

How the Paris Agreement could support the emergence of domestic and transnational carbon pricing in the future

Over the past few years, there has been growing evidence that carbon pricing policy can be an effective tool to facilitate the domestic transition to a low-carbon economy by creating economic incentives to drive emissions reductions and sending clear economic and political signals in favour of low-carbon strategies. With the adoption of the Paris Agreement in December 2015, a major question raised by this new international governance framework is to identify how this international climate Agreement could support the global uptake of carbon pricing policies into the future.

At the domestic level, at the end of 2015, the two main explicit carbon pricing instruments, carbon taxes and Emissions Trading Schemes (ETS), had been implemented by 40 governments and over 20 subnational jurisdictions, covering 4.3% and 8.8% of global GHG emissions respectively. This growing consensus from governments on the usefulness of carbon pricing policies is due to an understanding of its benefits and a recognition of the costs of climate policy inaction.

At the international level, the Paris Agreement has introduced a new approach to climate change mitigation. In contrast to the first international agreement under the UNFCCC, the Kyoto Protocol, the Paris Agreement has adopted a hybrid approach calling on all Parties to determine their own contributions to mitigate climate change and affording flexibility to countries in their choice of policy tools. While the Paris Agreement does not in itself establish an international carbon market to fix a global carbon price, it recognises that there are various approaches to achieve a domestic low-carbon pathway.

By increasing the scope for the development of low-carbon policies recognised by the UNFCCC, the Paris Agreement could create an appropriate international framework for the development and implementation of carbon pricing policies at the domestic and transnational level:

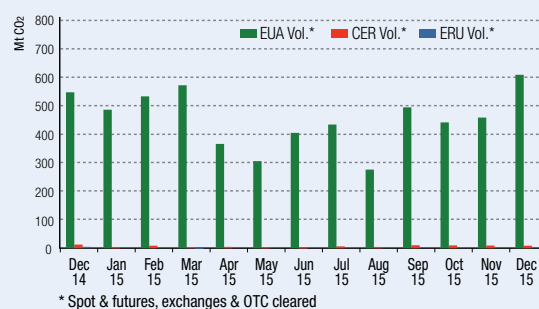
- **Firstly**, by allowing Parties to develop their own national strategies and introducing a provision to enhance INDC ambition in the future, the Paris Agreement creates an opportunity for the use of carbon pricing tools to achieve pledges.
- **Secondly**, by placing responsibilities on all Parties to the Convention, the Agreement could help create a more level international playing field with a patchwork of carbon prices. This could help alleviate some competitiveness concerns that would otherwise inhibit the implementation of carbon pricing policies.
- **Thirdly**, through Article 6, the Paris Agreement recognises the use of “voluntary cooperative approaches” between Parties to meet pledges. It does not exclude any particular policy tool and introduces three provisions that could be used to scale-up existing or introduce new carbon pricing initiatives: through Internationally Transferable Mitigation Outcomes (ITMOs), a Mechanism for Sustainable Development (SDM) and a Framework for Non-market Approaches. These provisions recognise the value of mitigation actions undertaken by Parties, encourage some forms of transfer of emissions reductions between Parties and could evolve into an explicit or implicit price on carbon.
- **Fourthly**, by introducing an accounting and transparency framework, the Paris Agreement lays the necessary foundation for the development of carbon pricing policies at both the domestic and transnational level. In addition, this framework could afford greater visibility to Parties on the supply and demand flows for international emissions reductions.

Currently, the lack of definitions for concepts contained in the Agreement leaves significant room for interpretation of the text and therefore, it remains unclear if or how carbon pricing will be mobilised by Parties to meet their national pledges. Ultimately, expansion of domestic carbon pricing policies will depend on whether it can enable a cost-effective transition to a low-carbon economy with subsequent benefits and co-benefits. Additionally, it will depend on how the rules and modalities that support the Agreement are defined by 2020 and whether they can be practically applied to the development of effective carbon pricing policies.

