Comparing local and global food chains: the case of tomatoes consumed in Catalonia
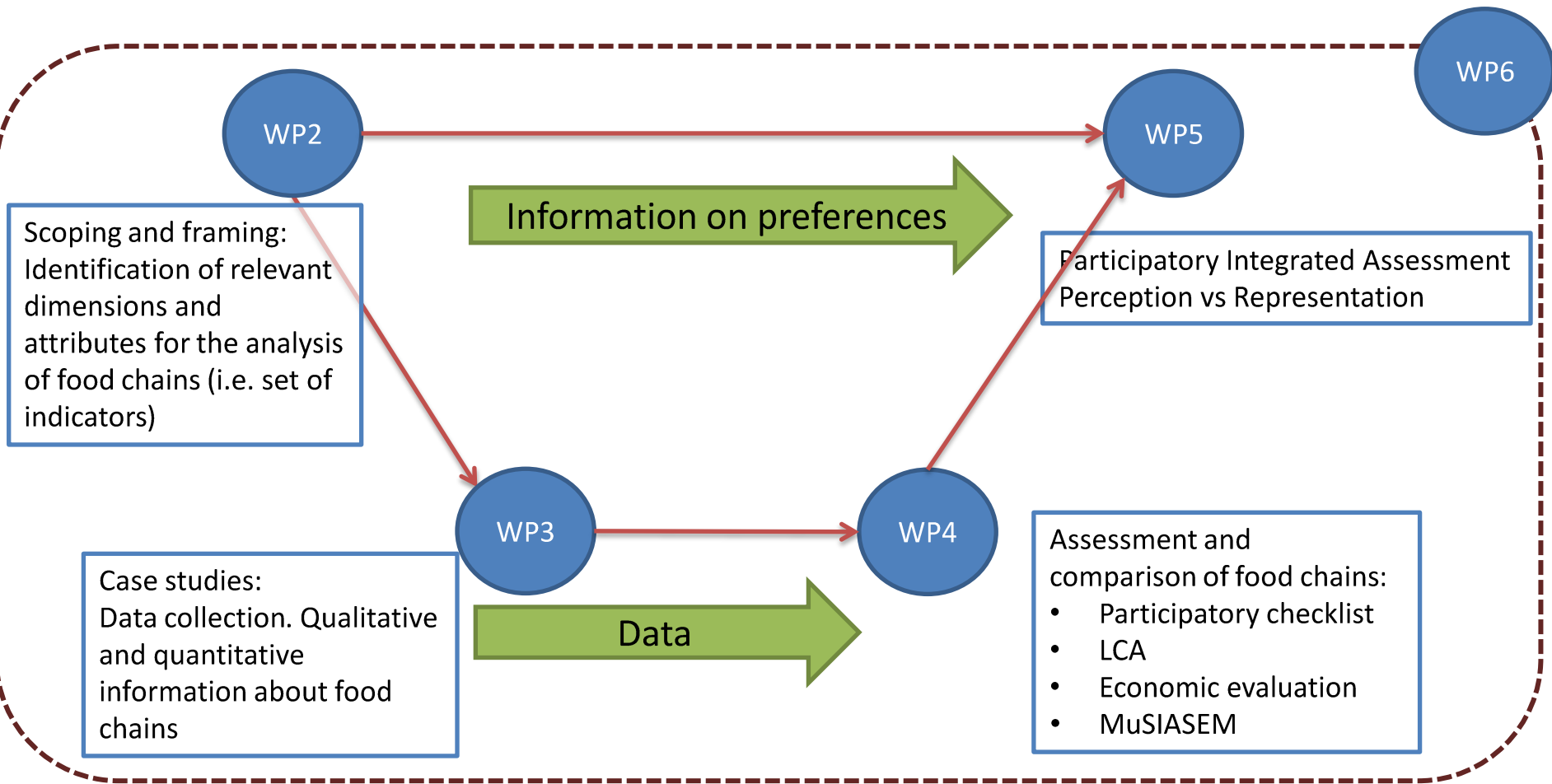
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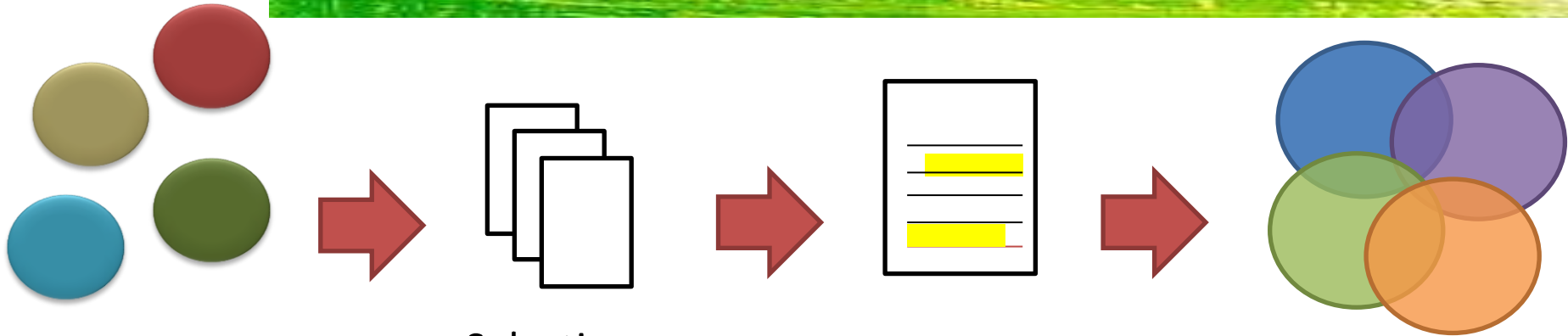
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GLAMUR Project

