Tendances Carbone

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EU ETS and Kyoto credits: from an efficient use to a burst bubble

During the Phase II of the European Trading Scheme, installations had the option to surrender carbon credits from project-based mechanisms of the Kyoto Protocol (CERs and ERUs). The rules set by Member States and approved by the European Commission capped the demand at around 1,400 $MtCO_2$ between 2008 and 2012. In the end, over 1 billion Kyoto credits (675 million CERs and 383 million ERUs) have been surrendered by EU ETS installations. What conclusions can be drawn from this unique experience in a CO_2 allowance market?

Based on our assessment[1] of the use of Kyoto credits by EU ETS participants, the use of credits was effective from an economic standpoint in several ways:

- **The use of CERs and ERUs within the EU ETS grew exponentially and a vast majority of the installations – 70%, which represent 90% of the CO_2 emissions covered – made use of the option to surrender credits.** However, the participation rate among small installations – i.e. installations that emit less than 50,000 tCO_2e – was markedly lower than for other installations: 61% of these installations surrendered at least one credit between 2008 and 2012, compared with 95% of installations emitting over 500,000 tCO_2e. In order to limit transaction costs, small installations primarily surrendered international credits in one or two instalments, while very large installations tended to surrender credits every year.
- **The use of credits was primarily limited by the supply:** once delivered, credits made their way from the producer's account to the end-customer's account very quickly, on average in seven months.
- **The use of credits did not depend on whether the installation had an allowance deficit or surplus:** even installations that had a surplus, which did not "need" credits for compliance, surrendered them to minimize their compliance costs.
- **Financialisation resulted in the mixing of credits:** Industrial installations could have showed a preference for some types of credits. This was absolutely not the case: industrial installation's features (geographical location, business sector, etc.) rarely influenced the kind of credits that it surrenders.
- **The surrendering process has responded to abrupt changes in regulations:** since May 1st, 2013, HFC-23 and nitrous oxide (N_2O) credits can no longer be surrendered. This regulatory change prompted industries to over-surrender these types of credits before the deadline.
- **Lower credit prices enabled installations to reduce their compliance costs.** These savings are estimated between €4 billion and €20 billion over 2008-2012. Indeed, Kyoto credits have always been less expensive than EUAs, initially as a result of asymmetric information, and then of the fact that credit surrender was capped at the European level.

Demand from the EU ETS dried up as installations had already contracted collectively a volume of credits corresponding to their maximum surrender limit since mid-2012. This limit was set in 2004 and was only marginally increased in 2009 at around 1,650 $MtCO_2e$ via the review of the EU ETS Directive for Phase III. Indeed, the bubble burst in the second half of 2012 after the market became convinced that European demand had dried up; this conviction was reinforced by the flooding of Russian and Ukrainian ERUs as both States boosted issuance of ERUs before the end of the first commitment period of the Kyoto Protocol. The thousands of industrial companies buying CERs and ERUs were therefore replaced by just a few States, which made the international credit market much less liquid.

Nevertheless, the decline in the price of Kyoto credits to prices close to zero does not mean that the public CDM and JI policies failed: the CDM attracted over €300 billion in private investments to avoid (together with JI) the emission of over 2 billion tonnes of CO_2e, and logically ran out of steam when the demand determined by government authorities dried up.

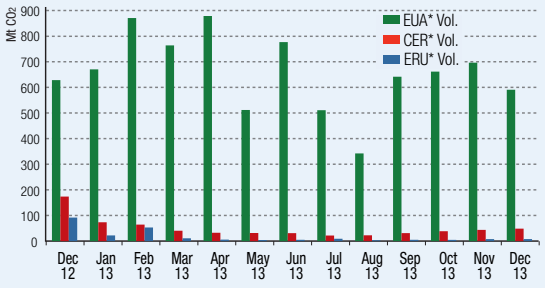
Nicolas Stephan & Valentin Bellassen - **CDC Climat Research**

1. Stephan, N., Bellassen, V., Alberola, E. (2014) "Use of Kyoto credits by European installations: from and efficient market to the bubble burst"– *Climate report* No 43.