Key points

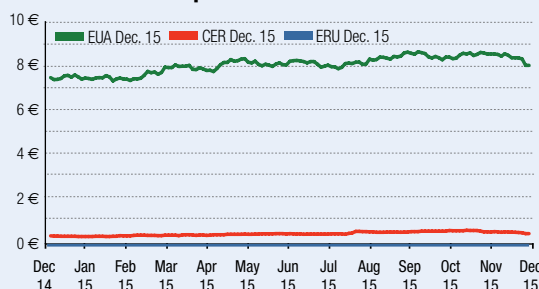
- **COP 21:** the EU Council invited the EU Commission to assess the consequences of COP 21 for Europe by March 2016.
- **Energy Union:** the EU Council called for a full implementation of the legislation on renewable energy, energy efficiency and other measures to meet the 2020 targets.
- **EU ETS – Auctioning regulation:** the EU Commission released a consultation on changes to the Auctioning Regulation related to the implementation of the MSR.

Trading volumes: EUA +32.7%, CER -5.7%



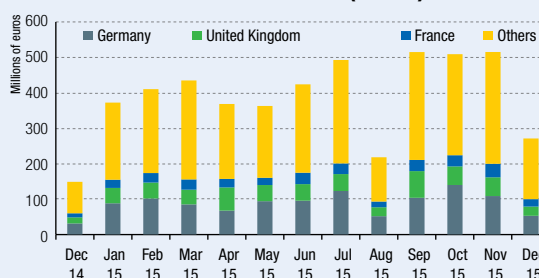
Source: I4CE calculation, based on data from EEX, ICE Futures Europe, NYMEX, Nasdaq OMX, and LCH Clearnet

Dec 15 contract price: EUA -2.3%



Source: I4CE, ICE Futures Europe

Monthly proceeds from Phase 3 auctions: 271.15 M€ in december 2015 (-47%)



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

Energy

Primary energy prices and electricity prices

		Nov. 2015	
Coal	API # 2 CIF ARA (First month in USD/t)	47.9 ▼	
Natural gas	NBP (spot in €/MWh)	16.2 ▼	
	TTF (spot in €/MWh)	15.8 ▼	
Crude oil	Brent (First month in USD/b)	39.1 ▼	
Electricity	Germany (€/MWh)	Spot	29.6 ▼
		Calendar	28.4 ▼
	United Kingdom (€/MWh)	Spot	45.2 ▼
		Next summer	49.1 ▼
		Next winter	56.1 ▼

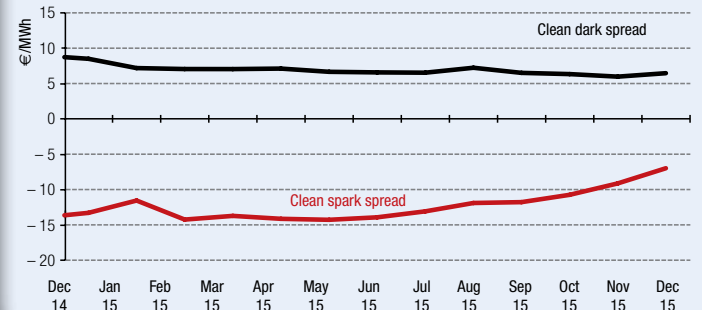
Sources: IACE, Thomson Reuters

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*	-5.2	-7.0	6.6	6.5	28.3	31.2
United Kingdom*	9.1	14.4	21.7	26.7	29.2	28.6

* Germany, 2016 calendar contract

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



Sources: IACE, Thomson Reuters

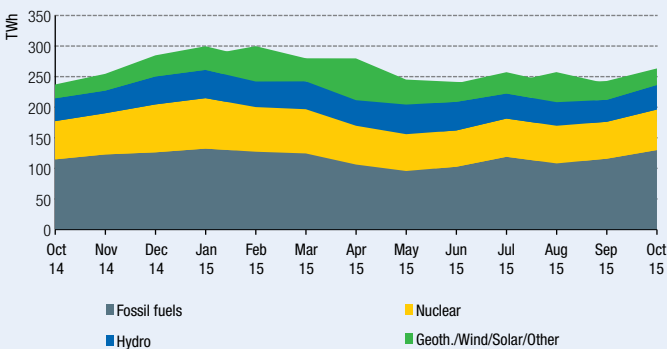
The price of Brent continued to decrease in December, reaching a monthly average of \$39.1/bl, in a context marked by a global low demand, and abundant American and OPEC productions. Coal prices decreased slightly to \$47.9/t. In the wake of lower oil prices, gas prices continued to fall, to €16.2/MWh for NBP spot prices, and €15.8/MWh for TTF spot prices. Electricity prices on the German spot market came down to €29.6/MWh due to declining fossil fuel prices, particularly high temperatures and abundant supply. The contract for delivery in December 2016 remained below €30/MWh with a monthly average of €28.4/MWh. This is due to the continued decline in coal and gas prices, low demand and an increasing share of RES. The German clean dark spread fell to €6.5/MWh on spot markets and stood at €6.5/MWh on futures markets. The clean spark spread was down to -€5.2/MWh on spot markets and increased to -€7/MWh on futures markets. The theoretical CO₂ "switch" price was calculated to 31.2€/tCO₂ on the German spot power market and 28.6€/tCO₂ on the British spot power market.

