

Summary¹

This report has been prepared following work developing proposals for future activity reporting, which it is hoped will be presented to the general meeting of the AIB, to be held in Copenhagen in September 2005.

During the development of proposals for improving the reporting of details of international certificate movements, the current public reports from registries were found to have significant shortcomings², the correction of which has led to the development of a much better picture of international transfers. This reveals a higher level of certificate transfers than had originally been reported (a 50% increase), and demonstrates more clearly the viability of an international market, such that of the 84 million certificates issued to date, 26 million have been transferred internationally, and 42 million have been redeemed.

Work continues to identify, analyse and correct the remaining errors, the discovery and correction of which emphasises the need for central coordination of certificate activity, and in particular the need for a Hub.

The major certificate issuing countries are now Norway and Sweden, with Netherlands remaining the major redeemer. The largest exporters are Sweden, Norway and Finland, and Austria and Netherlands are major importers. Technologies have remained the same, although biomass has been overtaken by hydro, and wind is increasing.

The proportion of certificates that are redeemed has risen sharply to about 50% overall (72% this year).

Phil Moody
General Secretary, Association of Issuing Bodies
4 August 2005

¹ Readers should note that:

1. All certificates are 1MWh.
2. As the base data for issued certificates derives from meter data, there is always an element of delay in gaining an accurate picture of certificates issued for a particular month. Thus the most recent [3] months will always be understated and the corresponding information should be treated with caution.
3. Historic import and export figures continue to be misleading due to the practice of redeeming certificates in one country and transferring the renewable benefit over national borders by means of redemption statements. This appears to be increasingly replaced by inter-CMO transfers.
4. Data has been collected for all months to date, from all parties.

² Shortcomings included:

1. Different methods of setting date-ranges (1st to last day of a month, or 1st to 1st day of the month? The former is preferred);
2. Omission of some technologies from certain reports;
3. Different interpretations of import and export (do these relate to the domain, or to the registry? The former is preferred);
4. Imports on one registry not being reflected by exports on the counterpart registry; and
5. Timing considerations between imports and exports.

Figure 1: raw data – issuing and redemption

Issuing & Redemption for all technologies												
	Total		2005		2004		2003		2002		2001	
	Issued	Redeemed	Issued	Redeemed	Issued	Redeemed	Issued	Redeemed	Issued	Redeemed	Issued	Redeemed
Austria	5,894,306	1,341,864	432,225	106,868	2,452,748	851,784	1,950,584	298,543	1,057,599	84,669	1,150	
Belgium and Luxembourg	113,390	390,530		333,530		50,000		7,000	59,150		54,240	
Switzerland	917,174	622,120	28,675	479,566	512,442	102,924	276,837	35,530	99,220	4,100		
Germany	48,351	52,623		9,536	5,963	43,087	41,789		450		149	
Denmark (West)	1,366,276	24,614	336,264		777,965		24,686	24,614	74,233		153,128	
Denmark (East)												
Spain	2,750,108	314,365	126,319	174,334	901,135	93,400	795,287	46,631	534,378		392,989	
Finland	23,357,238	7,752,428	1,518,138	169,153	8,107,713	1,863,639	7,177,954	4,192,610	5,840,401	1,527,025	713,032	1
France	777,562	445,703	186,429	144,068	443,916	214,878	142,665	86,757	4,552			
Italy	673,088	259,804	225,359	171,249	73,970	76,873	59,549	10,557	302,814	1,125	11,396	
Netherlands	6,521,331	14,903,490	3,983,937	7,252,149	2,172,121	7,542,276	162,773	107,962	202,500	1,103		
Norway	23,455,298	6,966,384	6,512,078	1,564,589	5,625,516	1,617,327	7,817,149	1,325,707	3,500,555	2,458,761		
Poland												
Portugal	20,553		20,553									
Sweden	16,161,576	6,836,702	5,037,311	1,134,216	5,832,690	2,471,348	2,040,632	2,106,088	3,150,720	1,125,050	100,223	
Slovenia	2,237,185	2,237,185		1,769,182	2,237,185	468,003						
UK & Ireland	90,158								90,158			
All countries	84,383,594	42,147,812	18,407,288	13,308,440	29,143,364	15,395,539	20,489,905	8,241,999	14,916,730	5,201,833	1,426,307	1
Percentage redeemed		50%		72%		53%		40%		35%		0%

Issuing & redemption for all countries												
	Trading report for all countries		2005		2004		2003		2002		2001	
	Issue	Redeem	Issued	Redeemed	Issue	Redeem	Issue	Redeem	Issue	Redeem	Issue	Redeem
Onshore wind	4,298,644	2,001,788	1,896,191	997,207	1,896,551	804,377	314,767	153,738	166,708	46,465	24,427	1
Offshore wind	14,446	5,718	1,542	2,993	9,636	2,539	4	186	2,008		1,256	
Photovoltaic	4,301	2,221	1,793	1,798	2,495	423	13					
Thermal												
Hydropower	52,188,817	21,342,415	13,780,298	9,832,376	18,512,393	6,833,053	11,967,408	1,739,735	7,325,326	2,937,251	603,392	
Onshore tidal												
Offshore tidal												
Onshore wave												
Offshore wave												
Geothermal	255,082	102,898	35,627	36,081	53,431	55,175		10,517	166,024	1,125		
Energy crops	206,601	193,700	1,046	70,643	59,023	56,457	66,513	52,078	36,033	14,522	43,986	
Forestry etc	23,681,033	16,352,041	651,442	1,073,139	7,572,161	6,917,876	7,945,838	6,201,910	6,850,232	2,159,116	661,360	
Landfill gas	207,635	70,206	82,492	24,061	102,132	36,968	3,890	742	19,121	8,435		
Sewage gas	31,288	30,752	31	546	6,028	5,025	1,075	25,181	24,154			
Other biogas	17,318	7,124	13,672	5,625	3,016	1,499	630					
MSW	1,269,636	509,390	422,843	219,629	339,170	283,780	171,379	3,026	244,358	2,955	91,886	
IB&CW	2,188,240	1,529,559	1,499,758	1,044,342	587,328	398,367	18,388	54,886	82,766	31,964		
Total	84,363,041	42,147,812	18,386,735	13,308,440	29,143,364	15,395,539	20,489,905	8,241,999	14,916,730	5,201,833	1,426,307	1

The above tables display statistics for individual years 2004 and 2005 (to late July), and for 2001-5 (in total). These, and the following charts, show that volumes issued and transferred continue to increase at a slightly greater rate than last year while, since March, redemption has increased markedly.

Figure 2: raw data – transfers

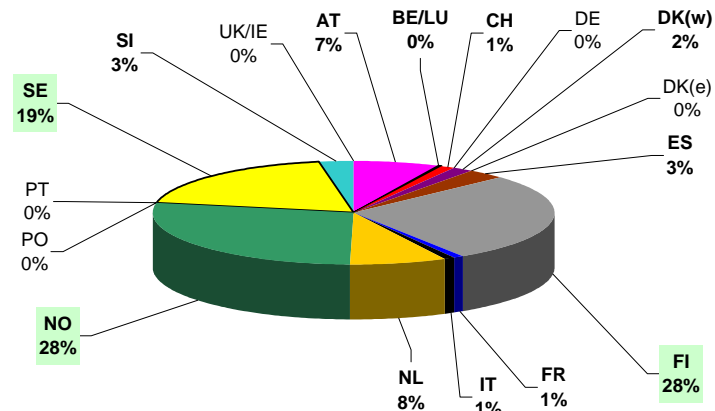
Total country to country - 2001 to 2005																	
TOTAL	AT	BE/LU	CH	DE	DK(e)	DK(w)	ES	FI	FR	IT	NL	NO	PT	SE	SI	Unknown	
AT	278,430	0	5,676	0	0	0	0	0	0	0	530,322	0	0	155,000	0	0	969,428
BE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH	439,200	0	80,727	28,200	0	0	0	0	6,000	0	0	100	0	0	0	250	554,477
DE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DK(e)	0	0	0	0	0	0	0	0	0	0	110,280	0	0	1,000	0	0	111,280
DK(w)	0	0	0	0	5,630	0	0	0	0	0	206,858	0	0	0	0	0	212,488
ES	1,311,301	0	219,600	10,000	0	0	0	0	0	0	0	0	0	0	0	0	1,540,901
FI	757,056	39,450	0	19,660	1	0	0	1,457,842	0	0	6,647,495	67	0	339,199	0	0	9,260,770
FR	0	0	0	5,000	0	0	0	0	63,957	0	0	0	0	0	0	0	68,957
IT	0	0	0	0	0	0	0	0	0	297,437	0	0	0	0	0	0	297,437
NL	0	0	0	0	0	0	0	13,619	0	0	0	0	0	0	0	5,910	19,529
NO	2,783,844	377,772	100	2	410	0	0	22,500	0	0	0	675,364	0	0	0	0	3,859,992
PT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SE	3,643,282	0	0	10,000	0	0	0	66,172	0	0	4,882,728	1	0	158,386	0	0	8,760,569
SI	468,003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	468,003
Unknown	0	24,779	17,000	0	0	0	0	0	0	0	7,000	0	0	0	0	0	48,779
All transfers	9,681,116	442,001	323,103	72,862	6,041	0	0	1,560,133	69,957	297,437	12,384,683	675,532	0	653,585	0	6,160	26,172,610
External	9,402,686	442,001	242,376	72,862	6,041	0	0	102,291	69,957	0	12,384,683	168	0	495,199	0	6,160	23,224,424
Internal	278,430	0	80,727	0	0	0	0	1,457,842	0	297,437	0	675,364	0	158,386	0	0	2,948,186

Total country to country - 2005																	
TOTAL	AT	BE	CH	DE	DK (e)	DK (w)	ES	FI	FR	IT	NL	NO	PT	SE	SI	Unknown	
AT	0	0	0	0	0	0	0	0	0	0	50,000	0	0	0	0	0	50,000
BE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH	0	0	0	9,400	0	0	0	0	0	0	0	0	0	0	0	0	9,400
DE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DK(e)	0	0	0	0	0	0	0	0	0	0	0	0	0	1,000	0	0	1,000
DK(w)	0	0	0	0	5,630	0	0	0	0	0	0	0	0	0	0	0	5,630
ES	27,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27,000
FI	291,941	39,450	0	0	0	0	0	369,106	25,500	0	799,208	0	0	304,576	0	0	1,829,781
FR	0	0	0	0	0	0	0	0	25,500	0	0	0	0	0	0	0	25,500
IT	0	0	0	0	0	0	0	0	0	50,000	0	0	0	0	0	0	50,000
NL	0	0	0	0	0	0	0	13,619	0	0	0	0	0	0	0	2,607	16,226
NO	1,144,241	320,772	0	2	360	0	0	22,500	0	0	0	228,565	0	0	0	0	1,716,440
PT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SE	80,000	0	0	0	0	0	0	66,171	0	0	3,172,852	0	0	133,397	0	0	3,452,420
SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	24,779	3,000	0	0	0	0	0	0	0	0	0	0	0	0	0	27,779
All transfers	1,543,182	385,001	3,000	9,402	5,990	0	0	471,396	51,000	50,000	4,022,060	228,565	0	438,973	0	2,607	7,211,176
External	1,543,182	385,001	3,000	9,402	5,990	0	0	102,290	25,500	0	4,022,060	0	0	305,576	0	2,607	6,404,608
Internal	0	0	0	0	0	0	0	369,106	25,500	50,000	0	228,565	0	133,397	0	0	806,568

The above tables show transfers between countries (RECSCMO is in pale green, while other registries are in blue – except for transfers internal to a domain, which are in white. The summary at the foot of the table shows all certificate transfers, (“Internal”).

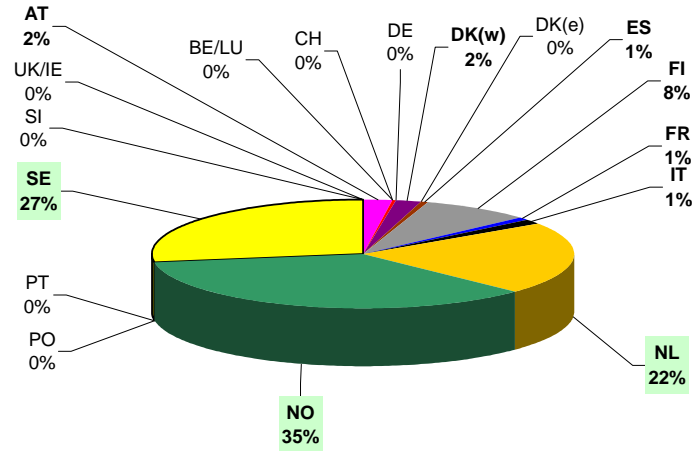
The major certificate issuing countries remain Norway, Sweden and Finland; although it can be seen that this year Netherlands has replaced Finland. Regarding technology, hydro continues to increase, with wind and industrial & commercial waste replacing forestry and agricultural waste.

Certificates Issued Per Country (2001-5)



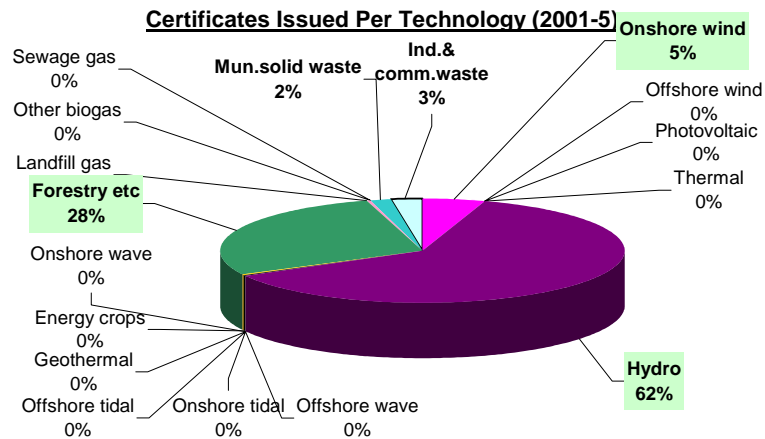
Legend for Country Chart: AT, BE/LU, CH, DE, DK(w), DK(e), ES, FI, FR, IT, NL, NO, PO, PT, SE, SI, UK/IE

Certificates Issued Per Country (2005)



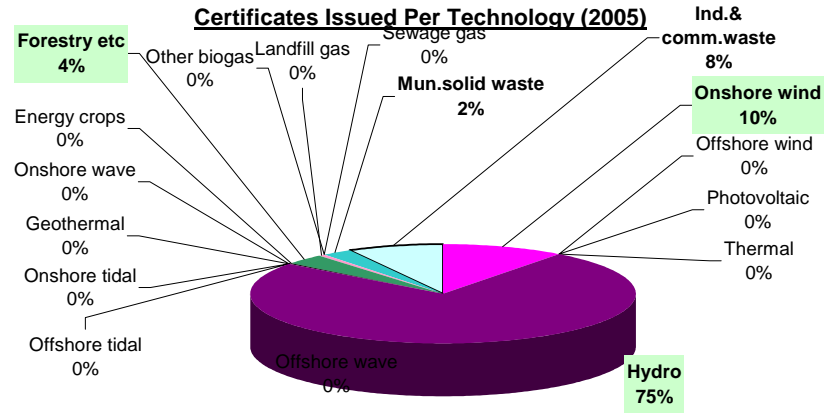
Legend for Country Chart: AT, BE/LU, CH, DE, DK(w), DK(e), ES, FI, FR, IT, NL, NO, PO, PT, SE, SI, UK/IE

Certificates Issued Per Technology (2001-5)



Legend for Technology Chart: Onshore wind, Hydro, Offshore wave, Landfill gas, Ind. & comm.waste, Offshore wind, Onshore tidal, Geothermal, Onshore wave, Offshore tidal, Energy crops, Forestry etc, Mun.solid waste, Sewage gas, Other biogas, Photovoltaic, Thermal