Key points

- **Backloading:** the EU Parliament and the Council adopted the backloading proposal, respectively, on 10th December and 16th December. On 8th January, Member states agreed on rules to remove up to 900 million permits from 2014-2016.
- **Free allocations:** on 18th December, the EU Commission adopted a first commission decision on free allocation of emission allowances by Member States for phase III. 23% of 2013 free allowances have been allocated.
- **2030 target:** The EU Commission will publish on 22nd January a paper which should include and emission reduction goal for 2030 and a section on the structural reform of the EU ETS.

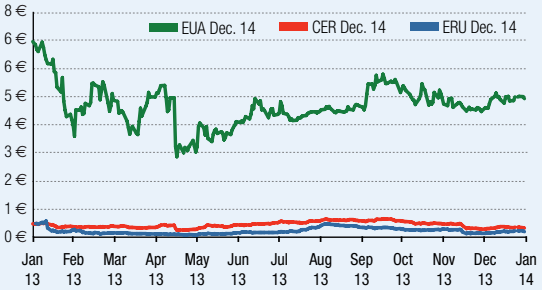
Trading volumes: EUA –15.2%, CER +11%, ERU +1.7%



* Spot & futures, exchanges & OTC cleared

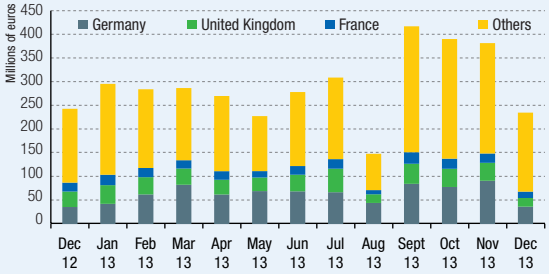
Source: CDC Climat Research calculation, based on data from BlueNext, EEX, ICE Futures Europe, NYMEX, Nasdaq OMX, and LCH Clearnet

Price of the Dec. 14 contract: EUA +10.2%



Source: CDC Climat Research, ICE Futures Europe

Income from Phase 3 auctions: 235 M€ in December (–38.4%)



Source: CDC Climat Research based on data from ICE Futures Europe, EEX

Energy

Primary energy prices and electricity prices

			Dec. 2013	
Coal	API # 2 CIF ARA (First month in USD/t)		82.5	▼
Natural gas	NBP (spot in €/MWh)		28.3	▲
	TTF (spot in €/MWh)		26.3	▼
Crude oil	Brent (First month in USD/b)		110.7	▲
Electricity	Germany (€/MWh)	Spot	38.4	▼
		Calendar	36.8	=
	United Kingdom (€/MWh)	Spot	59.9	▼
		Next summer	62.6	▲
		Next winter	69.8	▲

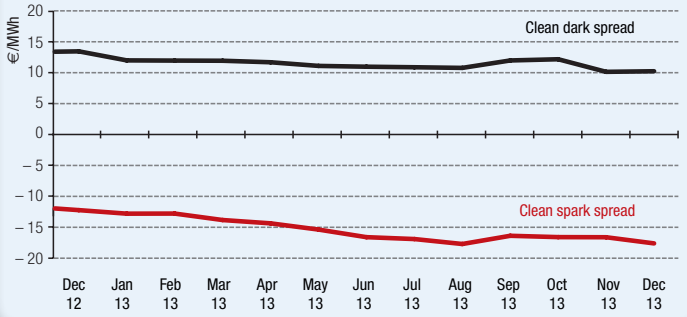
Sources: CDC Climat Research, Thomson Reuters

Clean dark, clean spark spreads and switching price

	Clean spark (€/MWh)		Clean dark (€/MWh)		Switching Price (€/tCO2)	
	spot	futures	spot	futures	spot	futures
Germany*	–16	–17.6	13.3	10.3	32.1	31.3
United Kingdom*	11.5	8.4	34	36.8	34.8	30.7

