



BIOENERGY EUROPE
**STATISTICAL
REPORT**
2020

REPORT
BIOGAS





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ABOUT

THE STATISTICAL REPORT

Every year since its debut release in 2007, Bioenergy Europe's Statistical Report has provided an in-depth overview of the bioenergy sector in the EU-28 Member States.

Bioenergy Europe's Statistical Report has been enriched each year with new figures and information, collecting unique data on the developments of the European bioenergy market from a growing number of international contributors.

Bioenergy Europe develops detailed reports that aid industry leaders, decision makers, investors and all bioenergy professionals to understand the situation of bioenergy in Europe.

With more than 150 graphs and figures, readers of Bioenergy Europe's Statistical Report can get accurate and up-to-date information on the EU-28 energy system such as the final energy consumption of biomass

for heat and electricity, the number of biogas plants in Europe, the consumption and trade of pellets, the production capacity of biofuels and other key information to help break down and clarify the complexity of a sector in constant evolution.

In 2017, the Report was rewarded by the European Association Awards for being the 'best Provision of Industry Information and Intelligence', a recognition after a decade of collective work.



2007

First Statistical Report published

2010

89 pages

2012

+ statistics on ENplus®
+ 2700 downloads
+ (124 pages)

2009

+ analysis on the
National Renewable
Energy Action Plan
+ (108 pages)

2011

+ pellet chapter
+ (108 pages)

2013

+ socio-economic indicators
+ 2600 downloads

2014

+ EPC European Wood Pellet
+ Overview + expert's view
+ 3000 downloads
+ 158 pages

2015

+ statistics on wood chip consumption
+ 200 page report on bioenergy support
scheme in Europe
+ key findings report
+ 3500 downloads

2016

+ chapter on environmental impact
of bioenergy
+ projections on bioheat &
bioelectricity
+ awarded as 'the Best Provision
of Industry Information &
Intelligence' by the European
Association Award
+ 4000 downloads
+ 300 pages

2017

+ updated information on
bioelectricity / bioheat market &
support schemes in all EU28
Member States
+ a separate report on ENplus®

2018

+ report available to the public,
free of charge
+ emphasis on providing
transparent data & sharing
knowledge to support private &
public initiatives
to promote bioenergy
+ 300 pages

2019

+ Bioenergy Europe
publishes 7 focussed
reports published
throughout the year

2020

ABOUT

BIOENERGY EUROPE

A bit of history

Bioenergy Europe is the voice of European bioenergy.

It aims to develop a sustainable bioenergy market based on fair business conditions. Founded in 1990, Bioenergy Europe is a non-profit, Brussels-based international organisation bringing together more than 40 associations and 90 companies, as well as academia and research institutes from across Europe.

Our vision

Bioenergy Europe will be the leading player in ensuring that sustainable bioenergy is a key pillar in delivering a carbon neutral Europe.

Our mission

Bioenergy Europe facilitates the development of a sustainable, strong, and competitive bioenergy sector through:

- Promotion towards European policymakers and stakeholders for awareness, acceptance, and reputation of bioenergy.
- Promote the development of consistent, realistic, and sustainable bioenergy scenarios in the heat, electricity, and transport sectors.
- Pro-active proposals to develop more favourable European legislation.
- Market intelligence to support decision making.
- Services to members, including a support to advocacy at national level.
- Tools, including certification schemes, to sustain market growth and credibility.
- Industry collaboration throughout the entire supply chain.
- Promotion of efficient and innovative technologies within the bioeconomy.

OUR ACTIVITIES

Bioenergy Europe carries a wide range of activities aimed at supporting its members on the latest EU and national policy developments. Bioenergy Europe works to voice their concerns to EU and other authorities, including, advocacy activities in key policy areas as well as the organisation of dedicated working groups.

Working Groups

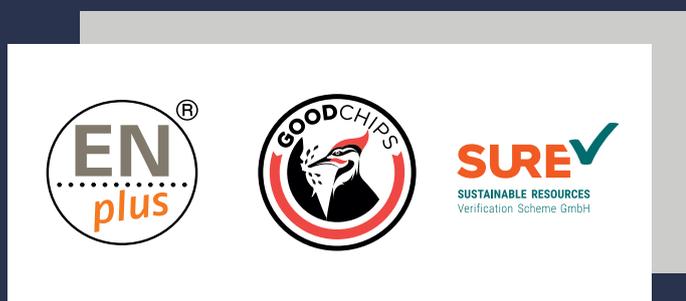
Bioenergy Europe's working groups act as a platform for members to discuss common issues and exchange information on the state of play of bioenergy.

There are currently 7 active working groups:

- Agrobiomass & Energy Crops;
- Biopower & CHP;
- Competitiveness;
- Domestic Heating;
- Sustainability;
- Pellets;
- Wood Chips.

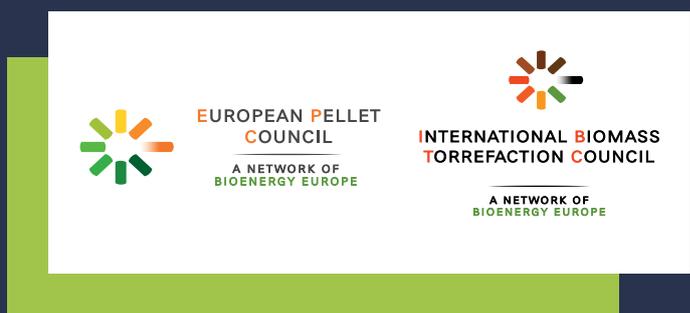
Certification Schemes

Thanks to the experience and authority acquired over the last 20 years, Bioenergy Europe has successfully established three international certification schemes to guarantee high quality standard for fuels, namely, **ENplus®**, **GoodChips®** as well as the latest edition in the certification for sustainable bioenergy: **SURE**.



