Summary note on biogas status and trends in EU

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1. Introduction

The biogas industry has recently undergone a sharp increase in Europe, especially in response to the national and European renewable energy targets. This expansion has determined agricultural changes, such as the increase in the cultivation of energy crops and the use of digestate on land, with potential effects on water quality. In order to help assess this challenge in relation to EU environmental legislation, especially the Nitrates Directive, a questionnaire (see Annex 1) was prepared and circulated to Members of the Nitrates Committee. The questionnaire posed a number of technical and legal questions, whose responses are summarized in this document. This document is based on data received at the end of 2012 and beginning of 2013, from 24 Member States (EU 27 except Greece, Luxembourg and Malta) and Norway.

2. Biogas industry in Europe

Biogas production installations in Europe are based on different types of input material, including energy crops, agricultural waste and other waste. Biogas is also produced in wastewater treatment plants (WWTP) and landfills. Energy is produced in the form of biogas, electricity, heat or a combination of these three. Biogas stems from the fermentation of organic matter in waste, manure or sludge. The product of this fermentation, called digestate, is often used as a fertiliser. For some input materials, such as slaughterhouse waste and sewage sludge, a large amount of the digestate is considered waste and is incinerated or landfilled.

Table 1a, 1b, 1c and Fig.1 give an overall picture of the biogas industry in Europe, in terms of number of plants, installed capacity and energy production. It should be kept in mind that some issues of comparability affect the tables. In fact, some countries considered wastewater treatment plants and landfills out of the scope of the questionnaire. For other countries, it is not always clear whether or not the contribution of biogas from WWTP or landfills is included. Furthermore, some replies are differentiated on the basis of the type of energy (electricity, heat, combined heat and power) or on the basis of the input material (agricultural waste/food/manure, landfill gas, sewage sludge).

Germany is by far the first country in terms of number of biogas plants. Other member states with 300 or more biogas plants are Italy, Austria and Czech Republic. Five respondents have less than 10 plants (Bulgaria, Cyprus, Romania, Northern Ireland and Wales).

Table 1a

Number of plants differentiated by technology and/or type

	Technology					Type				Total
	Electricity	Heat	CHP[1]	Gasif-ication	Not spec	Farms ***	WWTP	Land-fills	Not spec	
AT							excl.**	excl.		300
BE-FL							15	13	11	39
BE-WA						17	19			36
BG						3	2	1	1	7
CY			11							11
CZ						250	70	63		383
DK						85	67	32	9	193
EE	1	4	10			5	4	4	2	15
FI						13		38	28	79
FR	119	0	71			56/88	11	118		190
DE							excl.	excl.		7600
GR*										
HU										44
IE	15	7	10			5	12	15		32
IT						521****	excl.	excl.		521****
LV			23			23				23
LT						8	3	excl.		11
LU*										
MT*										
NL						91	excl.	excl.		91
PL							excl.	excl.		26
PT	30		11							41
RO										2
SK						40	13			53
SI										25
ES						14	17	73	16	120
SE			19		24	38	135	55	5	233
UK ENG	3	6	57	0	16	32	excl.	excl.	50	32
UK NIR			5				excl.	excl.		5
UK WLS	6	2	1			3	1	excl.	5	9
UK SCT		4	9		5		excl.	excl.		18
NO						5	29			34

**no questionnaire*

*** excl. (excluded): the reply specifically mentions that this has not been taken into account*

n/a: the reply specifically mentions that this information is not available

****farms and installations using agricultural and food waste*

**** data refer to December 2011. In December 2012 the number of biogas plants was 994.

[1] *combined heat and power*

Table 1b

Total installed biogas capacity (MW) differentiated by technology and/or type.

	Technology					Type				Total
	Electricity	Heat	CHP	Gasif-ication	Not spec	Farms ***	WWTP	Land-fills	Not spec	
AT							excl.**	excl.		80
BE-FL							4.2	15.7		88
BE-WA	29.2	96.0								125
BG						1.8	4.4	0.8	4.7	11.7
CY										9
CZ						190	20	58		268
DK										n/a
EE	10.59	11.95				12.97	2.15	7.42		22.54
FI										
FR	147	86				15				322
DE							excl.	excl.		3200
GR*										
HU										27
IE	73	14.3	13.6							100.9
IT							excl.	excl.		350****
LV										24
LT						22.602	6.458	excl.		29
LU*										
MT*										
NL	98	n/a**				98	excl.	excl.		98
PL	28	29					excl.	excl.		57
PT	43		6							49
RO										2.54
SK										38.73
SI										27.6
ES						11	30	15	14	209
SE										n/a
UK ENG	1.7	0.15	53.4	0	21.4		excl.	excl.		76.65
UK NIR			1.1				excl.	excl.		
UK WLS	0.16	0.2	2			2.36	n/a**	excl.		2.36
UK SCT							excl.	excl.		9.7
NO										n/a

**no questionnaire*

***excl. (excluded): the reply specifically mentions that this has not been taken into account*

n/a: the reply specifically mentions that this information is not available

****farms and installations using agricultural and food waste*

**** data refer to December 2011. In December 2012, the total installed biogas capacity was 756 MW

Table 1c

Total biogas energy production (MWh) differentiated by technology and/or type.

