



The biomethane refinery in Könnern, Germany, is supplied by nearly 30 farmers, who bring 120 000 tons of biomass. The production is about 15 millions of m³ of biomethane per year.



10.2%

Biogas primary energy production growth in 2013.

BIOGAS BAROMETER

A study carried out by EurObserv'ER. 

The expansion of biogas energy usage has continued across the European Union. According to EurObserv'ER, about 13.4 million tonnes oil equivalent (Mtoe) of biogas primary energy were produced during 2013, which is 1.2 Mtoe more than in 2012 representing a 10.2% growth. However, the biogas sector's momentum was more sluggish than in 2012 (16.9% between 2011 and 2012, giving an additional 1.8 Mtoe) and it is expected to lose some of its impetus in 2014 in a number of countries whose sector expansion controlling policy changes will limit the future use of energy crops.

13.4 Mtoe

of biogas primary energy produced in 2013 in the European Union.

52.3 TWh

of biogas electricity produced in 2013 in the European Union.

The Westwood AD plant in Northamptonshire, UK, processes 65 000 tons of food waste per year to produce power injected into the grid.



Anaerobic digesters specially designed to recover energy produce most of the biogas across the European Union. The plants come in different types and sizes ranging from small anaerobic digesters on farms, larger co-digestion (or multi-product) plants and household waste methane production plants. Their feedstock (raw materials) is typically slurry, farming waste, green waste, food-processing waste and domestic refuse but the facilities can also use cultivated farm crops such as intermediate crops (crucifers, grasses, etc.), and other energy crops (maize, etc.), to optimize the methanisation reaction by introducing carbon. The umbrella term “other biogas” covers the output of these installations for the sake of convenience, to distinguish it from the biogas produced by wastewater treatment plants that produce methane from sewage sludge only and from landfill biogas whose output is directly captured inside the landfills rather than being produced by an industrial plant.

THE EU PRODUCED 13.4 MTOE OF BIOGAS IN 2013

In 2013, biogas energy output, put at almost 13.4 Mtoe, again enjoyed two-digit growth (10.2% up on 2012). However the sector confirmed the loss of impetus sparked by the biogas policy changes of the European Union’s two main producer countries, Germany and Italy (see below). The decline started in 2012 judging from the fact that the 21.7% growth

rate between 2010 and 2011 dropped to 16.9% between 2011 and 2012. For many years, “other biogas” has dominated the distribution of the European Union’s primary biogas energy output (table 1 and graph 1). EurObserv’ER puts its share at 69.0% of EU output in 2013, a long way ahead of landfill biogas at 21.6%, and wastewater treatment biogas at 9.4%. Yet this “other biogas” category does not universally hold the largest share across the Member States. It tends to predominate in those countries, primarily Germany, Italy, Austria and the Czech Republic that have developed an industrial methanisation sector. Landfill biogas can also dominate the breakdown (as is the case in the UK, France, Spain, Portugal and Ireland) while wastewater treatment biogas seldom prevails (Sweden and Poland). Biogas is a renewable energy that can be recovered in different ways, most commonly as electricity and heat through cogeneration (tables 2 and 3). As it stands, electricity production is the main biogas energy recovery form regardless of whether or not it is produced through cogeneration. In 2013, output stood at about 52.3 TWh (which equates to 4 499 ktoe of final energy), which is a 12.7% increase over 2012. Heat sold to district heating networks increased to 432.4 ktoe in 2013, which represents 22.4% year-on-year growth. Self-consumed heat (used directly on the production sites), is put at a further 2 010 ktoe in 2013 – a 4.6% increase on 2012). If there are outlets close to the methanisation plant, the biogas can be fully har-

nessed with maximum energy efficiency to produce heat. It can also be refined into biomethane so that it can be put to use in the same way as natural gas, in the form of electricity in cogeneration plants, but also as biofuel for natural gas-powered vehicles (NGVs) or even injected into the natural gas grid. Grid injection offers advantages since it enables the biomethane to be stored at lower cost and postpone its use until required, but this comes with the proviso that the facility must be sited close to a natural gas grid to keep grid access costs down. Biomethane storage on the production site is feasible but technically more complicated and expensive to implement. The advantage for operators is that they can play a part in balancing the grid while waiting for the right time in the supply and demand cycle to sell their electricity at the best price. Policies discussed for example in Germany for the creation of capacity power markets may pave the way for the expansion of this option.

