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What role for carbon offsets?

29 October 2020 - Workshop on carbon offsets and ETS linking, LIFE DICET project


Source: https://de.wikipedia.org/wiki/Biogasanlage#/media/File:2012-05-13_Nordsee-Luftbilder_DSCF8567.jpg

What role for carbon offsets in ETS linking?

1. **CDM experiences** – additionality and baseline setting issues
2. **Article 6** for crediting: Looking for environmental integrity
3. **Linking of ETS** – as strong as its weakest link (both ETS or crediting components)
4. **Outlook** global offset market past 2030 towards **net zero**

How additional is (was) the CDM?

2016 study for DG CLIMA by Öko-Institut, INFRAS, SEI, Carbon Limits

Question: Does the CDM provide *real, measurable and additional* emission reductions?

Methodological approach:

- Systematic analysis of CDM rules for (i) **additionality determination**, (ii) determination of **baseline emissions** and (ii) other issues
- Analysis of application of rules in **major project types** based on random sampling of project PDDs
- **Quantitative assessment** of impact on potential 2013-2020 CER supply

Approaches for additionality determination and baseline setting analysed

- Prior consideration
- Investment analysis
- First of its kind and common practice analysis
- Barrier analysis
- Crediting period and their renewal
- Additionality of PoAs
- Positive lists
- Standardized baselines
- Consideration of policies and regulations
- Suppressed demand

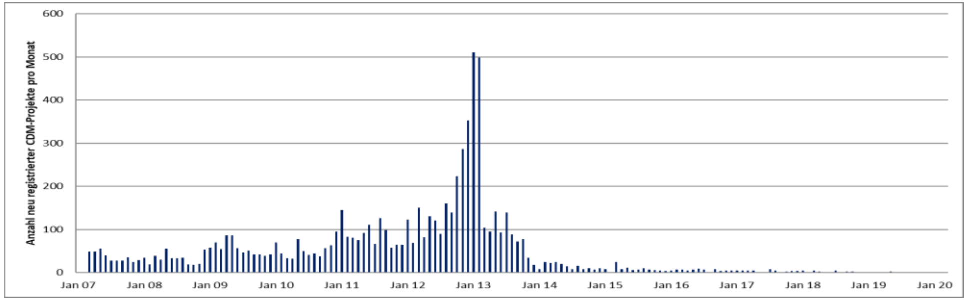
How additional are project types?

	CDM projects			Potential CER supply 2013 to 2020		
	Low	Medium	High	Low	Medium	High
	… likelihood of emission reductions being real, measurable, additional					
	No. of projects			Mt CO_2e		
HFC-23 abatement from HCFC-22 production						
Version <6		5			191	
Verson >5			14			184
Adipic acid		4			257	
Nitric acid			97			175
Wind power	2.362			1.397		
Hydro power	2.010			1.669		
Biomass power		342			162	
Landfill gas		284			163	
Coal mine methane		83			170	
Waste heat recovery	277			222		
Fossil fuel switch	96			232		
Cook stoves	38			2		
Efficient lighting						
AMS II.C, AMS II.J	43			4		
AM0046, AM0113			0			0
Total	**4.826**	**718**	**111**	**3.527**	**943**	**359**

CDM eligibility of project types

Project type	Environmental integrity under current rules	Environmental integrity if rules were improved	Recommendations
HFC-23	Medium / High	High	Not eligible
Adipic acid	Medium	High	Eligible (with benchmark of 30 kg / t AA)
Nitric acid	High	High	Eligible
Wind power	Low	Low	Not eligible
Hydropower	Low	Low	Not eligible
Biomass power	Medium	Medium / High	Eligible (projects avoiding methane emissions)
Landfill gas	Medium	Medium / High	Eligible (subject to transition arrangements)
Coal mine methane	Medium	Medium / High	Eligible
Waste heat recovery	Low	Low	Not eligible
Fossil fuel switch	Low	Low	Not eligible
Efficient cook stoves	Low	Medium / High	Eligible
Efficient lighting	Low / High	Medium / High	Eligible