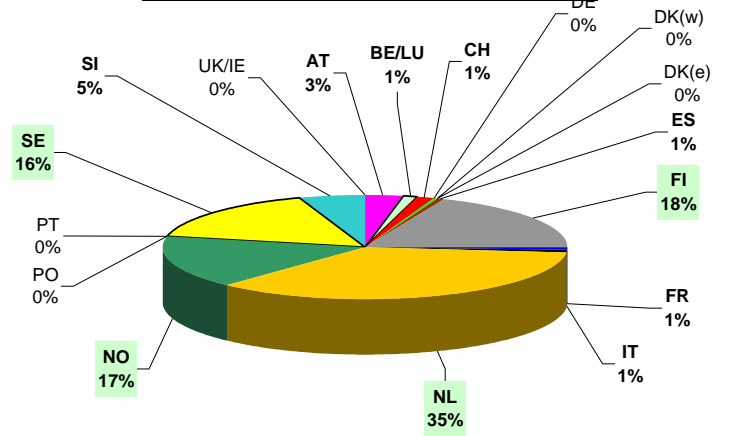
Certificates Issued Per Technology (2005)



Legend for Technology Chart: Onshore wind, Hydro, Offshore wave, Landfill gas, Ind. & comm.waste, Offshore wind, Onshore tidal, Geothermal, Onshore wave, Offshore tidal, Energy crops, Forestry etc, Mun.solid waste, Sewage gas, Other biogas, Photovoltaic, Thermal

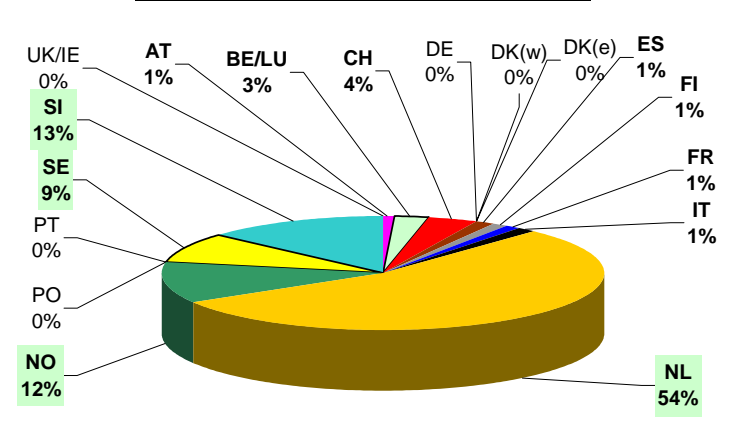
Regarding redemption, Netherlands continues to predominate, while Slovenia is now in second place. The decrease in redemption in some countries is probably due to the replacement of trading in redemption statements by export using the CMO-CMO interface. As regards technology, wind continues to grow, but nowhere near as fast as hydro which, assisted by industrial and commercial waste, has replaced much of the forestry and agricultural waste.

Certificates Redeemed Per Country (2001-5)



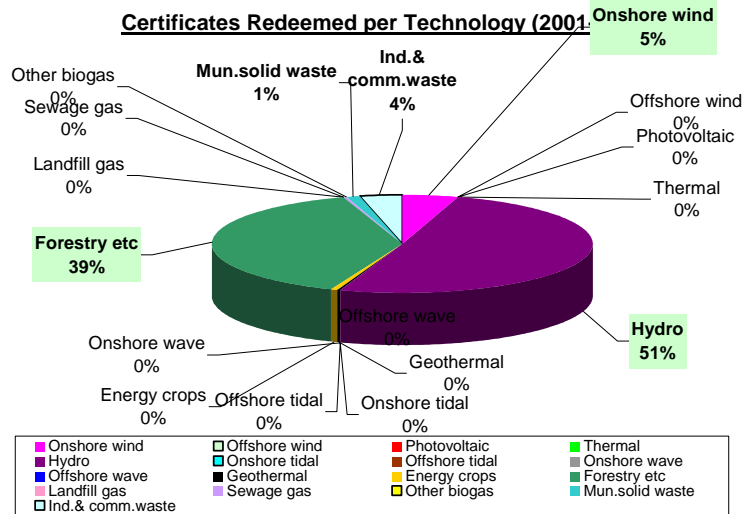
Legend: AT, BE/LU, CH, DE, DK(w), DK(e), ES, FI, FR, IT, NL, NO, PO, PT, SE, SI, UK/IE

Certificates Redeemed Per Country (2005)



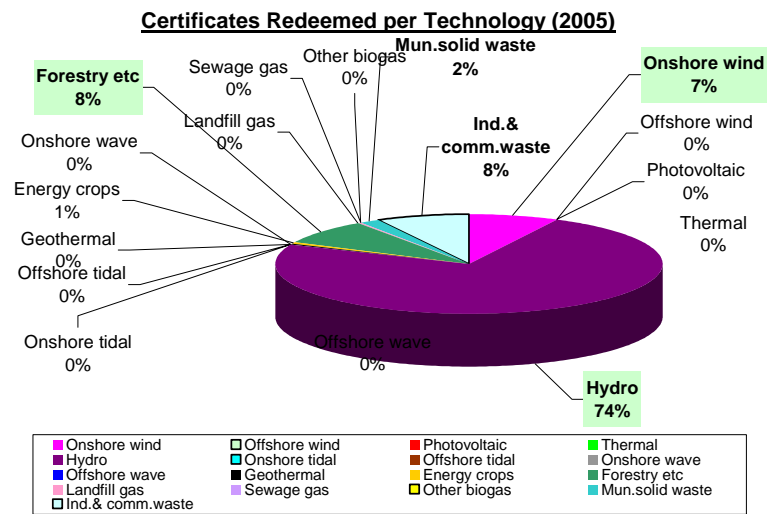
Legend: AT, BE/LU, CH, DE, DK(w), DK(e), ES, FI, FR, IT, NL, NO, PO, PT, SE, SI, UK/IE

Certificates Redeemed per Technology (2001-5)



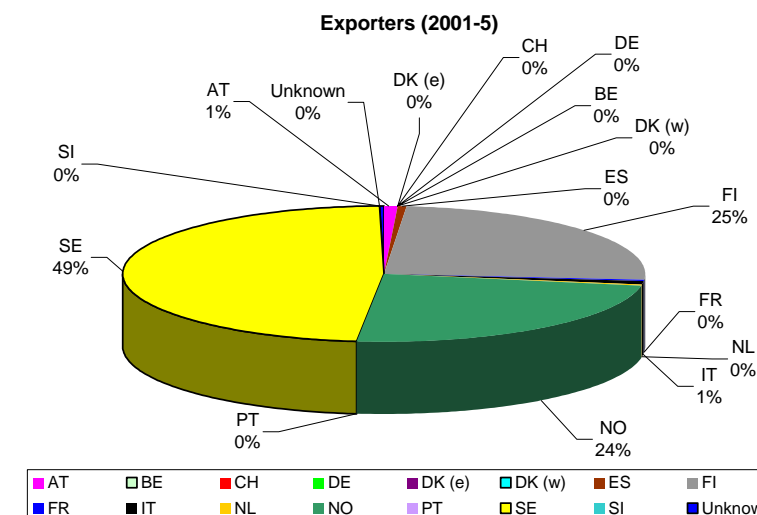
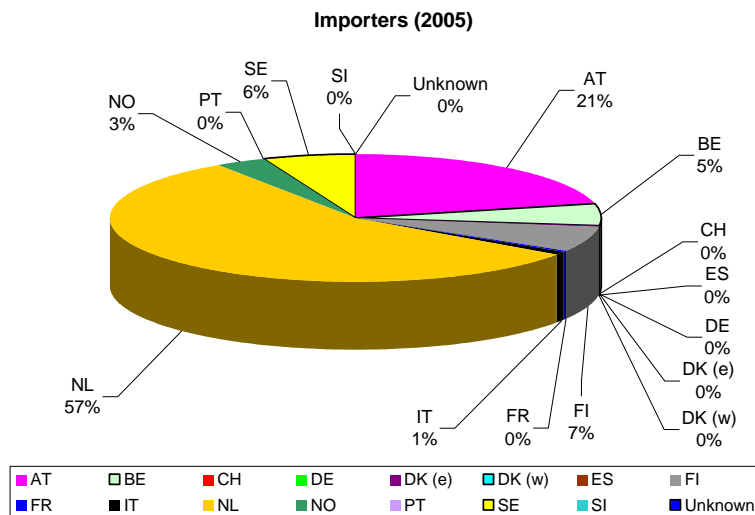
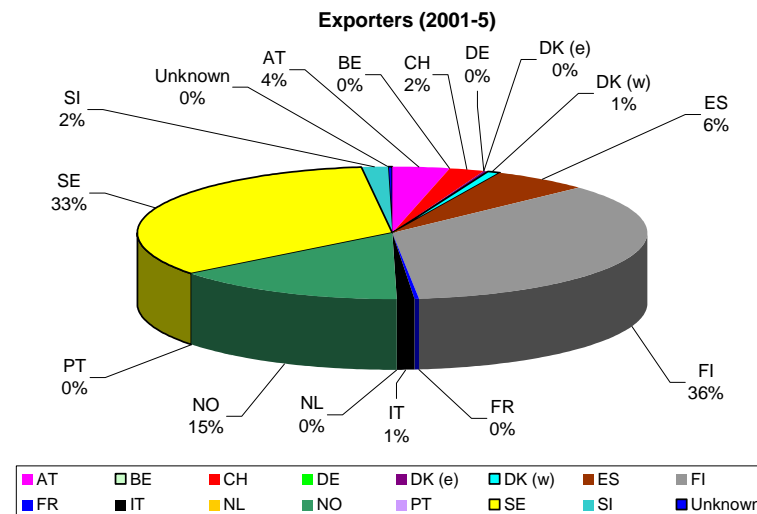
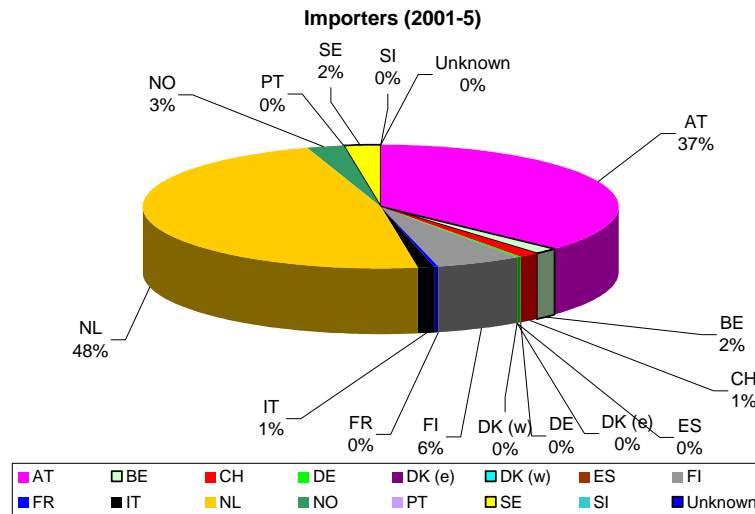
Legend: Onshore wind, Hydro, Offshore wind, Photovoltaic, Thermal, Onshore wave, Offshore wave, Geothermal, Energy crops, Forestry etc, Landfill gas, Sewage gas, Ind. & comm.waste, Offshore tidal, Onshore tidal, Other biogas, Mun.solid waste

Certificates Redeemed per Technology (2005)

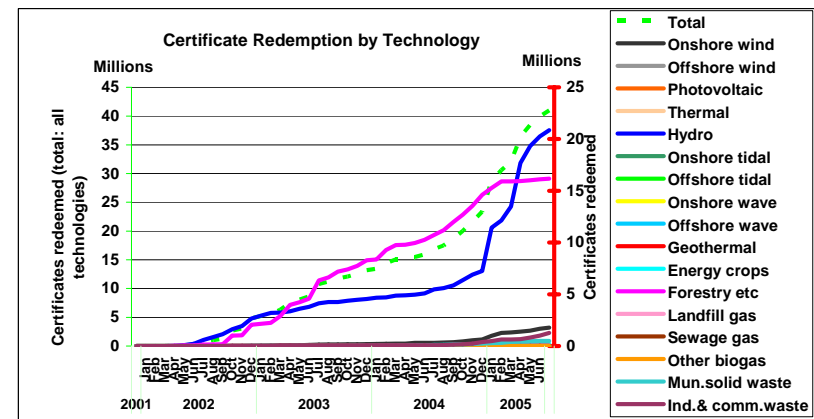
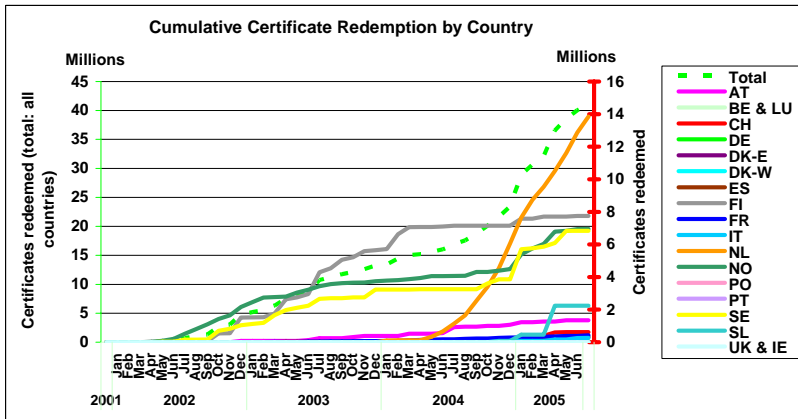
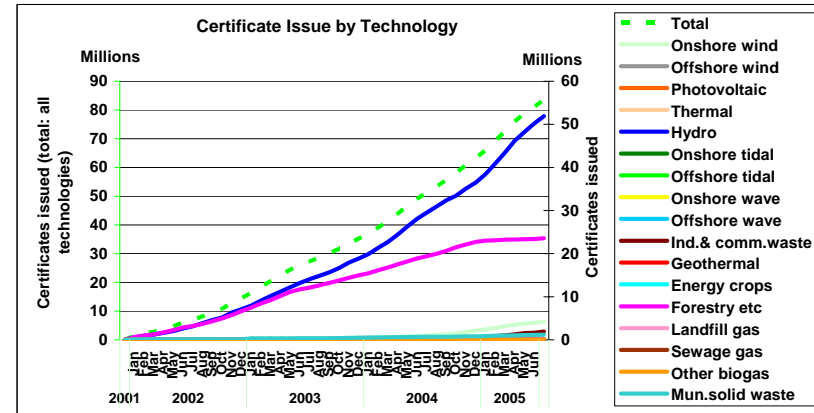
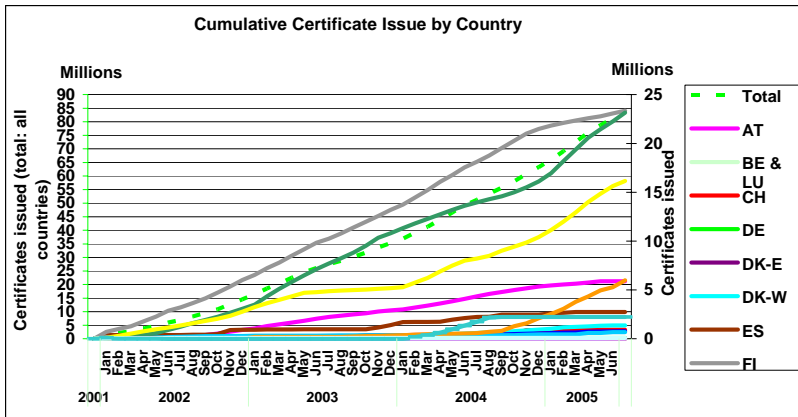


Legend: Onshore wind, Hydro, Offshore wind, Photovoltaic, Thermal, Onshore wave, Offshore wave, Geothermal, Energy crops, Forestry etc, Landfill gas, Sewage gas, Ind. & comm.waste, Offshore tidal, Onshore tidal, Other biogas, Mun.solid waste

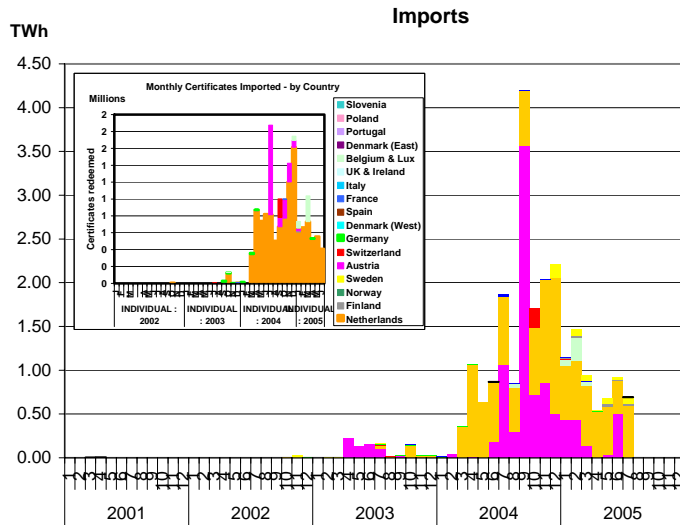
The largest exporters are Sweden, Norway and Finland; while Austria and Netherlands are the major importers. Technologies have remained the same, although biomass has been overtaken by hydro, and wind is increasing.



