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## Foodshed spatial approach

Esther Sanz Sanz, Michel Moulery

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# RISE ATTER 2021-2025

Agroecological Transitions *for* Territorial Food Systems

1st webinar on the "**foodshed spatial approach**"

20th January 17-18.00 (CET)

by Michel Mouléry and Esther Sanz-Sanz



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Coordination by **INRAE**

**What are the socio-spatial determinants  
of the geographies of the agriculture-food-nutrition nexus?**

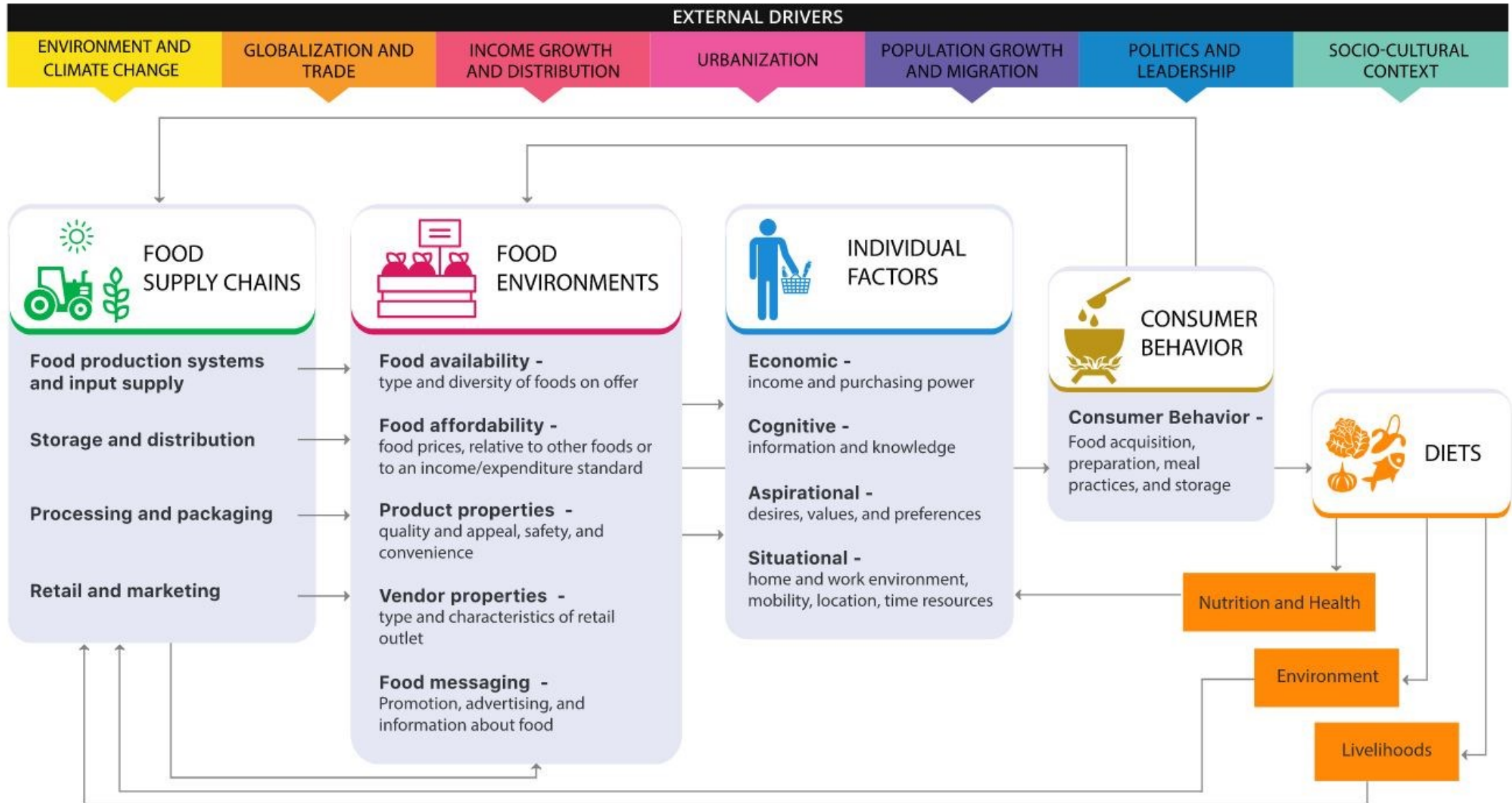
### Objectives:

- 1/ To define and characterise the geographies of the nexus at the territorial scale of the city-regions → foodshed
- 2/ To identify the levers of intervention