** Germany, 2015 calendar contract, United Kingdom, summer 2015 contract.*

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



Sources: CDC Climat Research, Thomson Reuters

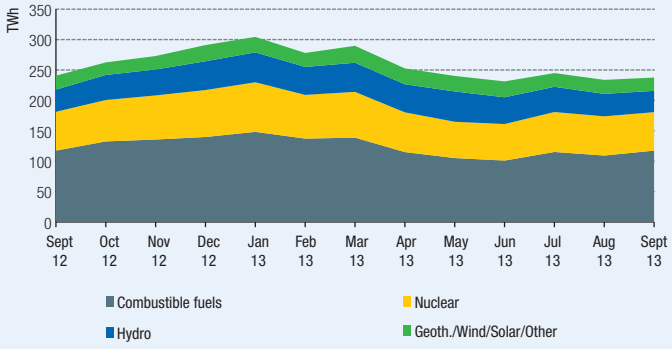
In December, the price of Brent crude was up 1% and varied in the range between 108.3 to 112.2 USD/b supported by positive market sentiment and tensions in the Middle East. In Germany, the average price of MWh decreased by 9.8 % due to mild temperatures and comfortable wind supply. The price of electricity and gas for delivery 2015 remained stable with an increase by 0.6% and 0.3% respectively. In the UK, the price of electricity for winter 2015 remained stable (+0.3%) and contract summer 2015 is unchanged. While the price of NBP decreased by 5.7% for the week ahead contract, it increased by 0.4% for the 2015 delivery contract and close on December 30th at 63 GBp/therm. In contrast, the price of coal API 2 for delivery in 2015 showed an increase of 1.3% due to sustained consumption and risk regarding Columbian supply. In Europe, the fictive CO_2 price which encourage power generator to produce electricity from gas instead of coal remains at a level close to 30 €/t.

Production

Electricity generation (TWh)

EU 20 (in TWh)	Sep. 13	Jan.- Sep. 13	Year-on-Year (% change)
Production	237.3	2,310.8	–1.4%
of which - Combustible fuels	116.9	1,082.9	–5.9%
- Nuclear	63.4	608.7	–0.3%
- Hydro	35.1	397.3	5.4%
- Geoth./Wind/Solar/Other	22	222	8.1%

** Gas, coal, oil.*

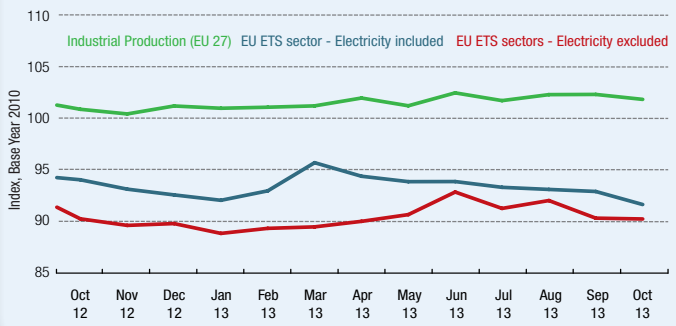


Source: CDC Climat Research, from IEA data

Production indices (Index base year 2010)

EU 27	Oct. 13	Last month (pts)	Year-on-Year (pts)
Indust. Prod (excl. construction)	101.9	–0.5	0.4
EU ETS sectors production* (incl. electricity)	91.7	–1.3	–1.8
EU ETS sectors production* (excl. electricity)	90.3	–0.1	– 0.1
Electricity. gas and heating	92.4	–1.9	–2.7
Cement	77.5	0.1	–0.1
Metallurgy	99.9	1.0	2.9
Oil refinery	90.1	–1.7	–5.0

