



# BIO CIRCULAR CITIES

Exploring the circular  
bioeconomy potential  
in cities

## First Living Lab

The Region of Pazardzhik

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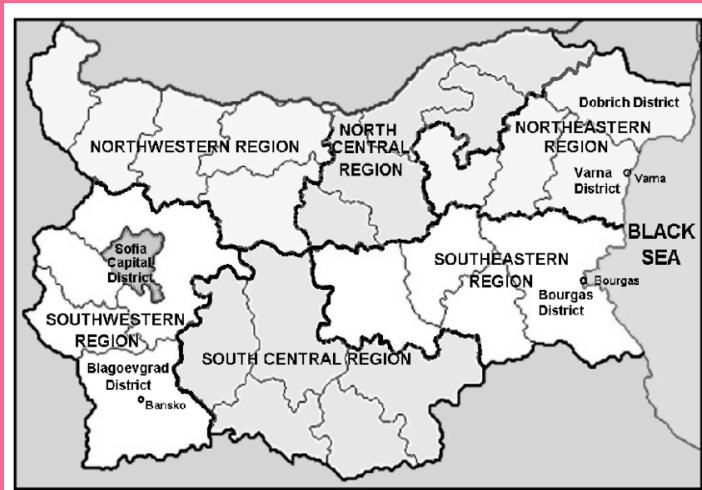
Pazardzhik, Bulgaria



# Biowaste: state of the art

The Region of Pazardzhik - pilot territory

# Region of Pazardzhik



# Main characteristics of the pilot territory

- One of the 28th Administrative regions in Bulgaria
- Part of South-Central Region of Bulgaria – one of the six Planning Regions in Bulgaria
- 12 municipalities and population of about 251,000 people
- 56% of the total area is forested and 36% is agricultural lands
- The region is considered as rural, however ...
- Well developed industry sectors like: paper and cardboard production, biotechnology, mining and processing of ores, clothing and shoe producers, etc.

