

Recalibrating the EU ETS: in search of a long term price signal to drive investments

With the endorsement of 2030 energy and climate targets by the EU Council in October 2014, the proposal for a revised EU Emissions Trading Scheme (EU ETS) directive disclosed in July 2015 and the enforcement of the Market Stability Reserve (MSR) in September 2015, a recalibrated EU ETS is emerging for the 2020 to 2030 period. While the debate will be unfolding in 2016 around the final EU ETS directive, the question arises whether this new born EU ETS will be able to convey a long term price signal to 2030 which could drive investments and innovations, beyond merely impacting short term operational decisions.

Based on our detailed analysis¹, three main lessons from the first half of the Energy and Climate framework, from 2008 to 2014, have to be considered for designing the Phase IV of the EU ETS.

- *The 2020 EU ETS emissions reduction target has already been overachieved, but the instrument seems to have played a limited role.* Indeed, CO₂ emissions have decreased significantly between 2008 and 2014, by 24%, largely driven, by the uptake of renewable energy sources and the degraded economic conditions.
- *In the context of an inflexible supply, a large surplus has been building-up, amounting to 2.1 billion allowances in 2014.* The drivers of the surplus should be distinguished from those of emission reductions. The growing share of RES has been taken into account in the cap trajectory. As such, only the overachievement of targets could be driving the surplus by an estimated 120 MtCO₂e in the 2008 to 2014 period. Other uncertain abatements linked to the economic recession have contributed by 1,200 MtCO₂e in the period. In contrast, it appears that Kyoto offsets and the Energy efficiency Directive, not embedded in the cap, have contributed to the surplus by more than 1,500 MtCO₂e, which could have been avoided with a timely adjustment of the supply.
- *Without a long-term confidence in the scheme, the surplus has undermined the cost-effectiveness of the EU ETS.* Indeed, the dramatic fall in prices and the shortsightedness of market participants have delayed investments in low carbon assets and innovation, giving rise to a deviation from a cost effective transition to a zero carbon economy.

Going forward, achieving a cost-effective decarbonisation of EU ETS sectors requires the carbon price pathway to reflect the abatement cost of the necessary low carbon technologies in the long run. In addition, given the wide uncertainties and barriers to mobilize all abatement potential, complementary mechanisms will remain a key support to drive low carbon and capital intensive investments in the power sector. However, these energy and climate complementary policies should be better coordinated with the EU ETS. Their on the demand of allowances will have to be carefully assessed and addressed in a transparent manner. The extent to which the nearly 50% RES target in the power sector by 2030 will be achieved, and the stringency of energy efficiency measures will have dramatic and uncertain impacts on the supply demand tightness by 2030.

The introduction of the MSR seems to be likely to absorb this increasing surplus, and to restore the short term scarcity by mid-2020, in line with the long term target. Modelling results show that prices are likely to increase by 15€/tCO₂e by 2030, bringing the current price trajectory into alignment with a more efficient pathway. The resilience of the EU ETS to external shocks will also be increased, as a 55% RES target in 2030 combined with a drop in output similar to 2009 would not affect dramatically the surplus by 2030. However, the major drawback of the mechanism lies in its inability to discriminate between surplus stemming from abatement efforts and surplus stemming from exogenous shocks. This "robot-like" withdrawal of surplus is likely to spur volatility if not adjusted to hedging needs and can have detrimental consequences on the low-carbon investment framework. Given the likely and unforeseeable evolution of business models and hedging needs in the power sector, some degree of "human intervention" will be essential to recalibrate the MSR in a timely fashion and to safeguard dynamic efficiency.

Without such an appropriate governance of the MSR and more broadly of the EU ETS, the uncertainties concerning the long term carbon price development will remain too high to drive investments, further encouraging fragmented schemes for their necessary promotion. In the end, the decarbonisation cost could increase for European citizens.

