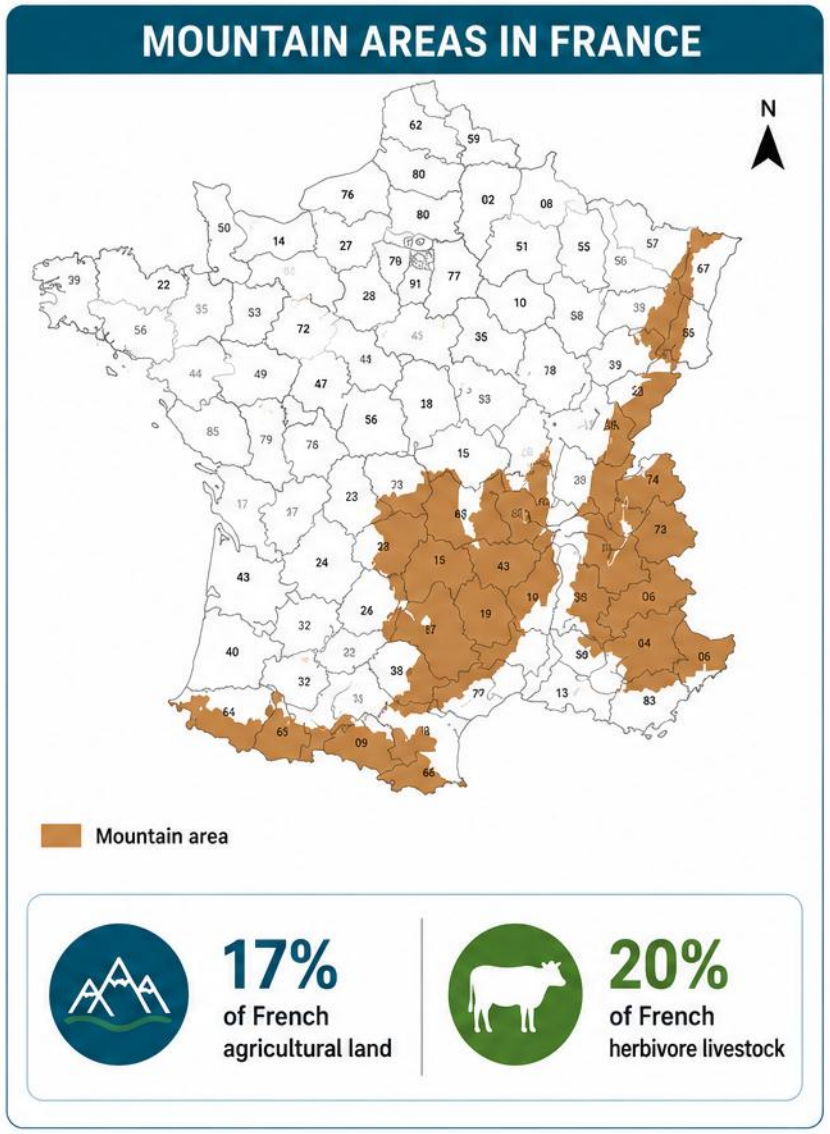
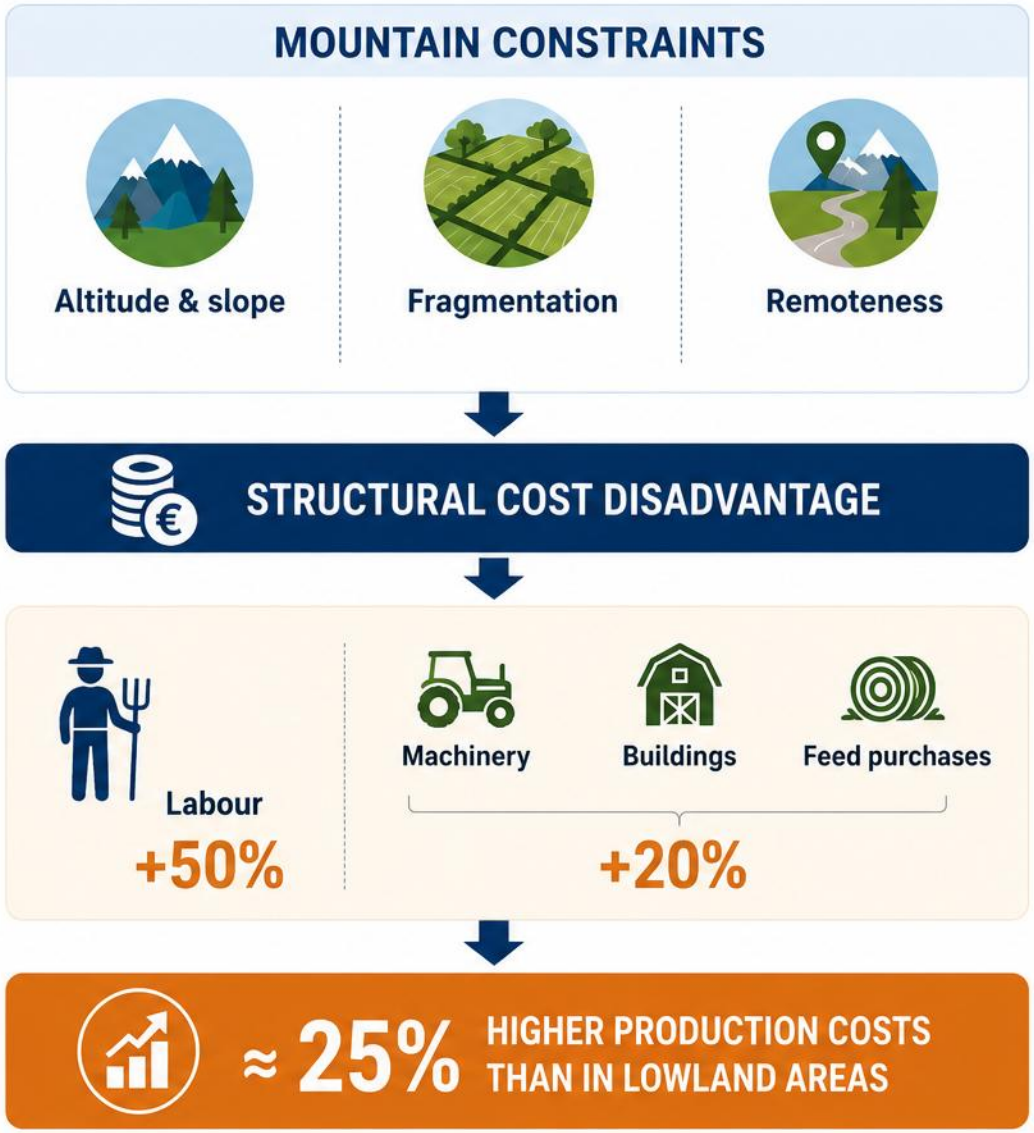
Evolution, prospectives and challenges of cattle farms in mountainous areas

