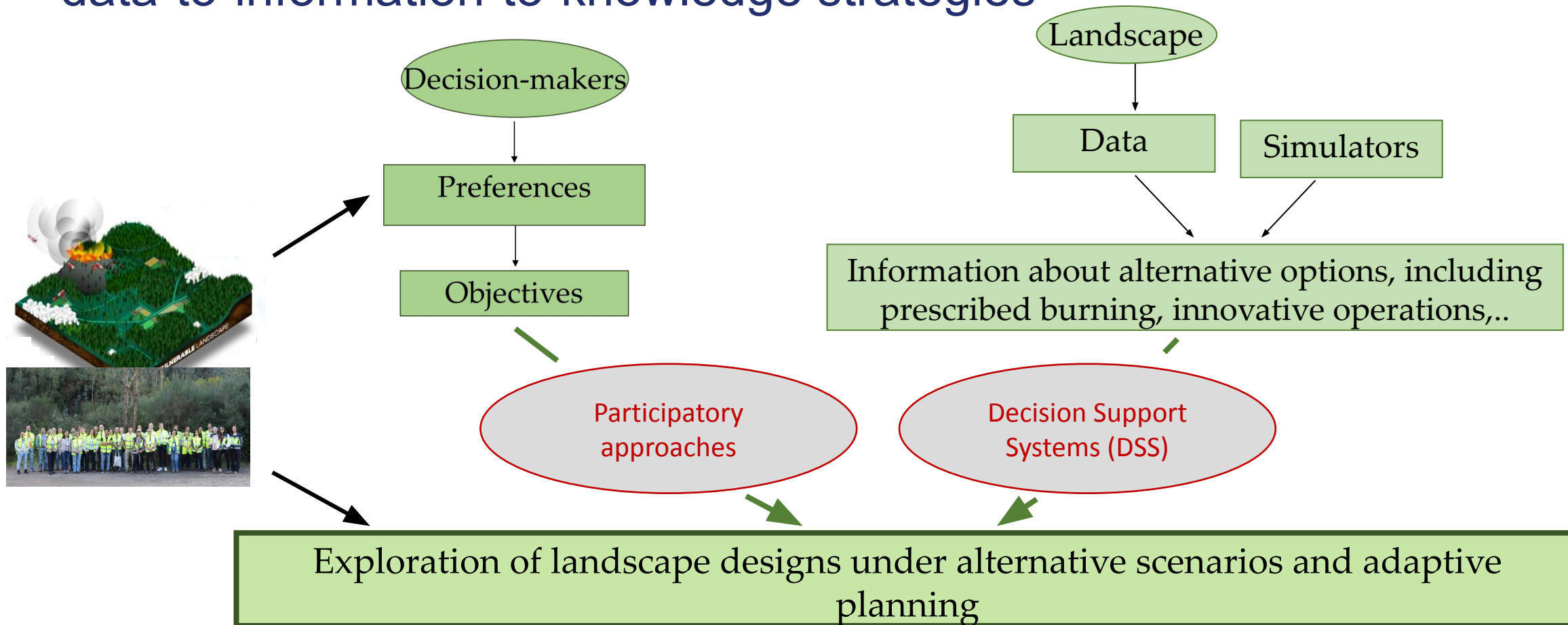
Why landscape design? How to design resilient landscapes?





Risk management and landscape adaptive planning

Requires the integration of efficient and effective data-to-information-to-knowledge strategies





Risk management and landscape adaptive planning

- ✓ How to build and manage the vegetation in the WUI?



- Building codes and developing vegetation management guidelines (with the EXPLORII platform)

- ✓ Where to fuel treat to support preparedness and prevention while addressing values-at-risk?



- Designing cost efficient fuel treatment networks (with Cell2Fire and the Fire Analytics QGIS Toolbox)



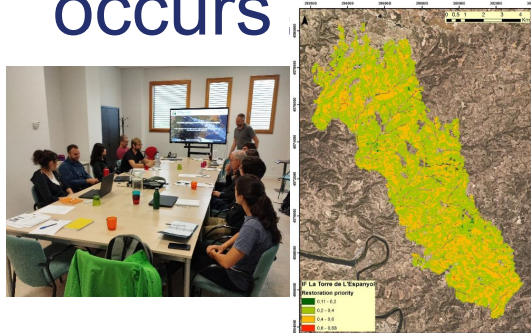
Risk management and landscape adaptive planning

- ✓ Where to fuel treat to facilitate suppression when a wildfire occurs?