	Technology					Type				Total
	Electricity	Heat	CHP	Gasif-iction	Not spec	Farms ***	WWTP	Land-fills	Not spec	
AT							excl.	excl.		519767
BE-FL						330000	10000	60000		399590
BE-WA	150000	135000								285000
BG	14659					178	13995	486		14659
CY										60000
CZ						1500000	100000	350000		1950000
DK						511695	228222	59138	49143	1140000
EE	25053	24520				23738	excl.	25835		49573
FI	151400	366500				4000				519900
FR	1196690	235220				15				1431910
DE	22500000	10500000								33000000
GR*										
HU										203404
IE	508837	73035	82349			59954	95430	508837		664221
IT										3000000****
LV	37016	10072				47088				47088
LT	34720	44745				55842	23623			79465
LU*										
MT*										
NL	527000	453000					excl.	excl.		980000
PL	221940	226858								448798
PT	149097		19401							168780
RO										
SK										125310
SI		N/A								124200
ES										
SE	47000	562000	incl.	734000	131000	incl.	incl.	incl.		1473000
UK ENG	N/A	N/A	N/A	N/A	N/A			excl.		N/A
UK NIR			8300					excl.		8300
UK WLS							n/a	excl.		
UK SCT								excl.		
NO	156000	163000		4000	18000	n/a	200000	300000		500000

**no questionnaire*

***excl. (excluded): the reply specifically mentions that this has not been taken into account*

n/a: the reply specifically mentions that this information is not available

****farms and installations using agricultural and food waste*

**** data refer to December 2011.

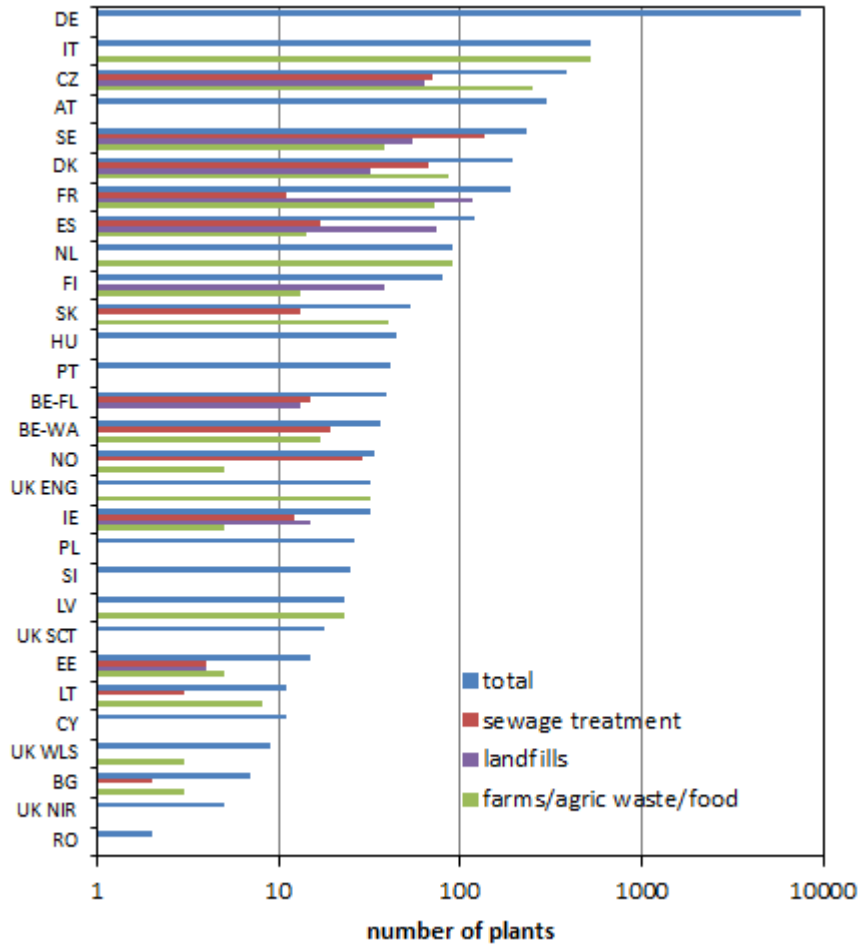

Fig. 1. Type of biogas plants (Figures are not always comparable, since only some Member States included in the reply wastewater treatment plants and landfill gas plants).