Claire Mosnier, UMR Herbivores Inrae, France

Why are mountain farms different?

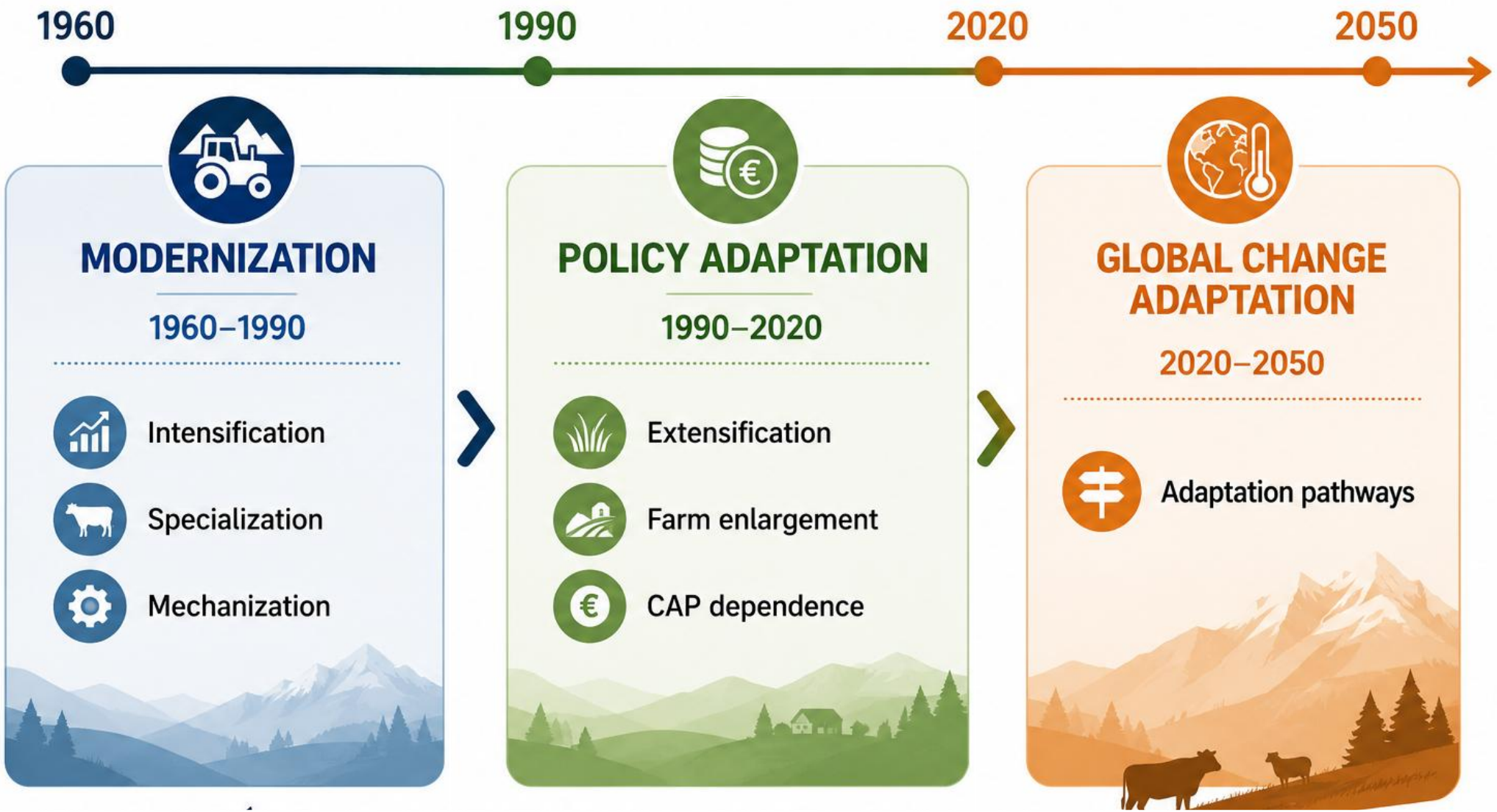


Source : Dobremez et Borg, 2016. L'Agriculture en montagne, Agreste les Dossiers



Source : d'après Bertrand et al., 2022. Cout de production dans les principales filières d'élevage de Massif

