EU ETS Emission Trading Scheme (ETS)-
Response to consultation on the auction time profile

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Key Results

Surplus

- Our analysis suggests that the cumulative surplus of allowances will continue to grow; peaking at 2.65 billion tonnes in 2013 or 2014 before falling slowly at a rate which depends on the future emission trajectory.
- If emissions evolve as projected in the current policy initiatives scenario used by the European Commission in the impact assessment for the Roadmap 2050, the surplus of allowances exceeds the maximum estimate of hedging demand by 0.96 billion in 2013, and perhaps by significantly more.

Back-loading

- Back-loading 1.2 billion CO_2 allowances would reduce the volume of unused allowances so that balance can be met by hedging needs. What happens to retained allowances, however, is crucial for long term carbon price expectations. If allowances are being returned to the market from 2015, then surplus will again exceed hedging demand. Allowances must be retained until the end of the third trading period, and sufficient scarcity ensured in the fourth trading period.
- Based on our estimates of the cumulative surplus and the hedging demand, back-loading 0.9 or 0.4 billion CO_2 allowances would not eliminate the need for banking of allowances by speculative investors.

CO_2 Prices

- Where demand for hedging does not balance surplus allowances, allowance price will be determined by speculative investors. On our assumptions, speculative investors will only buy these allowances at 15 Euro/t CO_2 in 2012, if they expect a 2020 carbon price of 46 Euro/t CO_2 and 2030 carbon price of 186 Euro/t CO_2.
- The current 8 Euro/t CO2 price suggests that market participants anticipate 2020 carbon prices to be significantly below 25 Euro/tCO2 if there is no action on EU ETS in the coming months.

Implications

- To align the EU ETS Cap post 2020 with the EU's desired emission trajectory, the European Commission needs to act to address the cumulative surplus of ETS allowances.

Calculation Methodology

Our calculations are based on modeling of the supply and demand balance of EU ETS, according to a methodology found in *Banking of Surplus Emissions Allowances: Does the Volume Matter?* DIW Discussion Paper 1196 (2012). The underlying numbers and assumptions on market actors are summarized below and in Table 1.

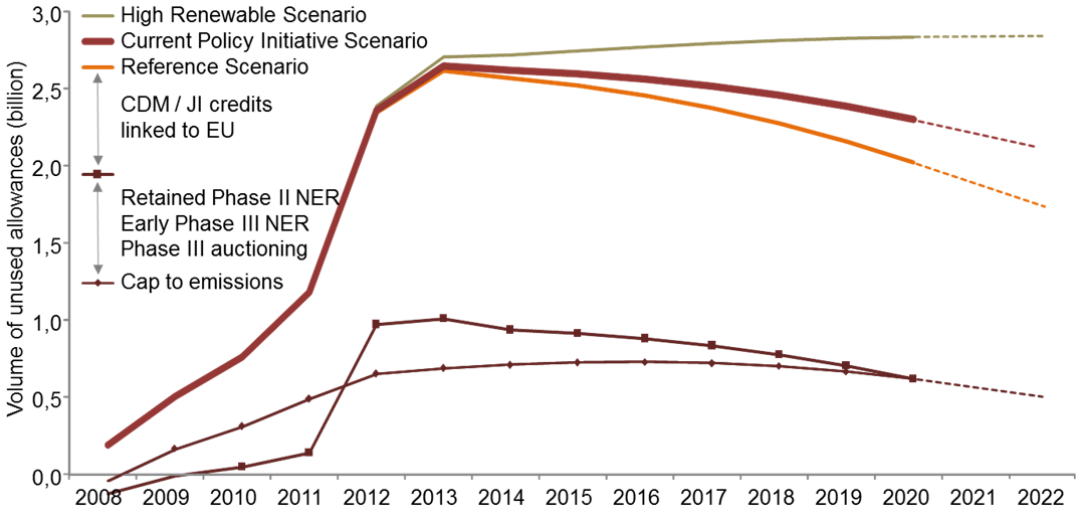
1) Surplus of EU ETS allowances – see figure on page 2.

Since 2008, a surplus of allowances in the EU ETS has accumulated and is expected to increase further (Figure 1). The surplus results in part from the financial and economic crisis, since carbon emissions fell below expectations at the time the emissions cap was set. The supply of emissions allowances has consequently exceeded the carbon emissions covered under the ETS. The volume of unused allowances further increases between 2011 and 2013, because several auctions of Phase II and Phase III allowances take place between these years.