3. Input material of biogas plants

The input material to the biogas plants varies strongly between countries and the number of input products mentioned by respondents varies between 1 and 12 different materials. However, a precise categorization of the input material was not asked within the questionnaire.

The input from energy crops is on average higher than 50% in some countries (e.g. Austria, Latvia and Slovakia, see Table 2[1]), while in others (e.g. Denmark, France and Poland) the input from livestock manure is higher. In Germany, the contribution of manure and energy crops is almost equal (based on mass of input). In other member states the contribution from other biowaste is dominant (e.g. Belgium - Flanders, Netherlands, UK - Wales). In some

[1] Mass is given in tonnes fresh weight. Mass can also be given on the basis of dry weight if the water content of the input materials is known. The dry weight is conventionally defined as the mass after drying a material at 105 ˚C. All countries that have given percentages of input, and total inputs, have given input as fresh weight. The logic behind this is that a material such as sludge contains a large percentage of water. Element analyses are often given on the basis of dry matter.

Member States the contribution of energy crops is smaller than 20% (Belgium-Flanders, Denmark, France, Netherlands and Sweden).
Table 2, and Figure 2, cannot be put in direct relation with the table on energy generated (Table 1c), since energy from landfill gas is not always part of the total energy production, or total input in unknown. These data are not specified by Bulgaria, Czech Republic, Estonia, France, Finland and Sweden. In the case of Belgium – Wallonia, the energy from biogas-production at WWTP (Table 1c) is included in the energy production (Table 1b), but WWTP are excluded from the table of inputs (Table 2).

With regards to the area used for energy crops cultivation, most respondents have provided estimates (summarized in table 3 and figure 3). The largest area of energy crops is by far found in Germany (1,072,000 ha), followed by Czech Republic (80,000 ha) and Italy (70,000 ha). Maize is the most cultivated crop.

Table 2.
Inputs of materials to biogas plants in % of total (***) and the total input in tonnes per year.

	Energy crops	Manure	Slaughter house material	Other bio-wastes	Sewage sludge	Total fresh weight (tonnes)[1]
AT	62%	23%	10%	5%	excl**	
BE-FL	13%	29%		58%	excl	1995000
BE-WA	48%	1%	45%	0%	excl	208500
BG						
CY	0%	50%	30%	20%	0%	
CZ	33%	67%			excl	
DK	0.0%	81%		6.1%	12.7%	
EE	2%	11%		68%	19%	n/a**
FI						
FR	3%	62%	3%	29%	3%	152000
DE	49%	43%		8%		
GR*						
HU						
IE						
IT						
LV	67%	28%		5%		
LT						
LU*						
MT*						
NL	12%	43%		44%		2340000
PL	23%	59%		9%		475556
PT						
RO		4%	96%			
SK	90%	10%				
SI	78%	21%	n/a			
ES						
SE	0.4%	4.3%	1.8%	7.4%	86.1%	6495691
UK ENG					excl	
UK NIR	27%	73%			excl	69000
UK WLS		10%		48%	42%	96036
UK SCT					excl	
NO				6.8%	93.2%	1403000

**no questionnaire*
***excl. (excluded): the reply specifically mentions that this has not been taken into account*
n/a: the reply specifically mentions that this information is not available
***** Mass-based percentages are based on fresh weights unless mentioned differently.