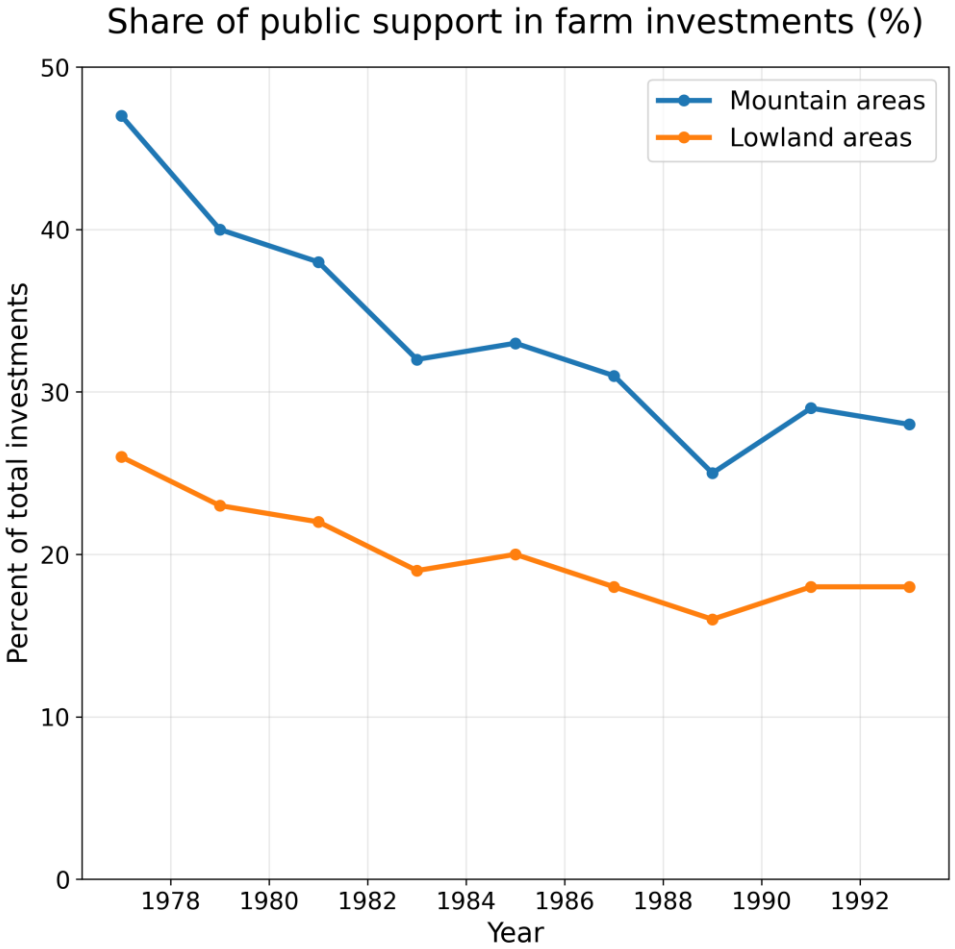
Overview of evolution of farm adaptation



1960-1990 : MODERNIZATION

Public policies have supported modernisation of agriculture in mountains

- Income & market stabilisation policy
  - Market regulations *(CAP, 1962)*
  - National agricultural disaster fund *(1968)*
- Mountain agricultural policy
  - Subisidies for milk collection *(1972)*
  - Annual subsidies for Least Favoured Area *(1973)*
- Higher investment support in moutain areas
- Supports to R&D

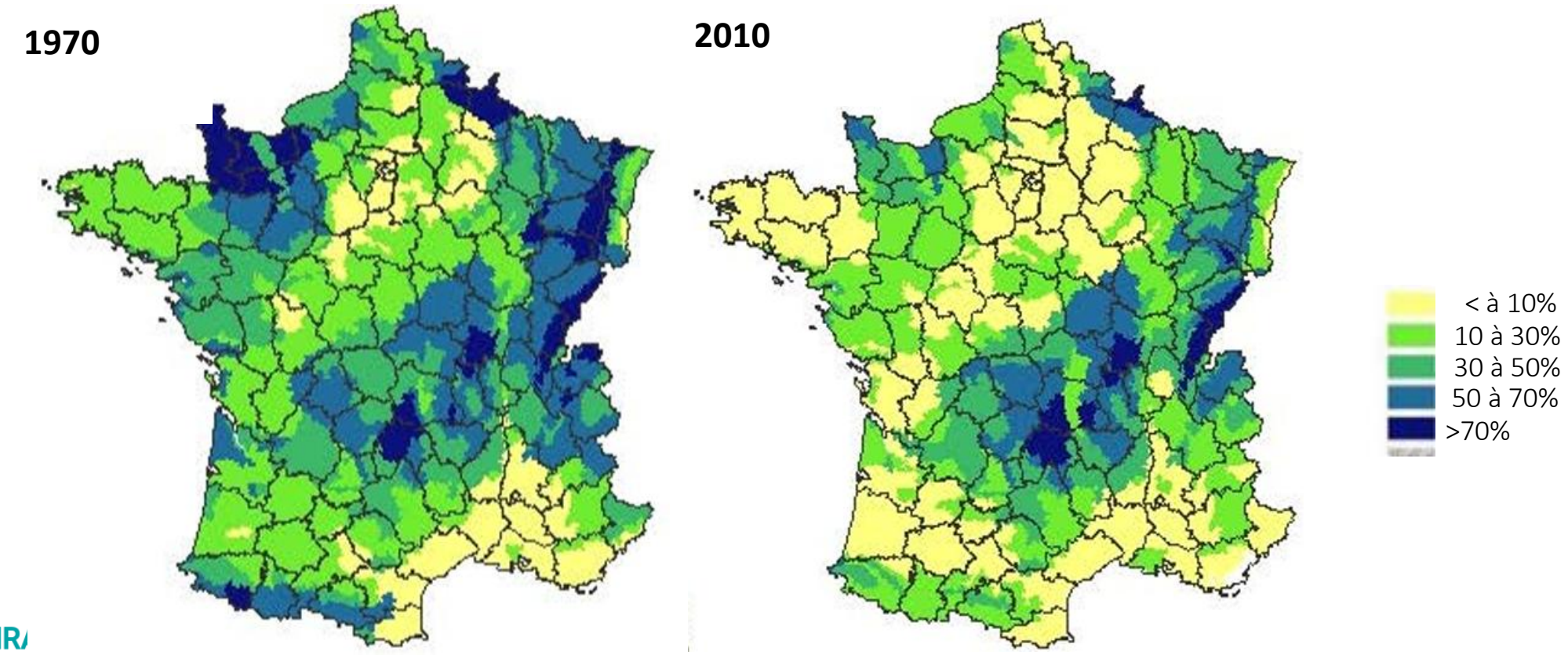


Source : APCA, 1996, Eléments pour un bilan de la Politique de la Montagne, données CNASEA