Networks

Bioenergy Europe is the umbrella organisation of both the **European Pellet Council (EPC)** and the **International Biomass Torrefaction Council (IBTC)**. These networks



have been created thanks to the dynamics of Bioenergy Europe members. Today, these networks bring together bioenergy experts and company representatives from all over Europe and beyond.

The **European Pellet Council (EPC)**, founded in 2010, represents the interests of the European wood pellet sector. Its members are national pellet associations or related organisations from over 18 countries.

EPC is a platform for the pellet sector to discuss issues relating to the transition from a niche product to a major energy commodity. Issues include the standardisation and certification of pellet quality, safety, security of supply, education and training, and the quality of pellet-using devices. EPC manages the ENplus® quality certification.

Launched in 2012, the **International Biomass Torrefaction Council (IBTC)**, aims to build the first platform for companies that have common interests in the development of torrefied Biomass markets. Currently, the IBTC initiative is supported by more than 23 companies worldwide.

IBTC's objective is to promote the use of torrefied biomass as an energy carrier and to assist the development of the torrefaction industry. In this respect, IBTC's key activities are to undertake studies or projects, and to commonly voice its members' concerns to third parties to help to overcome barriers of market deployment.

For further information on Bioenergy Europe's Networks & Certification Schemes visit www.bioenergyeurope.org

OUR MEMBERS*

As the common voice of the bioenergy sector, Bioenergy Europe, aims to develop a sustainable bioenergy market based on fair business conditions and does so by bringing together national associations and companies from all over Europe – thus representing more than 4000 indirect members, including companies and research centres.

Associations



Academia



Companies



*Members as of June 2020.

Move forward with a reliable partner in the changing energy markets



Resource efficiency, flexibility and clean solutions are the key for success in changing energy markets. Based on our decades-long experience, we have the know-how to deliver the best solutions based on biomass, waste or on a mixture of different fuels.

Valmet's proven automation solutions help you to optimize your energy production and our network of service professionals is ready to recharge your competitiveness both on-site and remotely.

Explore valmet.com/energy



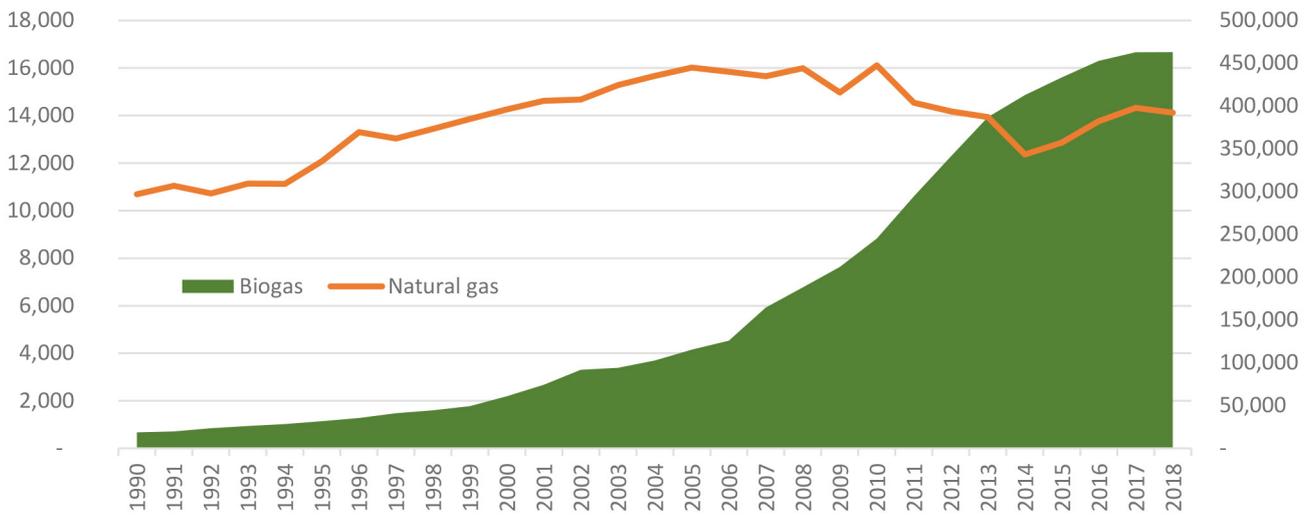
Valmet 
FORWARD

1. Biogas in Europe

The gross inland energy consumption of biogas has tremendously increased since 1990 and has been multiplied by a factor of 25. This increase was supported by the fast development of advanced technologies, resulting in higher plant efficiency, cheaper digesters and upgrading units used for the conversion of raw biogas to biomethane of natural gas grade. The use of digestate as an organic fertiliser also offers a sustainable and locally produced alternative to mineral fertilisers and can provide an additional source of income to farmers as the market matures.