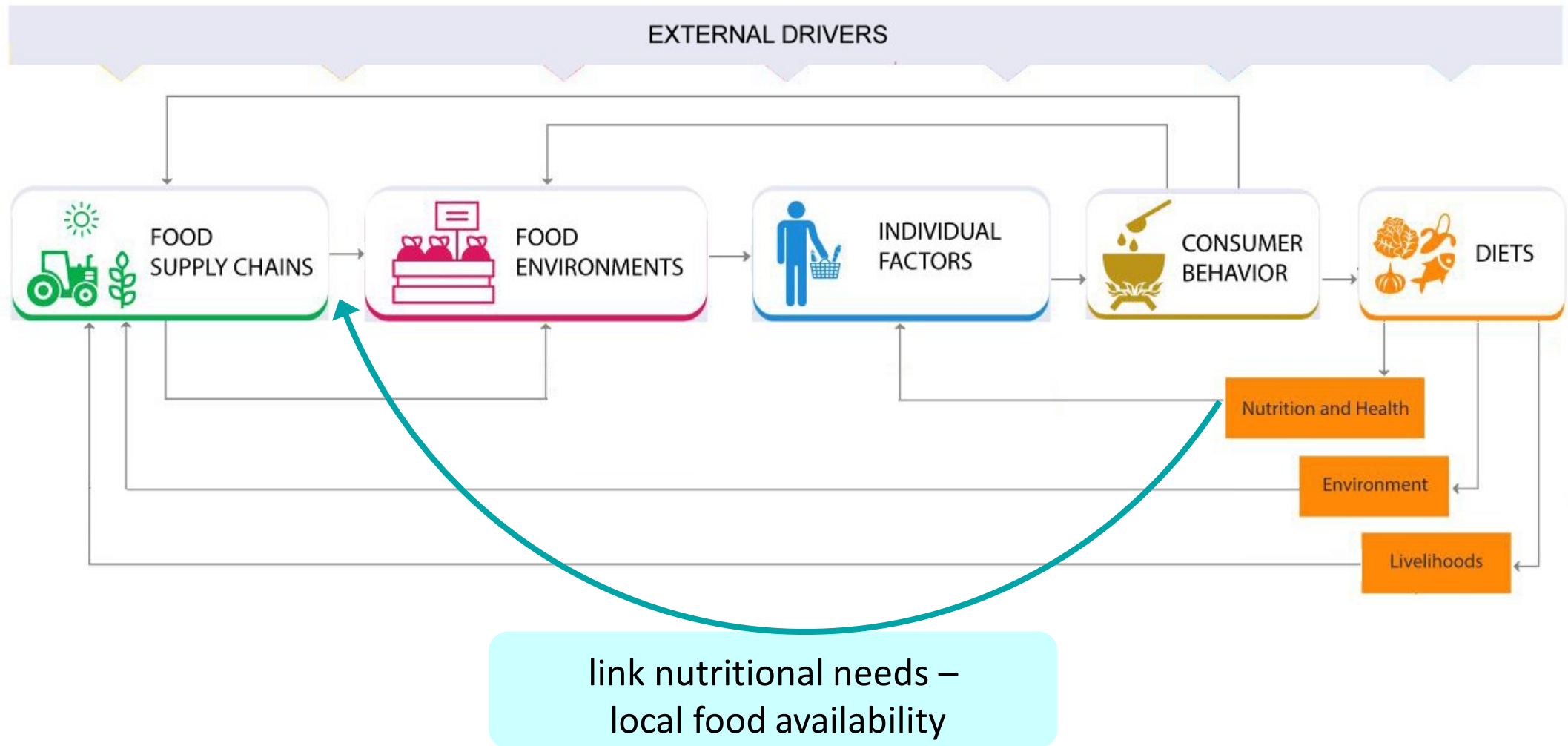
*From farm to fork*

New Geography of Food Security + Land Change Sciences  
**Mapping + modelling + participatory approach**

