

A systemic description of the dairy value chain's contribution to Inclusive Sustainable Development in highland



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*Session 10. Livestock are
more than food, Part 1*

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General context

HIGHLANDS.3

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9 Research Innovation sessions (R&IS) on various highlands locations throughout the world

International participants with transdisciplinary backgrounds

Interviews to local initiatives representative of Inclusive Sustainable Development in Highlands

Creation of a database with data from all the interviews



General context

Highlands

Vital for humanity: several ecosystems hosted; provision of multiple goods and services

Geographical, economical, and social entities

Climate – Natural – Cultural heritage

Inclusive Sustainable Development in Highlands (ISDH)

Meeting the needs of the present without compromising future generations

Promoting wellbeing, reducing inequalities

Long-term viability of economic, social, environmental systems

Collective contribution to create opportunities and in decision making

Sharing the benefits of the economic growth, leaving no one behind



General context



Dairy production In Highland

High-quality products

Economic revenues

Landscape maintenance

Supporting biodiversity

Carbon storage

Lower yields

Higher production costs

Abandonment of land and traditional low-input farms



Methodology

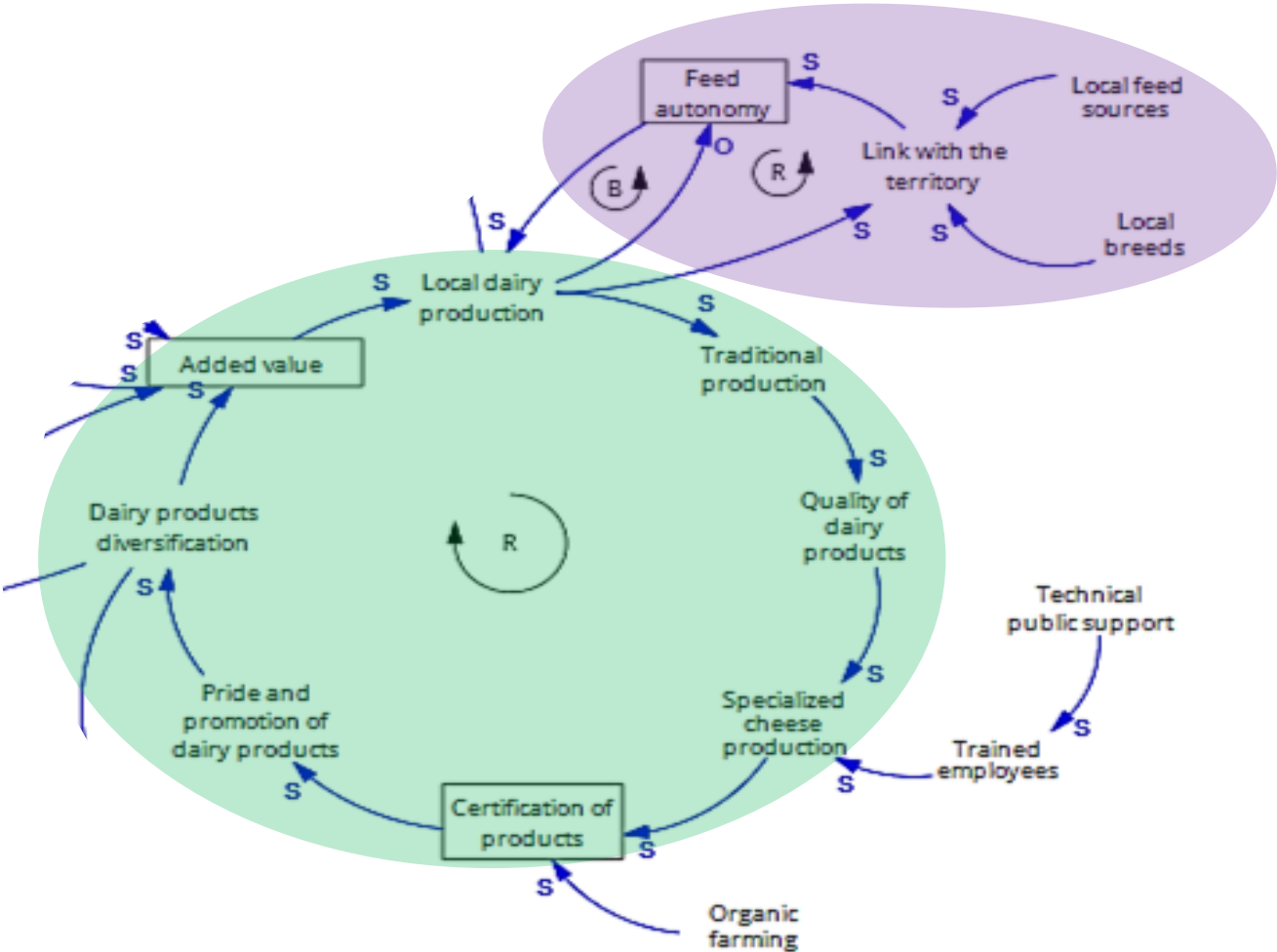
- Aim → **To investigate the benefits of the dairy value chain beyond food provision, and its contribution to inclusive sustainable development in highlands**
- Analysis of interviews from 11 dairy initiatives in three regions *Alps, Pyrenees, Massif Central*
- ***“What are the factors and relationships that describe the dairy value chain’s contribution to ISDH?”***
- **Systems thinking approach**
- Classification of factors within similar topics, clustered under a common title
- *Causal Loop Diagram* (CLD) for each region constructed on the relationships between the factors
- Development of integrated **CLD** merging the three regional ones
- Within the CLD, identification of: reinforcing loops, subsystems, points of leverage for system change

