



4.2.1 INVENTORY AD PLANTS

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1 INTRODUCTION – BACKGROUND SCENARIO

Data on AD plants operating in target Regions were collected. A questionnaire was prepared and passed to different companies through project partners. Information related to the size of the AD plant and the feeding were collected and analyzed. Main results are summarized in this document.

2 DATA ANALYSIS

Data collected considered two different aspects: information of the plant and its feeding, and information related to willingness in using grass in feedstock.

2.1 AD PLANTS AND FEEDINGS AT REGIONAL LEVEL

2.1.1 BELGIUM-FLANDERS

There are 43 large AD plants in Flanders, 38 in operation. All of these were contacted, however only 14 actually responded to our query. 3 of the interviewed AD plants use roadside verge cuttings and sometimes small amounts of grass coming from landscape management. Based on an earlier questionnaire as well it is estimated that no more than 7 of the large AD plants digest grass.

For the Flemish plants in general, the output greatly differs; the installed capacity varies from 732 to 7445 kWe. Most of the plants operate within the 1000-4000 kWe region, however. Permits for the digestion of biomass vary from 7500 to 225000 tons per year, with most installations being limited to 60000 tons. Input streams in Flanders include organic biological waste (1022 kton/y), manure (303 kton/y), energy crops (212 kton/y) and VGF waste (93 kton/y). (Source: Voortgangsrapport Biogas-E 2014)

2.1.2 DENMARK

In Denmark 159 biogas plants were in operation in 2012. One third is operating in wastewater treatment plants, while 70 are centralised or decentralised AD plants using biomass in the feedstock. As for centralised and decentralised AD plants, which are of interest for the GR3 project, maize and sugar beet are often used as feedstock. Also grass is reported but is probably crop grass. Other plant use also manure (dung) and straw.

2.1.3 GERMANY-SAARLAND

In Saarland 14 AD plants were interviewed: 13 of them use grass intended as agricultural, permanent or landscape management grass. All plants use crops silage (maize, cereals....) and some of them also manure, liquid, solid or both. Most of the grass used in feedstock is originated from permanent grassland. Typical size are < 300 kW electric power.

2.1.4 ITALY-VENETO

At the moment some 140 AD plants are in operation in the Veneto Region. Of these, 20 are industrial AD plants, while 120 are farm plants. Two different type of AD plants were therefore considered in the interviews: AD plants using biowaste (food waste from separate collection) and wastewater sludge in the feed or AD plants working in farms were manure and energy crops composed the feedstock. A total of 11 AD plants was interviewed, 3 plants treating waste and 8 farm plants. As for the 3 industrial plants they treat biowaste from separate collection (krb-side collection) and wastewater sludge with a limited power generation. On the other hand, farm AD plants were all around 999 kW and treating manure and energy crops (maize silage mainly). There are limited experiences with grass-like feedstock like switchgrass or *Lolium perennis*.

2.1.5 PORTUGAL-GREAT LISBON

In all Portugal there are about 9 AD biowaste bases plants in operation or ready to start and all are integrated with a composting unit. Three of them are in the Great-Lisbon area. One plant uses source separated biowaste and the others are provided with mechanical sorting units, separating the biowaste from the mixed municipal solid wastes. There are then others 18 plants operating in Portugal which generates biogas and produces electricity, treating sludge and agro-industrial effluents. Commonly, digested sludge, after dewatering, is chemically stabilised and sent to a composting unit, as final disposal.

2.2 WILLINGNESS IN USING GRASS AS PART OF FEEDSTOCK

2.2.1 BELGIUM-FLANDERS

Three plants are already using grass in the feedstock (roadside verge, landscape management). There is potential to increase the presence of grass as a feedstock material. However, during the questionnaire major problems with sand, floating layers and clogging were reported by managers of plants who digested grass in the past but stopped doing so. It is thus important to guide plant owners towards good quality grass!

The actual uptake of grass will depend on a number of factors, such as government policy and grass quality. These factors are discussed in depth in other GR3 reports.

2.2.2 DENMARK

Some plants are already using grass, but this is mainly grass originated from permanent grass or crop grass rather than “waste” grass.

2.2.3 GERMANY-SAARLAND

AD plants already have experience with grass like permanent grassland and crops so there is already the know-how but limited experience with “waste” grass coming from landscape, river banks and roadside management.

2.2.4 ITALY-VENETO

Only one industrial plant is using grass in order to improve the dry matter content. The other are not considering this option because of the low energy density of grass. On the other hand, some of the farm digesters showed interest in this opportunity as this feedstock is suitable with the digester and presents similar characteristics with other streams (crops).

2.2.5 PORTUGAL-GREAT LISBON

Some grass is already received in solid wastes digesters mixed to the other feedstock. There is interest in using grass originated from roadside management and green areas in 3-4 AD plants. It has been planned to carry-out experiments at full scale in Tratoxio plant under GR3 project, to verify the benefits in terms of gas and energy production. According to the results the possibility to remove the gate fee will be evaluated.

3 REMARKS

There are already several experiences in using grass as feedstock around Europe. However, in a number of cases, this grass is originated from grassland or it is a real crop rather than waste grass or originated from landscape management.

The green biomass from cuttings and cleanings has been included as waste with a specific code in the European List of Waste. The green grass material should be removed from the waste List, once they are generally not hazardous and not really dangerous to the health and to the environment. They should be regarded as a biomass source. According to Decision 2000/532/EG, the LoW should be revised regularly on the basis of new knowledge and, in particular, of research results. The Thematic Strategy on Prevention and Recycling has called for a revision of the system of waste nomenclature with the purpose of simplifying and modernising waste legislation. This is an opportunity for GR3 to contribute to it, being one of the main outputs.

On the other hand, the new “Advanced Biofuels” directive is under discussion: here, only organic waste and residual materials are considered for the production of biofuels (no competition with food/feed) so, again, there is interest for residual grass as potential feedstock.