# Description of the current biowaste management

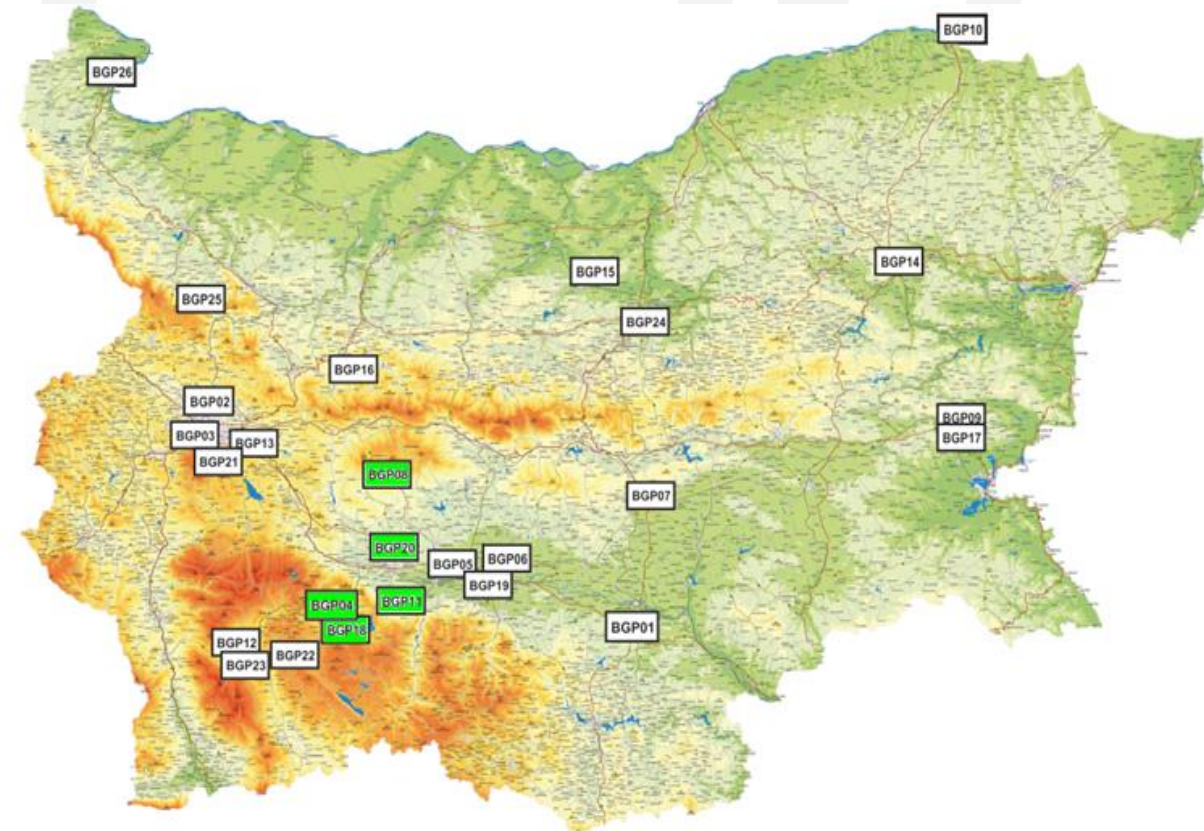


- Some key findings so far related to MSW (Municipal Solid Waste):
  1. Separation is done at municipal landfills, not at the points of collection.
  2. The total amount of MSW is gradually decreasing (366 kg/capita/year) which is also the same at the national level (406 kg). Reasons are: Decreasing population; Introduction of electronic accounting of the amount of waste through the use of electronic scales; Raising people's culture and awareness of minimizing household waste.
  3. The number of landfills significantly decreased in 2018. This is due to the opening of a new modern landfill close to city of Pazardzhik, which is a regional landfill and services 7 municipalities in the Region.
  4. Average household waste per capita in Pazardzhik was significantly below the average for the country. Average municipal waste per capita is far below the average value for the EU (about 500 kg/capita/year).