1960-1990 : MODERNIZATION

Mountain farming systems specialized in grassland-based livestock production

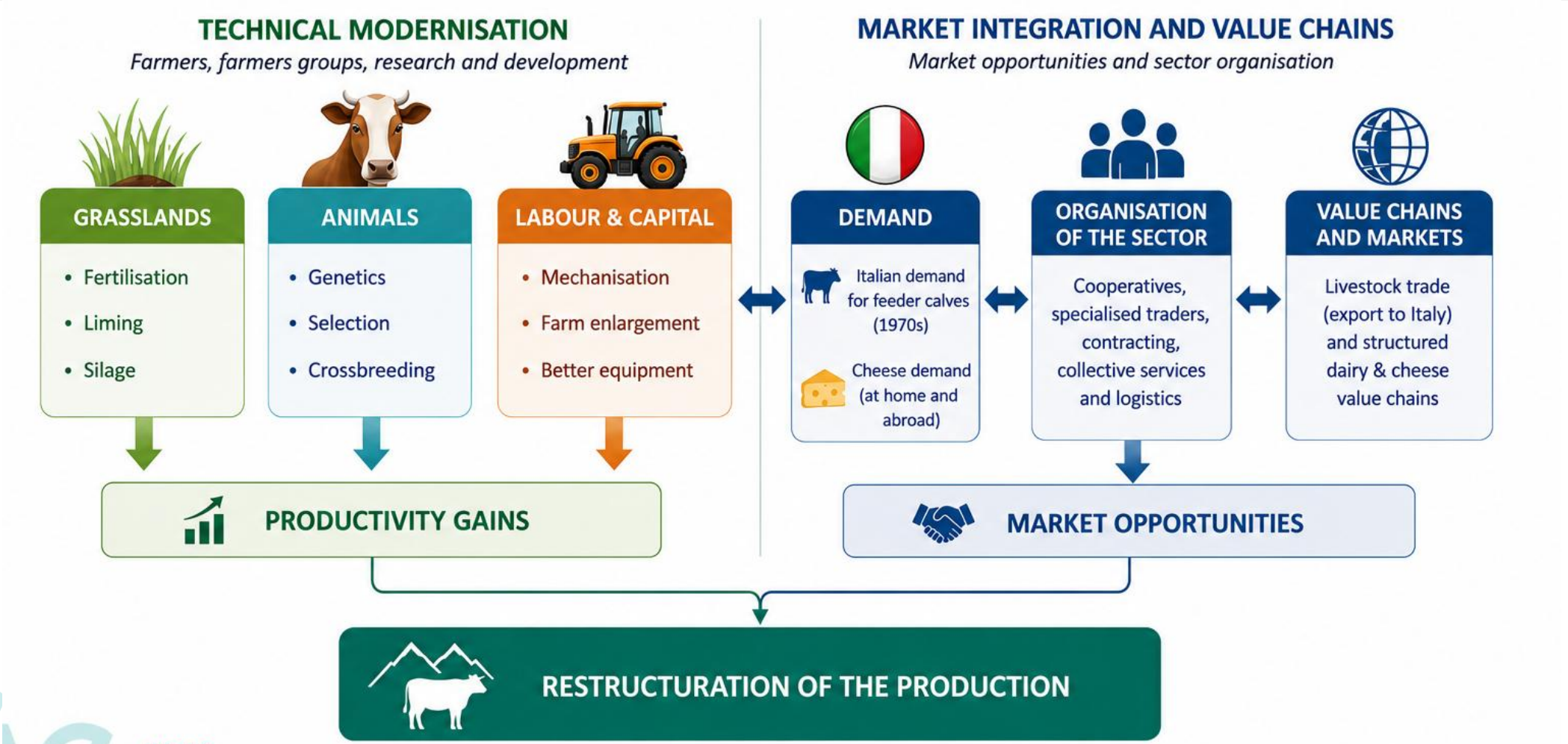
Changes in the proportion of permanent grassland within the UAA between 1970 and 2010



(source : Therond et al., 2017; with RGA)

1960-1992 : MODERNIZATION

Technical progress and market integration drove the transformation of mountain farming



