Capturing socio-ecological dimensions of wealth creation through territorial metabolism and relevant stakeholders: the case of Beaufort production in the Maurienne Valley

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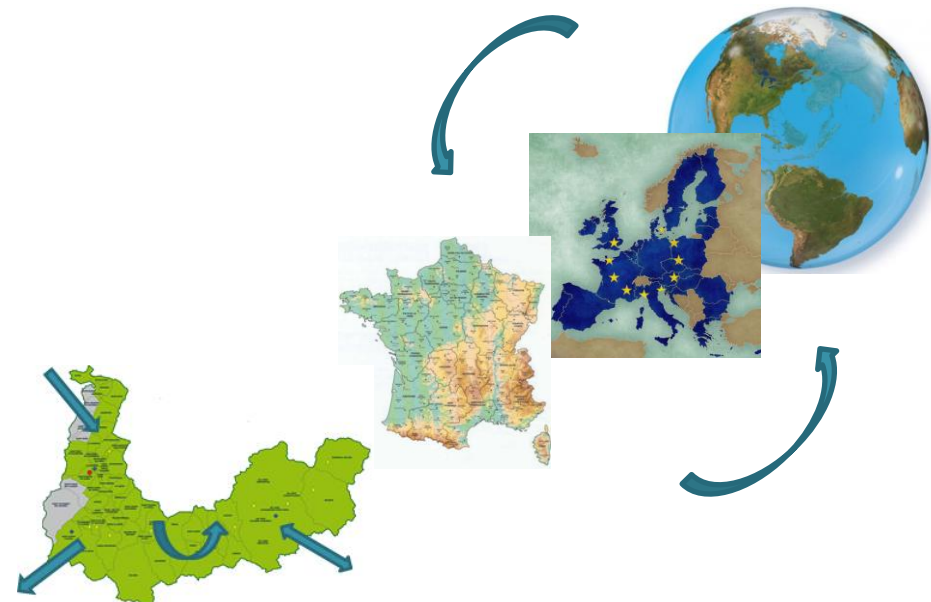*PhD Directors: Nicolas BUCLET, Pierre-Yves LONGARETTI, Jean-Yves COURTONNE*

Introduction

This PhD thesis aims at analyzing **socio-ecological dimensions of wealth creation activities** by coupling quantitative-biophysical approaches and qualitative and socio-economic methodologies to characterize **territorial metabolism and relevant stakeholders**.

Territorial metabolism:

the whole material and immaterial flows which circulate within and throughout a territory and which allow a territory and its inhabitants to live.

Territorial ecology

This thesis contributes to the interdisciplinary research field of **territorial ecology**, which have emerged in France in recent years inheriting from industrial and urban ecology and methodologically close to social ecology.

Territorial ecology aims at capturing:

- the relationships between **territorial metabolism and the social, political and economical organisation** of such territory

- the **interdependence towards other territories** as well as the internalization and/or externalization of environmental pressures

Despite recent developments, quantitative, biophysical works remain dissociated from socio-economic, qualitative approaches.

Research questions and methodology

How a combined analysis of quantitative and qualitative aspects of flows circulation can contribute to the understanding of a territory and its socio-ecological challenges?

Which flows circulate within and throughout the territory and which are the environmental pressures related to them?

How stakeholders' strategies and territorial specificities influence the circulation of flows and their environmental pressures?

→ **Quantitative approaches**
  - Material flow analysis
  - Multiple-scale analysis
  - Life-cycle analysis
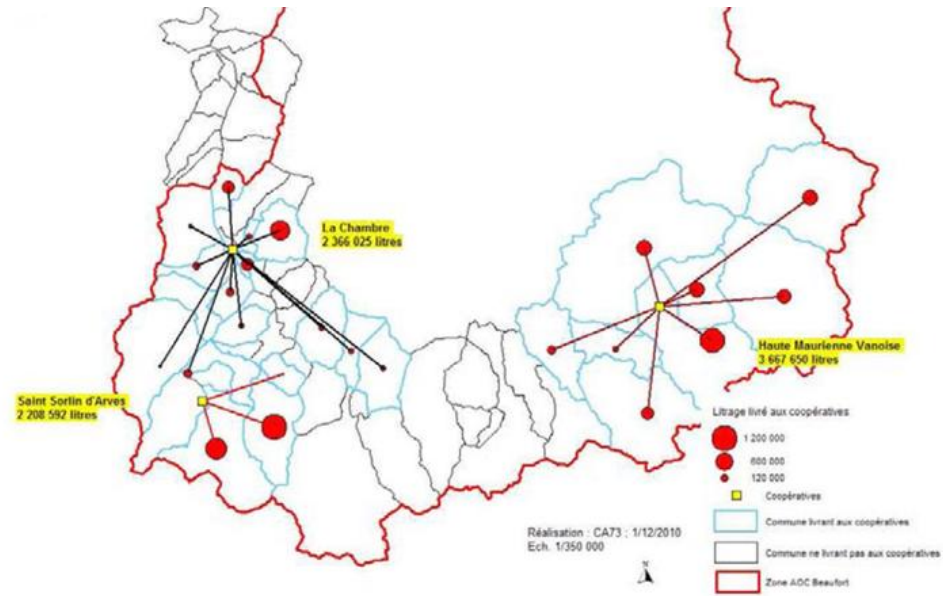
→ **Qualitative approaches**
  - Stakeholders' analysis
  - Territorial resource approach
  - Capability approach