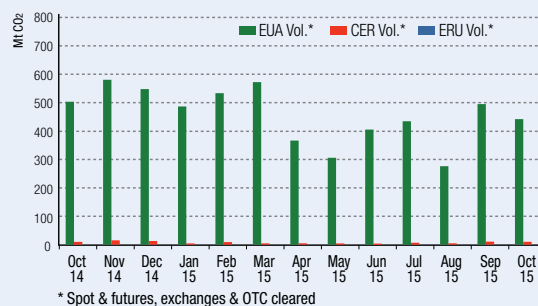
Matthieu JALARD and Émilie ALBEROLA - I4CE - Institute for Climate Economics

1. *Exploring the EU ETS beyond 2020: a first assessment of the EU Commission's proposal for Phase IV of the EU ETS (2021-2030)*, November 2015.

Key points

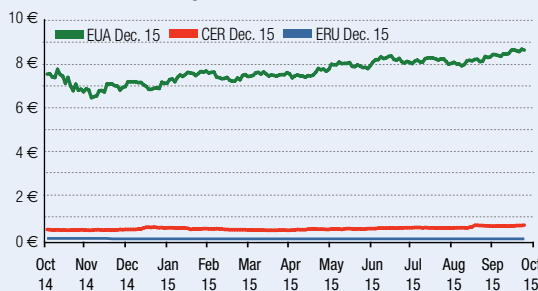
- **EU ETS – revision :** on 26th October, European Ministers expressed their views on the proposed revision of the EU ETS for Phase IV, stressing their concerns about the possible application of the Cross Sectoral Correction Factor.
- **EU ETS – revision :** A group of Member States, including the UK and France are in favor of a tiered approach as a way to target free allocation to the most exposed sectors.
- **EU ETS – revision :** On 28th October, a group of Member States including Poland stated that unanimity should be requested to raise the level of ambition.

Trading volumes: EUA +10.7%, CER -5.1%



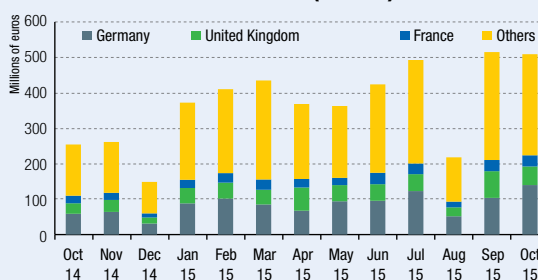
Source: I4CE calculation, based on data from EEX, ICE Futures Europe, NYMEX, Nasdaq OMX, and LCH Clearnet

Dec 15 contract price: EUA +3.3%



Source: I4CE, ICE Futures Europe

Monthly proceeds from Phase 3 auctions: 508.9 M€ in October 2015 (+1.2%)



Source: I4CE based on data from ICE Futures Europe, EEX

Energy

Primary energy prices and electricity prices

			Oct. 2015
Coal	API # 2 CIF ARA (First month in USD/t)		52.05 ▼
Natural gas	NBP (spot in €/MWh)		18.47 ▼
	TTF (spot in €/MWh)		18.24 ▼
Crude oil	Brent (First month in USD/b)		49.29 ▲
Electricity	Germany (€/MWh)	Spot	40.23 ▲
		Calendar	29.14 ▼
	United Kingdom (€/MWh)	Spot	55.52 ▼
		Next summer	53.00 ▼
		Next winter	59.98 ▼

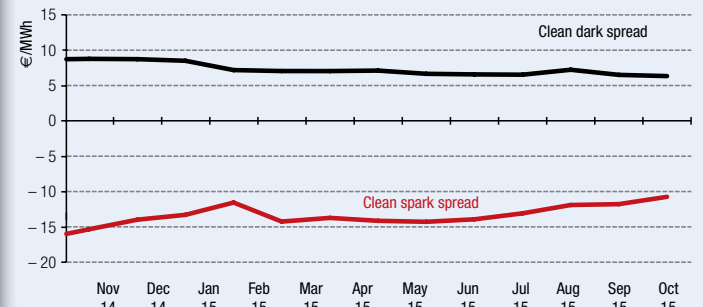
Sources: IACE, Thomson Reuters

Clean dark, clean spark spreads and switching price

	Clean spark (€/MWh)		Clean dark (€/MWh)		Switching Price (€/tCO ₂)	
	spot	futures	spot	futures	spot	futures
Germany*	0.6	-10.7	16.4	6.3	35.0	37.4
United Kingdom*	14.7	13.9	31.0	29.7	35.5	34.7