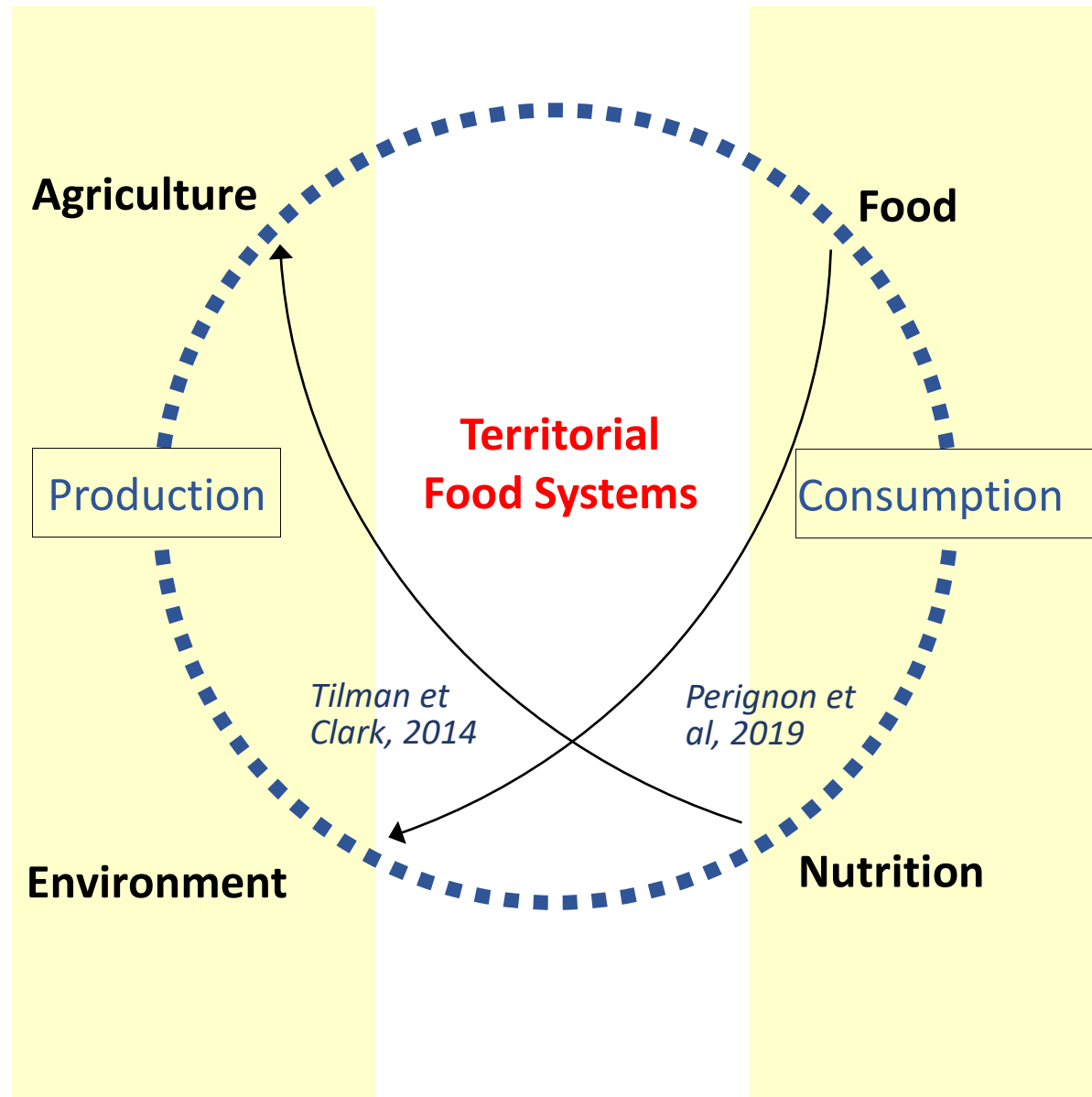
# Conceptual framework



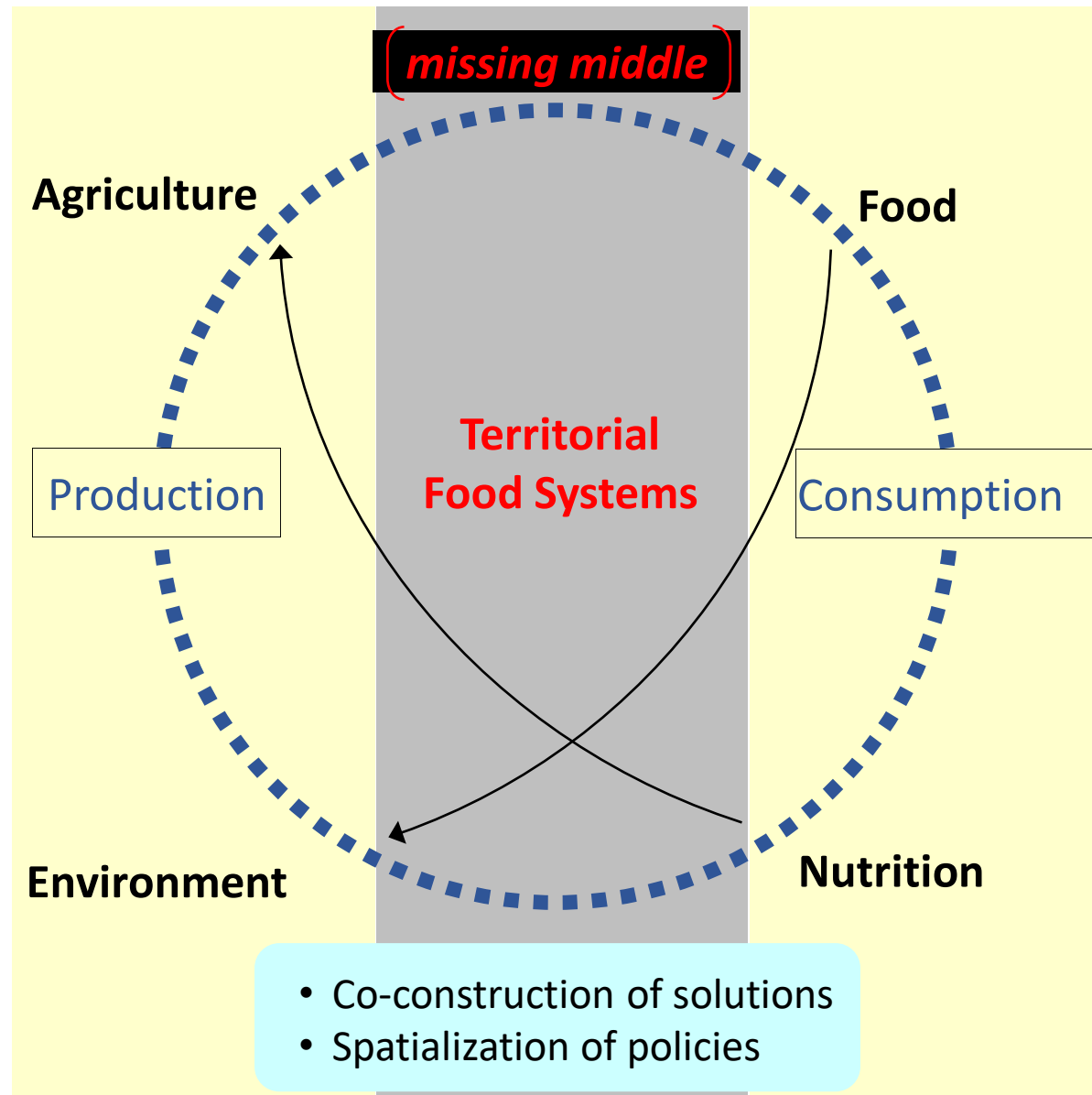
# Conceptual framework

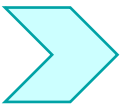


# What is the problem?



# How does our research fit into a foodshed approach?





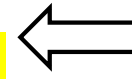
# Farming systems with the capacity to ensure the sustainable food