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ANNUAL REPORT 2016 OUT NOW!



AIB

association of issuing bodies



NEWSLETTER 27

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SYNOPSIS OF ARTICLES

AIB reacts to RED II

The AIB reacts to the EU Commission proposals for disclosure and guarantees of origin in “Clean Energy for All Europeans” package and is interested in your views to this analysis.

The impact of joining AIB on the Spanish GO system

The process of joining the AIB was a demanding challenge for the Spanish National Regulatory Authority (National Commission on Markets and Competition – CNMC). As for other AIB members, the Spanish domain has specific rules relating to imports and exports. Find out about the details in this article.

Involving consumers in the energy transition - EUSEW event by AIB and REScoop

It was an honour for the AIB to be accepted as one of the high level policy events at EUSEW in Brussels, week 19-23 June. Read the recap of this well attended event and a report about the lively debate.

Statistics

The latest activity statistics, showing continued growth in the market and the effect of the introduction of new members. Again with the new method: the statistics will show a monthly summary by technology group per country.



The AIB reacts to the EU Commission proposals for disclosure and guarantees of origin in “Clean Energy for All Europeans” package

The European Commission's proposals in the package “Clean Energy for All Europeans” are ambitious and will contribute to a better integrated and more decarbonised European energy market. More specifically, the instrument of the Guarantee of Origin (GO) is consolidated and reinforced by extending the issuance of GOs to all renewable energy, and making GOs mandatory for disclosure purposes.

The Association of Issuing Bodies (AIB) welcomes these elements. In particular, we appreciate the European Commission's recognition that the GO is a valuable instrument for Europe's electricity consumers. Thanks to the GO, companies and households can actively select a contract which guarantees that the electricity supplied to their home or business is from renewable sources.

The AIB – along with several other European and national organisations and companies – has been advocating for ‘full disclosure’, the mandatory use of GOs for disclosing all electricity, including

electricity from fossil and nuclear sources. While it is disappointing that issuance and use of fossil and nuclear GOs has not been made mandatory, we welcome the clarification that it is now legally supported and can be made mandatory if a MS so wishes.

The clarification of the role of high-efficiency cogeneration (HEC) GOs is also welcomed, as is the addition of GOs for renewable gas.

Several elements in the proposals do however raise concerns, in particular those concerning the introduction by the revised Renewable Energy Directive (RED II) of auctioning supported renewable energy in order to offset the cost of support by the income derived from the sale of GOs.

The AIB has reviewed in detail the provisions of the package relating to disclosure and GOs, and its views are set out [here](#). On this page, you can find the three ‘levels’ of the response of AIB to the EU Commission proposals for disclosure and GOs in the “Clean Energy for All Europeans” package in attachment:

1. The ‘[Press Release](#)’ (1 page) is the most high level document,
2. The ‘[Summary](#)’ document (5 pages) goes into some more detail and argumentation,
3. The ‘[Detailed considerations](#)’ provide the highest level of detail, commenting on the individual considerations and proposals and providing argumentation to improve the text of the Clean Energy Package further to ensure that the energy consumer is put fully in the driver's seat so the push for sustainable energy transition can be successful!

Do you agree with our analysis?

The impact of joining AIB on the Spanish GO system

Since 2007, the Spanish National Regulatory Authority (National Commission on Markets and Competition - CNMC) has been the official Issuing Body for guarantees of origin of electricity from renewable energy sources and high-efficiency cogeneration in Spain. CNMC is also responsible for the National Electricity Source Disclosure system, including audit and inspection of renewable and cogeneration electric production devices, as well as being responsible for renewable support schemes settlements and the payments system.

On 4th March 2016, the AIB (Association of Issuing Bodies) General Meeting decided unanimously to accept CNMC as a member. For this participation to become active, a formal agreement between the CNMC and AIB had to be signed, and this took place on 26th July 2016.

As for other AIB members, the Spanish domain has specific rules relating to imports and exports. Some of these rules are mentioned below, and set out in more details in the Spanish Domain Protocol¹:

- The Spanish registry only facilitates GOs for electricity from renewable resources and highly efficient cogeneration, and does not issue GOs from fossil and nuclear energy sources

- The imports and exports, as well as the remaining operations are published on the CNMC website².
- Under Spanish legislation, once a GO has been imported into the Spanish domain, it is not possible to export it from Spain.
- Spanish importers and Spanish exporters are required to provide specific details in order for approval to be granted, using the form available in the specific site for GOs.
- Import and export requests should follow the deadlines set out in section E2.4 of the Spanish Domain Protocol.

According to the information from the last complete exercise (for the year 2016), almost 35 000 Production Devices participated in the GO system, including wind, solar PV, biomass, concentrated solar power plants and HEC (High-efficiency cogeneration).

The number of supplying companies involved in the Spanish system has been increasing steadily year by year, growing from 65 suppliers in 2015 to 117 suppliers in 2016, which is an indication of the rise in the demand of green offers from final customers.

This concern includes not only domestic and industrial consumers, but also administrative



and public facilities from national, regional and local governments, where the demand for these offers is high.

But the main change in the GO operation in 2016 took place in the market for exported and imported guarantees of origin.

Since CNMC became a member of the AIB in March 2016, the main barriers for international operations were removed, offering the opportunity to transfer GOs to almost all European countries.

This new situation meant that for the first time Spanish suppliers imported GOs from other Domains with a final result that GOs representing 1400 GWh were imported in 2016.

Special attention should be drawn to exports, which almost multiplied threefold in the last year. The following chart shows the evolution of GO exports from Spain to other countries, including non-AIB countries. The main increase in international operations was due to exports to AIB countries (91 % of the total) including Norway, Belgium, Sweden, Germany, The Netherlands, France etc.

The process of joining the AIB was a hard and demanding challenge, but I am completely positive that it was worth it, not only on the evidence of the data, but also from the experience of being a member of a group of people of a very high professional level, who are always willing to help to new applicants.

¹ Available at: <https://www.aib-net.org/documents/103816/-/-/c635359d-98bc-7117-dc36-cb215f7a732c>

² Specific site for GO system: <https://gdo.cnmc.es/CNE/navegacion.do?accion=home&reloadNews=true>

AIB and REScoop.eu EU Sustainable Energy Week event on 22 June 2017



Involving consumers in the energy transition

MEP Claude Turmes opened the event by urging for more additionality, in order to push forward the energy transition in Europe. He then provocatively mentioned some time-worn arguments against the instrument of the Guarantee of Origin (GO). It was unfortunate that he had to leave, as he would have learned about several investment projects that truly provide additional capacity of electricity production based on renewable sources, which rely on Guarantees of Origin to demonstrate their added value. Clearly, the GO is a reliable tool which brings transparency, and enables additionality to be proven and put into practice.



We then heard from Laura Plunkett, chair of the AIB's Working Group Internal Affairs, who did an admirable job in defining the role of the GO and of AIB, providing an overview of the rapid development of the GO market in Europe and outlining what is good and what is not so good regarding GOs in the Clean Energy Package (CEP). She highlighted concerns on the proposal that mandates Member States to auction GOs that are issued for production from renewable energy sources that received support, both for the competent bodies who will be charged with auctioning, for consumers and for electricity suppliers and GO-traders.

Ivan Debay of the French GO- trading company Origo then gave his perspective on the value of the GO. GOs reflect the intrinsic environmental value of the MWhs of electricity produced using renewable sources and demonstrate this value to consumers in a reliable way. He debunked a number of myths (including those mentioned by Claude Turmes) such as the GO-market being in a state of chronic oversupply - but the fact is that demand for electricity from renewable sources is growing rapidly and, as Laura pointed

out, the European GO-market is now balanced between supply and demand. This has led to an increase in the price of GOs, particularly for GOs issued for new solar and wind installations. Ivan pointed to the increasing awareness of consumers into choosing electricity from local, renewable energy sources in e.g. France and Norway and to the positive impact of initiatives such as the RE100 and carbon footprinting.

Josh Roberts from REScoop.eu then provided the perspective of cooperative suppliers. He explained their business model and pointed to – and strongly supported - the GO as bringing transparency for consumers, but questioned the use of GOs as a financial instrument. Whereas GOs are crucial for the cooperative business model, he still felt that some commercial electricity suppliers misuse GOs to represent themselves as more sustainable than is actually the case. Josh urged European policy makers not to get rid of GOs, but to ensure that the GO is maintained and reinforced in the European framework as a transparency tool.





Sim van der Linde of the Dutch company DSM then brought the industrial consumer's perspective. He stressed the need to ensure additionality when setting out a corporate sustainability strategy. DSM has entered into a Power Purchase Agreement to acquire the electricity of a newly-built onshore wind farm that also receives support. Without GOs to track and trace, and prove that DSM uses that electricity, the deal would not be feasible. Hence, auctioning GOs for supported generation would kill this promising investment model.

Finally, Simon Minett of Challoch Energy, representing COGEN Europe, gave his views on the role of GOs for High Efficiency Cogeneration (HEC-GOs). He confirmed the AIB's acknowledgement that consistency is needed in the CEP, e.g. to make not only the issuing, but also the use of HEC-GOs in the disclosure process mandatory. Just like RES-GOs, HEC-GOs are instrumental in ensuring that the environmental benefits of cogeneration production are understood and verified and that consumers have confidence in HEC-GOs.

The following debate was lively and illustrated that not even the panellists see eye to eye on all issues. The real issue was additionality, but unlike Claude Turmes, all panellists see GOs as beneficial in achieving this. For how long time an installation should be regarded as 'additional' was discussed, and several delegates remarked that investors need to have certainty that the payback time is covered. GOs are instrumental in sharing the value and environmental benefits associated with the production for which they are issued. Demand for GOs has picked up rapidly over the past few years, bringing the market to equilibrium between supply and demand. Auctioning may disrupt this and unintentionally lead to excess profit-making by traders, instead of creating value for producers, as is now the case. Transparency is a concern shared by all, and the GO is recognised as being instrumental in bringing transparency, but oddly, the CEP does not really provide progress in this respect e.g. price comparison tools or consumer protection agencies. A comment was made about the analogy of GOs and ETS, but while CO₂ is homogenous, the value

of GOs lies in their diversity! GOs are not simply a unit of measurement, they are a tracking tool for consumer empowerment. One thing the panellists and the audience were divided on, was the role of the market. Some believe GOs should not be used as a financial instrument. This opens up the potential for electricity suppliers to mislead consumers. Others believe that provided consumers are informed correctly, GOs provide choice to consumers. Finally, no one supported mandatory auctioning, because of the many unwanted side effects and the disruptive impact on the business models that currently help to drive forward the energy transition.