BIOMETHANE IS ON THE UP AND UP

Biomethane production is primarily gaining in popularity with the countries of the European Union, because it enables them to reduce their reliance on natural gas imports. On the basis of various studies such as the final 2014 report of the European Green Gas Grid project, the IEA Bioenergy Biomethane study published in September 2014 and the DENA (German Energy Agency) biomethane barometer, EurObserv’ER found at least 258 biome-

thane plants in service in the European Union at the end of June 2014 in just 12 member countries. The countries most involved in biomethane production are Germany (151 plants), Sweden (53 plants), the Netherlands (23 plants), Austria (10 plants), Finland (6 plants) and the small country Luxembourg (3 plants). More recently the UK (4 plants), France (3 plants), Italy (2 plants), Denmark (1 plant), Hungary (1 plant) and Croatia (1 plant) have become involved and offer considerable development potential. Most of the output from these plants is intended for grid injection but could also be used on site when required. Other countries only use their output on their sewage treatment sites

More than 14 000 methanisation plants in Europe

Methanisation is a waste treatment and energy recovery process. It produces gas, called biogas, primarily composed of methane (50-70%) and carbon dioxide. The reaction also produces a digester’s sludge that can be harvested as an agricultural fertilizer. Anaerobic digesters process different types of organic feedstock, liquid and solid waste and also plants that optimize their processing and yield. A European Biogas Association (EBA) report claims that in 2012 13 800 anaerobic digesters were in service in Europe (the European Union + Switzerland) with about 7 400 MW of electricity generating capacity. By the end of 2013, the 14 000 anaerobic digester threshold had been left far behind, with Germany alone having installed 335 additional facilities over the year.

to produce electricity and heat or use it as biofuel. This applies in particular to most of Sweden’s sewage treatment plants (only 11 plants inject biomethane into the grid) and also to Finland, Italy, Croatia and Hungary. Germany’s biomethane output dwarfs the rest of the European Union’s. According to the DENA biomethane sector barometer, Germany already had 151 biomethane plants at the end of June 2014 (146 at the end of 2013) with production capacity of around 93 650 Nm³/h (normal cubic metres per hour). The Federal grid agency (Bundesnetzagentur) says that the amount of biomethane injected into Germany’s natural gas grid has practically doubled since 2011. It has risen from 275 million Nm³ in 2011 (i.e. 256 084 toe), to 413 million Nm³ in 2012 (384 591 toe), then to 520 million Nm³

in 2013 (484 230 toe). Biomethane now accounts for 7.2% of Germany’s primary biogas energy output. Now most of these plants operate using a large proportion of energy crops. According to DENA, the breakdown of materials used by quantity (tonnes of “fresh” matter) for producing biomethane in 2013 was 59.6% maize, 16.3% other energy crops, 12.3% slurry, 7.9% miscellaneous organic waste and 3.9% harvest residues. Biomethane production is also increasing sharply in other countries. In the Netherlands, Statistics Netherlands claims that it increased by 70.3% between 2012 and 2013 to reach 35 600 toe, or 11.8% of the country’s primary biogas energy output. In Austria, biomethane output reached

The sustainability requirements of biogas called into question

The biogas and biomethane production conditions are at the centre of heated negotiations at European Union level. On 28 July, the European Commission published a working document on the sustainability of solid and gaseous biomass used for electricity, heating and cooling. In the section on biogas, the report highlighted the environmental issues stemming from the use of energy crops and encouraged the use of a higher percentage of manure, slurry and other organic waste to improve the greenhouse gas emission performance of biogas installations. The report’s main line is that the percentage reduction in greenhouse gas emissions from bioenergy such as biogas should be at least 70% less than fossil fuels, which is a higher target than 60% target actually defined by the Directive to come into effect from 1 January 2018 (for installations that start producing in January 2017). The sector feels that this percentage will be very hard to achieve, especially for biomethane production whose greenhouse gas emission performance levels would be measured in comparison with natural gas, applying the new European Commission-proposed method, and no longer against the mean European fossil energy mix excluding fuel that was previously used and more advantageous. However, a JRC (Joint Research Centre) report that accompanies the document, reckons that this target can be achieved provided certain production conditions apply with a 100% organic waste pathway or a co-digestion blend of 70% slurry to 30% maize. Negotiations between the stakeholders over the wording of a draft directive being prepared for presentation to the European Parliament and European Council are expected to be tough. The European Commission has already warned that no draft directive on these sustainability criteria would be expected before 2020.

4 729 toe in 2013 (55 GWh), according to the Association of gas suppliers and heating networks, and the connection of two new plants drove output up to 3 009 toe (35 GWh) over the first 4 months of the year. In Finland, the biogas sector is almost purely driven by transport. According to the Finnish biogas association, Biomethane

consumption in transport increased by 168% in 2013 compared the previous year, to 2 820 toe (32.8 GWh). In France, a specific Feed-in Tariff for biomethane injection has been introduced and a tendering system is soon to be rolled out, raising expectations for the fortunes of its fledgling injected biomethane sector.

One of the biogas sector's ambitions is to form a European biomethane market that would stimulate the production, exchange and use of biomethane. Six national biomethane registers (in Austria, Denmark, France, Germany, Switzerland and the UK), that can provide biomethane grid injection flow traceability right through to

its end use (quality, injected volume), are cooperating to set up common standards and strengthen the European statutory framework to set up this market. They aim to harmonize the national registers and create the conditions for mutual acceptance and recognition of biomethane guarantees of origin.