supply of their territory

H<sub>1</sub> : spatial signature

(SANZ et al., 2021, 2018, 2017a,b,c et 2016; Poggi, SANZ et al., 2021)

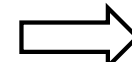
Statistical and spatial analysis (GIS) heterogeneous multi-source data

Local field survey

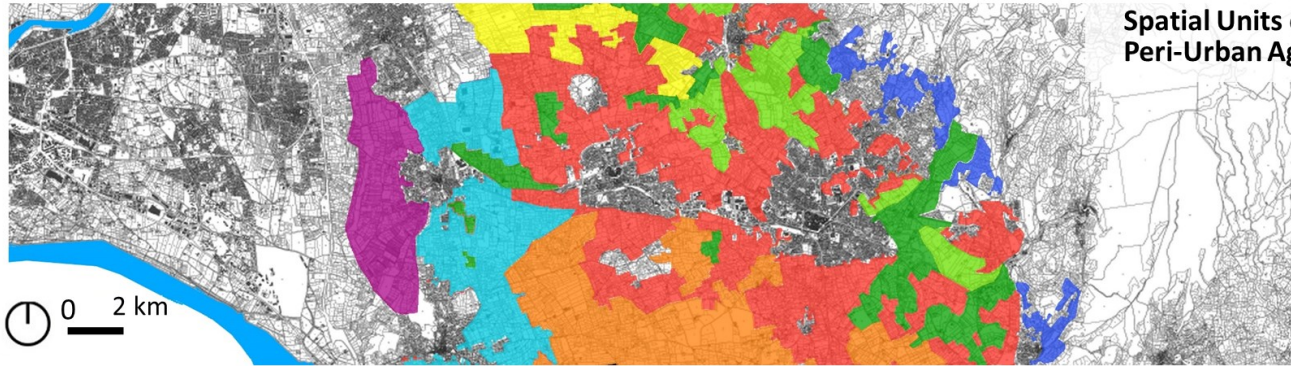


Modelling approach

Model (multinomial Dirichlet regression)