Source : d'après Borres et al., 2019 L'Aubrac 50 ans de développement, L'Aube

1960-1992 : MODERNIZATION

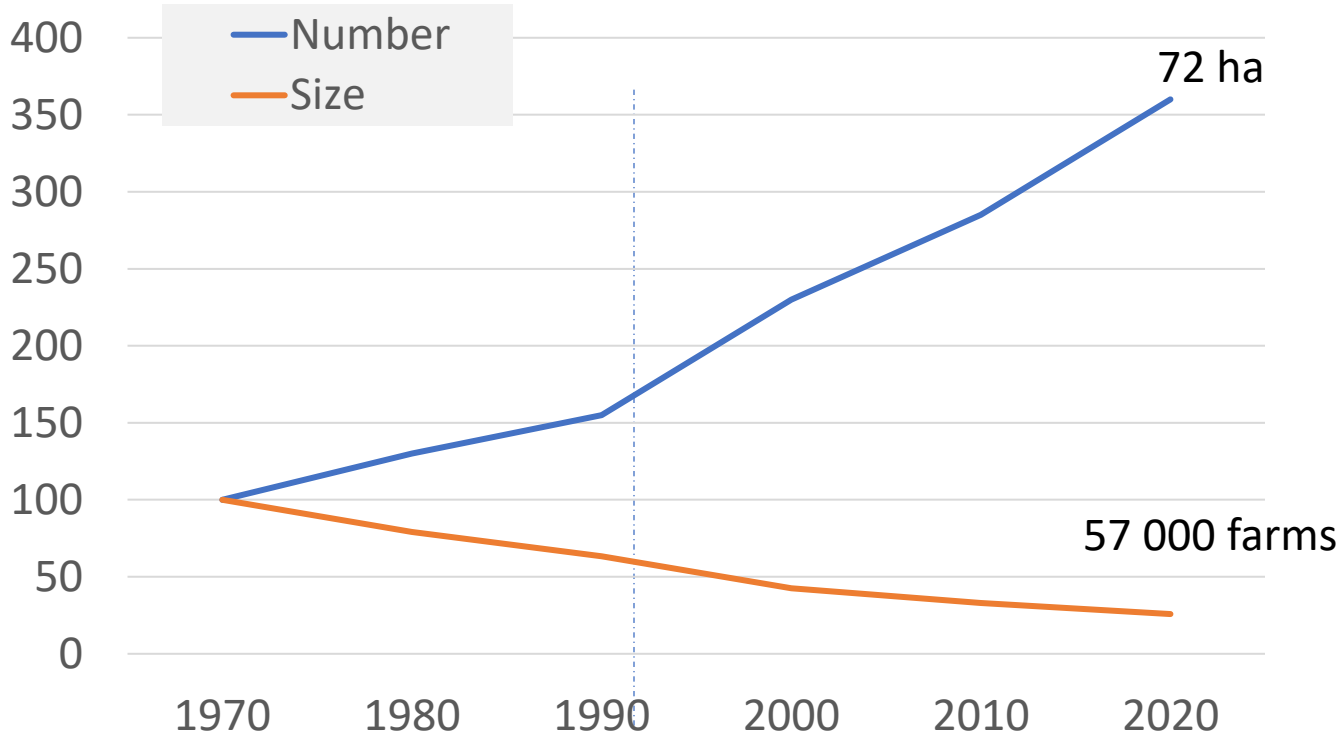
Productivity gains and market integration accelerated structural change

Farm consolidation

- Between 1970 – 2020
  - Farms ÷ 4
  - farm size x 3.5

- Stronger structural changes after the 1992 CAP reform

Evolution of farm number, farm size and cultivated area in Massif central



Source : agreste auvergne-rhône-alpes | études | septembre 2022 no 7

Part 2 – CAP reforms and structural adjustment (1990-2020)

PILLAR I – Market support and direct payments

1992

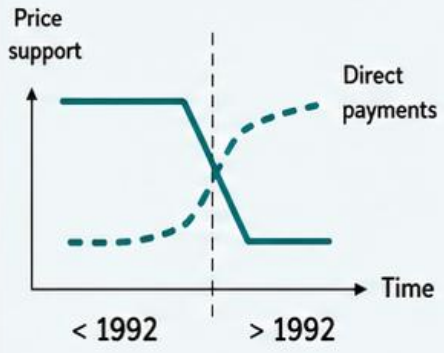
1992 CAP reform

- Direct payments
- Progressive decoupling from production

Adjustment strategies

- Enlargement
- Simplification
- Extensification

From price support to income support



Technical efficiency

-0.76% / year

(Veysset et al., 2025)

PILLAR II – Rural development and territorial support

1999

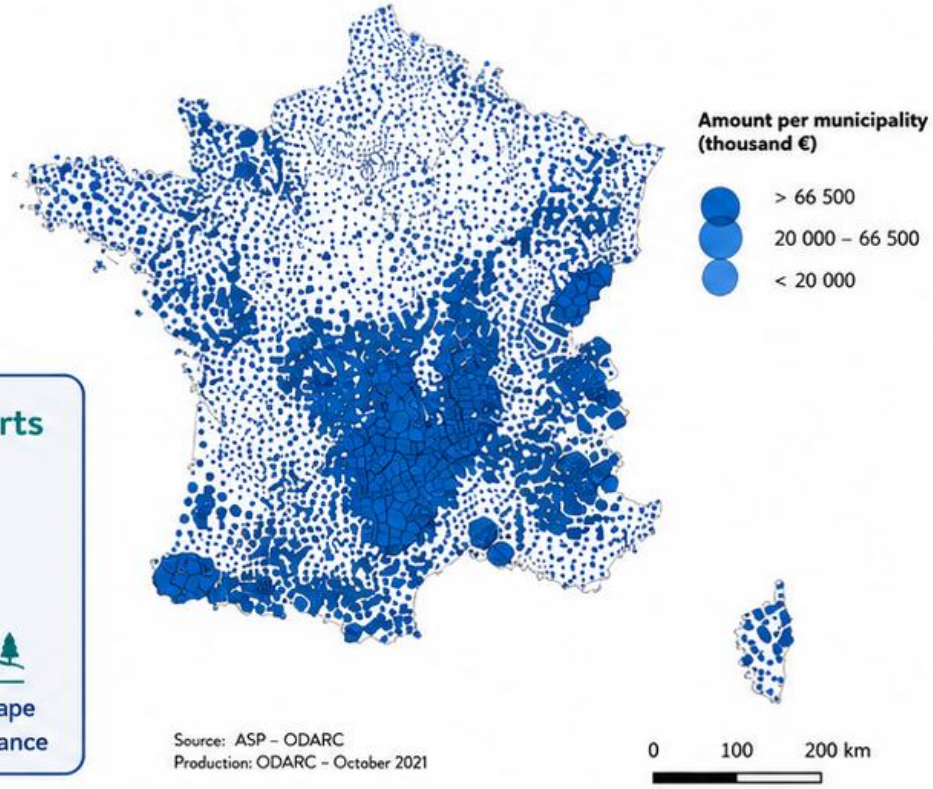
1999 Rural development policy

- Less Favoured Area (LFA) payments (ICHN in France)
- Agri-environmental schemes
- Support for extensive grasslands and rural areas

