



# GOEfluentes

## Livestock effluents: Farm scale effluent management towards agronomic and energetic valorization

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Annual Meeting *EAAP 2018*  
Dubrovnik, 30 August 2018





PROGRAMA DE  
DESENVOLVIMENTO  
RURAL 2014-2020

## Measure 1. Promotion Innovation

### Action 1.1. Innovation by Operational Groups

**Domain 1. Increase of resources efficiency in agriculture and forestry production**

## Practical Problem:

- Livestock production is concentrated in certain regions, some without enough area for land spreading valorisation of effluents.
- Therefore, in order to be competitive and comply with legal requirements, the sector should promote a circular economy, pursuing new alternatives for effluents management.

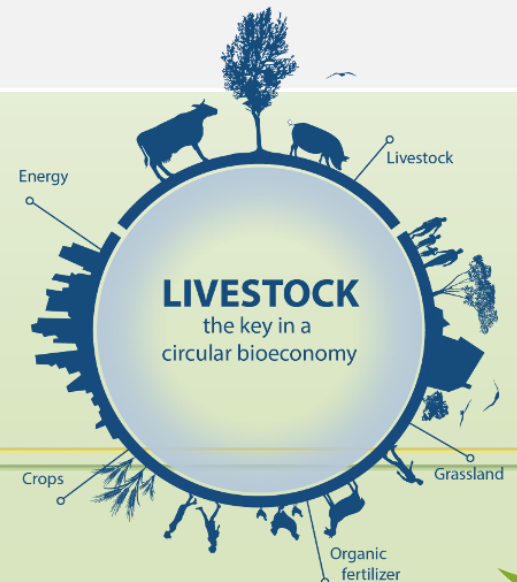


## Objectives:

- Valorise livestock effluents as a resource, focusing on the production and integrated management of the different flows generated;
- Optimize effluents use as secondary raw materials, recovering energy and nutrients, improving farm nutrient balances and promoting sustainable management.

➤ CIRCULAR ECONOMY

➤ ZERO RESIDUE



## PARTNERSHIP

➤ 4 Research/Teaching



➤ 3 Agri Associations



➤ 6 Agri Enterprises



## Livestock Systems

- Dairy cattle
- Pigs
- Poultry





## ACTION PLAN

### Action1. Caracterization of intensive livestock systems

- State of the art
- **Surveys**

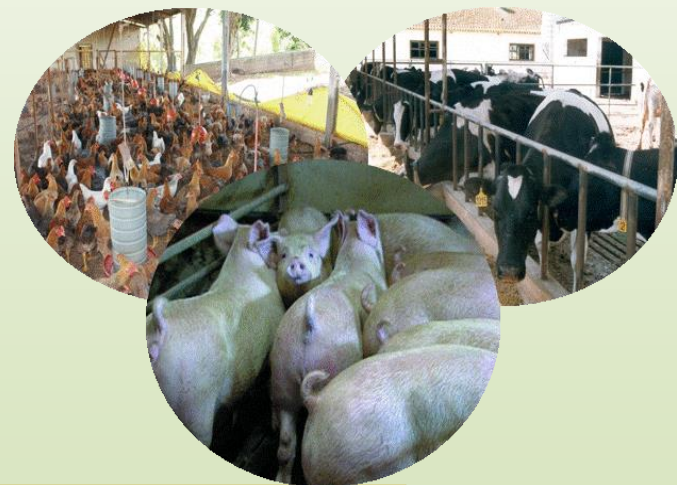
### Action 2. Mitigation measures for gaseous emissions and primary livestock effluent treatment

### Action 3. Valorization of livestock effluents as a resource

- Composting of dairy cattle manure
- **Anaerobic digestion of livestock effluents**
- Biodegradation of livestock effluents by BSF larvae
- Agronomic valorization
- **Bioenergy production**

### Action 4. Socioeconomic impact studies

### Action 5. Demonstration and Dissemination



## Task 3.2/3.5

- ✓ Selection of the demo farm (for AD mobile unit deployment)