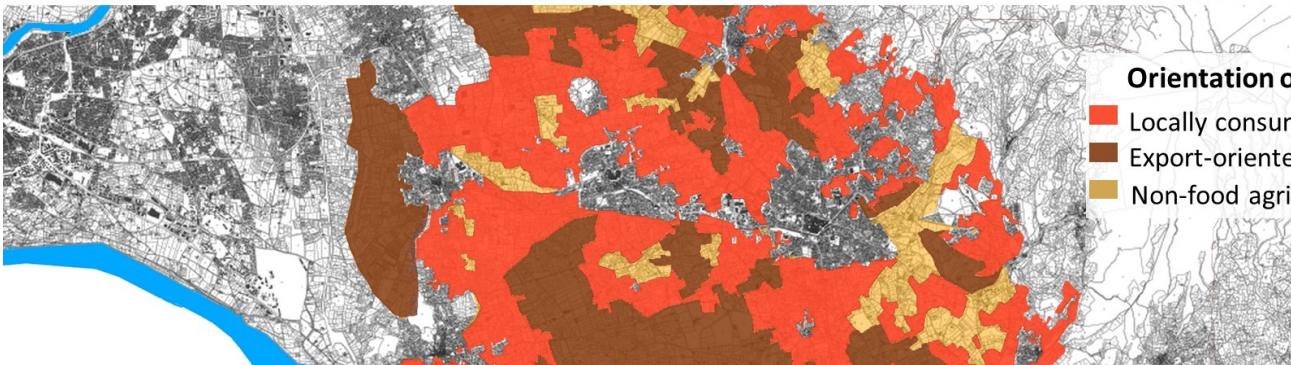


Spatial Units of Peri-Urban Agriculture



Orientation of cropland

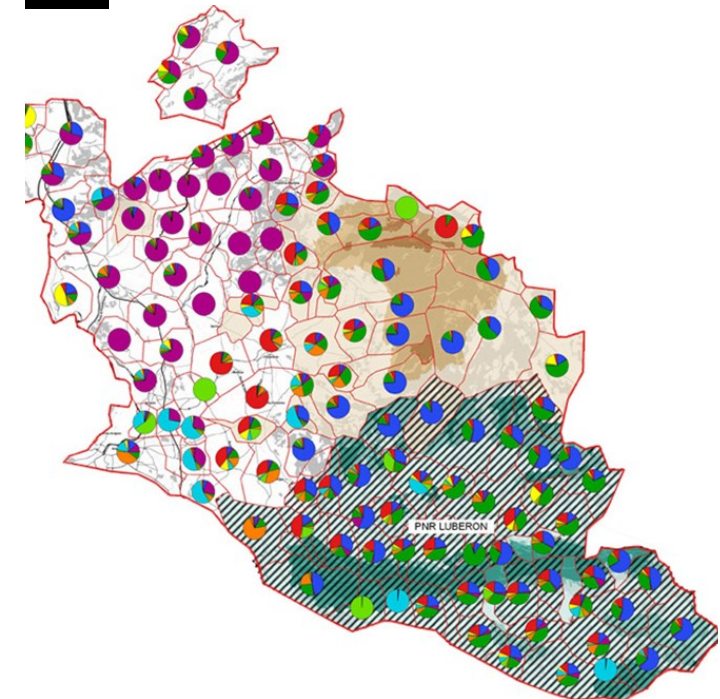
- Locally consumed food production
- Export-oriented food production
- Non-food agricultural production



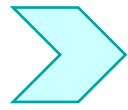
Spatial signature of periurban agriculture

- local vs. export oriented
- green (organic) vs. conventional

0 km







# Farming systems with the capacity to ensure the sustainable food supply of their territory

H<sub>2</sub> : rugosity

(MOULÉRY et al., under review;  
Brinkley, 2019, 2018, 2013)

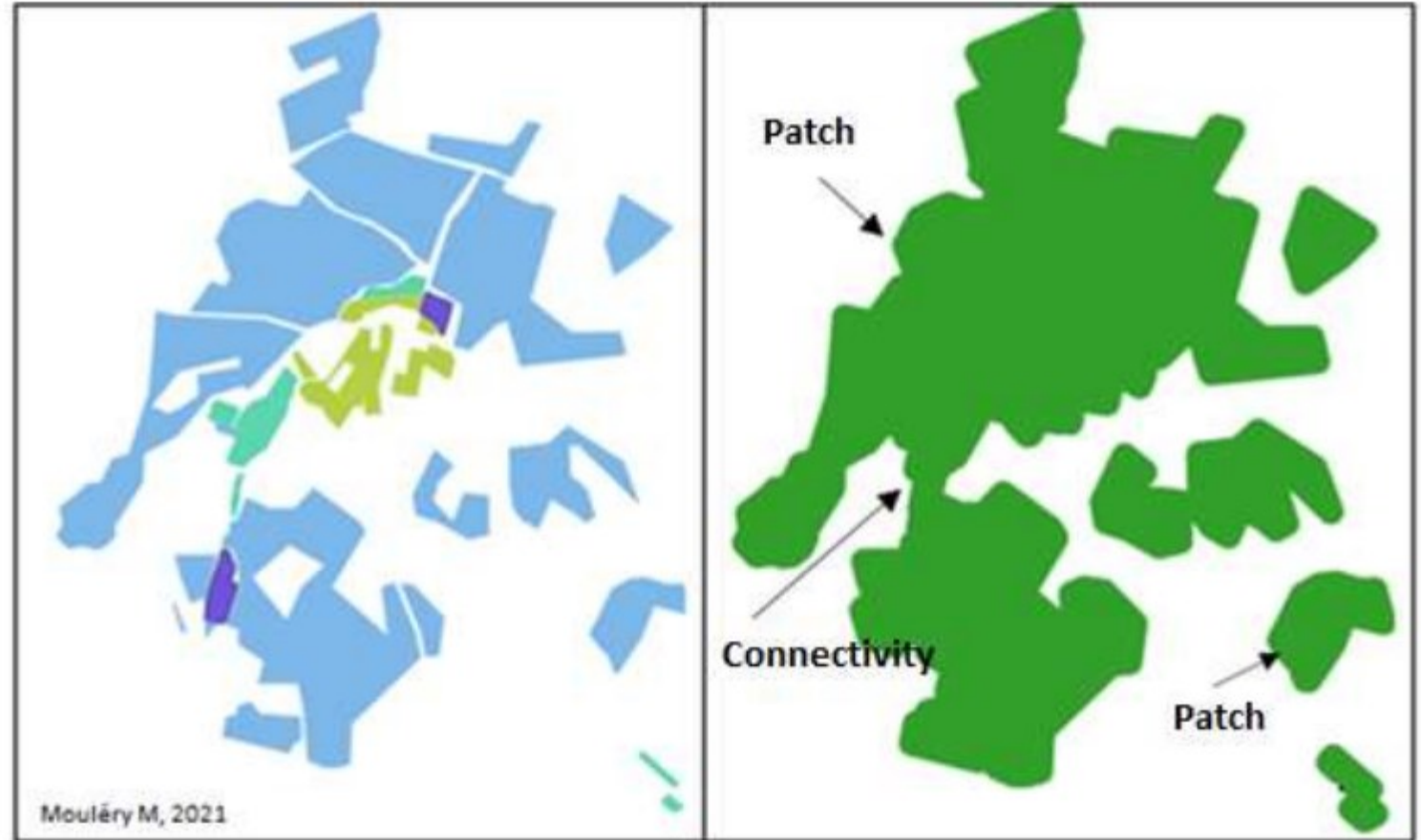
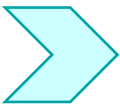


