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Session 4 - Circular Economy, Urban Metabolism, Eco-engineering

Towards a metabolic rift analysis : the case of organic waste management in Rennes



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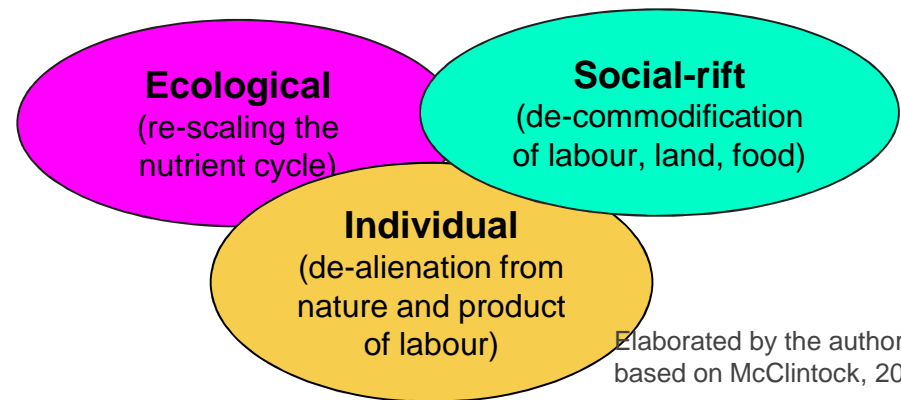
Theoretical Background

Urban metabolism (material and energy flows throughout the cities)

- beyond the UM : social practices, flows governance, urban ecosystem/ network, and proximity (Barles, 2010; Pincelt, 2012; Newell and Cousins, 2015)

Urban metabolism & urban agriculture

- group of discussion (e.g. ARENE Île-de-France 2016), projet, newspapers,..
- literature : **UA is a part of urban metabolism** (Aubry and Pourias, 2013); **UA can mend the “metabolic rift”** (McClintock, 2010, Daehene, Tornaghi, Sage, 2015)



Elaborated by the authors
based on McClintock, 2010

Hypothesis

A **hypothetico-deductive approach**, we assume that:

"urban agriculture could "mend the metabolic rift" in ecological, social and individuals terms changing the chain and the geographies of wastes"

GOALS:

- **Theoretical** : discuss the metabolic rift
- **Operational** : underline the role that UA could play in the waste management

Case of study: Rennes Métropole

The key figures (2014)

421 000 inhabitants - 3rd French population growth;

More than **30,000 companies**;

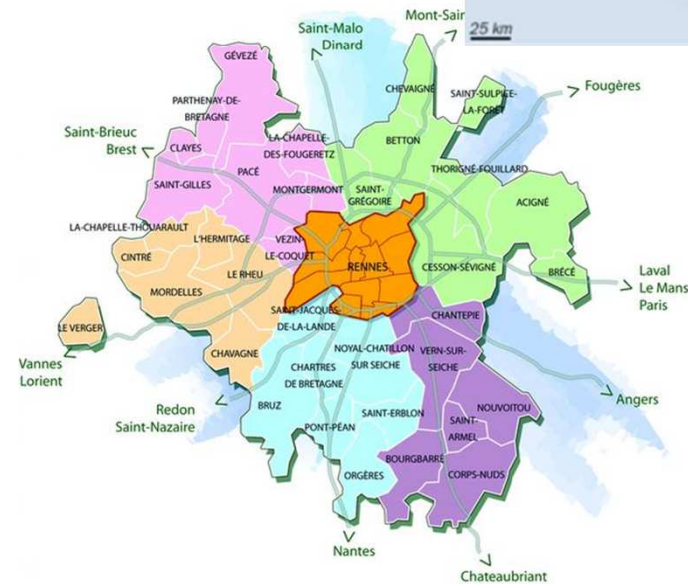
An unemployment rate 2 points lower than the national average;

3rd GDP of the major French cities.



3 historical sectors of economic development :

- the automobile industry,
- the agro-food industry,
- the information and communication technologies.



