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## The Need of Resilience for Rural Societies and Economies in Alpine Regions to Profit from Emerging Opportunities in the Course of Climate Change Adaptation

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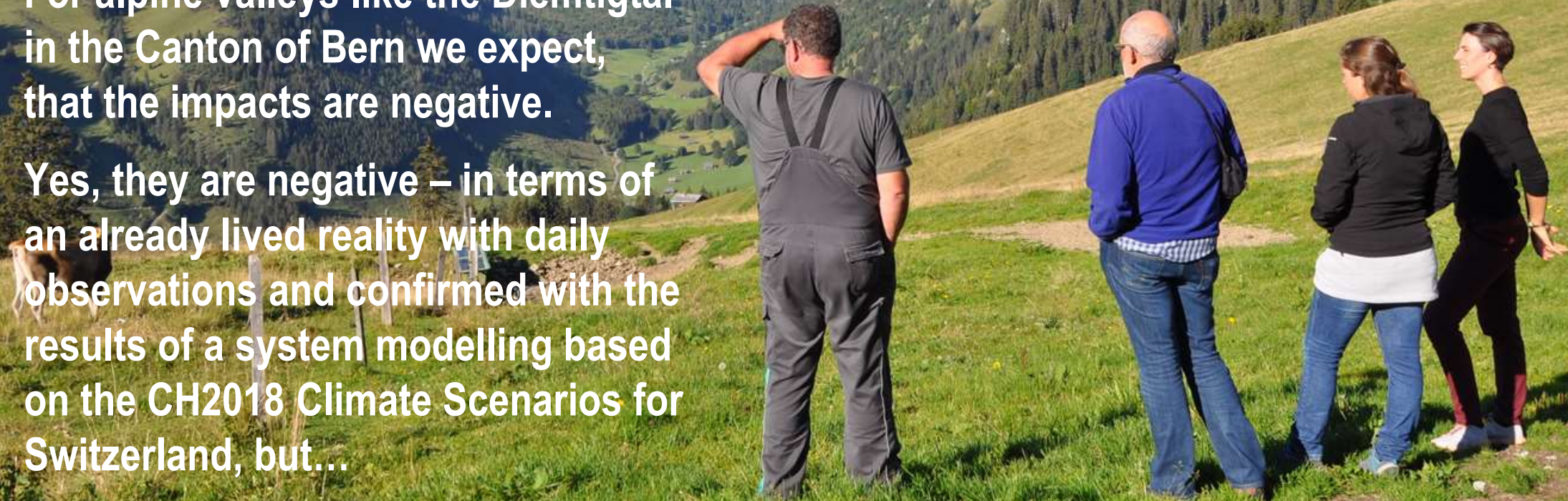


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## What are the impacts of climate change?

- For alpine valleys like the Diemtigtal in the Canton of Bern we expect, that the impacts are negative.
- Yes, they are negative – in terms of an already lived reality with daily observations and confirmed with the results of a system modelling based on the CH2018 Climate Scenarios for Switzerland, but...



## Today's observations and experiences of the population in the Diemtig Valley:

- decreasing slope stabilities caused by heavy rainfall (e.g. rain on snow)
- drought periods leading to water and feed shortage for cows and cattle (2018)
- forest succession (spruce to beech), more parasites (bark beetle) and increasing tree mortality, decreasing wood quality, increasing risks of forest fires, decreasing forest protection of infrastructure and settlements
- increasing economic and environmental pressure on alpine agriculture and forestry