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

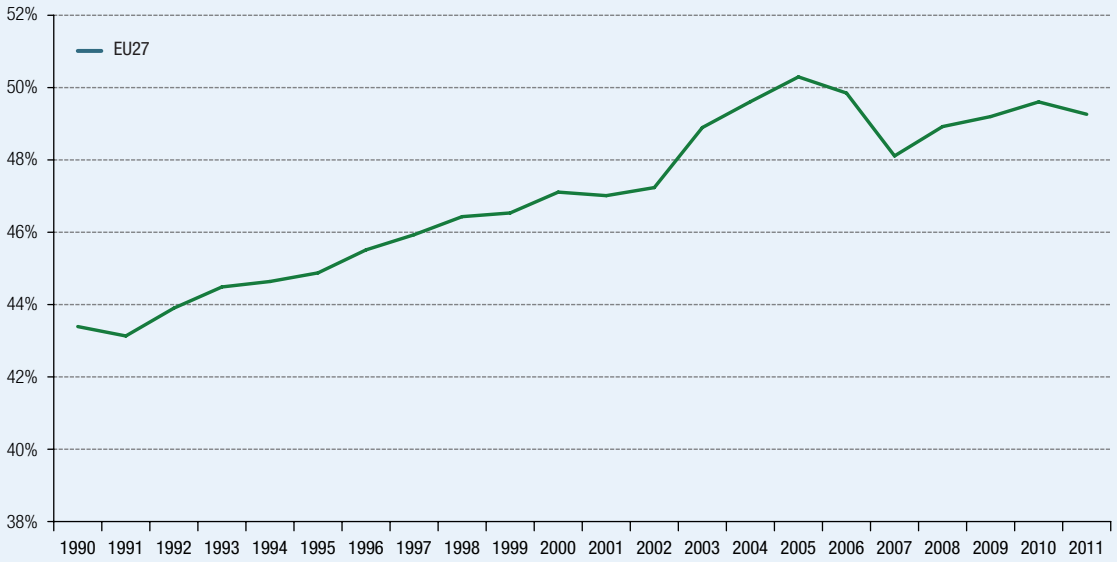


Source: CDC Climat Research from Eurostat data

In October, compared with September 2013, seasonally adjusted production in the construction sector fell by 1.2 % in the euro area according to Eurostat. In December, the DG ECFIN flash estimate of the consumer confidence indicator improved the euro area (–13.6 after –15.4 in November 2013) and the EU (–11.1 after –12.4 in November 2013). Our EU ETS sector index fell by 1.3 points in October, primarily due to a 1.9 pt. fall power generation sector. While manufacturial production decreased by 0.5 points monthly, it is 0.4 points above the past year levels. The cumulative electricity generation for EU-27 between January-September 2013 was 2,310.8 TWh, which represents a 1.4% decrease over the same period last year. This decrease in cumulative electricity generation was accompanied by an increase in renewable energy (+8.1%) and hydroelectric energy (+5.4%) and a decline in the use of fossil fuels (–5.9%) and nuclear energy (–0.3%).

Coordination with the 20-20-20 policies

Efficiency of electricity and heat generation (EU27)



Note:
the indicator of the efficiency of electricity and heat production from conventional thermal plants (%) is a ratio of electrical and heat outputs on fuel inputs (measured in thousand tonnes of oil equivalent (ktoe)).

Source: Eurostat

On 18th December, the European Commission opened a public a consultation until 14th February 2014 on a proposal for revised State aid guidelines for assessing public support projects in the field of energy and the environment. The draft guidelines include renewable support measures and also rules on state aid on the introduction of "capacity mechanisms". In other news, the EC extended the consultation deadline on the evaluation of the Labelling and Eco-design directives will the 31st january 2014 and added new questions. On 13th December, the EU Commission decided to implement new energy requirements for new transformers in the EU electricity grid. Legal requirements will take effect on 1st July 2015 and will be strengthened by July 2021. According to the EU Commission, this new requirement could save 16 TWh by 2025.

