

Name of the technology: 3.3 Biogas from agro-zoo technical waste

Stage of development:

Widely used technologies (the technology is used by many actors on global/EU level).

Technical application:

Typical applications to produce electricity and thermal energy.

Short summary (up to 200 characters):

The large amount of agricultural waste generated in the EU each year is a headache for farmers.

According to specialists (AGROBIOGAS EU Project) decentralizing anaerobic digestion (AD) by using co-digestion with other organic residue could boost the efficiency of AD with agricultural waste. Using a co-digestion design would give farmers the chance to treat their agricultural waste and other organic materials at the same time. But they could also make money by treating and managing organic waste from other sources, as well as using or selling its outputs (e.g. electrical power).

Animal effluents are defined as those which can be collected using a shovel and those not: the first ones are essentially manure (bedding waste) and the second ones are sewage (waste without bedding).

Justification – why was this technology selected (up to 500 characters).

Anaerobic digestion is interesting in the agro- zoo technical sector and could play an important role in the 'green economy' as it may represent a key technology to minimize environmental impact and produce renewable energy.

Generally, the principal environmental benefit derived from biogas plants is the mitigation of GHG emissions, taking into account both the indirect benefits achieved by replacing fossil fuels with renewable sources and the direct ones coming from the capture and re-use of produced biogas, changes in land use, raw materials and animal effluents management.

Another advantage is: a significant reduction in the level of odour of sewage stored after the treatment (the digester) and emission of other volatile organic compounds.

Characteristics (up to 500 characters):

The transformation of raw material in biogas in the anaerobic digester does not present any particular environmental negative effects. The eventual emissions (H₂S, NH₃, GHG) can come from occasional incidents due to the gasholders breaking.

Obviously, the benefit is linked to the reduction of fugitive GHG emissions, in particular CH₄, normally emitted from animal effluent storage facilities.

Impact on the economy (up to 1000 characters):

The technology is mature and proven. Main impact is on environment benefits: reduction GHG emissions, reduced odours. Advantages: implementation of green heat and electricity, increased waste recycling, rural development (new business, new activity in rural areas, new jobs).

From all the renewable resources, biomass is the only one which remains available at all times and also can be converted through different methods necessary to provide transmittable power.

The general form in which biomass is converted is biogas and the installations created for this purpose are in a large range.

Biomass is one of the most important renewable resources in the Romanian territory. Traditionally, it has been

used by the rural population and on the towns' outskirts, but with traditional equipment and technologies.

On the long term, significant amounts of biomass for electricity and heat generation are available and should be provided by short rotation energy plants or by annual intensive crops

Global development (up to 1000 characters):

Biogas deriving from animal effluents constitutes an ever increasing commodity in some EU member States (such as, Germany, Denmark, Sweden and Austria) and also great potential in other states (such as Italy).

Denmark (20 centralised plants in operation, 60 farm scale plants in operation) Technically well operating; Economically viable, but co-digestion so far very important. Energy application: Electricity sold to the public power grid + Heat sold to district heating systems.

Biomass resources: Liquid manure - could be different (Organic waste –0-20 %, depending on the quality - From food processing industries. Why is waste important? 1 tonne liquid manure 5% DM = 20 m3 biogas // 1 tonne organic waste = 0 –1000 m3 biogas. Energy from renewable source is at competitive prices with the environment benefits. Market access and still attractive electricity prices. Open minded authorities and organisations. Incentives for farmers.

Milestones¹ (*List at least one milestone per year against which the progress towards the achievement of the local/regional 2020 targets can be measured*)

Given the scope of the roadmaps (municipally or regionally based) technological improvements that would require major research and development processes would tend to fall outside of the scope of these roadmaps. This does not necessarily mean that such technological improvements cannot be used as milestones, but that before any such technological improvements are stipulated in the milestones, the capacity of the municipal and/or regional stakeholders, and the capacity of the municipality/region to collaborate with external partners, should be carefully considered.

Milestones more likely to fall within the scope of this roadmap are those that are able to help measure desired changes in the deployment and/or wider usage of the previously identified key energy technologies or those that measure the effects of this changed deployment or usage (i.e. production of thermal energy (GWh); increase of thermal energy production (%); installed capacity (GW or m2); increase of installed capacity (%); CO2 reduction (t)).

Year	2015	2016	2017	2018	2019	2020
Milestones				1 MWe installed capacity		

The group assumed a hypothetical amount of 1 MWe of installed cogeneration biogas from agriculture waste plant until 2020.

They assumed an installed capacity of 1 MWe in year 2018.

Financial Gaps

(List financially related challenges that need to be addressed in order to increase the uptake/wider usage of this technology)

1. Lack of predictability when launching the financial instruments at national level.
2. Lack of institutional capacity of existing Programs Implementation Units (ESIF)
3. High bureaucratic public procurement procedures
4. Lack of cooperation between public authorities and private investors.

Policy Gaps

(List important policy gaps that prevent the uptake/wider usage of the key technology)

1. Contradictions and major issues in promoting, developing, implementing and operating RES in terms of financial and legal environment
2. Lack of interest and active involvement on behalf of central governmental authorities – ministries and national regulatory bodies
3. Lack of interest from projects developers for disseminating, sharing experience, know-how and best practice
4. Lack of awareness-targeting actions meant to increase knowledge on legislative provisions, financial and technical solutions
5. Lack of institutional transparency and high bureaucratic public procurement procedures.

Financial Instruments and Period of Implementation

(List all relevant financial instruments that can address the above financial gaps and will contribute to the uptake/wider usage of the key technology. Please add the start year and years of important developments for the financial instrument.)

1. Support Actions for public-private partnership (PPP)
2. Support schemes for legal entities (reinvestment of profit)

Policies and Period of Implementation

(List all relevant policies that can address the above policy gaps and will contribute to the uptake/wider usage of the key technology. Please add the start year and years of important developments for the policy.)

1. Rising the level of importance and involvement of the local authorities
2. Transposition of the new Public Procurement Directive as well as the ex-ante conditionality on Public Procurement for accessing EU Structural funds 2014÷2020
3. Increasing institutional capacity of existing Programs Implementation Units (for accessing ESIF 2014-2020) in order to assist from the early stages of the project and reduce project evaluation processes

Stakeholders

(List all relevant stakeholders for the implementation of the policy and/or financial instrument above)

1. Municipalities, administrations, ministries.
2. Building associations, corporations.

Policy Recommendations

(Relevant policies for this particular technology have already been identified above. This section aims to provide the steps needed for the practical implementation of the policies and financial instruments listed above.)

- 1. Identification of “Champions” that could be the motivated players in starting the public-private partnership (PPP).**
- 2. Organise meetings to develop the public-private partnership (PPP).**
- 3. Formally launch public-private partnership (PPP) and start procuring reciprocating engines at preferential prices.**