* Germany, 2016 calendar contract

German baseload – monthly average of Cal. 2015 clean dark and clean spark spreads



Sources: IACE, Thomson Reuters

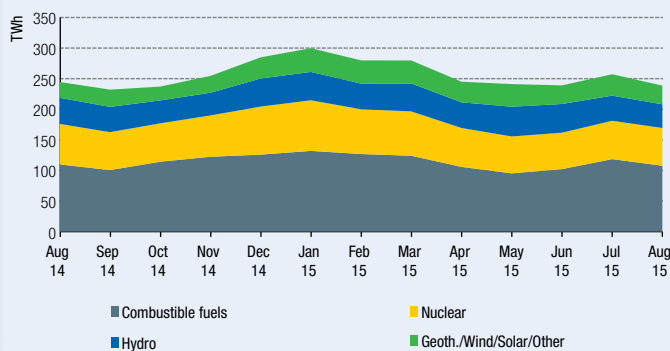
The price of Brent stood at its low level in October with a monthly average of \$49.3/bl, in a context marked by a global low demand, and abundant American and OPEC productions. Coal prices continued to fall to \$52.05/t. In the wake of lower oil prices, gas prices remain at relatively low levels at €18.47/MWh for NBP spot prices and €18.24/MWh for TTF spot prices. Electricity prices on the German spot market increased to €40.23/MWh reflecting tighter demand supply situation in the short term, while the contract for delivery in December 2016 was still under €30/MWh with a monthly average of €29.1/MWh. This is due to the continued decline in prices of coal and gas, low demand and the increasing share of RES. The German clean dark spread increased to €16.4/MWh on spot markets and stood at €6.5/MWh on the futures markets. The clean spark spread increased to the positive value of €0.65/MWh on spot markets and remained at €10.75/MWh in the future markets. The theoretical CO₂ «switch» price was calculated to 35.0 €/tCO_{2e} in the German spot power market and 35.5 €/tCO_{2e} in the British spot power market.

Production

Electricity generation (TWh)

EU 20 (in TWh)	Aug. 15	Cumulative from Jan. 15	Year-on-Year (% change)
Production	237.8	2,072.6	3.2%
of which - Combustible fuels	107.6	911.7	3.6%
- Nuclear	61.7	536.0	-1.1%
- Hydro	38.6	350.7	-3.6%
- Geoth./Wind/Solar/Other	30.6	280.7	26.3%

* Gas, coal, oil.

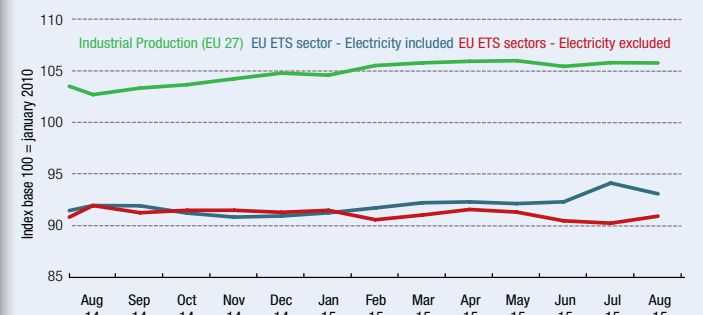


Sources: IACE, from IEA data

Production indices (Index base year 2010)

EU 27	Aug. 15	Last month (pts)	Year-on-Year (pts)
Indust. Prod (excl. construction)	105.8	-0.03	3.06
EU ETS sectors production* (incl. electricity)	93.1	-1.04	1.14
EU ETS sectors production* (excl. electricity)	90.9	0.68	-1.03
Electricity, gas and heating	94.2	-1.94	2.27
Cement	75.0	1.94	-4.98
Metallurgy	102.8	0.20	0.14
Oil refinery	94.4	-1.46	3.44

* Index weighted by EU ETS sectors's weight in average total allocation over 2008-2012