Key findings from experience with CDM



Source Data: UNEP-DTU CDM Pipeline Analysis and Database vom 1. 4. 2020 http://www.cdmpipeline.org/

- CDM has been a tremendous capacity building exercise in MRV, but
- CDM rules and processes are not adequate to assure reasonable level of additionality
- Since then CDM rules have been gradually improved and made more consistent, additionality issue not solved
- Large amount of (potential) CERs on the market which are mostly non-additional
- CDM is blueprint for most other offsetting programs
- Limiting crediting to project types with high likelihood of delivering additional emission reductions and new concept of vulnerable offsets emerged and provides niche market (NCM-ÖkoI)

-> Using any non-additional offsets threatens to weaken ETS

The new world of PA Article 6

New: De-centralized and all countries have NDC targets

Required elements for environmental integrity under Article 6:

- Robust accounting of international transfers
- Quality of units from mechanisms
- Ambition and scope of NDC targets
- Incentives and disincentives for further mitigation action

-> No rulebook (yet) – most likely weak rules, need for «clubs/ teams»

-> Complexities bring challenges to robust implementation

-> As NDCs are often non-ambitious or unclear, in most cases some sort of additionality testing is still needed.

(2017 paper for UBA)

Use of offsets in ETS

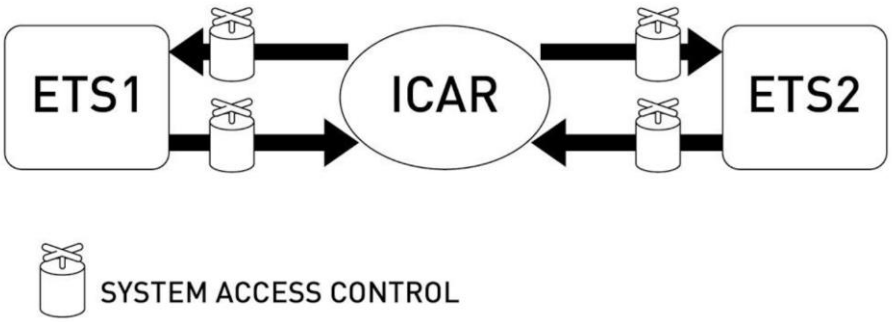
Eligibility of CERs in EU-ETS generated huge amount of CDM-Projects, pushed down prices and further weakened its GHG impact

«Restricted linking»: Limits on the amount of CERs were very important

In general:

- Each linked system combining ETSs and offset markets is as strong as its weakest link
- use of offsets may have destabilizing effect on linked ETS. Restrictions and safety valves necessary

(Source: ICAR paper)