A recording of the event can be seen here, with the above mentioned session starting at around 14:00:00.

It was an honour for the AIB to have been accepted as one of the high-level policy events at the EUSEW, so thanks to the European Commission and the organisational team for their support!



Statistics

Methodology

Frequency of reporting

Statistical data is collected and reported quarterly. Where available, data has been collected for all months since 2000, as this permits a high level of reconciliation between individual and total figures.

Data items recorded

Data is collected for each domain and month, and relates to single energy sources or groups of energy sources. For each domain / month / source the following is recorded:

- a. **By production date:** issued, expired and cancelled - this lets the market know how many certificates of each vintage are available for trade, so informing price setting.
- b. **By transaction date:** transferred within domain, imported, exported, expired and cancelled - this helps in judging the level of market activity, and making certificate expiry dates visible further informs pricing and trading strategy; and also enables AIB to calculate its membership fees.

Energy source codes

The list of codes has been prepared by reference to the codes used by all registries, and member preferences. EECS Rules Fact Sheet 5 provides the definitive list of energy source codes, aggregating reported codes into higher-level codes where codes are **inactive** (e.g. hydro and wave power will be aggregated until

such time as wave power becomes more widely used); are **unknown** (e.g. sold renewable fuel may be used where conversion between codes has resulted in the original code becoming unknown); are **not demanded** by the market (e.g. Orimulsion is simply reported as “Fossil”).

Analysis

Where possible, the statistical reports will provide a disclaimer explaining shortcomings in the data. This might include domains that do not provide certain items of data, and those that have not contributed to the latest report. The value of publishing data which contains such shortcomings is felt to outweigh the absence of such data.

Some items may solely be useful at a pan-European level (e.g. domains will not know if certificates they issued and exported have been cancelled). Hence it will be possible to know the length of the market across Europe, but not necessarily for certificates issued in a specific country).

Certificates withdrawn by the issuer (perhaps those issued in the wrong quantities or for the wrong technology) are statistically insignificant, and have therefore been ignored.

Further data is available on our [website](#).

General

All certificates are 1MWh. As metering data is the basis for issuing certificates, there is always some delay in gaining accurate statistics for the corresponding data for a specific month, so the most recent quarter's issuing activity will always be understated and consequently this information should be treated with caution.

Statistics for certificates issued in a specific month are not presented, as the value of this data is not clear. In general, “issued by transaction date” will be similar to, but slightly later than, “issued by production date”, due to the inevitable delays in processing meter data. Currently, close to 100% of the certificates for energy produced in a month will be issued within the following 6 months.

Explanatory notes to statistics

Date of collection of data

These statistics were completed on 23 May 2017 and based on statistics gathered either from statistics published AIB member websites, or where such data is not available, from data provided to the AIB by individual members. The data itself was provided on the following days:

Aggregation of data

In some cases detailed data has been aggregated. For instance “manure” also refers to “pig manure”, and “fossil” also contains “unknown source”. Further, unspecified renewable energy contains that which originates from technology codes T05000000 (combustion) and T07000000 (known).

Completeness of data

The Grexel registries (DK, HR, IE, IS, LU, NO and SE) provide all required information. However, information from these domains relating to periods prior to the adoption of this version of the registry is not always available. For instance, the previous registries did not record the quantity of cancellations by production date that had taken place during the life of these registries. The Austrian registry does not currently provide expiry data.

The difference between total exports and imports is the result of absences in the information gathered, and due to exports to Belgium needing to be accepted by the importer, introducing delay registering the transaction (and which is potentially treated differently by different registries).

Country	Collected	Source
Austria	04 May 2017	website (password protected)
Belgium - Federal	27 April 2017	spreadsheet provided by CREG
Belgium - Brussels	02 May 2017	spreadsheet provided by Brugel
Belgium - Flanders	06 April 2017	spreadsheet provided by VREG
Belgium - Wallonia	27 April 2017	spreadsheet provided by CWaPE
Croatia	02 May 2017	website
Cyprus	06 May 2017	Not yet available
Czech Republic	19 April 2017	spreadsheet provided by OTE
Denmark	01 May 2017	website
Estonia	21 April 2017	spreadsheet provided by Elering
Finland	23 May 2017	spreadsheet provided by FinExtra
France	26 April 2017	spreadsheet provided by Powernext
Germany	03 May 2017	website
Greece		Not yet available
Iceland	02 May 2017	website
Ireland	02 May 2017	website
Italy	18 April 2017	spreadsheet provided by GSE
Luxembourg	02 May 2017	website
Netherlands	13 April 2017	spreadsheet provided by CertiQ
Norway	02 May 2017	website
Portugal		Not yet available
Slovenia	10 January 2012	Only one market party currently, so publication of data would expose their trading position. Data will be published when other market parties commence trading.
Spain	24 April 2017	spreadsheet provided by CNMC
Sweden	02 May 2017	website
Switzerland	07 May 2017	website (password protected)

Please note

New data

The latest version of the statistics now provides:

- Relating to electricity produced during a specific year: the number of certificates issued, expired and cancelled
- Relating to the date when transactions actually took place: the number of certificates transferred, exported, imported, expired and cancelled.

The number of domestic and international certificate transfers have not been reported by production year, as this information does not seem to have a use. For the same reason, the number of certificates actually issued during each month is not reported.

Fuels

The fuels displayed reflect those used by member registries, normally at the most detailed level. Due to the more detailed information now being kept, some information is at a high level. For instance, "Solid - unspecified wood" might contain forestry products, energy crops and so on. Similarly, "liquid - renewable fuels" may contain black liquor. However, when this has been recorded, then it is displayed as such. Hopefully, over time, all registries will provide information at the more detailed level, enabling more accurate analysis.

As other certificates are issued for fuels not on the current list, so these categories will be added and reported against.

Missing and seemingly contradictory data

A further point for consideration is that the new data has only been collected by registries since last year, so it will be absent in earlier data; and for those countries where the registries have yet to capture and report this information. However, given the recent restriction on the lifetime of certificates, this matter should be corrected in the next year or two.

This explains a number of anomalies - for instance, the difference between the total number of certificates cancelled for all production years, and the total number of certificates cancelled by year of transaction: while all registries report when certificates are cancelled; not all registries report the production year to which they relate.

Production and Transaction statistics

Production statistics refer to the month and year when the electricity was produced, whereas Transaction statistics refer to the month and year when the transaction took place.

Thus Production → issue is the number of GOs issued for electricity produced in a specific month, while Transaction → issue is the number of GOs issued during a specific month, regardless of when the associated electricity was produced (note that GOs are issued one or more months after the electricity is produced).

Similarly, Production → cancelled is the number of GOs cancelled which relate to electricity produced in a specific month, while Transaction → cancelled is the number of GOs cancelled during a specific month, regardless of when the electricity was issued.

For each of the above (Production and Transaction):

- Issue = GOs created in a month for electricity produced in an earlier month
- Transfer = GOs transferred within a country or region
- Export = GOs transferred to another country
- Import = GOs transferred from another country
- Cancel = GOs which have been made non-transferrable by the holder of the account in which they reside (or its agent)
- Expire = GOs which relate to electricity produced more than a year ago, and which have consequently been cancelled.

Statistical report

During the third quarter of 2016, market activity continued to increase, as has the use of guarantees of origin (GOs) for disclosure purposes – which is now appreciably higher than it was at this time of the year in any preceding year. Note that RECS certificates ceased to be issued and supported by the AIB and its members at the end of 2015, and are no longer included in these statistics.

These graphs illustrate activity in two ways:

1. **Activity by production date** – this shows the quantity of GOs issued, expired and cancelled which relate to **electricity produced in a given year**; and indicates those which either remain on the market or are otherwise unaccounted for.
2. **Activity by transaction date** – this shows the quantity of certificates **actually** issued, transferred within that country or region, transferred internationally, expired and cancelled in a given year.