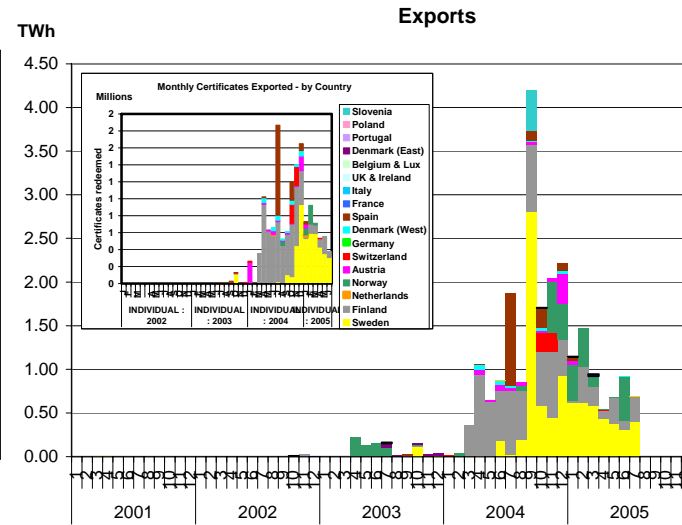
Issuing and redemption continue to increase fairly steadily, although redemption everywhere except Netherlands and Sweden has been markedly low this quarter. Of further note is that the volume of hydro issued and redeemed has continued to increase substantially over the last quarter, at the expense of forestry and agricultural waste.



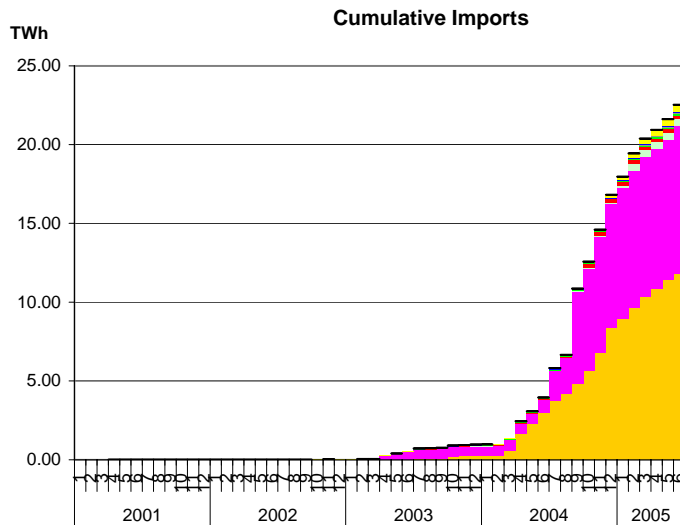
The impact of the corrected reports can be seen clearly here: most relevant is the inclusion of internal (to RECSCMO) transfers, as this shows clearly how volume of certificates travelling from (in particular) Sweden, Slovenia and Finland to Austria has in the past been understated (see inset April 2005 graphs).



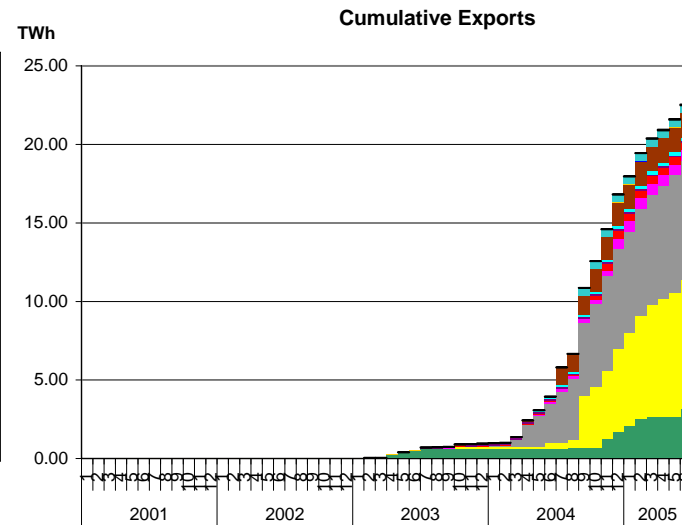
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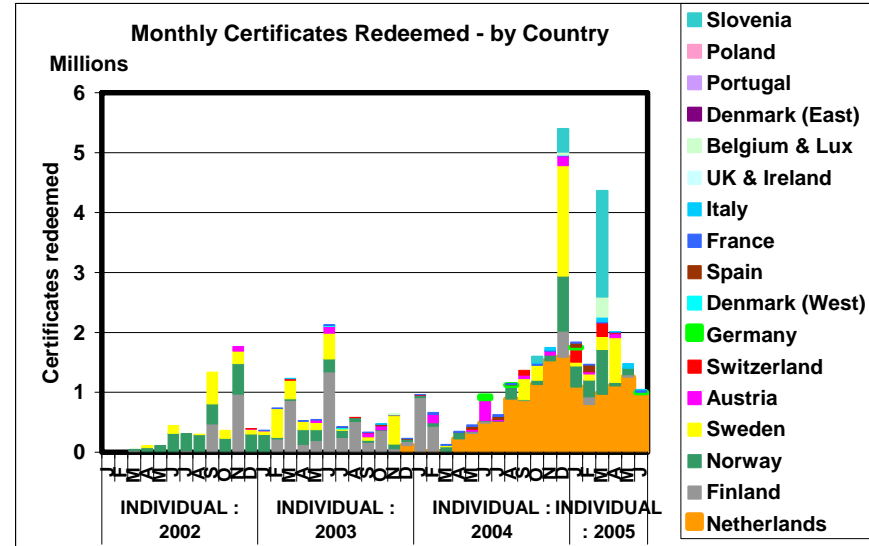
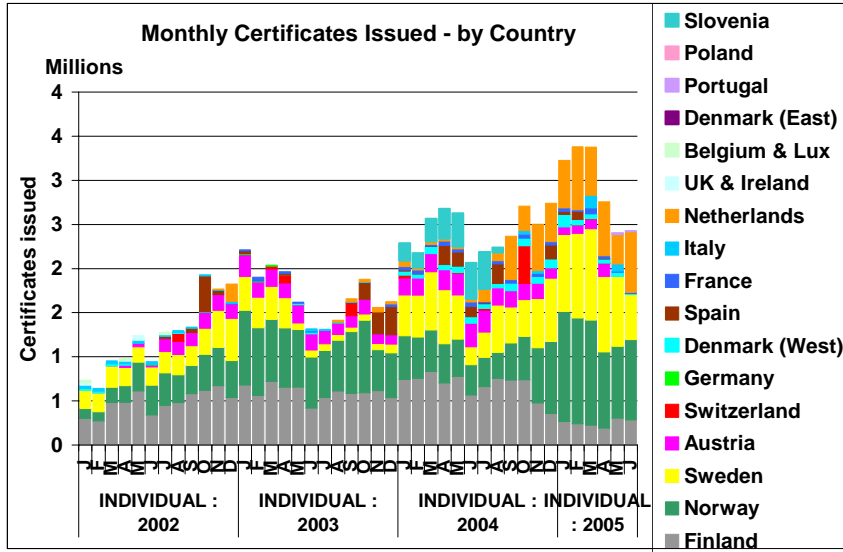
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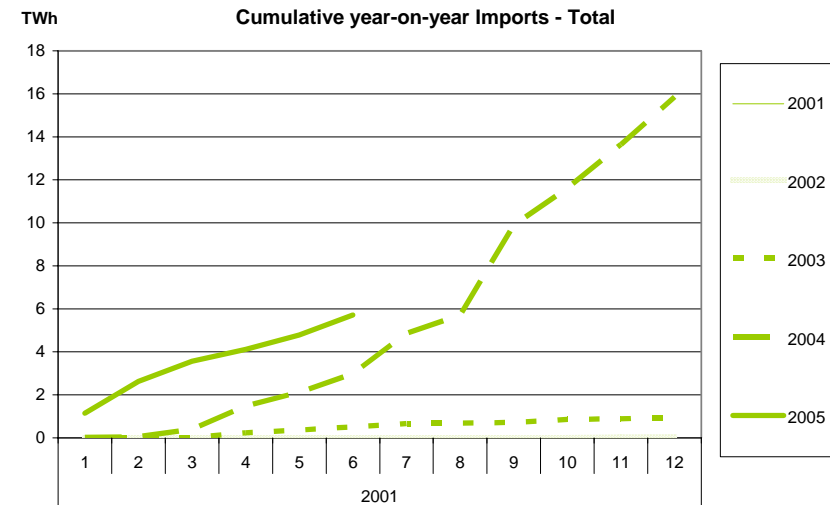
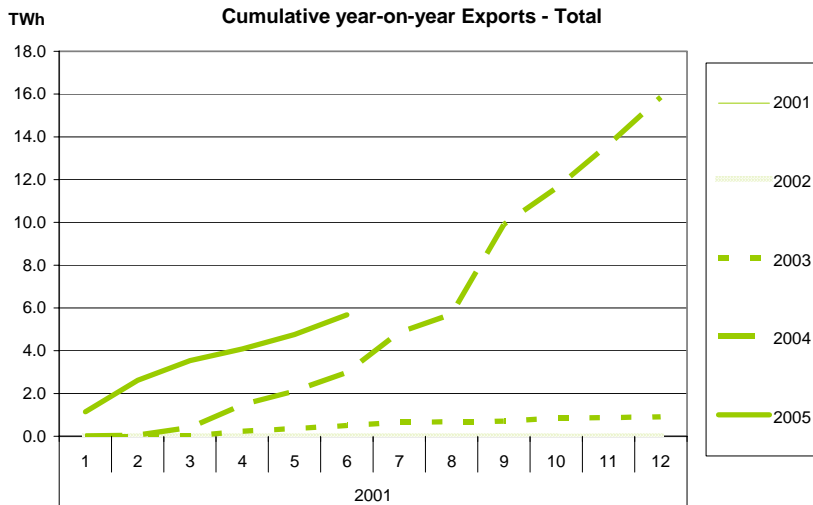
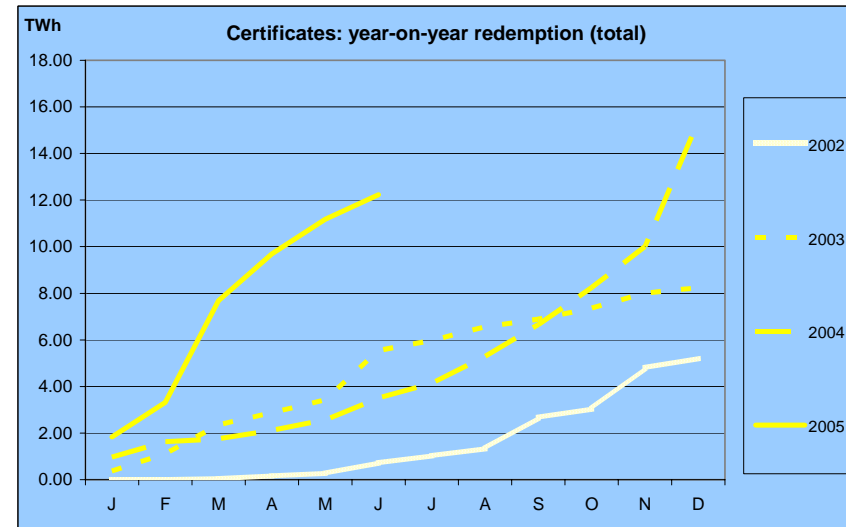
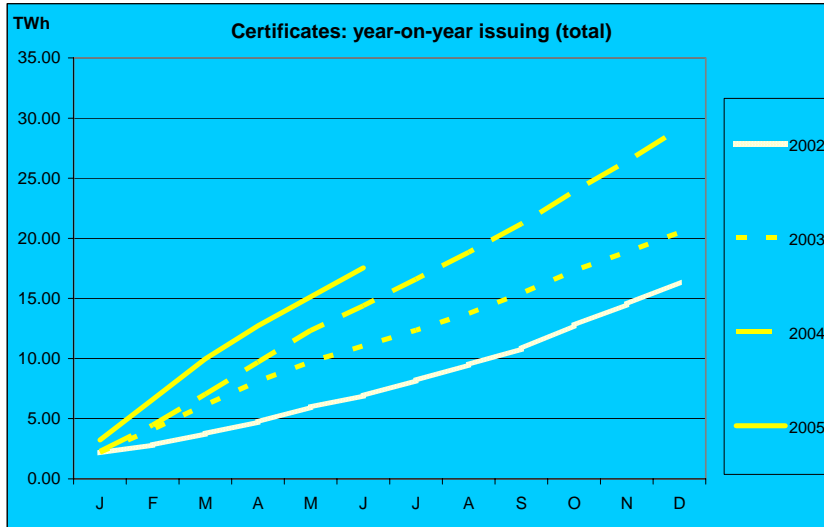
Monthly activity

The following bar charts summarise monthly activity, clearly showing the growing influence of the Netherlands and Austria (consumers) and of Finland, Norway, Sweden and Netherlands (suppliers) on international trade.