WP2

WP5

WP6

Information on preferences

Scoping and framing:
Identification of relevant
dimensions and
attributes for the analysis
of food chains (i.e. set of
indicators)

Participatory Integrated Assessment
Perception vs Representation

WP3

WP4

Case studies:
Data collection. Qualitative
and quantitative
information about food
chains

Data

Assessment and
comparison of food chains:
- Participatory checklist
- LCA
- Economic evaluation
- MuSIASEM

http://glamur.eu/

Analytical process

GLAMUR

Spheres

- Market
- Scientific
- Public
- Politic

Selection Of documents, TV programs & newspapers

First round of analysis: 2 documents by sphere

Text analysis

- AtlasTi
- Iramuteq

Discourses

- Discourses characterized by narratives
- Discourses in each sphere
- Aggregation of discourses

Spheres → Discourses → Attributes & Indicators

Discourses

- Commodity discourse
  - Use of **economic variables to measure performance** of food chains, such as price, cost, profit and the needs of the consumer. Profitability and productivity as policy priority, and contribution of the agricultural sector to GDP and its competitiveness in the international market.

- Right discourse
  - Focuses on consumers. More information, transparency and participation is advocated in order to ensure **consumers** are aware of what they buy, their health, ethical and social considerations are taken into account. It also highlights the **right of people (consumers) to access food** in adequate quantity and quality.

- Livelihood discourse
  - It highlights the exodus of the population from rural areas, **prospects for rural development and the quality of life of farmers**. **Workers** are seen as low skilled and undervalued. It refers to an **integrated and complex vision of food**, which is many things at the same time: health of your children, income, traditions, and so on. Considerations over the unfairness of profit distribution and pricing mechanisms

Attributres & Indicators

| Related Attributes from WP2 Report	Possible Indicators	Indicator Description
Fair trade	Share of profit	Share of profit in each stage of the chain (obtained by the corresponding actor) compared to the profit generated in the whole chain.
Contribution to GDP	Value added	The sum of the profit, the depreciation cost and the labour cost, both in absolute terms, per unit of land use and per unit of labour
Contribution to GDP	Taxes	Amount of money paid to government through taxes , both in absolute terms, per unit of land use and per unit of labour
Employment Contribution to GDP	Number of jobs	Number of jobs per unit of land use, in each stage of the chain and in the whole chain
Affordability	Price (Ability to provide food at acceptable price)	Sale prices to consumers (with respect to PPP)
Resilience/Dependency	Share of subsidies with respect to income	Percentage of subsidies with respect of total monetary inflows or to total income
Energy consumption Resource use	Consumption of energy carriers (energy consumption)	Consumption of electricity, natural gas and liquid fuels, per unit of land use and labour, in each stage of the chain and in the whole chain
Biodiversity	Agro-biodiversity	Number of crops and varieties present in the farm
GHG emissions Pollution	Tons of CO_2 equivalent	Tons of CO_2 equivalent directly emitted in each stage of the chain
Resource use	Share of water consumption	It measures the share of water consumption of agriculture in comparison with other socio-economic sectors (i.e. household, industry and services). This will be evaluated at territorial level
Farmers income Economic autonomy	Farmers' income (Net income)	Net income of farmers, per unit of labour
Labour relations	Wages level	Average salary of workers compared with the minimum wage
Efficiency	Productivity	Amount of product obtained per unit of land use and per unit of labour
Food security	Food availability	Availability of food in the market (e.g. number of months per year)

How to define Local or Global?