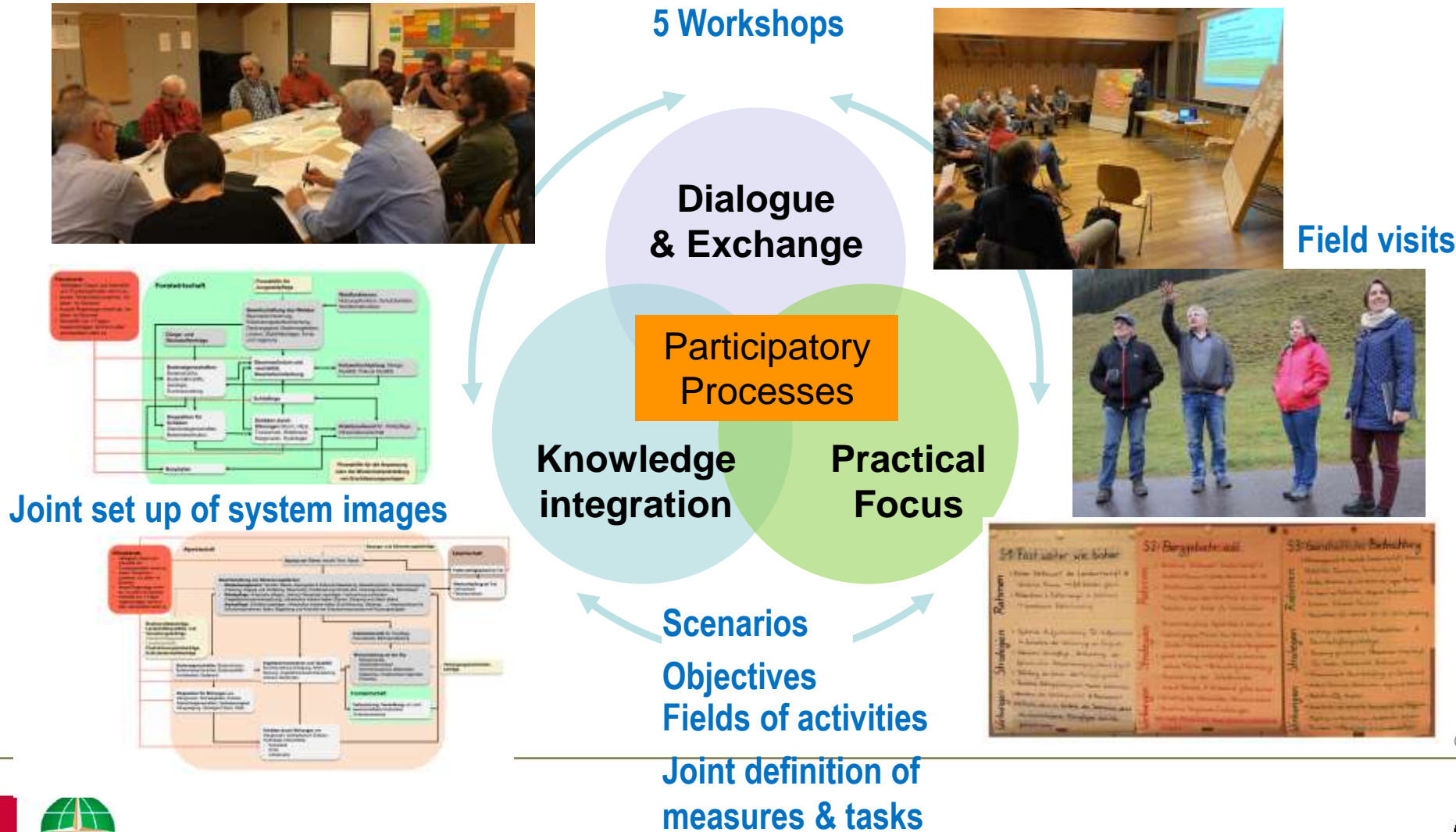


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## Results of the model-based scenarios: Alpine agriculture

- Slope stability:** Increasing risk for shallow landslides and debris flows due to intense local rainfall events
- Droughts:** The number of the driest days in spring, summer and fall increase.
- Forestry:** Decreasing tree growth, increasing tree mortality, increasing risk of forest fires
- Alpine agriculture:** Increasing food range over time and altitude for grazing

**With climate change a growing potential and thus opportunities for alpine habitats are emerging: In the medium and long term, alpine farming will have a greater supply of fodder available over a longer growing season up to higher altitudes.**



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Risks can be  
confirmed.  
Opportunities  
too!