# Description of the current biowaste management

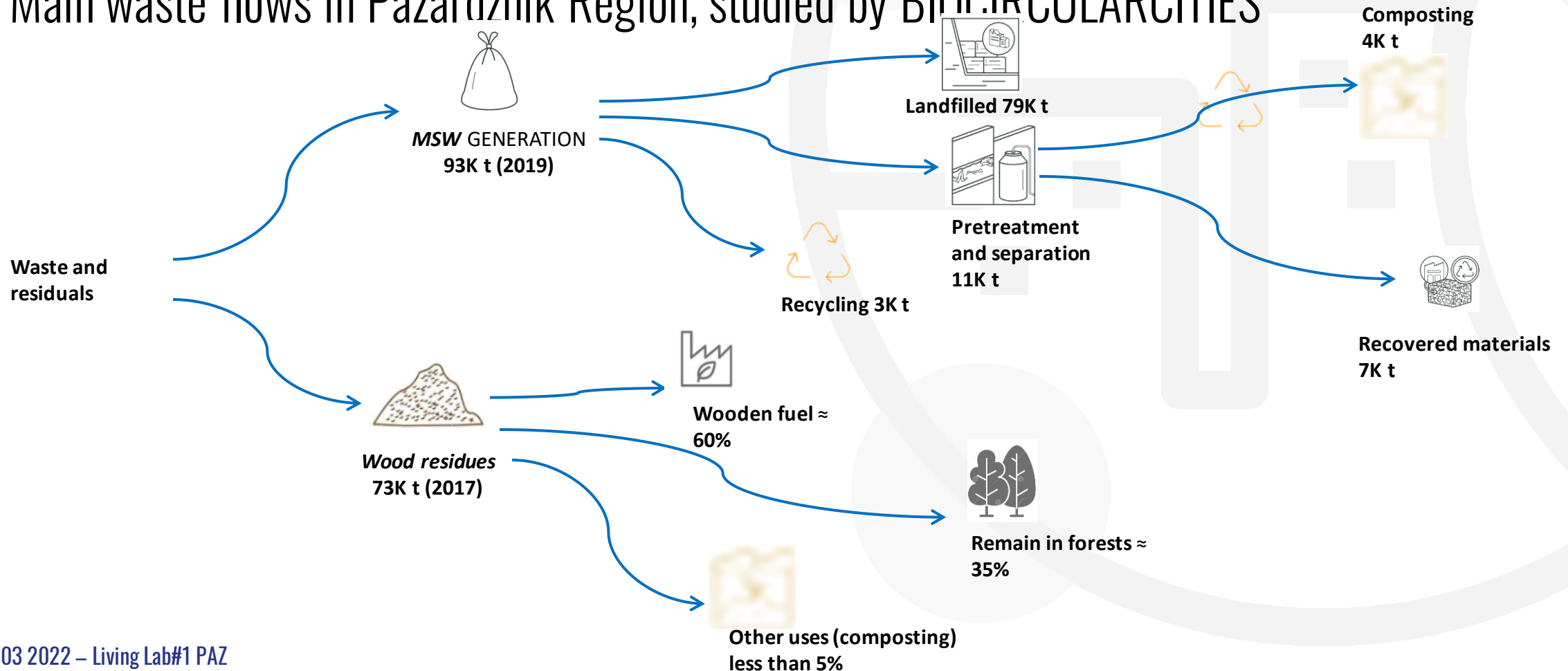


- Some key findings so far related to biowaste from agro-forestry sector:
1. Total forest wood stock amounts to 57 633 674 m<sup>3</sup>, which ranks the region second in Bulgaria.
  2. Total annual extraction of wood from forests: 526 500 m<sup>3</sup>.
  3. Forest wood biomass:  $\approx 110\,000$  m<sup>3</sup>.
  4. Not all of this biomass is being used.
  5. Total annual production of pellets: around 70,000 tons per year