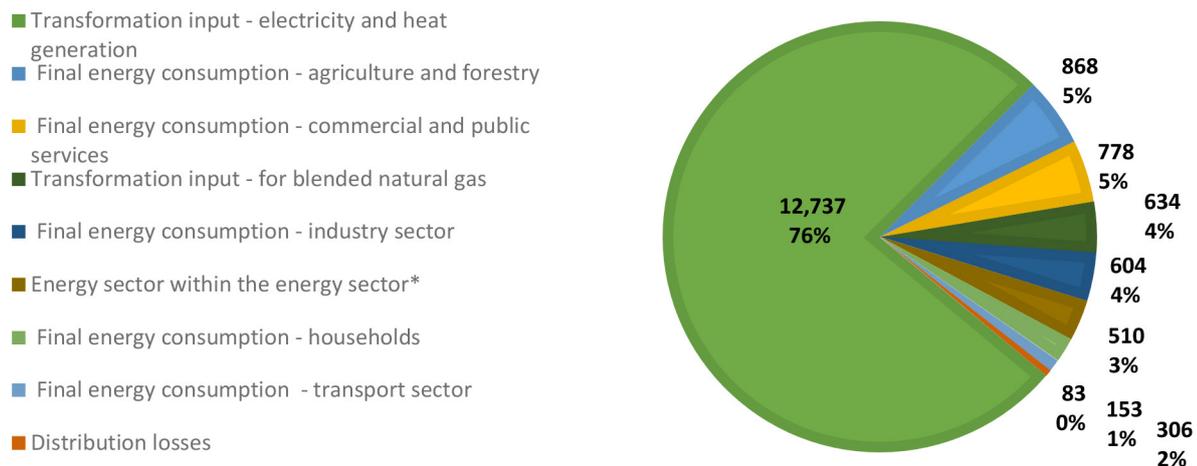
Nevertheless, in 2018 biogas provided a marginal share of the total gross inland energy consumption of the EU28, (only 1%), representing 11% of the bioenergy, the equivalent of around 4% of natural gas consumed across Europe in 2018. Those figures show that there is a real need to promote biogas as one of the reliable solutions for a low-carbon energy transition.

Figure 1 Evolution of the gross inland energy consumption of biogas and natural gas (right axis) in EU28 (in ktoe)



Source: Eurostat

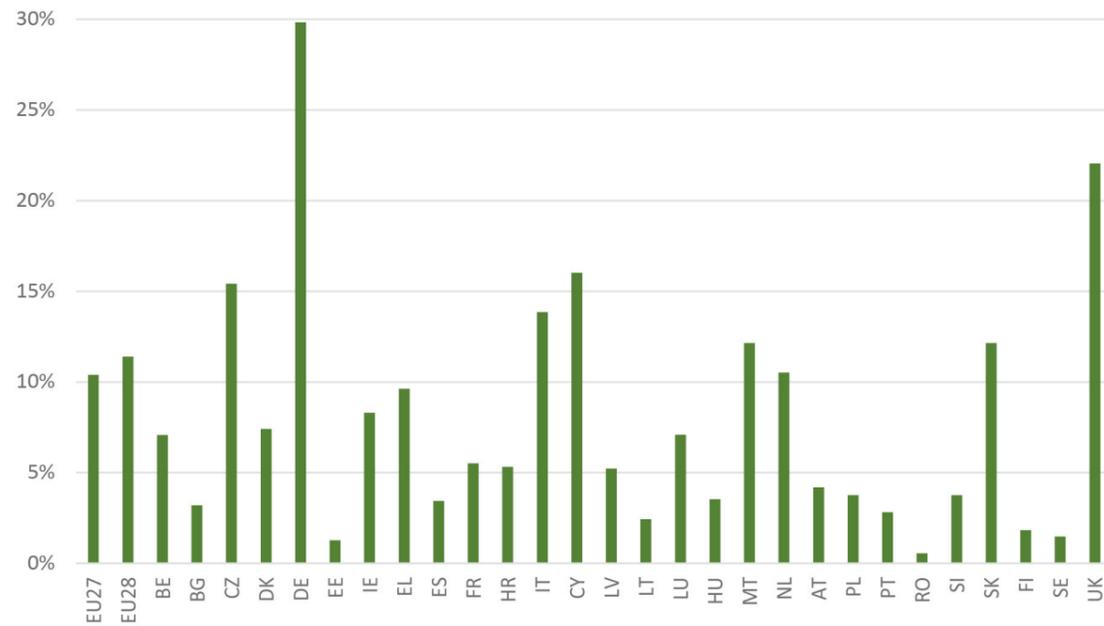
Figure 2 Biogas gross inland energy consumption by end-use in 2018 in EU28 (in ktoe and %)



* Mainly the biogas consumed as energy for support operations in biogas gasification plants (485 ktoe)

Source: Eurostat

Figure 3 Share of biogas within the total bioenergy gross inland consumption in 2018 (in %)

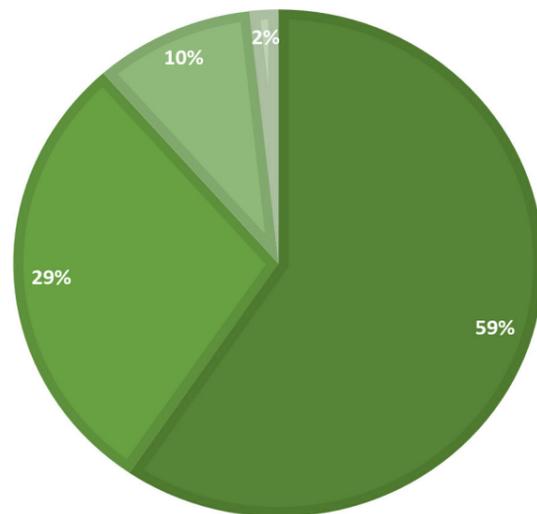


Source: Eurostat

Almost one third of biogas final consumption is directly used within different sectors (commercial and services, agricultural, industrial and residential). Transport represented only 2% of the final usage of biogas in 2018 (in the form of biomethane). Germany, Italy, and the United Kingdom are the leaders in biogas production within Europe. These three countries consume respectively 52%, 11% and 8% of the gross final energy consumption of biogas within Europe.

