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REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

Energy prices and costs in Europe

{COM(2016) 769 final}

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Annex 2 – Summaries of sectorial case studies

2.1 Iron and Steel

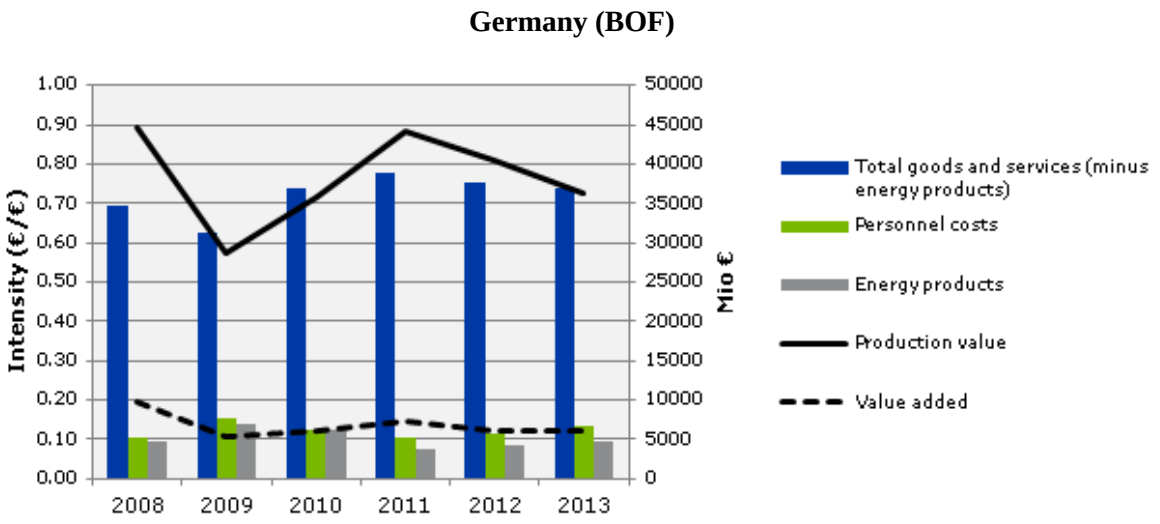
Sources: Ecofys, CEPS et altri and JRC

EU28 is a net exporter of steel products to the United States and Turkey and a net importer of Chinese and Russian steel products. Until 2014 the EU28 were still net exporters of semi-finished and finished steel products. While long and flat products have been net-exported on average between 2008 and 2014, simple steel products like ingots and semis have been net-imported. Facing global overcapacities, pressure on the European steel industry, especially in the commodity steel sector, has risen. Countries like China, where the steel industry has been subsidised and overcapacities exist, enter the market with very low prices. The excess capacity and increased exports from third countries (notably from China) gave also rise to an unprecedented wave of unfair trading practices affecting the profitability of the EU's steel industry.

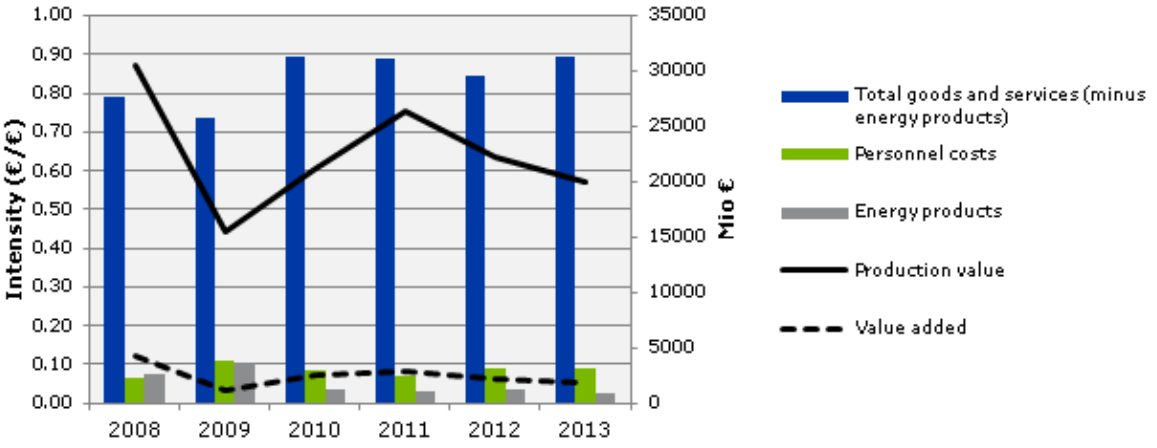
The JRC study shows that, concerning ***the steel*** industry, in almost all cases analysed, the country with the highest costs, Japan, is not far higher than the position of the EU, while Russia is one of the countries with the lowest costs. ***The variability in energy costs observed does not affect the production costs as much as the variability in other components of the costs***. For the products, both flat and long, and almost for all countries studied, the total cost in 2013 for the Electrical Arc Furnace (EAF) route (recycling route) was higher than for the Blast Furnace-Basic Oxygen Furnace (BF-BOF) route (integrated route). This is mainly due to the raw materials costs (scrap) rather than the energy costs.