## Achievements:

- Common comprehension and understanding
- Joint definition and set up of a system image
- Affirmation and acceptance of complexity
- Knowledge integration / Knowledge building
- Enabling of active participation and building of trust

**Despite the achievements, identified measures and the joint tasks for the various actors, the road to realize concrete actions appears too much of a challenge for the rural society and economy.**

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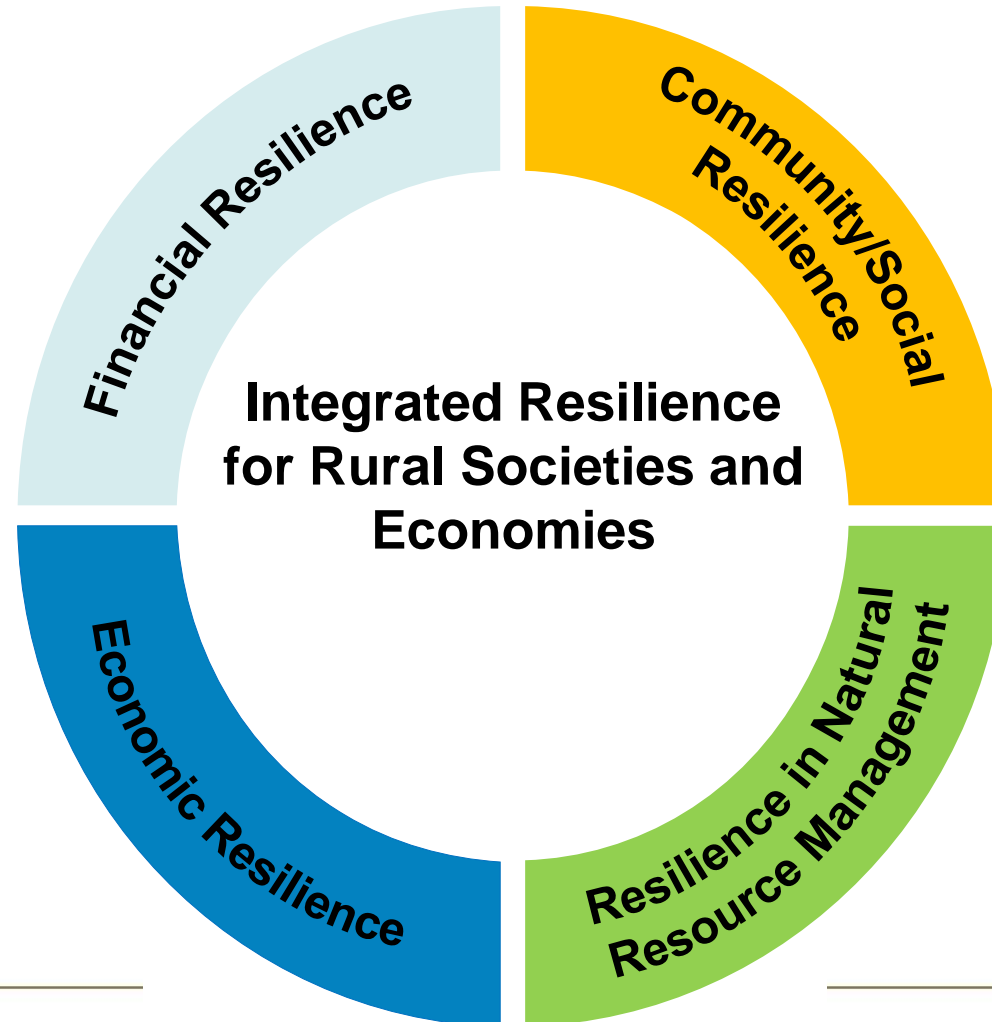
## A concept of resilience is needed

**There is a gap between the opportunities and capabilities. Today the rural society and economy operate at the limit of their capacities.**

- What is needed to overcome the gap to become resilient, allowing to avoid risks and to make use of opportunities?
- And what is needed for a successful adaptation and transformation process once the gap has been overcome?

