



Additional profits from the EU ETS

2008-2019

June 7, 2021



CE Delft

- Independent research and consultancy since 1978
- Interdisciplinary research combining economics, technology and policy issues
- 80 employees, based in Delft, the Netherlands
- Not-for-profit



Clients



Industries
(Small and medium size enterprises, transport, energy and trade associations)



Governments
(European Commission, European Parliament, regional and local governments)



NGOs

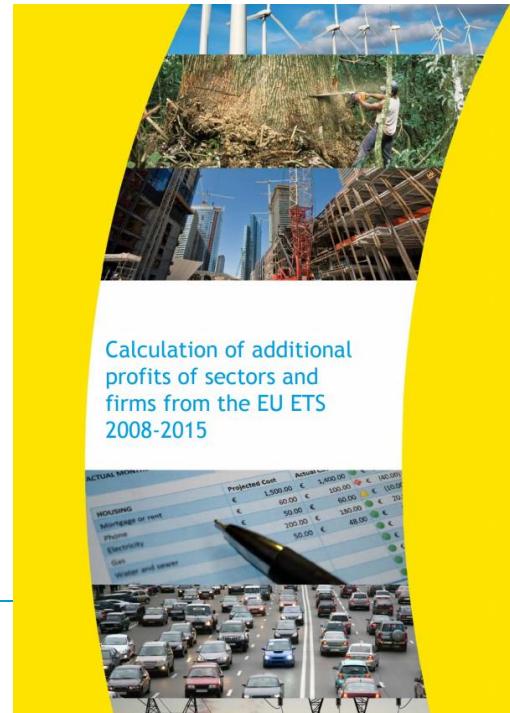
The EU ETS

- In operation since 2005
- EU policy instrument regulating and reducing CO₂ emissions
- 11'000 installations in electricity, industry and aviation
- Critiques on prices
- Critiques on allocation



Objective study

- To calculate and analyse the additional profits that sectors and companies have made from the EU ETS between 2008-2019
- Qualitative forecast how the development of additional profits may change in the future during Phase 4 of the EU ETS (2021-2030)
- In design similar to earlier studies (2008-2014 en 2008-2015)



Delineation study: countries

- 19 EU countries that are also part of the OECD
- (OECD membership is needed to calculate waste gas transfers)

Austria	Italy
Belgium	Netherlands
Czech Republic	Poland
Denmark	Portugal
Finland	Slovak Republic
France	Slovenia
Germany	Spain
Greece	Sweden
Hungary	United Kingdom
Ireland	



Delineation study: sectors

- 15 industrial sectors with highest carbon emissions + aviation
 - Refineries 19.20;
 - Extraction of crude petroleum and gas 06.10;
 - Iron and Steel 24.10;
 - Manufacture of coke oven products 19.10;
 - Cement 23.51;
 - Lime 23.52;
 - Petrochemicals 20.14;
 - Inorganic chemicals 20.13;
 - Industrial gases 20.11;
 - Manufacture of plastics in primary form 20.16;
 - Fertilisers 20.15;
 - Flat glass 23.11;
 - Hollow glass 23.13;
 - Other glass 23.14;
 - Manufacturing of bricks 23.32.
 - Aviation 51



3 types of additional profits investigated

1. Profits from **overallocation** (companies getting more free allowances than needed)
2. Profits from using **international credits** instead of EUAs for compliance
3. Profits from **passing through the carbon costs** of freely obtained allowances into product prices