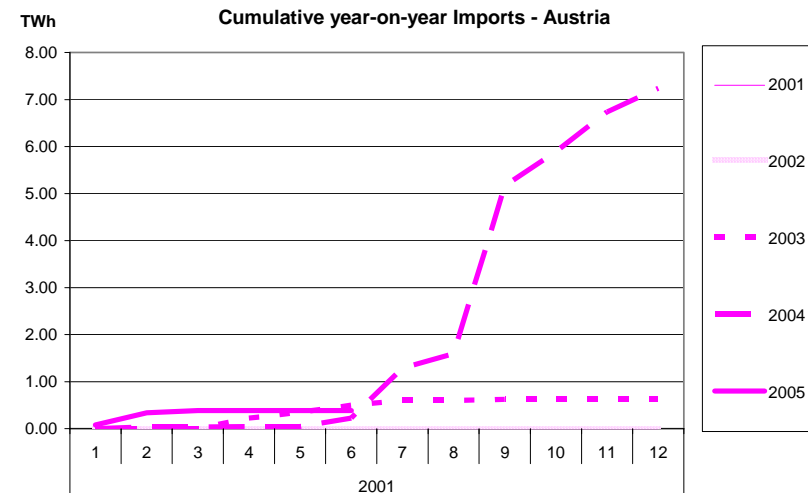
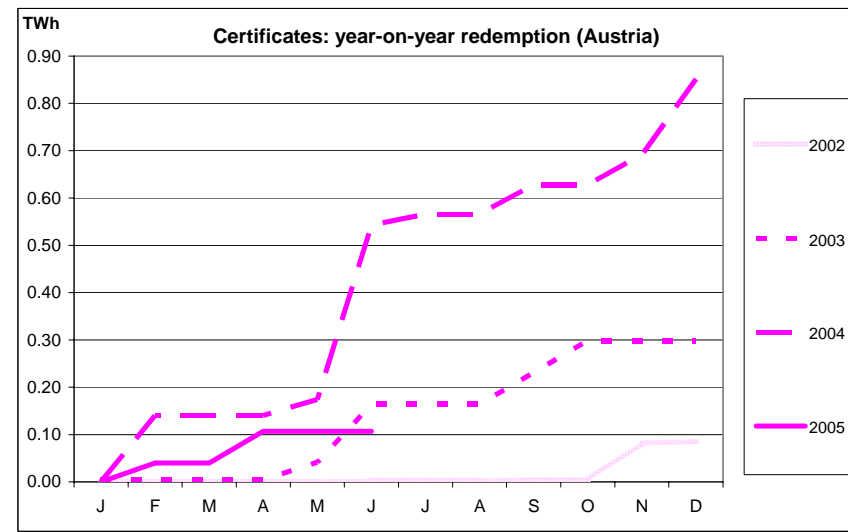
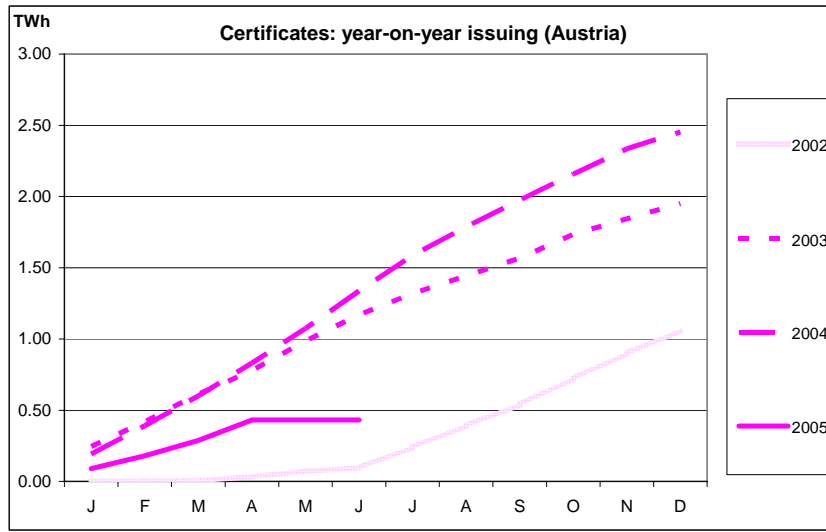


Year-on-year

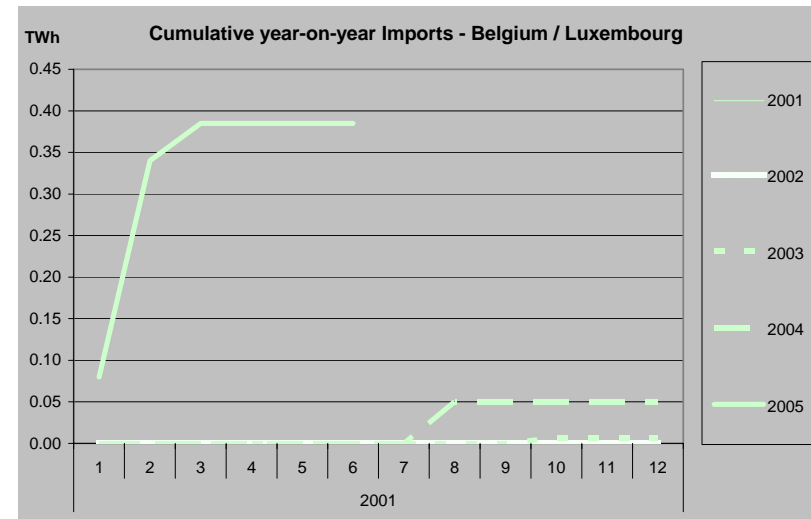
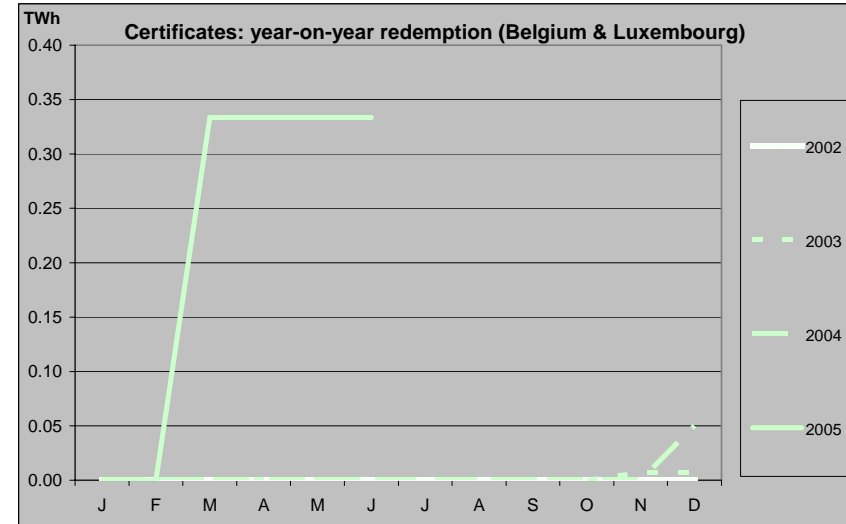
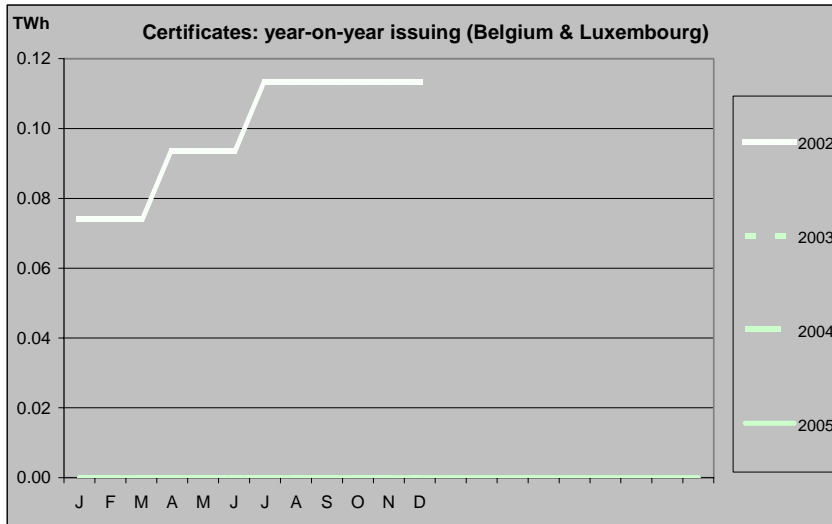
While issuing continues at a marginally increased rate, international trade is increasing and redemption has sharply increased.



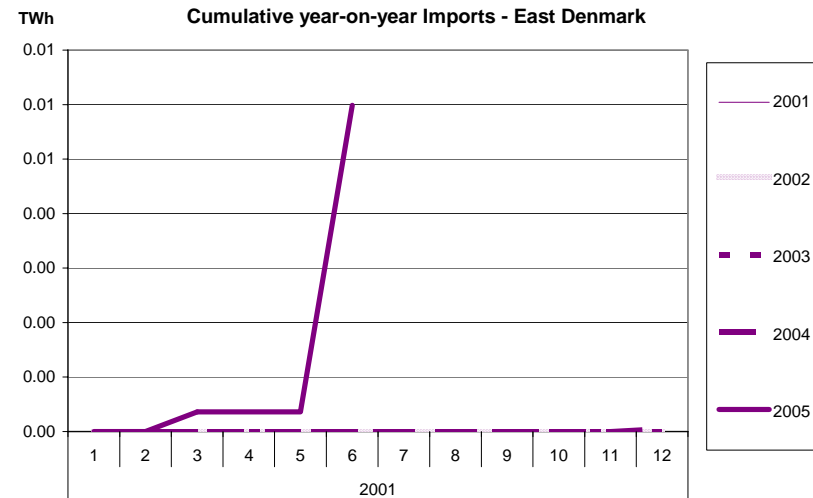
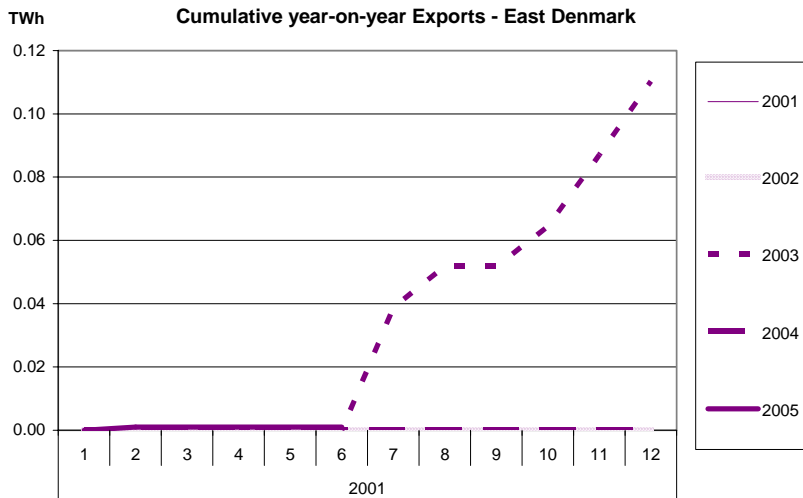
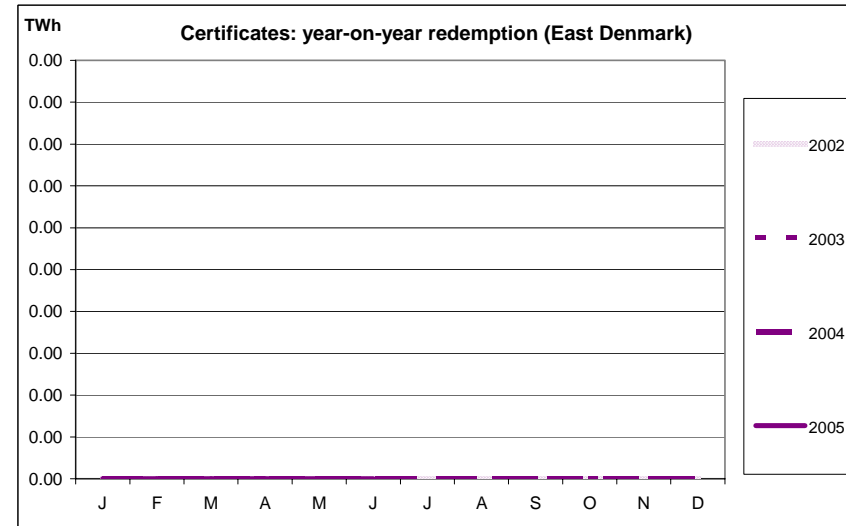
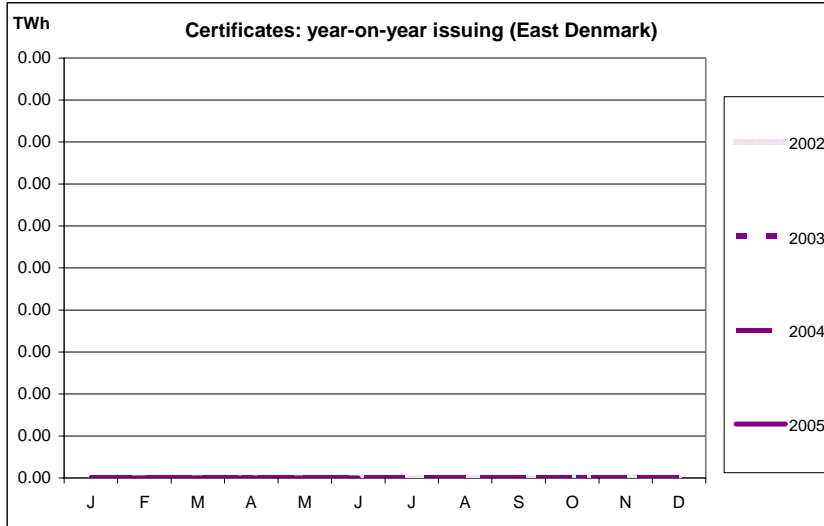
Austria has imported, exported and redeemed this year, but at a much lower rate of activity that in the past.



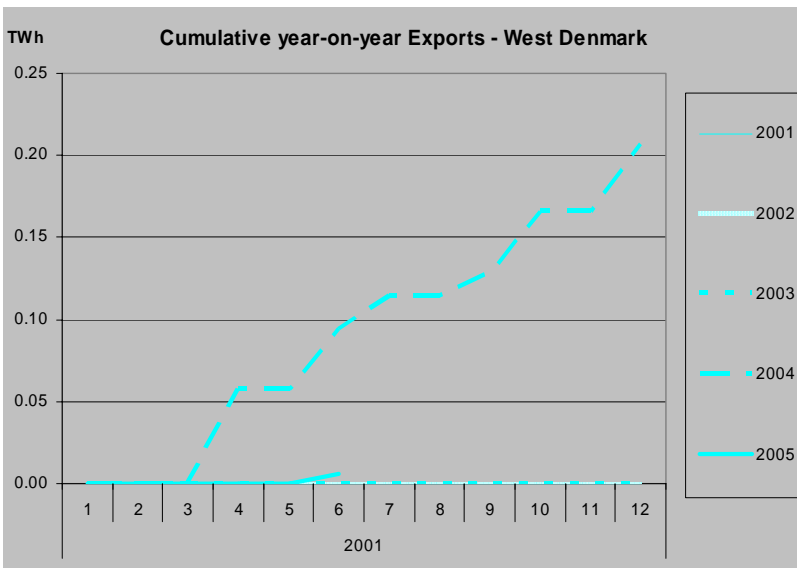
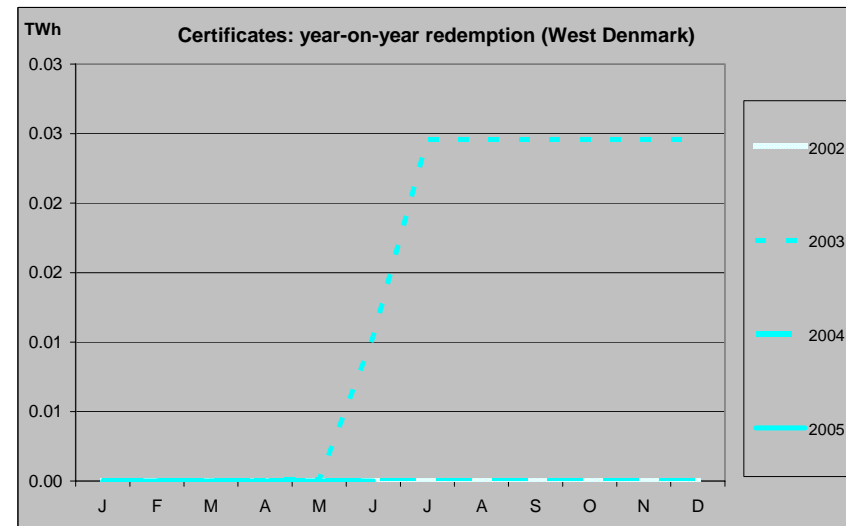
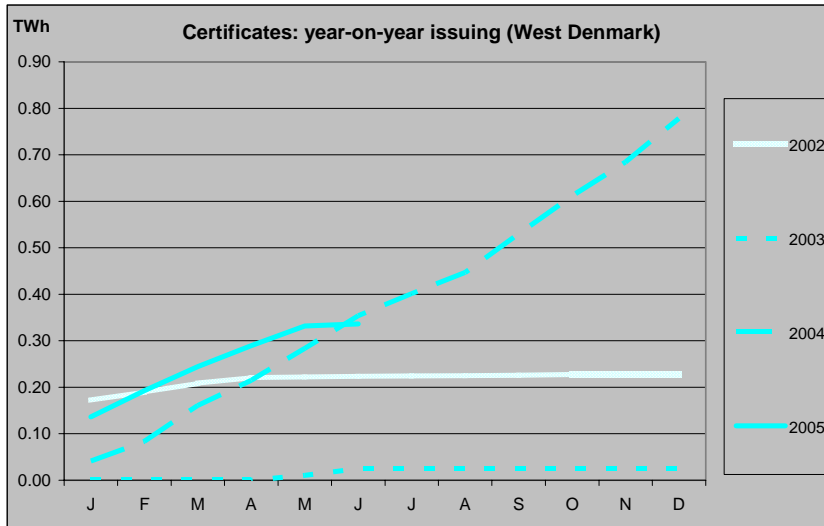
Belgium / Luxembourg. Belgium has started to become a consumer of certificates this year, albeit at a limited rate.