Additional supply of allowances derives from the import of international offset credits into the EU ETS. We estimate that the import quota of 1.68 billion tonnes for credits from Clean Development Mechanism (CDM)

and Joint Implementation (JI) projects is achieved by 2013/2014. Our analysis suggests that the cumulative surplus of allowances will continue to grow; peaking at 2.65 billion tonnes in 2013 or 2014 before falling slowly at a rate which depends on the future emission trajectory.

Figure 1: Cumulative surplus of allowances in Phase II and Phase III in EU ETS

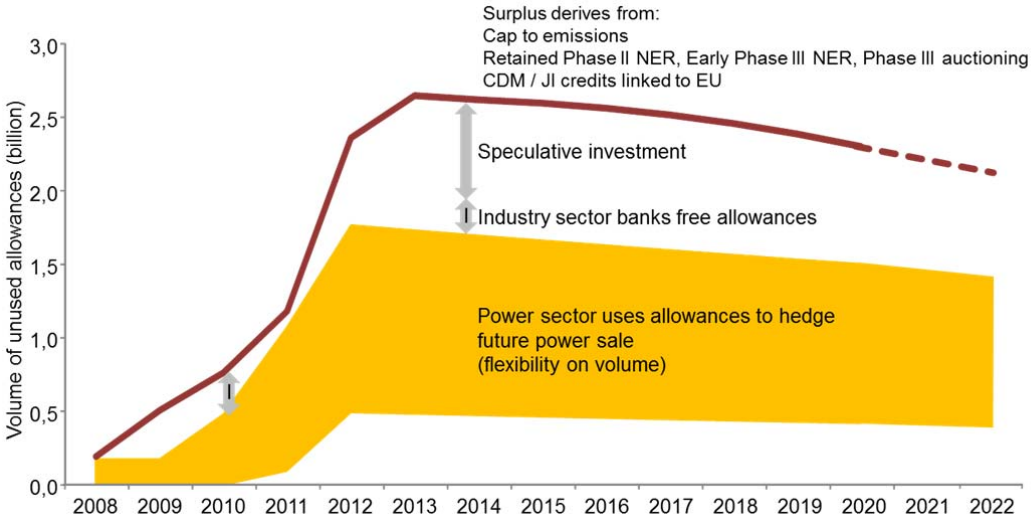


2) Demand for surplus of allowances

If emissions evolve as projected in the current policy initiatives scenario used by the European Commission (2011) in the impact assessment for the Roadmap 2050, the surplus of allowances exceeds the maximum estimate of hedging demand by 0.96 billion in 2013. Uncertainties in emission trajectories, about evolving hedging needs and uncertainties in our calculations need to be considered, and could imply that this gap increases significantly.

Figure 2 compares the cumulative volume of unused allowances with the projected hedging demand.

Figure 2: Cumulative volume of unused allowances and the projected hedging demand



Estimates of future demand are based on the actions of the groups below:

Power generators: Over the last three years, hedging demand from power generators increased in line with the surplus. Power generators sell a significant share of power one to three years ahead of delivery. Corporate risk management requires that contracts for all fuel and carbon input are signed in parallel. This creates a demand for hedging carbon. Power generators have the flexibility to bank allowances, as they own portfolios of generation technologies with different carbon intensities. According to our calculations, the power sector has the flexibility to bank between 0.48 to 1.73 billion CO_2 allowances in 2013.

Industrial emitters have retained some of the unused allowances they received for free. In the period 2008-2010 they received 596 million allowances more than they needed to cover their annual emissions.

Banks buy allowances, but do not hold these as speculative investments. Instead they simultaneously sell future, forward and option contracts. As they are not exposed to carbon price risk, their return expectations are in the order of 5%. The derivative contracts issued by banks are in turn used, for example, by power companies to hedge their future power sales. The allowances held by banks therefore do not increase the total volume of allowances banked in the ETS.

Speculative investments: Small-scale speculative investments in allowances to arbitrage price changes over short time periods have been continuously pursued by market participants. However, it is not clear who are actors that have pursued such speculative investments over longer periods. Financial investors, in principle, might be prepared to pursue speculative investments in carbon if rates of return exceed 10 or 15%. This implies that once the hedging needs for allowances are exhausted, the rates of return required and therefore the discounting of future carbon prices increase from 5% to levels exceeding 10-15%.