Figure 4 Gross final energy consumption from biogas by end-use in EU28 in 2018 (in %)

■ Gross electricity generation ■ Direct used - final consumption* ■ Gross heat generation ■ Transport



* In agriculture, industry, commercial, households & others.

Source: Eurostat

Table 1 Gross final energy consumption from biogas by end-use in EU28 Member States in 2018 (in Mtoe)

	Gross final energy consumption	Gross electricity generation	Derived heat* generation	Direct used - final consumption (agriculture, industry, commercial etc.)	Transport
EU27	6 130	4 757	860	2 308	113
Growth-rate (2017-2018)	1%	-1%	22%	-2%	2%
EU28	6 417	5 247	860	2 307	113
Growth-rate (2017-2018)	1%	-1%	22%	-1%	2%

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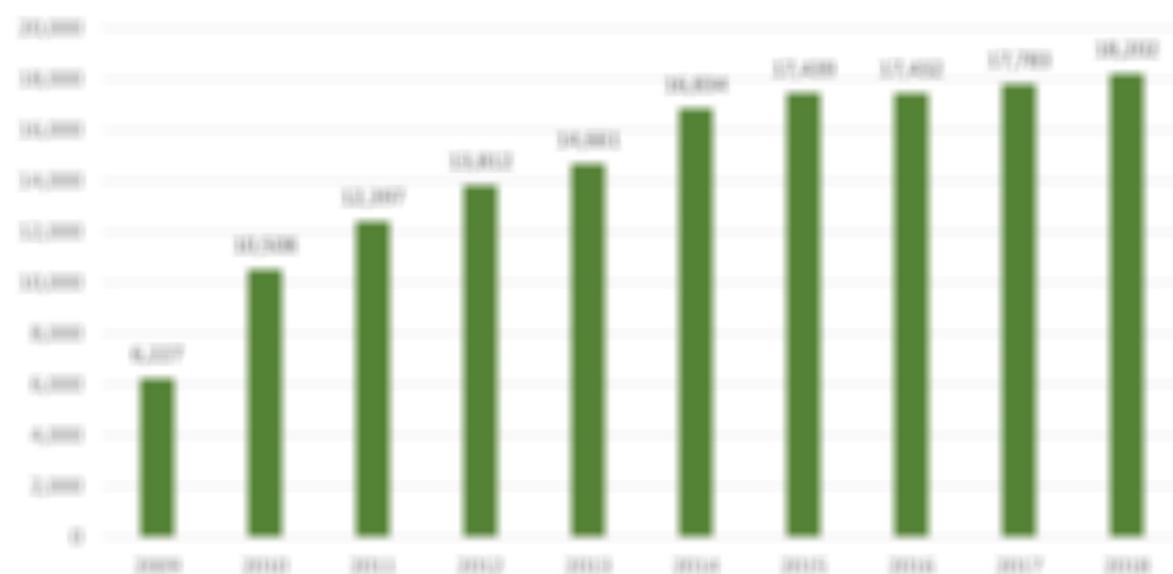
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EE	1%	0	0	0	0
UK	62	32	21	0	0
MT	1	1	0	1	0
NL	216	76	0	121	0
PL	201	97	22	62	0
PT	31	23	0	0	0
RO	17	0	6	7	0
SE	38	1	0	28	118
SI	17	10	0	1	0
SK	18	65	16	38	0
UK	600	450	0	117	0

*See definition in Annex

Source: Eurostat

Figure 5 Evolution of the number of biogas plants in Europe

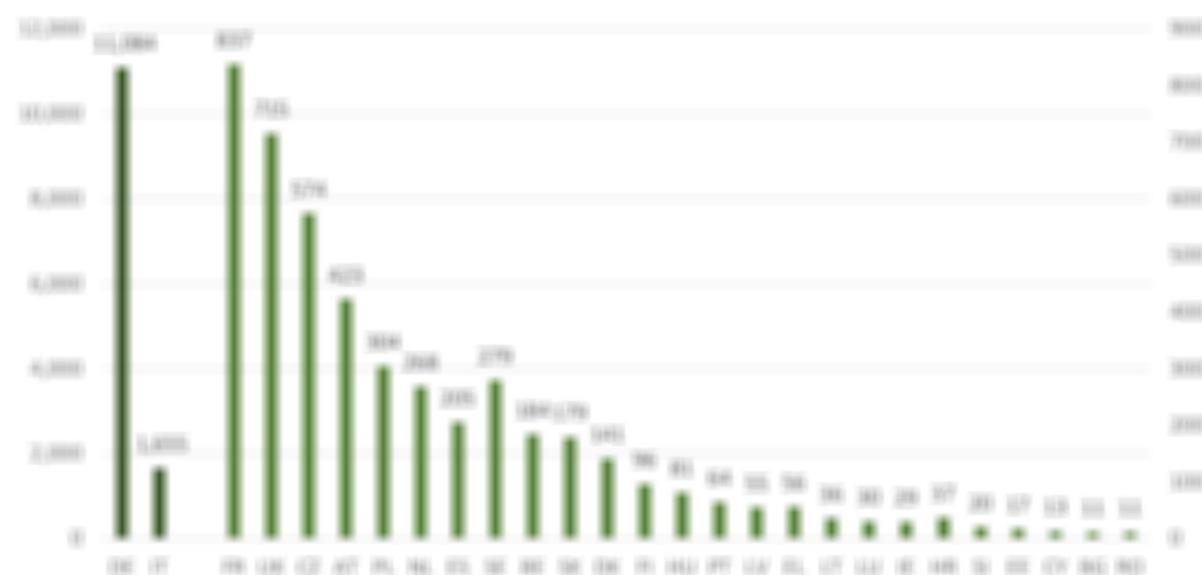


*EU28 + Switzerland + Norway + Serbia + Iceland

Source: ICF

The biogas sector is expanding and has experienced major improvements in the last decade in terms of efficiency (physical and economic) due to research and innovation. Germany is the European leader in biogas and its number of biogas plants increased in 2018 by 113 installations compared with 2017. On their side, the United Kingdom and France have also registered significant increase in the number of new plants in operation (+132 and +35 respectively).