Tabl. n° 1

Primary energy production of biogas in the European Union in 2012 and 2013* (in ktoe)

Country	2012				2013*			
	Landfill gas	Sewage sludge gas ⁽¹⁾	Others biogas ⁽²⁾	Total	Landfill gas	Sewage sludge gas ⁽¹⁾	Others biogas ⁽²⁾	Total
Germany	123.7	372.1	592.0	6 416.2	108.8	392.8	6 215.3	6 716.8
United Kingdom**	1 533.9	269.7	0.0	1 803.6	1 538.2	286.2	0.0	1 824.4
Italy	370.6	42.0	766.1	1 178.8	410.8	48.5	1 356.1	1 815.4
Czech Republic	31.7	39.4	303.8	374.9	28.9	39.6	502.5	571.1
France**	279.1	79.6	53.3	412.0	280.0	80.0	105.0	465.0
Netherlands	29.9	53.1	214.5	297.5	24.6	57.8	220.3	302.8
Spain**	140.8	33.8	116.2	290.8	124.0	29.8	102.4	256.1
Poland	53.7	79.3	60.8	193.8	61.8	91.2	98.2	251.2
Austria	3.8	18.2	184.3	206.4	3.7	18.4	174.6	196.8
Belgium**	32.4	17.2	108.0	157.7	29.2	15.5	97.2	141.9
Sweden**	12.6	73.6	40.6	126.8	13.6	79.3	43.7	136.6
Denmark**	5.6	21.2	77.9	104.7	5.3	20.3	74.4	100.0
Greece	69.4	15.8	3.4	88.6	67.5	16.1	4.8	88.4
Hungary	14.3	18.7	46.8	79.8	14.3	20.1	47.8	82.2
Slovakia	3.1	13.8	45.1	62.0	3.4	14.8	48.5	66.6
Portugal	54.0	1.7	0.7	56.4	61.8	2.7	0.8	65.3
Finland	31.6	13.9	12.4	57.9	31.7	14.6	13.2	59.5
Ireland**	43.0	7.5	5.4	55.9	43.1	7.5	5.4	56.0
Latvia**	18.4	5.7	27.8	51.9	18.4	5.7	27.9	52.0
Slovenia	6.9	3.1	28.2	38.1	7.1	2.8	24.8	34.7
Romania**	1.4	0.1	25.9	27.3	1.5	0.1	28.4	30.0
Croatia	2.0	3.1	11.4	16.6	2.1	3.2	12.8	18.0
Lithuania	6.1	3.1	2.3	11.6	7.1	3.6	4.8	15.5
Luxembourg	0.1	1.3	12.0	13.4	0.1	1.3	11.4	12.8
Cyprus	0.0	0.0	11.4	11.4	0.0	0.0	12.0	12.0
Estonia**	2.2	0.7	0.0	2.9	5.4	1.8	0.0	7.2
Bulgaria	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EU	2 870.3	1 187.8	8 079.0	12 137.1	2 892.3	1 253.6	9 232.7	13 378.7

(1) Urban and industrial. (2) Decentralised agricultural plant, municipal solid waste methanisation plant, centralised co-digestion plant.
*First estimations. **Whenever the information was not available, the breakdown between the different types of biogas was estimated by EurObserv'ER for the year 2013 on the basis of the breakdown observed in 2012. Source: EurObserv'ER 2014.

NEWS FROM AROUND THE MAIN PRODUCER COUNTRIES

About-face for biogas policy in Germany

The new renewable energy law (EEG 2014) came into force in Germany on 1 August 2014 and marks a turnaround for biogas. Future production will be much less geared to using energy crops. One of the new law's aims is to reduce the financial cost of energy transition by slowing the growth of the most expensive electricity-generating sectors. Solid biomass and biogas find themselves in the line of fire. Under the terms of the new law, installations commissioned before 1 August will continue to enjoy the rights acquired through the previous law (EEG 2012) and special arrangements are offered to plants licensed since 24 January 2014. One of the main measures of the new law affecting biogas is the withdrawal of the premium for using energy crops (NawaRo-Bonus), to encourage the use of organic and farming waste. Another major upset is that to limit the remuneration of biogas installations, biogas plants with capacity in excess of 100 kW will henceforth only be eligible for financial support of up to 50% of their nominal installation capacity.