Pillar II increasingly supports the environmental and territorial functions of mountain farming

Permanent grasslands | Biodiversity | Carbon storage | Landscape maintenance

CAP Pillar II payments by municipalities (cumulative amount, 2014–2018)

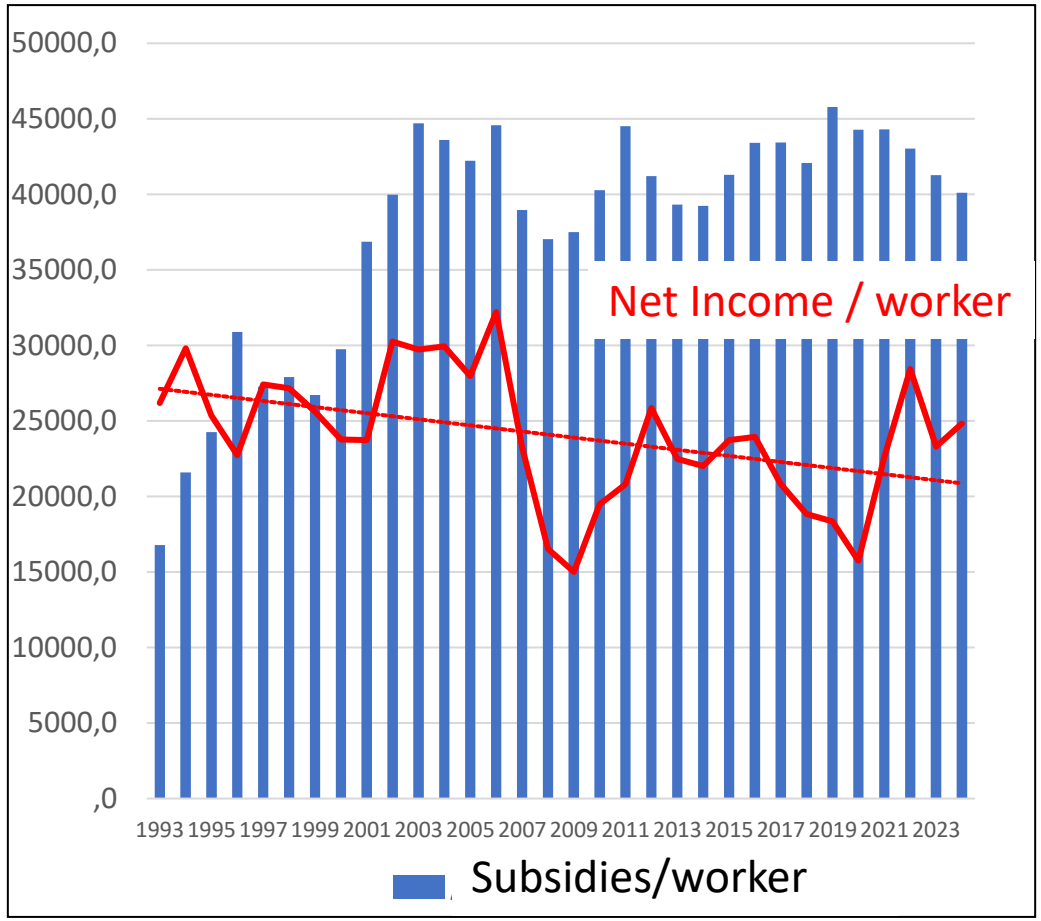


Part 2 – CAP reforms and structural adjustment (1990-2020)

Larger, greener but not richer farms

- Income per farmer have not increased
- Income /worker in mountains areas remained lower *(Bertrand et al., 2022)*
  - Beef cattle farms : - 30%
  - Dairy cattle farms : - 45 % *(except in the East with Comté cheese)*
- Growing dependance on subsidies