Integrated Causal Loop Diagram



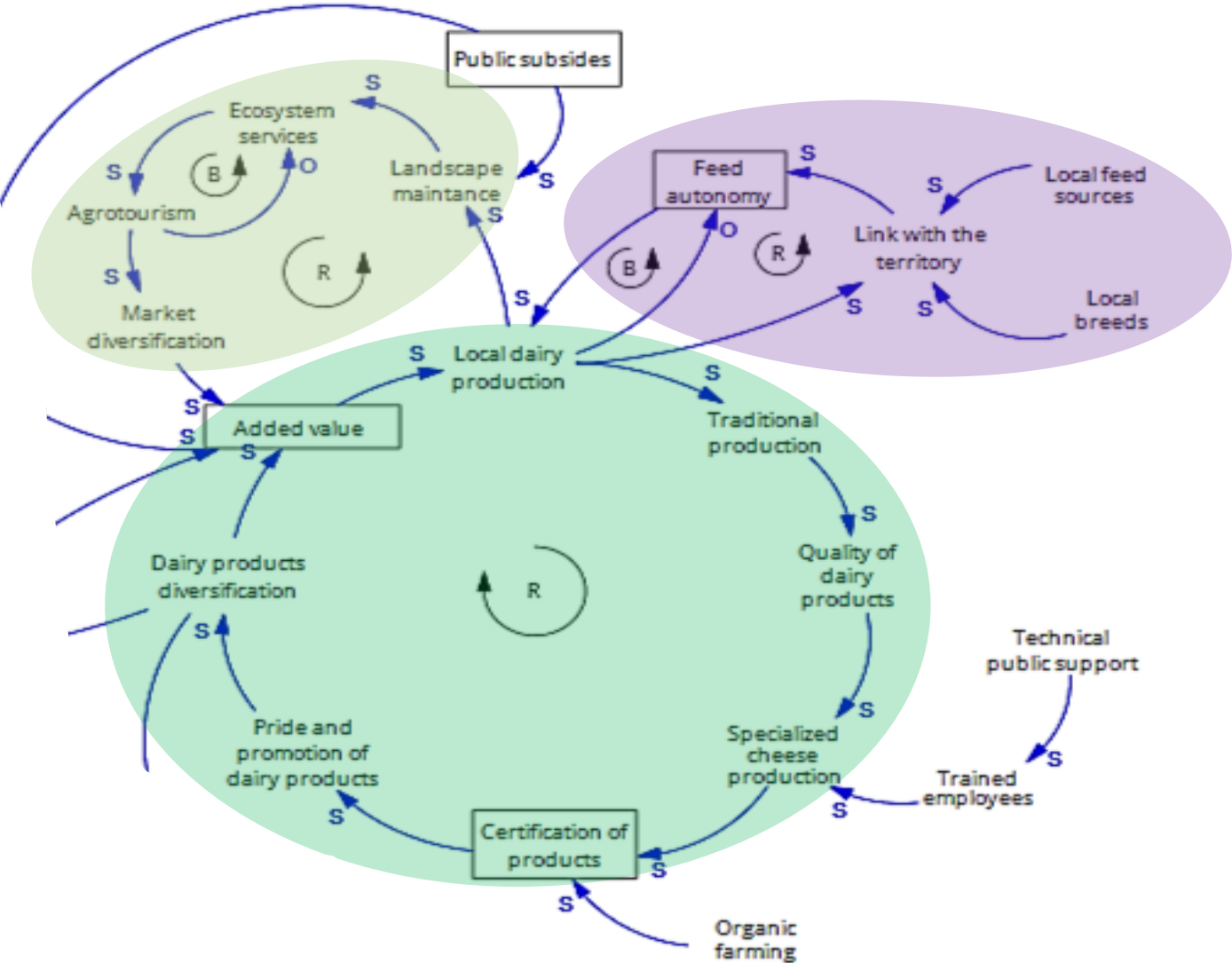
Integrated Causal Loop Diagram

- Local resources
- Dairy production