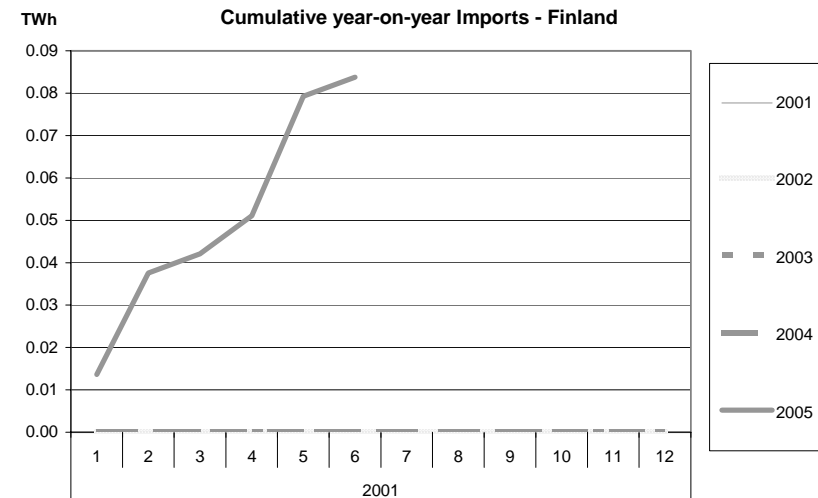
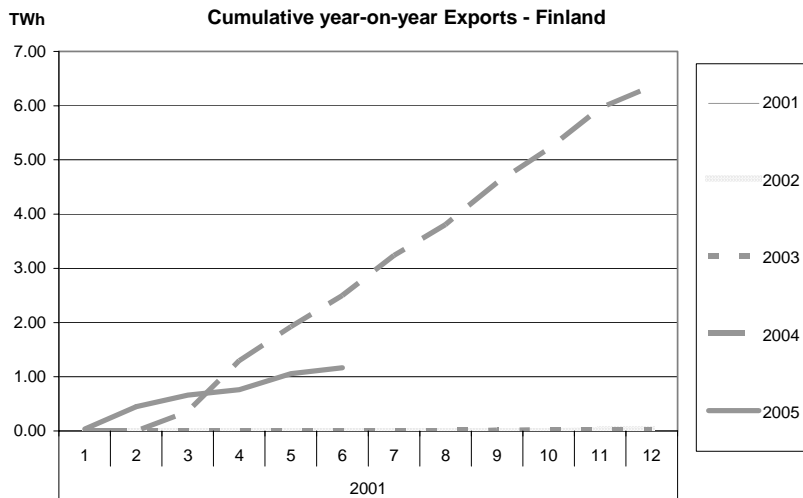
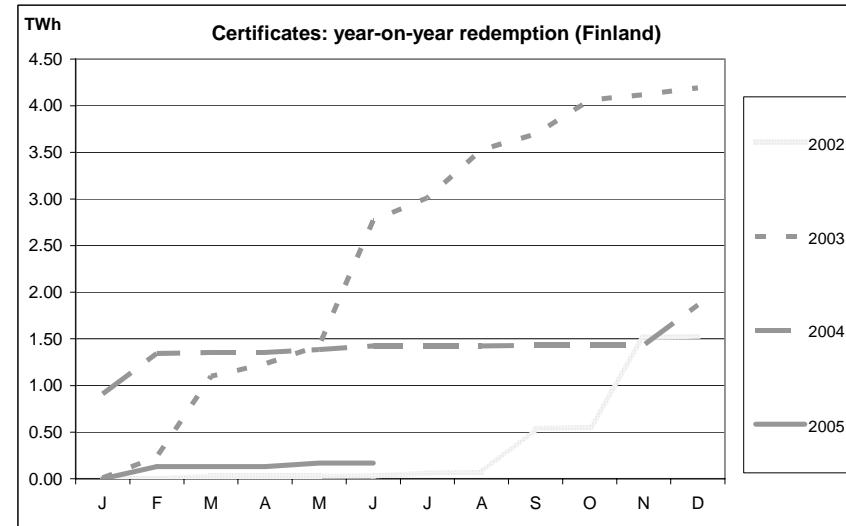
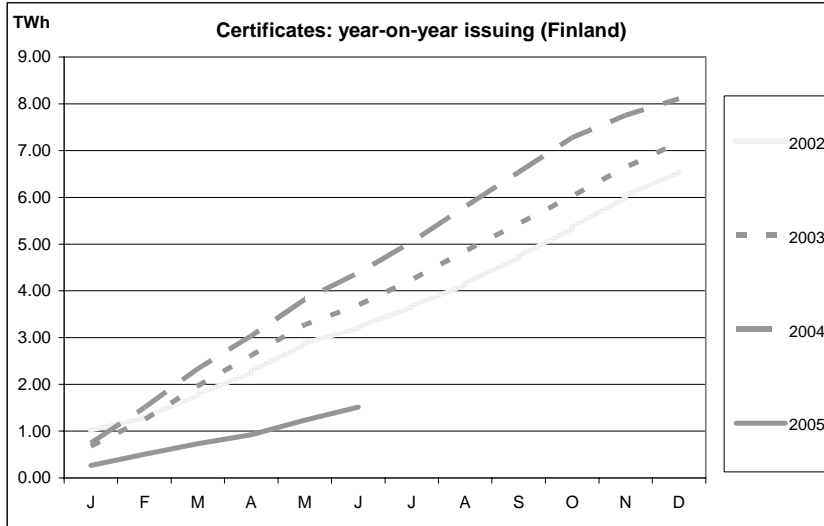
East Denmark. Denmark continues to be a minor participant in the market – it will be interesting to see how the market changes after Elkraft and Eltra consolidate into a single body.



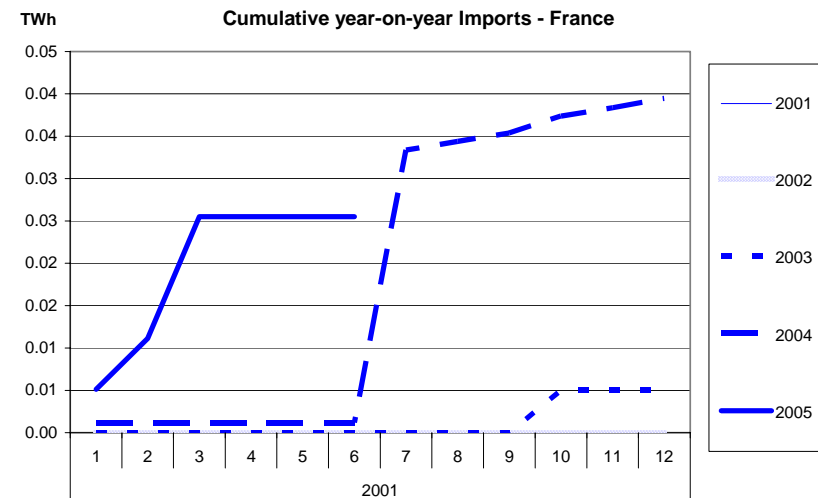
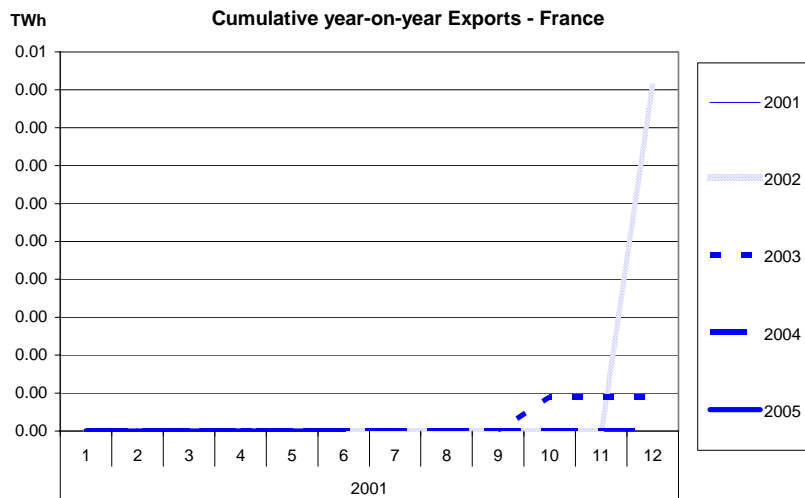
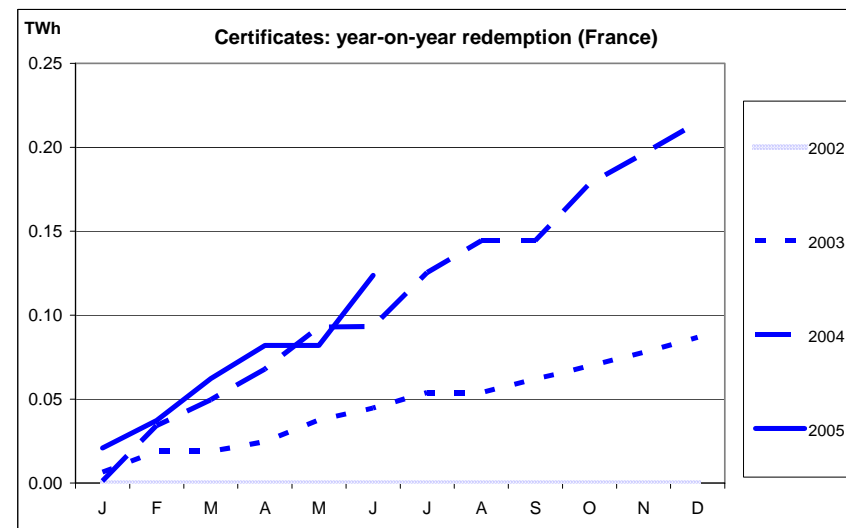
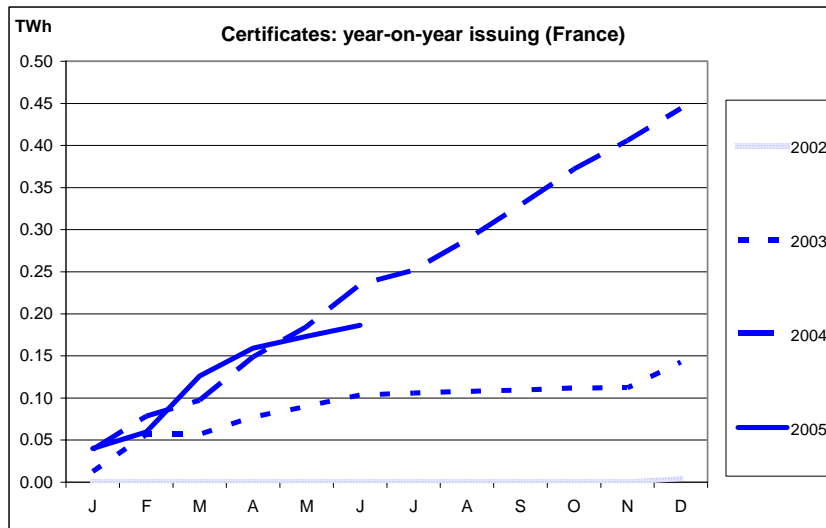
West Denmark (see comments for East Denmark, above)



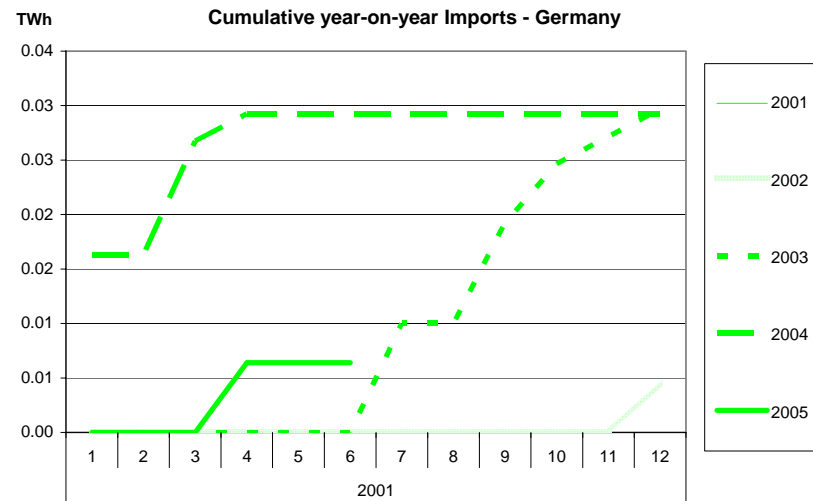
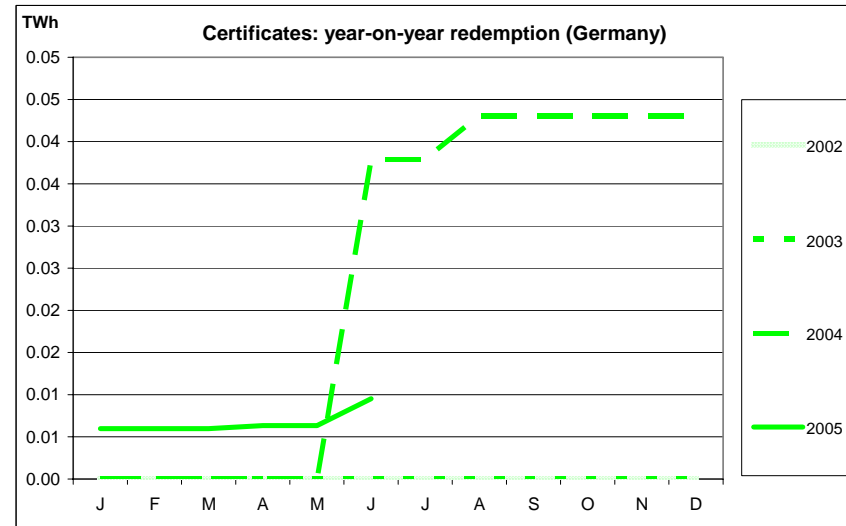
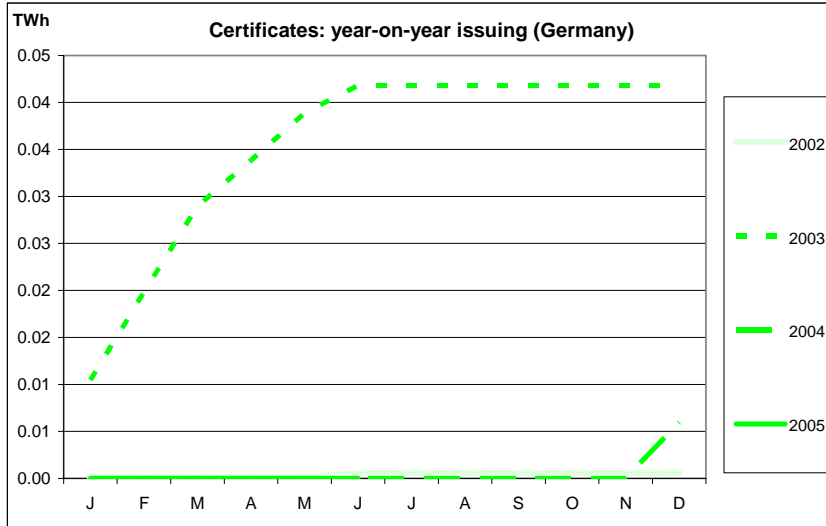
Finland continues to issue at a much lower rate, and is exporting and redeeming far less than in the past. It is now importing some certificates, but this may be the return of unsold certificates.