Figure 1. Before Dilation/Erosion

Dilation /Erosion (creation of the archipelago)

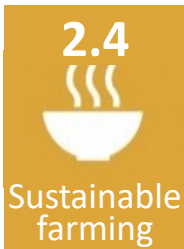
**Rugosity** of urban areas *versus*  
proximity supply chains



# Farming systems with the capacity to ensure the sustainable food supply of their territory

H<sub>2</sub> : rugosity

Identifying connectable sustainable agriculture to city-regions



Moulery et al.. Self-sufficiency assessment: Defining the foodshed spatial signature of short beef supply chains. 2022. [\(hal-03524862\)](#)  
Sanz Sanz, Napoléone & Mouléry (2021), Insights from France-CGIAR research.

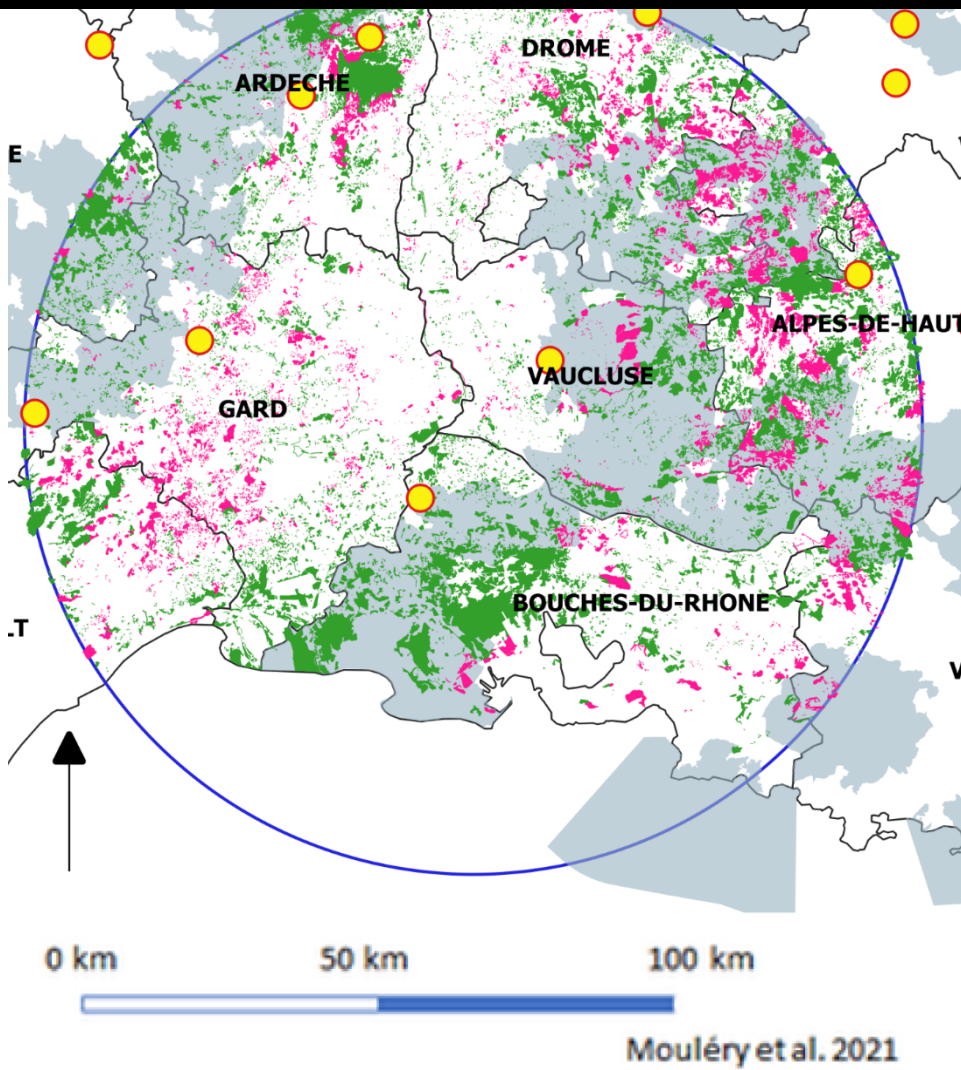
Vicente, Sanz Sanz, Napoléone, Mouléry, et al. (2021), *Agriculture*.

Poggi, S., Sanz Sanz, E. et al. (2021), *Advances in Ecological Research*.

Sanz Sanz, Napoléone, Martinetti (2018), *Land Use Policy*.

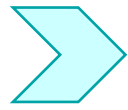
Sanz Sanz, Napoléone, Hubert, Mata (2017), *Revue d'économie régionale et urbaine, L'espace Géographique*.