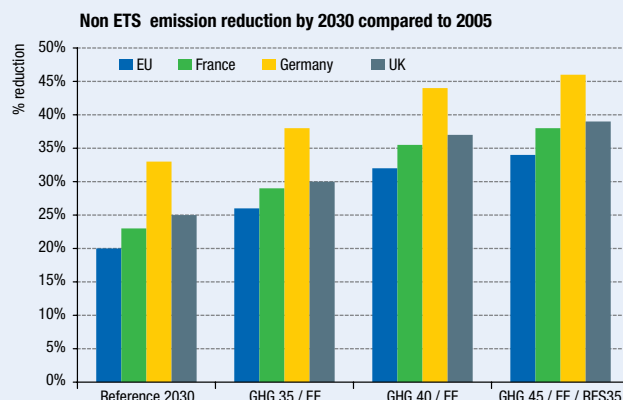
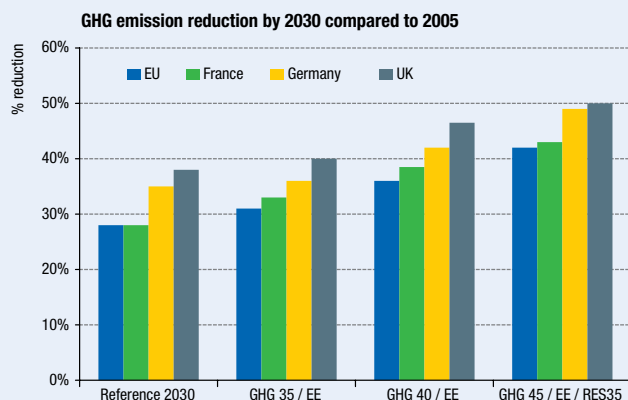


Sources: IACE from Eurostat data

Industrial production in EU 27 countries decreased slightly in August 2015 compared to the previous month and is up 3.1 pt compared to July 2014. The monthly decrease of industrial production is driven by the production of energy falling by 1.2%, capital goods by 0.3% while production of durable consumer goods rose by 1.3%. The largest decreases in industrial production were registered in the Czech Republic (-4.3%), Croatia (-4.1%) and Lithuania (-3.5%), and the highest increases in Sweden (+4.0%), Greece (+3.9%), Denmark and France (both +1.6%). Our production index of sectors in the EU ETS (including electricity) decreased to 93.1 pt, while the index excluding electricity increased slightly to 90.9 pt. Electricity production in the EU's 20 countries was 237.8 TWh in August 2015, down 7.4% compared to July 2015. Compared to 2014, the cumulative annual production is up 3.2%, renewable production is up 26.3%, and production of fossil electricity has increased by 3.6%. Hydropower production was down slightly (-3.6%).

Coordination of CO₂, EE and RES policies

The EU 2030 emission reduction target: impact on Member States



Note: Reference refers to the scenario with no additional climate and energy policies on the trajectory of the 2020 objectives; GHG 35, 40 et 45 refer to the scenario with a 35%, 40% and 45%, GHG target, RES 35 refers to the scenario with a 35% EU level renewable energy target in the final consumption.

Source: European Commission, Impact Assessment, A policy framework for climate and energy in the period from 2020 up to 2030, 2014.

On October 19th, the European Council published its draft conclusions concerning the governance of the Energy Union ahead of the Energy Council meeting on November 26th. It outlines the principles for the governance system of the Energy Union, and identifies essential components of this governance system. National Energy & Climate Plans will be developed and the first Plans will be drawn up in 2018. There will also be Progress Reports on the implementation of these Plans that European Member States will submit every 2 years. Key performance indicators will be established to monitor progress and enable comparisons between Member States. The Commission will summarize and assess the overall progress made in its annual report on the State of the Energy Union. The 2015 World Energy Outlook was released covering major issues including the drop in world oil prices, the end of the rise in China's coal consumption and the 'critical' global climate summit in Paris in December. The report highlights that there are "clear signs" an energy transition is underway, in particular since renewables powered almost half of the world's new power generation capacity in 2014. Moreover, pledges submitted for the climate summit are "rich in commitments on renewables and energy efficiency."