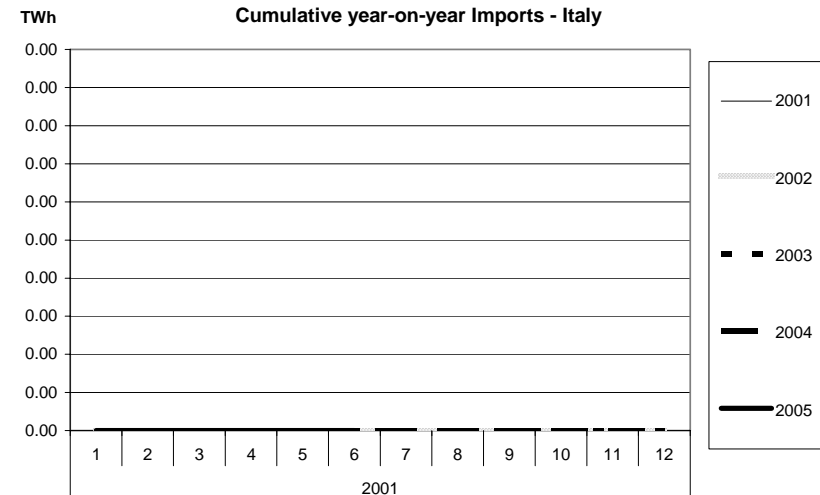
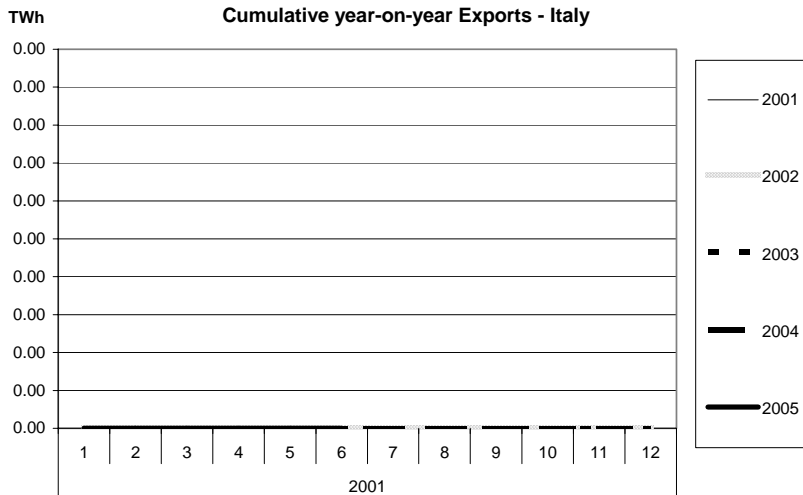
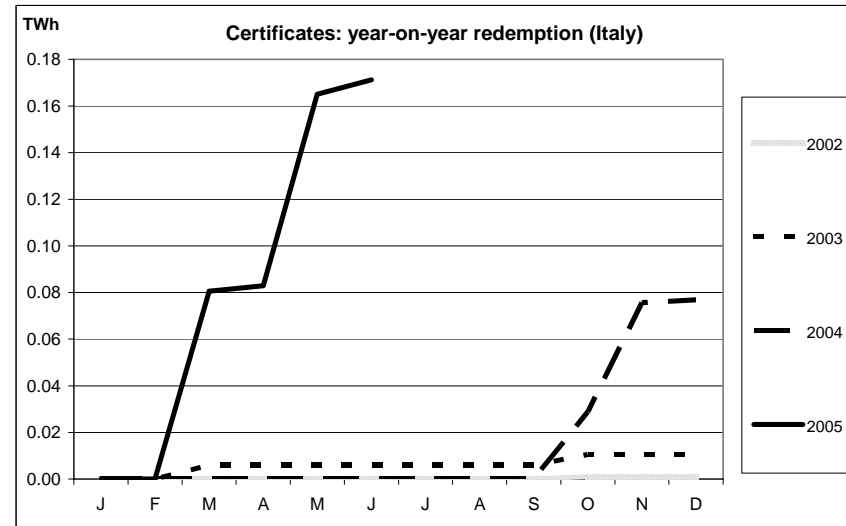
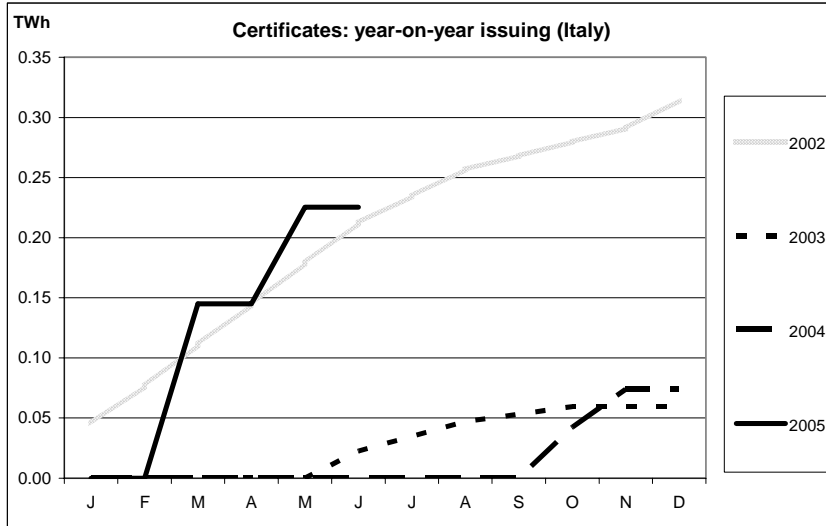
France. The French market, while comparatively small, continues to grow at a similar rate to last year.



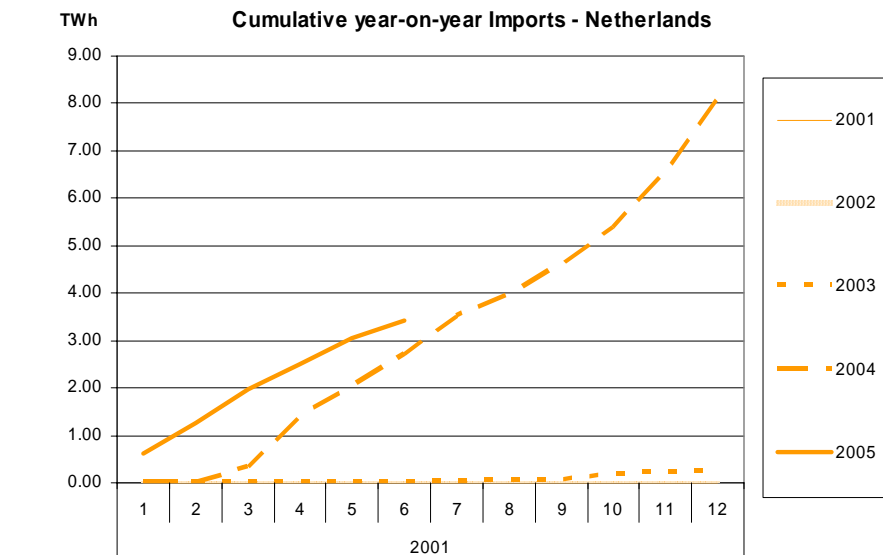
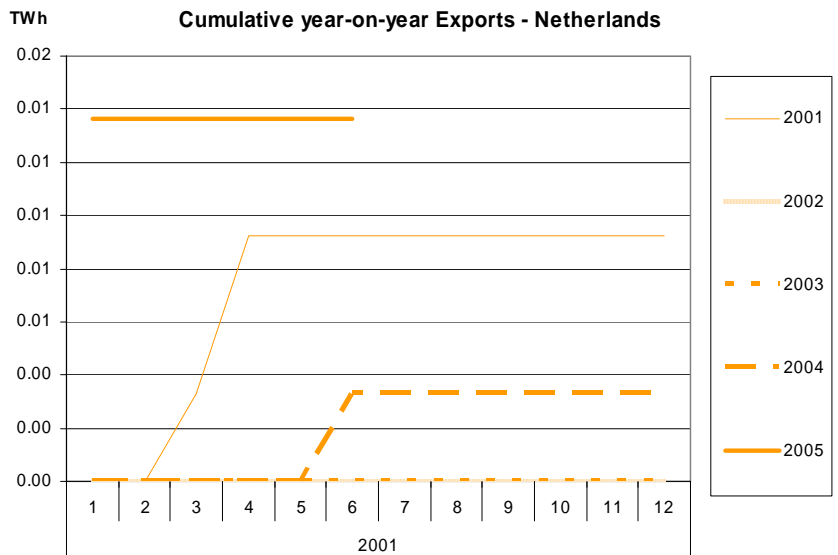
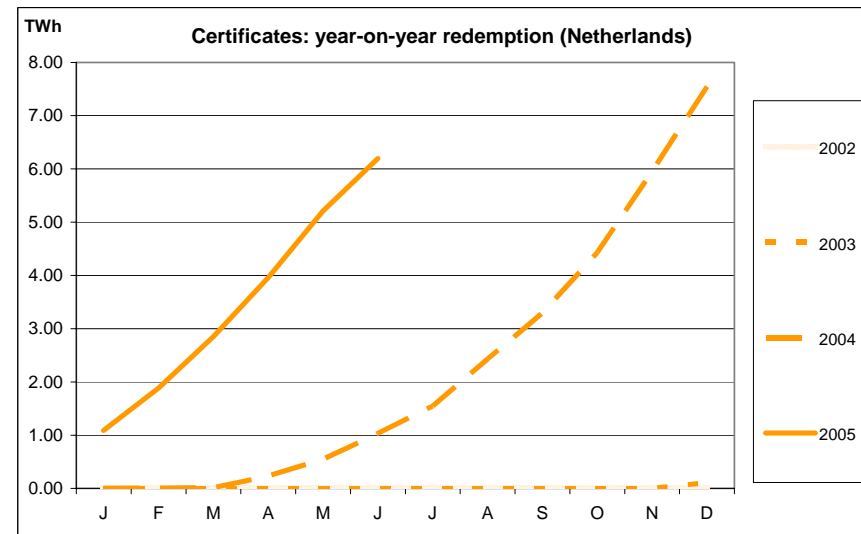
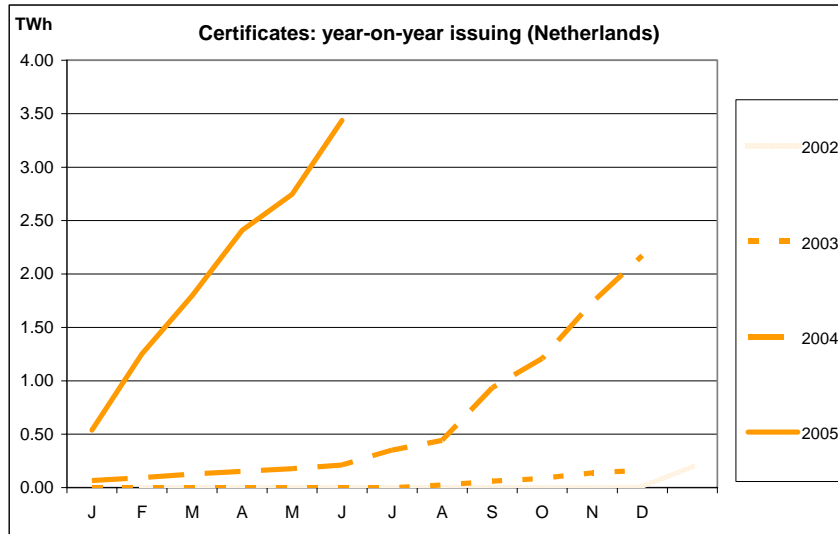
Germany. The German market has been very quiet this year, with less trading than in the past.



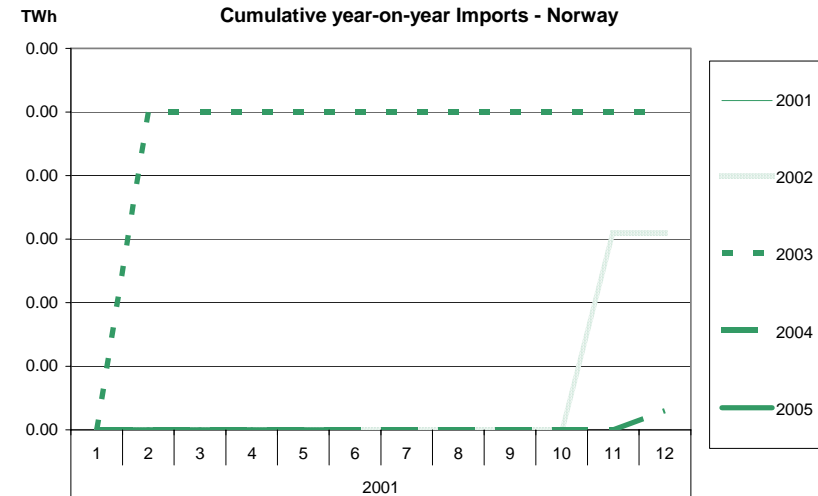
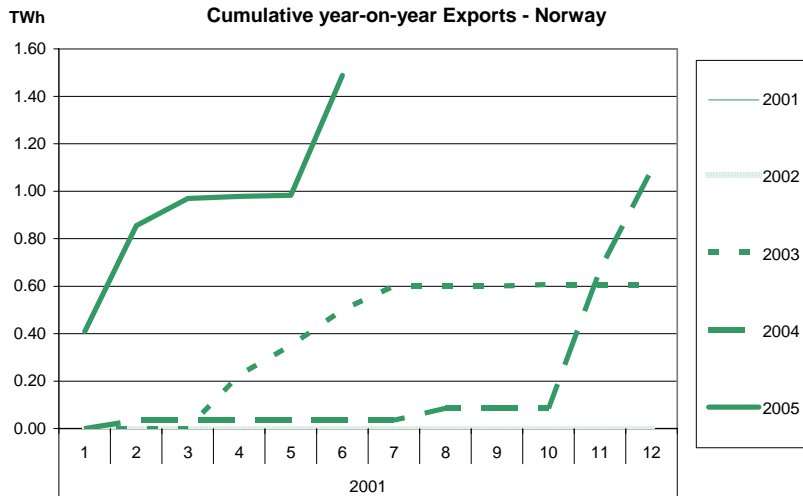
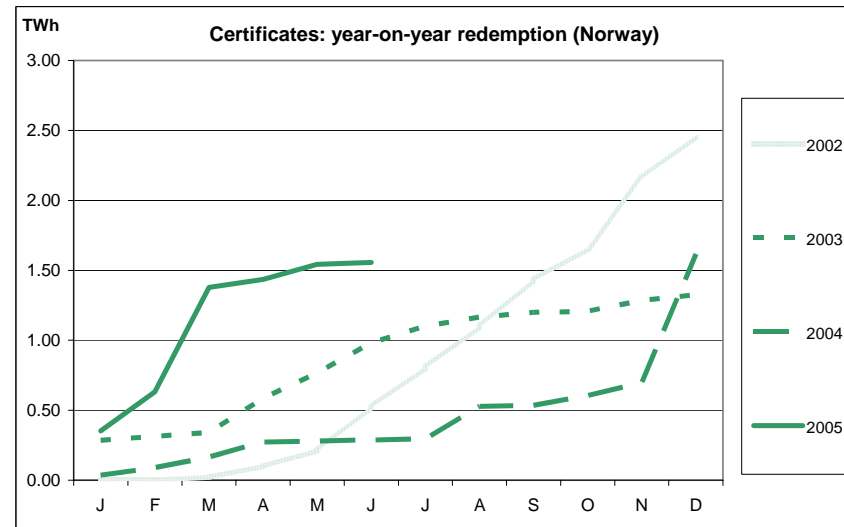
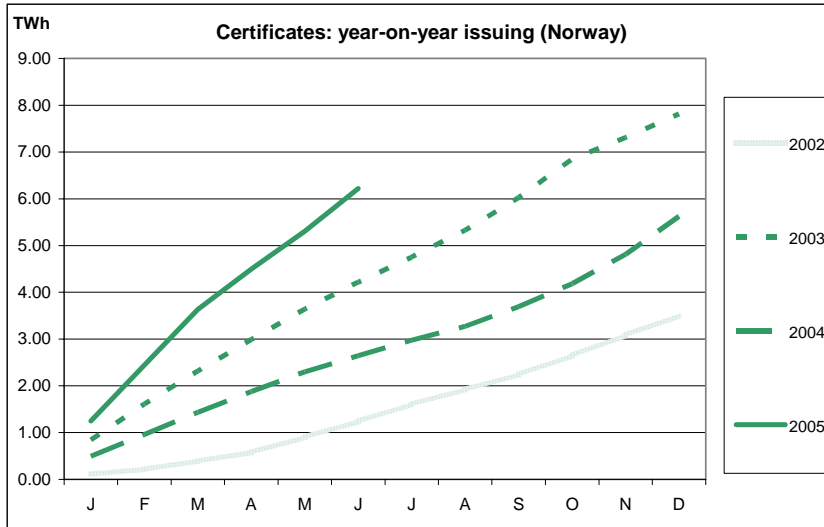
Italy. The Italian market seems to be increasing in size. There has yet to be any international trade, but redemption has markedly increased.