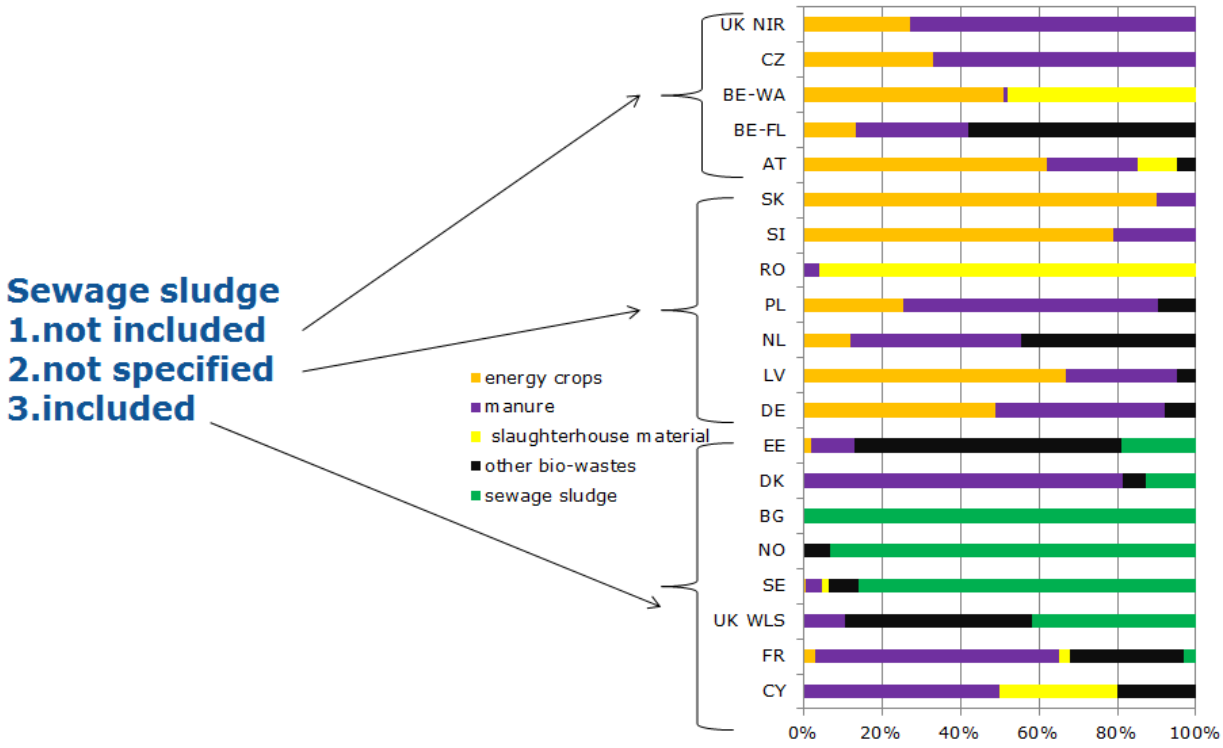

Fig. 2 – Input Material of biogas plants

Table 3
Surface area used for energy crops for biogas production (ha)

	ha	remark
AT	23000	15000 ha maize, 10000 ha other energy crops, partly overlapping
BE-FL	5260	estimated from the 263000 ton assuming 50 ton maize/ha
BE-WA	n/a**	
BG		
CY	0	
CZ	80000	
DK	17500	15000 to 20000 ha, including exports to Germany
EE	n/a	
FI	10	less than 10 ha
FR	n/a	energy crops are around 3%, intermediate crops are 8% of the input in biogas plants
DE	1072000	962000 ha energy crops, 110000 ha grass silage from permanent pasture
GR*		
HU		
IE	300	300 ha sugar beet is exported to biogas plants in Northern Ireland
IT	70000	around 60000-80000 ha
LV	11551	
LT	10	
LU*		
MT*		
NL	1800	maize for energy production
PL	2200	silage
PT	0	energy crops are used for bio-fuel/biodiesel, not for biogas
RO	n/a	only biogas from slaughterhouse waste and manure
SK	18000	estimated for corn silage used for biogas plants
SI	n/a	maize silage is the main substrate, slaughterhouse material is also used in some plants.
ES	0	
SE	n/a	contribution of energy crops to total substrates for biogas production is 0.41%
UK ENG	15000	approximately 50% maize and 50% grass.
UK NIR	409	
UK WLS	n/a	
UK SCT		
NO	0	

*no questionnaire
**n/a: the reply specifically mentions that this information is not available