Criteria	Local	Global
Geographic distance	Within Catalonia	From and to outside Catalonia
Governance and/or organization of the supply chain	Direct sales schemes	More than 2 intermediaries (wholesale market and retailers)
Resource, knowledge and technologies used	Local natural resources (e.g. manure) and traditional seeds	Use of chemical fertilizers and pesticides, greenhouses and hybrid seeds
Territorial aspects shaping the identity of the product	Local varieties	Hybrid varieties

Producer in Global tomato chain
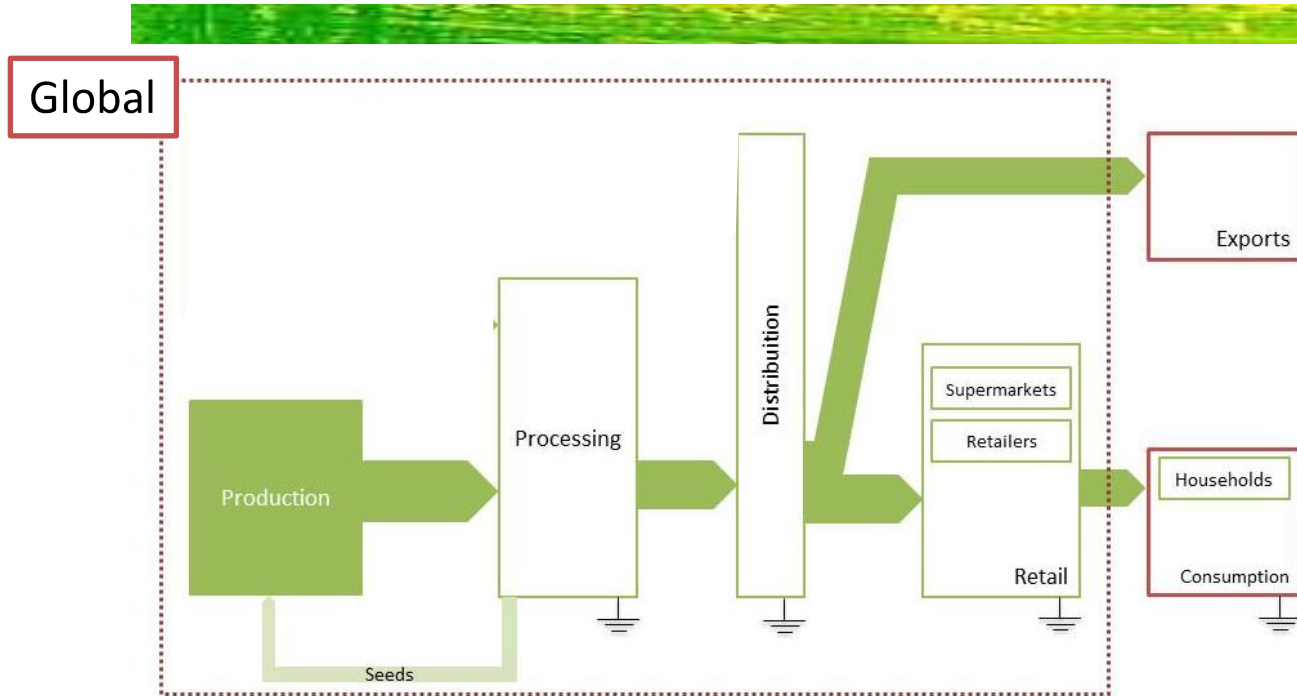
Producer in Local tomato chain
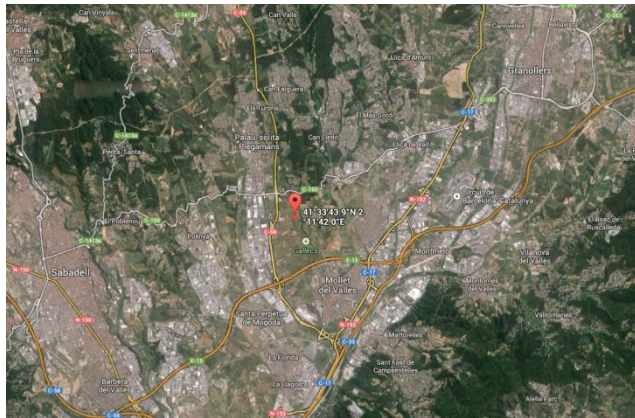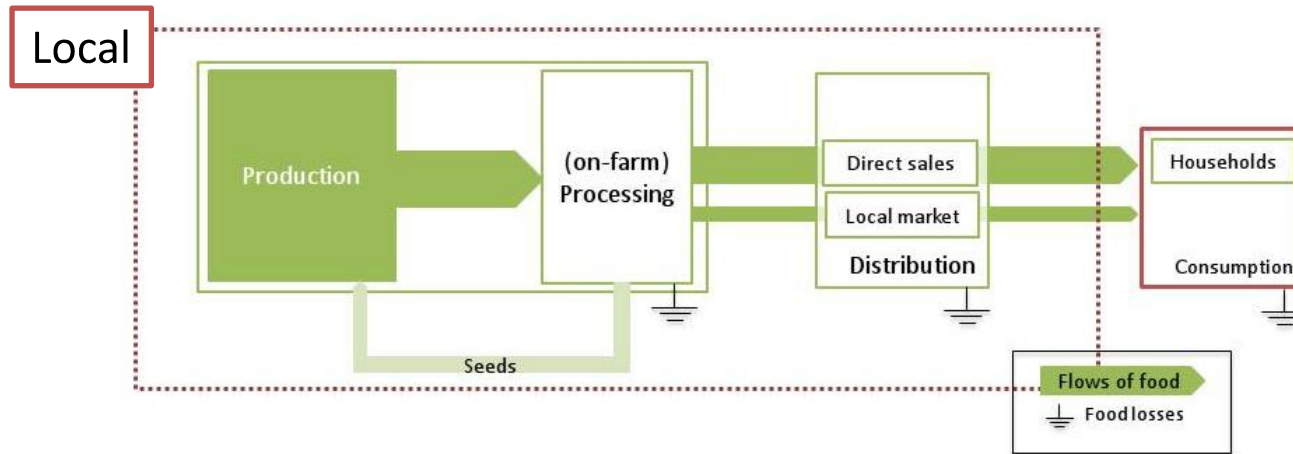
MuSIASEM approach

