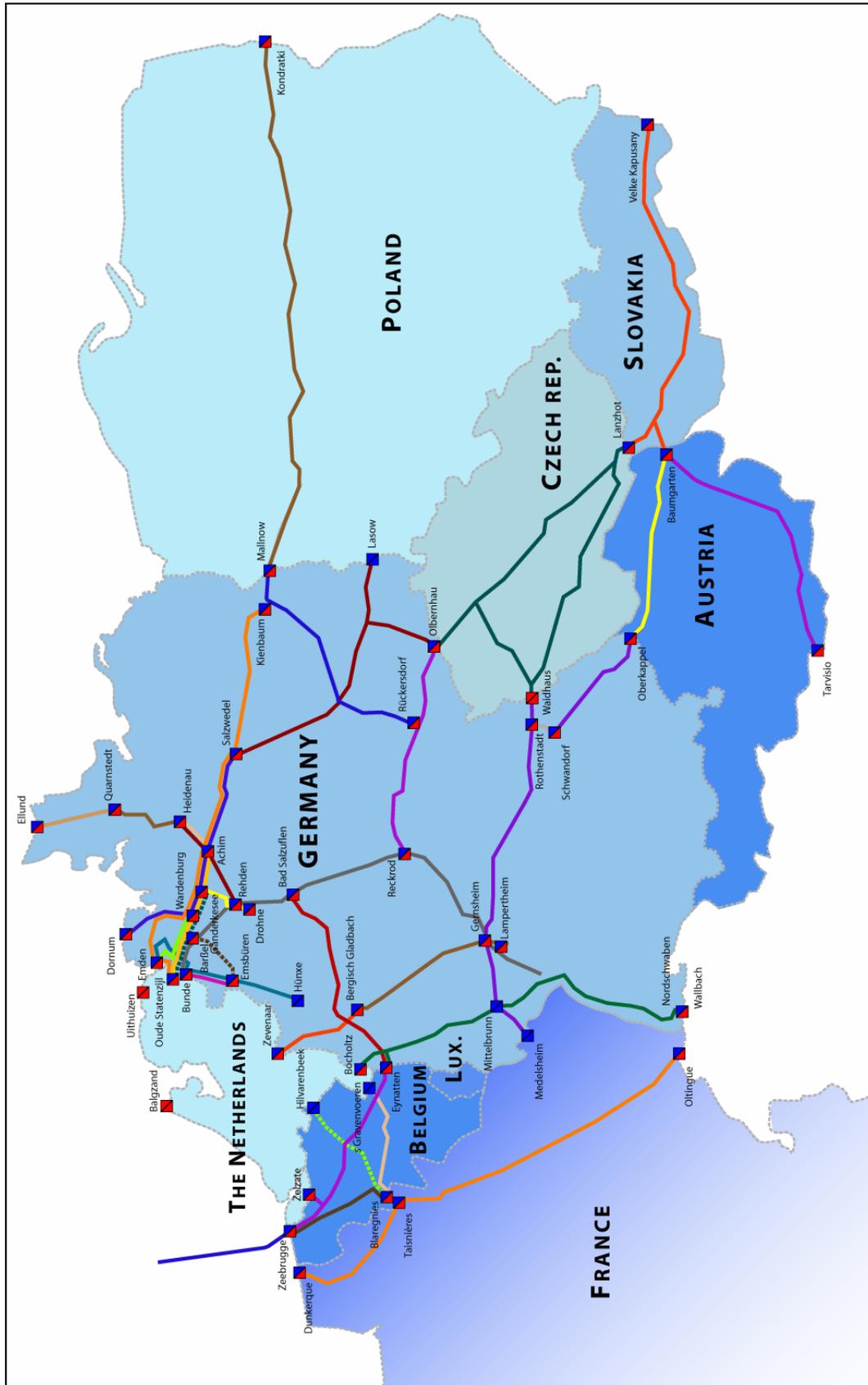


ANNEXES

ANNEX A (Gas)



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Pipeline	Technical capacity <i>mcm / day</i>	Route	Transit pipeline route
SPP	315.9	E-W	Velke Kapusany – Lanzhot & Baumgarten
Transgas	180.5	E-W	Lanzhot – Olbernhau & Waidhaus
TAG	95.3	E-W	Baumgarten – Tarvisio
JAGAL	80.1	E-W	Mallnow – Rückersdorf
Ex Hilvarenbeek	67.7	N-S	–
JAMAL-Europa	67.2	E-W	Kondratki – Mallnow
MEGAL Nord	57.1	E-W	Waidhaus – Medelsheim
IUK FF	54.8	N-S	Zeebrugge – Bacton
En Taisniere	50.4	N-S	–
NETRA 1	50.4	N-S	Dornum – Wardenburg
En Dunkerque	49.1	N-S	–
NETG	44.5	N-S	Zevenaar – Bergisch Gladbach
Ex Bocholtz	43.9	N-S	–
TENP	40.5	N-S	Bocholtz – Wallbach
TROLL	40.5	N-S	Zeebrugge – Taisnières
METG	40.1	N-S	Bergisch Gladbach – Lampertheim
STEGAL West	36.0	E-W	Rückersdorf – Reckrod
VTN/RTR FF	30.2	N-S	Eynatten – Zeebrugge / Zelzate
Slochteren	27.5	N-S	Hilvarenbeek – Blaregnies
Ex 's Gravenvoeren	27.1	N-S	–
BEB OTR 1	20.0	N-S	Emden – Wardenburg
STEGAL East	20.0	E-W	Olbernhau to Rückersdorf
Ex Oltingue	19.7	N-S	–
BEB OTR 8	19.3	N-S	Oude Statenzijl – Ganderkesee
En OSZ RG	18.6	N-S	–
WAG	18.5	E-W	Baumgarten – Oberkappel
En Emden EPT	18.2	N-S	–
SEGEO	17.9	N-S	's Gravenvoeren – Blaregnies
En Emden NPT	13.1	N-S	–
MEGAL Sud FF	11.1	E-W	Oberkappel – Schwandorf
RWE OTR 3	10.9	N-S	Emsbüren – Hünxe
BEB OTR 3	9.6	N-S	Oude Statenzijl – Achim
BEB OTR 5	6.9	N-S	Quarnstedt – Heidenau
BEB OTR 10	6.7	N-S	Ganderkesee – Drohne
DEUDAN	6.6	N-S	Ellund – Quarnstedt
RWE OTR 2	3.7	N-S	Bunder Tief – Emsbüren
BEB OTR 7	2.6	N-S	Bunde – Emsbüren
RWE OTR 1	1.6	N-S	Emden – Bunder Tief

Source: Energy Sector Inquiry 2005/2006.

**ANNEX B (Electricity)**  
**Geographic markets for electricity**

- (1) As regards geographic markets for electricity, despite efforts by the Community to integrate further the different territorial markets in the EU, the Commission has usually found that the geographic market is most of the time national<sup>1</sup>, but that it may sometimes be smaller<sup>2</sup> or larger<sup>3</sup>. Relevant elements which support the existence of a smaller or larger market include in particular system designs, the existence of congestion at points in the grid, the existence of prices correlation (see table g) and price differentials, and the differing nature of supply and demand on both sides of such congestion points (in particular the existence of an operator that is indispensable to meet demand<sup>4</sup>). This is a preliminary analysis of situations where it has been alleged that geographic markets are smaller or larger than national.

**A1. Cases of geographic markets smaller than national**

- (2) At this stage a complete assessment of the data provided by the TSOs regarding congestion inside their networks has not been possible. We are thus in a position to consider possible smaller geographic market only where network and market designs already foresee it. This is at present the case in Italy and Nord Pool (Denmark and Norway). Thus, the most congested links in Italy and the Nord Pool area have been identified, as well as the most frequent “aggregations of zones” in both systems. Also, a correlation study has been performed of prices between zones and in the case of Nord Pool, the prices of the Contract for Differences (CfD) of the different zones have been studied<sup>5</sup>. The data gathered over the period 2004-2005 indicated four smaller geographic markets in Italy (Macro-zone North<sup>6</sup>, Macro zone Centre-South<sup>7</sup>, Macro-Sicily<sup>8</sup>, and Sardinia). It also suggests that, in the Nord Pool area, three (West Denmark, East Denmark and South Norway) areas can be considered as separate geographic markets.
- (3) More precisely, in the case of Italy<sup>9</sup>, this segmentation corresponds to the links which are by far the most congested ones and aggregates the zones whose prices are almost perfectly correlated. The Macro zone Centre-South constitutes a special case in that respect. It does not occur on its own a large part of the time and is sometimes part of a wider aggregation of zones (often including the North zone). However, the Macro zone

<sup>1</sup> See i.a. cases COMP/M.3440 EDP/ENI/GDP, COMP/M.3696 E.ON/MOL.

<sup>2</sup> See case COMP/M.3729 EdF/AEM/Edison

<sup>3</sup> See cases COMP/M.3268 Sydkraft Grønting and COMP/M.2847 Verbund/Energie Allianz.

<sup>4</sup> An operator is theoretically indispensable to meet demand if total demand (D) in the area is larger than the sum of the capacity (SC) of the other generators in the area and of the import capacity (IC) of the area. Given the little flexibility of demand and provided that the capacity of this operator is not much larger than (D-SC-IC), such an operator would be a hypothetical monopolist

<sup>5</sup> In Nord Pool commit the seller of the CfD to pay the net difference between the price of the zone and the “average price of Nord Pool” at the time of “delivery” of those contracts: the price of those contracts reflect thus to a certain extent the average price difference between the zones expected by market participants.

<sup>6</sup> This includes the Zone Nord as well as four smaller zones (Ene, Enw, Turbigio and Monfalcone)).

<sup>7</sup> This includes the Zones Centro Nord, Piombino, Centro Sud, Sud, Rossano, Brindisi, and Calabria.

<sup>8</sup> This includes the zones Sicilia, Priolo and Calabria.

<sup>9</sup> This result is coherent with the approach taken by the Italian Energy Authority (*Autorità per l’Energia Elettrica e il Gas*, “AEEG”) and the Italian Competition Authority (*Autorità Garante della Concorrenza nel Mercato*, “AGCM”) in a Joint Report published on 9 February 2005 (the “Joint Report”). The Joint Report “*Indagine conoscitiva sullo stato della liberalizzazione del settore dell’energia elettrica*” is available on the website of AEEG <http://www.autorita.energia.it/eletricita/index.htm> as well as on the website of AGCM, <http://www.agcm.it/index.htm>

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Centre-South is characterised by the existence of an operator who is indispensable to cover the demand most of the time<sup>10</sup>: the analysis will thus be carried out on the level of that macro zone. The result would of course be subject to revisions if the changes in configuration (e.g. Sardinia becoming far less separated than it used to be) are confirmed in the future.

a)

Frequency of congestion of the main links in Italy											
Link	NOR-TUR	NOR-MON	NOR-CN	CN-PIO	PIO-CS	CS-SUD	SUD-ROS	ROS-BRN	ROS-CAL	CAL-	PIO-SAR
2004	1%	1%	36%	13%	0%	0%	7%	12%	17%	41%	73%
2005	0%	0%	23%	1%	4%	0%	0%	1%	8%	50%	17%
Whole period	1%	0%	30%	12%	2%	0%	4%	7%	12%	45%	46%

Source: GME TUR=Turbigo, MON=Monfalcone, CN=CentroNord, CS=CentroSud, PIO=Piombino; ROS=Rossano, BRN=Brindisi, CAL=Calabria, SIC=Sicily, SAR=Sardinia.