# Waste diagram – main flows

- Main waste flows in Pazardzhik Region, studied by BIO CIRCULAR CITIES





# Selected biowaste chain

The Region of Pazardzhik - pilot territory

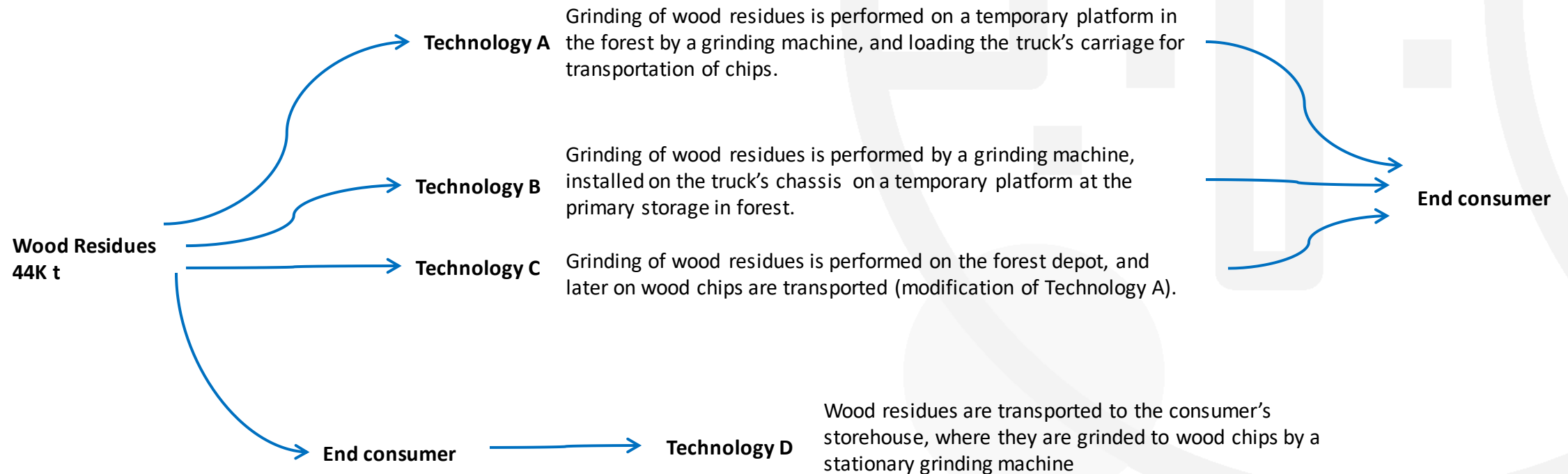




# Biowaste chain selected in the Region Pazardzhik

## Pilot in Pazardzhik

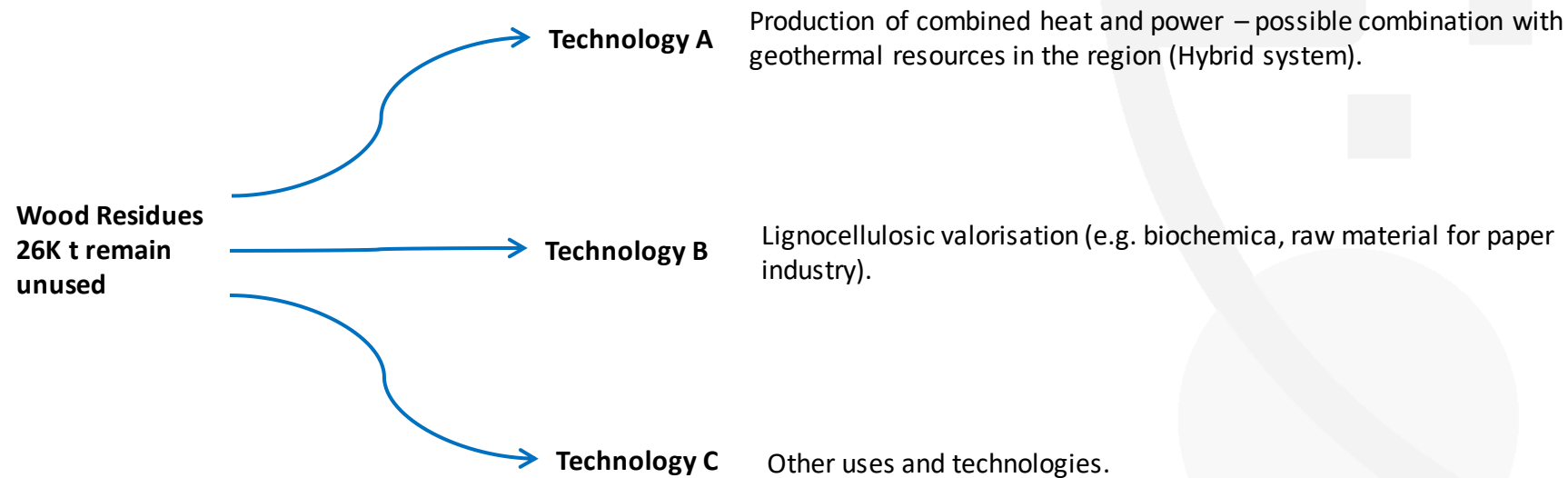
- **Business as usual (BaU):** Biowaste from agro-forestry chain in Pazardzhik (both forestry residues and wood processing waste) + transport + disposal in the field or in a landfill.



# Biowaste chain selected in the Region Pazardzhik

## Pilot in Pazardzhik

- **Alternative:** Biowaste from agro-forestry chain in Pazardzhik (both forestry residues and wood processing waste) + transport + energy valorisation treatment (e.g. CHP plant) or/and lignocellulosic valorisation (e.g. biochemicals).



# Policy framework on circular bioeconomy

The EU and the The Region of Pazardzhik context



# Approach

- Aims

- Review of regulatory framework related to circular economy and biowaste management both at European and local level in the selected areas of study
- To identify barriers and opportunities that limit or promote the circular use of bio-based products and processes

- Scope

- Territorial level: European, National, Regional, Local
- Where and which are the barriers?
- Can be circularity really promoted?