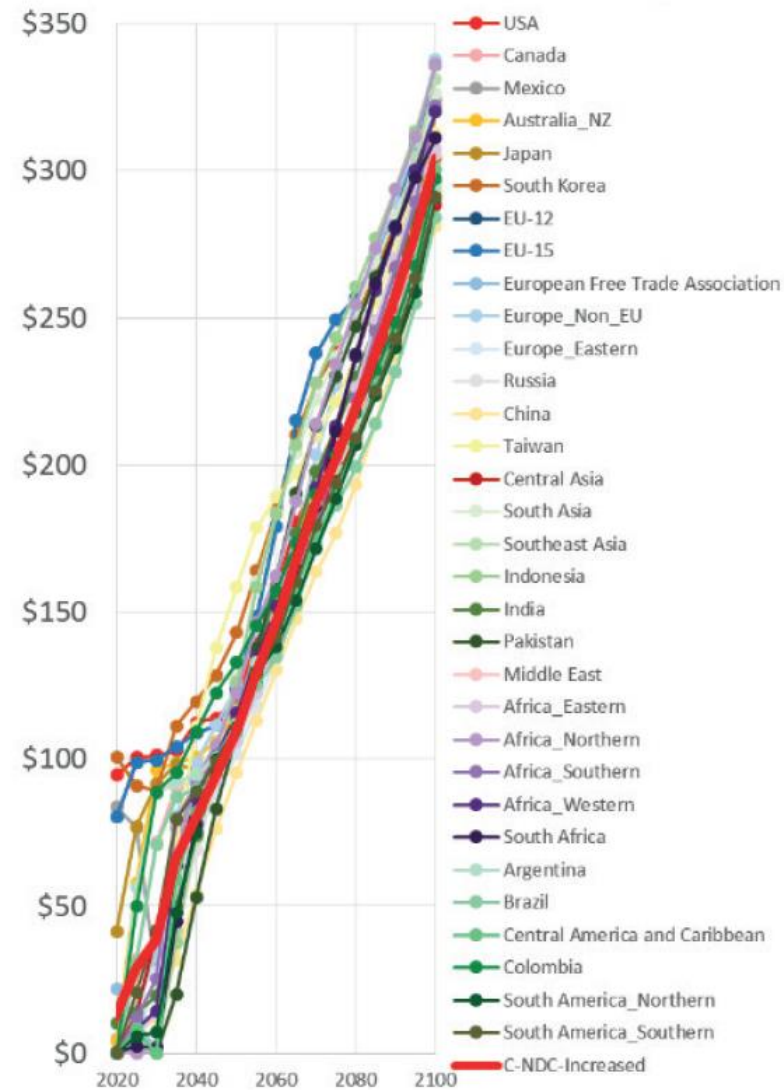


Outlook global offset market past 2030 towards net zero

Implementation of Paris Agreement target requires strong mitigation action in all countries and rapid ramping up of Negative Emissions Technologies (NETs)

Outlook past 2030 towards net zero:

- Convergence of mitigation costs – limited use of international transfers of mitigation outcomes?
- To which extend are ETS and crediting useful instruments for Negative Emission Technologies?