Note: All figures are rounded. Figures for 2005 correspond to the period January-August. All percentages are rounded.

b)

Correlation of prices of the main neighbouring zones in Italy										
	NOR-CN	CN-PIO	PIO-CS	CS-SUD	SUD-ROS	ROS-BRN	ROS-CAL	CAL-SIC	PIO-SAR	
Correlation of prices	0.93	0.99	1.00	1.00	0.99	1.00	0.85	.095	0.71	

Source: GME data and COMP calculations on the period January2004-August2005.

- (4) In the case of Nord Pool, it is likely that West Denmark represents a separate market: it is separated from other markets half of the time and its price is not correlated at all with the prices of other zones<sup>11</sup>. As regards East Denmark, it is usually not separate from other zones but the correlation of its price with prices of other zones remains lower than the correlation between the prices of other zones. Further, the price of the CfDs for that zone is significantly different from the price of the CfD for other zones. Last but not least, there is an operator which is indispensable to meet demand in that zone. Thus there are good reasons to consider this zone as a separate market. South Norway could also be considered as a separate market for similar reasons.

<sup>10</sup> See the joint Report in that respect.

<sup>11</sup> West Denmark also cannot be considered as in the same market as Germany as the interconnector between them is congested most of the time. In any event, there is one main operator in West Denmark which is indispensable to meet demand in that zone.

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c)

Frequency of congestion of the links in Nord Pool							
Link	WDK-SWE	WDK-SNO	EDK-SWE	SWE-SNO	SWE-NNO	SNO-NNO	SWE-FIN
2004	41%	41%	6%	35%	27%	44%	24%
2005	52%	52%	11%	22%	10%	28%	8%
Whole period	45%	45%	8%	30%	20%	37%	18%

Source: Nord Pool. WDK= West Denmark, EDK= East Denmark, SWE=Sweden, SNO= South Norway, NNO=North Norway.

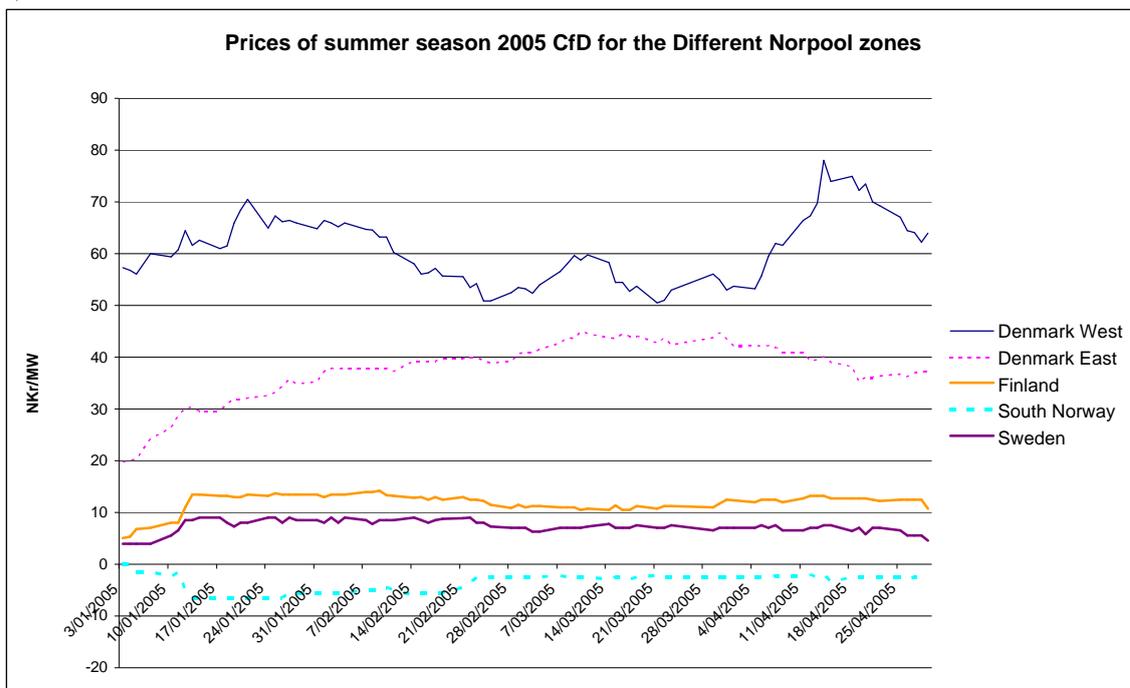
Note: All percentages are rounded.

d)

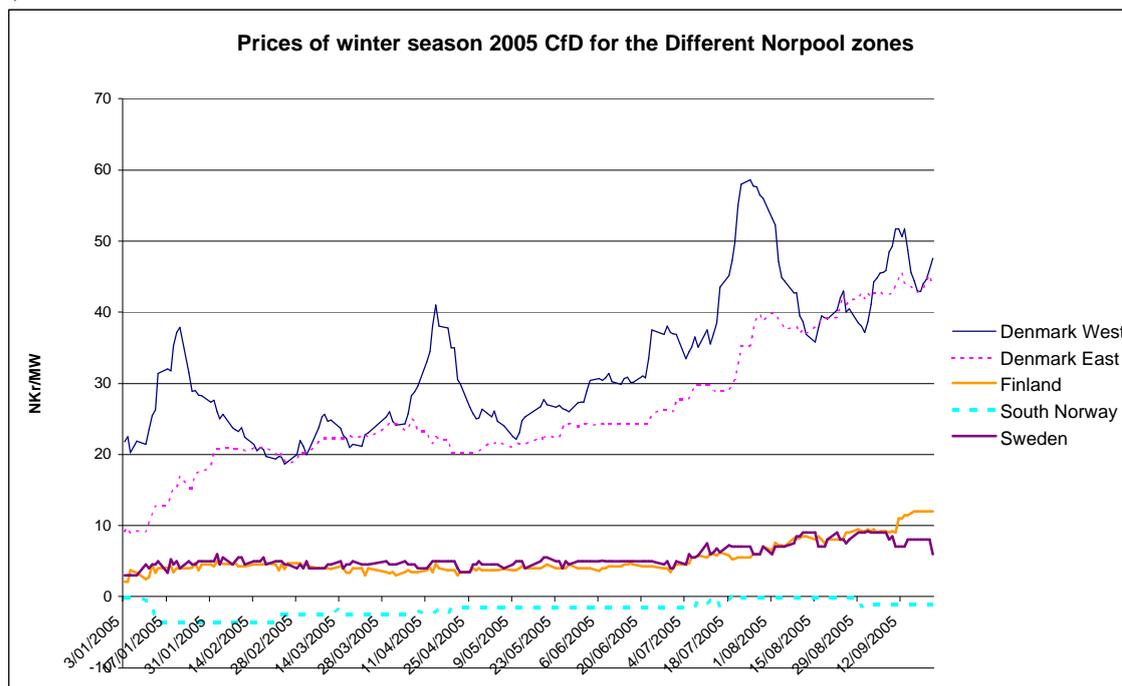
Correlation of prices of neighbouring zones in Nord Pool								
	WDK-EDK	WDK-SWE	WDK-SNO	EDK-SWE	SWE-SNO	SWE-FIN	SWE-NNO	SNO-NNO
Correlation of prices	0.42	0.45	0.36	0.74	0.74	0.87	0.86	0.83

Source: Nord Pool data and COMP calculations on the period January2004-August2005.

e)



f)



Source: Energy Sector Inquiry 2005/2006.

## A.2. Cases of geographic markets larger than national

- (5) The first case where a market is larger than national could be considered is Nord Pool because of the existence of its integrated market design. According to the analysis above, one could consider at most Sweden, North Norway and Finland to be part of the same geographic market. First the correlation of prices is fairly high. Second the prices of the Contract for Differences between the different zones in the forward markets indicate that operators consider that there is not much risk of trading forward between the remaining zones (except to a certain extent for North Norway). On the other hand, North Norway is separated from Sweden for one third of the time and Finland can be separated from Sweden during substantial amount of hours (especially during certain months separation can reach 40%). It is difficult to conclude without making a detailed calculation of residual demand in each of the zones, which at this stage has not yet been assessed. In line with previous Commission practice<sup>12</sup>, the issue will be left open.
- (6) Some market participants have also argued that the increasing correlation of the prices of the different markets on the continent has already led to the creation of a continental market involving at least France, Belgium Germany, the Netherlands and Austria. First of all, it is important to note that this correlation remains fairly low in most cases as seen below. Second, price level differentials between spot markets and forward market products remain substantial as will be shown in the next chapter. Further, the chapter on market integration demonstrates that congestion remains high on the borders between these MS and is in some cases even increasing. The same chapter demonstrates also that the procedures to trade between MS contain important administrative procedures that players experience as difficult (e.g. transaction costs) and risky. Further, France and Belgium continue to have a main operator which provides most of the generation in the

<sup>12</sup>

See case COMP/M.3867 Vattenfall/Elsam and Energi E2.

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market and is thus indispensable to meet demand. Thus, at this stage it is not possible to conclude that a continental market has emerged.

g)

Correlation of spot prices between continental exchanges							
Exchanges	ES-FR	FR-IT	FR-IT (Nord)	FR-DE	DE-NL	FR-NL	DE-AT
Correlation 2004	0.66	0.63	0.60	0.91	0.55	0.07	0.93
Correlation 2005	0.71	0.58	0.60	0.83	0.69	0.16	0.85

Source: data from the exchanges and COMP calculations.

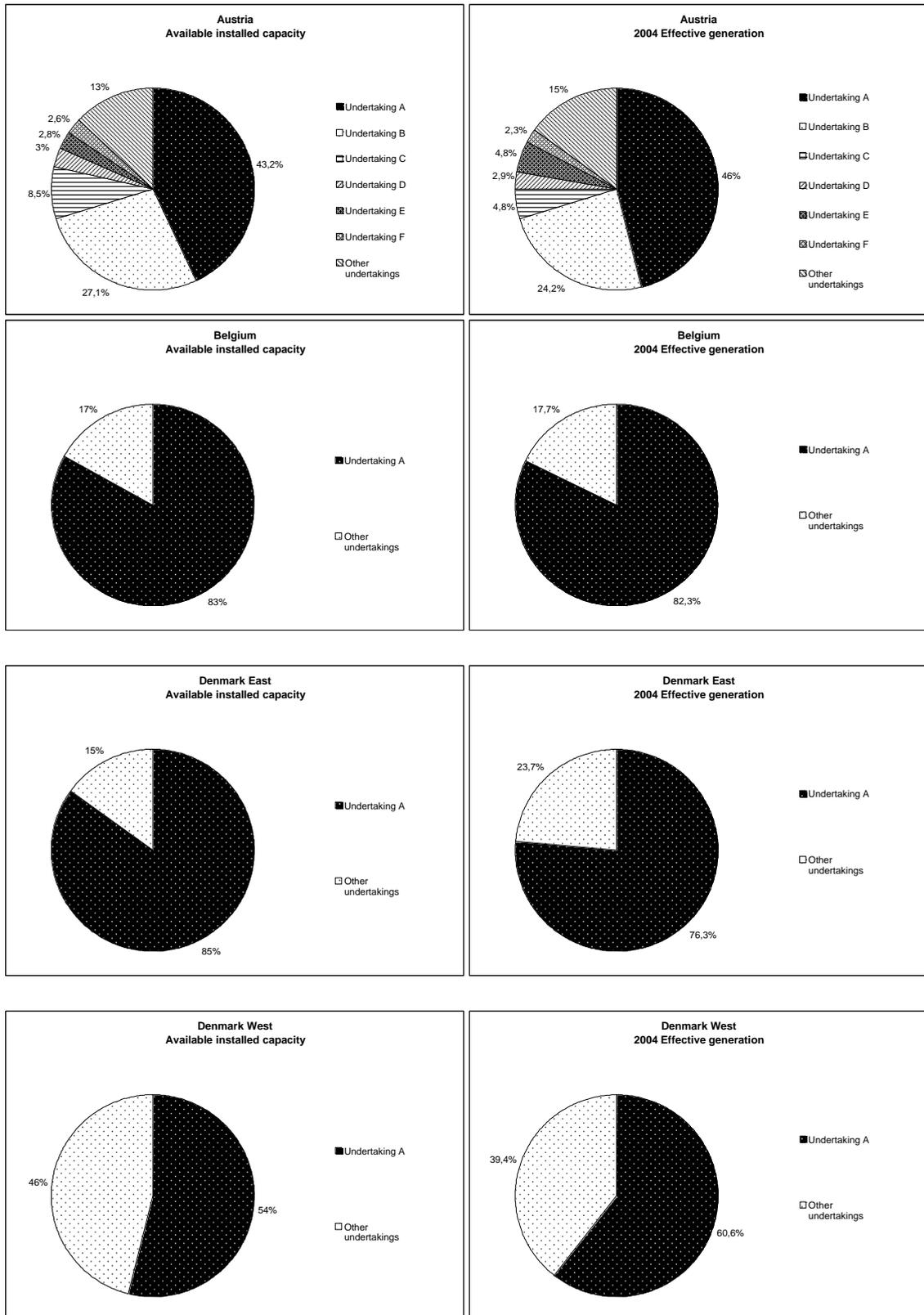
Note: The figures for 2005 correspond to the period January-September. For Italy, the first column corresponds to the whole system price (PUN), the second column to the North Zone.