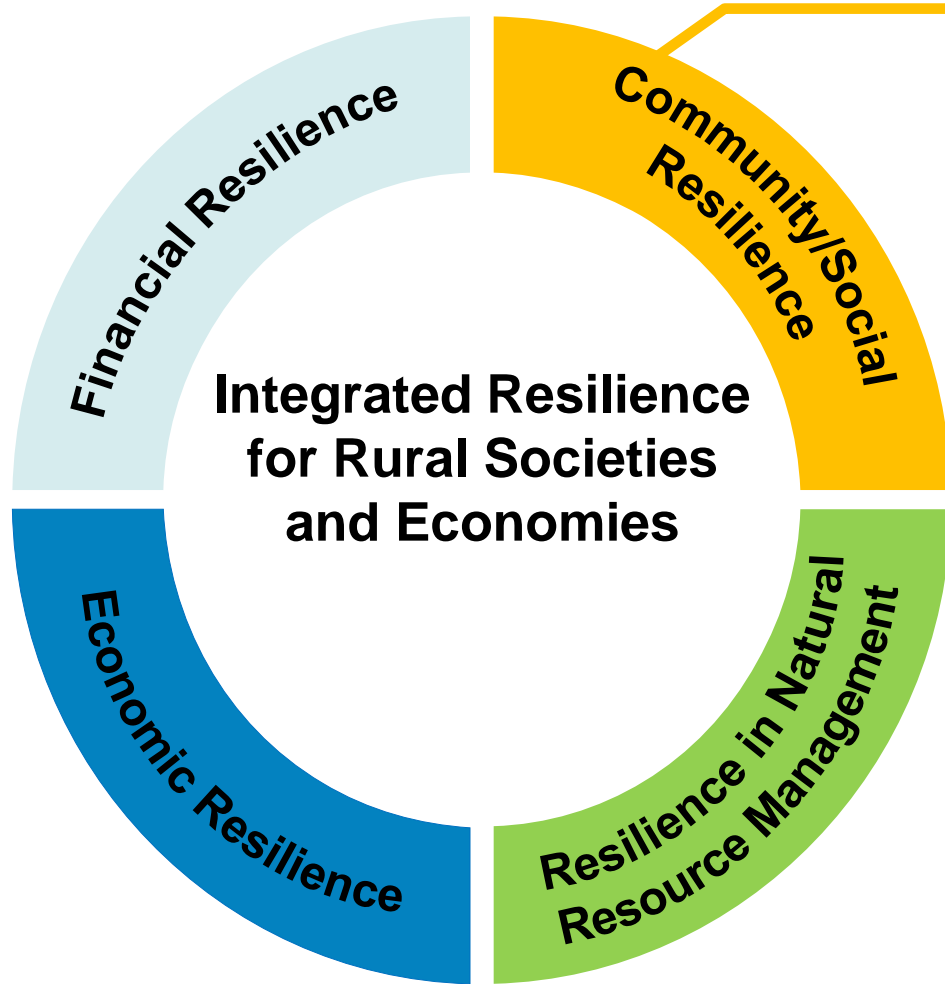
**Therefore, resilience means more than just reaching a critical level for climate adaptation capacities for protecting, transforming and sustaining rural living habitats.**

