

The European House
Ambrosetti



ThinkTankBasilicata
Energie per un futuro sostenibile

FORUM

“Energie per un futuro sostenibile”

Venerdì, **25 febbraio 2022**

modalità phygital
Matera, *Palazzo Viceconte*

PRESENTATION BY
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A circular bioeconomy at local level

The DECISIVE project

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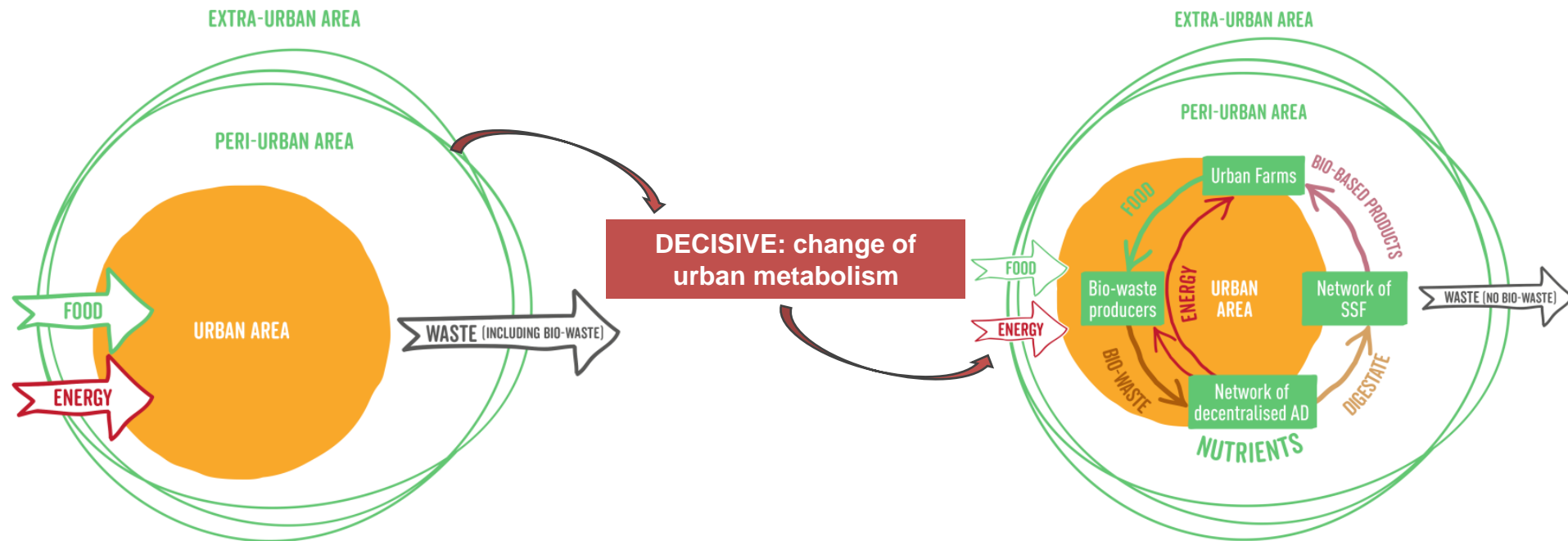


This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 689229.

What is DECISIVE about?

A new paradigm of urban organic waste management :

- promotion of networks of decentralised/proximity treatment sites
- short circuits and circular economy in the urban/peri-urban space



Sept. 16

Oct. 21



DECISIVE: An integrated approach

Multi-stakeholders

Research organisations ; public service ; association and foundation working with cities ; waste operator ; process sellers ; urban farm ; expert committee (public authorities, citizens, politicians)

Concept and tools Consolidation platform

Biowaste decentralised management system: concept and impact indicators

Decentralised AD and SSF processes

Integrated decision support tool for planning system implementation

Innovation Demonstration platform

Demonstration implementation

Eco-innovation assessment

Waste prevention

Social, ecological and economic impacts

Business outlooks

Communication and Dissemination

Multi-disciplinarity

Geographical analysis ; material flow analysis ; network analysis ; environmental and sustainability assessment ; economic and social assessment ; bioengineering ; waste characterization

Which results were targeted in DECISIVE?