- MuSIASEM approach (Giampietro et al, 2009). Based on Fund-Flow model (Georgescu-Roegen, 1971)
  - Fund categories: Human activity, Ricardian land, Capital
  - Flow categories: energy, matter, value added
- Extensive and intensive indicators
  - Extensive: *What the system is? What the system does?* Variables that can be added and represent the size of the system
  - Intensive: *How the system does what it does*. Indicate the pace of the system metabolism.
    - $Flow_k/Fund_k$ ratios, $Flow_{k-1}/Flow_k$ share, $Fund_{k-1}/Fund_k$ share
- Avoid efficiency indicators
  - Flow/Flow ratios, e.g. €/MJ

Description

What the system is, What the system does

	Production [Kg]	Cost [€/year]	Turnover [€/year]	Net income [€/year]	Energy [kWh]	Material [tons]	LU [m2]	HA [h/year]
Global	320.000	180.152	185.815	5.663	16.500	18.100	19.440	4.374
Local	995	1.617	1.991	374	100	18	400	123

Preliminary results

What the system is, What the system does

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How the system does what it does

	Productivity		Income		Energy		Material	
	Kg/m2	Kg/h	€/m2	€/h	kWh/m2	kWh/h	Kg/m2	Kg/h
Global	16,5	73,2	0,3	1,3	0,8	3,8	0,9	4,1
Local	2,5	8,1	0,9	3,0	0,3	0,8	0,0	0,1

Preliminary results

	Global	Local
Share of profit	Pending	Pending
Value Added	67.615 [€/year] 3,5 [€/m²·year]	1.200 [€/year] 3,0 [€/m²·year]
Taxes	pending	Pending
Numer of jobs	0,23 [h/m²]	0,31 [h/m²]
Price	1,5 - 2 [€/Kg]	2 - 2,5 [€/Kg]
Share of subsidies	pending	Pending
Agro-biodiversity	Low	Very high
Tons of CO2 eq	n.a.	n.a.
Water consumption	pending	Pending
Wages level	11,2 €/h	6,7 €/h
Food availability	Very High	Medium

Conclusions

- We have identified 3 discourses about food supply chains in Catalonia: Commodity, Rights and Livelihoods

- Preliminary evaluation of production systems involved in local and global tomato chains
  - Higher productivities in intensive/global farm: 8 times more land required to produce the same amount in small/local farm
  - More income, less energy and less material flows in farm involved in local food supply chain.
  - Local: value added, number of jobs and agro-biodiversity
  - Global: wage level and food availability

- Next steps: Perform evaluations of:
  - Other steps of the chain and of the complete chain (e.g. share of value added, share of profit)
  - Of food chain performance from different discourses (e.g. price)

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