Method

Data collection

Policies :

institutional documents collection/
5 semi-structured interviews

Practices of inhabitants : participant observation/
26 semi-structured interviews

Spatialization of flows

quantitative survey for biomass
and waste flows

Data analysis

Process analysis

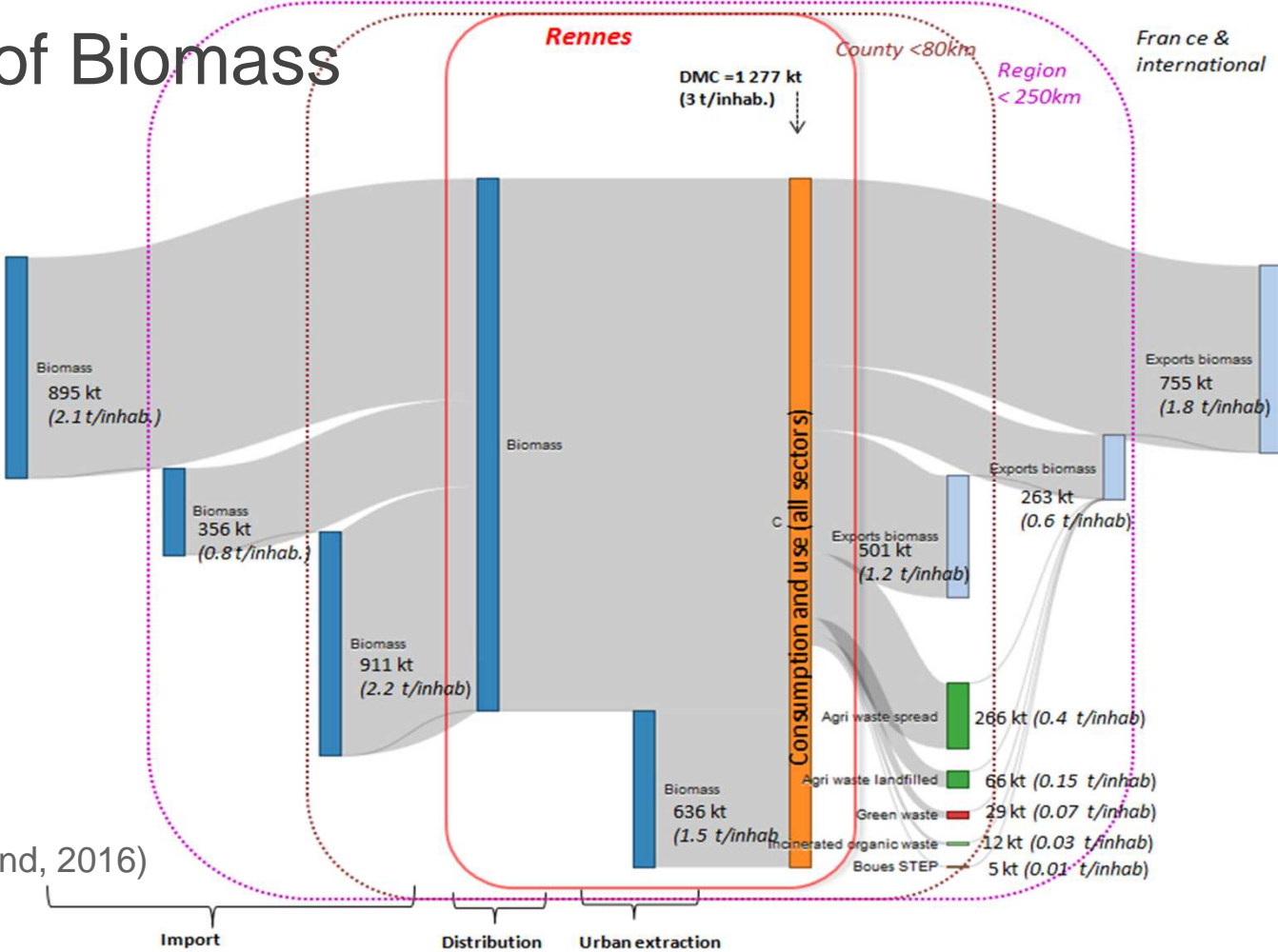
lexicometric analysis (31 interviews)

analysis of content (discourses and text)

a Material Flow Analysis (MFA) to explore the
circulation of flows at multi-scale