Organisational innovation:

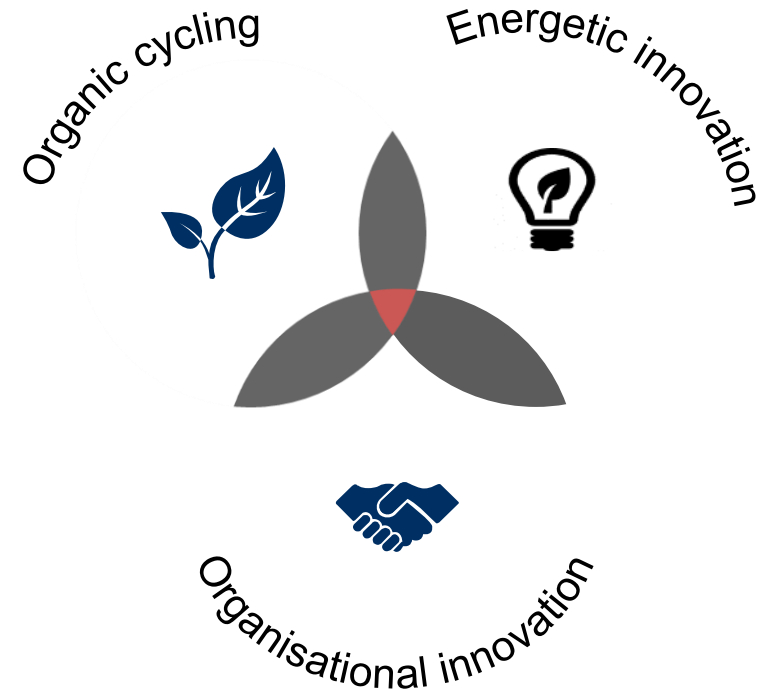
- A method to plan efficient (enough simple and accurate) decentralised management scheme for urban organic solid waste based on urban metabolism study

Technological innovations:

- Micro-AD and biogas local valorisation
- SSF

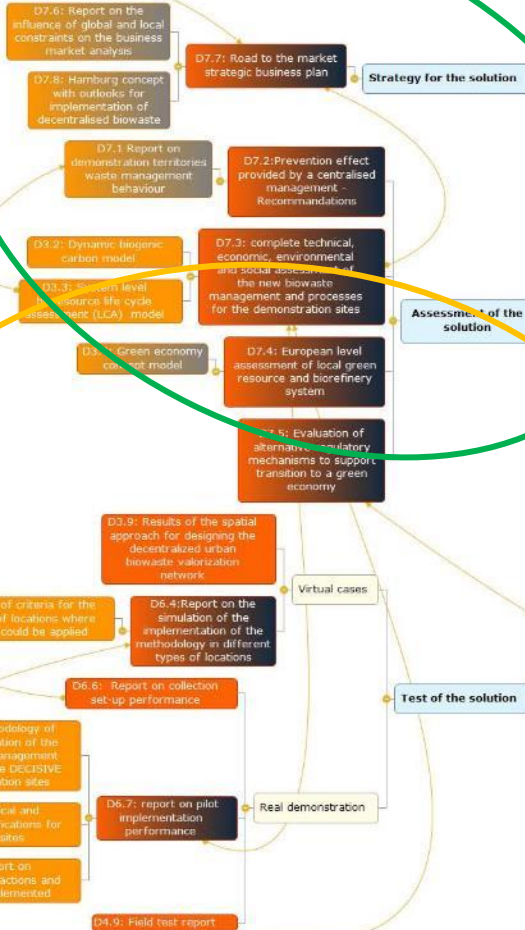
Policy and economic innovation

- Guidelines/advice for environmental Policy
- New businesses

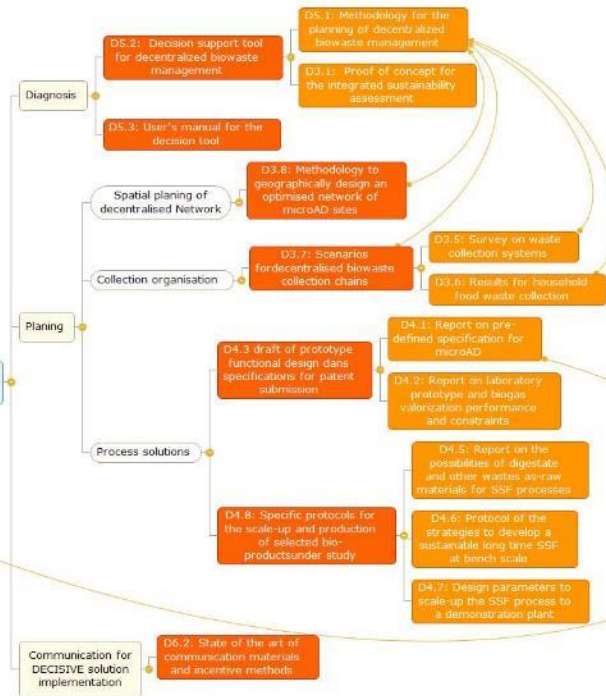


Five years for numerous results...

The Outlook



The Idea



The Reality

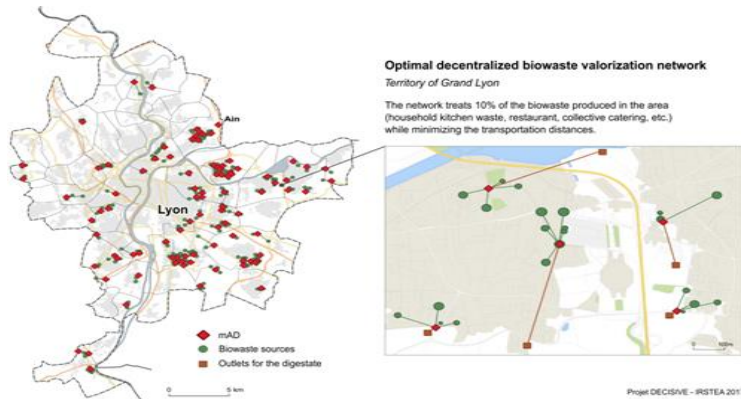
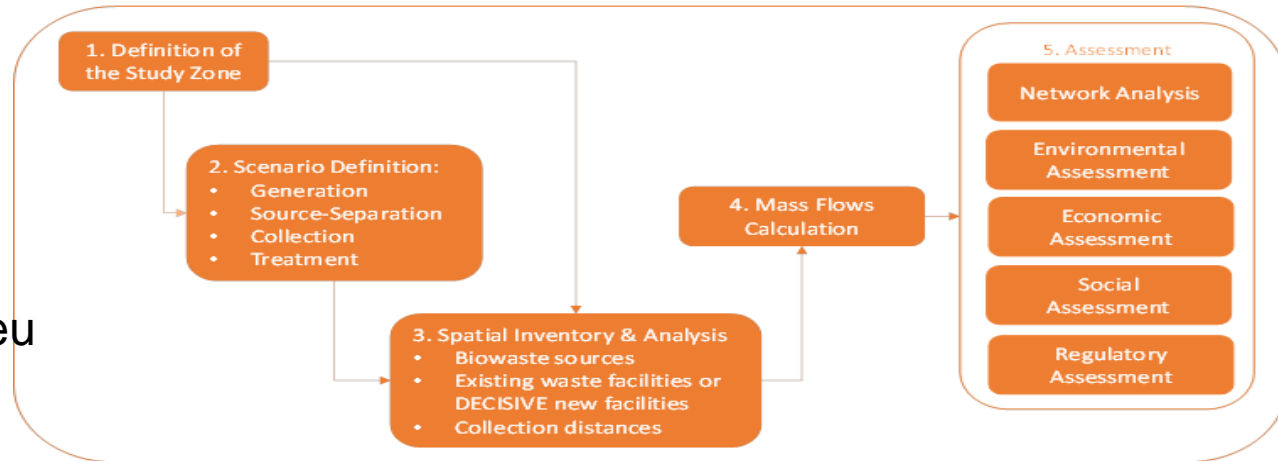
Tools for decentralised management planning

- Decision support tool

- Current situation
- Scenario proposals
- Assessment

<https://dst.decisive2020.eu>

WORKING FLOW



- Spatial optimization of decentralised networks

- Inventories of sources, locations, valorization points, surrounding farming
- Optimization on distance, regulatory obligations, etc.