The Ecofys study also provides a perspective of the energy costs related to other production costs in three EU Member States (Germany, Austria and Italy) which represent 48% of the EU total value added in the sector (Germany 31%, Italy 9%, Austria 8%)**.**

Figure 245 – **Steel (NACE 2410) - Production cost structure (total goods & services, personnel costs, energy products), production value, and value added in Germany and Italy**



Italy (EAF)



Source: Ecofys study, Eurostat SBS

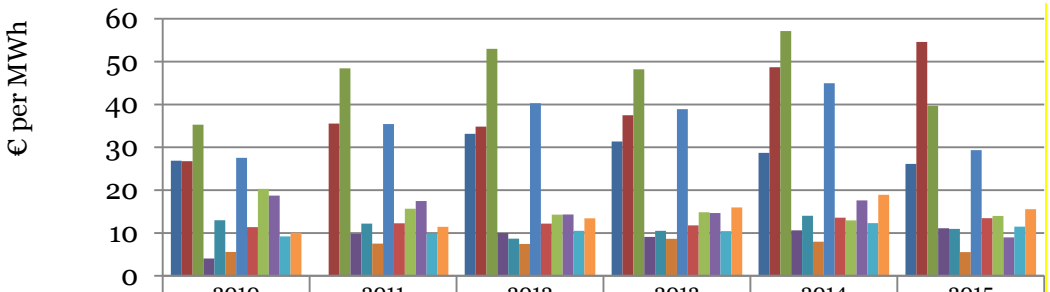
Between 2008 and 2015 Germany has a higher intensity of energy product costs to production value (0.10 €/€ German average) than Italy (0.05 €/€). This difference is mainly due to the fact that Italy has a much higher share of the less energy intensive EAF-production route.

International price comparison in steel sector

The CEPS study et altri, makes an analysis of the international prices using the CRU database. In 2010, the EU producers paid less for their **natural gas** (26.89 €/MWh) than producers in Japan and South Korea, but significantly more than producers in the United States (12.99 €/MWh). By 2015, the EU prices decreased slightly by 3% to a level of 26.11 €/MWh. Natural gas prices in China increased significantly (54.59 €/MWh), making China the highest priced country in the international comparison conducted by the research team. Prices in the United States decreased by 16%, in contrast.

In 2010, the EU with €60.21/MWh had a lower **electricity price** than China (65.19 €/MWh) but higher than the United States (43.70 €/MWh) and South Korea (49.26 €/MWh). Producers in Turkey and Japan faced the highest electricity price with 92.62 €/MWh and 82.06 €/MWh, respectively. In 2015 the EU with 53.03 €/MWh saw a substantial decrease of prices. Japan (124.54 €/MWh) and China (90.39 €/MWh) displayed the highest prices among the surveyed countries. Prices in the United States (56.77 €/MWh) and South Korea (68.04 €/MWh) also showed a significant increase. Electricity prices in the EU and Turkey decreased the most by 12% and 15% respectively, whereas the prices in Japan (51.8%) and China (38.7%) increased the most.