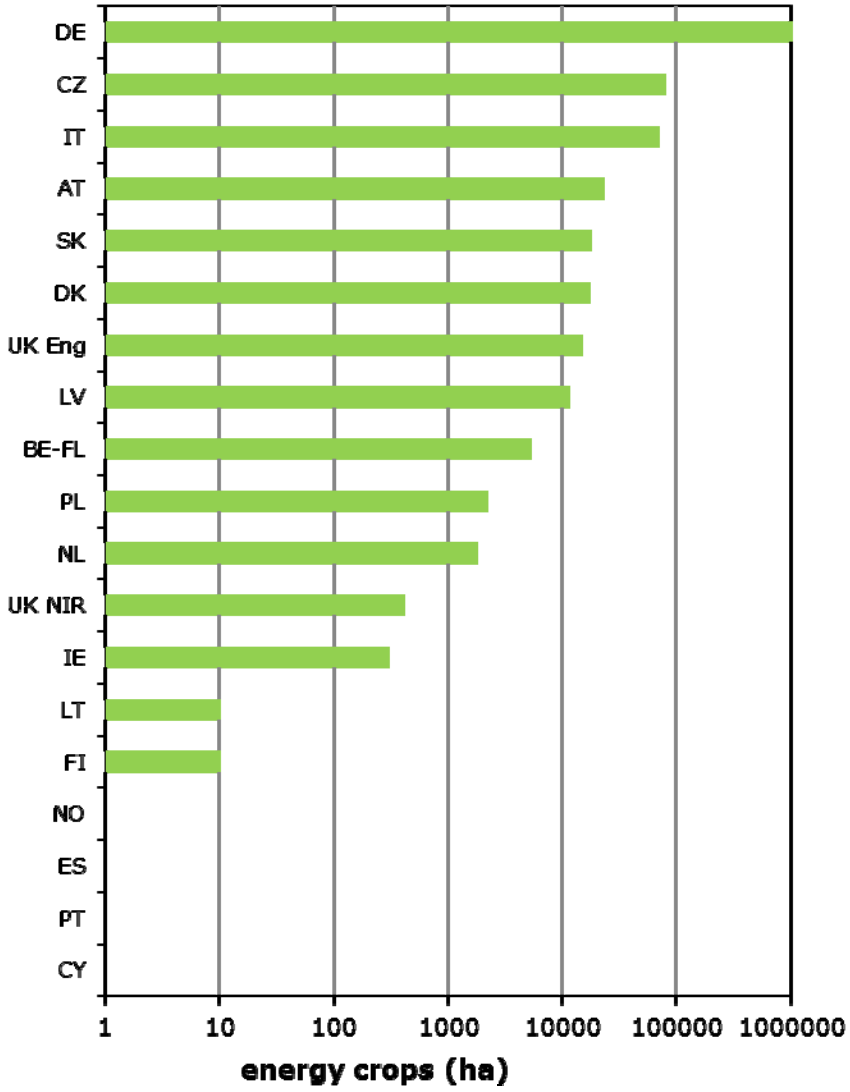

Fig. 3. - Surface area with energy crops (ha) in logarithmic scale. No data from Belgium-Wallonia, Bulgaria, Estonia, France, Hungary, Romania, Slovenia, Sweden, UK-Wales, UK-Scotland, Greece, Luxembourg, Malta. The figure for Portugal includes also biofuels.

4. Digestate

The composition of the output of biogas production is sometimes difficult to define, as it is not always possible to make a good distinction between raw manure, processed manure, and digestate. The composition of the digestate is also influenced by the processing technology. Flanders, for instance, distinguishes raw digestate, solid digestate, effluent, liquid digestate and dried digestate.

Treatment of digestate can affect the availability of N to crops. A study in Flanders[2] shows a great variability of N release. The data in table 4a are based on different sampling methods from various respondents.

[2] Reference in BE-FL reply: http://www.vlaco.be/professionele-verwerking/eindproducten/karakterisering-eindproducten

The amounts of digestate presented in Table 4a are in most cases used for fertilisation. In other cases, the digestate is considered a waste (e.g. digestate produced from slaughterhouse waste in Romania or digestate produced from sewage sludge in Sweden).

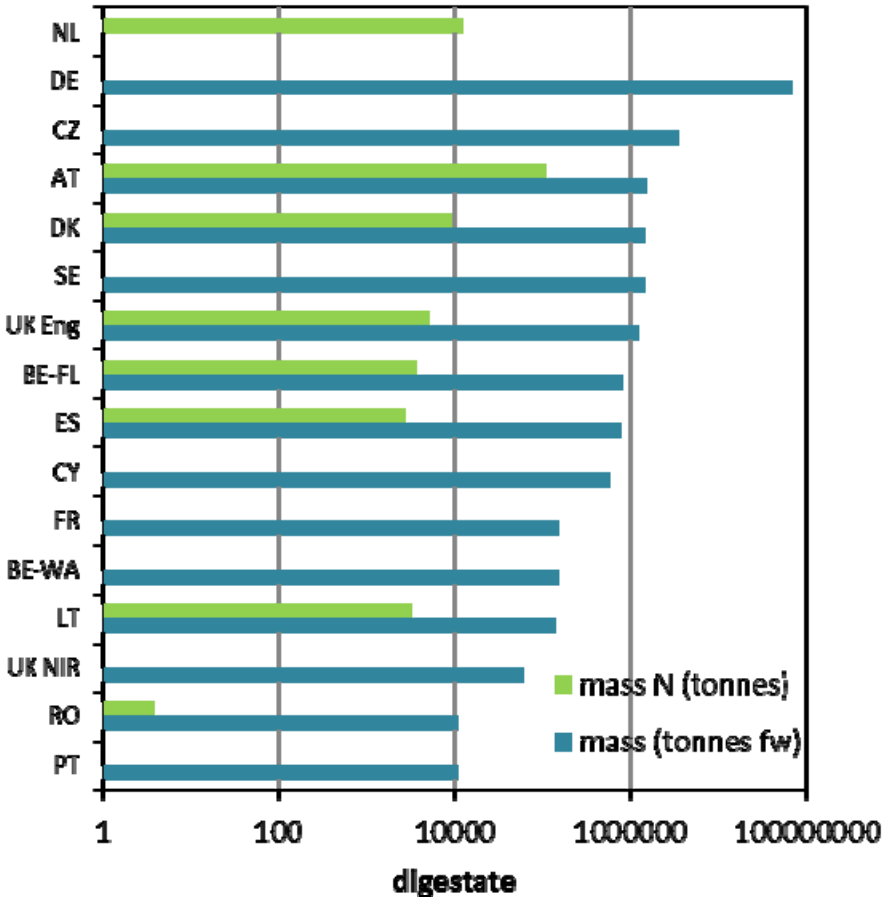

Fig. 4 – Digestate production (logarithmic scale). No data from Estonia, Finland, Hungary, Ireland, Italy, Latvia, Slovakia, Slovenia, UK-Wales, Norway. No reply from Poland, UK-Scotland, Greece, Malta, Luxembourg. Replies were given either in mass fresh weight or in mass N).