- (7) That being said, the data about congestion of interconnectors provided in the chapter II.3 indicates that some borders (DE-AT, DE-CH, CZ-SK) are never or almost never congested in both directions. This could lead to three possible cases where a geographic market could be larger than national. First, for the case Germany-Austria, it must be noted that while the price of the EXAA is rather well correlated to that of EEX, this correlation is decreasing (see table A1). Further and more importantly, the main operator in Austria generates roughly half of the generation needed to cover consumption, so it is indispensable to meet demand. For that reason, it is difficult to conclude that the market comprises both Member states. The size of the incumbent operator leads to the same conclusion in the case of the Czech and Slovak republics. As regards the possible integration of Switzerland and Germany in the same geographic market, it is first important to note that congestion has started to occur on the border and that an auction mechanism was put in place in early January 2006. In any event, the absence of liberalisation and corresponding regulation of networks in Switzerland<sup>13</sup> make the two national markets too different to be considered as part of the same relevant market.

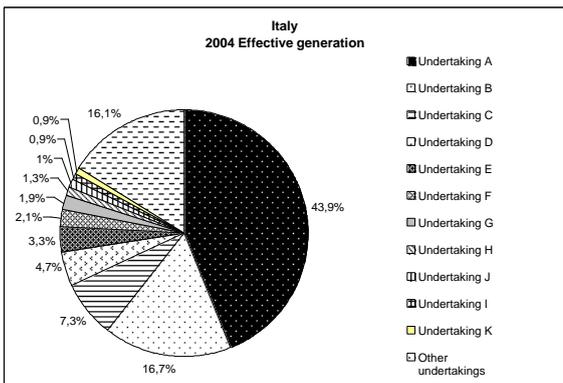
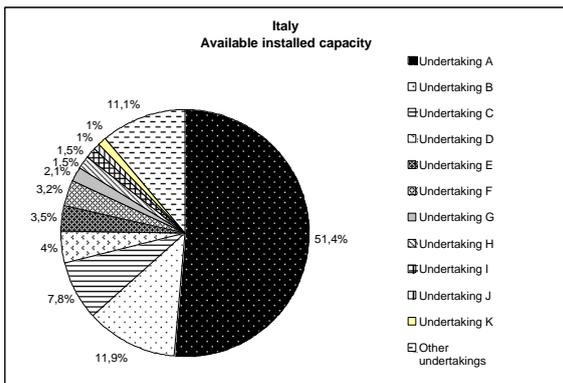
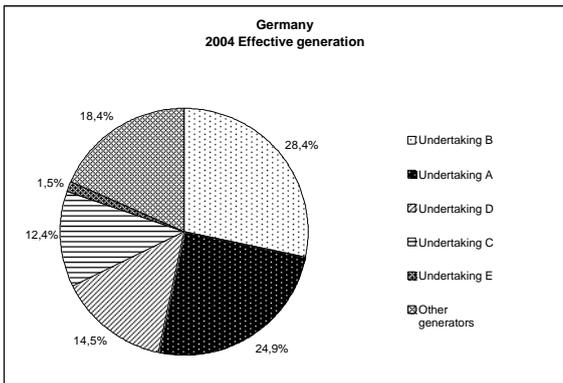
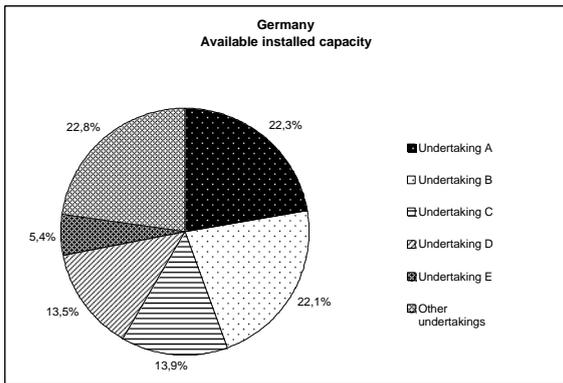
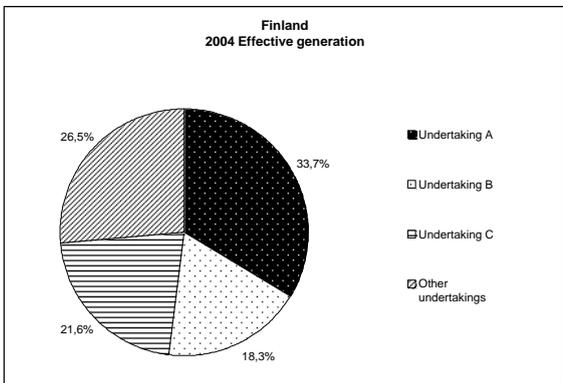
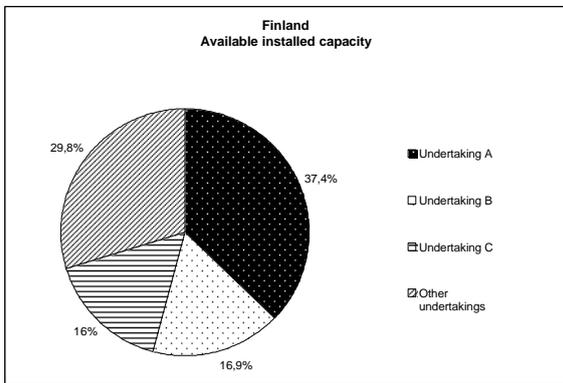
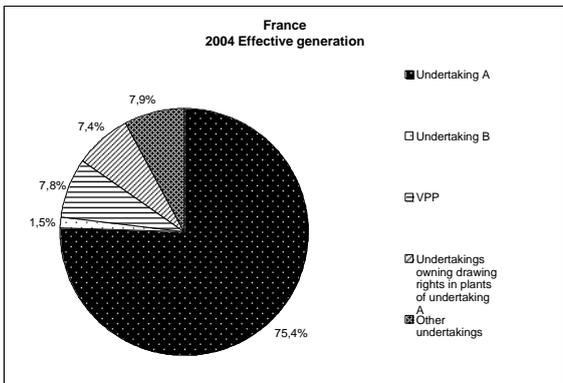
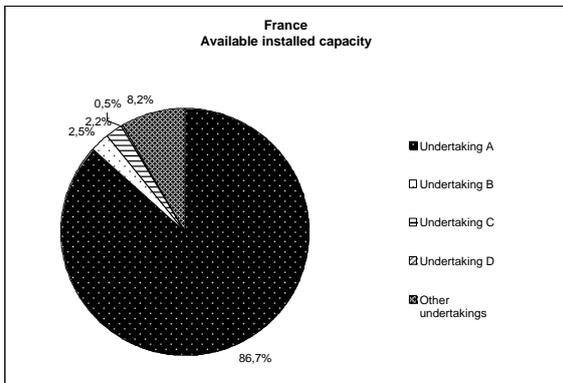
<sup>13</sup> This means in particular that there is no regulation of networks which would allow non-discriminatory access, a prerequisite for a true wholesale market to emerge.

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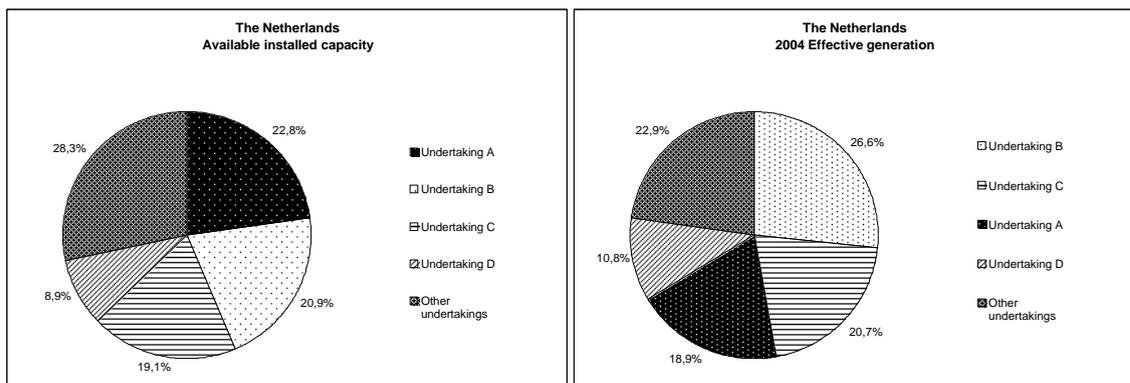
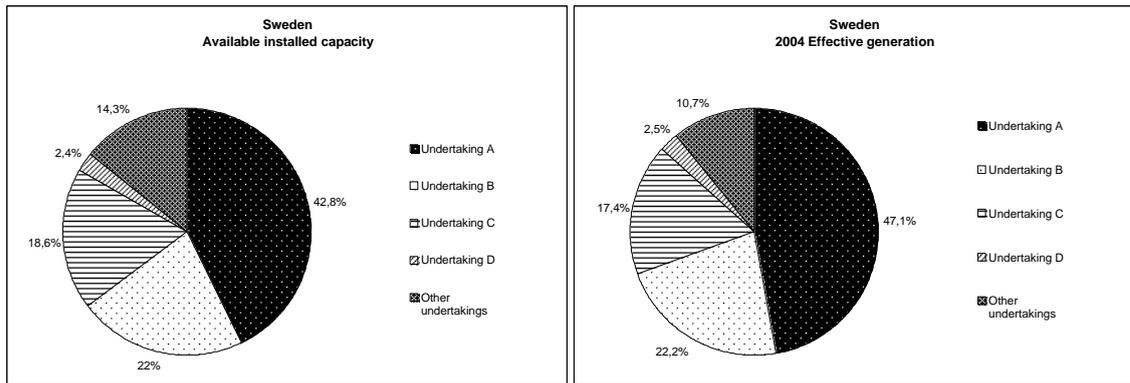
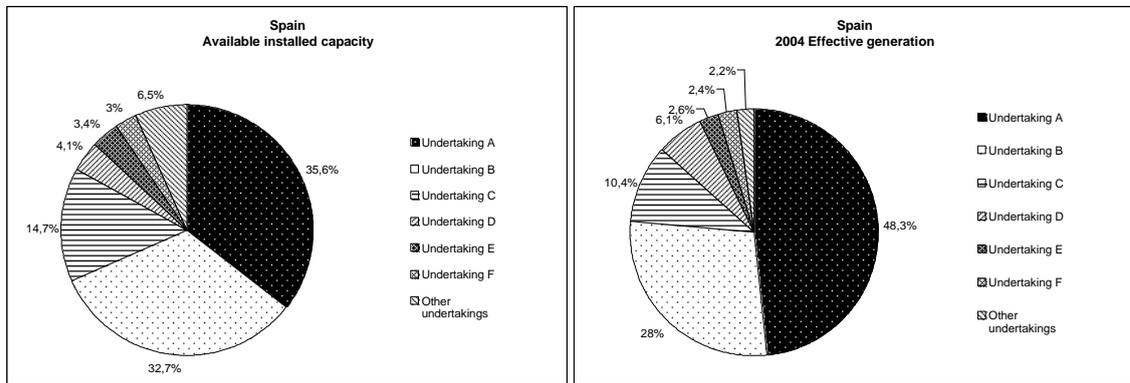
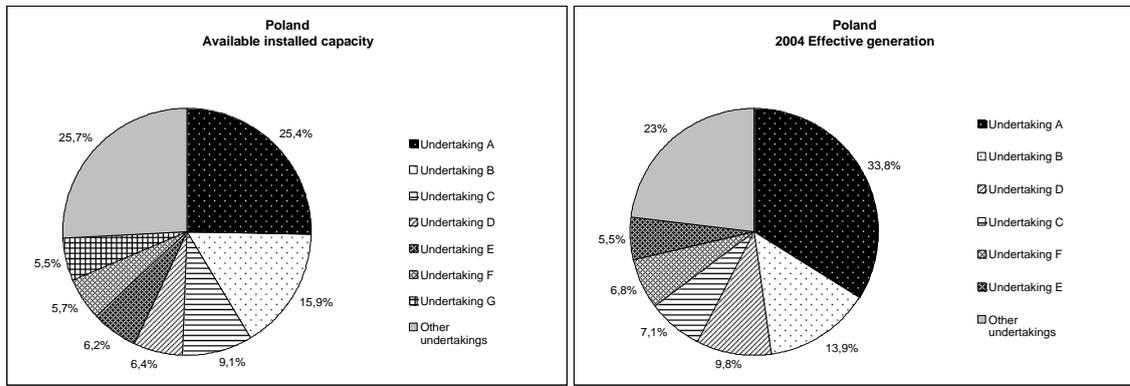
**ANNEX C (Electricity)**  
**Shares in available installed capacity and effective generation**  
**for a selection of countries, 2004**