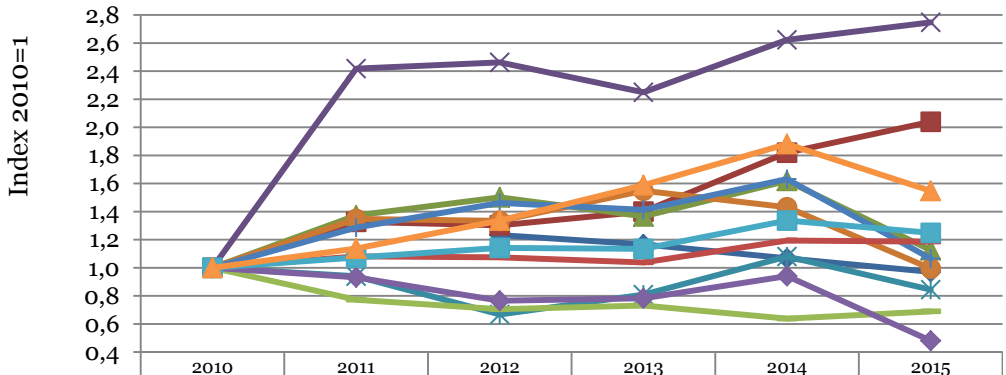
Figure 246 – **Steel -Prices of natural gas - EU vs. international (€/MWh) 2010 - 2015**



	2010	2011	2012	2013	2014	2015
EU	26,89		33,16	31,38	28,71	26,11
China	26,76	35,54	34,85	37,47	48,71	54,59
Japan	35,29	48,44	53,00	48,21	57,12	39,70
India	4,05	9,79	9,97	9,11	10,62	11,12
United States	12,99	12,21	8,67	10,51	14,02	10,97
Russia	5,58	7,52	7,44	8,64	7,98	5,54
South Korea	27,55	35,44	40,27	38,91	44,95	29,33
Brazil	11,35	12,28	12,19	11,78	13,56	13,46
Turkey	20,29	15,67	14,30	14,84	12,95	13,97
Canada	18,73	17,47	14,34	14,67	17,62	9,00
South Africa	9,20	9,88	10,51	10,44	12,30	11,50
Australia	10,06	11,44	13,44	15,98	18,93	15,56

Source: CEPS et al. - elaboration based on CRU (2015)

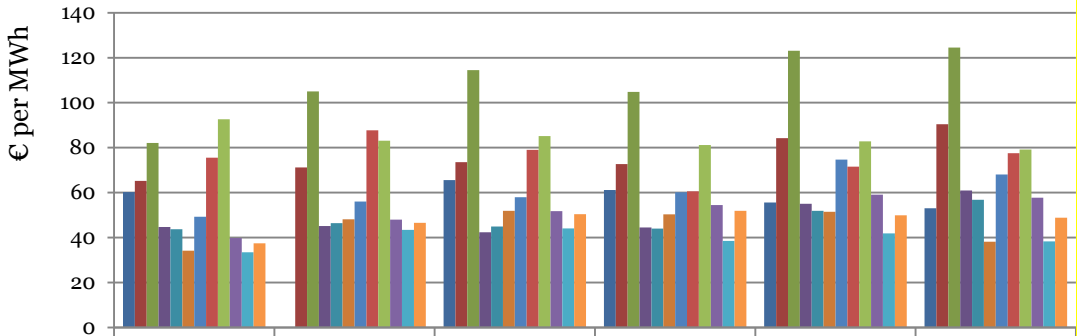
Figure 247 - **Indexed prices of natural gas - EU vs. international 2010 - 2015 (2010=1)**



	2010	2011	2012	2013	2014	2015
EU	1,00		1,23	1,17	1,07	0,97
China	1,00	1,33	1,30	1,40	1,82	2,04
Japan	1,00	1,37	1,50	1,37	1,62	1,13
India	1,00	2,42	2,46	2,25	2,62	2,75
United States	1,00	0,94	0,67	0,81	1,08	0,84
Russia	1,00	1,35	1,33	1,55	1,43	0,99
South Korea	1,00	1,29	1,46	1,41	1,63	1,06
Brazil	1,00	1,08	1,07	1,04	1,19	1,19
Turkey	1,00	0,77	0,70	0,73	0,64	0,69
Canada	1,00	0,93	0,77	0,78	0,94	0,48
South Africa	1,00	1,07	1,14	1,13	1,34	1,25
Australia	1,00	1,14	1,34	1,59	1,88	1,55