Case study

The case study of this thesis is the AOC-labelled cheese Beaufort production in the Maurienne Valley (Savoie department, Auvergne-Rhône-Alpes region, France), which represent the flagship product of the agricultural sector in the valley.
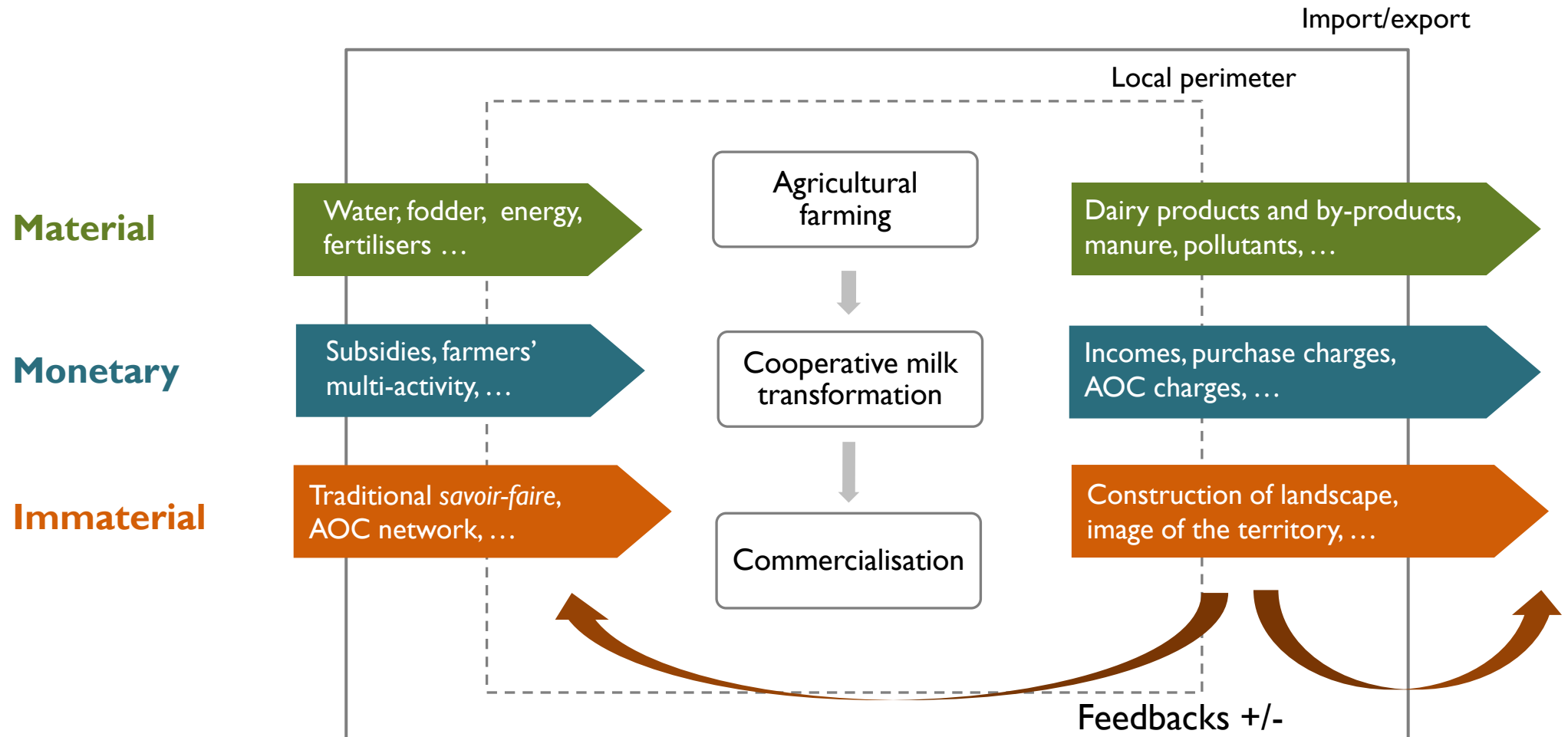

Source : Chambre d'Agriculture Savoie Mont-Blanc (2011)

Beaufort production and flows circulation

Territorial ecology describes territories as a network of wealth creation subsystems interacting with their environment and with each other through the circulation of material and immaterial flows.