Figure 6 Number of biogas plants in EU28 countries in 2018 (in ' of plants) (separated scale for Germany and Italy)



Source: ICF

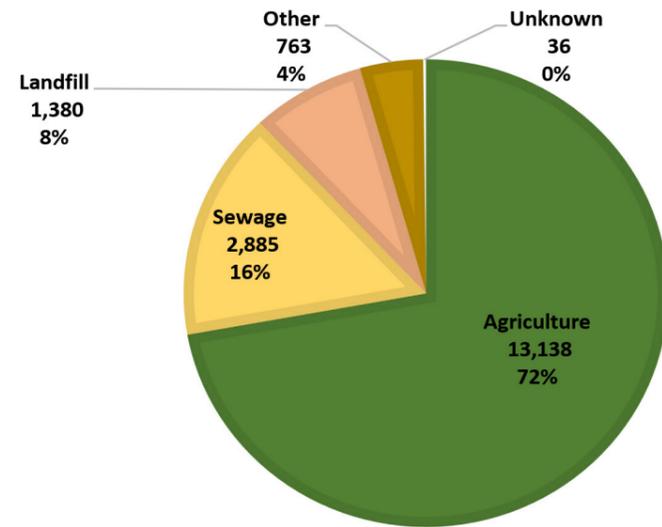
In EU28, landfill and sewage gas accounts for around 26% of total biogas production while most of the biogas is produced from anaerobic fermentation of agricultural feedstock.

Table 2 Primary Energy Production of biogas by type in EU28 Member States in 2018 (in twh)

	Total biogas	Landfill gas	Sewage sludge gas	Other biogas from anaerobic fermentation	Biogas from thermal processes
EU27	13,241	3,241	1,141	11,241	108
Growth-rate (2017-2018)	0%	-4%	3%	0%	14%
EU28	16,479	3,429	1,308	12,375	108
Growth-rate (2017-2018)	0%	-4%	3%	1%	14%
AT	224	2	26	216	n.a.
BE	228	19	25	179	7
BG	54	n.a.	9	45	n.a.
CY	13	1	1	11	n.a.
CZ	616	21	66	538	n.a.
DE	7,431	1,23	403	7,015	n.a.
DK	323	4	24	292	n.a.
EE	14	1	7	5	n.a.
EL	113	45	17	31	n.a.
ES	245	143	48	24	25
FI	186	18	17	32	118
FR	877	332	35	538	n.a.
HR	74	5	3	65	n.a.
HU	112	13	38	51	n.a.
IE	58	34	9	9	n.a.
IT	1,802	324	12	1,508	7
LT	37	18	7	20	n.a.
LU	22	0	2	20	n.a.
LV	47	8	2	77	n.a.
MT	2	n.a.	n.a.	2	n.a.
NL	326	13	58	255	n.a.
PL	388	38	116	133	n.a.
PT	82	68	6	9	n.a.
RO	21	n.a.	n.a.	21	n.a.
SE	176	4	78	94	n.a.
SI	24	2	2	20	n.a.
SK	143	7	13	123	n.a.
UK	2,009	1,108	308	1,273	n.a.

Source: Eurostat

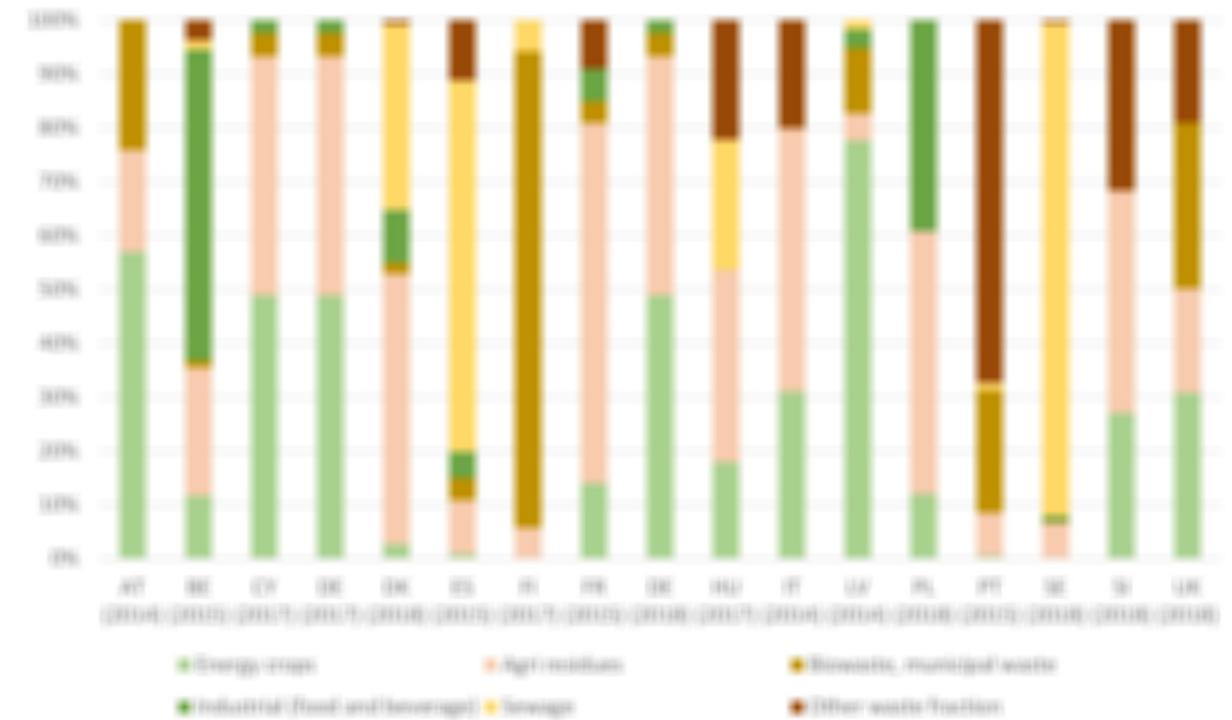
Figure 7 Distribution of biogas plants by feedstock in Europe* in 2018 (number of plants)