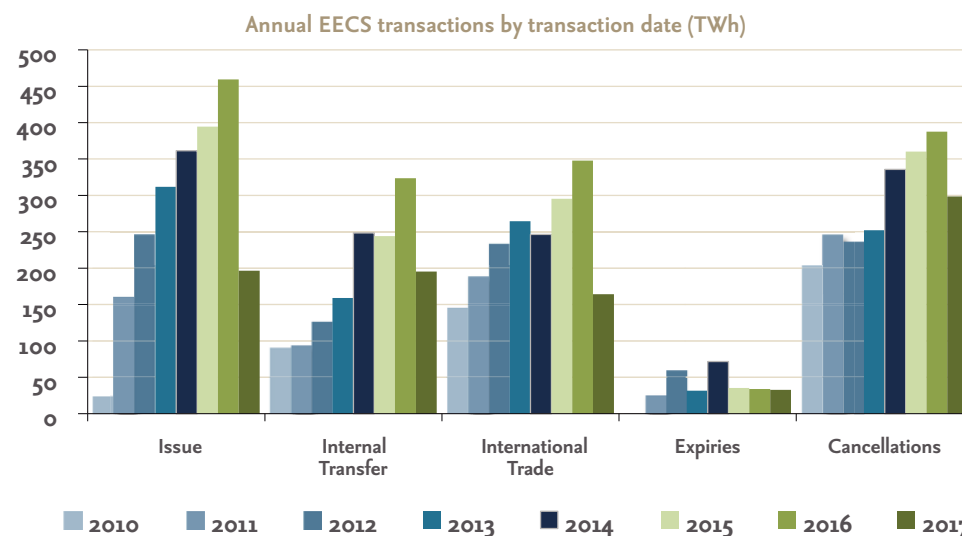
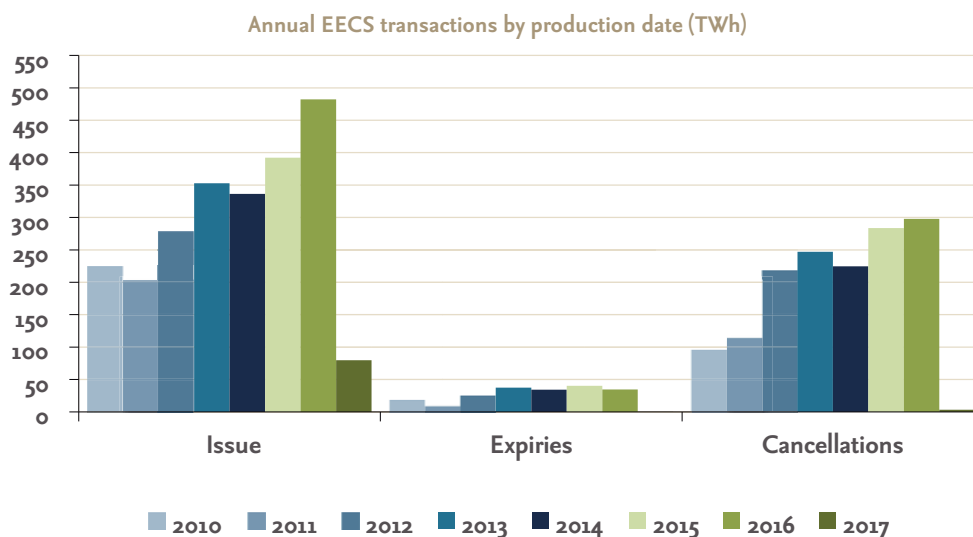
Issue, transfer and cancellation continue to increase over preceding years.

Further growth is expected as new countries are connected to the Hub, and as activity increases within existing members.

Spain (CNMC) became a member of the AIB in March 2016, and has now commenced issuing GOs; however, Cyprus continues to test its registry against the AIB Hub and has yet to commence issuing.

Energimyndigheten of Sweden has applied for membership, but the date on which it expects to replace Grexel and become active has slipped to mid-2017. LAGIE of Greece and Litgrid of Lithuania have applied for membership, and will probably become active next year.

Ofgem of the United Kingdom, RES Operator of Bosnia and Herzegovina, Elektromreža Srbije of Serbia, AST of Latvia and DGEG of Portugal are official observers; and contact continues with interested parties in Poland, Hungary, Slovakia and Montenegro.



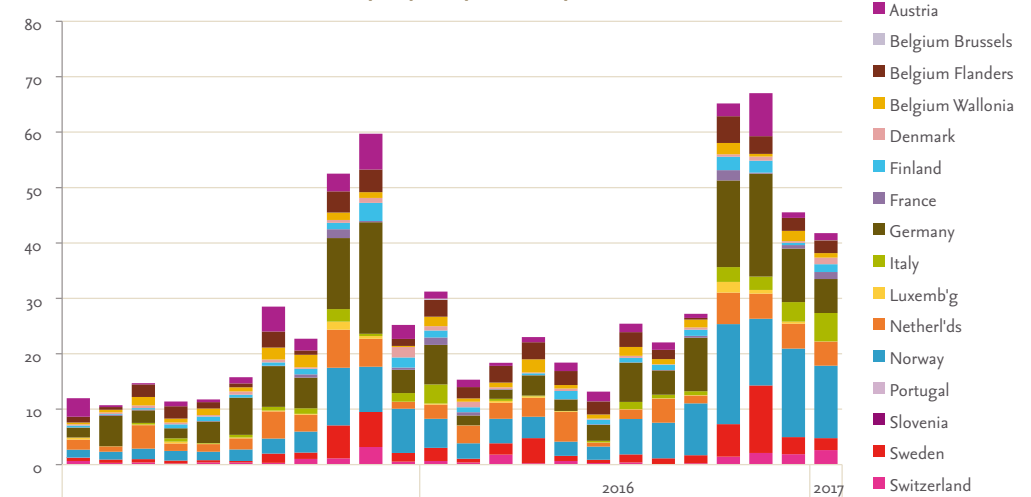
The number of cancellations continue to grow, and 2017 exceeded previous years' record levels, demonstrating the increased use of GOs for purposes of selling products for differentiated energy sources. Note that issuing tends to be 20% understated over the past quarter, due to delays in capturing metering data.

The monthly discrepancy between exports and imports is due to not all transfers being instantaneous, so hence trades which commence in one month can complete the following month; however, the general shape of the import and export graphs is similar.

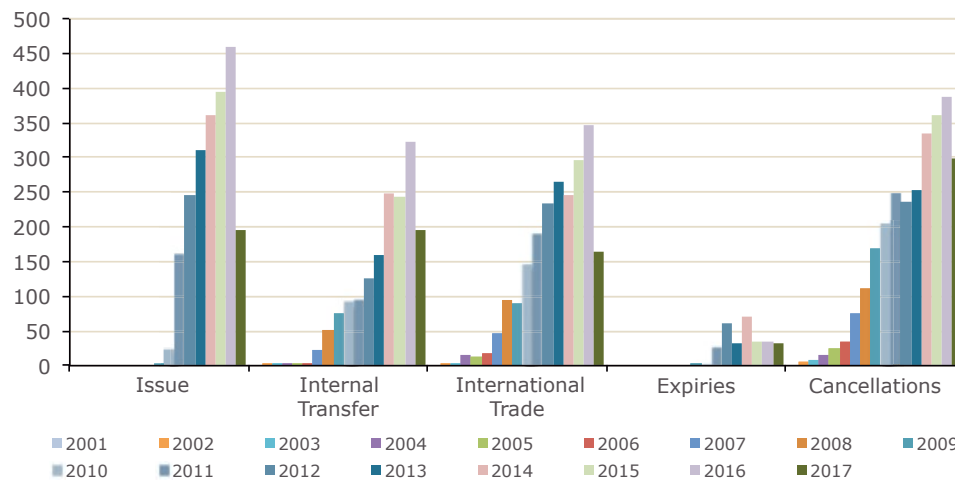
In 2016, Norway, Belgium, Sweden, Italy and France were the major exporters; while Germany, Norway, Belgium, Netherlands and Sweden were the main importers. So far in 2017, the major exporters have been Norway, Italy and Sweden; while Germany, Germany and Sweden have been the main importers. During both years, some countries figure in both exports and imports, suggesting trading activity.

These charts show the large role that the Nordic region has in this market, and the interest in renewable products elsewhere in Europe, particularly Germany and Benelux.

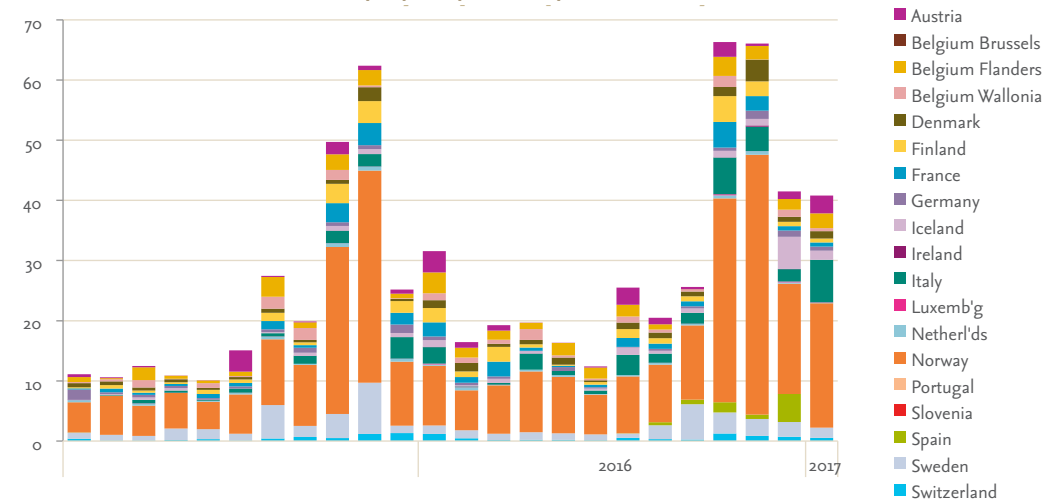
Monthly imports per country (TWh)



Annual EECS transactions by transaction date (TWh)



Monthly exports per country (TWh)



¹ Note that the issuing statistics are now based on transaction dates, whereas previous newsletters used the production dates for these.

There are still trades where certificates are cancelled in one country for use in another: these are known as “ex-domain cancellations (EDCs)”. The EECS Rules only permit this where transfer is technically impossible, so this does not occur between member countries - less than one percent of all EDCs are between member countries. EDCs may also occur where the account holder either does not reveal (or perhaps conceals) the country for which GOs are being cancelled: this is a matter for individual competent bodies.

EDCs can and do occur between member countries and non-member countries, to the extent that in 2016 74 percent of all EDCs went to non-member countries in Europe, while a further 25 percent went to an unknown destination - this is believed to be the UK, and if so this means that more than 99% of all EDCs are for use in Europe), only half a percent of EDCs being used outside of Europe.

The following table gives an indication of the countries for which ex-domain cancellations were executed in 2016.

Note that in some instances, EDCs took place between member countries where technical issues prevented transfer of GOs.

- Ex-Domain Cancellation between Norway and Sweden due to cancellation erroneously done in Norwegian registry with country of consumption = Norway.

During calculation of national disclosure, it was discovered that cancellation was done on behalf of a Swedish company, so the country was changed in the database. Routines have since then been changed to avoid such errors.