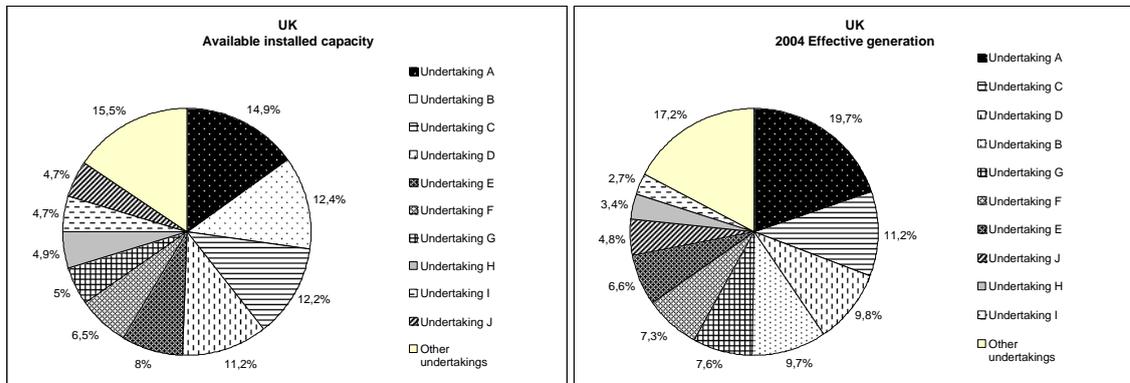
PRELIMINARY REPORT – ANNEXES



# PRELIMINARY REPORT – ANNEXES



## PRELIMINARY REPORT – ANNEXES



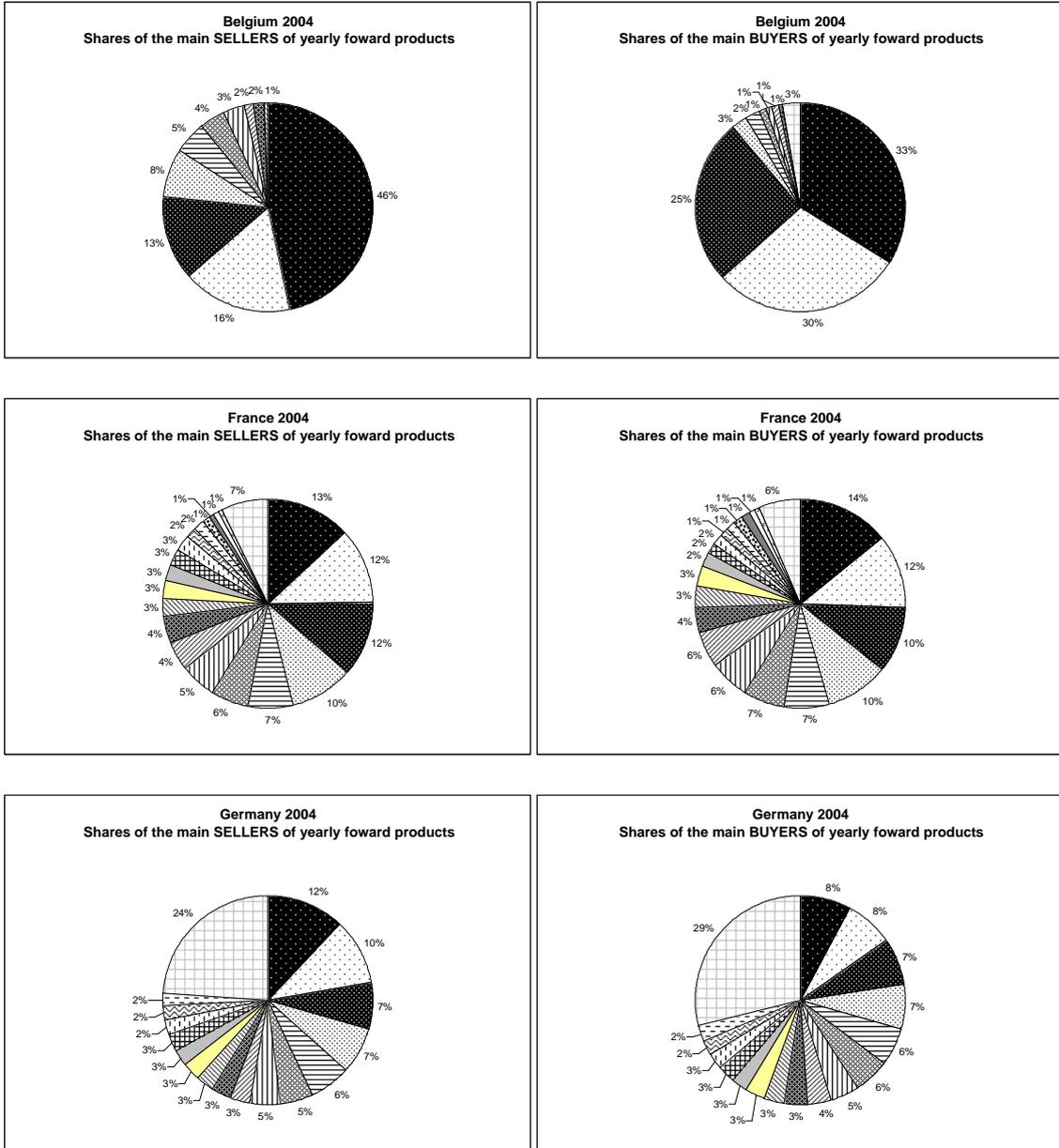
Source: Energy Sector Inquiry 2005/2006.

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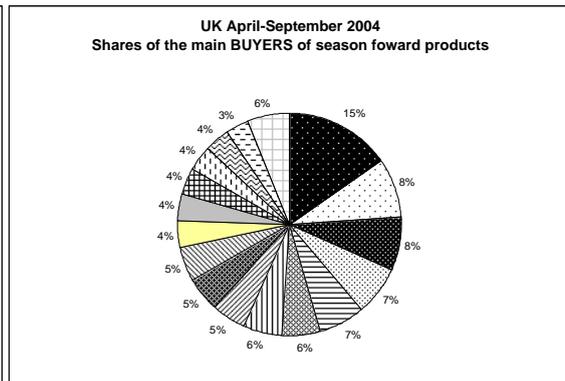
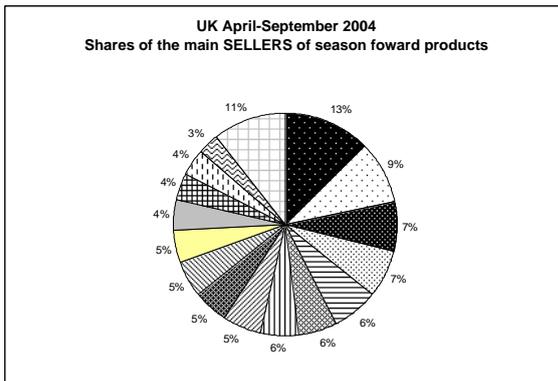
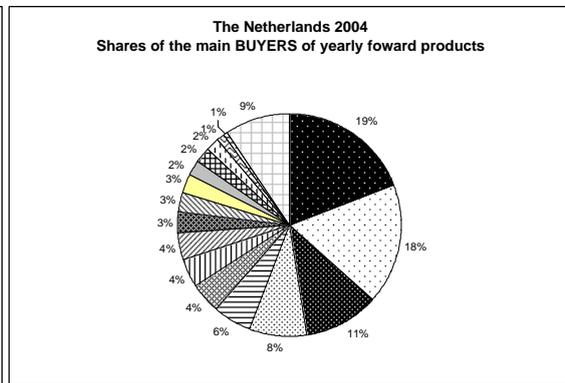
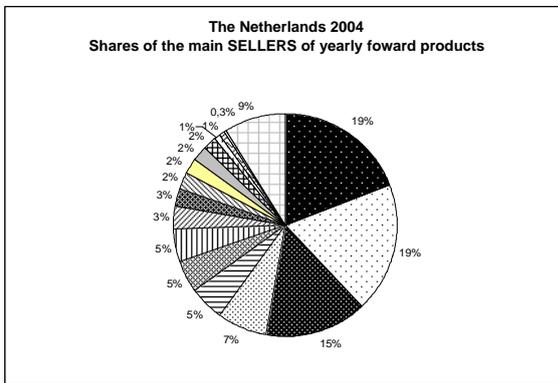
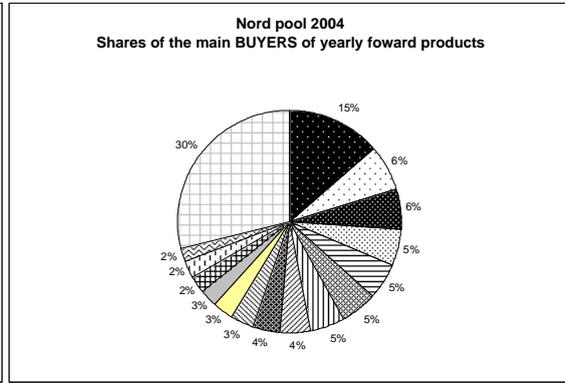
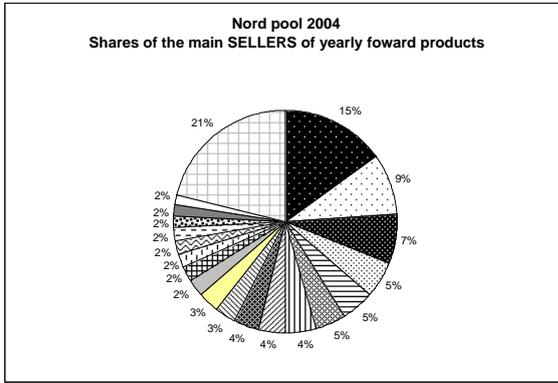
**ANNEX D (Electricity)**  
**Sales and purchases shares in existing forward markets, 2004**