Production

Electricity generation (TWh)

EU 20 (in TWh)	Oct. 15	Cumulative from Jan. 15	Year-on-Year (% change)
Production	263.2	2,577.6	4.1%
of which - Fossil fuels*	129.5	1,156.6	5.7%
- Nuclear	66.4	662.9	-0.5%
- Hydro	40.3	427.0	-3.5%
- Geoth./Wind/Solar/Other	27.1	338.6	24.0%

* Gas, coal, oil.

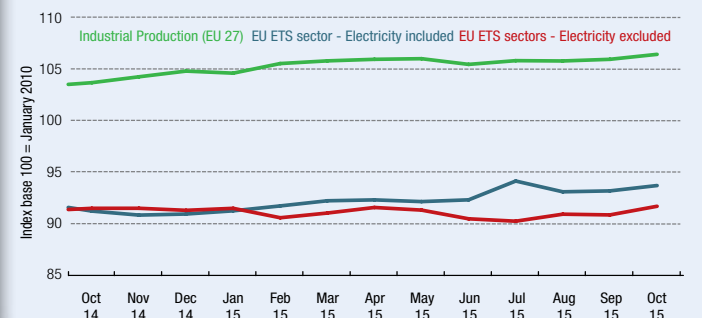


Source: IACE, from IEA data

Production indices (Index base year 2010)

EU 27	Oct. 15	Last month (pts)	Year-on-Year (pts)
Indust. Prod. (excl. construction)	106.4	0.48	2.74
EU ETS sectors production* (incl. electricity)	93.7	0.52	2.47
EU ETS sectors production* (excl. electricity)	91.7	0.84	0.20
Electricity, gas and heating	94.8	0.35	3.66
Cement	75.5	1.54	-2.49
Metallurgy	100.1	-1.09	-6.28
Oil refinery	100.2	1.79	6.44

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

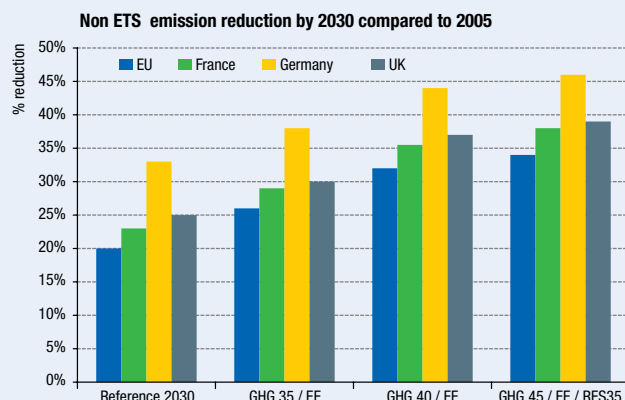
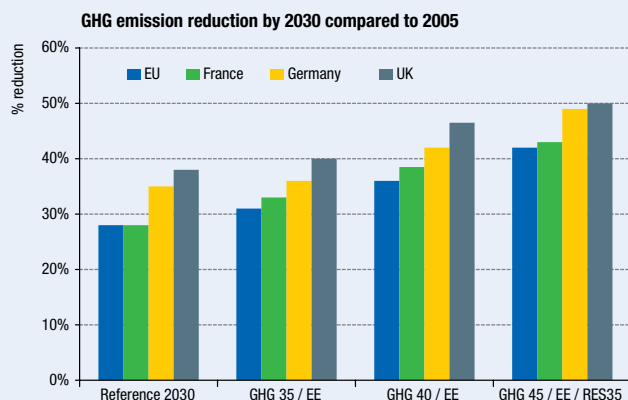