Source: CEPS et al. - elaboration based on CRU (2015)

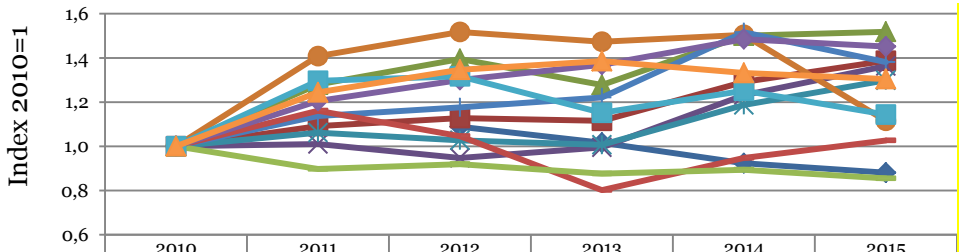
Figure 248 – **Steel - Prices of electricity - EU vs. international (€/MWh) 2010 - 2015**



	2010	2011	2012	2013	2014	2015
EU	60,21		65,53	61,18	55,59	53,03
China	65,19	71,17	73,54	72,70	84,20	90,39
Japan	82,06	105,01	114,48	104,83	123,13	124,55
India	44,69	45,14	42,35	44,47	55,03	60,93
United States	43,70	46,40	44,90	44,00	51,90	56,77
Russia	34,19	48,13	51,87	50,35	51,43	38,14
South Korea	49,26	56,02	57,94	60,15	74,69	68,04
Brazil	75,52	87,71	78,99	60,55	71,56	77,49
Turkey	92,62	83,09	85,13	81,15	82,77	79,17
Canada	39,78	47,95	51,73	54,44	59,05	57,73
South Africa	33,45	43,38	44,04	38,53	41,86	38,26
Australia	37,44	46,57	50,40	51,87	49,87	48,83

Source: CEPS et al. - elaboration based on CRU (2015)

Figure 249 – **Steel - Indexed prices of electricity - EU vs. international 2010 - 2015**



	2010	2011	2012	2013	2014	2015
EU	1,00		1,09	1,02	0,92	0,88
China	1,00	1,09	1,13	1,12	1,29	1,39
Japan	1,00	1,28	1,40	1,28	1,50	1,52
India	1,00	1,01	0,95	1,00	1,23	1,36
United States	1,00	1,06	1,03	1,01	1,19	1,30
Russia	1,00	1,41	1,52	1,47	1,50	1,12
South Korea	1,00	1,14	1,18	1,22	1,52	1,38
Brazil	1,00	1,16	1,05	0,80	0,95	1,03
Turkey	1,00	0,90	0,92	0,88	0,89	0,85
Canada	1,00	1,21	1,30	1,37	1,48	1,45
South Africa	1,00	1,30	1,32	1,15	1,25	1,14
Australia	1,00	1,24	1,35	1,39	1,33	1,30

Source: CEPS et al. - elaboration based on CRU (2015)

Performance indicators and impact of energy costs in the steel sector

According to the CEPS study, both the turnover and production costs per tonne of output have steadily decreased over 2008-2015, in particular after 2012 This was associated with a significant

decrease profit margins. The share of EBITDA in turnover fell by two thirds between 2008 and 2015 (from 15.6% to 5.3%), despite a slight recovery since 2013,

No clear trends can be identified in the electricity cost share of production costs which ranged between 4.9% and 6.8% over the study period. The share of natural gas costs in production costs was for all years observed considerably lower than the share of electricity, and ranged between 2.5% (2015) and 3.6% (2010).