*Note: the graphs represent sellers on the left side and buyers on the right side. The same pattern/color is not meant to represent the same operator in both graphs.*

*The pattern  represents in each Figure the category "other undertakings", i.e. the aggregation of all undertakings which have not been represented individually in the Figures.*



PRELIMINARY REPORT – ANNEXES



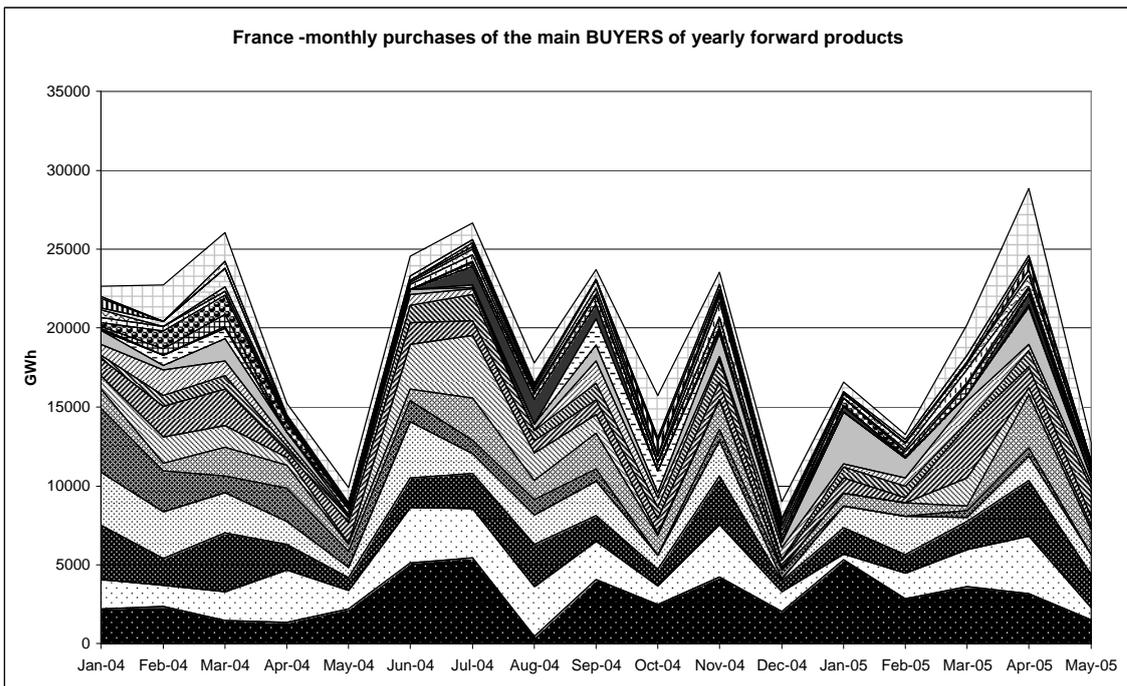
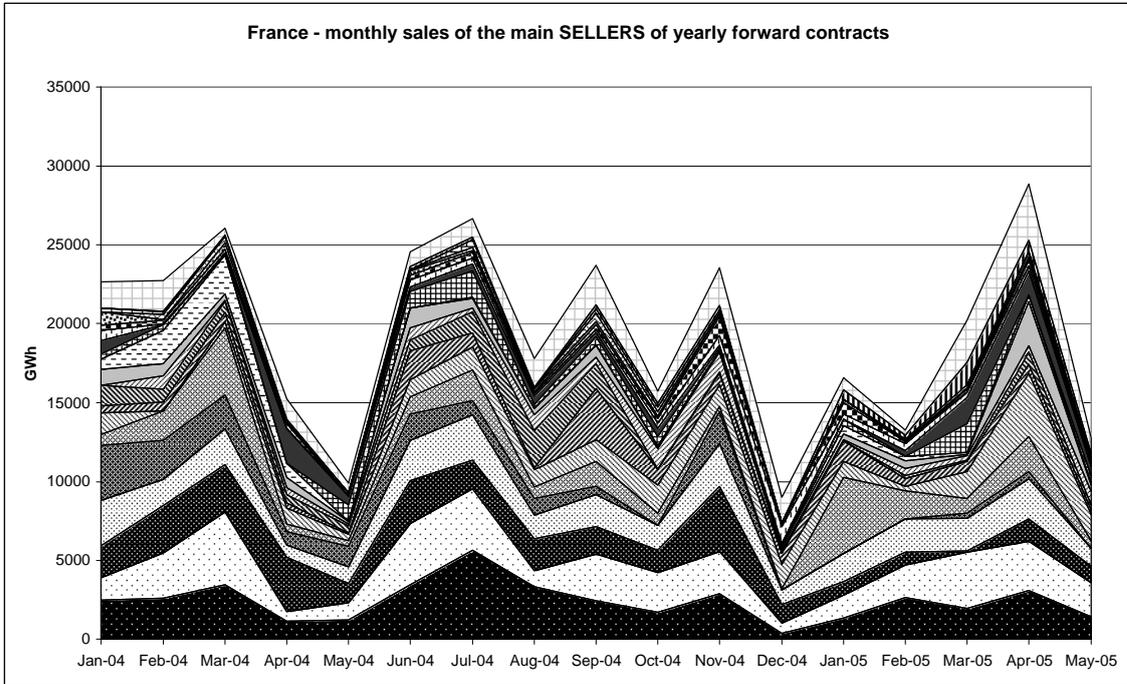
Source: Energy Sector Inquiry 2005/2006

**ANNEX E (Electricity)**  
**Evolution of sales and purchases shares in existing forward markets, 2004**

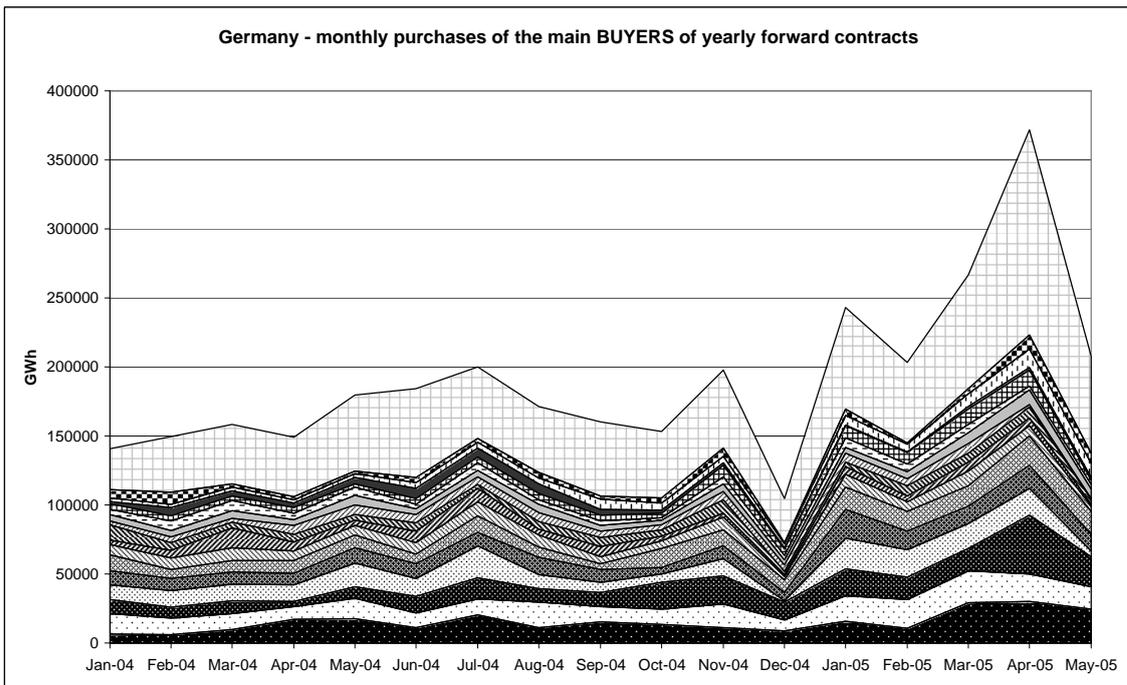
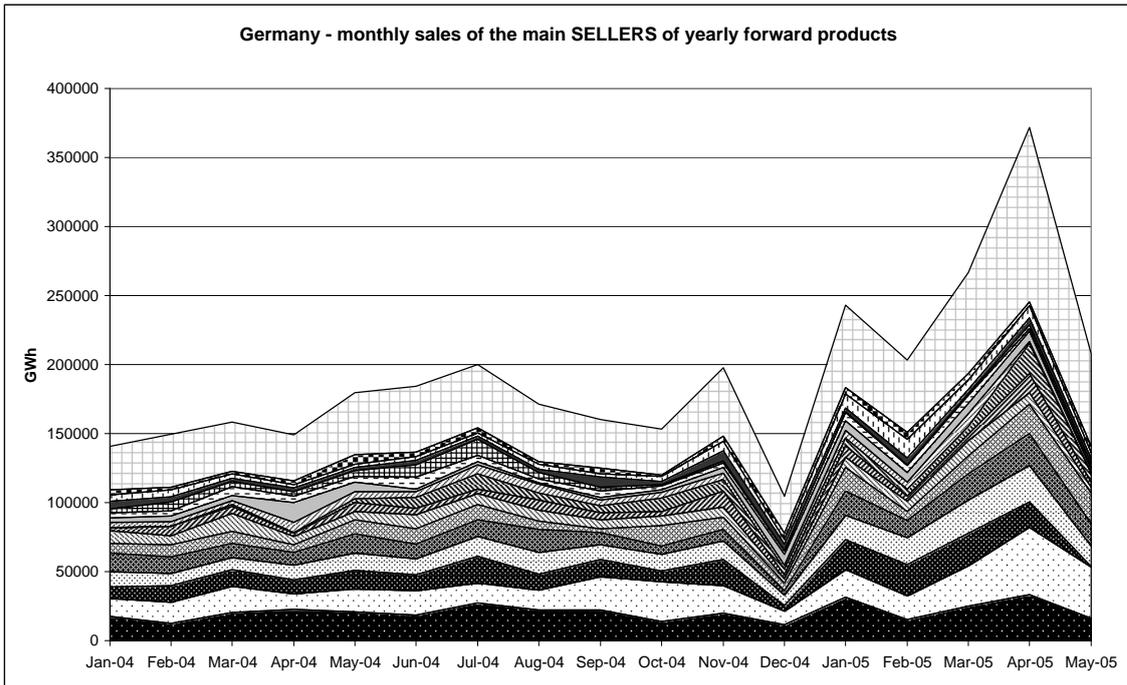
*Note: the graphs represent successively sellers and buyers for each market. The same pattern/colour is not meant to represent the same operator in both graphs, but for very few exceptions.*