Import/export

Local perimeter

Material

Water, fodder, energy, fertilisers …

Agricultural farming

Dairy products and by-products, manure, pollutants, …

Monetary

Subsidies, farmers' multi-activity, …

Cooperative milk transformation

Incomes, purchase charges, AOC charges, …

Immaterial

Traditional *savoir-faire*, AOC network, …

Commercialisation

Construction of landscape, image of the territory, …

Feedbacks +/-

What ? Why ? How ?
An application to milk circulation
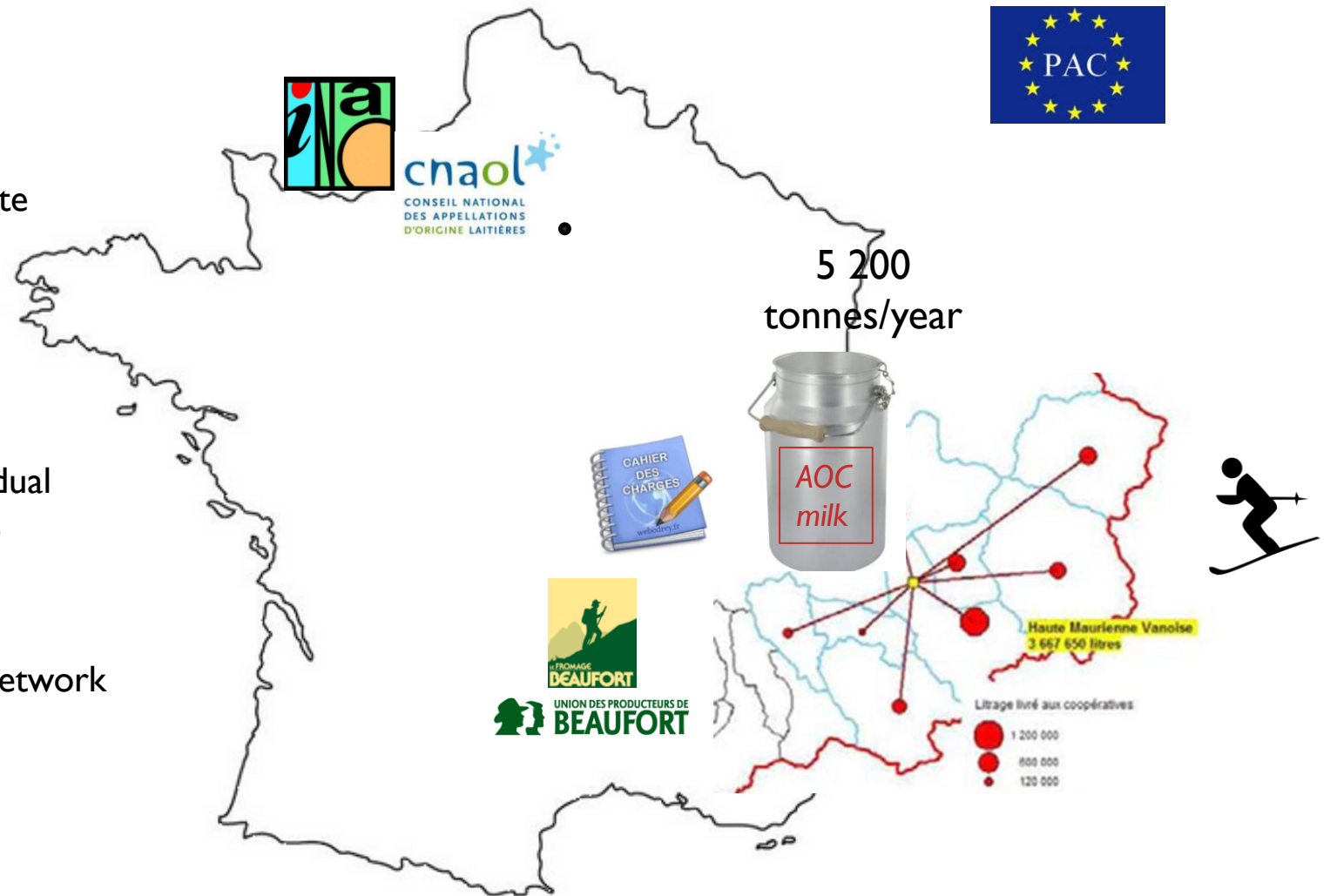
Who? Farmers and the cooperative