## 4 main components of an integrated resilience



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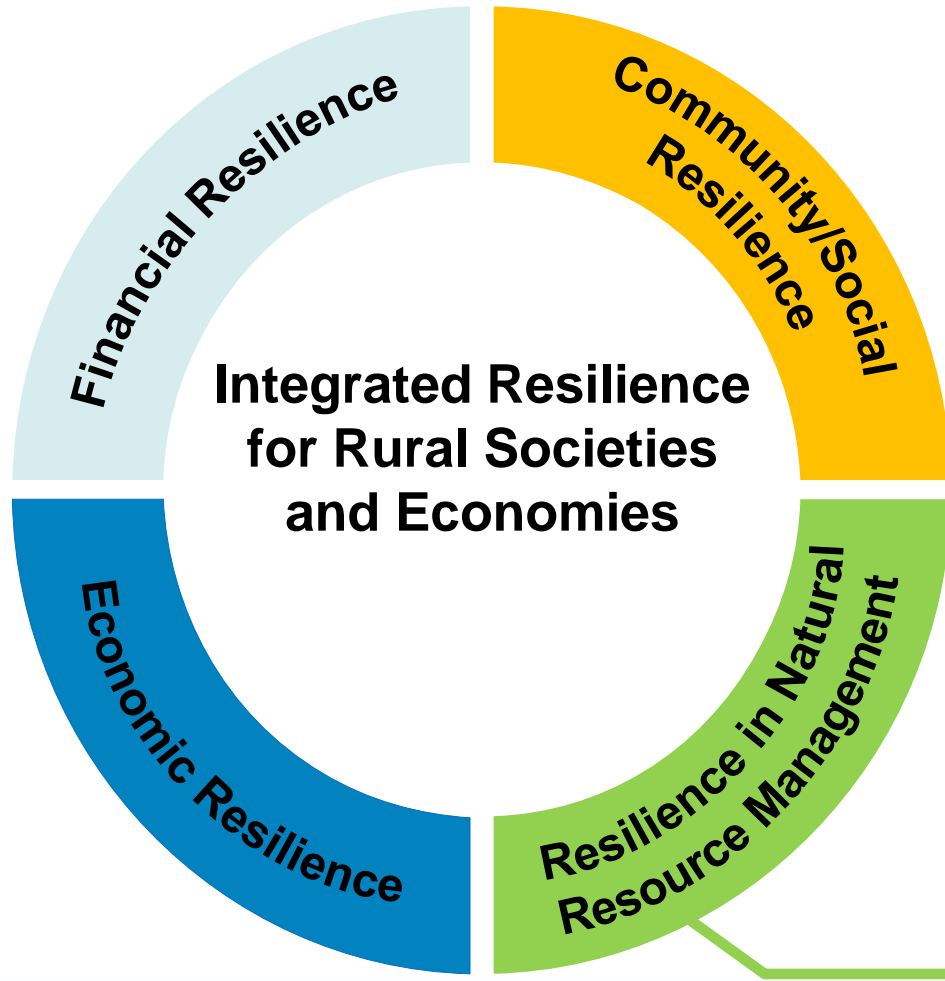




## Community/Social Resilience

- **Coping Capacities** to be re-active (**ex-post**) and absorptive.
- **Adaptive capacities** to be pro-active (ex-ante), “preventive” and anticipating.
- **Transformative and participative capacities** to encompass the people's ability to access assets and assistance from the wider socio-economic context (e.g. governmental organizations, civil society, NGOs)
- **The quality of social relations, network structures and diversity in rural areas**
- **Institutions and power relations:** Empowerment as the sum of equity, justice and power
- **Knowledge, innovation and culture**