H2020



- Slaughterhouse
- Département
- Patches in not short supply chain
- Patches in short supply chain
- National or Regional nature park

Defining the beef foodshed spatial signature by food supply chains (short vs long)



# Farming systems with the capacity to ensure the sustainable food supply of their territory

H<sub>1</sub> : spatial signature

H<sub>2</sub> : rugosity

Tooling and focusing public action:  
*Food sensitive planning*



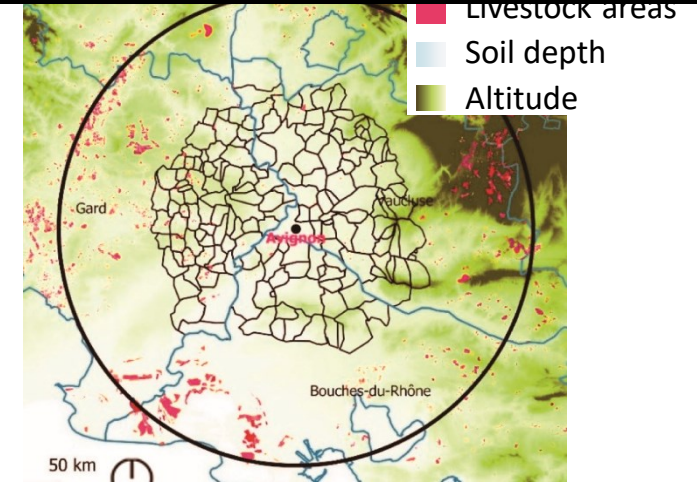
Mouléry, Sanz Sanz, Napoléone, Josselin et al. (2022), *Agriculture* [hal-03524862](https://hal.archives-ouvertes.fr/hal-03524862)

Sanz Sanz, Napoléone, Debolini, Mouléry, Martinetti et al. (soumis), *Nature Sustainability*

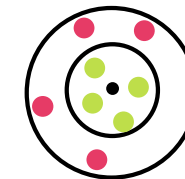
Boussougu, Sanz Sanz, Napoléone, Martinetti (2021), *Land Use Policy*