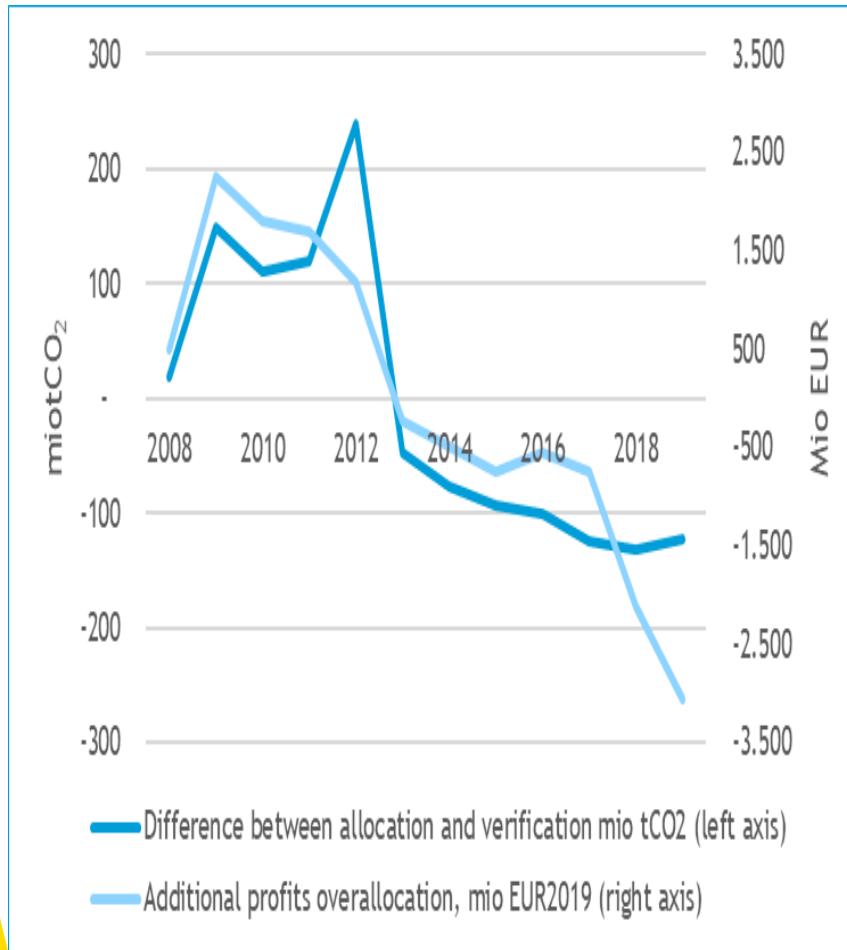
Total additional profits is the sum of these three categories

This is not a cost-benefit analysis! Not included are important categories as:

- costs for abatement of carbon emissions;
- administrative costs;
- benefits from compensation of indirect emission costs;
- benefits from subsidies
- costs or benefits from higher prices of inputs or auxiliary outputs
- costs/benefits associated with banking/hedging
- transfers of heat and electricity



1. Profits from overallocation



Since 2008, industry has received more allowances than needed for compliance, especially in Phase 2 (2008-2012).

Calculation: yearly difference between allocated and verified emissions multiplied by the average price of an EUA of that year.

Correction for waste gas transfers: free allowances in surplus of the natural gas equivalent of the waste gas allocated to the steel sector are being transferred to the electricity producers



1. Profits from overallocation: sectors

Nace	Sector	Allocated	Verified	Delta	Additional profits
		Mt CO ₂			€ mio
06.10	Extraction of crude oil and gas	194	224	-30	-285
19.10	Manufacture of coke oven products	65	76	-11	-124
19.20	Refineries	1,333	1,504	-171	-1,801
20.11	Industrial gases	70	71	-1	-24
20.13	Inorganic chemicals	122	109	12	156
20.14	Petrochemicals	684	645	39	601
20.15	Fertilisers	217	245	-28	-272
20.16	Manufacture of plastics in primary form	40	40	0	15
23.11	Flat glass	70	66	4	63
23.13	Hollow glass	116	122	-6	-45
23.14	Other glass	15	14	1	17
23.32	Manufacturing of bricks	122	88	34	478
23.51	Cement	1,561	1,31	251	3,057
23.52	Lime	340	309	30	477
24.10	Iron and steel	1,678	1,766	-88	-707
Total 15 sectors		6,627	6,59	37	1,604