Table 4a.
Total quantity (mass) of digestate produced in biogas plants, its N content and its final use.

	Mass (fresh weight) tonnes	N-content (unit as given)	Mass N (tonnes)	Final use
AT	1500000	7.10%	106500	fertiliser
BE-FL**	813371	4.76% DM	3660	
BE-WA	150000	2.9 -10.5% DM		fertiliser, apart from food industry process water and sewage sludge
BG				
CY	600000	< 1.800 mg/l		fertiliser
CZ	3500000			
DK	1441848	n/a	9015	97.8% N as a fertiliser, 2% N export, 0.2% N incineration
EE	n/a			fertiliser
FI	n/a	n/a	n/a	
FR	150000			
DE	70000000	0.55% FW	385000	estimated mass, nearly 100% fertiliser
GR*				
HU	n/a			
IE	n/a			
IT	n/a			fertiliser
LV	n/a	n/a	n/a	
LT	139475	2.30%	3201	15% waste, 85% fertiliser
LU*				
MT*				
NL			12000	fertiliser (27% exported)
PL				
PT				
RO	2000	0.19%	3.8	fertiliser (19% of the total amount of waste)
SK	n/a			fertiliser
SI	n/a		N/A	
ES	780000		2750	
SE	1434340			38% waste, 64% fertiliser
UK ENG	1198155		5096	
UK NIR	62100			
UK WLS	n/a			
UK SCT				
NO	n/a			fertiliser, fill in roadside slopes, landfills, parks and gardens.

*no questionnaire

** Only the data for raw digestate are reported for Flanders.

Table 4b.
Composition of digestate (in % of dry matter, except dry matter content).

	BE-FL	AT
DM content	9.46% Fresh weight	5.7% Fresh Weight
N	4.76%	7.1%
K2O	4.23%	7.5%
P2O5	4.55%	2.7%
CaO	4.02%	3.4%
MgO	1.48%	1.2%

5. Legislation relevant to digestate

5.1 National fertilizer legislation

The inclusion of digestate in national legislation on fertilizers varies considerably among respondents. Some Member States (Spain, Italy, UK – Northern Ireland) and Norway replied that digestate is not specifically addressed in national fertilizer legislation, while others (Austria, Belgium, Germany, Denmark, France, Lithuania, the Netherlands and Poland) pointed out that this is specifically treated as fertilizer, soil amendment or soil improver in relevant legislation.

Some Member States (Austria, Germany, Estonia, Finland, Sweden, Slovenia and Romania) specified that some requirements are assimilated to those applying to livestock manure.
Italy and Slovenia also referred to legislation being prepared and updated on this subject. In some Member States, digestate can be classified as a product and there are specific criteria for its placement on the market.

5.2. National waste legislation related to the Waste Framework Directive

The questionnaire addressed how digestate is dealt with in relation to the national waste legislation in connection to the Waste Framework Directive.

The replies to the questionnaire outline varied approaches across Europe. In some Member States digestate can become a product (e.g. compost in France, Italy and the Netherlands) if the digestate composition complies with certain rules. Estonia, Sweden and Norway replied that no specific regulation relevant to the waste sector addresses digestate. The Czech Republic replied that digestate is not considered waste, while other Member States (Belgium, Germany, Denmark, Italy, Lithuania, Poland, Slovenia) replied that it can be considered "waste" to be potentially spread on land for fertilisation. Austria specified that digestate is treated as waste if the raw materials are not from agricultural primary production, while it is treated as fertilizer if the raw materials are just from agricultural primary production. The diversity of replies point out also a lack of harmonization over the definition itself of waste.

5.3. The Nitrates Directive.

The questionnaire addressed the status of digestate in relation to national legislation implementing the nitrates directive, with specific reference to the accounting in relation to the obligation to not exceed the land spreading limit of 170 kg N/ha/year from livestock manure and the efficiency values assigned to digestate when used in fertilization.

5.3.1 Limit of 170 kg N/ha/year

A summary of the replies by respondent is given in table 5c. Slightly different approaches are currently being taken across the EU:

1. Total N in digestate is accounted for in calculation for the respect of the 170 kg N/ha/year limit, regardless of the composition of the input material. This approach is applied in Belgium (Wallonia) and Estonia.

