



CO2 Handel i EU og Globalt

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Publication date:
2011

Document Version
Publisher's PDF, also known as Version of record

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Citation (APA):
Olsen, K. H. (Invited author). (2011). CO2 Handel i EU og Globalt. Sound/Visual production (digital)

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CO₂ Handel i EU og Globalt

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Handel med klimaet? NOAH indbyder til debatmøde
27 okt. 2011, 8.30 – 21.30, DGI-byen, lok. 3, København

UNEP Risø Centre – Energi, Klima og Bæredygtig Udvikling

- Internationalt forsker-hold med mere end 30 økonomer og videnskabsfolk
- Baseret på en aftale mellem Risø, UNEP og Danida. Beliggende i Roskilde siden 1990
- Mandat til støtte og fremme af UNEP aktiviteter indenfor energi, klima og udvikling med fokus på udviklingslande



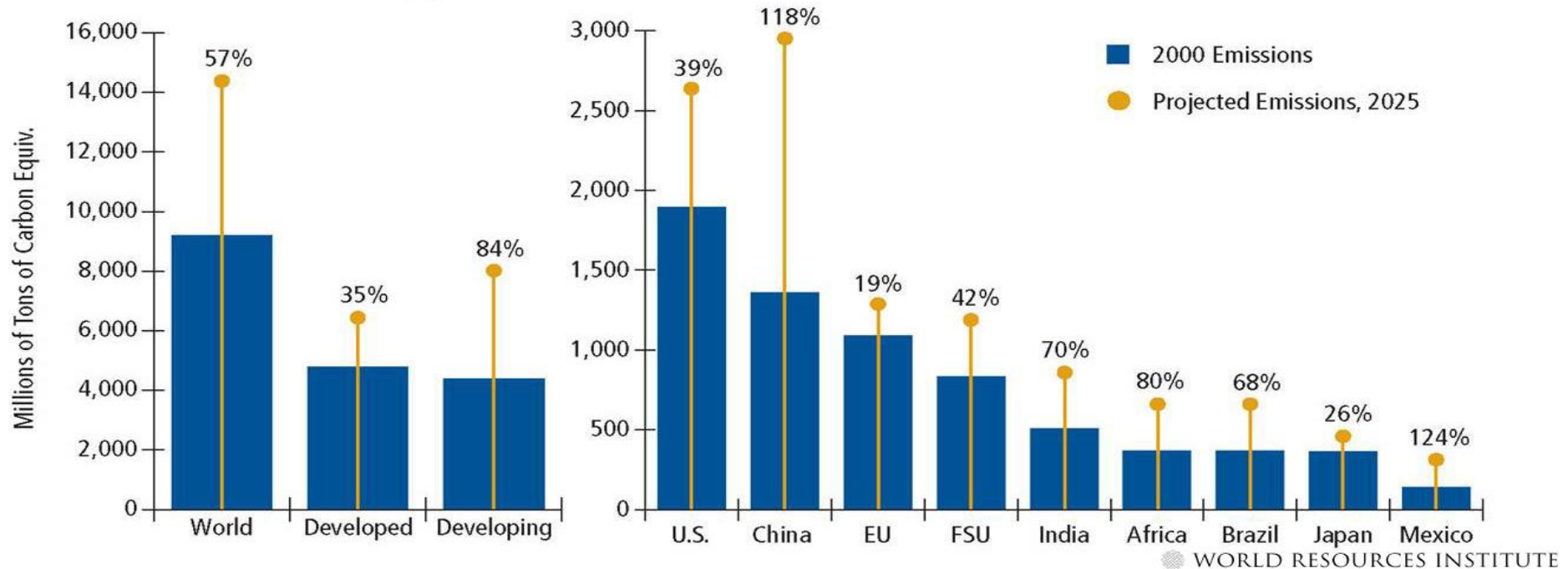
Oversigt

- Den globale udfordring
- Kyoto Protokollen
- CO₂-markeder globalt
- CO₂-handel i EU
- Clean Development Mechanism (CDM)

Den globale udfordring

Major Challenges

GHG Emissions Projections for 2025



- Largest emitters where not included in the 1st commitment period
- Developed and developing country emissions currently about equal

The mitigation challenge according to IPCC

- **Without action - global CO₂ emissions will grow between 40 and 110% between 2000 and 2030**
- **To stay below 2 degrees global average warming and avoid major damages:**
 - global CO₂ emissions should start **declining** by 2015 and
 - be reduced with 50-85% below 2000 level by 2050



Emission reductions required for stabilising climate with fair distribution of effort