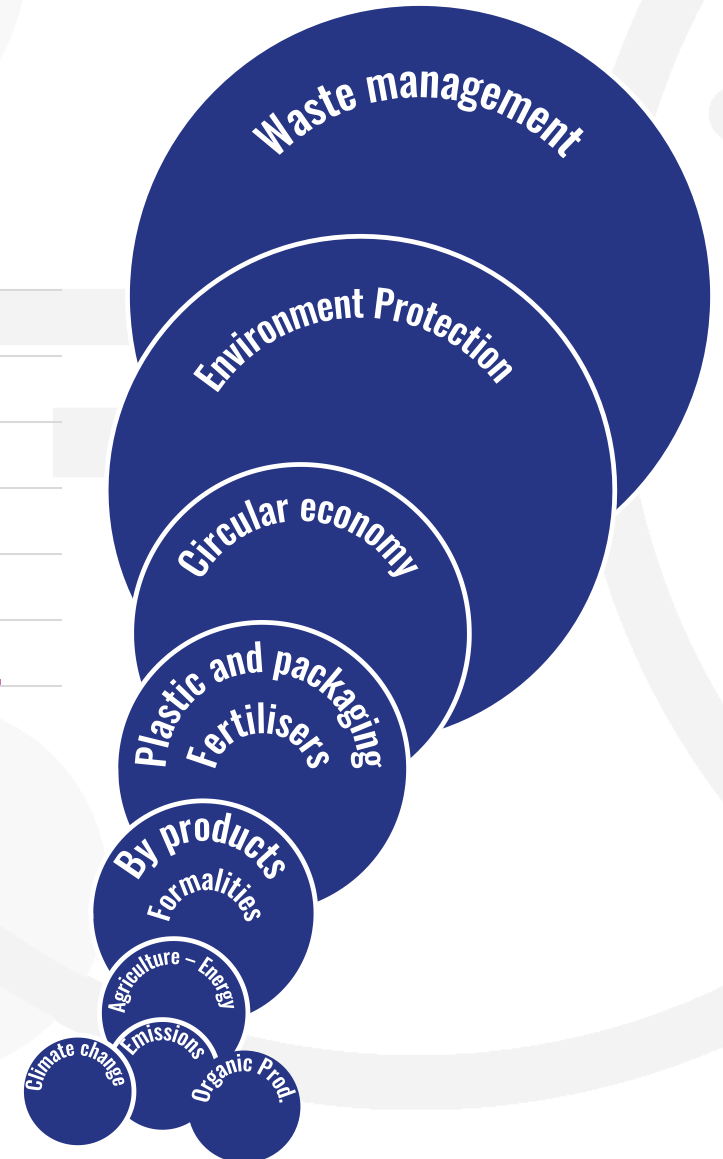
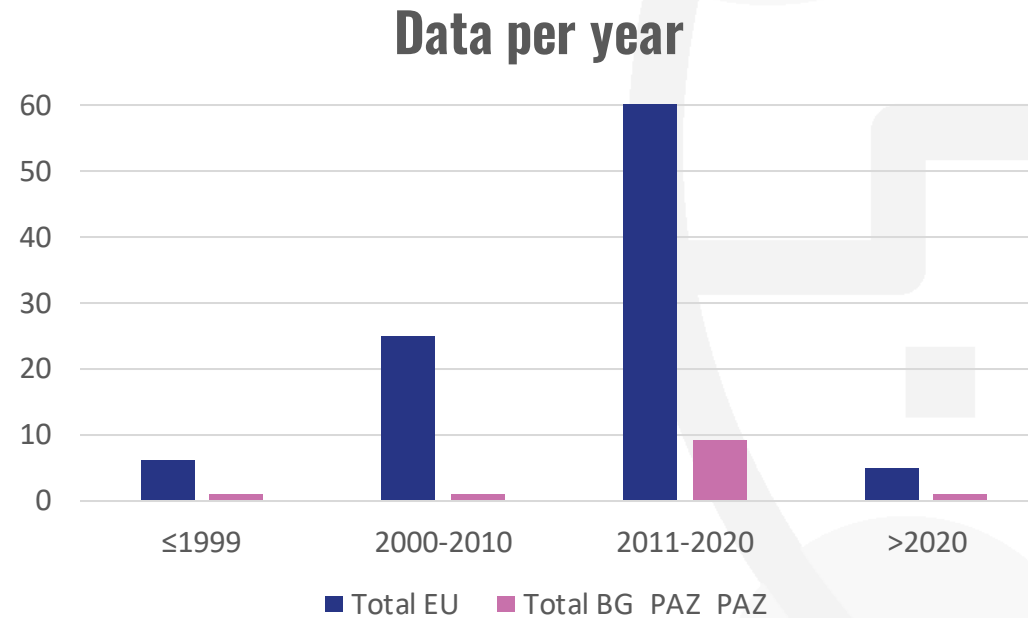
# Summary of Regulatory and policy framework



- Evolution along the years.