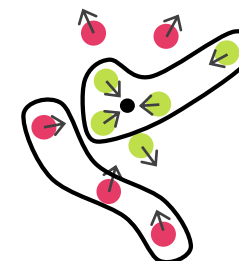
2020



1. Isotropic

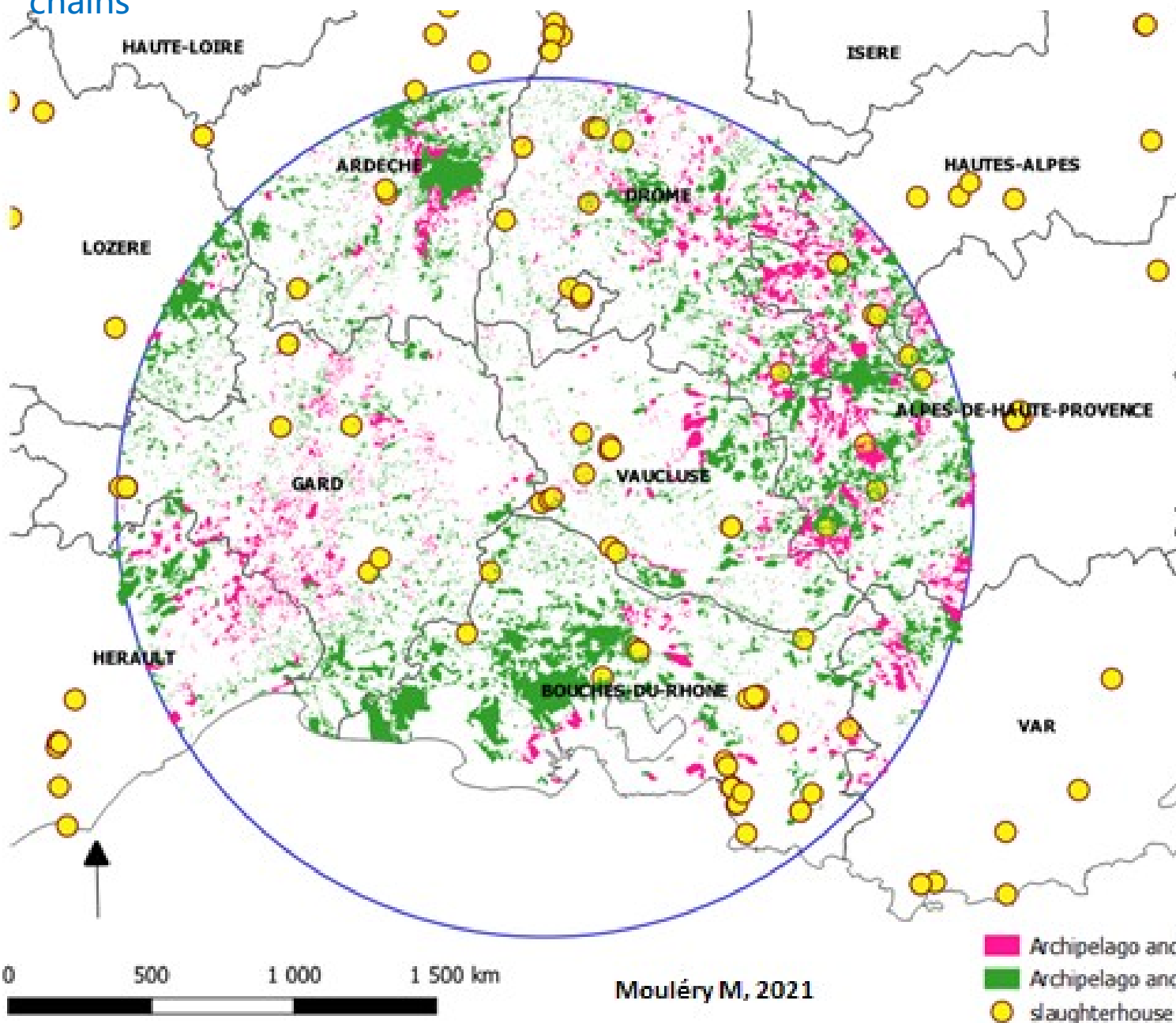


2. Product groups



Archipelago foodshed

## Example | Avignon beef self-sufficiency assessment Defining the livestock foodshed spatial signature by supply chains



### Foodshed approach

Objective: assessment of (a specific food product) self-sufficiency of a specific region based on biophysical and socio-economic characteristics.

Hypothesis : **spatial signature** of agricultures functionally connected to the city

Level: Spatial approach at territorial level.

Data needed:

- Localised food-crops land use (ex. RPG in EU)
- Local yields
- Supply chains: long vs shorts (database –ex. RGA in France- or key informants)
- Intermediaries
- Population

Skills needed:

- GIS & spatial metrics (landscape ecology)
- Focus groups / key informants

# Foodshed approach

## What we offer:

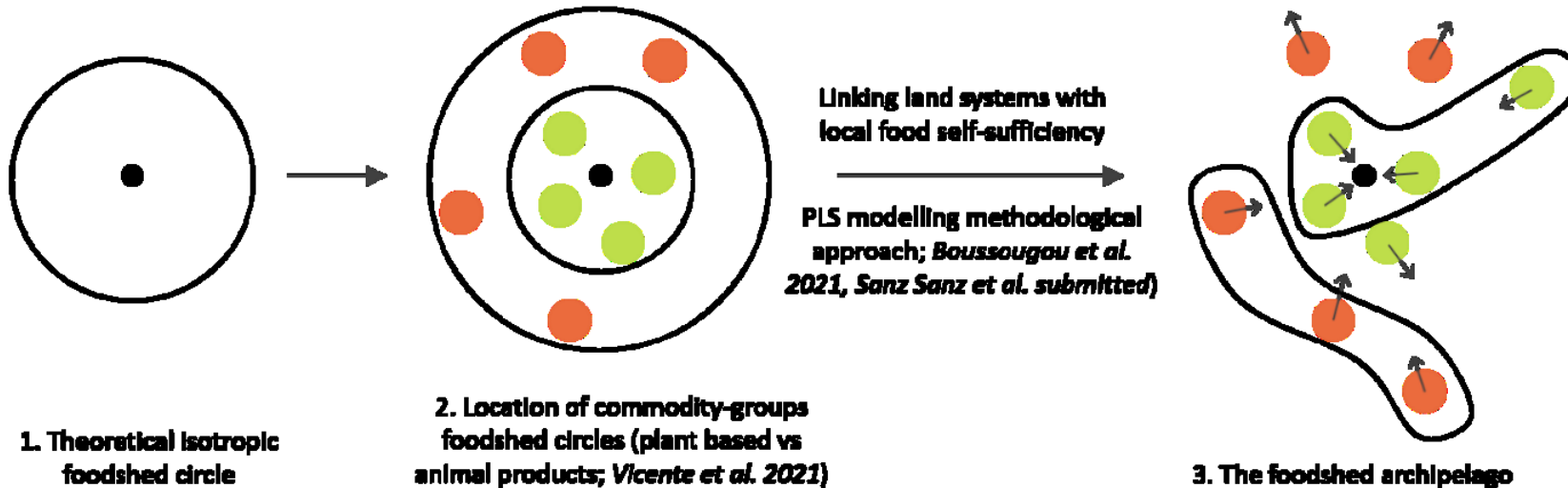
- Smart training (if needed)
- Application in my secondments / the study cases (if data provided)
- Comparison (generalisation) with colleagues working on the foodshed notion (ZALF, UC Davis)

## What we need:

- Quantitative data collection (land use, yields, supply chains)
- Support to conduct a field survey during my secondment (interviews to key informants / focus groups)

## What is the point of foodshed approach ?

- Mapping territorial food system
- Facilitating stakeholders' discussion and decision making
- Simulation of agro-ecological scenarios (planning strategies, public action)



REF : Moulery et al.. Self-sufficiency assessment: Defining the foodshed spatial signature of short beef supply chains. 2022. [hal-03524862](https://hal.archives-ouvertes.fr/hal-03524862)

REF: Sanz Sanz et al., 2021, "Agroecological transitions and local food self-sufficiency assessment", Insights from France-CGIAR research. Agropolis International, n°26.

REF: Vicente, J.L., Sanz Sanz, E. et al., 2021. Foodshed, Agricultural Diversification and Self-Sufficiency Assessment. *Agriculture* 11, 143. <https://doi.org/10.3390/agriculture11020143>