*EU28 + Switzerland + Norway + Serbia + Iceland
 Source: EBA

In Europe, up to 72% of the feedstocks used for biogas production come from the agricultural sector such as energy crops, manure, as well as other agricultural residues. The utilisation of agricultural residues such as manure is particularly important in countries such as Denmark, France and Italy. This underlying growth in synergies between animal farming and biogas provide a profitable manure management solution. Energy crops such as maize, silphium or sorghum are largely used in Germany, Austria or Latvia. It can be noted that with inter-cropping schemes there is the possibility to avoid the land-use competition between food and energy. The organic waste (municipal – included in figure 5 in “other”, or industrial – from food and beverage industry) still has the potential to be developed for use in biogas production as it is currently underrepresented except in some countries (e.g. Finland, Belgium or Poland).

Figure 8 Feedstock use for biogas production in European countries (excluding landfill) - expressed as a mass percentage



Note: data is not available for all countries, the year in brackets refers to date of the data
 Source: EBA

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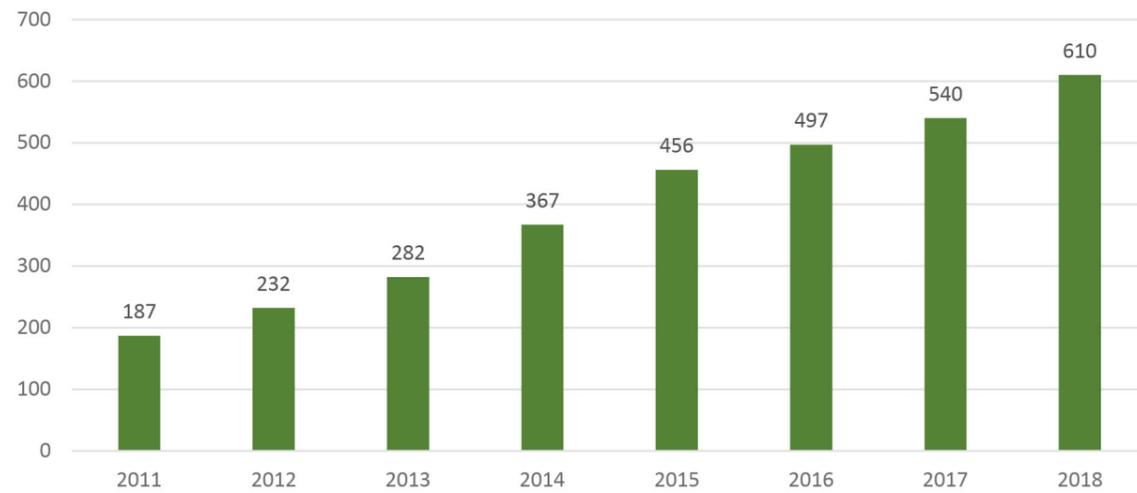
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2. Biomethane in Europe

Biomethane is defined as methane produced from biomass, with properties close to natural gas. The initial product is raw biogas, containing 40-60% methane, which is purified (upgraded) to reach a high methane content (usually >96%) which can then be used in the gas grid or as a fuel for transport.

The number of biomethane plants has more than tripled from 2011 to 2018 showing the fast development of this sector. For more information on the biomethane plans in Europe, see [the GIE - EBA Biomethane Map](#).

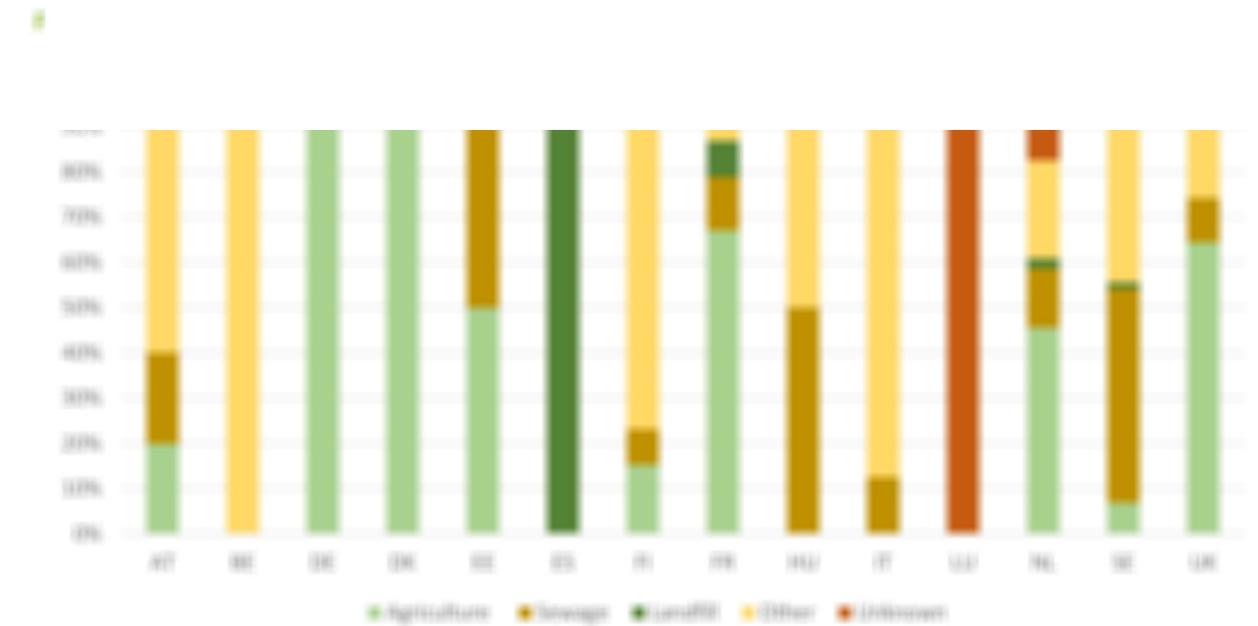
Figure 9 Evolution of the number of biomethane plants in Europe*