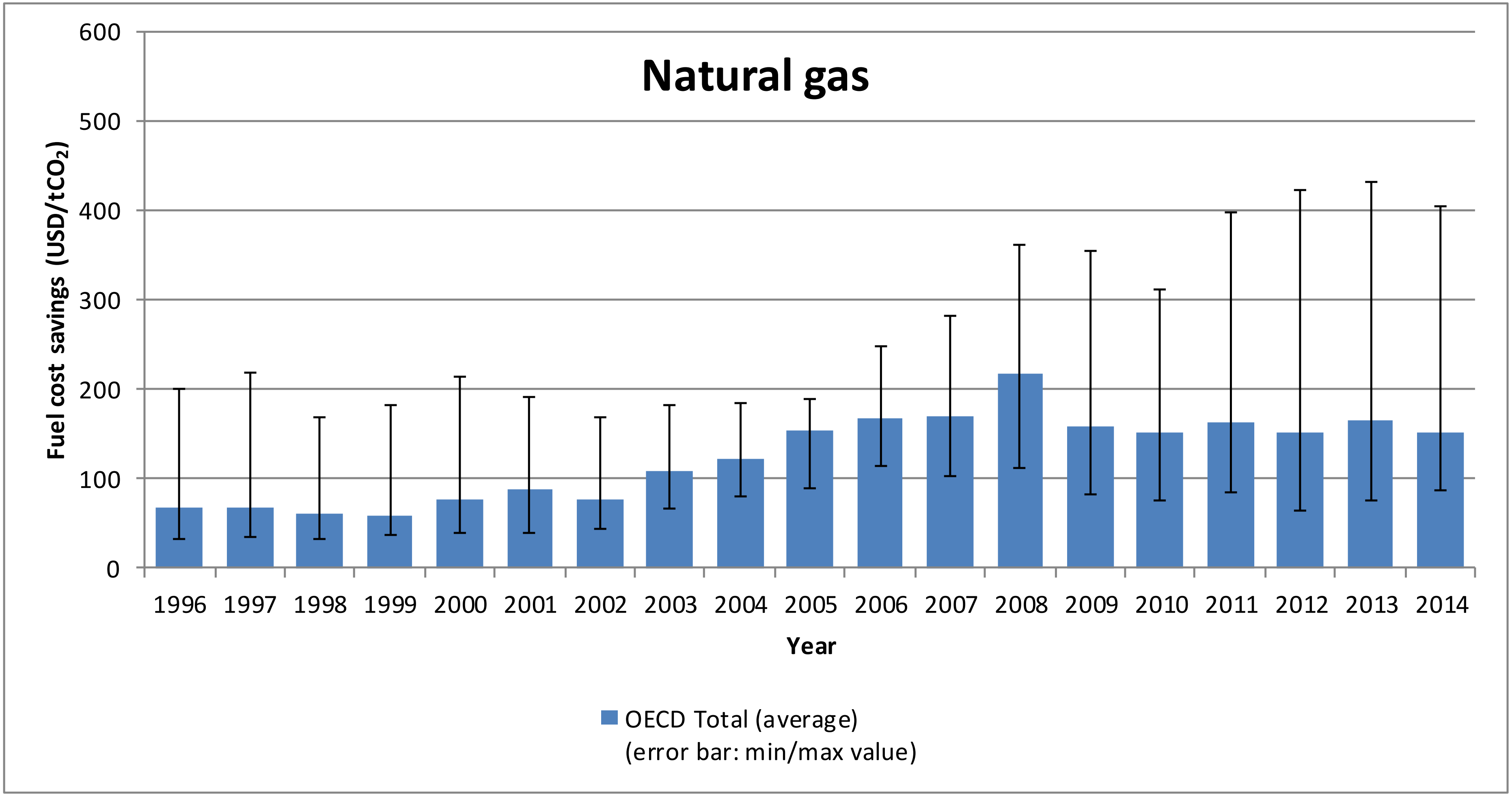


Source: Figure 12-B in [IETA & Univ. of Maryland (2019)]