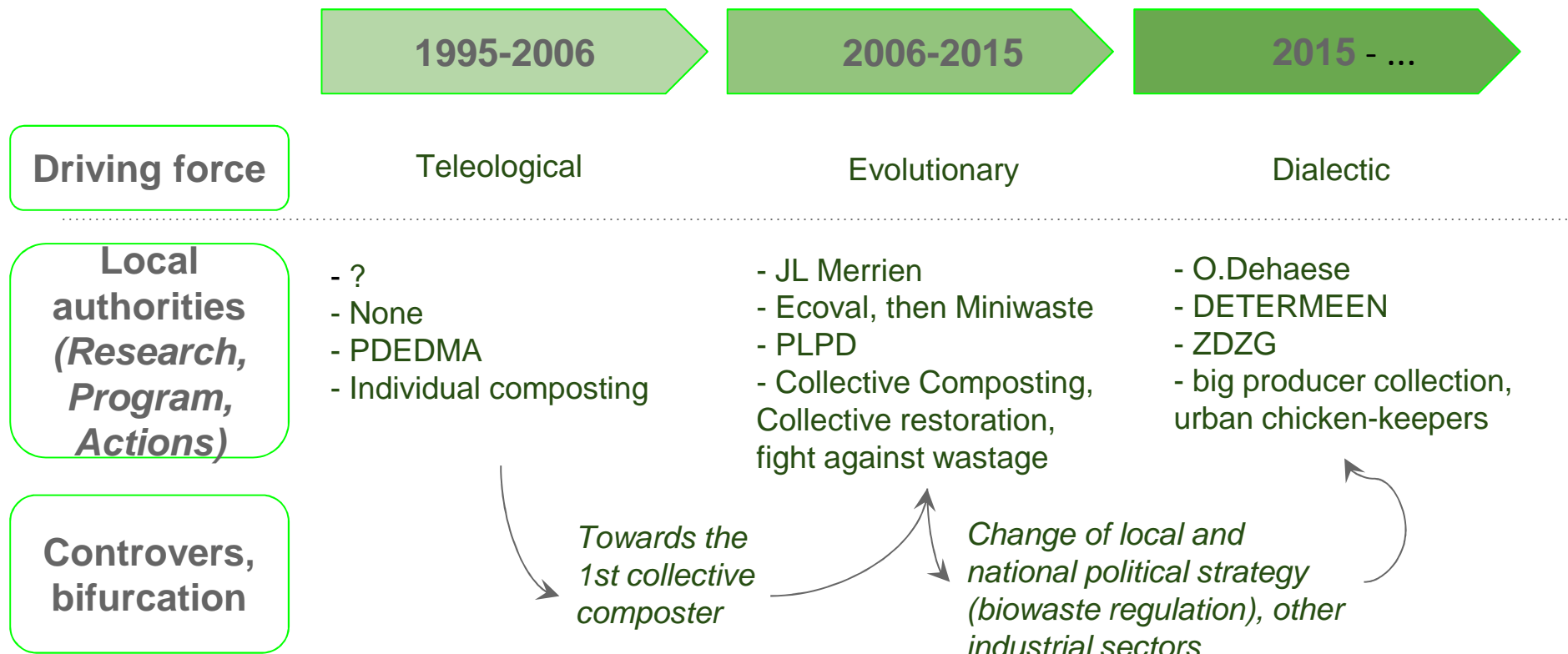
Result- MFA of Biomass

organic waste chain
in Rennes, kt, 2012



(Source : Bahers, Barles, Durand, 2016)