- Ex-domain cancellations to Cyprus and Spain: linkage to registry was not yet in place.
- Ex-domain cancellations to Czech Republic: linkage to Czech registry suspended due to EECS Rules infringement, which has now been rectified.

Ex-Domain Cancellations by Country : 2016										
Destination	Source									
	CH	DK	EE	FI	FR	IE	NO	SE	SI	TOTAL
Albania	0	0	0	0	0	0	445	0	0	445
Algeria	0	0	0	0	0	0	558	0	0	558
Australia	0	0	0	0	0	0	5.284	0	0	5.284
Bosnia	0	0	0	0	0	0	5	0	0	5
Brazil	0	0	0	0	0	0	37	6.670	0	6.707
Bulgaria	0	0	0	0	0	0	28.976	0	0	28.976
Chile	0	0	0	0	0	0	183	0	0	183
China	0	0	0	0	0	0	332	0	0	332
Cyprus	0	0	0	0	0	0	325	0	0	325
Czech Republic	0	0	0	0	0	0	11.222	6.125	0	17.347
Greece	0	0	0	0	0	0	83.760	0	0	83.760
Hungary	0	0	0	10	0	0	85.211	0	0	85.221
India	0	0	0	0	0	0	0	18	0	18
Israel	0	0	0	0	0	0	1.224	0	0	1.224
Japan	0	0	0	0	0	0	1.644	0	0	1.644
Latvia	0	0	1.221.431	150	0	0	7.345	304.404	0	1.533.330
Lithuania	0	0	1.327.678	0	0	0	42.880	0	0	1.370.558
Malta	0	0	0	0	0	0	100	0	0	100
Oman	0	0	0	0	0	0	395	0	0	395
Poland	0	0	0	0	0	0	474.191	18.027	0	492.218
Portugal	0	0	0	0	100	0	196.849	0	0	196.949
Qatar	0	0	0	0	0	0	1.436	0	0	1.436
Romania	0	0	0	10	0	0	22.993	0	0	23.003
Russia	0	0	0	2.141	0	0	29.017	0	0	31.158
Saudi Arabia	0	0	0	0	0	0	3.158	0	0	3.158
Serbia	0	0	0	0	0	0	13.661	0	0	13.661
Singapore	0	0	0	0	0	0	249	0	0	249
Slovakia	0	700.521	0	7.500	198.888	0	631.290	578.491	0	2.116.690
South Africa	0	0	0	0	0	0	2.705	0	0	2.705
South Korea	0	0	0	0	0	0	1.576	0	0	1.576
Spain	0	45.500	0	0	4.500	0	40.580	712	0	91.292
Sweden	0	0	0	0	0	0	220.000	0	0	220.000
Turkey	0	0	0	0	0	0	0	5.170	0	5.170
UK	0	5.115.793	85.390	151.274	4.221.811	961.872	8.538.323	8.396.635	122.516	27.593.614
Ukraine	0	0	0	0	0	0	187	0	0	187
United Arab Emirates	0	0	0	0	0	0	4.550	0	0	4.550
United States	0	0	0	0	0	0	113.824	0	0	113.824
Unknown	11.270.823	0	0	0	0	0	0	0	0	11.270.823
TOTAL	11.270.823	5.861.814	2.634.499	161.085	4.425.299	961.872	10.564.515	9.316.252	122.516	45.318.675

EDCs to Member Countries										
	TOTAL		Q1		Q2		Q3		Q4	
EDCs to Member Countries	328.639	0,73%	267.773	3,03%	59.300	0,22%	37	0,00%	1.529	0,03%
EDCs to European non-Member Countries	33.539.042	74,01%	8.117.156	91,90%	19.530.445	71,62%	1.826.322	38,38%	4.065.119	91,19%
EDCs to Europe	33.867.681	74,73%	8.384.929	94,93%	19.589.745	71,84%	1.826.359	38,38%	4.066.648	91,23%
EDCs outside of Europe	180.171	0,40%	43.163	0,49%	13.600	0,05%	95.697	2,01%	27.316	0,61%
EDCs to Unknown Destination	11.270.823	24,87%	404.758	4,58%	7.666.106	28,11%	2.836.164	59,61%	363.795	8,16%
TOTAL	45.318.675		8.832.850		27.269.451		4.758.220		4.457.759	

EDCs can and do occur between member countries and non-member countries, to the extent that in 2016 74 percent of all EDCs went to non-member countries in Europe, while a further 25 percent went to an unknown destination - this is believed to be the UK, and if so this means that more than 99% of all EDCs are for use in Europe), only half a percent of EDCs being used outside of Europe.

The following table gives an indication of the countries for which ex-domain cancellations were executed in 2016.

Note that in some instances, EDCs took place between member countries where technical issues prevented transfer of GOs.

So far in 2017, 72 percent of all EDCs went to non-member countries in Europe, while a further 27 percent went to an unknown destination. Again, if this is (as we believe) the UK, then more than 99% of all EDCs are still used in Europe), and only half a percent of EDCs are used outside of Europe.

The following table gives an indication of the countries for which ex-domain cancellations were executed in 2017.

EX-DOMAIN CANCELLATIONS BY COUNTRY : 2017								
DESTINATION	SOURCE							
	CH	DK	EE	ES	FI	NO	SE	TOTAL
Albania	0	0	0	0	0	87.539	0	87.539
Belarus	0	0	0	0	30	0	0	30
Bosnia	0	0	0	0	0	5	0	5
Brazil	0	0	0	0	0	1.000	0	1.000
Bulgaria	0	0	0	0	0	21.955	0	21.955
Chile	0	0	0	0	0	1.000	0	1.000
Cyprus	0	0	0	0	0	0	471	471
Czech Republic	0	0	0	0	1.465	2.226	0	3.691
Greece	0	0	0	0	0	34.111	0	34.111
Hungary	0	0	0	0	0	108.775	0	108.775
Latvia	0	0	183.829	0	0	7.019	0	190.848
Lithuania	0	0	360.581	0	0	83.656	0	444.237
Morocco	0	0	0	0	154	0	0	154
Poland	0	0	0	0	0	327.908	7.000	334.908
Portugal	0	0	0	0	0	0	147.906	147.906
Romania	0	0	0	0	0	35.632	0	35.632
Russia	0	0	0	0	0	68.721	0	68.721
Saudi Arabia	0	0	0	0	0	5.393	0	5.393
Serbia	0	0	0	0	0	16.897	0	16.897
Slovakia	0	0	0	0	0	387.051	89.280	476.331
Turkey	0	0	0	0	0	4.000	0	4.000
UK	0	1.944.449	0	0	0	1.350.037	169.831	3.464.317
Ukraine	0	0	0	0	0	2.257	0	2.257
United Arab Emirates	0	0	0	0	0	39	0	39
Unknown	790.801	0	0	0	0	0	0	790.801
TOTAL	790.801	1.944.449	544.410	0	1.649	2.545.221	414.488	6.241.018

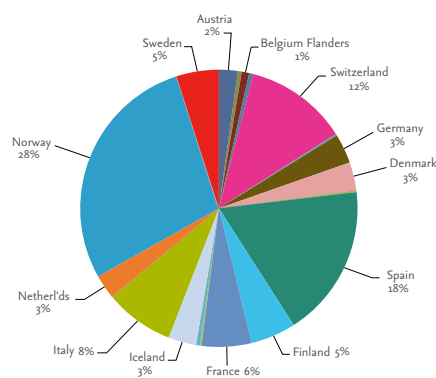
EDCs TO MEMBER COUNTRIES										
	TOTAL		Q1		Q2		Q3		Q4	
EDCs TO MEMBER COUNTRIES	3.691	0,03%	3.691	0,06%	-	0,00%	-	0,00%	-	0,00%
EDCs TO EUROPEAN NON-MEMBER COUNTRIES	10.328.319	72,03%	5.366.219	85,98%	4.962.100	61,28%	-	0,00%	-	0,00%
EDCs TO EUROPE	10.332.010	72,06%	5.369.910	86,04%	4.962.100	61,28%	-	0,00%	-	0,00%
EDCs OUTSIDE OF EUROPE	89.251	0,62%	80.307	1,29%	8.944	0,11%	-	0,00%	-	0,00%
EDCs TO UNKNOWN DESTINATION	3.917.424	27,32%	790.801	12,67%	3.126.623	38,61%	-	0,00%	-	0,00%
TOTAL	14.338.685		6.241.018		8.097.667		-		-	

The following graphs are based on specific “vintages” of certificate (i.e. associated with electricity produced in a particular year), and show the final destination of GOs associated with electricity produced by each member country in a year.

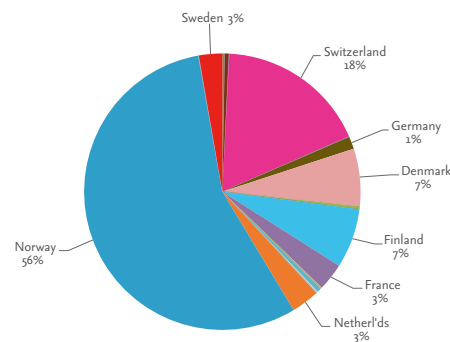
It is too early yet to compare 2017 with 2016.

For renewables, hydropower remains by far the prevalent supplied renewable energy source, followed by wind and then biomass.