The 20-year term for Feed-in Tariffs will stay in force, but a quarterly 0.5% reduction will apply starting in 2016. Another central point is that there will be a restriction on the additional capacity of biomass (including biogas) installations installed annually to 100 MW. Every three months, a 1.27% reduction rate will apply if the 100-MW limit is achieved over the rolling 12-month reference period. This quarterly reduction will be applied until the 100-MW ceiling is no longer achieved over the reference period. The new payment system is still more generous to small installations that transform agricultural waste. The highest rate, which is € 0.2373 per kWh



The Weltec Biopower Lönningen plant in Germany uses manure as raw materials for its biogas production.

only applies to <75 kW plants running on slurry. The tariff payable to plants that generate electricity from organic waste is € 0.1526 per kWh for capacities up to 500 kW and € 0.1338 per kWh for capacities up to 20 MW. Biomass installations generally (including biogas plants that process other feedstock besides farming residue or organic waste) will be paid a new tariff of € 0.1366 per kWh for <150 kW capacities, € 0.1178 per kWh for up to 500 kW, € 0.1055 per kWh for up to 5 MW and € 0.0585 per kWh for up to 20 MW. The Feed-in Tariffs for landfill biogas are even lower in 2014... € 0.0834 per kWh for up to 500 kW, and € 0.0571 per kWh for up to 5 MW with a higher reduction rate of 1.5%. For its part sewage treatment plant biogas is paid a Feed-in Tariff of € 0.0659 per kWh for up to 500 kW and € 0.0571 per kWh for up to 5 MW with the same 1.5% annual reduction rate

The setting of the 100-MW ceiling on new biogas installations will result in a sharp drop in their number from 2015 onwards. The German biogas association (Fachverband Biogas) puts the additional electricity capacity of the biogas plants in 2014 at 262 MW, or 147 additional installations, which would increase the number of biogas plants by the end of 2014 to 7 960 with 3 804 MW of electrical capacity.

Looking on a slightly brighter side, the new German circular economy legislation of February 2012 that transposes the European waste framework directive makes separate biowaste collection mandatory by the 2015 timeline for the whole of the country, which will provide the methanisation sector with new sources to replace the use of energy crops.

Setback for the Italian biogas market

The Ministerial Decree of 6 July 2012 on new incentive systems for renewable electricity production that applied from 1 January 2013 has completely shifted Italian policy on biogas. Taking a leaf out of Germany's book, the Italian government wants to curb the rise of its biogas sector by significantly reducing the Feed-in Tariffs (by 10 and 30% depending on the segments) and by introducing a quota policy. The decree has limited the accumulated capacity of new biomass (not only biogas) plants to 170 MW in 2013 and still further in 2014 and 2015 down to 160 MW. The government has also chosen to encourage the development of small plants (up to 600 kW) through its new tariff policy and to give preference

to the use of by-products and farming waste over energy crops. The Feed-in Tariff for biogas produced from organic waste, guaranteed for 20 years, is the most lucrative at € 0.236 per kWh up to 300 kW. It changes to € 0.206 per kWh for up to 600 kW. It then slips to € 0.178 per kWh for up to 1 MW, € 0.125 per kWh for up to 5 MW and to € 0.101 per kWh for

higher capacities. Biogas produced from farm-sourced products becomes much less attractive at € 0.18 per kWh for up to 300 kW, down to € 0.16 per kWh for up to 600 kW, then to € 0.14 per kWh for up to 1 MW, € 0.102 per kWh for up to 5 MW and to € 0.091 per kWh for higher capacities. Additional subsidies may be awarded for high-yield cogeneration systems

depending on GHG emission reductions and the use of local resources. The initial effects of this new policy were naturally felt in 2013, when the mean size of new installations plummeted together with the sharp drop in newly installed biogas capacity. The Italian electricity transmission system operator Terna claims that the additional capacity provided by

newly-installed biogas plants (all sources taken together) dropped from 569.2 MW in 2012 (on the basis of 684 new plants) to 45.7 MW in 2013 (on the basis of 140 new plants). At the end of 2013, the country's electricity-generating capacity was up to 1 388.4 MW for 1 611 plants. Farming biogas (agricultural matter and livestock manure) alone accounted for 945.7 MW (68.1% of the capacity) for 1 299 plants. The government now wants to gear its biogas policy to biomethane production. Italy has set up a Feed-in Tariff for biomethane production for NGV vehicles, cogeneration or grid injection (Decree of 5 December 2013). The rates have not yet been officially published, but the QualEnergia website suggests that they should

be around twice the price of natural gas, coupled with a 20-year term purchase contract. The government hopes that once this measure has fully defined the payment conditions, annual biomethane output will in time rise to 5-8 billion m³.

France ... Europe's new vector for growth?

Along with the UK, France is no doubt the most promising country for biogas development. The French Observation and Statistics Office (SOeS) states that primary biogas output increased by 17% in 2013 to 454 ktoe (preliminary figures), having increased by 13% in 2012. This growth can be put down to the significant public aid mechanisms set up comprising

the heat fund, more attractive Feed-in Tariffs and regulations and the creation of a Feed-in Tariff for biomethane injection into the natural gas grids. Electricity production has obtained the most for the time being, as output rose to 1.5 TWh in 2013. The country's ambitions for biogas were reiterated in the Energy Transition for Green Growth draft law. Ecology Minister, Ségolène Royal, has ambitions to launch 1 500 methanisation plant projects over the next three years.