Institutional environment

Phase 3 supply balance table

	2013	2014	2015*	2016*	2017*	2018*	2019*	2020*
Auctions (MtCO₂)	804	532	778	865	1,053	1,041	1,028	1,016
Free allocation (MtCO₂)	843	767	813	789	765	741	717	693
Total	1,647	1,299	1,488	1,568	1,750	1,733	2,019	2,326

* Estimations

Free allocation status table

EU Member State	2013	2014	2015*
France	82	81	73
Germany	169	163	159
United Kingdom	66	64	56
Others	526	459	246
TOTAL	843	767	630

* Until 31st March

CER and ERU supply

	Oct. 15	Last month change
Number of CDM projects	12,326	+4
of which - registered	7,677	6
with - CER issued	2,843	+6
Cumulative volume of CER issued (Mt)	1,627	+8
Number of JI projects	788	-
of which - registered	604	-
Cumulative volume of ERU issued (Mt)	864	-
via - Track 1	838	-
via - Track 2	25	-

On October 26th, European Ministers held a first discussion on the proposed revision of the ETS Directive for the period post-2020. Many Member States stated to be deeply concerned about the possible application of the Cross Sectoral Correction Factor. A large group of Member States, including the UK, France, Spain, and others, are in favor of a tiered approach as a way to target free allocation to the most exposed sectors and provide them a sufficient protection in the long run. Going forward, many Member States highlighted the need to strengthen the protection of exposed sectors in the 2030 timeframe. Some Member States, including the Netherlands, showed a support in favor of a dynamic allocation. Concerning benchmarks revision, a majority of Member States expressed their concerns about the European Commission proposal that intends to apply a flat reduction rate to all sectors, without reflecting actual technological progress and improvement potential. On October 28th, Czech Republic, Slovakia, Poland, Hungary, Bulgaria, and Romania published their initial views on the revision of the EU ETS. They stated that unanimity should be requested to raise the level of ambition, that they were open to discussing the introduction of more free allocation categories. They proposed to explore the possibility of dynamic allocation in order to align free allocation with changing production levels.

Sources: MCE, European Commission, ICE Futures Europe, EEX

Sources: MCE, UNEP-DTU

Carbon markets dashboard

Primary market - EUA auctions in Phase 3

		Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15
Common Auction Platform + United Kingdom & Germany	Price (€/t)	5.99	6.78	6.74	6.89	7.20	6.72	7.01	7.39	7.44	7.70	8.06	8.06	8.35
	Volume (Mt)	42.05	38.56	22.04	54.06	57.00	64.67	52.55	49.09	56.97	63.96	27.03	63.88	60.95
Auction Revenues (M€)	Germany	58.71	63.97	31.17	88.04	101.65	84.94	67.35	93.96	95.40	122.71	51.63	103.55	139.71
	United Kingdom	29.65	33.78	17.15	43.38	44.97	41.54	65.55	45.63	46.75	47.78	25.22	75.33	52.53
	France	21.35	20.03	11.51	23.14	26.76	28.96	23.96	20.46	32.18	30.10	16.12	31.52	31.47
	Others	144.45	143.52	88.78	217.71	236.84	279.33	211.53	202.74	249.46	291.99	124.97	304.54	285.22
	Total	254.15	261.30	148.61	372.27	410.23	434.77	368.40	362.79	423.79	492.57	217.94	514.94	508.93

Sources: EEX, ICE Futures Europe

Primary market - CER and ERU issued (MtCO₂)

		Oct-14	Nov-14	Déc-14	Jan-15	Fév-15	Mar-15	Avr-15	Mai-15	Juin-15	Juil-15	Août-15	Sep-15	Oct-15
Cumulative volume of CER issued UNEP-DTU (Mt)		1,504	1,512	1,512	1,525.7	1,540.8	1,544.7	1,551.3	1,595	1,598.4	1,605.0	1,614.0	1,618.8	1,627
Cumulative volume of ERU issued (Mt)	Track 1 (Mt)	824.4	824.5	824.5	838.1	838.1	838.1	838.1	838.1	838.1	838.1	838.1	838.1	838.1
	Track 2 (Mt)	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.386

Sources: UNEP-DTU, I4CE

Secondary market - Prices (€/t) and volumes: EUA, CER (ktCO₂)