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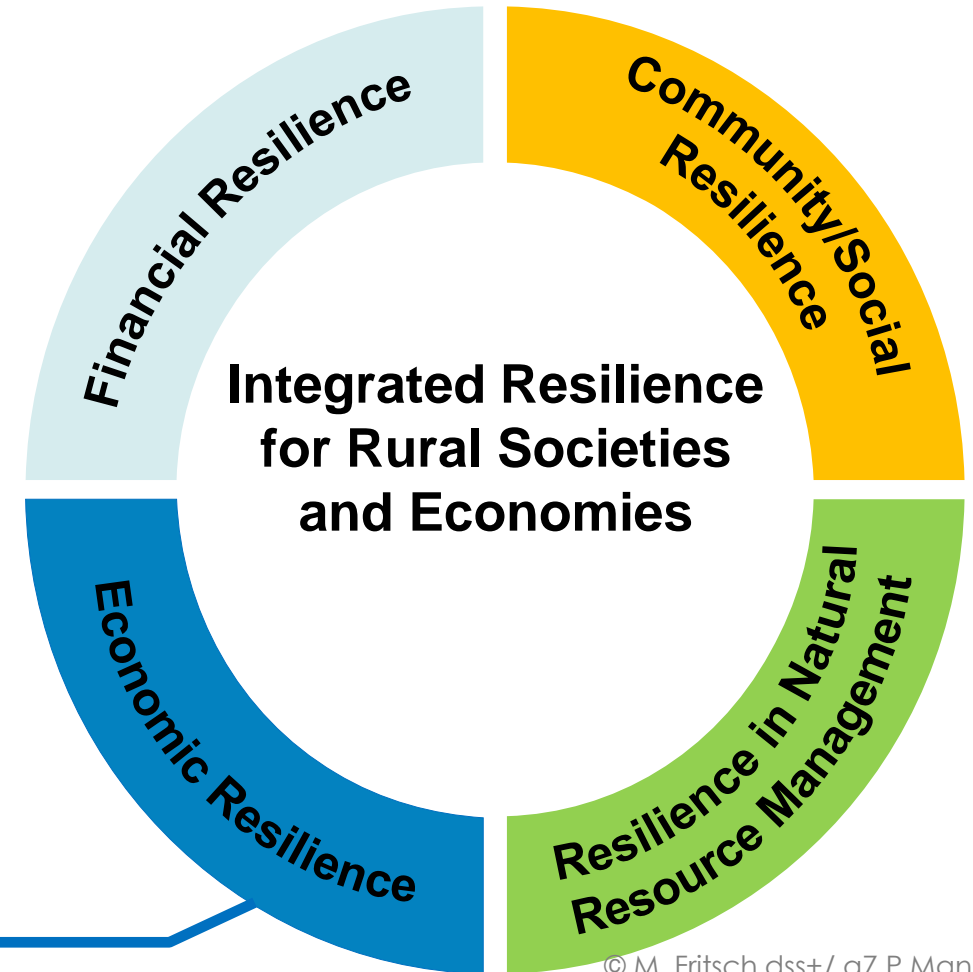


## Resilience in Natural Resource Management

- **Ecological resilience:** Magnitude of disturbance to be tolerated before a system is shifting to a new state: Speed, time, persistence, unpredictability
- **Social-ecological system resilience:** Absorption capacity to remain stable, capacity of self-organization, capacity to increase learning and adaptation, common understanding of the system (key variables, forecasting for improved decision-making)
- **Disaster resilience:** Robustness and managing capacities of responding to “Shocks” and slow and long-term changes