Institutional environment

Phase 2 balance

	2008	2009	2010	2011	2012	Total
Free allowances (A)	1,958	1,974	1,998	2,016	2,049	9,996
Auctioned allowances (E)	44	78	92	93	99	407
Verified emissions (VE)	2,120	1,880	1,939	1,904	1,867	9,709
Compliance position (A + E – VE)	**–117**	**172**	**152**	**205**	**282**	**694**
Allowance /credits surrendered						
EUA (R)	2,010	1,839	1,793	1,637	1,383	8,662
URCE	84	77	117	178	214	670
URE	0	3	20	76	279	378
EUA excess (+) or shortfall (–) (A + E – R)	**–7**	**213**	**297**	**472**	**766**	**1,742**

Sources: CDC Climat Research based on EUTL, ICE Futures Europe, EEX

CER and ERU supply

	Dec. 13	Last month change
Number of CDM projects	**11,091**	**+17**
of which - registered	7,418	+18
with - CER issued	2,522	+25
Cumulative volume of CER issued (Mt)	**1,419**	**+10**
CERs available until 2015, EU ETS eligible – CDC Climat Research estimate (Mt)*	2,060	0
Number of JI projects	**788**	**+1**
of which - registered	603	+1
Cumulative volume of ERU issued (Mt)	**829.0**	**0**
via - Track 1	803.7	0
via - Track 2	25.4	0

** Modèle de CDC Climat Recherche : http://www.cdcclimat.com/The-risks-of-CDM-projects-how-did-only-30-of-expected-credits-come-through,900.html?lang=fr*

Sources: CDC Climat Research, UNEP Risoe

The EU Parliament approved the backloading proposal on 10th December. The meeting of the EU Climate Change Committee on 8th January voted to approve the backloading of 900 million carbon permits from the EU ETS from 2014-2016. The EU Commission expects an implementation of revised auction schedule at the latest by June 2014. Regarding free allowances, on 18th December, the Commission adopted a first decision on the allocation of 157 million EUA for 2013 to 8 Member States and still has to rule on 77 % of 2013 free allocations. DG Clima published information on the timing for international credit exchanges. It will be possible when the international credit entitlement tables will have been uploaded in the Union registry. On 12th December, Switzerland informed the EU of the progress it has achieved in converting its ETS, the anticipated scope of the caps for stationary installations and the expected participants.

Carbon markets dashboard

Primary market - EUA auctions in Phase 3

		Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
Common Auction Platform + United Kingdom & Germany	Price (€/t)	6.31	5.05	4.37	4.06	3.85	3.40	4.23	4.16	4.40	5.19	4.83	4.51	4.62
	Volume (Mt)	38.51	59.63	65.03	70.61	70.19	66.45	65.89	76.65	33.65	80.33	80.62	84.53	50.90
Auction Revenues (M€)	Germany	35.89	42.61	62.46	82.86	62.31	69.46	68.98	67.09	44.50	84.82	78.19	91.29	36.66
	United Kingdom	32.71	39.40	36.38	34.23	31.05	28.69	35.06	49.65	18.30	42.33	38.40	37.87	18.27
	France	18.73	21.97	19.37	17.50	18.14	13.58	18.29	20.16	8.76	24.28	21.28	19.65	13.43
	Others	155.78	191.70	166.09	152.26	158.58	116.04	156.10	172.06	76.64	265.65	252.38	232.84	166.63
	Total	243.11	295.68	284.30	286.86	270.07	227.66	278.43	308.96	148.20	417.08	390.25	381.64	235.00

Sources: EEX, ICE Futures Europe

Primary market - CER and ERU issued ($MtCO_2$)

		Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
Cumulative volume of CER issued UNEP-Risoe (Mt)		1,155	1,198	1,208	1,271	1,308	1,335	1,353	1,362	1,369	1,388	1,400	1,409	1,419
Cumulative volume of ERU issued (Mt)	Track 1 (Mt)	385.7	564.6	600.0	651.3	651.3	714.5	757.0	757.0	785.1	801.5	802.4	803.5	803.7
	Track 2 (Mt)	363.8	22.6	22.7	22.9	22.9	23.9	24.4	24.6	24.7	25.1	26.7	25.4	25.4

Sources: UNEP-Risoe, CDC Climat Research

Secondary market - Prices (€/t) and volumes: EUA, CER ($ktCO_2$)

			Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
ICE Futures Europe	Daily spot	Price EUA phase 3	6.79	5.20	4.59	4.10	3.88	3.51	4.25	4.22	4.41	5.22	4.91	4.53	4.79
		Volume EUA phase 3	324	957	19,097	9,452	85,674	14,731	38,427	24,076	5,564	14,672	10,483	7,136	14,965
		Price CER	0.40	0.17	0.15	0.17	0.09	0.39	0.44	0.53	0.62	0.65	0.56	0.42	0.36
		Volume CER	0	327	1,099	1,541	1,901	0	112	0	57	170	0	47	1,204
	Dec.14	Price EUA	7.22	5.61	4.94	4.37	4.11	3.72	4.46	4.39	4.58	5.38	5.07	4.69	4.92
		Volume EUA	42,296	70,721	78,927	79,675	112,934	59,334	95,104	48,690	74,289	93,620	135,862	163,545	240,590
		Price CER	0.59	0.43	0.38	0.37	0.35	0.39	0.48	0.56	0.62	0.62	0.52	0.41	0.35
		Volume CER	3,505	5,883	4,361	2,089	3,885	1,949	8,891	7,134	6,505	12,753	7,949	16,224	20,287
	Dec.15	Price EUA	7.57	5.87	5.15	4.55	4.28	3.88	4.67	4.55	4.75	5.59	5.28	4.89	5.10
		Volume EUA	28,890	41,647	57,190	49,718	61,556	34,689	91,861	41,204	20,176	46,207	57,629	55,672	57,784
		Price CER	0.68	0.51	0.43	0.41	0.38	0.46	0.55	0.64	0.70	0.71	0.60	0.48	0.45
		Volume CER	2,738	2,281	2,767	710	1,706	4,087	6,792	2,617	620	3,184	5,586	4,158	10,987
	Dec.16	Price EUA	7.98	6.17	5.41	4.80	4.47	4.04	4.89	4.75	4.96	5.85	5.54	5.12	5.32
		Volume EUA	3,562	14,054	14,964	22,885	31,151	18,256	27,115	11,902	7,216	26,918	21,449	16,416	17,398
		Price CER	0.76	0.61	0.54	0.54	0.47	0.51	0.60	0.66	0.72	0.74	0.62	0.50	0.46
		Volume CER	202	1,033	322	0	0	0	134	1,134	0	0	0	10	0

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
Combustion	–253.1	–113.5	–125.8	–76.9	–40.6
Oil refining	–1.4	7.6	14.3	16.0	24.2
Coking plants	1.5	6.8	2.9	3.1	5.7
Metal ores	4.3	11.0	8.8	8.9	9.8
Steel production	51.6	89.3	71.4	72.8	74.0
Cement	20.9	61.4	61.0	62.8	74.1
Glass	2.5	6.1	5.5	5.4	6.4
Ceramic products	5.3	10.0	10.2	9.6	10.4
Paper	6.9	11.3	10.0	11.1	12.9
Other activities	0.2	4.3	1.3	–0.7	6.2
Total (Mt)	**–161.3**	**94.2**	**59.8**	**112.1**	**183.2**

Source: CITL

	2008	2009	2010	2011	2012
Germany	–84.0	–36.6	–54.4	–49.5	–27.8
United Kingdom	–50.8	–15.0	–16.8	2.5	–2.2
Italy	–8.5	24.1	8.5	5.3	12.8
Poland	–3.1	10.8	5.9	4.2	16.1
Spain	–9.6	13.7	29.5	18.4	17.4
France	5.5	17.5	23.4	33.9	35.8
Czech Republic	5.2	12.2	10.6	12.2	17.1
The Netherlands	–6.8	2.8	0.1	8.9	10.6
Romania	7.7	24.9	27.7	23.6	26.9
Others	–17.0	39.8	25.3	52.7	76.6
Total (Mt)	**–161.3**	**94.2**	**59.8**	**112.1**	**183.2**

Source: CITL

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