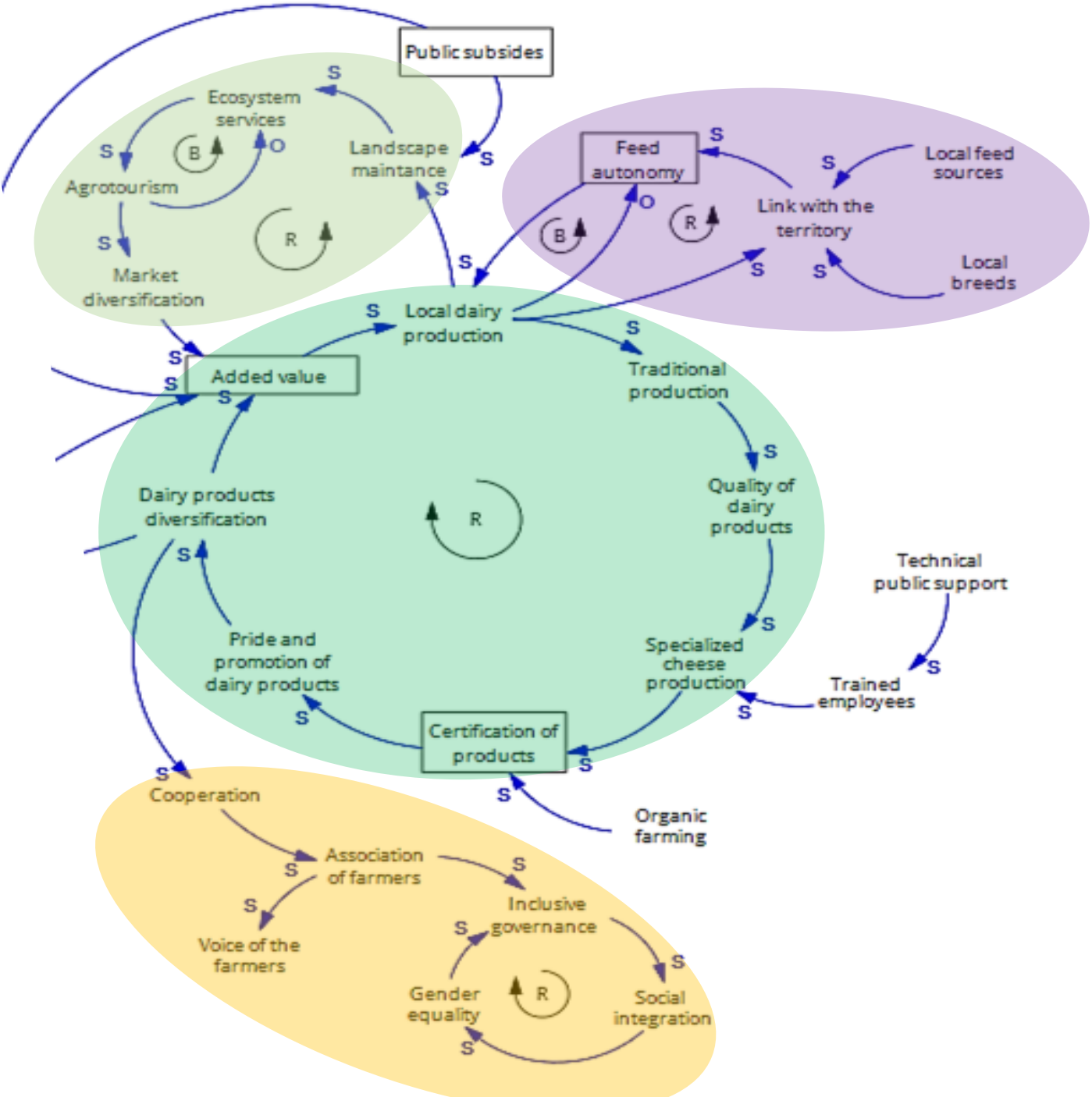
Integrated Causal Loop Diagram

- Local resources
- Dairy production
- Environment