Impact of CER revenues on the profitability of different project types

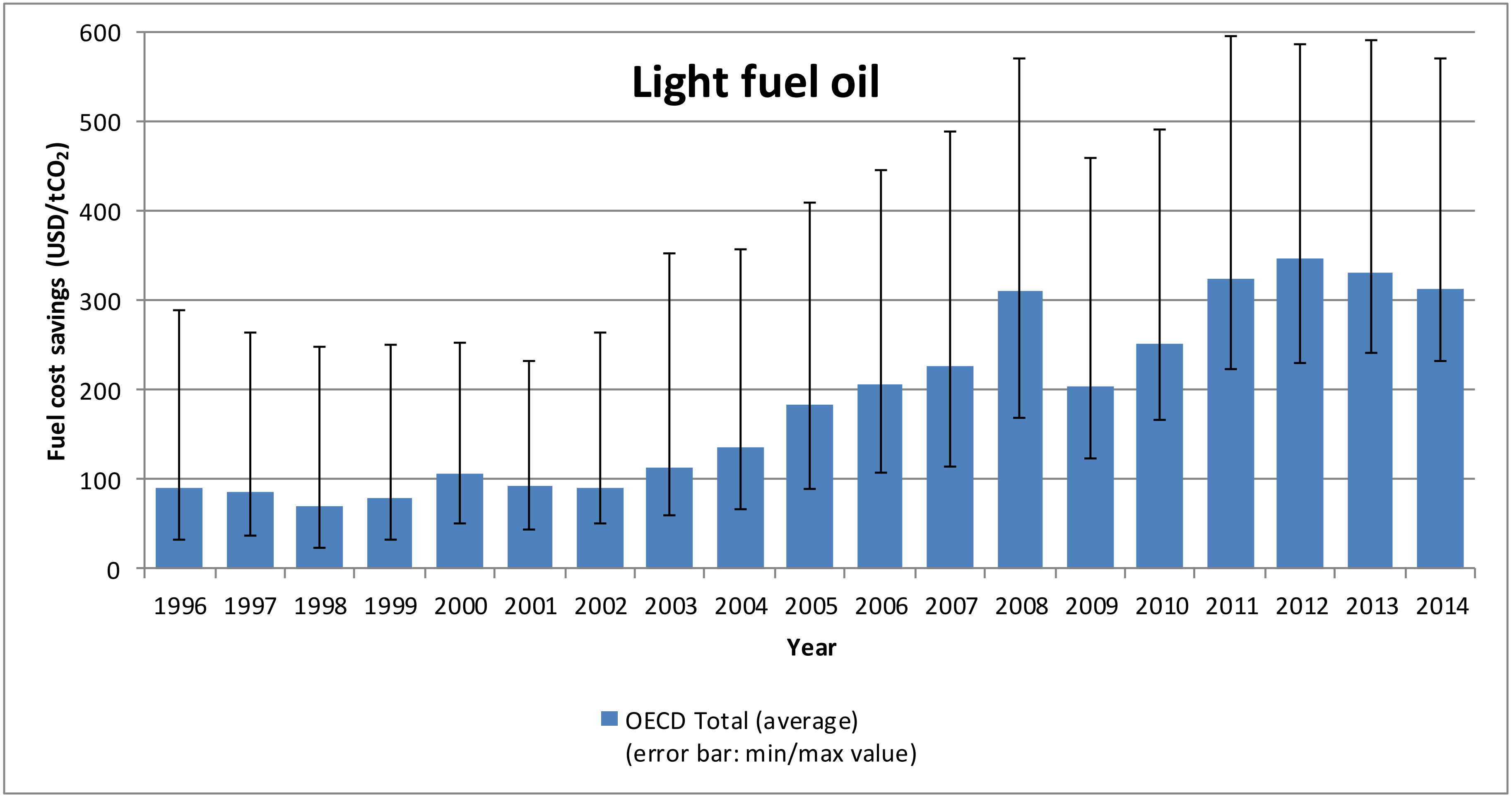
Type	Source	Projects with available IRR information	Average IRR without CER revenues	Average IRR with CER revenues	Average IRR difference
Biomass energy	UNEP-DTU	271	5.5%	13.6%	8.1%
	IGES	216	5.2%	12.9%	7.7%
Coal bed/mine methane	UNEP-DTU	70	2.1%	29.5%	27.5%
	IGES	75	2.2%	30.5%	28.3%
EE own generation	UNEP-DTU	205	8.8%	15.5%	6.7%
	IGES	202	8.3%	14.7%	6.4%
EE supply side	UNEP-DTU	36	7.1%	14.6%	7.5%
	IGES	23	6.3%	13.2%	6.9%
Fossil fuel switch	UNEP-DTU	47	7.2%	10.4%	3.1%
	IGES	39	7.0%	10.4%	3.4%
Hydro	UNEP-DTU	1,753	7.7%	11.0%	3.3%
	IGES	1,635	8.0%	11.6%	3.6%
Landfill gas	UNEP-DTU	183	2.5%	18.0%	15.6%
	IGES	165	2.8%	16.6%	13.8%
Methane avoidance	UNEP-DTU	203	3.8%	21.1%	17.3%
	IGES	204	3.9%	20.8%	16.9%
Solar	UNEP-DTU	154	6.5%	7.9%	1.4%
	IGES	122	5.8%	7.0%	1.2%
Wind	UNEP-DTU	2,162	7.1%	9.7%	2.6%
	IGES	1,804	6.6%	9.4%	2.8%

Figure Fehler! Kein Text mit angegebener Formatvorlage im Dokument.**-1: Natural gas cost savings per tonne of CO_2 reduced in energy efficiency projects**



Notes: Average fuel prices of OECD countries (in USD/TJ).
Sources: IEA 2015, IPCC 2006, authors' own calculations

Figure Fehler! Kein Text mit angegebener Formatvorlage im Dokument.**-1: Light fuel oil cost savings per tonne of CO_2 reduced in energy efficiency projects**



Notes: Average fuel prices of OECD countries (in USD/TJ).

Sources: IEA 2015, IPCC 2006, authors' own calculations