*The pattern  represents in each Figure the category “other undertakings”, i.e. the aggregation of all undertakings which have not been represented individually in the Figures.*

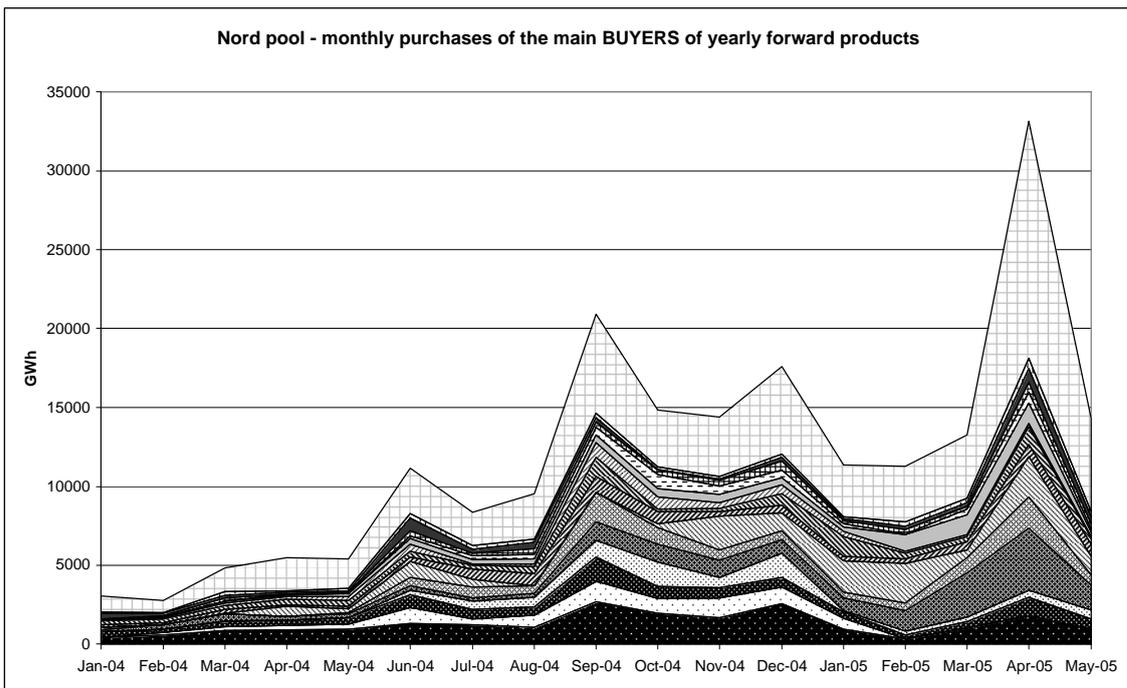
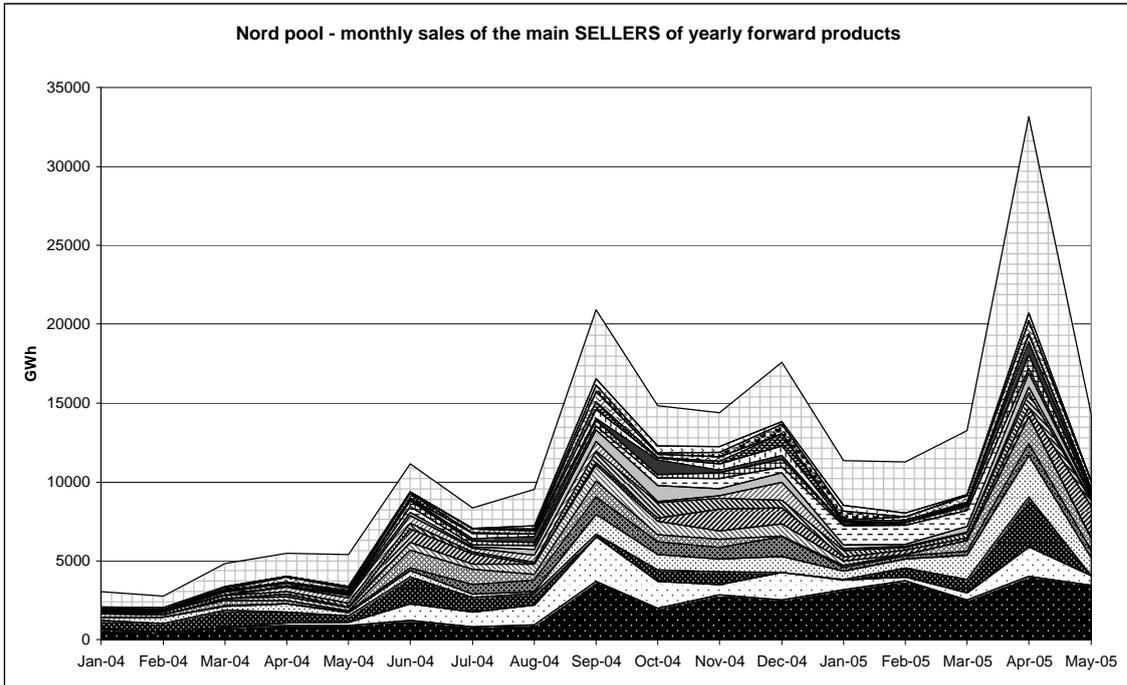
*The charts for Belgium cannot be shown given the very few operators actively trading: these charts would reveal the strategy of those operators.*



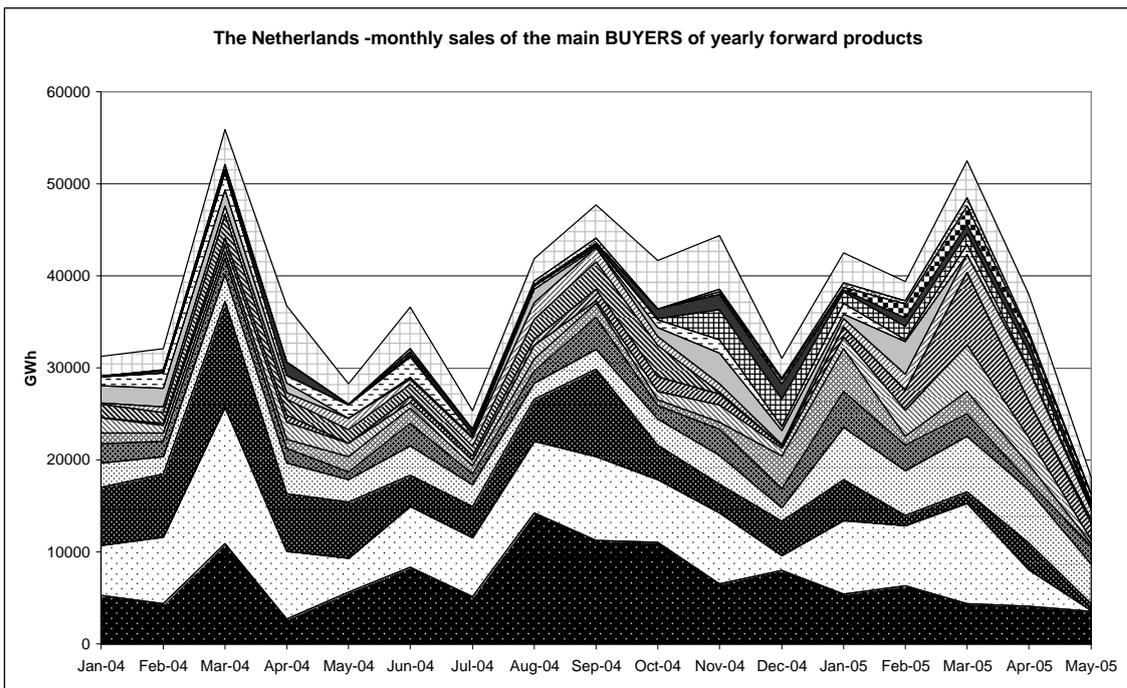
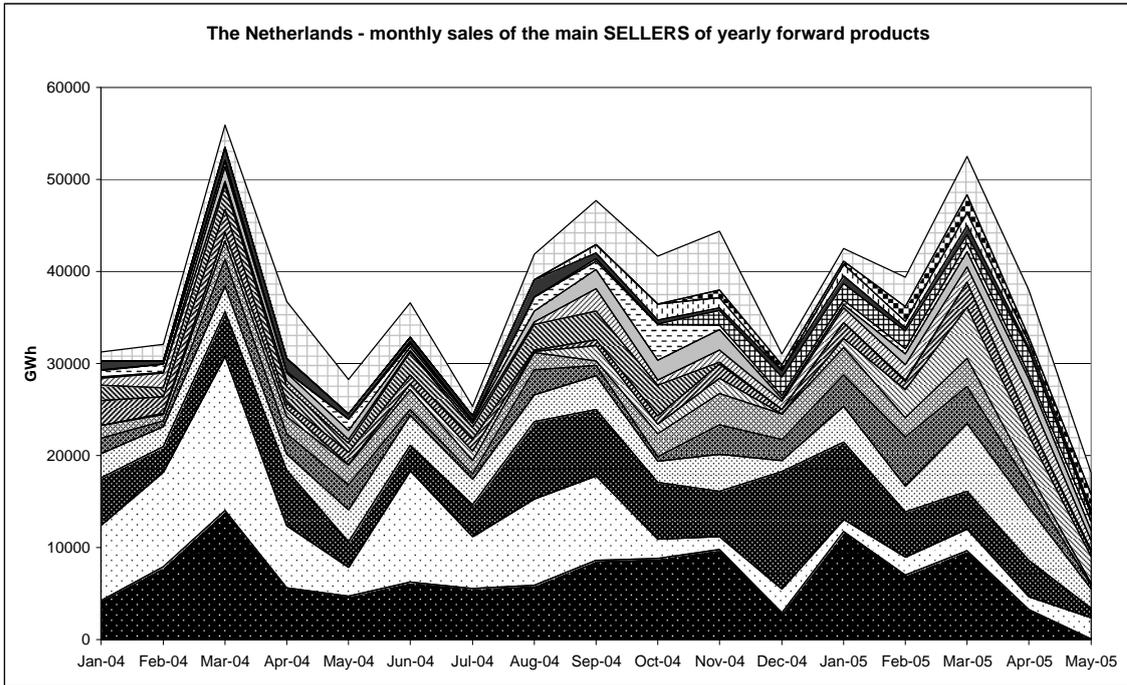
PRELIMINARY REPORT – ANNEXES