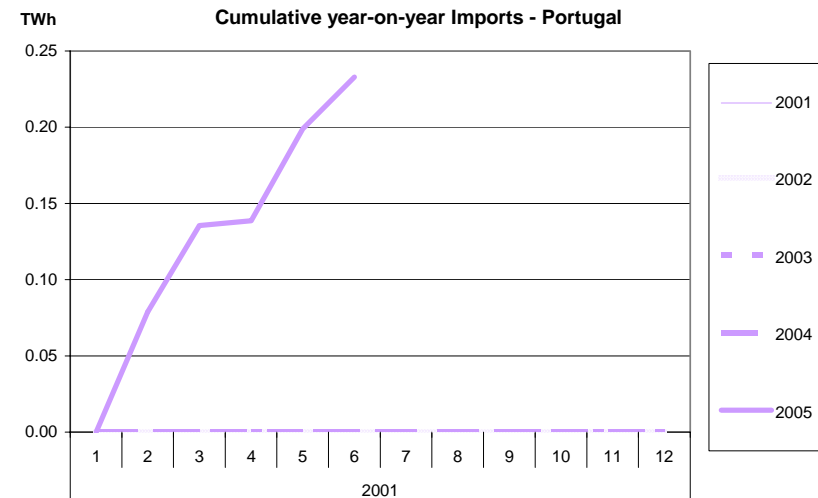
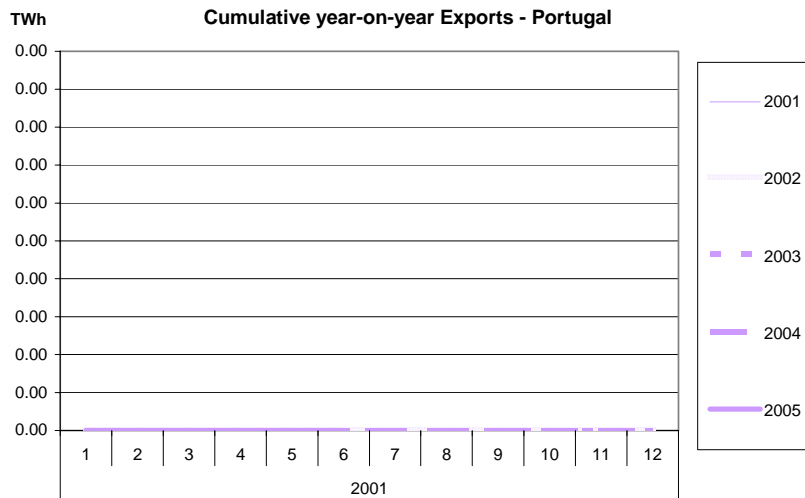
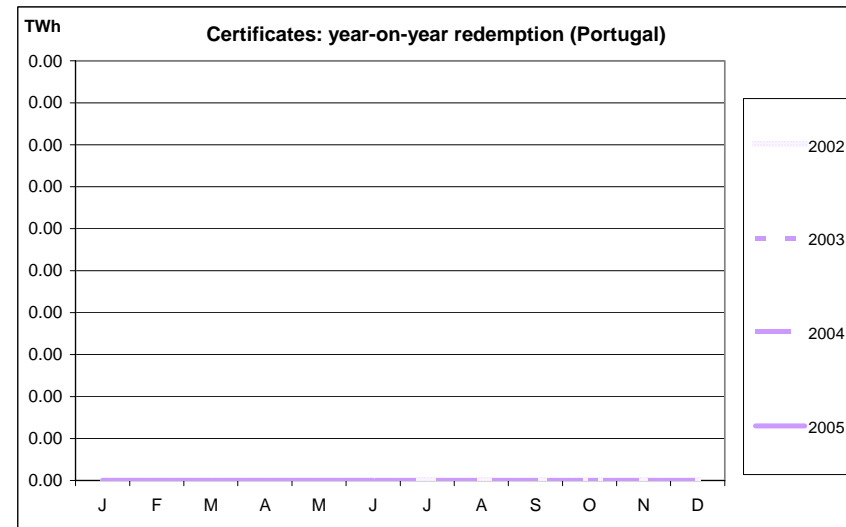
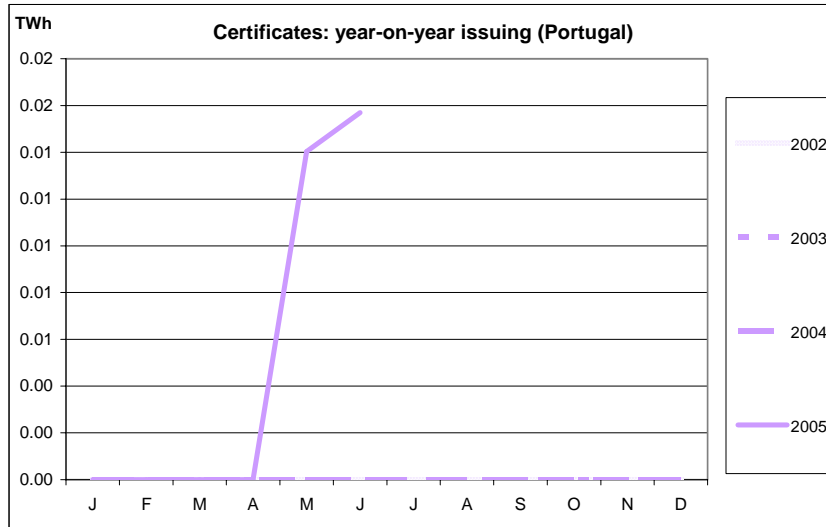
Netherlands continues its marked increase in all forms of activity except exporting.



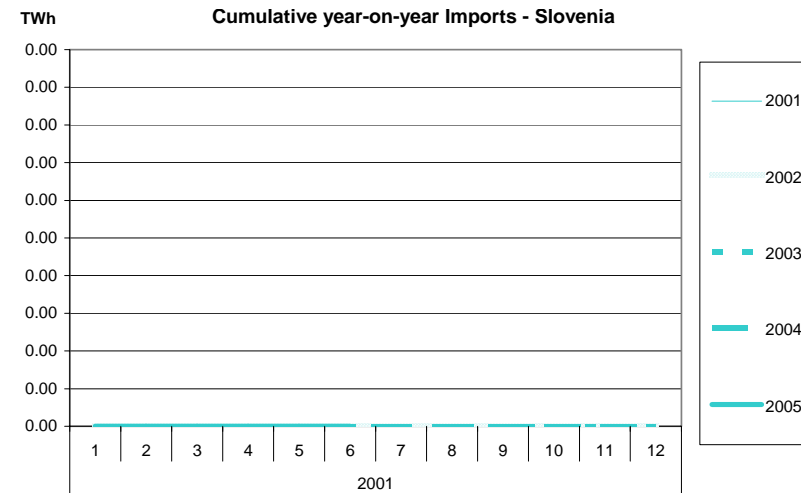
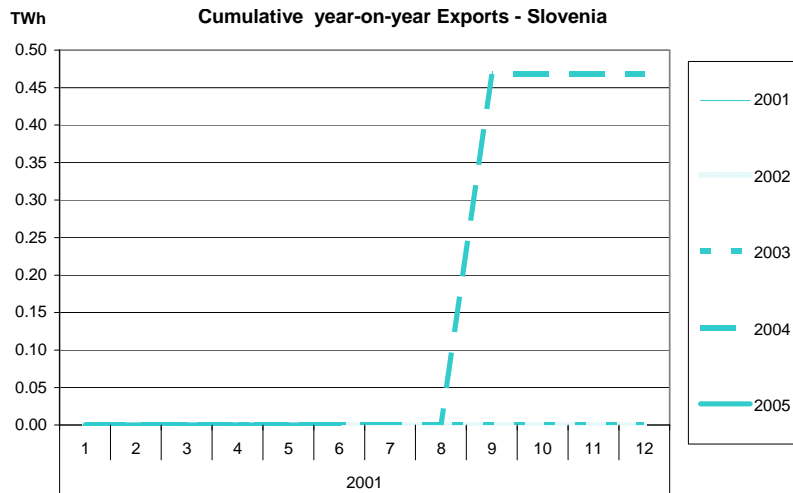
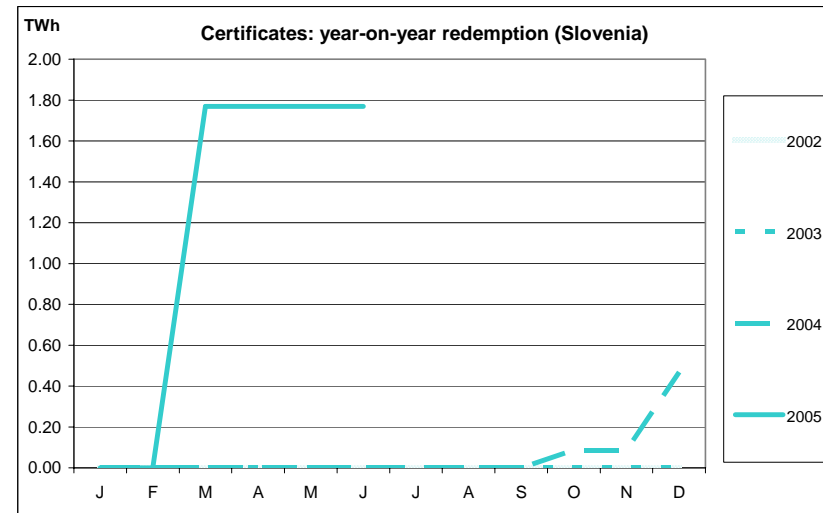
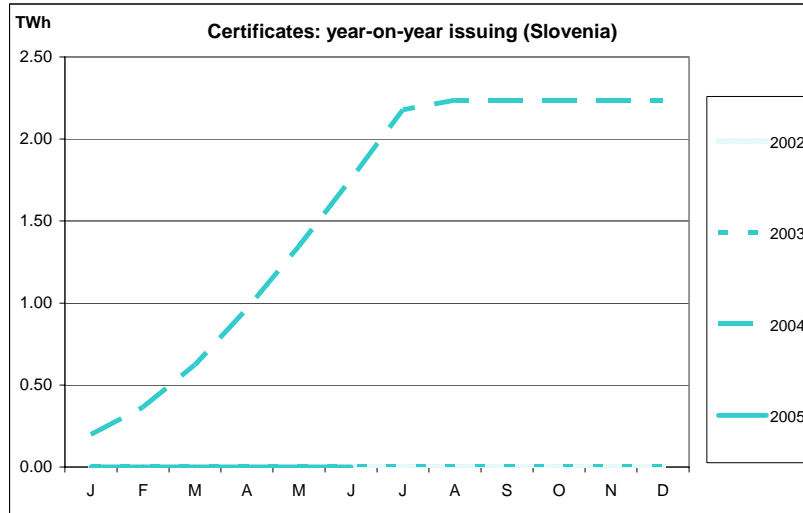
Norway continues to issue and export at a higher rate than ever before, although redemption has fallen away – perhaps because export via the CMO-CMO interface is now preferred.



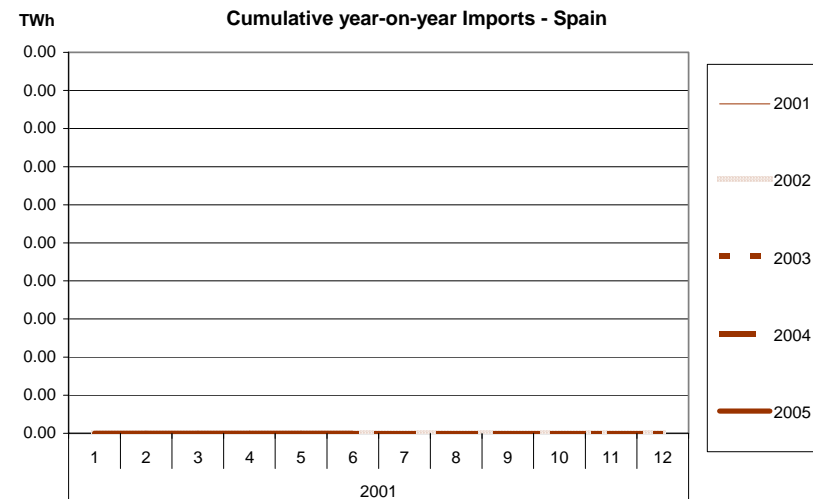
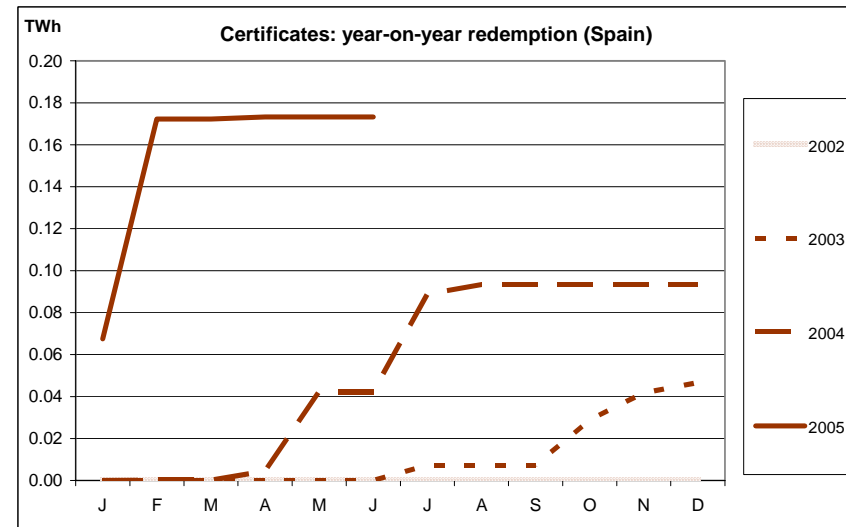
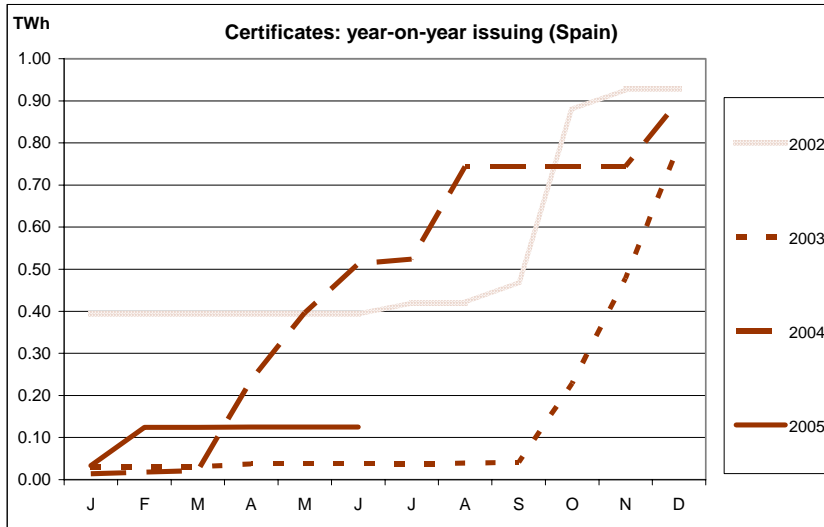
Portugal has commenced operations, both issuing and importing this quarter.