			Oct-14	Nov-14	Déc-14	Jan-15	Fév-15	Mar-15	Avr-15	Mai-15	Juin-15	Juil-15	Août-15	Sep-15	Oct-15
ICE Futures Europe	Daily spot	Price EUA phase 3	6.09	6.91	6.97	6.97	7.27	6.80	7.10	7.44	7.46	7.73	8.08	8.10	8.38
		Volume EUA phase 3	5,530	7,793	10,180	9,324	25,327	23,640	23,244	13,768	16,321	19,536	16,810	17,760	11,058
		Price CER	0.13	0.08	0.04	0.46	0.42	0.41	0.49	0.45	0.40	0.44	0.48	0.51	0.59
		Volume CER	255	319	8,622	860	4,436	3,202	833	161	83	726	11	1,159	719
	Dec.15	Price EUA	6.21	7.03	7.15	7.06	7.35	6.85	7.14	7.48	7.50	7.76	8.11	8.13	8.40
		Volume EUA	119,746	140,392	180,590	356,677	377,226	394,219	268,144	200,863	211,772	256,749	170,592	285,220	264,064
		Price CER	0.38	0.52	0.54	0.46	0.42	0.41	0.49	0.45	0.40	0.44	0.48	0.51	0.59
		Volume CER	3,644	3,724	2,654	1,863	2,796	1,408	3,440	3,048	2,108	4,996	3,265	7,607	3,684
	Dec.16	Price EUA	6.34	7.17	7.35	7.17	7.47	6.93	7.22	7.56	7.58	7.85	8.19	8.21	8.47
		Volume EUA	40,921	40,926	39,009	55,893	46,588	50,070	39,148	35,365	72,609	65,575	38,537	43,022	76,818
		Price CER	0.38	0.52	0.54	0.52	0.42	0.40	0.49	0.44	0.39	0.42	0.46	0.49	0.52
		Volume CER	850	500	550	500	0	0	200	298	654	979	979	1,769	4,300
	Dec.17	Price EUA	6.34	7.17	7.35	7.34	7.63	7.06	7.34	7.67	7.68	7.96	8.31	8.32	8.58
		Volume EUA	40,921	40,926	39,009	15,087	19,340	28,076	8,049	27,783	32,838	36,075	28,925	24,543	27,696
		Price CER	0.38	0.52	0.54	0.46	0.42	0.40	0.49	0.44	0.39	0.41	0.45	0.48	0.52
		Volume CER	850	500	550	0	0	0	0	0	0	2	500	112	600

Sources: ICE Futures Europe

Emission-to-cap by EU ETS sector and country: difference between distributed allocations of allowances and verified emissions

	2008	2009	2010	2011	2012	2013
Combustion	-253.1	-113.5	-125.8	-76.9	-42.4	-137.8
Oil refining	-1.4	7.6	14.3	16.0	20.2	-36.7
Coking plants	1.5	6.8	2.9	3.1	5.7	-1.5
Metal ores	4.3	11.0	8.8	8.9	9.7	-0.2
Steel production	51.6	89.3	71.4	72.8	73.9	38.5
Cement	20.9	61.4	61.0	62.8	70.3	26.7
Glass	2.5	6.1	5.5	5.4	5.0	-1.2
Ceramic products	5.3	10.0	10.2	9.6	9.2	2.0
Paper	6.9	11.3	10.0	11.1	11.6	4.1
Other activities	0.2	4.3	1.3	-0.7	1.4	-1.0
Total (Mt)	-161.3	94.2	59.8	112.1	164.5	-107.1

Source: CTL

	2008	2009	2010	2011	2012	2013
Germany	-84.0	-36.6	-54.4	-49.5	-28.6	-106.3
United Kingdom	-50.8	-15.0	-16.8	2.5	-2.5	-52.0
Italy	-8.5	24.1	8.5	5.3	12.2	21.5
Poland	-3.1	10.8	5.9	4.2	15.6	-76.4
Spain	-9.6	13.7	29.5	18.4	17.0	31.7
France	5.5	17.5	23.4	33.9	25.2	24.8
Czech Republic	5.2	12.2	10.6	12.2	17.1	-18.3
The Netherlands	-6.8	2.8	0.1	8.9	10.5	-3.0
Romania	7.7	24.9	27.7	23.6	25.8	15.1
Others	-17.0	39.8	25.3	52.7	72.3	55.7
Total (Mt)	-161.3	94.2	59.8	112.1	164.5	-107.1

Source: CTL