How much? Beaufort Syndicate

Which characteristics?
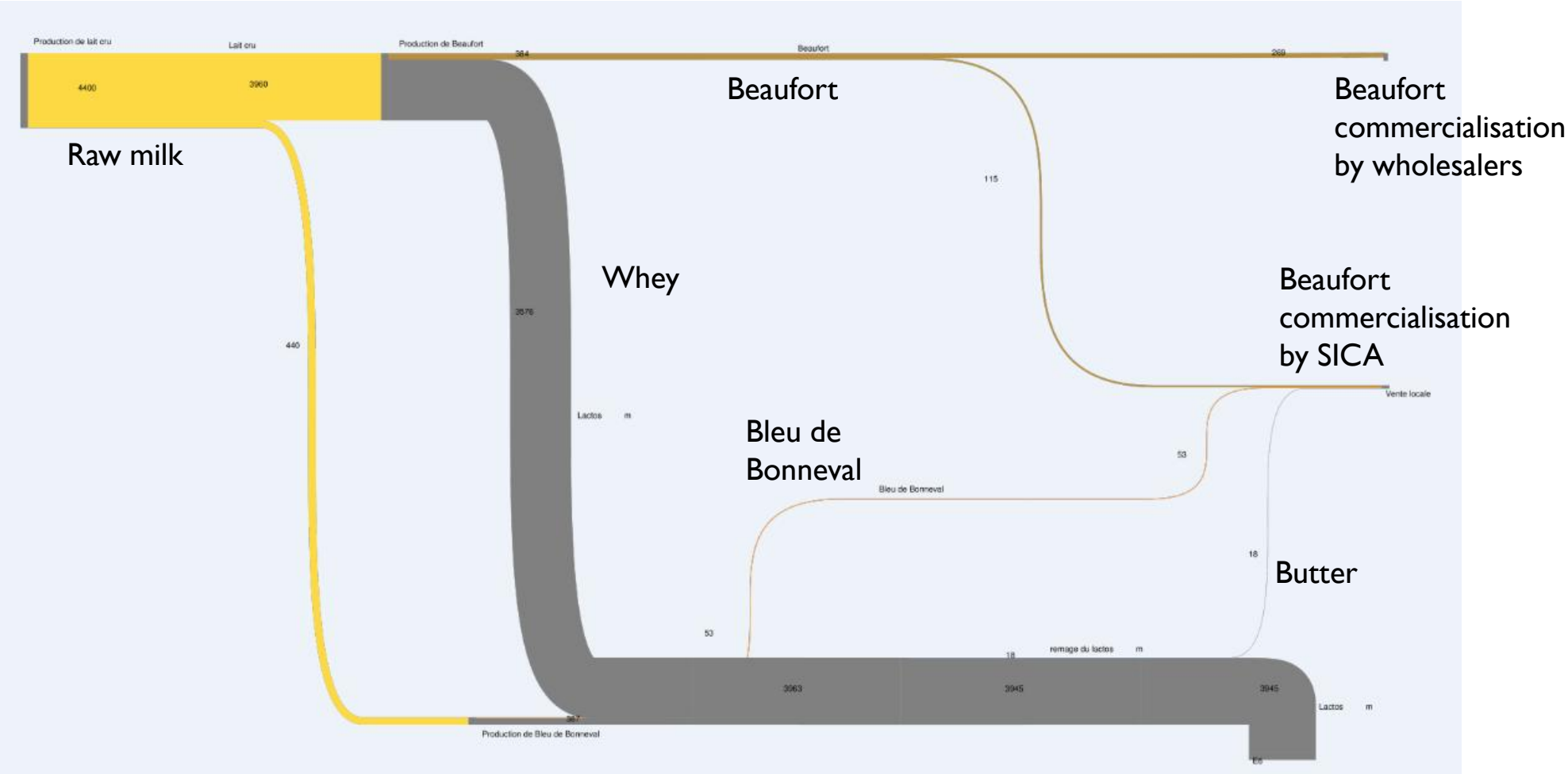Beaufort Syndicate, UPB,
INAO, CNAOL