Result : Timeline

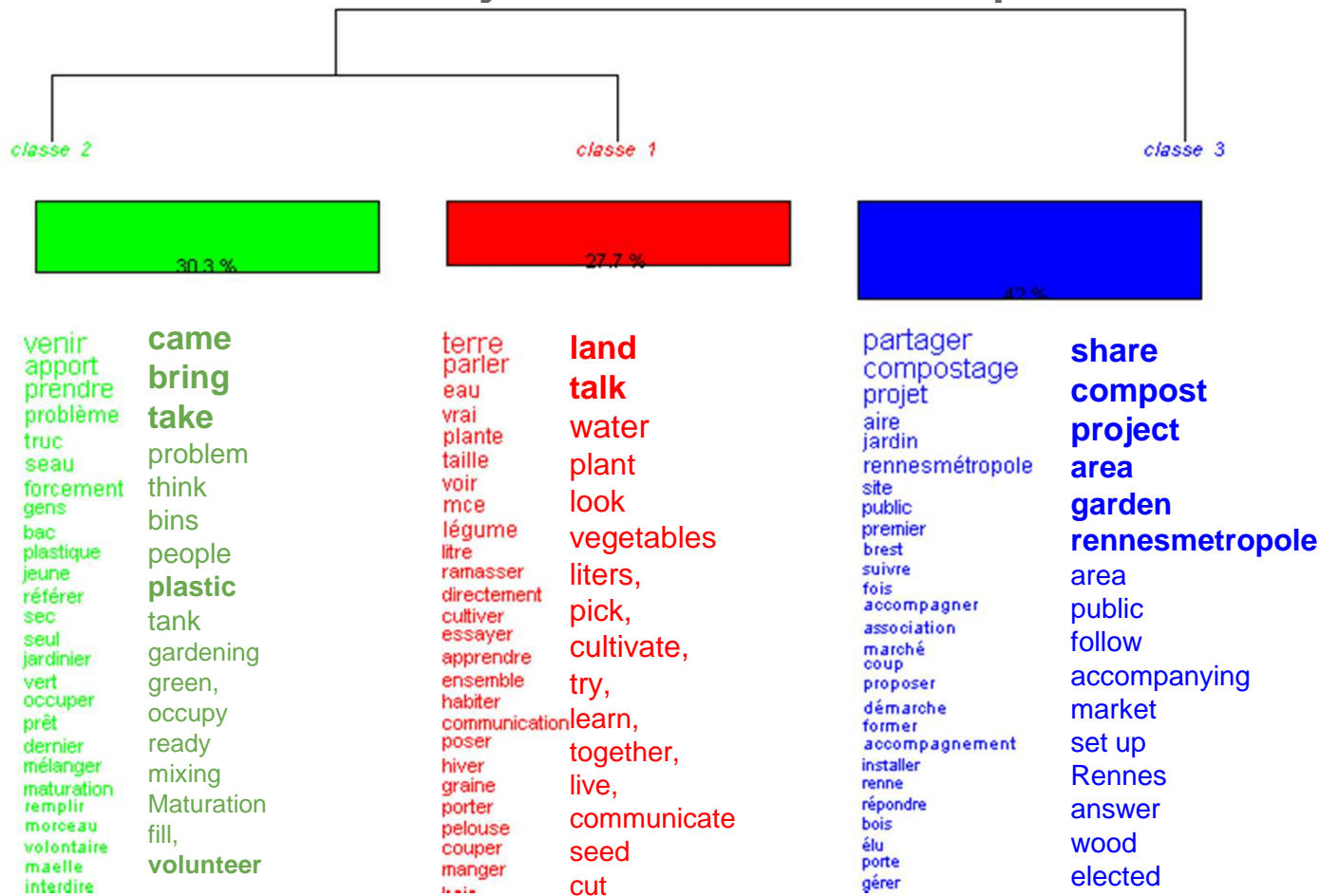


Result : analyse qualitative contenu de discours

	Social	Ecological	Individual
Skeptical	I pay taxes so I do not want to compost myself	Nobody utilizes the compost and its quality is not good	Compost only attracts flies and rats
Convinced	I can sorting all my waste	The compost could be used for private or collective gardens	The compost is the basis of the life
Activist	I volunteered to be a referent	We can change the model : produce and compost closer	The compost is a green petrol

Result : analyse lexicométrique

31 semi-structured interviews



Discussion

Social Rift :de-commodification of labour and land

PRO

- reclaim public spaces
- **citizen's commitment** 37,500 “foyers” (9% pop) (which 6500 including 700 referents are involved in community composting waste)

*“It's a **win-win system** : RM saves money and the inhabitants became a citizens”*

- **social-control** on the quality of the waste-composting process and the compost

“I prefer to compost in my own bins in my private garden because I eat organic and my compost is organic too”



Photos G.Giacchè (2017)

Diapositive 10

1

pas sure....