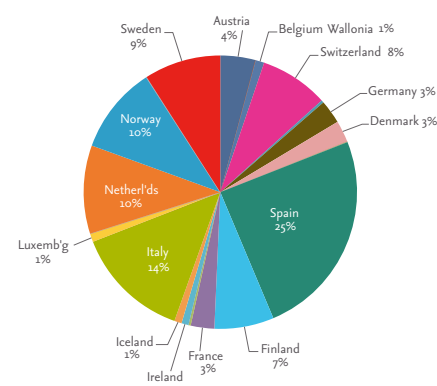
2016 Issue



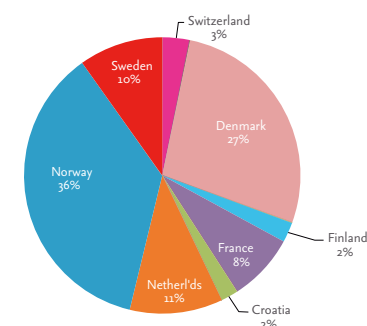
2017 Issue



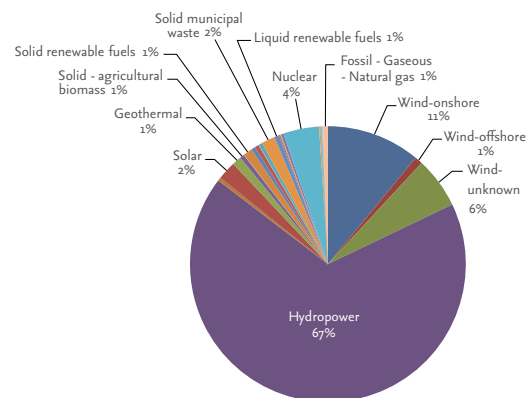
2016 Cancel



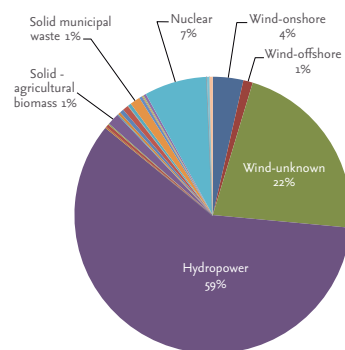
2017 Cancel



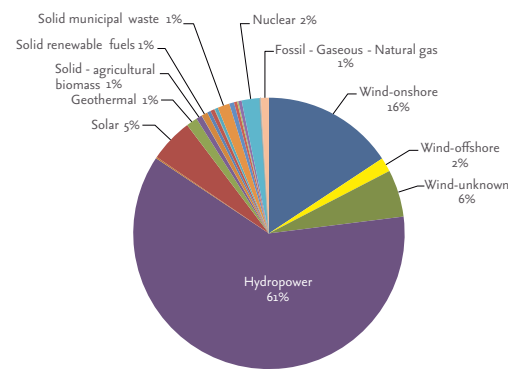
2016 Issue



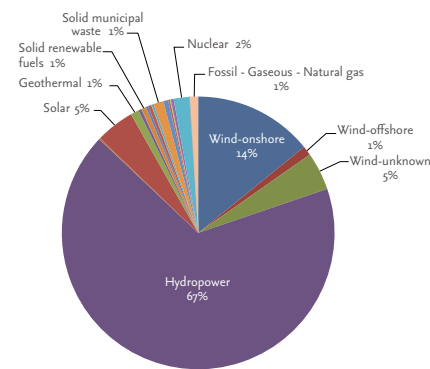
2017 Issue



2016 Cancel



2017 Cancel

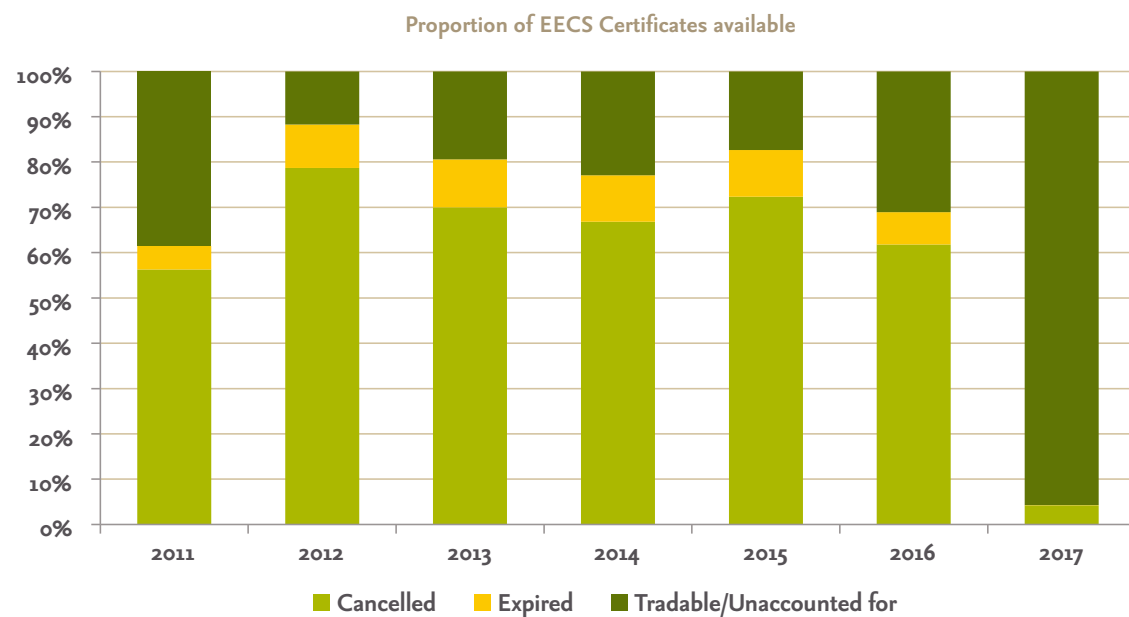
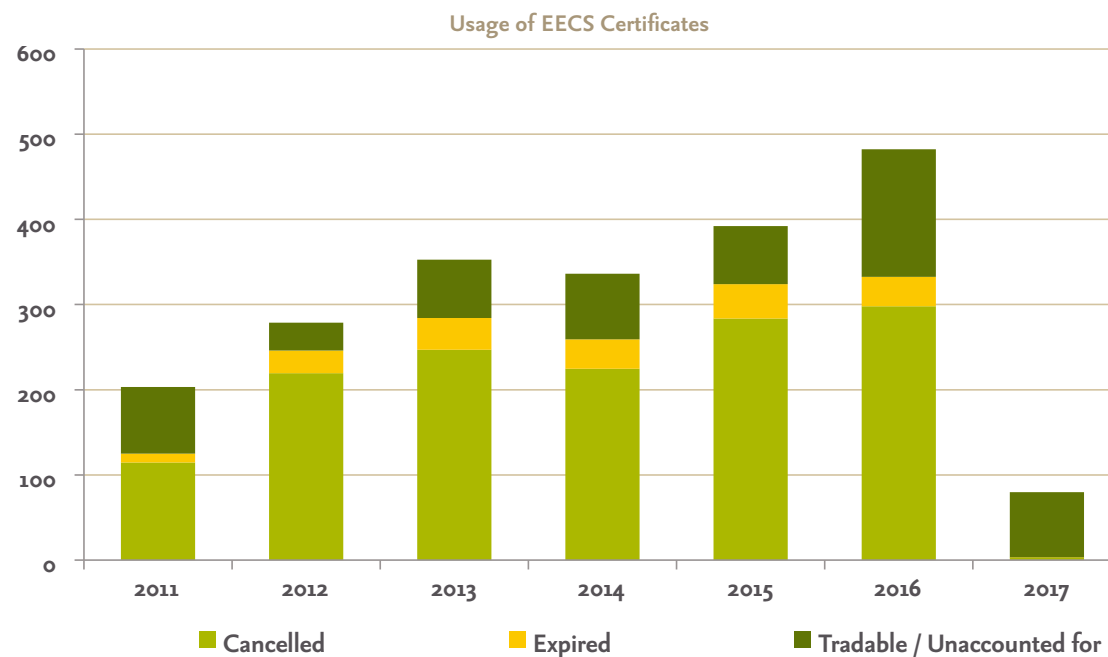


Comparing the status of different vintages of EECS certificate, we can see what has happened to the certificates that were issued for energy produced in the last four years - that is, whether the certificates have:

- been cancelled as evidence of supply;
- expired due to it being more than one year since the associated energy was produced (as required by Directive 2009/28/EC); or
- whether their whereabouts is unknown. This may mean that they remain available for trade, but it could also be that they have been transferred to a registry that does not currently report expiry and cancellation by the date of production.

Two graphs are shown. In the first, actual numbers of certificates are given; while the second illustrates the proportion of certificates in each category.

The picture is becoming clearer as more and more registries support expiry.



The following tables display the raw data by domain at a yearly level. Aggregated totals are given for the period since records began (2000); and for the period from January 2016 until the date of collection of

the data (during April/May 2017 – although note that not all registries can provide the required information upon request – see also “Explanatory notes to statistics” in this statistical report).