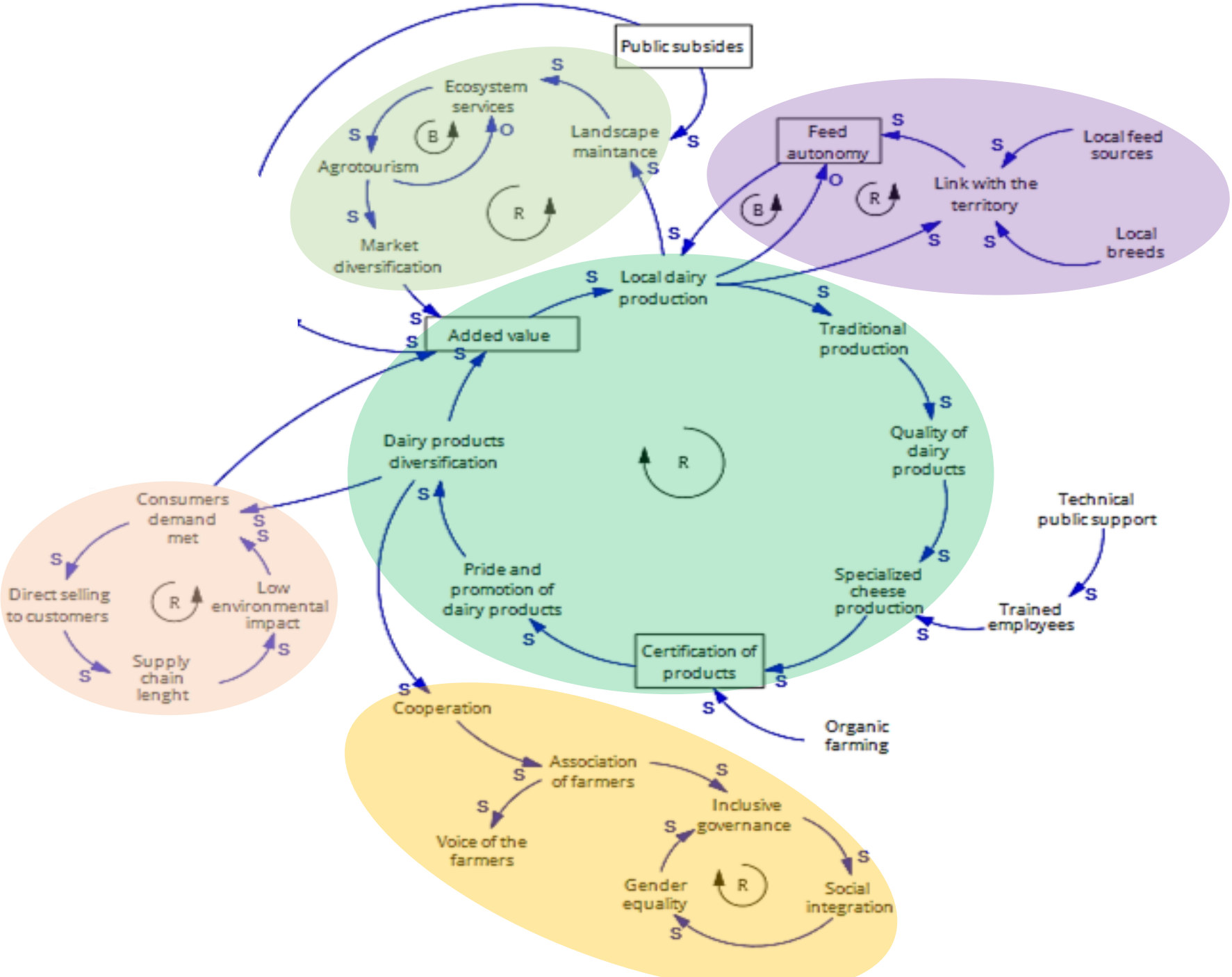
Integrated Causal Loop Diagram

- Local resources
- Dairy production
- Environment
- Collaboration