The share of regulated electricity costs in EBITDA shows an increasing trend from 2008 to 2015. Within the years 2012 to 2015, the share increased from 13.9% to 35.4%. The share of regulated natural gas costs in EBITDA from shows a less pronounced increase and is considerably lower.

Overall, the assessment by CEPS indicates the sensitivity of profitability to energy prices trends. Should energy prices reach 2012 levels again without having higher steel prices and thus turnover, European still plant might face further competitive issues.

Energy prices paid by the Steel industry

The CEPS et altri study reveals **t**hat **a**verage natural gas prices paid by respondent plants decreased in 2015 after peaking in 2012 (26.11 €/MWh and 33.16 €/MWh, respectively) and reached a level almost 9% below the 2008 average. No significant price differences could be identified between BOF and EAF plant sites. Yet, the spread between the minimum and maximum price observed remained high, in 2015 the maximum price paid was much higher than in 2008 and more than double the lowest one.

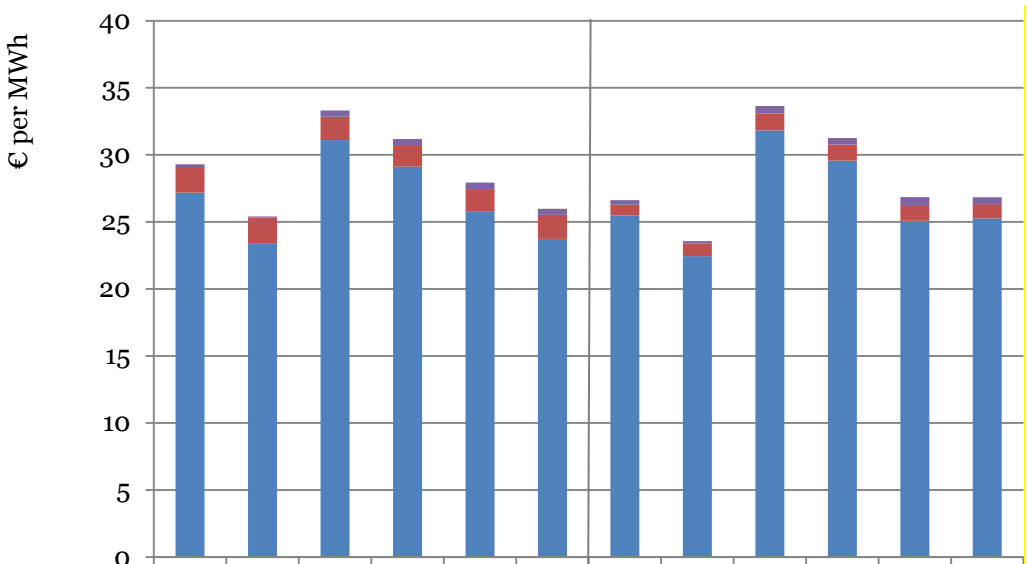
Table 26. Steel - Statistics for natural gas prices paid by sampled producers (€/MWh)

	2008	**2010**	**2012**	**2013**	**2014**	**2015**
Plant sites/total sample	14/22	16/22	20/22	20/22	20/22	17/22
EU (weighted average)	28.57	26.89	33.16	31.38	28.71	26.11
EU (median)	29.45	26.33	31.19	31.32	30.04	27.47
EU (relative standard deviation)	19.3%	16.0%	17.9%	16.8%	16.7%	21.4%
EU (IQR)	14.16	7.25	10.21	8.80	11.48	6.00
EU (minimum)	21.12	19.40	24.35	21.16	24.20	21.86
EU (maximum)	36.67	35.42	49.91	44.59	40.74	44.84
CEE EU (weighted average)	29.83	28.06	30.52	29.50	28.64	--
SE EU (weighted average)	--	--	--	--	--	--
NWE EU (weighted average)	27.09	25.50	34.04	32.11	27.78	26.92
BOF (weighted average)	31.08	29.24	31.52	30.55	28.52	27.13
EAF (weighted average)	26.48	24.84	34.23	31.98	28.86	25.51

Source: CEPS et al.