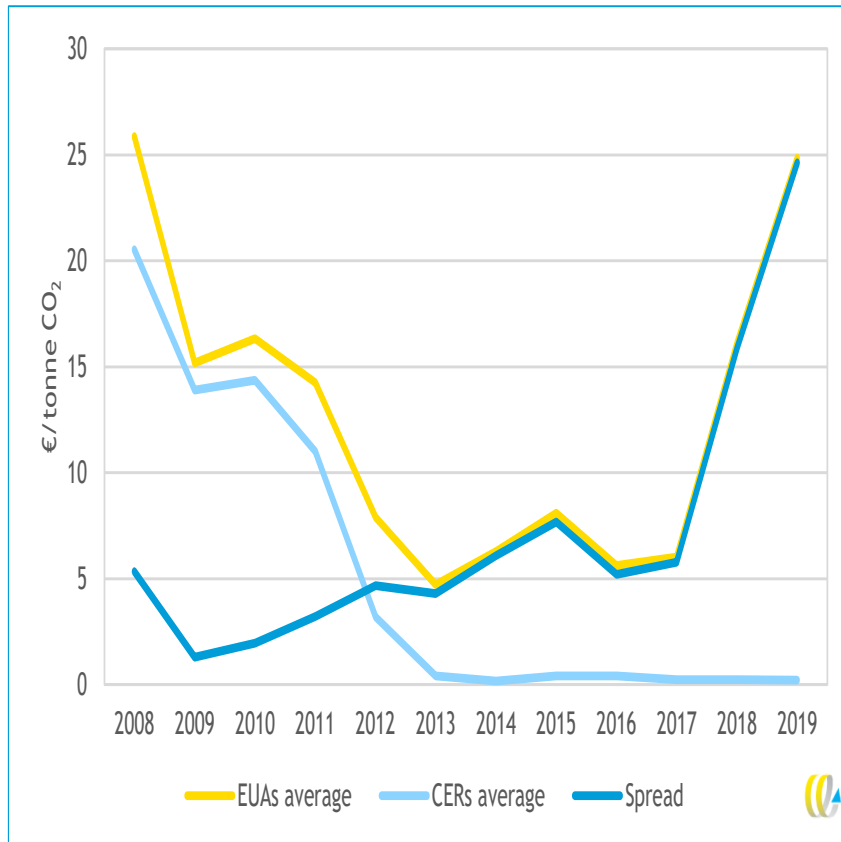


1. Profits from overallocation: countries

	Country	Allocated	Verified	Waste gases	Difference	Profits
		(MtCO ₂)	(MtCO ₂)	(MtCO ₂)	(MtCO ₂)	(€ mio)
AT	Austria	199	228	33	-62	-743.3
BE	Belgium	416	338	42	37	520.8
CZ	Czech Republic	212	189	20	2	23.5
DK	Denmark	62	58	0	4	63.6
FI	Finland	126	121	15	-10	-114.4
FR	France	779	721	53	5	86.9
DE	Germany	1,518	1,443	175	-100	-794.5
GR	Greece	173	153	0	20	310.2
HU	Hungary	88	77	10	1	-21.2
IE	Ireland	47	35	0	12	153.9
IT	Italy	809	710	62	37	240.2
NL	Netherlands	448	396	56	-3	-41.0
PL	Poland	404	388	37	-21	-198.3
PT	Portugal	131	119	0	12	187.6
SK	Slovakia	168	158	4	6	205.6
SI	Slovenia	13	12	0	1	3.9
ES	Spain	696	578	23	94	1363.7
SE	Sweden	168	131	18	19	260.3
GB	United Kingdom	775	736	57	-17	97.1
Total 19 countries		7,235	6,59	608	37	1,604.7



2. Profits from International Credit conversions



Companies could use cheaper CDM/JI credits for compliance between 2008-2020 up to (i) NAP 2008, or (ii) 11% of free allocation of EUAs in 2008-2012, or (iii) 4.5% of verified emissions between 2013-2020,

From 2008-2012, this information was publicly available. Between 2013-2019 it has been calculated assuming that companies used their maximum possibilities.

2. Profits from ICC

	€mio	2008-2012	2013-2019	Total
Extraction of crude oil and gas		14	95	108
Manufacture of coke oven products		5	26	31
Refineries		96	536	632
Industrial gases		1	30	32
Inorganic chemicals		11	34	44
Petrochemicals		47	274	321
Fertilisers		5	103	107
Manufacture of plastics in primary form		8	8	15
Flat glass		15	13	28
Hollow glass		16	28	44
Other glass		3	4	6
Manufacturing of bricks		12	52	63
Cement		165	442	607
Lime		58	67	125
Iron and steel		267	582	850
Total		722	2,292	3,014