2. Total N in digestate is accounted for in calculation for the respect of the 170 kg N/ha/year limit:
- if any percentage of livestock manure is part of the input material
- in some cases, even if livestock manure is not part of the input material.
This approach is being taken in Belgium (Flanders).

3. Total N in digestate is accounted for in calculation for the respect of the 170 kg N/ha/year limit, if any percentage of livestock manure is part of the input material. Ireland and Northern Ireland follow this approach.

4. The Netherlands account for total N in digestate in which manure was an input. However, digestate can only be used as a fertiliser if the co-material is part of a specific list and is co-digested with at least 50% livestock manure or produced from solely plant materials, which are mentioned in a separate section of the list.

5. Denmark accounts for the total N in digestate if more than 75% of the input material is livestock manure.

6. Only N from livestock manure is accounted for in calculation for the respect of the 170 kg N/ha/year limit. This approach is applied in Austria, Germany, France, Italy, Latvia and Portugal.

7. In Slovenia, N from digestate is not accounted in current legislation, although legislation will be revised so as to account for N from livestock manure.

8. In Sweden, N from digestate is not accounted for in calculations for the respect of the 170 kg N/ha/year, unless the whole input material is livestock manure.

9. In Bulgaria, N from digestate is not accounted for in calculations for the respect of the 170 kg N/ha/year.

The following countries did not provide a reply to the question: Cyprus, Czech Republic, Hungary, Norway, Poland, Spain, UK-England and Wales, Greece, Luxembourg and Malta, while replies from others did not provide a straightforward answer, sometimes outlining some lack of clarity or gaps in legislation.

5.3.1 Efficiency of digestate

The efficiency of N in digestate is not defined in a similar manner in the Member States. Efficiency values applying specifically to digestate are given in only a very limited number of Member States. Other Member States make use of efficiency values similar to those of the input materials or obtained on the basis of analyses.

Belgium (Wallonia) stated that an efficiency value of 100% is used for digestate. The Czech Republic uses a value of 70%. In Denmark, when animal manure, digestate, processed digestate and other types of organic fertilizers are mixed, the efficiency value is set by calculating the weighted average efficiency value based on information about the input material. As an alternative, the efficiency value for digestate can be set as the same as pig slurry (75%). Austria uses comparison to categories of livestock manure, with values ranging from 50 to 100%. Italy replied that values ranging from 26% to 75% are used, provided that livestock manure is part of the input material. Belgium (Flanders) applies values ranging from 30% to 60% depending on the material being liquid or solid and with or without livestock manure as an input. Northern Ireland applies an efficiency value of 40% to digestate for which manure is not part of the input. The Netherlands uses different efficiency values for different types of livestock manure and organic fertilisers (such as co-materials). For digestate, the highest efficiency value of the components in the input mixture is used. Digestate can only be used in the Netherlands as a fertiliser if the co-material is part of a specific list and is co-digested with at least 50% livestock manure or produced from solely plant materials, which are mentioned in a separate section of the list. Ireland uses a value of 40% (or different if approved by the authorities). Other Member States (Estonia, Slovakia) replied that the value depends on nutrient content or needs to be determined by analyses. Other Member States (Bulgaria, Germany, Finland, France, Latvia, Portugal, Sweden) replied that values are not determined or available in legislation yet. No reply was given by Cyprus, Spain, Hungary, Lithuania, Poland, Romania, Slovenia, UK (England, Scotland and Wales), Norway, Greece, Luxembourg and Malta.

Table 5.
Description of the way digestate N is accounted for with regard to the standard of 170 kg N/ha/year and the N efficiency of digestate.

	Is digestate N accounted for in the 170 kg manure N/ha/year standard?	Efficiency
AT	Only N from livestock manure	Values from 50% to 100% (similar to some categories of livestock manure), depending on ammonium content and on whether or not separation takes place.
BE-FL	Yes if livestock manure is part of the input material. In some cases, also accounted if livestock manure is not part of the input material	Efficiency in the system of application standards: liquid digestate 60%, solid digestate with livestock manure as input 30%, solid digestate without livestock manure as input 60%.
BE-WA	Yes	100%
BG	No	Cannot be determined
CY	No reply	No reply
CZ	No reply	70% of total N
DK	A maximum of 170 kg N per hectare of livestock manure and degassed plant biomass may be applied on agricultural holdings (and more for derogation farms)	Weighted % based on information about the input material. As an alternative, same value as pig slurry (75%)
EE	Yes	Depends on nutrient content
FI	"Not defined"	"Not defined"
FR	Only N from livestock manure	No efficiency values in legislation yet
DE	Yes, digestates from manure are considered and treated like manure/slurry N. Digestates not resulting from manure are not calculated within the 170 kg N/ha-limit.	No efficiency defined
GR		
HU	No reply	No reply
IE	Yes if livestock manure is part of the input material.	Availability figures for N and P are 40 and 100% respectively. Different figures can be used if approved by authorities.
IT	Only N from livestock manure. The amount of N from biomass has to be applied according to nitrogen balance and, fertilisation plans and Maximum Application Standards (MAS) of nitrogen required by the crops.	Table with different values, ranging from 26-75%, applying provided that manure is part of the input material and digestate is assimilated to slurry
LV	Only N from livestock manure	Methodology is explained, no reference to efficiency
LT	170 kg N/ha/year standard applies to compost. It	No reply