*EU28 + Switzerland + Norway + Iceland

Source: EBA

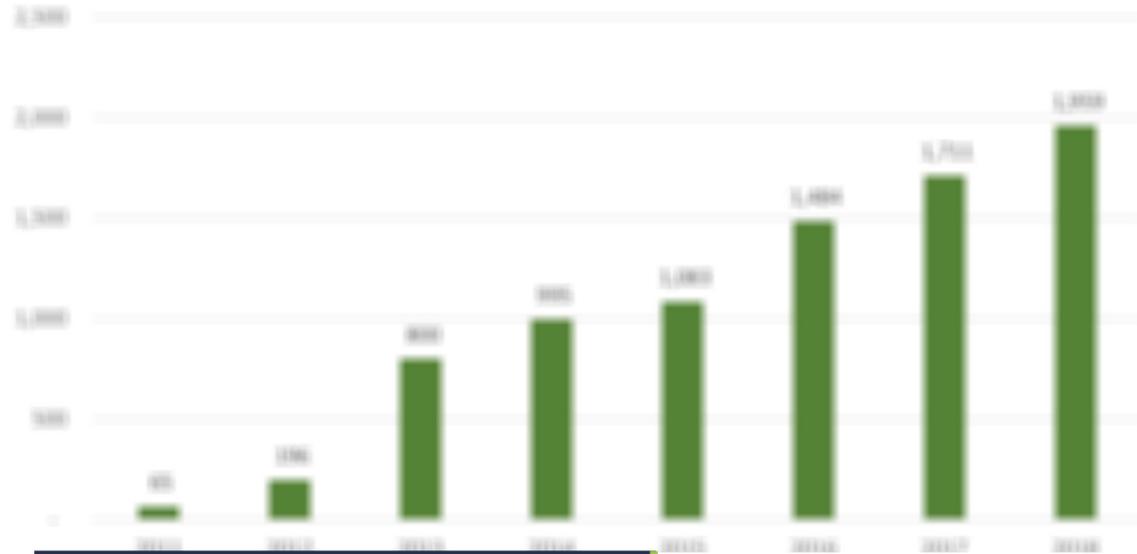
Between 2017 and 2018 the biomethane sector expanded significantly with a growth of biomethane plants of 13%. In 2017, 70 new biomethane plants were constructed in Europe. Germany reached 200 biomethane plants in 2018. The United Kingdom follows with 93 plants. In France, 32 additional plants were installed in 2018, reaching a total of 76 biomethane plants. Finally, Belgium (1 plant), Estonia (2 plants) and Ireland (1 plant) reported their first biomethane production plants in 2018.



Source: GIE

Within the agriculture category, there are energy crops and agri-residues, while in Germany the majority of the agricultural feedstock is energy crops, in Estonia, Denmark, and in the United Kingdom it is mainly agri-residues. 'Other' includes among others, biowaste – municipal (e.g. in Belgium) and industrial (food and drink) (e.g. in Denmark).

Figure 11 Evolution of the production of biomethane in Europe* (in twh)



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3. Annexes

Definitions

Derived heat (DH)

According to Eurostat, derived heat covers the total heat production in heating plants and in combined heat and power plants. It includes the heat used by the auxiliaries of the installation which use hot fluid and losses in the installation/network heat exchanges. For auto-producing entities (= entities generating electricity and/or heat wholly or partially for their own use as an activity which supports their primary activity) the heat used by the undertaking for its own processes is not included.

Gross electricity generation

The gross electricity generation is measured at the outlet of the main transformers, i.e. the consumption of electricity in the plant auxiliaries and in transformers is included.

Gross final energy consumption

Final energy consumption = consumption of electricity and heat by the energy branch for electricity and heat generation (own use by plant) + losses of electricity and heat in transmission and distribution.

Gross inland consumption

Gross inland consumption is the quantity of energy necessary to satisfy inland consumption of the geographical entity under consideration. It is calculated using the following formula: primary production + recovered products + imports - stock changes - exports - bunkers. International Marine Bunkers are quantities of fuels delivered to ships of all flags that are engaged in international navigation. The international navigation may take place at sea, on inland lakes and waterways, and in coastal waters.