3. Profits from cost pass through

		Min.	Avg	Max.
06.10	Extraction of petroleum and gas	40%	70%	100%
19.10	Manuf. of coke oven products	55%	75%	100%
19.20	Refineries	40%	70%	100%
20.11	Industrial gases*	0%	0%	0%
20.13	Inorganic chemicals**	10%	24%	37%
20.14	Petrochemicals	15%	50%	100%
20.15	Fertilisers	10%	50%	100%
20.16	Manufacture of plastics	42%	70%	100%
23.11	Flat glass***	0%	40%	80%
23.13	Hollow glass	30%	55%	80%
23.14	Other glass	24%	50%	80%
23.32	Manufacture of bricks^^	30%	40%	80%
23.51	Cement	20%	39%	58%^
23.52	Lime***	0%	40%	80%
24.10	Iron and Steel	55%	75%	100%

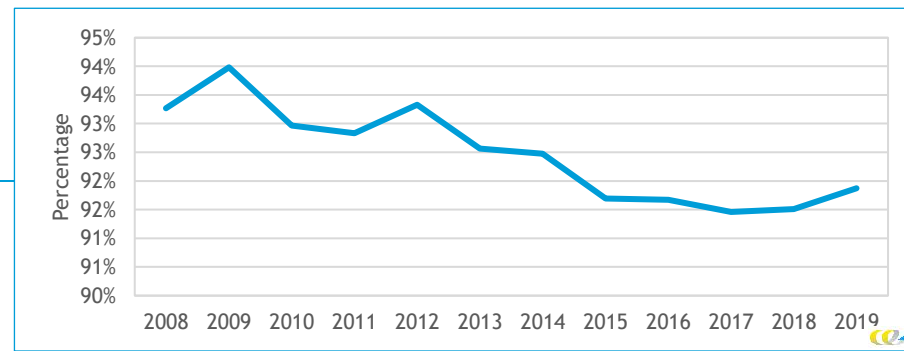
- Research shows that there is indication that companies pass through the freely obtained allowances into product prices
- Ranges differ substantially in the literature
- Companies claim officially that they do not do this and that research is flawed
- Using minimum and average prices as a conservative estimate



Why is it likely that companies pass through costs of freely obtained allowances?

- 1. Opportunity cost argument:** EUAs represent a value. Companies could also sell EUAs as long as they stay above the capacity thresholds in the ETS. Therefore it is rational to factor in price of allowances in production prices
- 2. Marginal cost argument:** Companies receive only free allowances up to benchmark based on historical production. Companies that are short of allowances must buy an additional allowance for each additional unit of production. It would be poor business behaviour not to reflect these in the sales prices.
- 3. Market price argument:** Inefficient producers are often determining the price levels on markets. Often these operate (far) above benchmark levels. Therefore market price contains the costs for emissions above the benchmark for these producers.

Higher prices on product markets imply theoretically a loss in market shares. The loss in profits from a potential loss in market shares is included in the calculation.



3. Profits from cost pass through

	Sector	Min. net profits from CPT (€mln)	Avg. net profits from CPT (€mln)
06.10	Extraction of crude oil and gas	1,15	1,689
19.10	Manufacture of coke oven products	533	480
19.20	Refineries	7,651	12,462
20.11	Industrial gases	-	-
20.13	Inorganic chemicals	129	261
20.14	Petrochemicals	1,601	4,007
20.15	Fertilisers	395	1,098
20.16	Manufacture of plastics in primary form	207	250
23.11	Flat glass	-	330
23.13	Hollow glass	466	800
23.14	Other glass	42	79
23.32	Manufacturing of bricks	345	459
23.51	Cement	3,437	6,625
23.52	Lime	-	1,561
24.10	Iron and steel	12,318	15,991
Total		28,273	46,089



Total additional profits: sectors (€mln)