## Pilot: PAZ

- Europe
- Bulgaria
- 12 municipalities of Pazardzhik
- Pazardzhik province



# Relevant Plans and Directives at EU level



## CIRCULAR ECONOMY

### • Planification

- COM(2015) 614 final. Closing the loop. An EU action plan for the circular economy
- COM/2018/673 final. A sustainable Bioeconomy for Europe: Strengthening the connection between economy, society and the environment
- COM/2020/98 final. A new Circular Economy Action Plan for a cleaner and more competitive Europe

### • Main regulation

- Waste Framework Directive. Directive 2008/98, on waste and repealing certain directives
- Landfill Directive. Directive 1999/31, on the landfill of waste

# Key messages from regulation framework in biowaste chain (EU level)



## • Key messages at European level

### Landfill:

Directive 1999/31  
Directive 2018/850

- Reduction of biodegradable waste in landfill
  - Prohibited in landfill: BW of MSW from separate collection
  - 2035 – only 10% of MSW to landfill

### Waste:

Directive 2008/98  
Directive 2018/851  
Decision 2019/1004

- Obligation of separate collection or recycling at source of biowaste (from 31st Dec 2023)
- Recycling targets of municipal waste (in weight)
  - 2025 – 55%
  - 2030 – 60%
  - 2035 – 65%

### Recycling:

Decision 2019/1004

- Bioestabilised from MBT will not account for recycling rate



# Key messages from regulation framework in biowaste chain (local level)



- Key messages at local level

- Reduction of organic waste in landfills
- Separate collection of waste – start in reality.
- Recycling and reuse of waste
- Current system of waste taxation of households – possible improvements ...

<http://eea.government.bg/bg/nsmos/waste/legislation>



# Good practices

The Region of Pazardzhik - pilot territory



# Approach

## • Aims

- Identify actions that can increase value of biowaste collected

## • Scope

- Territorial level: European, National, Regional, Local
- Main topic: biowaste as main
- Related topics:
  - Technological innovation
  - Optimization and efficacy of collection System
  - Communication and dissemination activities
  - Fiscality
  - Control, surveillance, and sanctions



- Prevention
- Separate collection
- Preparing for re-use
- Decentralised treatment
- System Nudge
- Optimization biodegradable waste composting plants

# Most relevant good practices in biowaste management (local level)

- Relevant good practices for the pilot (PAZ) coming from Bulgaria

## Waste Management Policy:

New technologies and approaches have been introduced

- Waste: municipal waste
- Previous management
- New management



# Most relevant good practices in biowaste management (local level)

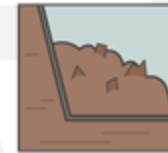
- Relevant good practices for the pilot (PAZ)

## Treatment of biowaste:

Belovo Site for Composting of Green Waste

- Waste: green waste

- Previous management:



- New management



# Challenges and good practices in the management of municipal and agro-forestry biowaste

**Collaborative exercise in Mural on critical issues and potential strategies or good practices to improve the management of organic waste of municipal and agro-forestry origin**

Each participant will share her/his opinion by answering the following question:



**40 minutes:**

10 minutes writing  
20 minutes round table  
5+5 voting & conclusions

Based on your experience, could you please indicate challenges (regulatory, technological, economical, social) of the municipal and agro-forestry organic waste management system and could you please suggest some strategy or good practice of biowaste collection, treatment and valorisation?

MURAL LINK:

<https://app.mural.co/t/fundacioent1413/m/fundacioent1413/1648460312248/ea10d9f1e8f774987e9c2c5ce951eeb994317f85?sender=uf5af56d1f9f0ac3f08b41378>



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## Thank you

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