## Economic Resilience

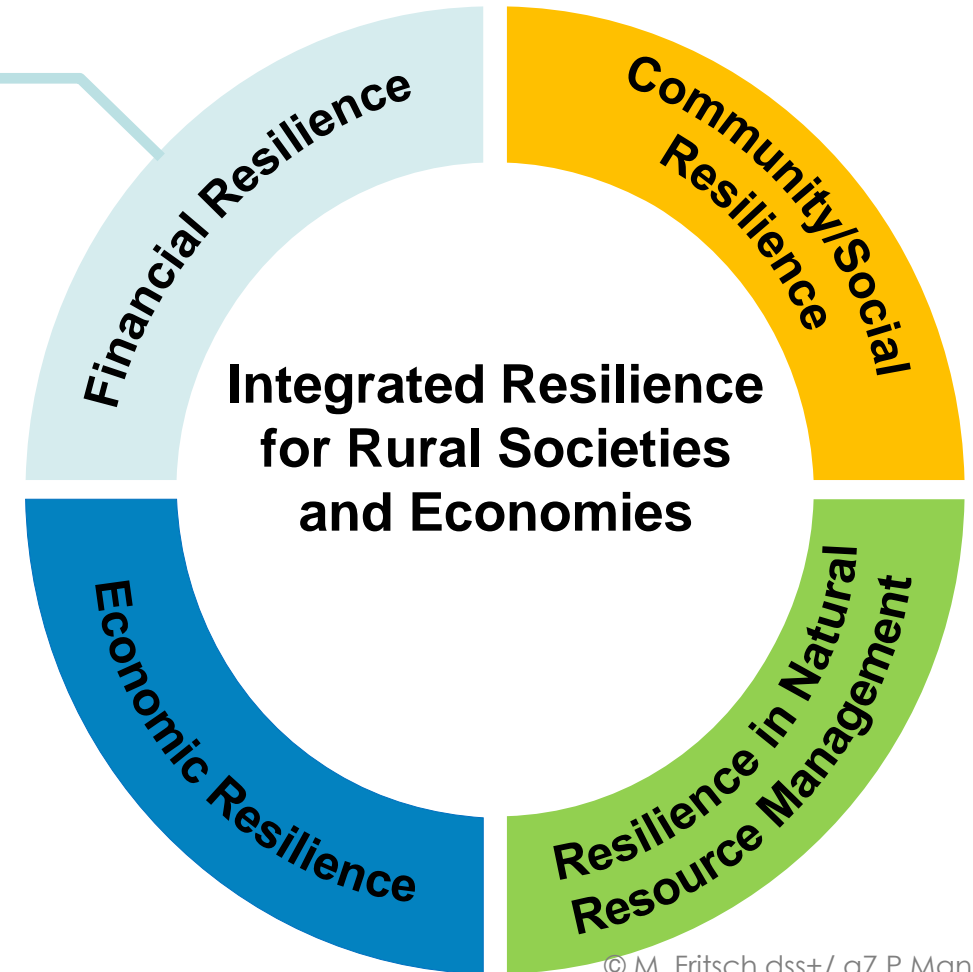
- **Macroeconomic stability** depending on e.g. interest rates, ability to mobilize financial and technical resources to rebuild, ripple-effects of sudden production losses, redundancy of infrastructure, ability of firms' ability to cope with shocks.
- **Microeconomic Market Efficiency:** market size and stability, internal / external dependencies (i.e. vulnerabilities), ability to anticipate risks and to build responsive capacities.
- **Good governance and social development:** Political stability, quality/integrity of the legal/ administrative/educational/health systems



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## Financial Resilience

- **Economic resources:** Saving capacities, dept management, ability to meet costs of living expenses, ability to raise funds (short and long term), income
- **Financial knowledge and behavior:** Knowledge of financial services and products, confidence of using those, willingness to seek financial advice, proactive and anticipating financing.
- **Financial resources:** Access to banking systems, credits, subsidies, compensation funds, insurances.
- **Social capital:** Social connections, access to social support in times of crises, access to support from communities, governments, organizations.



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How can European rural areas collaborate to strengthen strategic autonomy?



## 3 theses for a resilience-based collaboration between rural societies and economies

- **Identify and exchange the needs regarding resilience for reaching a common under-standing by using the 4 key resilience components and linking them with the SDG framework.**
- **Connect resilience with knowledge building/ transfer/exchange for becoming a network of learning societies and economies.**
- **Adapt governance structures/models** to better connect (horizontally and vertically) activity fields, collaborative joint tasks and responsibilities for climate change adaptation for reaching a strategic autonomy and for turning problems into opportunities.

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