Which infrastructures? Individual and cooperative equipements

Which immaterial heritage?
Traditional *savoir-faire*, AOC-network

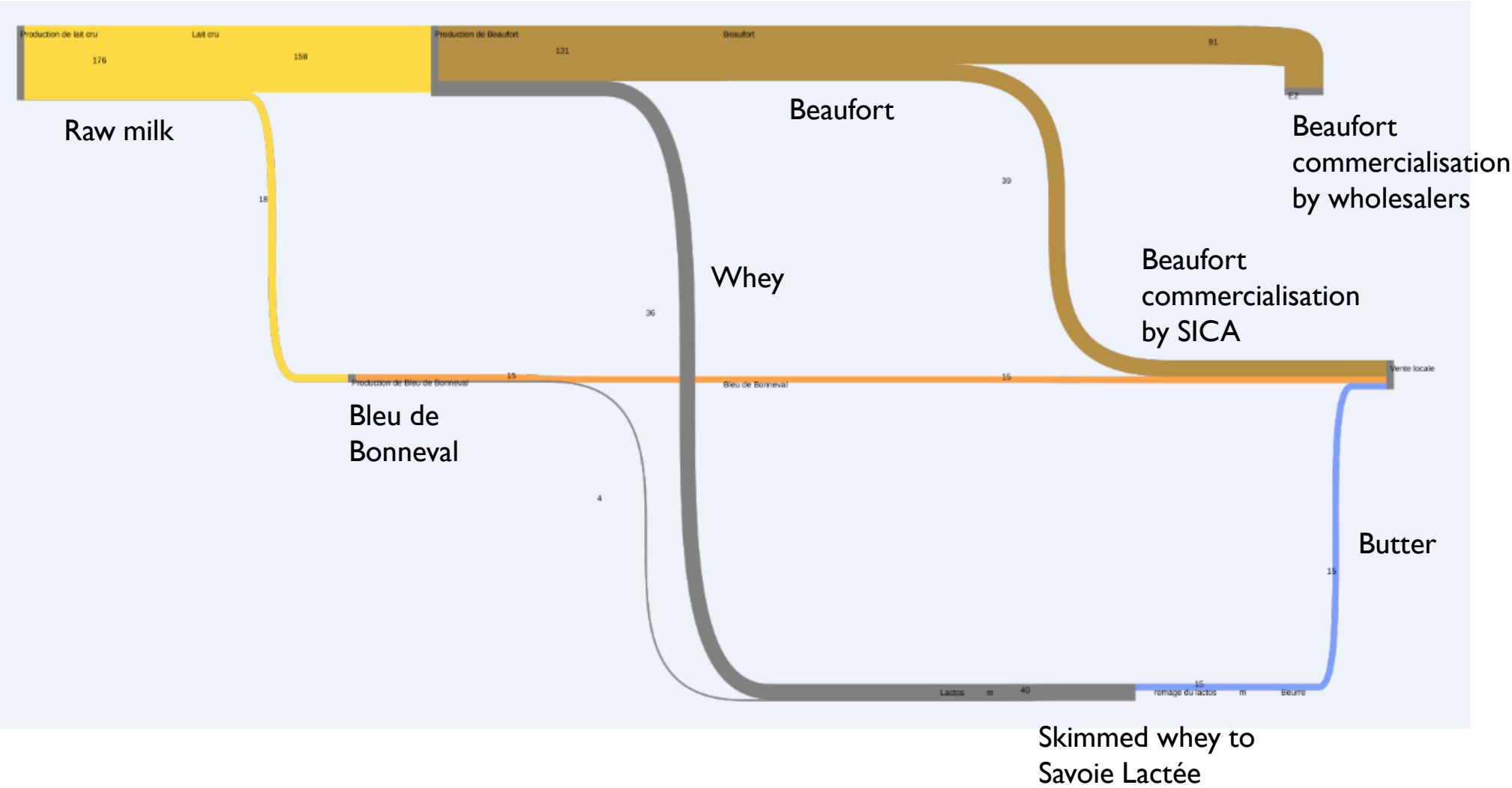Which monetary flows? Milk remuneration, farmers' multi-activity, PAC subsidies

5 200 tonnes/year

AOC milk

Coopérative de Haute Maurienne-Vanoise:
Sankey diagram for total material flow (tonnes, 2016)

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Coopérative de Haute Maurienne-Vanoise:
Sankey diagram for fat flow (tonnes, 2016)

Conclusions

- An analysis of the material flows associated to wealth creation activities may help to understand territorial dynamics and capability as well as the capacity for local stakeholders to adapt to local and global perturbation factors.

- Assessing the economic and environmental aspects associated to material flow circulation can be useful to grasp territorial vulnerability on the ecological, economic or social front.

- Visualization through Sankey diagram may be useful for local stakeholders to apprehend socio-ecological issues associated to supply-chains.

- This methodology is conceived as replicable and transposable to other territories and/or wealth creation activities at local and intra-regional scales.

Thank you
for your attention!