Giulia Giacche; 26/05/2017

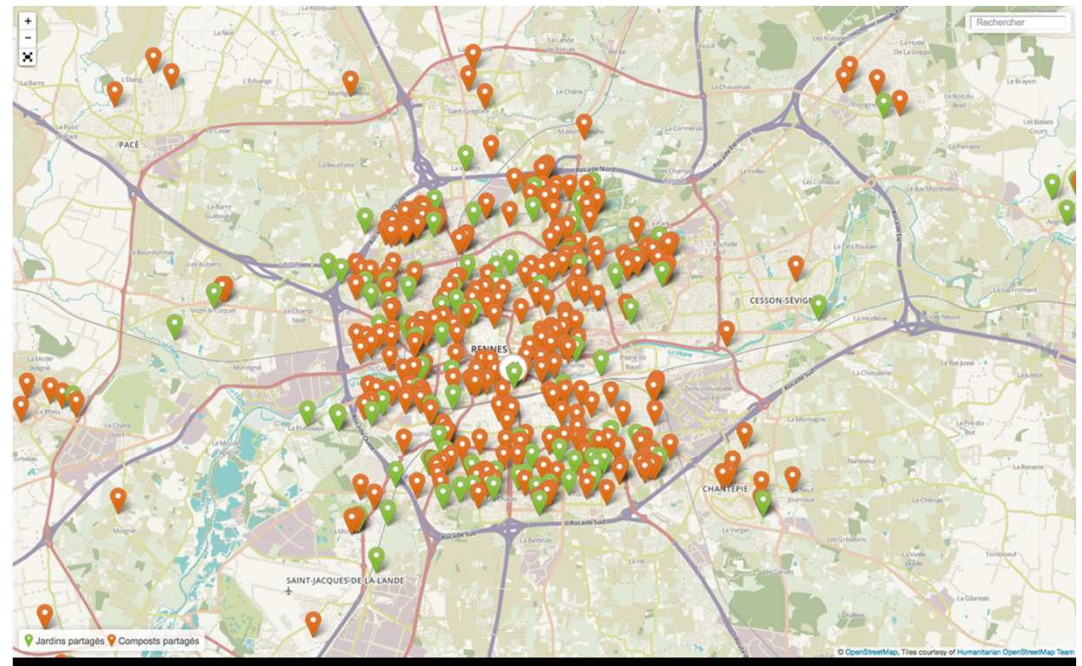
Social Rift :de-commodification of labour and land

AGAINST

30 kg/inhab/year of organic waste + 8 kg of garden green waste / **12.630 ton** of organic waste/year

5% pop 400 composting area / **8000 area requested**

SO a severe spatial boundary issue



Volume limit : where there is more waste to be diverted, orientation towards massive industrial sectors, and export.

Ecological Rift :re-scaling the nutrient cycle

45kg/inhab/year have already sorting //
48 ton/year are already produced

PRO

-socio-environmental proximity 400 areas of c.c.w
and 130 community gardens

“ 3/4 of compost produced by the area of CCW are employed
in the community garden” /

“ we should change the model of our cities: from the selfish
city to the ecosystem city by producing and composting
closer to people”

- spatio-temporal scale: opening
up to the local farmers

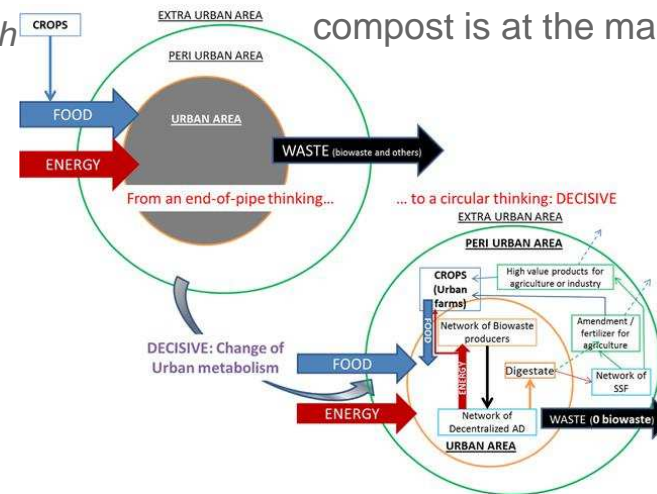
Source : DECISIVE2020 project, 2017

AGAINST

- metabolic vision

the MFA shows that a lot of flows aren't
recovered or exported easily

no “circular economy” according to
the study of UM in Rennes: individual
compost is at the margin



Individual rift: De-alienation from nature

AGAINST :

- back to roots

“it’s useless...” from the **skeptics**

“The compost brings the rats” or “Ok, but on the grounds of the city, not the condominium” (at 5 meters) from the **NIMBY**



PRO

- changing the way people look at waste "wastes are resources"

- reconnecting people to nature

"the compost feed the soil"

"humus is the basis of the fertility of life in the soil"

- creating a social bond

"I do not know anybody since I have been living here for 20 years, so I want participate to met my neighbours".

Final Remarks

Metabolic rift : embedment of social practices in other dimensions

→ towards socio-organizational metabolic rift and socio-ecological metabolic rift

HP : urban agriculture could “mend the metabolic rift” in ecological, economic and social terms and it is changing the chain and the geographies of wastes

- No questioning of the system, only a hybridization (ex: experimentation industrial chain (“hygieniser” - methanizer in Angers)
- No profitability of chain (“600E/ton of composted waste ”- 4 times more than incinerated waste)

Perspective : focus on collective composting, more data on compost production, investigation on others producers of bio-waste.

Literature

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Thanks for your attention.....

and

let's continue this discussion

Acknowledgement : Brittany Region; ADEME