The government also plans to put out tenders for biomethane injection into the natural gas grid and gradually

Tabl. n° 2

Gross electricity production from biogas in the European Union in 2012 and 2013* (in GWh)

Country	2012			2013*		
	Electricity only plants	CHP plants	Total electricity	Electricity only plants	CHP plants	Total electricity
Germany	5 916.0	21 322.0	27 238.0	6 338.0	22 662.0	29 000.0
Italy	2 160.0	2 458.0	4 618.0	3 435.0	4 013.0	7 448.0
United Kingdom	5 249.2	625.0	5 874.2	5 265.7	665.0	5 930.7
Czech Republic	55.0	1 412.0	1 467.0	55.0	2 239.0	2 294.0
France	754.9	530.0	1 284.9	893.6	627.4	1 521.0
Netherlands	68.0	940.0	1 008.0	60.0	906.0	966.0
Spain	765.0	101.0	866.0	802.1	105.9	908.0
Poland	0.0	565.4	565.4	0.0	882.5	882.5
Austria	592.0	46.0	638.0	574.0	41.0	615.0
Belgium	90.4	573.1	663.5	81.5	516.5	598.0
Denmark	2.5	375.7	378.2	1.7	255.3	257.0
Portugal	199.0	10.0	209.0	238.0	10.0	248.0
Hungary	153.4	81.3	234.7	100.3	142.5	242.8
Latvia	0.0	223.0	223.0	0.0	223.0	223.0
Greece	40.0	164.3	204.3	39.2	177.2	216.4
Slovakia	88.0	102.0	190.0	94.0	110.0	204.0
Ireland	175.0	24.0	199.0	175.9	24.1	200.0
Slovenia	4.9	148.2	153.0	4.2	136.8	141.0
Finland	57.0	82.0	139.0	57.4	82.6	140.0
Croatia	0.0	56.8	56.8	0.0	63.2	63.2
Lithuania	0.0	42.0	42.0	0.0	59.0	59.0
Luxembourg	0.0	57.9	57.9	0.0	55.3	55.3
Cyprus	0.0	50.0	50.0	0.0	52.0	52.0
Romania	0.0	19.0	19.0	0.0	25.8	25.8
Estonia	0.0	15.8	15.8	0.0	21.0	21.0
Sweden	0.0	22.0	22.0	0.0	12.0	12.0
Malta	0.0	2.0	2.0	0.0	3.0	3.0
Bulgaria	0.0	0.3	0.3	0.0	0.5	0.5
EU	16 370.4	30 048.8	46 419.1	18 215.6	34 111.6	52 327.2

*Estimate. Source: EurObserv'ER 2014.

Tabl. n° 3

Gross heat production from biogas in the European Union in 2012 and in 2013* (in ktoe) in the transformation sector**

Country	2012			2013*		
	Heat only plant	CHP plant	Total	Heat only plant	CHP plant	Total
Italy	0.3	138.5	138.8	0.3	200.8	201.1
Germany	33.2	47.8	81.0	33.5	70.5	104.0
Denmark	5.9	29.5	35.5	4.2	20.7	24.8
France	2.8	10.6	13.4	2.8	10.6	13.4
Czech Republic	0.0	8.7	8.7	0.0	11.6	11.6
Sweden	5.4	5.7	11.2	5.4	5.7	11.2
Latvia	0.0	10.9	10.9	0.0	10.9	10.9
Slovenia	0.0	9.3	9.3	0.0	8.8	8.8
Finland	6.2	1.6	7.8	6.2	1.6	7.8
Poland	0.3	4.8	5.1	0.0	7.2	7.2
Belgium	0.0	6.6	6.6	0.0	6.6	6.6
Austria	1.9	5.2	7.1	1.9	4.4	6.3
Netherlands	0.0	4.4	4.4	0.0	3.7	3.7
Romania	0.9	2.4	3.3	0.9	2.4	3.3
Croatia	0.0	2.7	2.7	0.0	3.0	3.0
Slovakia	0.0	2.7	2.7	0.0	2.9	2.9
Lithuania	0.0	1.2	1.2	0.0	2.3	2.3
Hungary	0.4	0.9	1.3	0.4	0.9	1.3
Luxembourg	0.0	1.0	1.0	0.0	1.1	1.1
Cyprus	0.0	1.0	1.0	0.0	1.0	1.0
Estonia	0.0	0.1	0.1	0.0	0.1	0.1
EU	57.4	295.8	353.2	55.6	376.8	432.4

**Estimate. **Heat sold to the district heating network or to the industrial units. Source: EurObserv'ER 2014.



The Scania truck retailer released two trucks using biomethane as fuel, for the french biofood retail chain Biocoop.