The *energy supply component* in 2015 fell by 24% and 13% compared to 2012 and 2008, respectively. *Network costs* remained mostly stable or slightly decreased while *Taxes and Levies* showed an increasing trend. Still both components represent a very low share of total price (together less than 10%).

Figure 250 – **Steel - Components of the natural gas bills paid by sampled producers in the EU (€/MWh), 2008-2015**



	EU average						North-Western Europe					
	2008	2010	2012	2013	2014	2015	2008	2010	2012	2013	2014	2015
Other taxes, fees, levies and charges (excl. VAT)	0,20	0,09	0,47	0,45	0,49	0,46	0,34	0,16	0,54	0,50	0,59	0,52
Network costs	1,92	1,91	1,75	1,61	1,64	1,78	0,81	0,96	1,29	1,19	1,18	1,07
Energy supply costs	27,18	23,41	31,10	29,12	25,81	23,74	25,48	22,44	31,81	29,57	25,09	25,26

Source: CEPS et al.

Also average *electricity prices* decreased between 2012 and 2015 (from 65.5 €/MWh to 53 €/MWh, 8% down from the 57.7 €/MWh calculated for 2008. The spread between minimum and maximum price paid in 2015 remained significant, with the latter being almost three times higher than the former and also higher than in 2008.

Table 27. Steel - Statistics for electricity prices paid by sampled producers (€/MWh)

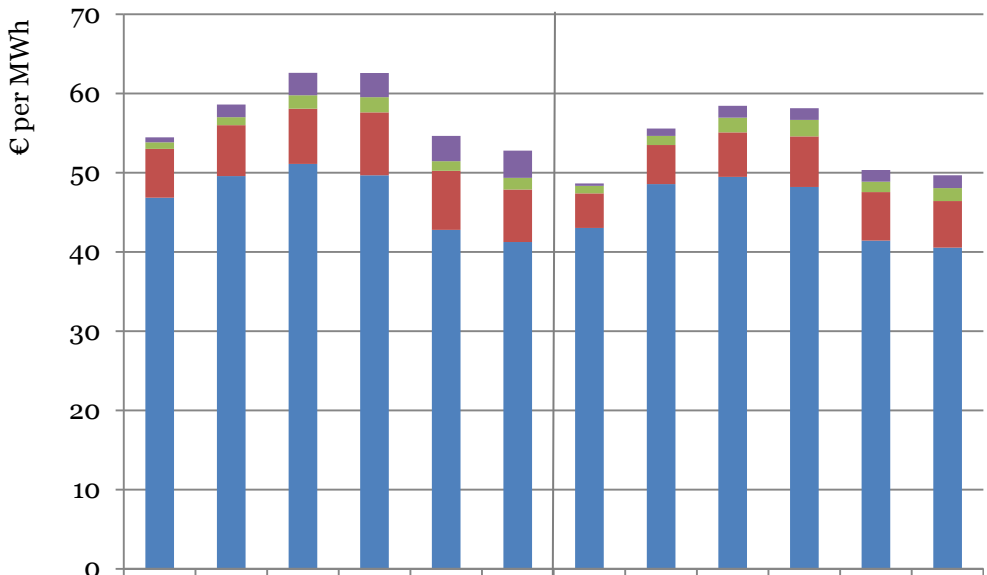
	2008	**2010**	**2012**	**2013**	**2014**	**2015**
Plant sites/total sample	15/22	18/22	22/22	22/22	22/22	18/22
EU (weighted average)	57.65	60.21	65.53	61.18	55.59	53.03
EU (median)	57.30	62.58	62.82	59.48	56.10	53.87
EU (relative standard deviation)	30.4%	21.4%	29.3%	34.5%	27.7%	33.0%
EU (IQR)	39.86	21.90	36.34	30.50	17.73	22.59
EU (minimum)	33.60	42.17	41.24	42.63	33.63	33.42
EU (maximum)	92.27	89.55	111.95	122.80	100.43	101.73
CEE EU (weighted average)	84.75	72.43	86.58	70.16	68.80	--
SE EU (weighted average)	--	--	--	--	--	--
NWE EU (weighted average)	50.47	55.68	58.57	58.13	50.51	49.83
BOF (weighted average)	56.02	62.71	72.86	59.45	56.33	52.12
EAF (weighted average)	58.55	57.35	60.12	62.46	55.03	53.55

Source: CEPS et al.