ISSUING, TRADE & REDEMPTION FOR ALL FUELS																		
	TOTAL : 2001 TO 2017									2015 TO 2017								
	PRODUCTION			TRANSACTION						PRODUCTION			TRANSACTION					
	ISSUE	EXPIRE	CANCEL	ISSUE	TRANSFER	EXPORT	IMPORT	EXPIRE	CANCEL	ISSUE	EXPIRE	CANCEL	ISSUE	TRANSFER	EXPORT	IMPORT	EXPIRE	CANCEL
Austria	66.999.907		101.501.461	69.938.129	132.591.879	87.323.485	162.935.417		133.961.701	21.062.242		34.867.834	27.154.709	51.228.067	32.701.369	56.272.586		52.305.823
Belgium (Federal)	4.368.594			4.368.594		4.368.594				4.368.594			4.368.594		4.368.594			
Belgium Brussels	301.325		102.041	77.388	8.354.498	14.800	11.743.442	5.390	20.205.408	215.132		50.295	77.388	5.269.750		853.456	5.390	5.418.588
Belgium Flanders	31.392.447	47.990.885	4.799.580	27.591.190	80.556.166	105.774.496	250.361.978	7.864.479	156.419.231	9.091.599	15.169.989	753.289	10.260.909	38.313.997	46.113.919	62.978.039	2.649.922	24.155.618
Belg & Lux RECS	113.390						2.031.496		2.048.355									
Belgium Wallonia	12.174.245	77.885	6.910.774	7.584.685	45.335.102	30.047.321	90.878.822	1.521.308	56.701.527	4.375.409	77.885	4.362.536	5.339.244	20.971.034	19.798.889	29.955.423	965.609	11.793.707
Belgium	48.350.001	48.068.770	11.812.395	39.621.857	134.245.766	140.205.211	355.015.738	9.391.177	235.374.521	18.050.734	15.247.874	5.166.120	20.046.135	64.554.781	70.281.402	93.786.918	3.620.921	41.367.913
Switzerland	295.038.193	43.364.632	218.640.704	296.514.366	102.015	35.818.171	62.384.197	91.290.530	242.325.401	132.361.539	11.845.187	79.704.899	139.275.921		16.932.669	28.731.635	31.286.012	132.962.096
Cyprus	155.252			155.252						155.252			155.252					
Czech Republic	2.151.050	249.040	3.691.695	2.092.796	2.338.148		1.866.321	247.178	3.643.630	986.588	35.144	2.542.367	1.037.567	1.296.548		1.859.984	89.768	2.861.618
Germany	78.670.035	4.959.312	183.350.443	76.410.654	268.853.353	35.853.903	488.478.569	11.419.314	480.541.878	35.466.769	727.954	20.266.553	39.493.364	116.195.416	15.338.844	194.991.279	7.298.803	224.687.695
Denmark	98.581.129	8.387.668	44.620.489	88.786.439	41.326.661	62.924.169	25.679.867	8.387.668	46.446.934	37.770.587	835.068	20.747.138	41.158.201	22.639.947	27.893.317	14.860.376	3.692.808	27.459.663
Estonia	2.194.922		318.494	3.968.562	6.035.159	1.542.304	3.453.870	737.109	1.382.714	2.008.438		261.504	3.760.066	6.035.159	1.542.304	3.453.870	689.345	1.282.581
Spain	100.509.425	3.129.610	73.377.630	89.258.436	73.349.543	13.988.192	1.466.623	3.129.610	79.921.218	85.823.283	3.129.610	73.377.630	85.823.283	73.349.543	8.578.982	1.408.243	3.129.610	73.377.630
Finland	197.934.491	8.182.276	129.272.912	136.400.231	54.267.863	217.373.970	191.084.062	8.182.276	144.729.622	56.030.040	134.867	40.985.364	61.137.469		39.135.144	33.570.402	462.986	56.193.293
France	151.068.283	14.216.770	49.819.299	143.830.269	20.117.439	83.454.101	33.047.092	18.285.229	106.277.724	59.713.763	529.778	20.506.610	84.176.869	7.490.911	58.588.047	11.072.195	1.505.749	34.872.450
Croatia	1.318.617	7.883	992.254	1.318.617	852.846	278.127	143.870	7.883	992.254	1.318.617	7.444	969.680	1.318.617	852.846	278.127	143.870	7.883	992.254
Ireland	4.917.283	6.921	5.351.501	4.754.869	2.396.355	426.603	1.570.397	6.921	5.351.501	4.754.869	6.921	5.350.597	4.754.869	2.396.355	416.602	1.570.397	6.921	5.351.501
Iceland	53.628.409	1.003.048	4.014.155	53.628.409	6.260.870	49.329.793	1.046.983	1.003.048	4.014.155	22.402.299	15.942	3.685.461	25.163.370	5.254.283	21.429.901	28.540	38.913	3.691.162
Italy	161.287.138	38.702.893	101.334.403	134.584.466	259.670.763	63.028.141	50.969.053	42.290.563	197.961.621	73.280.030	37.268.615	72.492.666	93.213.232	186.828.228	50.044.656	33.869.938	40.709.553	112.798.644
Luxembourg	381.449	431.795	17.482.666	381.449	7.309.029	1.566.576	19.759.873	431.795	17.482.666	294.104	22.720	6.181.538	321.328	3.448.800	801.371	9.553.905	135.474	9.707.457
Netherlands	128.713.329	4.941.253	203.587.426	43.177.499	87.318.863	33.191.802	307.449.003	4.941.264	378.125.700	29.544.383	589.936	78.709.053	31.561.139	18.054.967	9.131.675	85.256.022	2.072.699	104.315.640
Norway	1.281.849.967	63.656.256	168.973.861	805.801.296	506.256.964	1.090.004.961	254.144.513	63.656.256	306.283.305	315.375.868	3.580.911	63.636.425	322.820.991	193.508.149	387.738.308	165.154.347	5.723.964	87.768.525
Portugal	1.455.576		422.472	477.440		1.064.056	371.468		487.048						11.800	155.963		205.659
Sweden	431.061.956	28.534.171	201.466.694	167.028.414	28.265.357	221.786.635	207.195.998	28.534.171	378.315.576	57.771.633	878.232	55.589.583	67.879.489	9.990.927	68.365.634	71.695.899	1.786.761	74.169.446
Slovenia	4.002.666					668.004	117.018		1.927.200									
UK	90.158																	
TOTAL	3.110.359.236	267.842.298	1.520.030.954	2.158.129.450	1.631.558.873	2.139.828.204	2.168.179.932	291.941.992	2.765.546.369	954.171.038	74.856.203	585.041.022	1.050.251.871	763.124.927	809.210.152	807.436.369	102.258.170	1.046.371.050

Issuing, Trade & Redemption for All Fuels																		
	2017									2016								
	Production			Transaction						Production			Transaction					
	Issue	Expire	Cancel	Issue	Transfer	Export	Import	Expire	Cancel	Issue	Expire	Cancel	Issue	Transfer	Export	Import	Expire	Cancel
Austria	187			4.912.677	14.398.971	5.711.033	11.500.208		11.982.483	10.529.090		12.374.193	10.505.930	20.528.469	13.713.446	22.274.692		21.826.108
Belgium (Federal)	188.578			511.018		511.018				2.116.702			2.377.838		3.136.152			
Belgium Brussels	30.623				431.116		10.045			109.828				3.148.349		219.576	5.390	3.026.305
Belgium Flanders	383.284	13.536		1.219.758	3.562.523	6.742.773	7.868.824	105.615	2.260.945	4.213.339	3.450.917	94.496	4.183.694	16.032.749	20.983.837	30.908.800	1.647.173	13.296.574
Belg & Lux RECS																		
Belgium Wallonia	39.354		1.157	488.592	3.193.780	1.710.397	3.180.193	72.311	2.506.262	2.333.747	48.749	3.030.503	2.698.096	11.476.459	9.253.225	14.111.041	345.557	5.748.727
Belgium	641.839	13.536	1.157	2.219.368	7.187.419	8.964.188	11.059.062	177.926	4.767.207	8.773.616	3.499.666	3.124.999	9.259.628	30.657.557	33.373.214	45.239.417	1.998.120	22.071.606
Switzerland	14.068.644		107.050	18.549.743		2.216.067	7.560.351	933.040	21.957.720	57.798.493		24.128.526	58.393.123		7.174.309	9.824.606	12.877.045	54.805.015
Cyprus	59.072			76.331						96.180			78.921					
Czech Republic				236.603	78.102		76.754	3.134	281.840	864.925	4.994	882.271	620.696	140.544		127.470	44.053	1.482.914
Germany	1.159.939		1.724	5.250.351	19.499.420	3.107.930	34.378.988	405.131	53.083.233	16.629.611	92.362	8.355.494	14.621.681	46.500.291	5.861.011	80.298.053	2.607.135	84.018.233
Denmark	5.346.713		923.270	7.326.408	4.112.845	6.856.149	2.468.977	209.892	5.042.916	15.882.148	176.683	7.639.242	16.037.121	9.332.608	12.395.134	6.974.355	713.715	8.187.816
Estonia	303.890		2.324	473.210	1.189.330	144.219	862.808	26.210	132.090	988.440		205.456	1.691.639	3.493.588	653.583	2.320.143	186.553	903.607
Spain				38.328.046	54.048.926	5.416.875	1.255.000	3.129.610	73.377.630	85.823.283	3.129.610	73.377.630	47.495.237	19.300.617	3.006.144	153.243		
Finland	5.543.975		78.831	11.301.480		4.703.674	4.074.667	71.638	14.119.816	25.357.814	62.712	20.968.258	24.908.710		20.017.954	15.293.104	86.552	21.244.834
France	2.566.335		269.106	18.044.013	1.209.500	12.654.819	2.079.308	161.017	9.517.207	28.061.921		8.311.421	39.793.211	2.958.301	24.798.402	5.101.733	529.778	15.831.644
Croatia	149.970		68.723	646.903	831.888	141.840	22.357		853.608	1.033.688		785.385	603.336	20.958	136.287	98.500	7.444	116.072
Ireland	395.274			602.525	797.026	309.264	461.129	6.911	1.879.095	2.038.069	770	2.491.559	2.176.944	1.404.524	93.300	797.268	10	3.080.981
Iceland	149.336			9.518.635	1.399.698	8.007.224	3.540	14.670	2.583.175	15.744.320		2.583.175	9.196.668	1.921.095	7.596.836	25.000	1.272	1.100.026
Italy				17.297.025	48.528.550	13.154.848	11.053.046	26.230.359	39.286.950	38.972.555	26.230.359	40.649.593	40.206.573	86.406.695	25.525.831	11.602.934	11.038.256	38.796.750
Luxembourg	23.460			39.137	1.284.592	188.031	1.059.784	10.701	2.291.423	138.147	10.701	2.967.059	147.728	443.381	384.220	3.614.277	12.060	3.393.366
Netherlands	2.603.612		368.238	4.272.852	2.710.227	921.753	13.404.735	172.125	13.583.016	13.586.123	71.181	31.142.573	13.855.111	7.493.695	3.956.287	37.524.750	593.053	48.030.514
Norway	44.584.392		1.230.880	49.676.384	34.930.652	87.995.438	44.276.844	992.049	22.663.150	136.112.460	969.740	30.975.756	138.459.470	88.986.419	161.872.336	77.671.297	2.614.991	32.670.060
Portugal																		
Sweden	2.176.800		332.910	7.593.176	3.250.066	7.893.302	18.626.757	345.714	21.167.496	23.865.432	276.663	27.011.191	31.384.598	3.949.433	29.304.056	28.965.584	611.236	29.924.796
Slovenia																		
UK																		
TOTAL	79.773.438	13.536	3.384.213	196.364.867	195.457.212	168.386.654	164.224.315	32.890.127	298.570.055	482.296.315	34.525.441	297.973.781	459.436.325	323.538.175	349.862.350	347.906.426	33.921.273	387.484.342

Similar to the “by country” data above, the following tables display the raw data “by technology” at a yearly level.