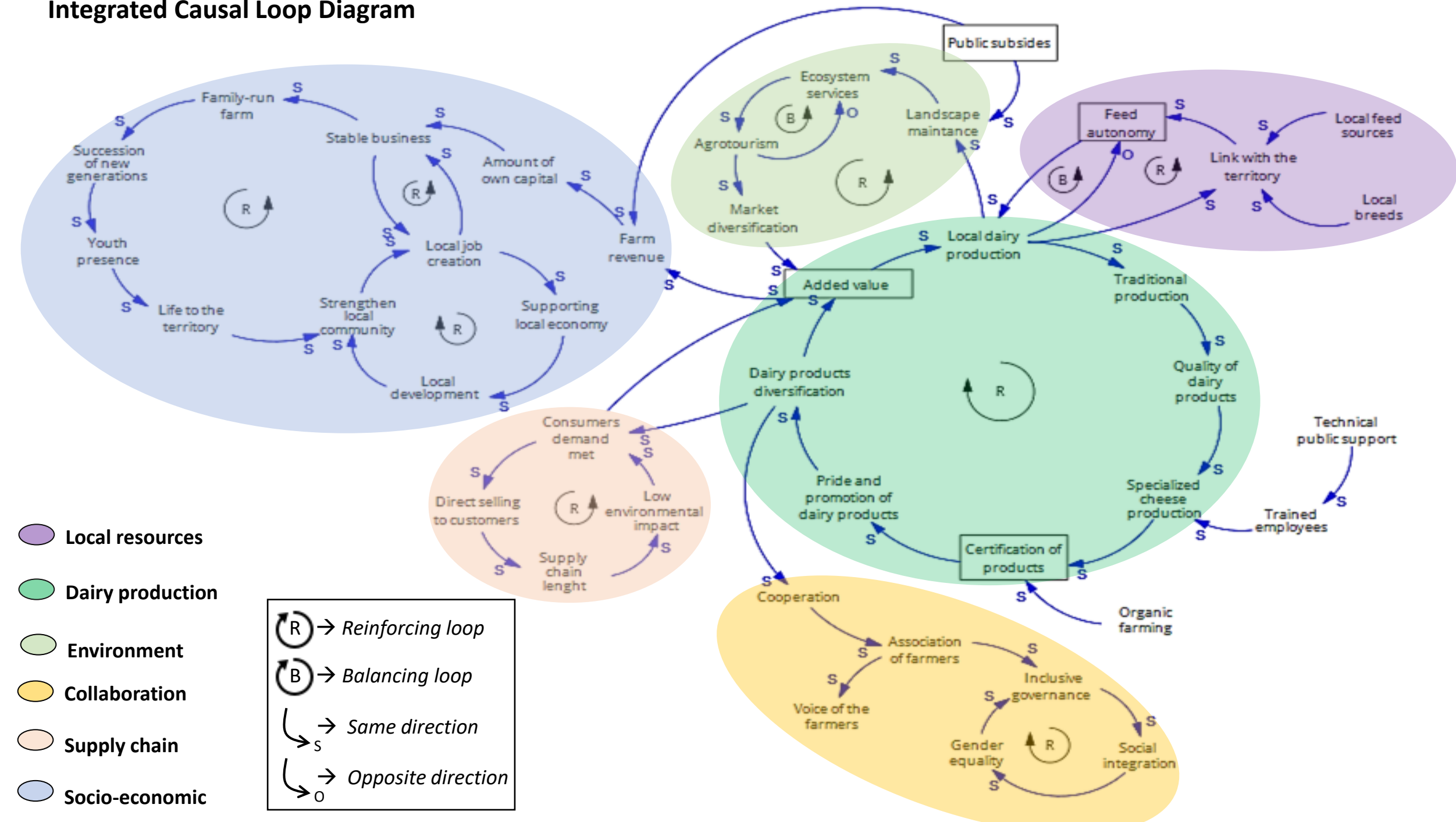


Integrated Causal Loop Diagram

- Local resources
- Dairy production
- Environment
- Collaboration
- Supply chain