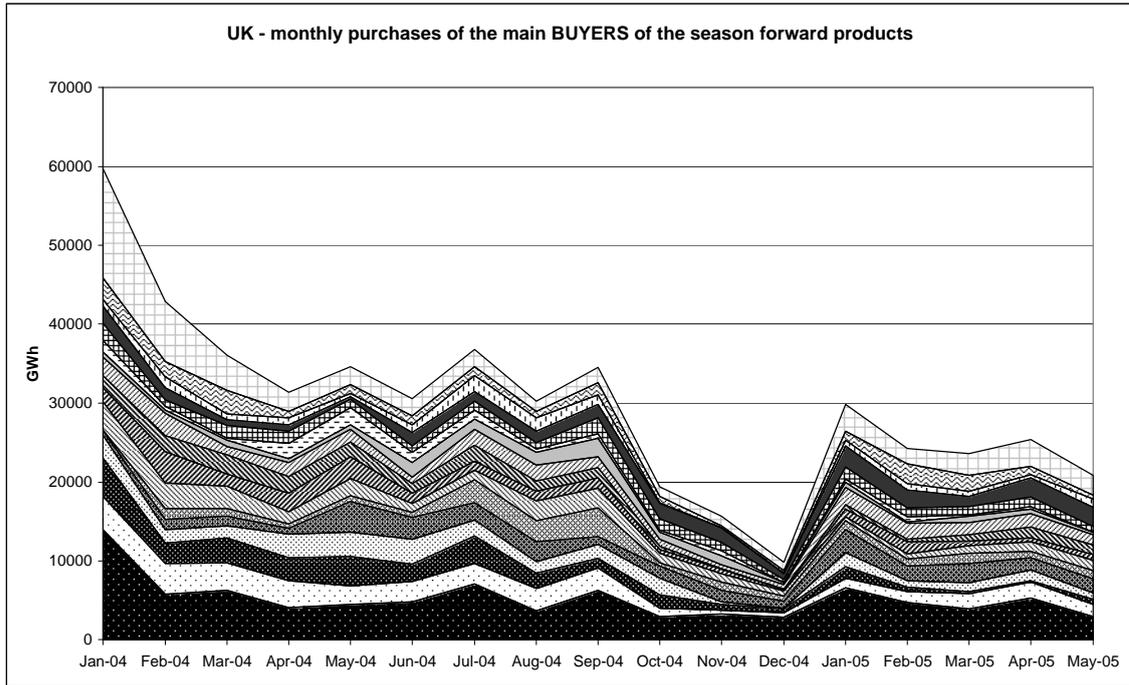
# PRELIMINARY REPORT – ANNEXES



PRELIMINARY REPORT – ANNEXES



PRELIMINARY REPORT – ANNEXES

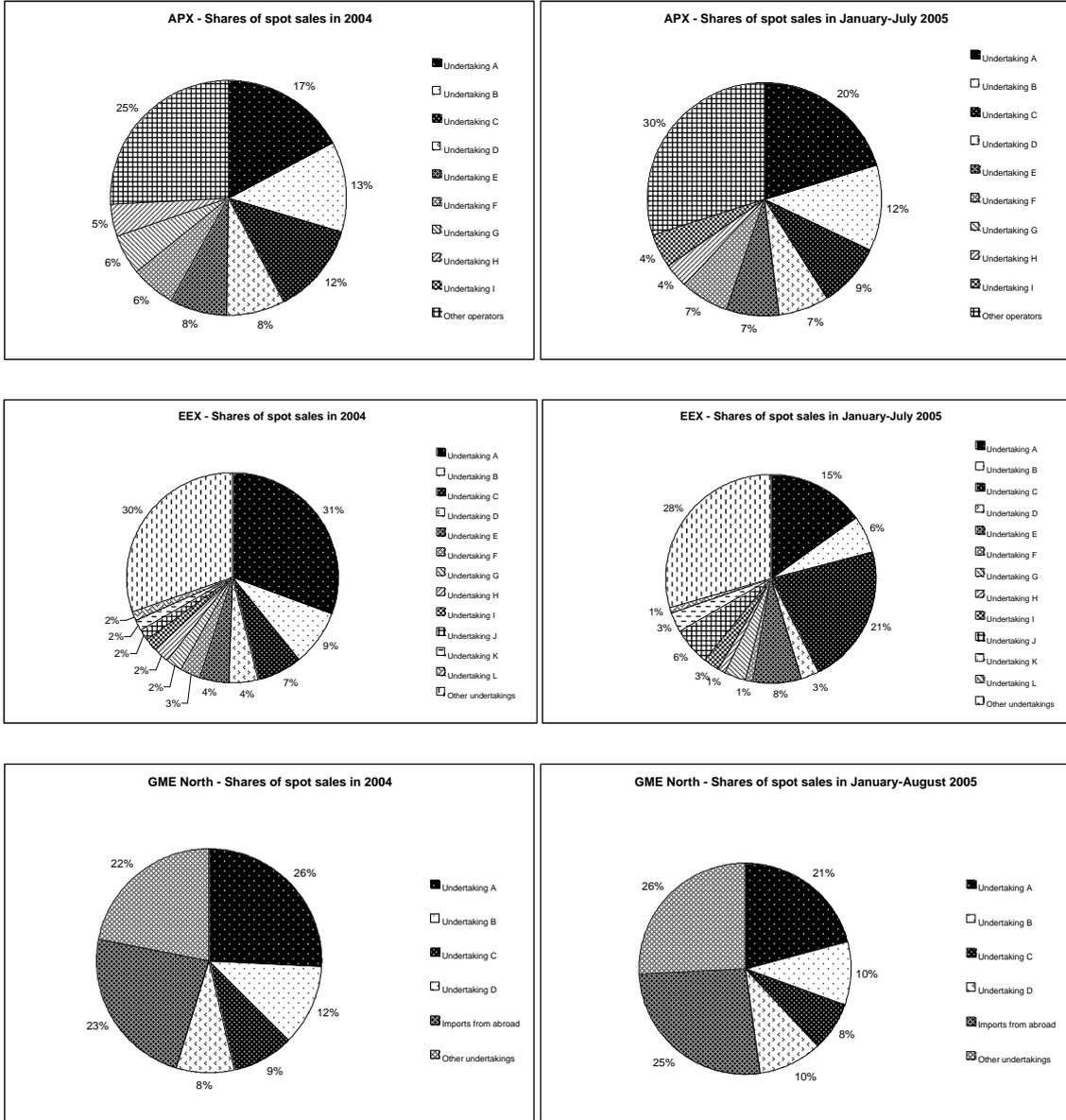


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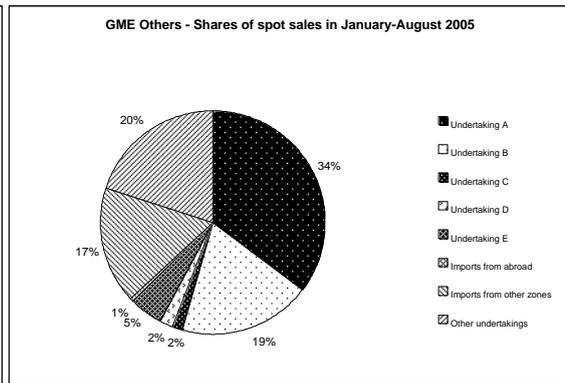
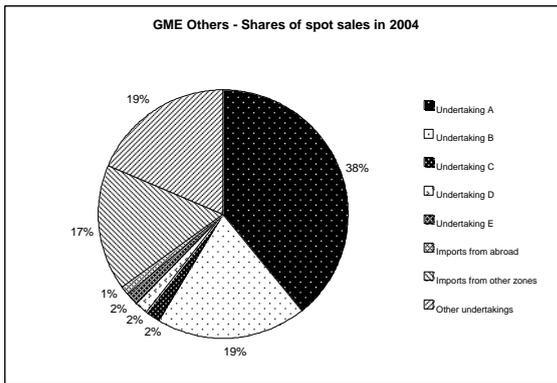
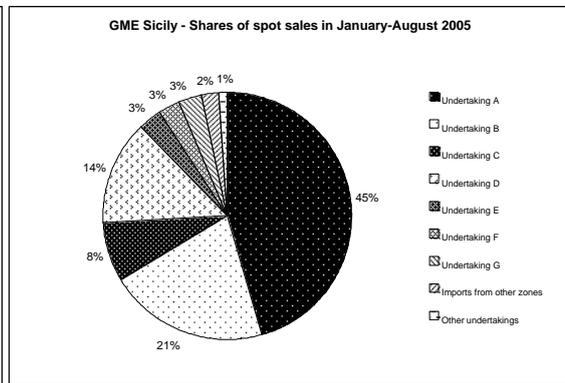
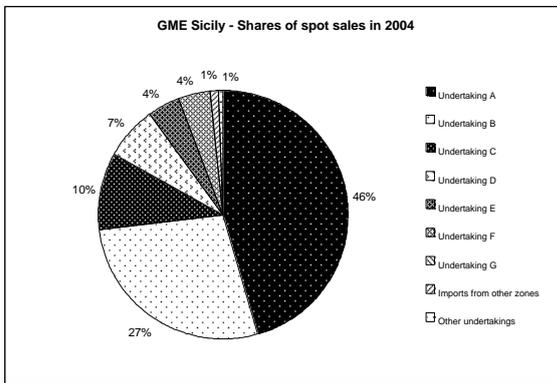
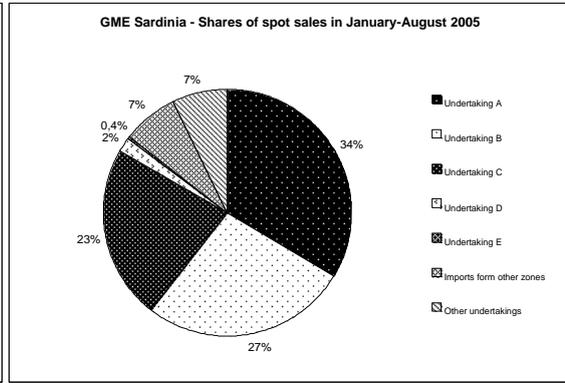
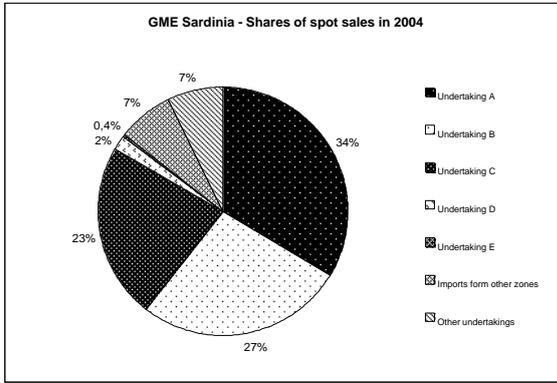
PRELIMINARY REPORT – ANNEXES