3) What happens if cumulative surplus exceeds hedging demand?

If the surplus of allowances exceeds the hedging demand of market participants, then the current carbon price has to decline to a level that attracts speculative investors. Speculative investors might buy allowances like other commodities, but only if the expected returns compensate for the risks associated with the future carbon price development. Assuming speculative investors require 15% annual return on buying CO2 allowances, then they will only buy these allowances at 15 Euro/t CO_2 in 2012, if they expects a 2020 carbon price of 46 Euro/t CO_2 and 2030 carbon price of 186 Euro/t CO_2.

This has several implications:

- If carbon prices increase steeply over time, then cheap mitigation opportunities are initially ignored, while at high carbon prices in future years, expensive mitigation opportunities are implemented. This raises the costs of achieving climate goals.
- Companies investing in low-carbon technologies (e.g. energy efficiency, renewable energy) struggle to convince their board/stakeholders that future carbon prices will be high given the market price for carbon is low. As a result the ETS will not deliver full impact on investment and strategic choices.
- Many corporate decisions are informed by the carbon price, not because the actors are directly covered by the EU ETS, but because the EU ETS is the most visible European climate policy instrument. A low carbon price is interpreted as a lack of commitment by European policy makers to climate policy. If this situation is prolonged, it could risk attention and resources dedicated to low-carbon strategies and investments.

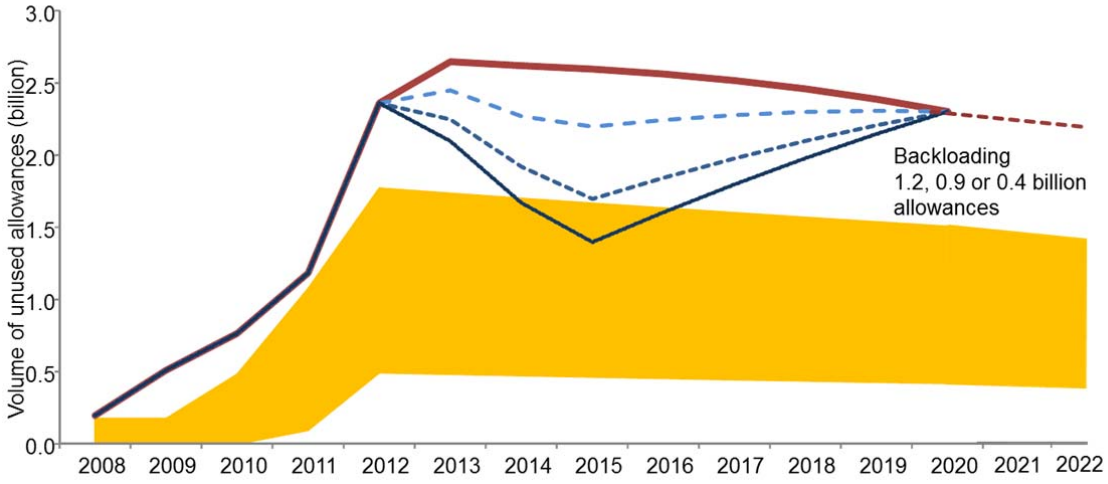
4) Back-loading

To avoid these unwanted outcomes, the cumulative surplus of allowances in the EU ETS would need to be reduced to a level that matches the hedging demand of market participants, so as to eliminate the need for large scale banking by speculative investors. (This is not to argue against the important role of speculative investors in providing short-term arbitrage in the market.) According to our calculations, back-loading 1.2 billion CO_2 allowances would reduce the volume of unused allowances so that it can be met by hedging needs and allow for banking at low discount rates (Figure 3).

What happens to retained allowances, however, is crucial for long term carbon price expectations. If allowances are being returned to the market already from 2015, then the surplus will again exceed hedging demand. Based on our analysis it would be necessary to retain the allowances till the end of the third trading period, and also to ensure sufficient scarcity in the market in the fourth trading period, to allow speculative investors to bank allowances into the fourth period. Thus speculative investors are only required for banking of allowances for one or two years and , their annual return requirements will have less impact on the carbon price level. Furthermore, we would anticipate that over time market participants gather again more confidence in EU ETS, and return requirements of speculative investors will decline.