Integrated Causal Loop Diagram





Results - Subsystems

Subsystems

Local resources



Link with the territory, local production

Environment



Ecosystem services, diversification, added value

Dairy production



Diverse specialized productions, added value

Collaboration



Association of producers, inclusive governance

Supply chain



Local selling, consumers' demand met

Socio-economic



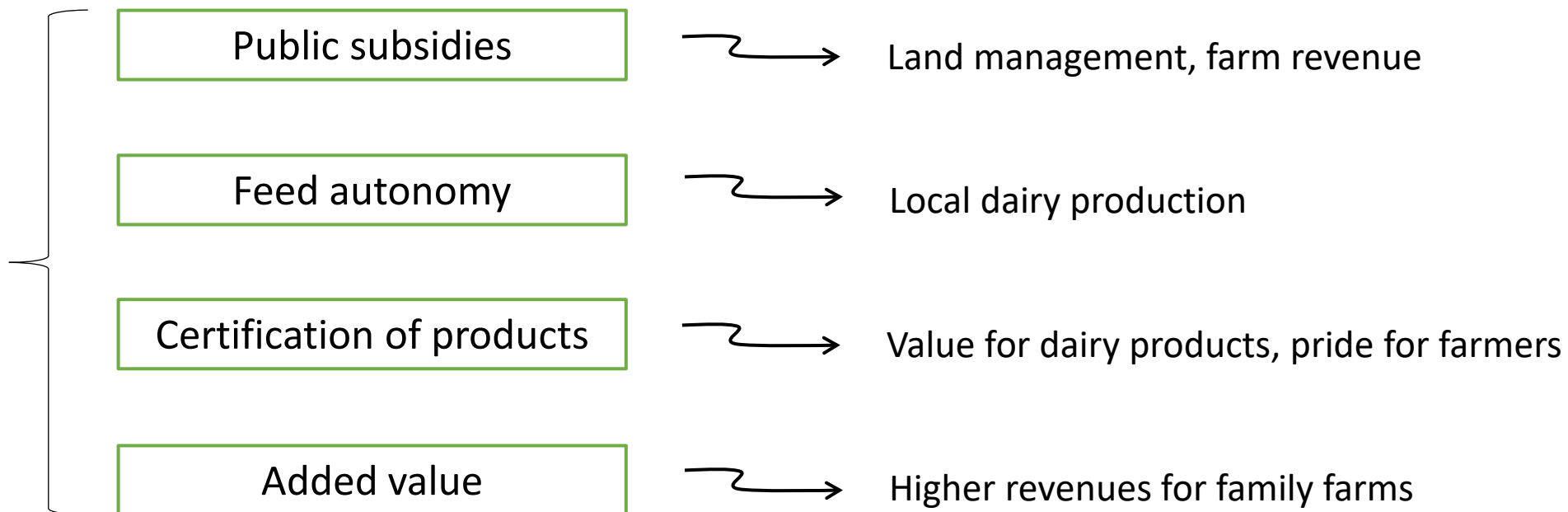
Economic stability, family farms, vitality to territory



Results – Leverage points

- **Points of leverage for system change**, identified in the CLD by exploring the impact of specific variables throughout the system

Leverage points





Discussion

Dairy value chain in highlands



Multiple benefits beyond food production

**System thinking
approach**

Analysis of the system in its complexity, investigating on the interconnections and relationships between the factors

Identification of leverage points where to act to generate system-wide impacts, enhancing positive and mitigating negative cycles

Interpretation of the actors' view, from the interviews

- **Public entities** (EU and local authorities) → laws and regulations; public subsidies to farmers
- **Rural planners** → Design of Rural Development Programmes
- **Farmers** → actions and strategies to counter barriers (succession, lack of skilled workers)



Conclusion

Dairy value chain

- Multiple **benefits** beyond food production
- Contribution to **ISDH**

Integrated model (CLD)

- **Complexity** of dairy value chain
- Identification of **factors** contributing to ISDH and their **interconnections**

- **Decision-making tool** for stakeholders
- Implementation of **strategic and integrated interventions** to support the dairy value chain in highlands



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