Evolution of income and subsidies in french Beef cattle farms

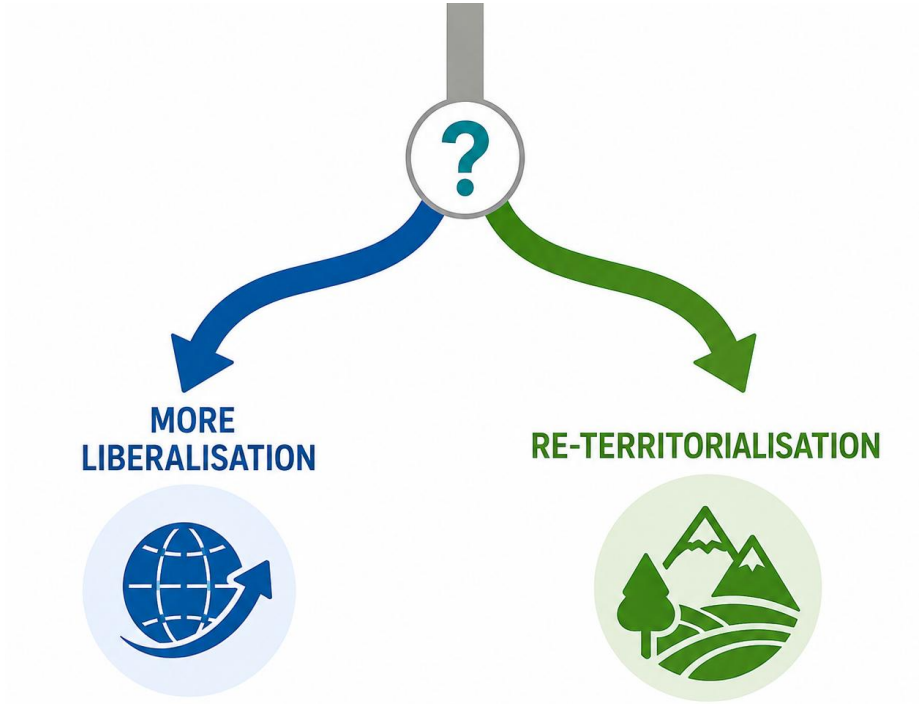


Source : Veysset, 2025, based on FADN

Part 3 : Prospects and challenges for 2020-2050

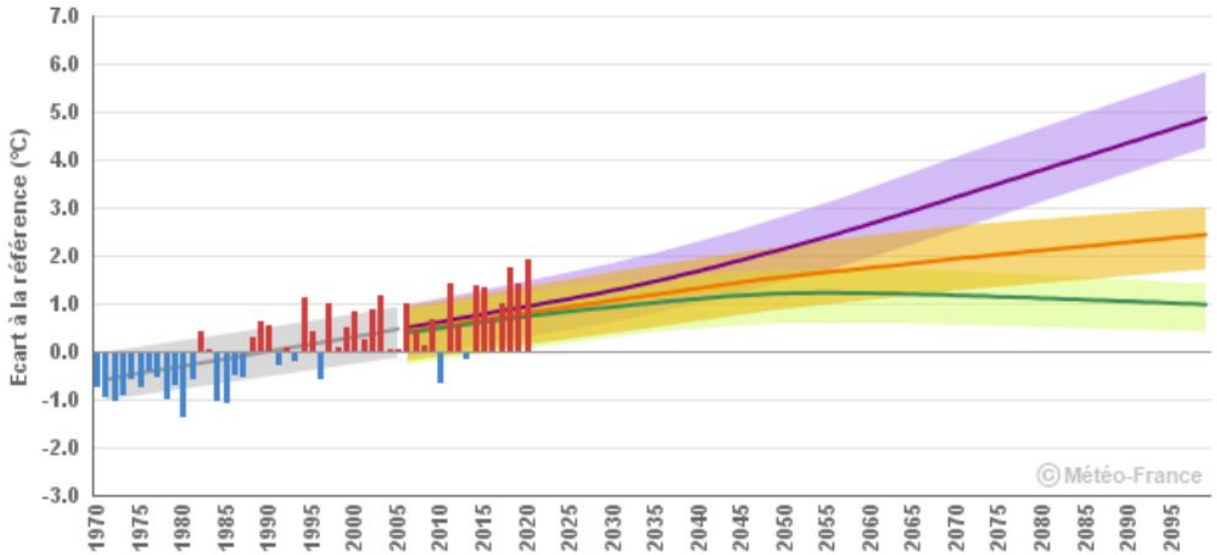
Two major uncertainties for mountain livestock systems

- Socio-economic futures



- Climate change

Evolution of Mean temperature in Massif central relative to 1976-2005 period : observation and simulation for 3 RCPs scenarios (Meteo France)



.. But adaptations needs to starts today

Part 3 : Prospects and challenges for 2020-2050

Opportunities and threats for mountain territories

CLIMATE CHANGE

OPPORTUNITIES

- Longer growing season
- New crop opportunities

THREATS

- Drought and heat stress
- Diseases and predators

MARKETS

OPPORTUNITIES

- High cattle prices
- Quality product differentiation
- Short supply chains

THREATS

- Declining production volumes weakening local value chains
- Unequal value distribution along the supply chain
- Market volatility

PUBLIC POLICIES

OPPORTUNITIES

- Payments for ecosystem services
- Support for renewable energy

THREATS

- CAP reform uncertainty
- Carbon pricing

SOCIETY

OPPORTUNITIES

- Local food demand
- Demand for healthy lifestyles
- Digital connectivity

THREATS

- Demographic decline
- Isolation
- Dietary shifts toward ultra-processed foods

Part 3 : Prospects and challenges for 2020-2050

Strengths and Weaknesses in mountain territories

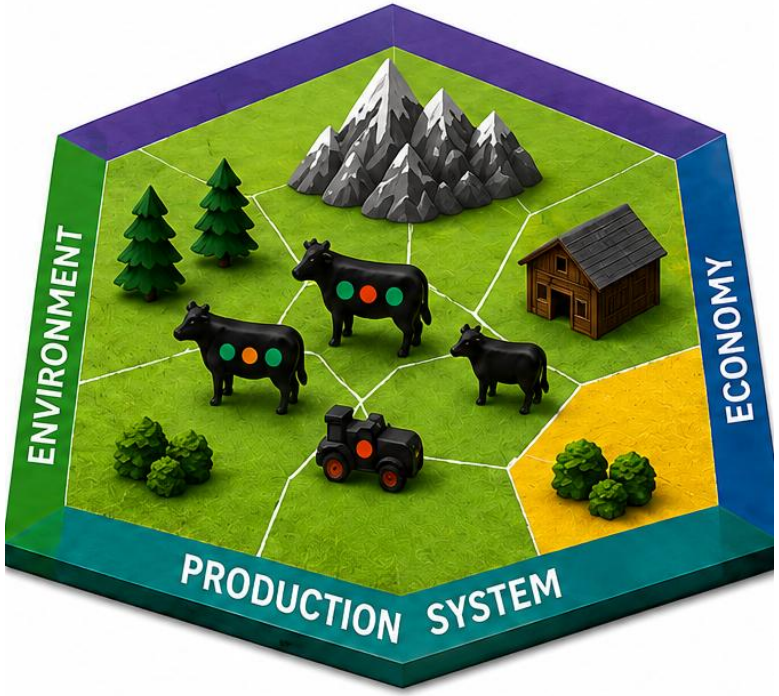
Results from the game La Grange played with local stakeholders (vaacherin/solve Projects, Aubrac, 2026)

ENVIRONMENT

- \+ Carbon storage
- \+ Biodiversity
- \+ Water resources
- − GHG emissions
- − Water-use restrictions