**ANNEX F (Electricity)**  
**Shares of spot sales in the different power exchanges in 2004 and 2005.**

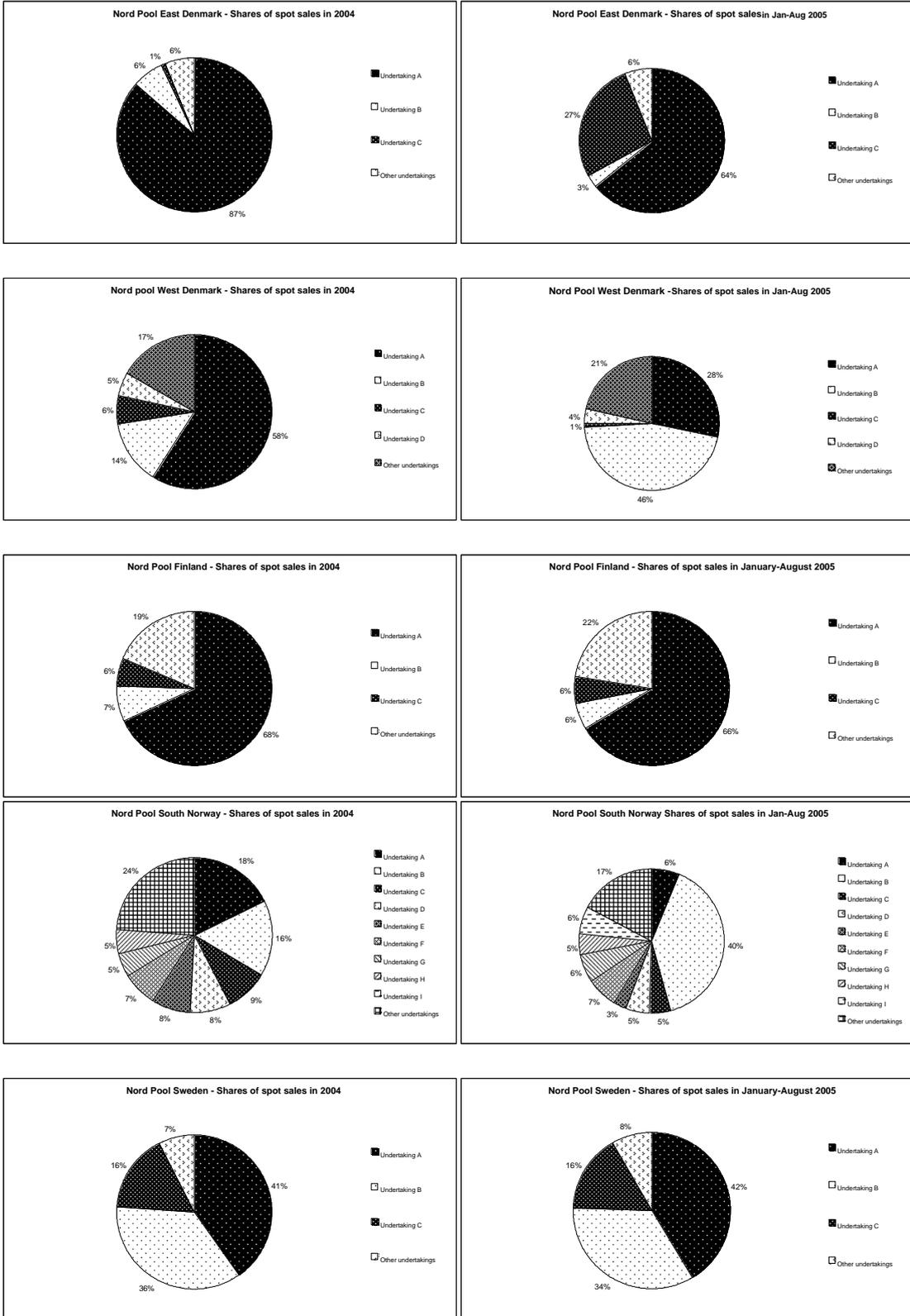
*Note: the same pattern/colour represents the same undertaking in both pies for a given market.*



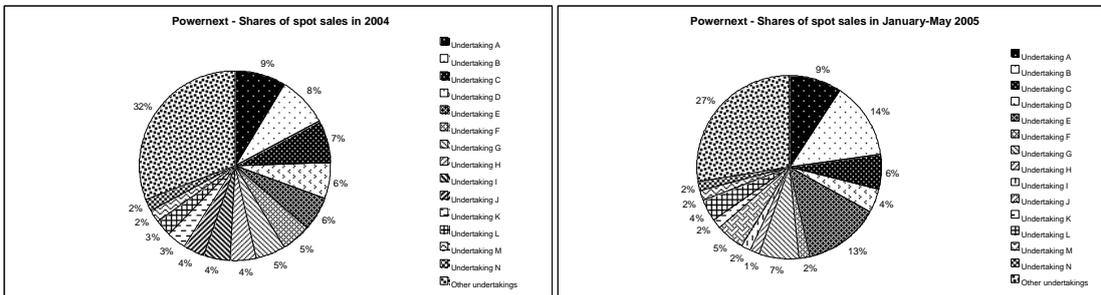
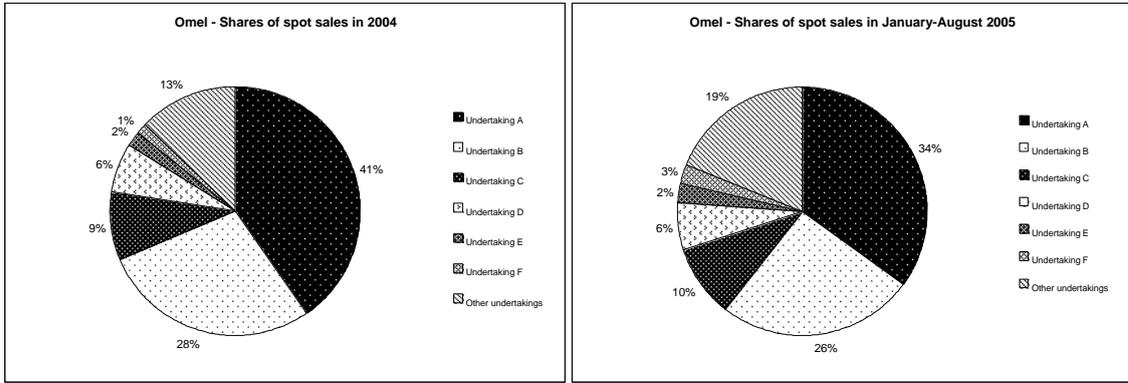
# PRELIMINARY REPORT – ANNEXES



# PRELIMINARY REPORT – ANNEXES



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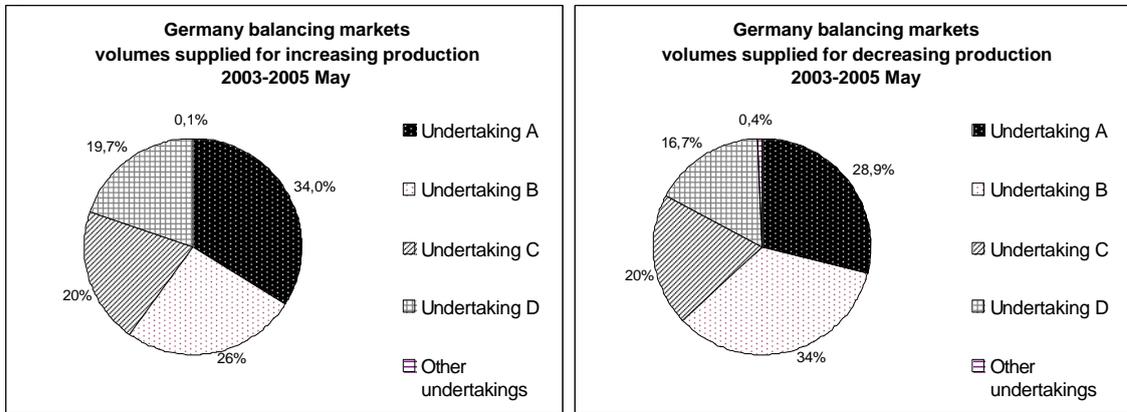


ANNEX G (Electricity)

First elements of analysis of balancing markets

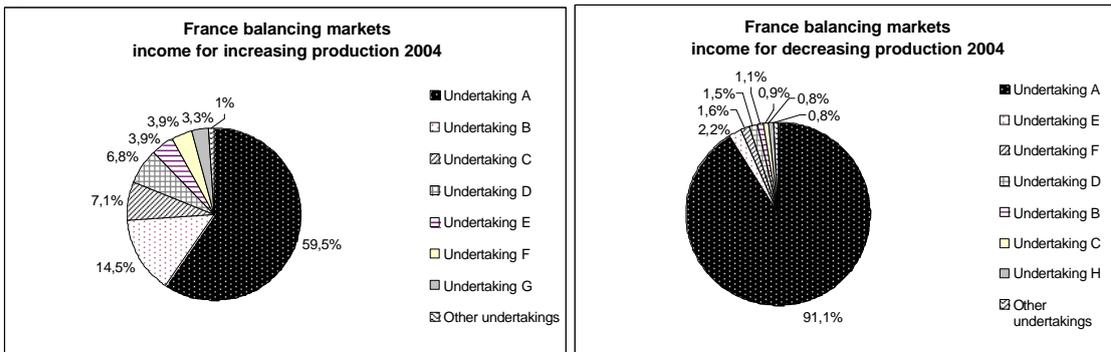
Figure a) show the concentration in the German balancing market segment aggregated for the whole of Germany. The shares (in percentages) represent the volumes supplied (MWh) by generators aggregating secondary and tertiary reserves that have been supplied during 2003 until May 2005. To be clear, though Germany has four so-called control areas it is reasonable to aggregate the volumes for reserves across these areas since supplying reserve power across control areas is possible. The figure reveal that four actors are mainly supplying reserves.

a)



The figure b) shows the share of income that operators received from the French TSO for balancing services (only tertiary reserves). All main actors in the balancing markets are either owners of generation assets or have drawing rights in generation capacity of third parties.

b)



PRELIMINARY REPORT – ANNEXES

**ANNEX H (Electricity)**  
**Importance of transparency on 49 individual issues,**  
**according to market participants**

*Note: These figures are discussed in section II.4.5*

<b>Issues</b>	<b>Information indispensable, important or useful</b>	<b>Information not useful</b>
Location of congestion	95,4%	4,6%
Frequency of congestion	93,2%	6,8%
Causes of congestion	92,6%	7,4%
Grid investments: impact on frequency and location of congestion	95,2%	4,8%
Planned line maintenance Location	96,1%	3,9%
Planned line maintenance Duration	96,1%	3,9%
Planned line maintenance Capacity loss (MW)	96,1%	3,9%
Unplanned line outages Location	95,9%	4,1%
Unplanned line outages Duration	95,9%	4,1%
Unplanned line outages Capacity loss (MW)	95,9%	4,1%
Thermal capacity	80,3%	19,7%
Net Transfer Capacity (NTC)	93,8%	6,2%
Impact of planned works on the network on NTC	92,8%	7,2%
Capacity reserved for legacy contracts	92,2%	7,8%
Capacity reserved for reserve power	92,8%	7,2%
Available Transfer Capacity (ATC)	96,1%	3,9%
Capacity requested by market actors	90,2%	9,8%
Capacity given out by TSO	92,4%	7,6%
Price per time slot	95,1%	4,9%
Total nominated capacity	93,9%	6,1%
Actual physical flows over interconnector	90,6%	9,4%
Day-ahead aggregated scheduled load	93,8%	6,2%
Week-ahead forecasted load	95,1%	4,9%
Year-ahead forecasted load	95,8%	4,2%
Actual system load in MW/h	95,4%	4,6%
Operation margins at consumption peaks	92,3%	7,7%
Demand for balancing power	95,8%	4,2%
System balancing status (long or short)	94,7%	5,3%
Actual use of primary reserve power	85,2%	14,8%
Actual use of secondary reserve power	89,3%	10,7%
Actual use of tertiary reserve power	88,5%	11,5%
Hourly generation (KWh) by fuel type	88,1%	11,9%
Day-ahead projected hourly injections (KWh) of wind power	89,3%	10,7%
Actual hourly injections of wind power	84,6%	15,4%
Actual injections (KWh) of wind power	82,7%	17,3%
Day-ahead aggregated scheduled generation capacity by fuel type	88,0%	12,0%
Week-ahead scheduled available generation capacity by fuel type	88,9%	11,1%
Year-ahead scheduled available generation capacity by fuel type	88,8%	11,2%
Projected new-built of generation capacity Location	94,9%	5,1%
Projected new-built of generation capacity Capacity (MW)	98,0%	2,0%
Installed generation capacity Location	95,9%	4,1%
Installed generation capacity Capacity (MW)	98,7%	1,3%
Projected mothballing of generation capacity	93,6%	6,4%
Projected dismantling of generation capacity	95,0%	5,0%
Projected maintenance Duration	96,6%	3,4%
Projected maintenance Capacity loss (MW)	97,3%	2,7%
Water levels in hydro reservoirs	94,2%	5,8%
Unplanned loss of generation capacity Duration	93,8%	6,3%
Unplanned loss of generation capacity Capacity loss (MW)	93,7%	6,3%

*Source: Energy Sector Inquiry 2005/2006.*