**Closed cycle farm with 900 sows and 5.000 finishing places**

Gestating sows



Farrowing sows



Weaners



Growing/finishing pigs





## Task 3.2/3.5

Slurry from all stages



Equalization tank



Solid/liquid separation



Liquid  
phase



Storage in Lagoons

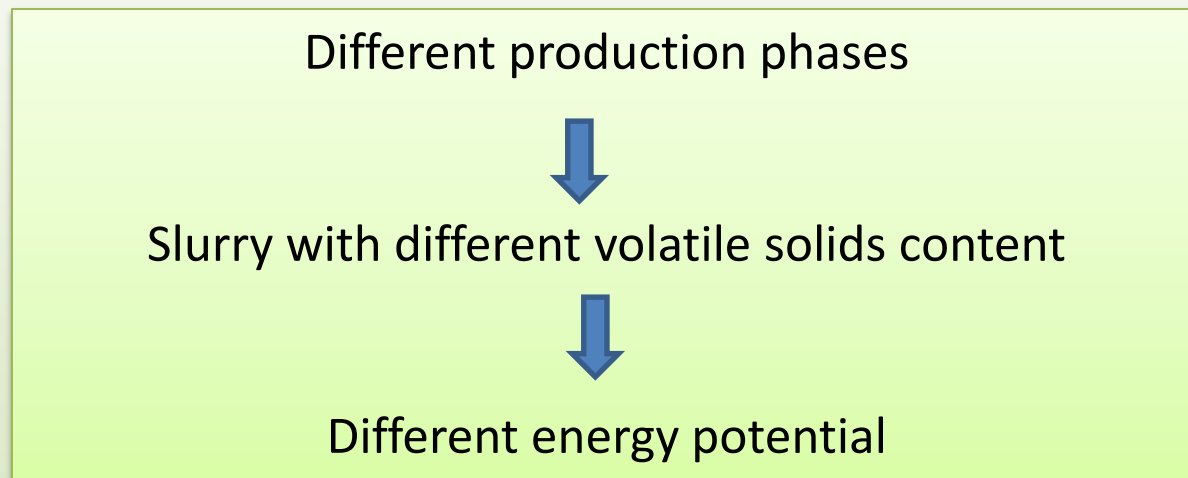
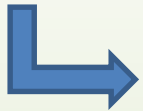


Solid  
phase

Soil amendment

## Task 3.2/3.5

- ✓ Characterization of the pig farm (type and performance)
- ✓ Slurry collection and characterization

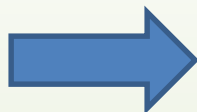


## Task 3.2/3.5

### Growing/finishing pigs



**Total solids = 50-80 g/L**  
**TVS/TS = 75-85**



**Ongoing**

Lab-scale AD  
trials

**Future**

Deployment of the AD mobile unit on  
farm for growing/finishing phase



## FINAL REMARKS

### ➤ **Expected results**

- ✓ A roadmap for effluents management, including technology portfolio, linked to farm characteristics and regional constraints;
- ✓ Support decision making on centralized/decentralized solutions;
- ✓ Contribute to sustainable livestock intensification and landscape planning, to face climate change and resources scarcity.

### ➤ **Results so far/first lesson**

Recognition of the need for:

- ✓ Integration of livestock production data at local/regional/national scale;
- ✓ Landscape planning for livestock production towards environmental sustainability, sector competitiveness and rural development.

### ➤ **Who will benefit?**

- ✓ The beneficiaries will be the animal producers and farmers, its sustainability and the image and brand of the sector.

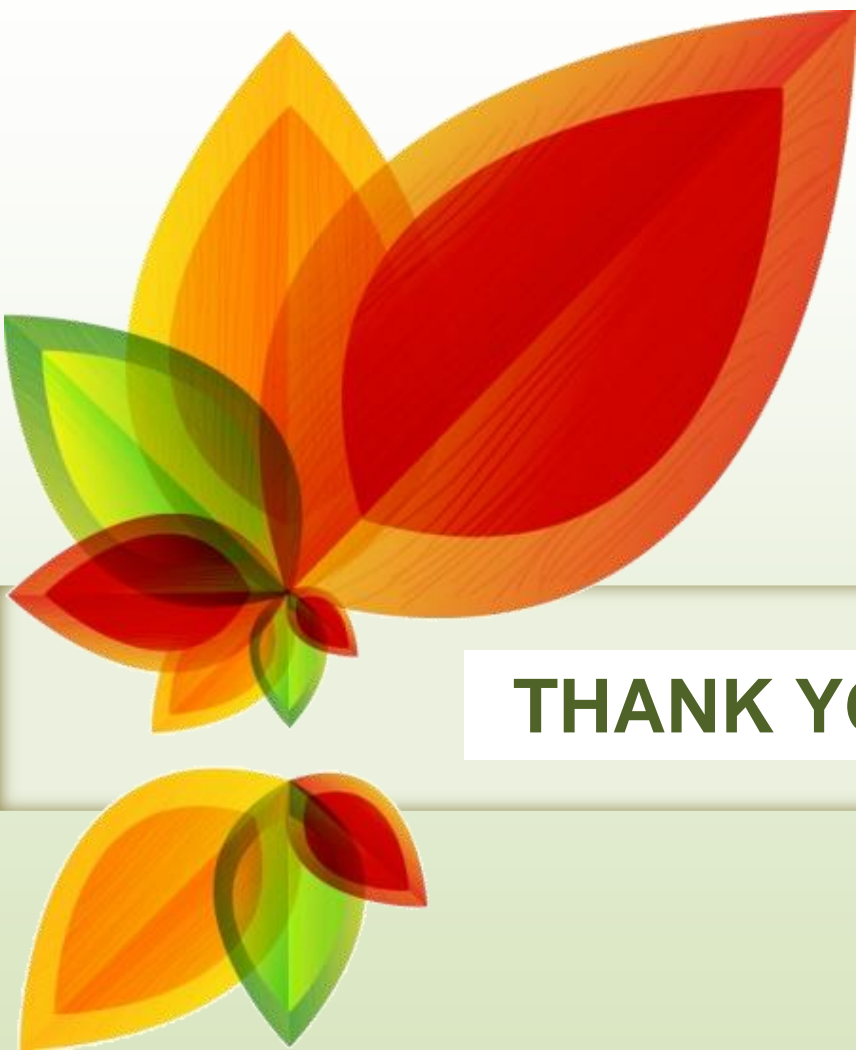




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**THANK YOU FOR YOUR ATTENTION**

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