increase the renewable gas share. The biogas Feed-in Tariffs were revised for electricity production in 2011. They break down into a basic tariff now in the range € 0.119 to 0.1337 per kWh in line with installation capacity, that may be topped up by an energy efficiency premium of € 0-0.04 per kWh and a premium for processing livestock effluents of € 0-0.026 per kWh. Thus the maximum tariff could be € 0.20 per kWh. France has also introduced a Feed-in Tariff for injected biomethane which is in the range € 0.45-0.95 per kWh geared to the installation size for non-hazardous waste storage installations. The other methanisation plants are eligible for Feed-in Tariffs for injected biomethane made up of a basic tariff of € 0.64-0.95 per kWh geared to the installation size that may be topped up by a premium calculated on the basis of the nature of the matter treated by the methanisation process. This premium ranges from € 0.02-0.03 per kWh if the feedstock exclusively comprises agricultural waste or waste from agricultural or agri-business products. It is € 0.05 per kWh if the feedstock exclusively comprises household waste. In the case of "mixed" feedstock, the premium is weighted and calculated in proportion to the feedstock quantities used by the plant. Last important point, in the bill on energy transition voted at the first reading in the National Assembly on 14 October 2014,

Parliament adopted an amendment that prohibits dedicated energy crops for methanisation, the use of intermediate crops remaining allowed. The bill will be submitted to the Senate in early 2015. The Netherlands, the UK and Denmark are other European Union countries that have set up Feed-in Tariffs for biomethane injection.