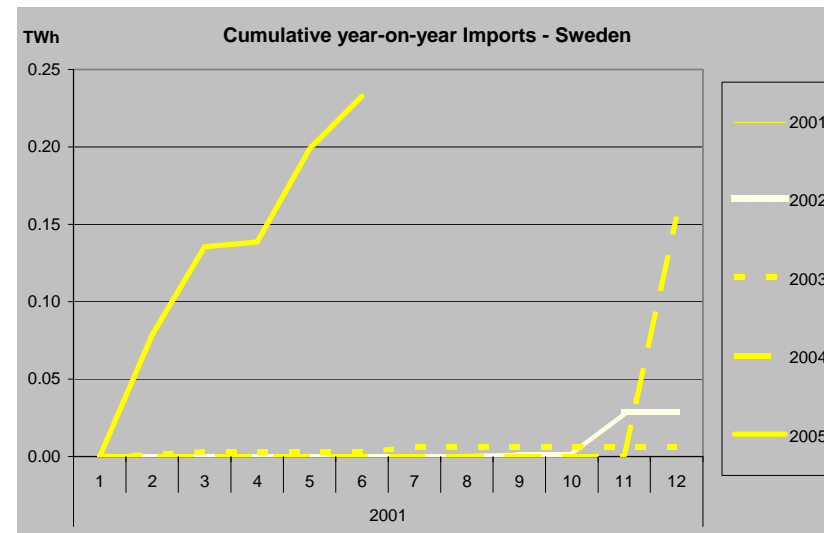
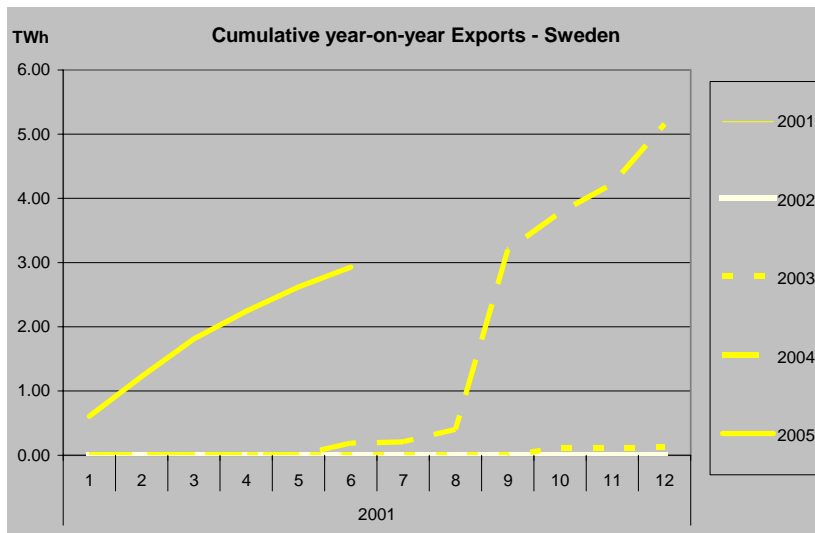
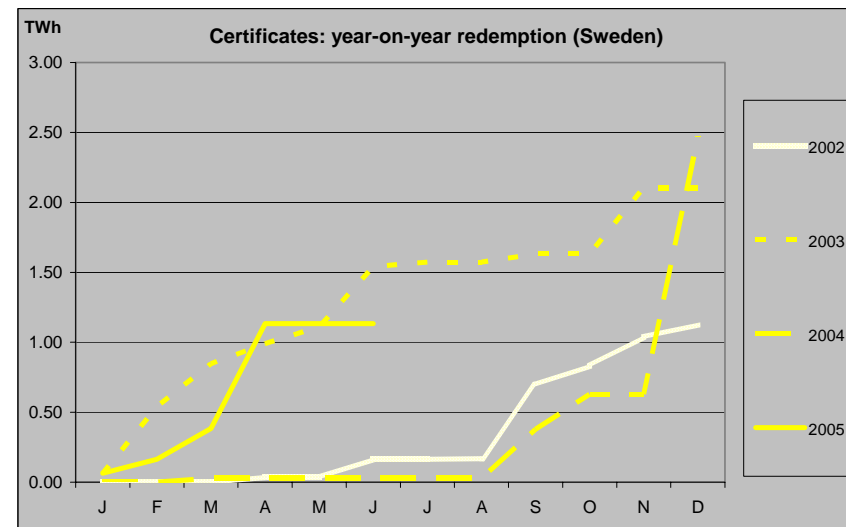
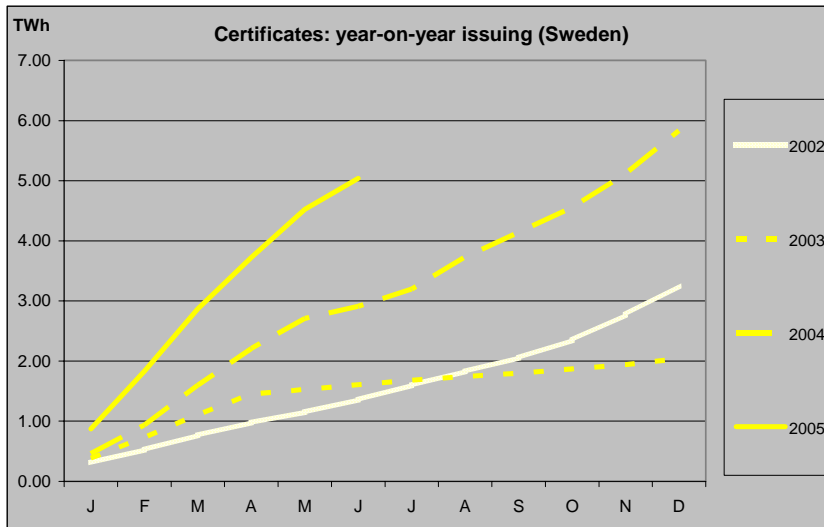
Slovenia started issuing last year, and has now exported or redeemed all its certificates.



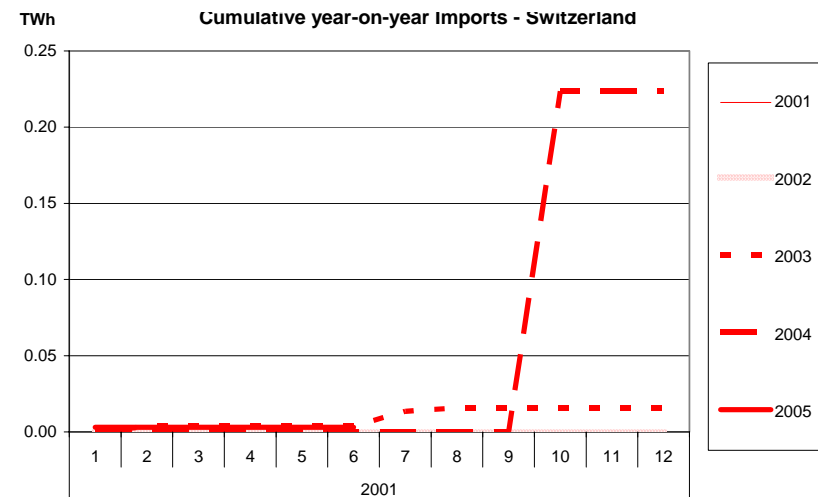
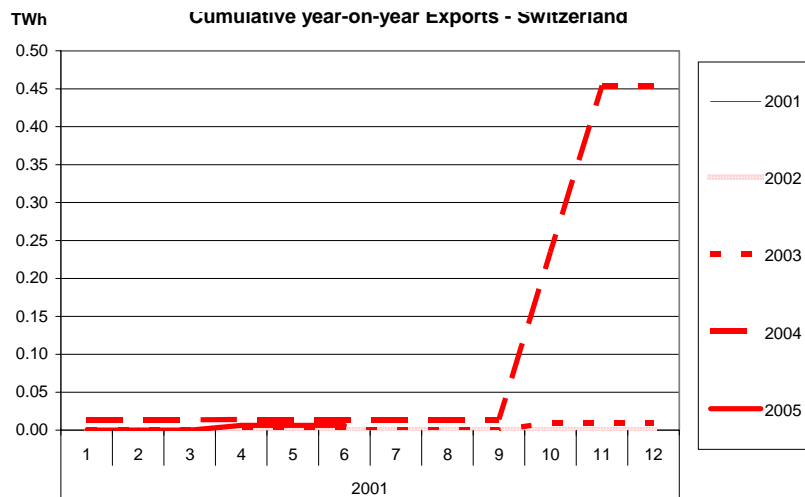
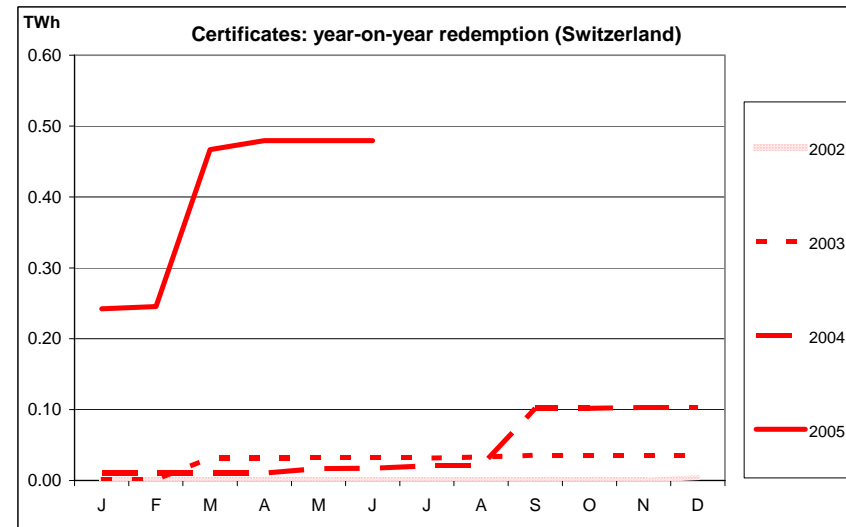
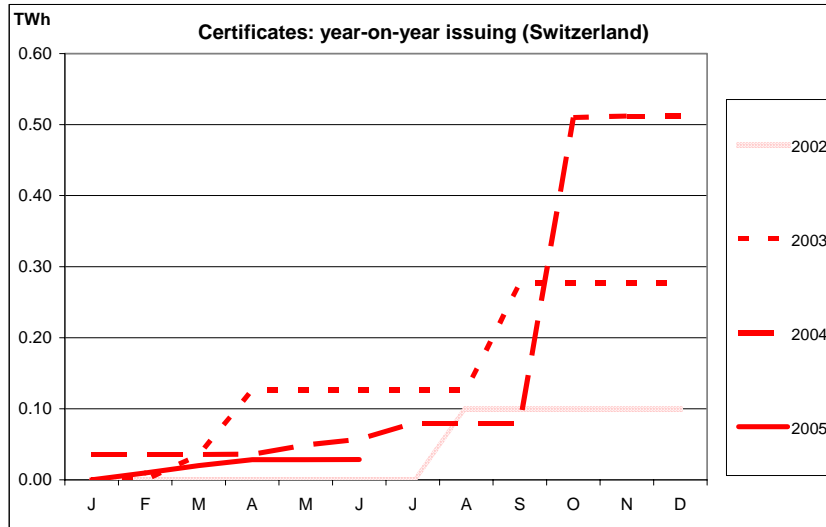
Spain has shown little activity during the last quarter, perhaps due to the current preparations for for guarantees of origin.



Sweden continues to issue and export substantially more certificates than in previous years, although redemption seems to have ceased recently – perhaps reflecting export via the CMO-CMO interface taking preference. Imports may reflect returns.

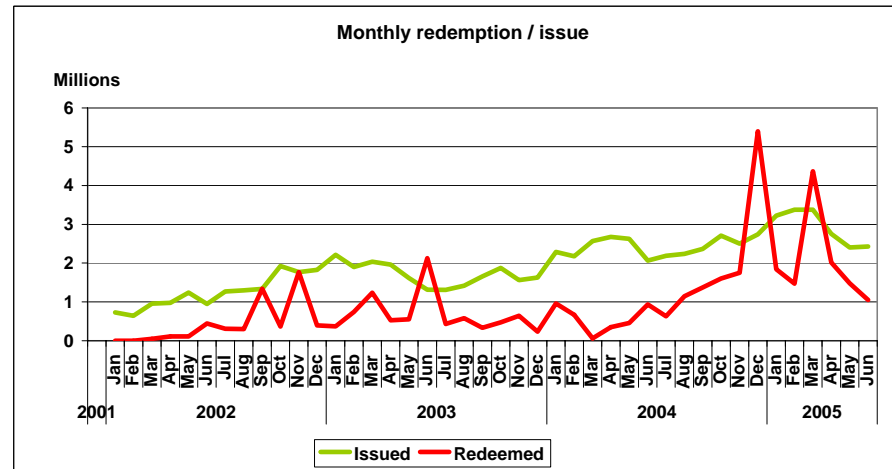
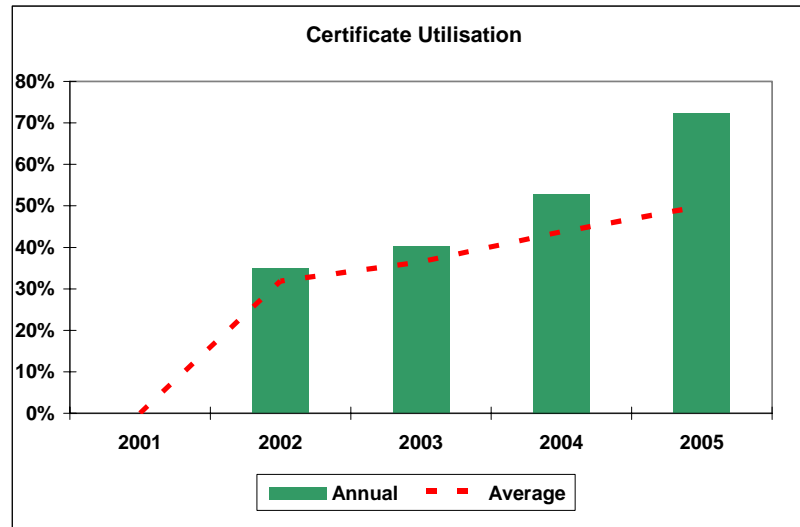


Switzerland has been relatively inactive this quarter, as preparations for guarantees of origin are in hand.



Realisation of value

The proportion of certificates that are redeemed has risen sharply to 50% overall, and above 70% this year.



Rolling three-month averages show that the market continues to grow – the growth of international trade can be seen below.