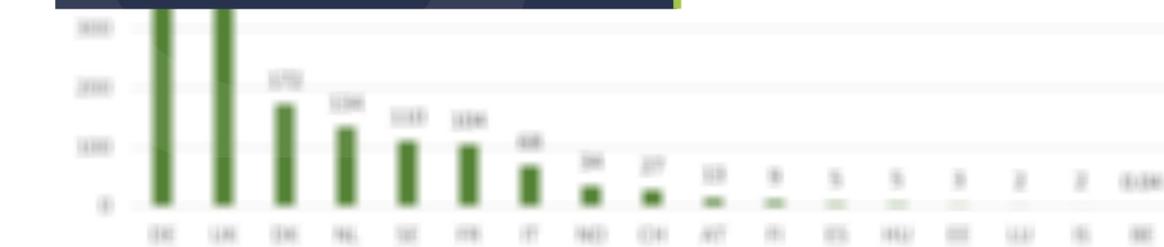


Table 3 Country Codes

EU28	European Union (28 members)	CH	Switzerland
AT	Austria	IE	Ireland
BE	Belgium	NO	Norway
BG	Bulgaria	RS	Republic of Serbia
CY	Cyprus		
CZ	Czech Republic		
DE	Germany		
DK	Denmark		
EE	Estonia		
EL	Greece		
ES	Spain		
FI	Finland		
FR	France		
HR	Croatia		
HU	Hungary		
IE	Ireland		
IT	Italy		
LT	Lithuania		
LU	Luxembourg		
LV	Latvia		
MT	Malta		
NL	Netherlands		
PL	Poland		
PT	Portugal		
RO	Romania		
SE	Sweden		
SI	Slovenia		
SK	Slovak Republic		
UK	United Kingdom		

Table 4 Symbols and Abbreviations

Symbol	Meaning
,	Decimal separator
k	Thousand
n.a.	Data not available

Table 5 Decimal Prefixes

10 ¹	Deca (da)	10 ⁻¹	Deci (d)
10 ²	Hecto (h)	10 ⁻²	Centi (c)
10 ³	Kilo (k)	10 ⁻³	Milli (m)
10 ⁶	Mega (M)	10 ⁻⁶	Micro (µ)
10 ⁹	Giga (G)	10 ⁻⁹	Nano (n)
10 ¹²	Tera (T)	10 ⁻¹²	Pico (p)
10 ¹⁵	Peta (P)	10 ⁻¹⁵	Femto (f)
10 ¹⁸	Exa (E)	10 ⁻¹⁸	Atto (a)

Table 6 General Conversion Factor for Energy

From	To	1 MJ	1 kWh	1 kg oil	1 t coal
1 MJ		1	0,278	0,024	0,220
1 kWh		3,6	1	0,086	0,08
1 kg oil		41,200	11,33	1	1,0
1 t coal		4,187	1,163	0,1	1

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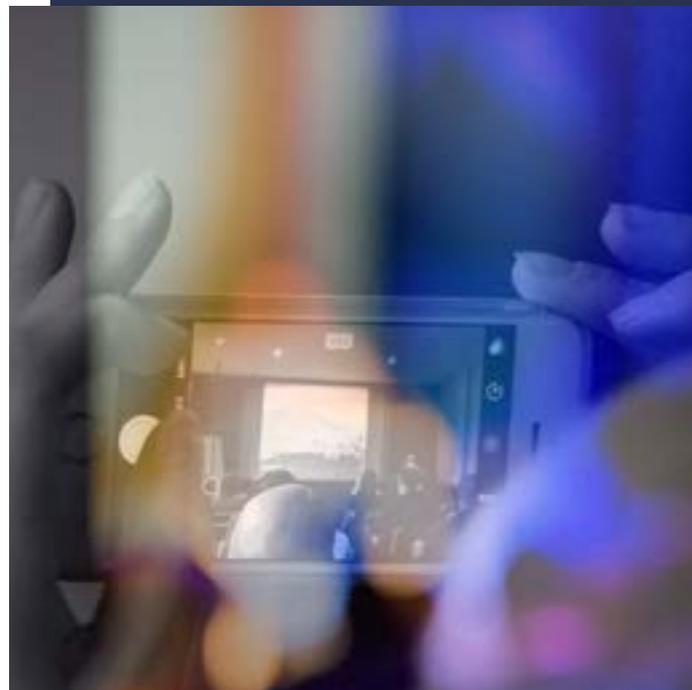
ENHANCED VISIBILITY & SPONSORSHIP OPPORTUNITIES

Enhanced Visibility

(Exclusive to Bioenergy Europe Members)

This opportunity entails a free of charge promotion for Bioenergy Europe members only. This offer includes the chance to display your organisation's logo as well as a featured 100-word description, placed in 1 of the 7 annual statistical reports of your choice.

This enhanced visibility opportunity is limited and interested members are required to contact the team via info@bioenergyeurope.org



You can find further information about this opportunity on the Bioenergy Europe website.

Sponsorship

Bioenergy Europe offers two sponsorship opportunities to further enhance organisation profiles to not only Bioenergy Europe members but to the wider European and global bioenergy sector. New to 2020, organisation's get the chance to feature in two major deliverables for Bioenergy Europe namely, the Statistical Report 2020, as well as the leading bi-annual event, **European Bioenergy Future (EBF20)**.*

As our sponsor for the Statistical Report, you will be able to have the highest level of visibility. In addition to having full-page adverts for all 7 statistical reports, you will also have logos placed on publications, policy briefs, content-driven tweets, as well as LinkedIn posts, amongst a variety of additional advantages.

In relation to the 2020 European Bioenergy Future conference (17th-19th of November 2020), you will be able to benefit from the 'Main' sponsorship or 'Break Dinner' sponsorship package where you can decide how conspicuously your organisation is presented during this event.

For both sponsorship opportunities, you can find out more information in regards to sponsorship on the Bioenergy Europe website.

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