See also the AIB website at [Statistics](#) for Excel spreadsheets in Excel 2010 format, containing the detailed data since records began, summarised by year and by month; and also analysing certificate

activity by fuel source grouping per country, and giving details of the number of GOs that have been cancelled for use in other countries (“Ex-Domain Cancellations”), along with their source and destination.

ISSUING, TRADE & REDEMPTION FOR ALL COUNTRIES

		TOTAL : 2001 TO 2017										TOTAL : 2015 TO 2017							
		PRODUCTION			TRANSACTION						PRODUCTION			TRANSACTION					
		ISSUE	EXPIRE	CANCEL	ISSUE	TRANSFER	EXPORT	IMPORT	EXPIRE	CANCEL	ISSUE	EXPIRE	CANCEL	ISSUE	TRANSFER	EXPORT	IMPORT	EXPIRE	CANCEL
Wind	Wind - onshore	137.875.084	9.322.883	86.283.320	82.061.438	93.122.808	36.076.803	58.874.853	4.808.988	138.135.981	66.210.954	3.787.694	59.691.453	68.390.615	51.650.776	11.570.342	18.443.627	3.000.754	70.075.312
	Wind - offshore	14.256.247	2.406.931	14.663.081	9.409.578	11.691.793	10.840.728	22.590.262	974.820	21.429.963	8.538.865	1.212.844	9.231.489	8.689.154	7.943.699	8.986.067	16.675.850	395.441	13.548.513
	Wind - unknown	125.985.813	19.442.308	68.307.611	118.406.372	80.288.389	113.956.391	80.444.586	21.105.666	73.248.954	73.102.215	13.092.599	38.806.185	67.291.438	55.897.266	71.923.377	55.991.981	15.419.925	52.074.151
		278.117.144	31.172.122	169.254.012	209.877.388	185.102.990	160.873.922	161.909.701	26.889.474	232.814.898	147.852.034	18.093.137	107.729.127	144.371.207	115.491.741	92.479.786	91.111.458	18.816.120	135.697.976
Hydro/marine		2.377.926.025	156.460.252	1.139.040.281	1.638.908.367	1.258.450.475	1.850.998.183	1.867.678.206	193.866.720	2.165.628.407	665.171.431	33.111.619	384.441.059	751.093.833	555.040.107	647.654.889	650.009.615	43.268.710	771.346.530
	Unspecified mechanical/other	23.126	41.731	191.959	69.580	30.431	26.698	5.906.682	726	5.852.666	11.294		14.910	57.968	16.352	18.498	12.286		36.233
	Unspecified renewable energy	8.260.144	1.578.301	3.531.374	6.497.216	3.420.431	3.757.080	11.315.722	1.960.725	3.942.530	6.204.475	447.860	1.891.114	3.991.858	2.418.411	2.760.070	2.799.139	1.220.878	3.003.154
Other	Unspecified heat			871		1.167		1.167					871		1.167		1.167		
	Solar	15.831.896	13.596.327	21.474.948	16.050.928	42.078.376	20.409.627	20.640.868	16.301.953	22.271.822	12.589.890	12.520.267	19.325.429	12.710.002	40.850.955	19.669.429	19.613.464	13.633.917	20.598.250
	Geothermal	28.638.306	3.768.949	10.419.761	23.288.309	15.331.675	24.947.619	23.965.463	453.609	26.763.309	10.395.735	744.709	5.594.091	13.141.691	9.207.716	15.385.500	14.797.023	391.767	13.678.512
		52.753.472	18.985.308	35.618.913	45.907.200	60.860.913	49.142.191	61.828.735	18.717.013	58.830.327	29.201.394	13.712.836	26.826.415	29.902.686	52.493.434	37.834.664	37.221.912	15.246.562	37.316.149
	Solid - agricultural biomass (inc. energy crops)	12.750.349	567.328	9.280.837	10.446.058	3.039.928	9.184.625	10.639.106	382.506	11.166.249	5.609.798	120.254	4.655.580	5.932.261	1.715.884	5.304.435	6.432.777	97.689	5.887.064
	Solid - agricultural products	1.239.810	117.531	720.026	990.074	335.030	928.584	851.102	103.386	699.025	600.001	36.954	294.872	647.781	196.291	759.126	662.976	56.212	455.740
	Solid - renewable fuels (inc. For&Ag bp & w)	64.981.819	8.255.917	8.802.898	21.751.009	38.105.166	23.756.599	20.919.593	3.673.544	56.090.297	9.292.895	1.984.670	3.970.317	11.876.120	10.516.754	4.600.902	2.586.574	1.405.622	7.630.483
	Solid - forestry products	10.965.308	588.338	8.196.125	9.747.351	6.258.489	4.686.466	4.113.338	668.852	9.914.839	4.407.168	139.310	2.534.795	5.919.476	1.150.401	1.670.233	1.467.997	442.319	4.116.916
	Solid - forestry by-products & waste	14.491.840	963.211	6.818.115	9.668.326	5.804.422	4.193.778	4.045.962	956.659	9.977.381	4.822.588	199.316	3.111.621	5.319.887	1.748.467	1.478.450	1.601.143	334.087	4.835.014
	Gas - landfill	4.568.375	368.275	971.597	1.301.768	3.065.465	332.125	397.070	171.783	3.439.223	466.344	52.855	317.175	548.269	383.527	94.073	71.881	71.760	575.070
	Gas - sewage	688.420	102.123	311.161	626.839	259.011	1.044.438	1.205.263	314.582	370.809	338.730	5.944	144.955	387.653	5.999	19.971	63.344	61.998	229.877
	Gas - other biogas	12.299.944	2.064.879	6.353.848	8.452.179	8.057.538	2.422.130	2.016.382	1.425.395	9.672.645	4.252.591	503.462	2.675.979	4.609.895	4.345.917	1.268.983	932.686	405.933	4.271.353
	Solid - municipal biogenic waste	43.484.209	3.133.941	22.097.192	28.041.818	15.309.197	11.899.037	7.973.692	2.159.890	32.973.787	15.036.094	545.314	9.165.460	16.790.229	5.922.975	5.659.672	3.216.657	999.187	12.970.397
	Liquid - renewable fuels (inc. Mun.waste)	7.611.372	1.131.160	5.430.482	7.796.390	5.544.259	4.293.607	3.844.435	1.543.064	6.799.161	4.710.523	1.003.816	3.093.488	5.156.294	3.649.784	3.278.796	2.614.404	1.125.656	4.442.914
	Liquid - black liquor	2.609.297	45.504	3.042.998	2.520.901	1.996.845	2.186.536	3.580.121	43.640	3.592.272	1.276.343	17.810	1.893.725	1.239.751	822.061	854.417	2.247.288	30.698	2.745.503
Solid - unspecified wood	2.542.207	509.942	2.960.123	2.651.160	1.226.581	2.279.405	3.526.340	457.126	3.353.422	1.521.058	326.718	1.581.156	1.801.495	943.349	1.770.616	2.533.974	395.946	2.463.203	
Solid - industrial & commercial waste	20.412.979	4.388.265	4.467.108	9.822.801	14.591.572	2.842.207	3.673.839	1.427.643	18.052.901	3.647.762	658.381	2.369.519	4.154.565	3.794.235	1.288.358	1.389.052	475.679	4.494.075	
	Biomass	198.645.929	22.236.414	79.452.510	113.816.674	103.593.503	70.049.538	66.786.243	13.328.070	166.102.011	55.981.895	5.594.804	35.808.642	64.383.676	35.195.644	28.048.032	25.820.753	5.902.786	55.117.609
RENEWABLE		2.907.442.570	228.854.096	1.423.365.716	2.008.509.629	1.608.007.881	2.131.063.833	2.158.202.885	252.801.277	2.623.375.643	898.206.754	70.512.396	554.805.243	989.751.402	758.220.926	806.017.371	804.163.738	83.234.178	999.478.264
NUCLEAR		180.694.412	35.370.920	83.606.644	125.504.778		355.863	355.863	35.379.484	127.168.824	48.166.724	3.587.039	25.332.692	50.914.143		273.376	273.376	15.720.565	40.621.829
	Unknown	3.198.270	124.113	87.842	2.970.042	497.631	3.058.512	73.434	124.113	81.482	1.859.862	17.420		1.962.594		1.924.506	40.004	123.393	
	Solid - Unknown				3.447									3.447					
	Solid - Hard coal	2.238.884	1.989.226	1.298.582	2.238.884	1.380.582	249.582	1.339.582	1.989.226	1.298.582			609.000	1.397.144	940.582	249.582	899.582	1.989.226	858.582
	Solid - Brown coal	67			67														
	Solid - Peat	30.911	1.167	12.356	58.068	21.387	19.026	13.879	10.638	24.857	30.911	1.167	12.356	58.068	21.387	19.026	13.879	10.638	24.857
	Solid - Municipal solid waste	2.739.576	845.349	845.517	2.807.237	25.996	102.471	187.468	919.399	877.576	1.803.148	387.530	411.114	1.954.131	25.996	102.471	187.468	664.690	740.416
Solid - Industrial and commercial waste		220.276	46.720	147.351	243.362	27.569	27.560	51.178	147.351		98.913	23.187	51.572	102.094		21.200	21.200	26.708	94.907
	Liquid - Unknown	6.913		6.913	6.913					6.913				5.060					5.060
	Liquid - Crude oil	11.074	10.656	418	11.074	418	418	10.656	418					5.541	418	418	418	10.656	418
	Liquid - Natural gas	261.476			64.013					164	244.573			64.013					164
	Liquid - Petroleum products	186.929	73.670	62.246	191.695	53.603		95.284	62.246		114.787	26.168	59.449	122.227	53.603			53.168	61.359
	Gaseous - Unknown	166.352			18.076		2	2.270	167		166.350								
	Gaseous - Natural gas	13.161.526	526.381	10.597.369	15.502.165	21.571.375	4.950.928	7.978.843	558.467	12.502.146	3.479.016	301.296	3.759.596	3.912.007	3.862.015	602.202	1.836.704	424.948	4.485.195
	Gaseous - Coal-derived gas																		
	Gaseous - Petroleum products																		
	Gaseous - Municipal gas plant																		
	Gaseous - Process gas																		
	Heat - unknown																		
	Heat - Process heat																		
FOSSIL		22.222.254	3.617.282	13.058.594	24.115.043	23.550.992	8.408.508	9.621.184	3.761.231	15.001.902	7.797.560	756.768	4.903.087	9.586.326	4.904.001	2.919.405	2.999.255	3.303.427	6.270.955
TOTAL		3.110.359.236	267.842.298	1.520.030.954	2.158.129.450	1.631.558.873	2.139.828.204	2.168.179.932	291.941.992	2.765.546.369	954.171.038	74.856.203	585.041.022	1.050.251.871	763.124.927	809.210.152	807.436.369	102.258.170	1.046.371.055