- Strategic networks of managed areas to facilitate suppression efforts (by integrating functionalities of decision support tools)

- ✓ Where to implement restoration options after a wildfire occurs?



- Prioritization of areas to manage/restore after a wildfire (by integrating functionalities of decision support tools)



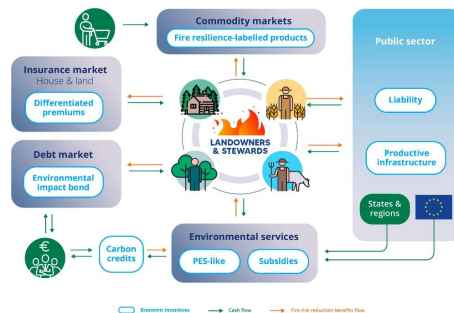
Fire-smart bio-economy *resilient* landscapes

- ✓ How to address demographics and landscape fragmentation?



- Promotion of joint landscape-level management planning (by integrating landscape-level owners' association, land consolidation techniques and collaborative decision support tools)

- ✓ How to address value-chain segmentation?

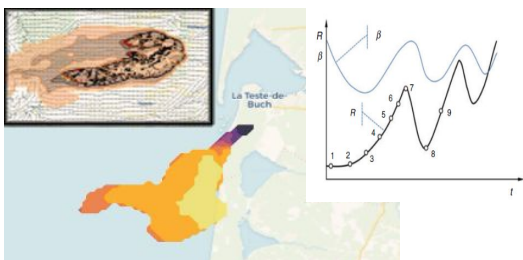


- Integration of spatial-temporal design and sectoral perspectives (by institutional frameworks and pools of economic instruments to incentivise coordination and wildfire risk mitigation, e.g., labelling, PES, insurance premiums)



Emergency management and response operations

- ✓ How to capture extreme fire dynamics in wind-driven events and deploy and dispatch suppression resources?



- Analytical support (by integrating functionalities of coupled atmosphere-fire models, DEMs, smoke prediction and decision support tools)

- ✓ How to advance response operations?



- Training and interoperability (by developing thematic workshops on operational practices with a regional anchorage and yet also involving international experts)



Stakeholder engagement, public communication and risk governance



- Fire forums. Participatory decision-making process, including face-to-face meetings and field visits with decision-makers to discuss future fire scenarios, values and responsibilities.



- Fire Education Platform. An immersive tool for policy-makers, schools and families, organized into different sections according to the target public, e.g., “to teach”, “to do”, “to learn”

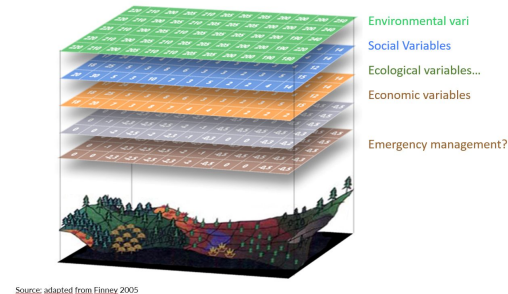


- Policy clinics for inclusive and coherent fire smart risk governance Prototyping and testing public-private mechanisms for regional participative discussion to identify effective bundles of policies for coherent fire risk governance

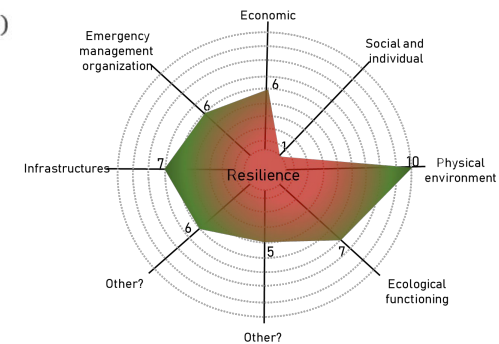


A multimethodological approach to co-define resilience and support collaborative planning in co-designing landscapes

- ✓ Considers multiple dimensions (e.g., environmental, social, economic,...)



$$U = w_r \sum_{n \in N} \sum_{k \in K_n} w_{C_n}(w_{SC_k} u_{rk}) + w_l \sum_{n \in N} \sum_{k \in K_n} \sum_{i \in I} w_{C_n}(w_{SC_k} u_{ik}) + w_{wui} \sum_{n \in N} \sum_{k \in K_n} \sum_{h \in H} w_{C_n}(w_{SC_k} u_{hk})$$



- ✓ Takes advantage of the integrated functionality of both quantitative and qualitative decision support tools



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Obrigado!

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