	is not mentioned if the standard also applies for digestate	
LU		
MT		
NL	-Yes, if digestate is considered animal manure (more than 50% input is animal manure and the comaterial is on the list of allowed comaterial -No, if digestate is considered “other organic fertiliser” (produced from solely plant materials, which have to listed in a separate section of the list of products that can be used as fertiliser) or compost	- If digestate is considered animal manure: efficiency values of input manure is used. -If digestate is considered "other organic fertilizer" efficiency rate of 50% N - compost: efficiency rate of 10% N
PL	No reply	No reply
PT	The N from livestock manure is included. Other types of biomass used for digestion are not treated in the 170 kg N per ha standard	No specific availability factors for composts and digistate
RO	Reply not clear	No reply
SK	Not clearly indicated in the Action programme	The N contents have to be determined by analyses. Compost from livestock manure or biomass have 1st availability of 30% and 2nd availability of 20%
SI	Not in current legislation. Only N from livestock manure will be accounted for in revised legislation.	No reply
ES	No reply	No reply
SE	No, unless the input material is only livestock manure	Reply refers to manure only (estimated by standard figures or by analyzing ammonium nitrate content
UK ENG	No reply	No reply
UK NIR	Yes if any livestock manure going is being input to the AD system, then the digestate as a whole should be regarded as livestock manure.	An efficiency of 40% is attributed to the digestate for which no manure has been used.
UK WLS	No reply	No reply
UK SCT	Example, but no reply on legislation	No reply
NO	No reply	No reply

7. Conclusions

Biogas is a growing industry in the EU, with huge figures of energy crop cultivation and digestate production in some countries. National initiatives to promote renewable energies have often been the driver for the increase in this industry. While in some countries energy crops are the main input material, in others landfill ad sewage sludge account for a large share of the production. This represents a significant agricultural pressure and can potentially impact water quality.

The outcome of the questionnaire provides an interesting overview of the biogas industry in Europe. The overview of replies should be taken as indicative, as many of them are not comparable and do not always refer to legislation, but also to guidance documents. Nevertheless, the survey was very useful in providing a general understanding of the scale of the industry and the rules relevant to digestate.

Digestate is not comprehensively covered by legislation in many Member States. This also applies to the Nitrates Directive provisions. For instance, accounting for digestate N in the 170 kg/ha/year limit is not clear for all MS and a number of different approaches are adopted. The same applies to efficiency values applied in the methodologies for limitation of land application of fertilizers.

This lack of harmonization and legislative uncertainty is an important indicator that more clarity on the legal status and the rules applicable to digestate would be necessary in the EU, in order to ensure adequate water quality protection.

Annex. 1. Questionnaire on Biogas status and trends in EU

As part of the follow-up to the conferences on manure processing in 2010 and 2006, and in order to help assess the challenges which the growth of manure process and biogas production may pose for water, especially in the context on the Nitrates Directive, the following questionnaire has been prepared.
Member States are kindly asked to provide answers to the Commission by 30 November 2012.

Questions to the Member States:

Please, provide a description on status and trends of biogas development in your country. In particular, please provide information on the following items:

1. Level of development of biogas industry in your Country:
    a) Number of plants
    b) Total installed biogas capacity (MW)
    c) Total biogas energy production (MWh)

For the questions above, please provide data differentiated by technology (electricity, heat, CHP, gasification, etc.)

2. Information on the composition of the input material (energy crops, manure (specify type of manure), slaughterhouse material, other bio-wastes, etc.) and related mass-based percentages (average values, ranges or statistics)
3. Surface area used for energy crops for biogas production (ha)
4. Total quantity (mass) of digestate produced in biogas plants, its composition (including N content) (average values, ranges or statistics) and its final use (agricultural use, waste, export, etc. in weight percentages)
5. A description of the legislation relevant to digestate, in particular how it is considered and treated within:
    a) the national fertilizer legislation
    b) the national waste legislation in connection to the Waste Framework Directive
    c) the Nitrates Directive, in particular:
        i. with regard to the 170 kg N/ha/year limit (please, specify how the N content of the digestate is accounted for)
        ii. with regard to the measure on limitation of land application of fertilizers (please specify which efficiency is attributed to the digestate).