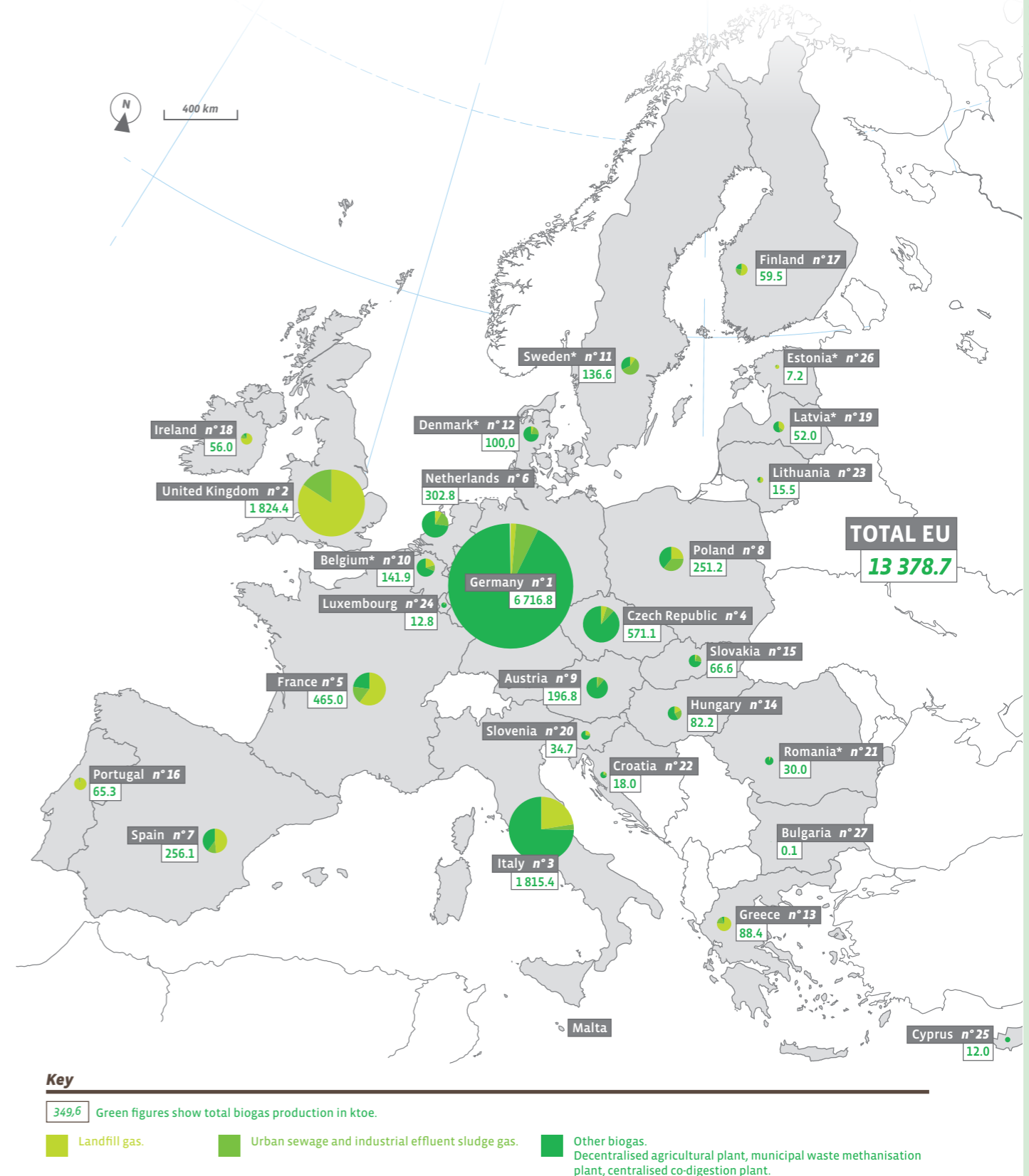
RESTRUCTURING OF THE METHANISATION INDUSTRY CONTINUES

The slump in the growth of the German and Italian markets that were up to now the European growth drivers for biogas has driven the European sector into a major restructuring exercise. A number of anaerobic digester manufacturers decided two or three years ago to diversify their income sources to get through this tough patch and invest in operating their own plants. They have also developed the business abroad in the most promising European markets and also outside Europe in the Asian and American markets. Despite their efforts, a number of them are having difficulty keeping afloat. Many of the players are in dire financial straits and others have been forced out of the market. The most high profile failure was that of Biogas Nord AG in September 2013, which was one of the lea-

ding German manufacturers. MT Energie (table 4), another German player is still in business and pushing ahead with restructuring. Its first financial results for the year 2013 announced last 30 June report a loss of 23.3 million euros, which is more than 25% of the company's provisional sales put at 87.7 million euros. The situation has forced it to close its offices in the United States, Canada and Australia effectively ruling out any possibility of expanding into these markets. Last 25 September, the group announced that it would be shedding 65 jobs on its main production site at Zeven in Northern Germany because of the German renewable energy law reform. Last July, the company which is still in a poor financial position, reached an agreement with its financial partners. Its improved financial results for the first half-year of 2014 through the company's strong showing in the French and British markets may have eased the agreement through. Another source of growth for the group is the construction of biogas refining plants. MT Energie, which has created a special subsidiary, MT BioMethan, for the production of biomethane plants, has announced the construction of 8 projects in in the Champagne-Ardenne region of France by 2016, whose second plant at Ussy-sur-Marne has been on stream since September



Primary production of biogas in the European Union in 2012 and 2013** (in ktoe)



Key

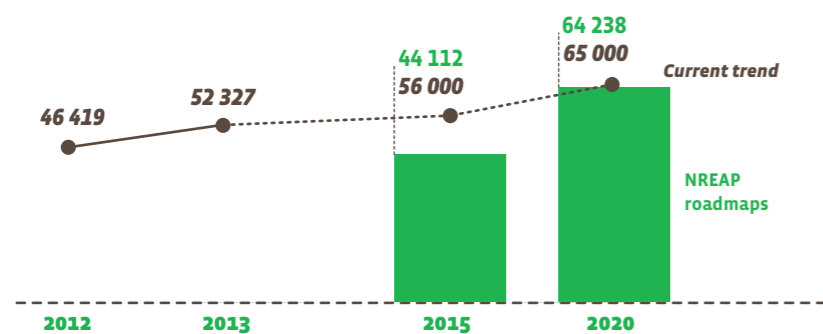
- 349.6 Green figures show total biogas production in ktoe.
- Landfill gas.
- Urban sewage and industrial effluent sludge gas.
- Other biogas. Decentralised agricultural plant, municipal waste methanisation plant, centralised co-digestion plant.

* First estimations. ** Whenever the information was not available, the breakdown between the different types of biogas was estimated by EurObserv'ER for the year 2013 on the basis of the breakdown observed in 2012. Source: EurObserv'ER 2014.



Graph. n° 1

Comparison of the current trend of electricity biogas generation against the NREAP (National Renewable Energy Action Plans) roadmap (in GWh)



Source: EurObserv'ER 2014.

2014. MT Energie is also constructing its biggest biomethane production plant for the German sugar refiner SüdZucker. The energy produced by this plant will supply about 6 000 households with electricity and heat 2 000 homes. Another front line player from Germany, Envitec Biogas, clearly improved its financial situation over the first half of 2014, with sales up by 9.5% to 75.3 million euros, and an EBIT of 5.3 million euros compared to a loss of 1.7 million euros the previous year. The company claims that its income for the full 2014 tax year should be 145-165 million euros

and is banking on a positive EBIT. The company explains that this performance can be largely attributed to its operating business, as Envitec Biogas has a 57-MW portfolio of plants that it manages with other investment partners. The results can also be put down to the realignment of its manufacturing activity, which after suffering a 5.2 million euro loss last year, posted a 0.6 million euro surplus in the first half year. The company has also decided to expand internationally. At the end of June 2014, its export order book was worth 34.1 million euros, which is a

55.7% increase out of a total of 55.7 million euros. It views the most attractive markets as being the French, UK and Chinese markets, but also reckons new markets are emerging in Japan and the Philippines, where the company has sent its first containers.

HOW MUCH WILL BIOGAS BE CONTRIBUTING IN 2020 AND 2030?