PRODUCTION SYSTEM

- \+ Grassland-based systems
- \+ Low-input systems
- \+ Animal welfare
- − Dependence on external straw and cereals



ECONOMY

- \+ Strong Italian market
- \+ Quality products
- \+ CAP support
- − Specialisation
- − CAP dependence
- − Low added value creation

SOCIETY

- \+ Employment
- \+ Tourism
- \+ Cultural heritage
- − Access to services
- − Housing availability
- − Limited local food basket
- − Labour shortage

Part 3 : 2020-2050 : Adaptations pathways for mountain cattle farming

STRATEGY	**PRODUCT DIFFERENTATION** *Animal finishing* *Crossbreeding* *Local processing*	**DIVERSIFICATION** *Sheep* *Crops* *Vegetables*	**ECOLOGICAL INFRASTRUCTURES** *Hedges* *Wetlands* *Agroforestry*	**REBALANCING LIVESTOCK FORAGE AND RESOURCES** Lower stocking rate Larger stock
OBJECTIVES	**Create value** **Spread market risk**	**Spread risks** **Increase feed & food self-sufficiency**	**Secure animal health & resources** **Climate mitigation**	**Secure feed resources**
CHALLENGES	Value chain acceptance Consumer willingness to pay	New skills New value chains Economies of scale and scope	Maintenance Value of ecosystem services	Decline of volumes for value chains Average income

Research challenges

From farm adaptation to territorial adaptation

How can we scale up adaptation?

- Understanding interactions among farms, value chains and territories
- Fostering collective adaptation through participatory approaches

Designing robust futures under uncertainty

How can we act despite uncertain futures?

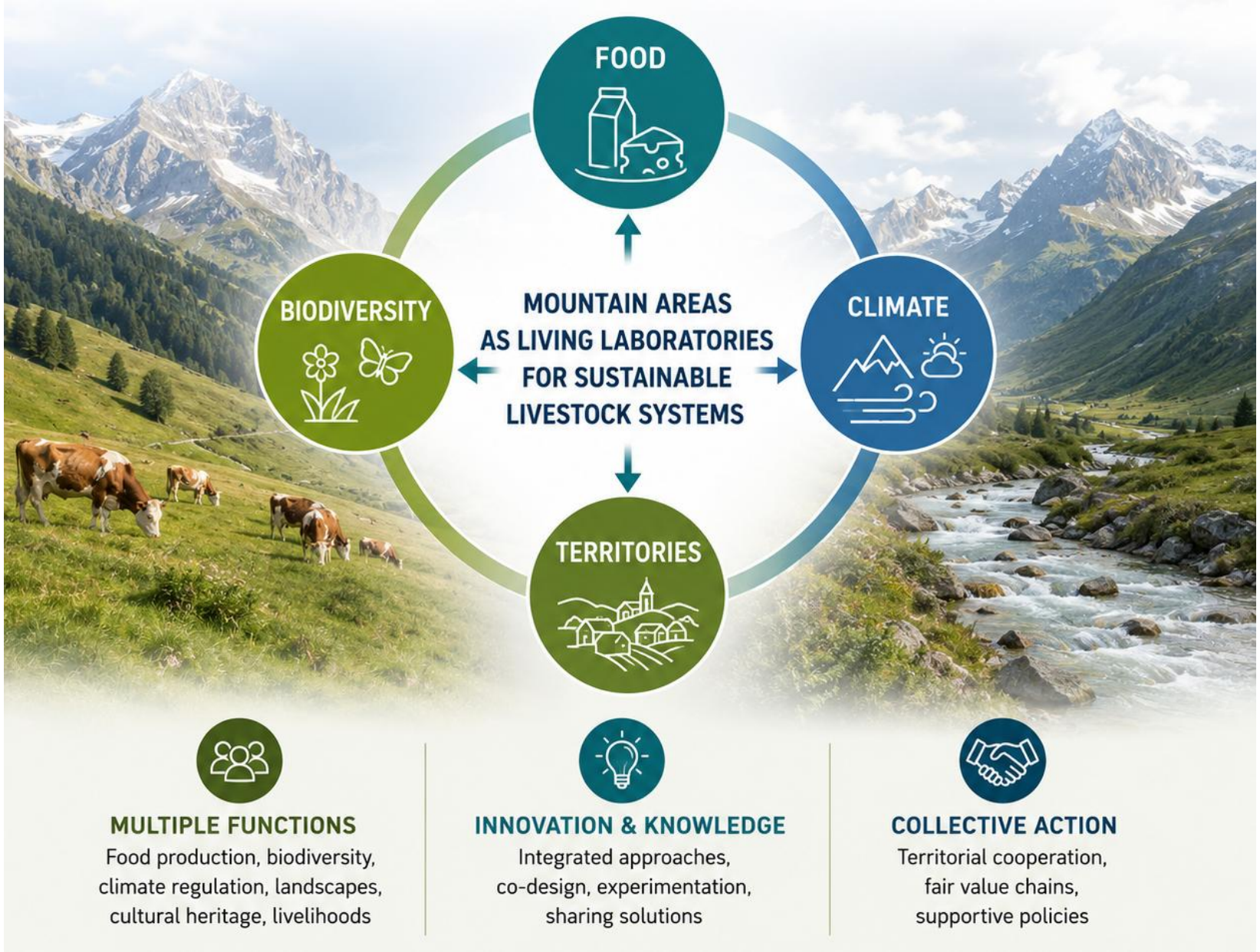
- Identifying robust and no-regret adaptation pathways under multiple uncertainties
- Combining risk management instruments in farms and across institutions

Recognising and rewarding the multiple functions of mountain farming

How can we value what mountain farming provides to society?

- Measuring realised ecosystem services
- Designing mechanisms to reward service bundles

Mountain livestock systems: from constraints to opportunities



Claire MOSNIER