RÉPUBLIQUE FRANÇAISE
Liberté Égalité Fraternité

INRAE

Bioeconomy for urban areas

PeriUrbanWasteEng

Consortium 2020

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Key words

Flows
Territory
Biowaste
Bioeconomy
Circular economy
Urban/peri-urban areas

INRAE divisions

ACT
AGROECOSYSTEM
ECOSOCIO
TRANSFORM

Toward agricultural and food waste engineering in increasingly urban peri-urban areas: how can waste be transformed (or not) and for what uses?

> Promote circularity by valorising and reducing waste

Context and challenges

Food systems (agricultural production, transport, storage, processing, distribution, purchasing, consumption) produce waste at every stage and in different ways depending on the situation and region, and involve different actors: farmers, processing professionals, associations, households, restaurant owners and caterers, and ultimately everyone who eats. The corresponding carbon footprint is estimated at more than 3 billion metric tonnes of CO2 per year, i.e., 6.7% of global greenhouse gas emissions.

Goals

Reducing waste is possible "at the source", by limiting losses and waste, but also through a logic of circularity of flows, by promoting the use of some waste as raw material for other uses. That is why our consortium wishes to further explore waste engineering by applying the logic of circularity of flows not only to reduce waste but to recover it. A suitable scale to carry out such studies seems to be local, i.e., at a limited and consequently manageable scale. That is why we suggest this project Is limited to Saclay plateau and Versailles plain. The research objective of our network is to exploit agricultural and food waste engineering in increasingly urban peri-urban areas to answer the following question: How should waste be transformed (or not) and for what uses?

Answering this question requires analysing the current situation and understanding stakeholders' and consumers' expectations. On this basis, we will explore the potential of combining better waste recovery (the idea being a domino effect rather than traditional solutions with little added value) and reducing waste (and consequently the associated impacts). With this aim in view, we will promote more efficient economic and ecological business models while at the same time accounting for how the system is organised (stakeholders; institutions; processes; relationships

between the different components of the system; the scope and limits of the system and interactions with the outside world.

The specific goals of this project are the following:

- **Build a shared understanding of how waste management is currently organised and identify the associated regional stakes:**
  - make an inventory of available data (by consulting ongoing projects, actors in the field, etc.) that offer insights into the typology of agricultural and food waste, where the different types of waste are found and how waste products are currrently used on the Saclay plateau and Versailles plain;
  - Synthesize data to quantify flows and grasp the current organisation of systems and the associated regional stakes;
  - Assess the expectations of stakeholders, including consumers, when it comes to the issue of waste management.
- **Define common interdisciplinary research topics to take up these challenges, by designing collaborative projects.**
  - To this end, we will organise innovative design workshops based on the KCP method, which has already proved useful in pinpointing original interdisciplinary topics

Project members

INRAE division	Units	Expertise and contributions
ACT	UMR SADAPT	Local governance of the circular economy, Environmental socio-economics, Sociology of Law, Urban metabolism, material flow analysis, analysis of food waste
	UMR LISIS	Describing uses
AGROECOSYSTEM	UMR AGRONOMIE	Agronomy, coupled innovations
	UMR ECOSYS	Agronomy, soil sciences, effects of returning Organic Residual Products (at plot and regional scale) to the soil
ECOSOCIO	UMR ALISS	Management sciences (regulatory models, public action, consumers'/stakeholders' expectations, forecasting)
TRANSFORM	UMR SayFood	Processing and bio-processing procedures (food / bio-products), Eco-design, Process engineering – re-territorialisation of food processing, Eco-design
	UR PROSE	Sensory engineering, consumer sciences, food waste, Environmental biotechnologies, waste management and recovery