Today methanisation is fully recognized as an exemplary process for treating waste and recovering energy and that can reduce energy reliance on natural gas. However the development potential of the biogas sector now hangs in the balance as the very fast growth in output of the leading countries for agricultural methanisation has been achieved by wholesale recourse to energy crops. The growth pattern has been recently challenged by the European Commission that insists that biogas production should be primarily based on the use of by-products and organic waste. Perforce, current uncertainties about forthcoming European legislation on biomass sustainability and limiting the use of energy crops have and will have an impact on the biogas sector's growth potential. On the other hand, the countries of the

Tabl. n° 4

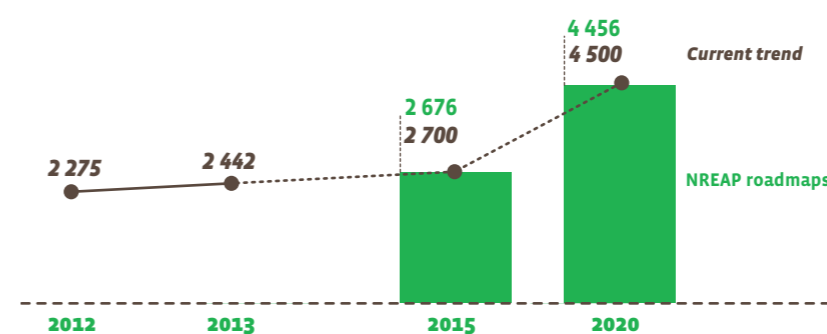
Representatives firms of the methanisation sector in Europe at the end of 2013

Compagny	Country	Number of references in 2013	Electrical capacity installed in 2013 (in MWe)	Employees in 2013
AB Energy (Gruppo AB)	Italy	650	700	500
MT Energie	Germany	600	356	650
Envitec Biogas AG *	Germany	456	335	350
Biogas Weser-Ems	Germany	360	n.a.	100
PlanET Biogastechnik	Germany	330	134	< 200
Schmack Biogas GmbH	Germany	< 300	130	376
Weltec Biopower GmbH	Germany	300	76	80
UTS Biogastechnik (Anaergia Group)	Germany	176	350	125
Bioconstruct	Germany	219	123	>100
BTS Italia	Italy	178	145	125

* Including plants under construction. Source: EurObserv'ER 2014.

Graph. n° 2

Comparison of the current trend of biogas heat consumption against the NREAP (National Renewable Energy Action Plans) roadmap (in ktoe)



Source: EurObserv'ER 2014.

EU are also under obligation to organize recovery circuits for the various types of organic waste and set up sorting systems to collect them, through European waste regulations (Directive 2008/98/EC). The application of this directive, and discussions are currently going on to strengthen its criteria (a draft directive has been filed along these lines), will contribute new fermentable waste to the sector that should make up in part for the decreased use of energy crops. In order to recover, the biogas sector requires fast decisions about the environmental requirement levels for biogas and biomethane production with regard to GHG emissions, so that they can be included in the European renewable energy target calculations. Thus the future development of the biogas sector is essentially a political issue. Accordingly, the best estimates for 2020

are those defined by each Member State in the national renewable energy action plans (NREAPs) for the EU of 28, which forecast that the biogas sector will contribute up to 4 456 ktoe of heat production (graph. 2) and 64.2 TWh (5 423 ktoe) of electricity production (graph. 1), equating to combined final energy consumption of 9 879 ktoe. The European Biogas Association (EBA) reckons that 28 billion m³ of biogas (natural gas equivalent) will have to be produced to achieve the NREAP targets, which could equate to 1.5% of the European Union's primary energy mix and 5% of its natural gas consumption. For 2030, the EBA puts potential biogas output at 50 billion m³ (natural gas equivalent). Therefore, if suitable policies are set up, the European biogas industry could supply 2-4% of the EU's electricity needs and 15-30% of the methane market in 2030. According to the European Green Gas

Grids project, Europe's technical potential for biomethane would be even higher if anaerobic biogas production were to be added to synthetic biogas production (bio-SNG) primarily produced from solid biomass. For the EU of 27, the maximum theoretical potential is in the range 151 to 246 billion Nm³ of biomethane per annum that equates to energy output of 130.8 to 212.2 Mtoe. Natural gas dependency would be much less of an issue in Europe, whereas biomethane production sustainability might be a much heavier issue. □

Sources: Statistic Austria, APEE (Bulgaria), University of Zagreb (Croatia), Ministry of Industry and Trade (Czech Republic), University of eastern Finland, SOEs (France), AGEE-Stat (Germany), CRES (Greece), University of Miskolc (Hungary), Ministry of Economic Development (Italy), Statistics Lithuania, STATEC (Luxembourg), Statistics Netherlands, The Institute for Renewable Energy (Poland), DGGE (Portugal), Energy Center Bratislava (Slovakia), IJS (Slovenia), DECC (United Kingdom), AIE, Observ'ER.

The next barometer will cover solid biomass

Download

EurObserv'ER is posting an interactive database of the barometer indicators on the www. energies-renouvelables.org (French-language) and www.eurobserv-er.org (English-language) sites. Click the "Interactive EurObserv'ER Database" banner to download the barometer data in Excel format.



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