In terms of components, the energy supply component fell by 19% and 12% compared to 2012 and 2008, respectively. While network costs remained fairly stable, taxes and levies showed a significant percentage increase (more than four times 2008 levels) representing in 2015 6.5% of total price versus

1.2% in 2008. RES support also increased and almost doubled compared to 2008 but still representing less than 3% of total price.

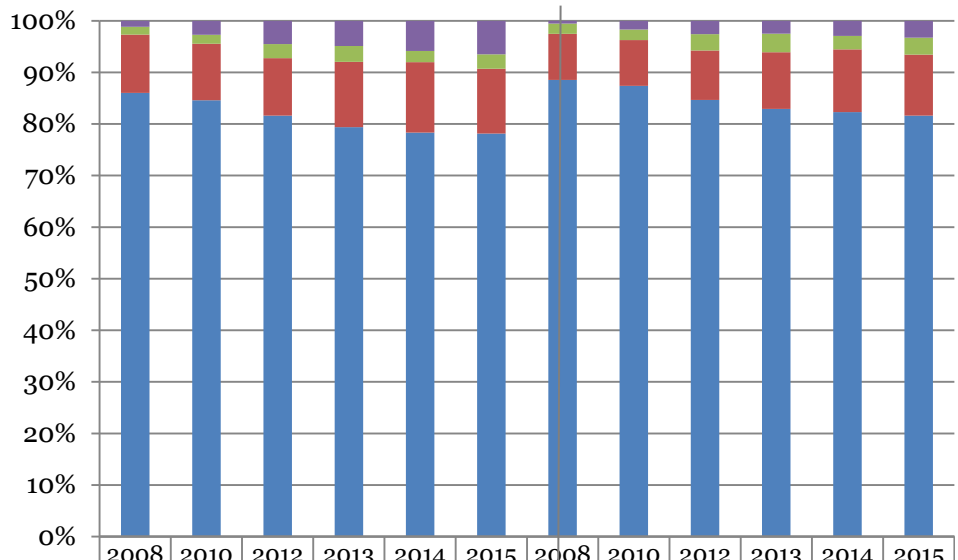
Figure 251 – **Steel - Components of the electricity bills paid by sampled producers in the EU (€/MWh), 2008-2015**



	EU average						North-Western Europe					
	2008	2010	2012	2013	2014	2015	2008	2010	2012	2013	2014	2015
Other taxes, fees, levies and charges (excl. VAT)	0,63	1,60	2,82	3,05	3,19	3,43	0,30	0,93	1,51	1,46	1,48	1,63
Renewable support	0,83	1,01	1,71	1,92	1,20	1,47	0,95	1,14	1,85	2,09	1,31	1,62
Network costs	6,16	6,41	6,96	7,92	7,45	6,63	4,36	4,94	5,60	6,39	6,12	5,88
Energy supply costs	46,84	49,57	51,10	49,68	42,80	41,26	43,03	48,56	49,48	48,19	41,42	40,55

Source: CEPS et al.

Figure 252 – **Steel - Components of the electricity bills paid by sampled producers in the EU (%), 2008 - 2015**



	EU average						North-Western Europe					
Other taxes, fees, levies and charges (excl. VAT)	1,2%	2,7%	4,5%	4,9%	5,8%	6,5%	0,5%	1,7%	2,6%	2,5%	2,9%	3,3%
Renewable support	1,5%	1,7%	2,7%	3,1%	2,2%	2,8%	2,0%	2,0%	3,2%	3,6%	2,6%	3,3%
Network costs	11,3%	10,9%	11,1%	12,7%	13,6%	12,6%	9,0%	8,9%	9,6%	11,0%	12,2%	11,8%
Energy supply costs	86,0%	84,6%	81,6%	79,4%	78,3%	78,2%	88,5%	87,4%	84,7%	82,9%	82,3%	81,6%

Source: CEPS et al.