Technical solutions

- **Micro-anaerobic digestion**

- Benchmark and demonstration of commercial solutions
- New process development at *INRAE Rennes*

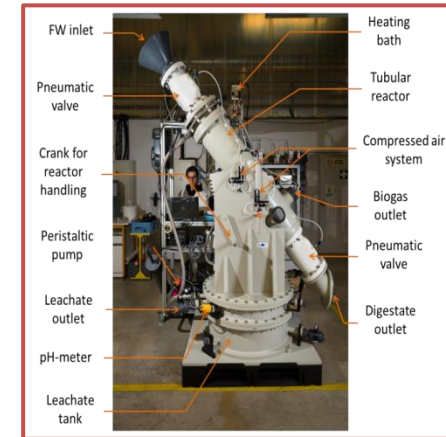
- Biogas valorization with **Stirling Engine**

- Developed by *ITS Energy* (Italy)
- External combustion (less biogas pretreatment)



- **Solid substrate fermentation (SSF)**

- Developed by *UAB* and *aeris* (Spain)
- Production of a biopesticide with digestate



Bt and parasporal crystals.

Demonstration of the concept: the reality

Demonstration 1: Solution for biowaste from restaurants (50t/y)

Hydroponic culture
Tray-grown plants
Soil-grown plants

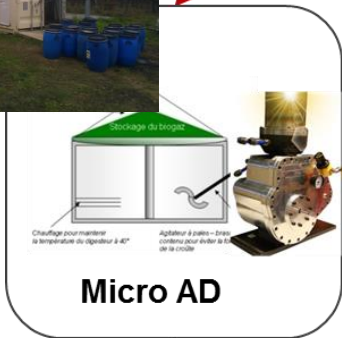


FARM



SSF

ENERGY



Collection =
SOCIAL
BUSINESS



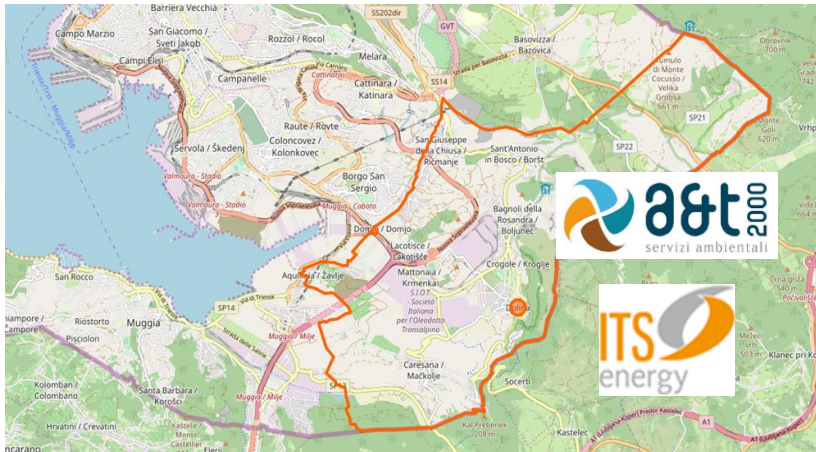
RESTAURANTS

Demonstration of the concept: the reality

Demonstration 2: Solution for an isolated city (200 to 400 t/y)

- Dolina, Italy

- Community far from waste management solutions in the area
- Household bio-waste + restaurants
- Link with local agriculture



Project main lessons

- The concept is feasible
 - Importance of communication and network for implementation
- Technical processes are ready
 - High adaptability
- Quality of the biowaste is not a real problem
 - Training and Time are keys !
- Environmental profit can be obtained

- A complementary solution to centralised systems => introduction for urban biorefinery
 - Interest of authorities / municipalities / private stakeholders

Barriers to be overcome

- **Administrative/legal**
 - Lack of specific status for proximity AD (in comparison to composting)=> what about other biorefinery concepts?
 - Still limits in terms of digestate products status
 - Complexity of bureaucratic procedures may discourage new stakeholders
 - Needs for specific incentives
 - Push all actors to adapt and comply
- **Business models**
 - Lack of valorization of positive externalities
 - Low development of urban farming
 - Scale of circular system is still a question

Contact

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