Source: IACE from Eurostat data

The industrial production of EU 27 countries increased by 0.5 pt in October 2015 and was up 2.7 pt compared to October 2014. The increase of 0.5% is due to production of durable consumer goods rising by 1.2%, capital goods by 1.0%, energy by 0.8%. Among the Member States for which data is available, the highest increases in industrial production were registered in Lithuania (+11.3%), the Netherlands (+4.3%), Portugal (+3.9%) and Ireland (+3.4%), and the largest decreases in Greece (-1.2%), Denmark and Finland (both -0.9%). Our production index for EU ETS sectors (including electricity) increased to 93.7 pt, while the index excluding electricity production increased to 91.7 pt. Electricity production in the EU's 20 countries was 263.2 TWh in October 2015, up 8.5% compared to September 2015. Compared to 2014, the cumulative annual production increased by 4.1%. The cumulative production of renewable electricity increased by about 24.0%. Fossil fuel-fired power generation increased by 5.7%. Hydropower production was down slightly (-3.5%).

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 December 18th, the EU Council welcomed the Paris Agreement and invited the EU Commission to assess the results of COP 21 by March 2016, in particular in respect to the 2030 climate and energy framework and the preparation of next steps. The Council also assessed the progress in building the Energy Union and called for (i) a full implementation of the legislation on renewable energy, energy efficiency and other measures to meet the 2020 targets (ii) a preparation of an integrated strategy for research, innovation and competitiveness and (iii) the implementation of a legislation to improve the integration of energy markets and the security of supply. On November 18th, the EU Commission published a progress report on reduced energy consumption in Europe. Final energy consumption decreased by 7% between 2005 and 2013. Primary energy consumption decreased by 8% over the same period. In 2013, the EU final energy consumption was 1,105 Mtoe. The report detailed that the largest cut in energy consumption was made in industry (-15% between 2005 and 2013 in energy use). This was linked to the effects of the economic crisis, structural changes in industry and energy efficiency measures. However, the report stated that EU countries will need to do more to reach the 2020 target. Currently, the sum of all national indicative targets set by EU countries will add up to a saving of 17.6% in primary energy consumption.

Institutional environment

Phase 3 supply balance table

	2013	2014	2015*	2016*	2017*	2018*	2019*	2020*
Auctions (MtCO₂)	804	532	644	763	969	976	985	1,016
Free allocation (MtCO₂)	862	815	793	769	745	721	697	673
Total	1,666	1,347	1,437	1,532	1,714	1,697	1,682	1,689

* Estimations

Free allocation status table

EU Member State	2013	2014	2015*
France	82	81	77
Germany	169	163	159
United Kingdom	66	64	57
Others	526	459	437
TOTAL	843	767	730

* Until 31st March

CER and ERU supply

	Dec. 15	Last month change
Number of CDM projects	11,265	+8
<i>of which - registered</i>	7,684	+4
<i>with - CER issued</i>	2,864	+11
Cumulative volume of CER issued (Mt)	1,641	+7
Number of JI projects	788	-
<i>of which - registered</i>	604	-
Cumulative volume of ERU issued (Mt)	864	-
<i>via - Track 1</i>	838	-
<i>via - Track 2</i>	25	-

On December 29th, the Polish Council of Ministers approved an appeal requesting to cancel the MSR proposal which is expected to enter into force in 2019. According to them, the introduction of the MSR goes against the EU Council conclusions of October 2014, and violates the principles of legitimate expectations and proportionality. On November 9th, the EU Council released recommendations on the reform of the EU ETS to avoid harming the competitiveness of the sectors most exposed to carbon leakage, including the steel industry: (i) a more focused mechanism for the allocation of free allowances, for example through a tiered approach, (ii) to minimize the need for a cross-sectoral correction factor by the end of Phase IV, (iii) the creation of incentives for industrial innovation and (iv) the update of production levels for the determination of allocation per installation. The consultation on the functioning of the Auctioning Regulation was released with two objectives: collecting the stakeholders' views on the changes to the Auctioning Regulation directly related to the implementation of the MSR and on the current functioning of the Auctioning process to identify further technical improvements.