Based on our estimates of the cumulative surplus and the hedging demand, back-loading 0.9 or 0.4 billion CO_2 allowances would not eliminate the need for banking of allowances by speculative investors.

Figure 3: Potential impact of policy proposals on surplus: blue lines show back-loading of 0.4, 0.9 and 1.2 billion



Back-loading CO_2 allowances and returning these as late as possible would not impact the supply-demand imbalance in the year 2020. Therefore, the back-loading would need to be combined with a process to review, and if necessary, to strengthen emission targets post 2020. In this process, a clear strategy for the future use of allowances retained from the market under the set aside needs to be formulated.

5) What we can learn from existing market prices

The current level of the carbon price of approximately 8 Euro/tCO_2 would (on the analysis above) be compatible with a market situation in which speculative investors bank allowances in the expectation of a 2020 carbon price of 25 Euro/tCO_2. However, the current price is also inflated by anticipation of a potential action on the auction timing by the European Commission. If the cumulative surplus is addressed, market participants assume the price will increase significantly above 8 Euro/t CO_2, otherwise the price will drop significantly below 8 Euro/tCO2. This suggests that market participants anticipate 2020 carbon prices to be *significantly* below 25 Euro/tCO2, if there is no action on EU ETS in the coming months.

6) Conclusion

Analysis of the market indicates that action by the European Commission on EU ETS would be needed to align the EU ETS Cap post 2020 with the EU's desired emission trajectory, in order to address the cumulative surplus of EU ETS allowances exceeding hedging demand.

TABLE 1	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Data sources
EUA Allocation	2.08	2.08	2.08	2.08	2.30	2.25	2.21	2.17	2.14	2.10	2.06	2.02	1.99	European Parliament and Council (2009)
Emissions Reference scenario	2.12	1.88	1.94	1.91	2.15	2.23	2.21	2.19	2.16	2.14	2.12	2.10	2.09	
Emissions CPI scenario	2.12	1.88	1.94	1.90	2.14	2.21	2.19	2.16	2.13	2.11	2.08	2.06	2.04	CITL (2011), European Commission (2011)
Emissions High RES scenario	2.12	1.88	1.94	1.89	2.12	2.18	2.15	2.11	2.07	2.04	2.01	1.97	1.94	
Cumulative ETS surplus	- 0.04	0.17	0.31	0.49	0.65	0.69	0.71	0.73	0.73	0.72	0.70	0.67	0.62	
NER Phase III (300)	-	-	-	-	0.20	0.26	0.23	0.19	0.15	0.11	0.08	0.04	-	
NER Phase II	- 0.09	- 0.17	- 0.26	- 0.35	-	-	-	-	-	-	-	-	-	
Early auctioning	-	-	-	-	0.12	0.06	-	-	-	-	-	-	-	
CER and ERU	0.32	0.52	0.71	1.04	1.39	1.64	1.68	1.68	1.68	1.68	1.68	1.68	1.68	UNEP Risoe (2011), IGES (2011)
Cumulative surplus + credits	0.19	0.51	0.76	1.18	2.36	2.65	2.62	2.60	2.56	2.52	2.46	2.39	2.30	
Hedging min	-	-	0.00	0.10	0.49	0.48	0.47	0.46	0.45	0.44	0.44	0.43	0.42	E.ON (2011), EDF(2011) EnBW (2011), Enel (2011), GDF Suez (2011), Iberdrola (2011), RWE (2011), Statkraft (2011), Vattenfall (2011), Eurelectric (2009), Eurostat (2011), Point Carbon (2011), IPCC (2006)
Hedging max	0.18	0.18	0.48	1.08	1.77	1.73	1.70	1.66	1.63	1.60	1.57	1.54	1.50	
Hedging min with new MS	-	-	0.00	0.10	0.68	0.66	0.65	0.64	0.62	0.61	0.60	0.59	0.58	
Hedging min max with new MS	0.18	0.18	0.48	1.16	2.13	2.08	2.04	2.00	1.96	1.92	1.88	1.85	1.81	
Minimum cumulative surplus	0.19	0.51	0.46	0.33	0.77	0.96	0.92	0.93	0.93	0.92	0.89	0.85	0.80	

Notes: Cap and emissions include aviation, new sectors. Cumulative ETS surplus applies current policy initiative emissions scenario.

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