Issuing, Trade & Redemption for All Countries																			
		2017								2016									
		Production			Transaction					Production			Transaction						
		Issue	Expire	Cancel	Issue	Transfer	Export	Import	Expire	Cancel	Issue	Expire	Cancel	Issue	Transfer	Export	Import	Expire	Cancel
Wind	Wind - onshore	2.842.547	2.188	314.396	21.623.392	24.934.799	3.756.331	2.596.254	2.071.392	42.227.100	52.984.777	2.478.472	46.773.367	36.393.928	20.394.630	4.780.352	9.815.620	288.851	15.406.608
	Wind - offshore	881.166		3.538	1.541.865	2.484.981	1.559.226	5.154.599	186.744	3.341.928	4.360.785	204.766	5.052.593	4.511.086	4.410.569	5.647.074	7.926.762	187.885	7.067.408
	Wind - unknown	17.390.570		1.473.436	12.817.416	11.482.620	17.824.377	13.833.071	6.601.245	13.455.559	28.930.000	6.644.764	16.764.134	28.285.246	26.144.331	32.090.330	24.338.017	6.605.641	18.184.823
		21.114.283	2.188	1.791.370	35.982.673	38.902.400	23.139.934	21.583.924	8.859.381	59.024.587	86.275.562	9.328.002	68.590.094	69.190.260	50.949.530	42.517.756	42.080.399	7.082.377	40.658.839
Hydro/marine		47.368.016		1.444.172	131.038.907	134.985.385	126.800.708	124.728.678	11.057.805	200.943.206	325.501.119	12.135.812	182.739.985	326.814.789	223.488.933	275.555.801	275.526.616	17.206.125	293.760.138
Other	Unspecified mechanical/other						4.940	9.316		4.982	1.410		4.982	2.086	6.068	4.277	323		572
	Unspecified renewable energy	129.717		1.724	482.341	733.746	662.518	531.513	55.466	430.551	1.994.293	78.970	488.817	1.438.166	900.868	1.053.621	1.148.622	209.954	1.234.843
	Unspecified heat												871	1.167		1.167			
	Solar	285.523	9	11.781	4.301.872	10.654.175	5.917.476	5.991.939	10.460.913	13.683.188	10.452.038	10.432.043	15.476.214	6.681.555	27.891.916	12.176.604	11.983.120	2.413.201	5.376.228
	Geothermal	101.880		470	1.576.733	1.895.071	3.070.950	3.236.024	92.915	2.938.710	5.155.967	78.245	3.975.408	5.306.344	4.023.473	5.518.019	5.273.601	88.138	5.485.249
		517.120	9	13.975	6.360.946	13.282.992	9.655.884	9.768.792	10.609.294	17.057.431	17.603.708	10.589.258	19.946.292	13.429.318	32.822.325	18.753.688	18.405.666	2.711.293	12.096.892
Solid - agricultural biomass (inc. energy crops)		1.119.051			1.542.886	863.235	3.405.591	3.655.034	23.534	1.083.377	2.481.710	16.173	2.039.774	2.312.309	691.469	1.479.478	1.736.788	36.238	1.694.618
Solid - agricultural products		92.507			131.433	141.745	543.522	453.009	12.498	60.159	278.062	30.607	81.291	262.276	6.376	99.017	93.380	5.824	137.364
Solid - renewable fuels (inc. For&Ag bp & w)		242.765			3.242.398	1.483.802	1.078.466	808.087	415.424	1.700.675	5.037.846	635.810	2.212.051	4.141.040	4.741.316	1.906.796	959.490	407.620	3.433.103
Solid - forestry products		374.141		43.308	1.356.495	76.292	254.910	226.144	24.899	856.634	2.285.952	33.366	1.257.311	2.154.474	168.593	589.535	528.046	154.322	1.455.576
Solid - forestry by-products & waste		532.630		9.202	1.005.674	236.841	278.044	197.741	38.750	1.109.196	2.310.037	61.850	1.440.693	2.310.011	1.074.648	798.709	946.981	120.648	1.719.366
Gas - landfill		23.876		35	58.197	23.045	21.578	15.284	3.987	131.288	194.344	11.006	131.491	243.842	187.500	51.679	34.968	36.224	204.691
Gas - sewage		27.459		1.142	61.482	300	10.639	13.862	1.817	58.811	156.041	692	69.895	163.014	597	9.331	49.481	4.686	88.765
Gas - other biogas		300.577		45.736	596.818	739.489	371.271	236.032	79.232	724.488	2.036.553	126.957	1.165.449	1.949.604	1.874.210	588.570	421.219	172.679	1.617.283
Solid - municipal biogenic waste		958.709		5.741	2.994.910	1.046.500	1.115.099	831.890	213.621	3.514.766	7.509.359	280.717	4.235.128	6.660.099	1.984.209	2.595.847	1.000.772	228.739	4.061.875
Liquid - renewable fuels (inc. Mun.waste)		258.119		19.034	1.270.251	964.646	717.705	605.364	859.381	1.708.360	2.676.850	868.868	1.701.025	2.178.093	1.351.433	1.543.111	1.268.884	112.661	1.502.144
Liquid - black liquor		69.775			420.439	178.201	74.147	249.053	14.638	655.485	776.912	14.637	1.113.716	615.681	439.130	371.566	1.448.252	3.172	1.532.215
Solid - unspecified wood		115.206			227.274	214.634	309.195	309.493	85.602	333.093	532.810	112.815	442.447	834.669	404.385	954.213	1.291.208	220.356	1.009.750
Solid - industrial & commercial waste		246.496	11.339	4.286	447.653	321.980	134.584	87.912	11.653	982.617	1.449.834	97.369	1.186.186	1.814.353	1.679.451	704.375	795.712	247.369	1.867.294
Biomass		4.361.311	11.339	128.484	13.355.910	6.290.710	8.314.751	7.688.905	1.785.036	12.918.949	27.726.310	2.290.867	17.076.457	25.639.465	14.603.317	11.692.227	10.575.181	1.750.538	20.324.044
RENEWABLE		73.360.730	13.536	3.378.001	186.738.436	193.461.487	167.911.277	163.770.299	32.311.516	289.944.173	457.106.699	34.343.939	288.352.828	435.073.832	321.864.105	348.519.472	346.587.862	28.750.333	366.839.913
NUCLEAR		5.867.666			7.162.699		81.193	81.193	342.456	5.674.421	20.233.542	24.415	6.443.422	20.924.948		85.904	85.904	4.447.573	18.986.272
Unknown		448			193.988		293.386		120		762.010			576.517		868.141	4	70.032	
Solid - Unknown														3.447					
Solid - Hard coal															691.000		650.000	47.714	609.000
Solid - Brown coal																			
Solid - Peat					5.952	2.439			5.283		25.793	1.167	7.238	36.791	12.641	15.363	10.216	5.355	18.550
Solid - Municipal solid waste		240.527			400.275	25.996	79.598	58.237	39.552	72.788	975.357		78.792	1.002.059		19.167		391.902	265.571
Solid - Industrial and commercial waste		15.989		4.286	20.873		21.200	21.200	21.200	21.529	53.262	21.200	18.558	57.876				2.654	30.043
Liquid - Unknown																			
Liquid - Crude oil																			
Liquid - Natural gas											159.621			64.013					164
Liquid - Petroleum products		7.179			49.344	53.603			2.537	55.428	79.265		55.428	44.763				26.056	4.021
Gaseous - Unknown											166.350								
Gaseous - Natural gas		280.899		1.926	1.793.300	1.913.687		293.386	167.463	2.801.716	2.734.416	134.720	2.808.515	1.652.079	970.429	354.303	572.440	179.654	730.808
Gaseous - Coal-derived gas																			
Gaseous - Petroleum products																			
Gaseous - Municipal gas plant																			
Gaseous - Process gas																			
Heat - unknown																			
Heat - Process heat																			
FOSSIL		545.042		6.212	2.463.732	1.995.725	394.184	372.823	236.155	2.951.461	4.956.074	157.087	3.177.531	3.437.545	1.674.070	1.256.974	1.232.660	723.367	1.658.157
TOTAL		79.773.438	13.536	3.384.213	196.364.867	195.457.212	168.386.654	164.224.315	32.890.127	298.570.055	482.296.315	34.525.441	297.973.781	459.436.325	323.538.175	349.862.350	347.906.426	33.921.273	387.484.342



Forthcoming events

20-22 Sept 2017	Kolding + Fredericia, Denmark	AIB General Meeting
29 Nov 2017	Vienna, Austria	Open Markets Committee
30 Nov - 1 Dec 2017	Vienna, Austria	AIB General Meeting