NACE	Sector	Over-allocation (a)	CER/ERUs (b)	CPT min (c)	CPT avg (d)	Tot min (a+b+c)	Tot avg (a+b+d)
06.10	Extraction of crude oil and gas	-285	108	965	1,689	789	1,513
19.10	Manufacture of coke oven products	-124	31	346	480	253	387
19.20	Refineries	-1,801	632	7,119	12,462	5,95	11,293
20.11	Industrial gases	-24	32	-	-	7	7
20.13	Inorganic chemicals	156	44	111	261	311	461
20.14	Petrochemicals	601	321	1,335	4,007	2,256	4,929
20.15	Fertilisers	-272	107	328	1,098	164	933
20.16	Manufacture of plastics in primary form	15	15	150	250	180	280
23.11	Flat glass	63	28	-	330	91	421
23.13	Hollow glass	-45	44	436	800	435	798
23.14	Other glass	17	6	38	79	61	102
23.32	Manufacturing of bricks	478	63	344	459	885	1
23.51	Cement	3,057	607	3,396	6,625	7,059	10,288
23.52	Lime	477	125	-	1,561	602	2,162
24.10	Iron and steel	-707	850	11,723	15,991	11,865	16,133
Totals		1,604	3,014	26,291	46,089	30,909	50,708

Total additional profits: countries (€mln)

	Overallocation (a)	CERs (b)	CPT min (c)	CPT avg (d)	Tot min (a+b+c)	Tot avg (a+b+d)
Austria	-743	80	1,176	1,791	513	1,128
Belgium	521	206	1,202	2,317	1,929	3,044
Czech Republic	24	76	774	1,348	873	1,447
Denmark	64	30	211	380	304	473
Finland	-114	55	616	984	556	924
France	87	250	2,957	5,148	3,294	5,484
Germany	-794	608	5,755	9,952	5,569	9,766
Greece	310	66	548	994	925	1,371
Hungary	-21	38	266	511	283	528
Ireland	154	23	93	188	270	365
Italy	240	331	2,856	5,055	3,428	5,627
Netherlands	-41	194	1,468	2,731	1,621	2,884
Poland	-198	169	1,293	2,400	1,263	2,371
Portugal	188	56	381	731	625	975
Slovakia	206	64	766	1,202	1,036	1,472
Slovenia	4	5	40	73	49	82
Spain	1,364	317	2,076	3,803	3,757	5,484
Sweden	260	68	578	969	907	1,297
United Kingdom	97	376	3,233	5,12	3,707	5,985
Total	1,604	3,014	26,291	46,089	30,909	50,708



Total additional profits: companies

- Results for Top-5 companies (in verified emissions) are given for each country (Top-10 for the larger countries).
- Analysis on the company level is largely based on ETS installation names rather than on ownership ~ indicative results
- Waste gas transfers have been allocated to blast furnaces
- E.g. Top 5 in Germany

Company	Sector	KT verified	Over- allocation €mln (a)	CERs €mln (b)	CPT min (c)	CPT avg (d)	Tot Min €mln (a+b+c)	Tot Avg €mln (a+b+d)
THYSSENKRUPP AG	Iron and steel	163,944	-221	94	1,079	1,472	953	1,346
SALZGITTER AG	Iron and steel	92,473	-484	22	604	824	142	362
BASF SE	Petrochemicals *	76,222	12	38	137	416	187	466
ARCELORMITTAL	Iron and steel**	59,594	422	30	365	506	817	958
HeidelbergCement	Cement***	58,165	-16	28	141	285	153	298

Outlook Phase 4

Mechanism	Development on Additional Profits (AP)	Uncertainty
Higher CO ₂ price	Tends to result in higher CPT so higher AP	High
CBAM	If no change in free allocation, will most likely result in higher CPT so higher AP	Medium
Dynamic allocation	Will result in lower CPT, so lower AP	Medium
LRF update	Will result in less free allowances so lower AP	Low
Benchmark updates	Will result in considerably less free allowances, so lower AP	Low
International credits	No longer possible, so lower AP	Low



Conclusions

- The EU ETS has resulted in substantial additional profits worth 30 to 50 billions for the most CO2 intensive sectors in 19 EU countries between 2008-2019
- Cost pass through is the largest component of additional profits
- While ICC and overallocation are dealt with in Phase 4, cost pass through is still possible to a large extent - unsure what happens to cost pass through rates under much higher CO2 prices.
- If politicians want to lower AP, they should better target free allocation: {CBAM + auctioning} or {Subsidies + auctioning}



THANK YOU FOR YOUR ATTENTION!



Ellen Schep



Daan Juijn



Sander de Bruyn

bruyn@ce.nl