Sources : IACE, Commission européenne, ICF Futures Europe, EEX

Sources : IACE, UNEP-DTU

Carbon markets dashboard

Primary market - EUA auctions in Phase 3

		Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
Common Auction Platform + United Kingdom & Germany	Price (€/t)	6.74	6.89	7.20	6.72	7.01	7.39	7.44	7.70	8.06	8.06	8.35	8.48	8.27
	Volume (Mt)	22.04	54.06	57.00	64.67	52.55	49.09	56.97	63.96	27.03	63.88	60.95	60.76	32.75
Auction Revenues (M€)	Germany	31.17	88.04	101.65	84.94	67.35	93.96	95.40	122.71	51.63	103.55	139.71	108.48	52.76
	United Kingdom	17.15	43.38	44.97	41.54	65.55	45.63	46.75	47.78	25.22	75.33	52.53	52.97	26.08
	France	11.51	23.14	26.76	28.96	23.96	20.46	32.18	30.10	16.12	31.52	31.47	38.11	20.86
	Others	88.78	217.71	236.84	279.33	211.53	202.74	249.46	291.99	124.97	304.54	285.22	315.59	171.27
	Total	148.61	372.27	410.23	434.77	368.40	362.79	423.79	492.57	217.94	514.94	508.93	515.15	270.97

Sources: EEX, ICE Futures Europe

Primary market - CER and ERU issued (MtCO₂)

		Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
Cumulative volume of CER issued UNEP-DTU (Mt)		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	1.634	1.645
Cumulative volume of ERU issued (Mt)	Track 1 (Mt)	824.5	838.1	838.1	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	25.4

Sources: UNEP-DTU, I4CE

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

			Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
ICE Futures Europe	Daily spot	Price EUA phase 3	6.97	6.97	7.27	6.80	7.10	7.44	7.46	7.73	8.08	8.10	8.38	8.51	8.29
		Volume EUA phase 3	10.180	9.324	25.327	23.640	23.244	13.768	16.321	19.536	16.810	17.760	11.058	17.160	10.627
		Price CER	0.04	0.46	0.42	0.41	0.49	0.45	0.40	0.44	0.48	0.51	0.59	0.64	0.53
		Volume CER	8.622	860	4.436	3.202	833	161	83	726	11	1.159	719	1.277	31
	Dec.15	Price EUA	7.15	7.06	7.35	6.85	7.14	7.48	7.50	7.76	8.11	8.13	8.40	8.51	8.32
		Volume EUA	180.590	356.677	377.226	394.219	268.144	200.863	211.772	256.749	170.592	285.220	264.064	262.403	246.341
		Price CER	0.54	0.46	0.42	0.41	0.49	0.45	0.40	0.44	0.48	0.51	0.59	0.64	0.53
		Volume CER	2.654	1.863	2.796	1.408	3.440	3.048	2.108	4.996	3.265	7.607	3.684	0	3.899
	Dec.16	Price EUA	7.35	7.17	7.47	6.93	7.22	7.56	7.58	7.85	8.19	8.21	8.47	8.58	8.36
		Volume EUA	39.009	55.893	46.588	50.070	39.148	35.365	72.609	65.575	38.537	43.022	76.818	116.680	268.078
		Price CER	0.54	0.52	0.42	0.40	0.49	0.44	0.39	0.42	0.46	0.49	0.52	0.56	0.51
		Volume CER	550	500	0	0	200	298	654	979	979	1.769	4.300	3.490	927
	Dec.17	Price EUA	7.35	7.34	7.63	7.06	7.34	7.67	7.68	7.96	8.31	8.32	8.58	8.69	8.46
		Volume EUA	39.009	15.087	19.340	28.076	8.049	27.783	32.838	36.075	28.925	24.543	27.696	32.041	47.893
		Price CER	0.54	0.46	0.42	0.40	0.49	0.44	0.39	0.41	0.45	0.48	0.52	0.56	0.51
		Volume CER	550	0	0	0	0	0	0	2	500	112	600	1	225

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