Scenario category	Region	2020	2050
A-450 ppm CO₂-eq²	Annex I	-25% to -40%	-80% to -95%
	Non-Annex I	Substantial deviation from baseline in Latin America, Middle East, East Asia (-15% to -30% from BAU)	Substantial deviation from baseline in all regions
B-550 ppm CO₂-eq	Annex I	-10% to -30%	-40% to -90%
	Non-Annex I	Deviation from baseline in Latin America and Middle East, East Asia (0 to -20% from BAU)	Deviation from baseline in most regions, especially in Latin America and Middle East

Impacts of 2 C warming – worse than expected

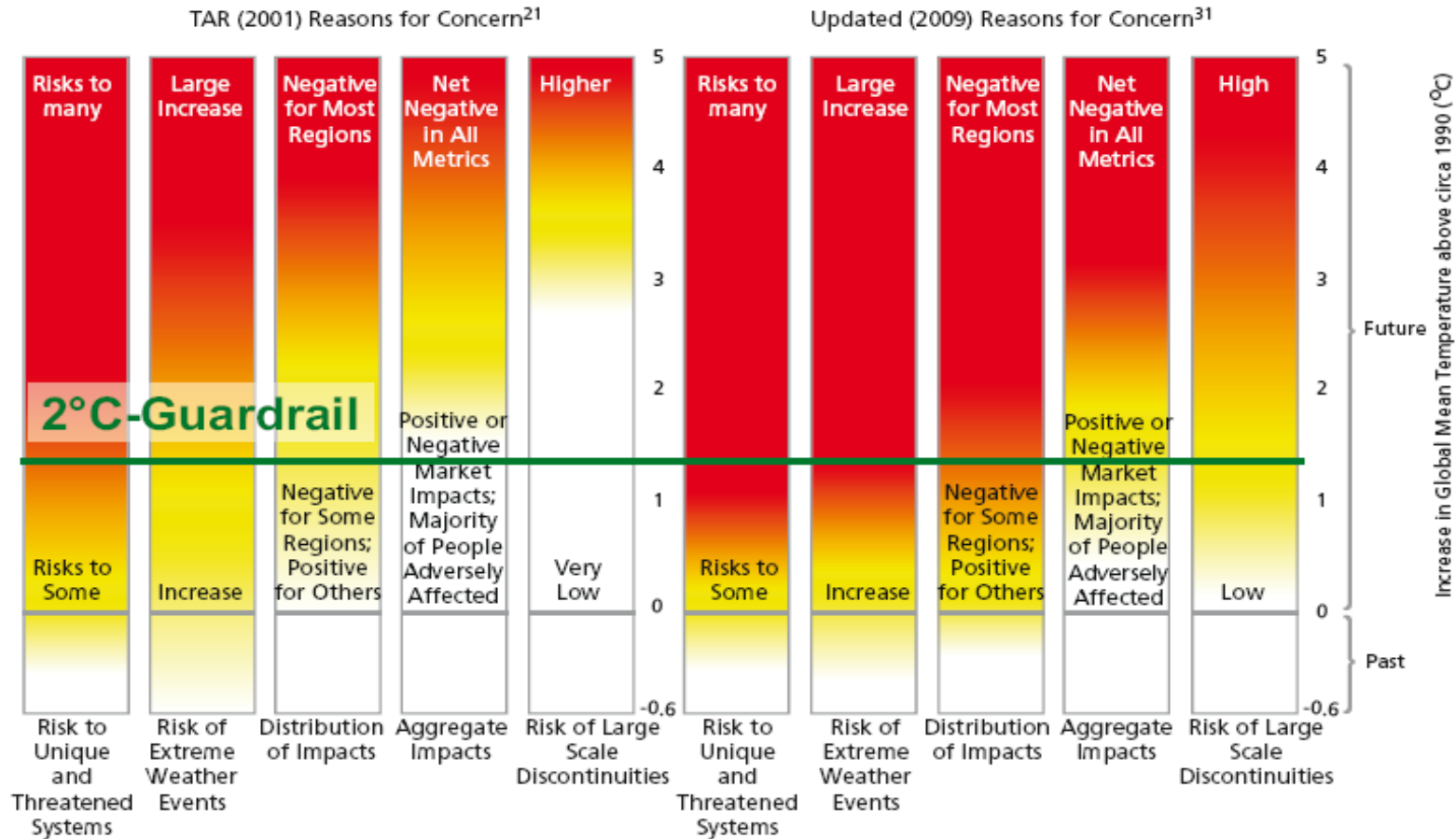


Figure 8
Diagram relating the potential impacts of climate change to the rise in global average temperature. Zero on the temperature scale corresponds approximately to 1990 average temperature, and the bottom of the temperature scale to pre-industrial average temperature. The level of risk or severity of potential impacts increases with the intensity of red colour. The 2°C guardrail is shown for reference.

Kyoto Protokol

History of Kyoto Protocol

No mandatory targets under the UNFCCC

- Developed countries agreed to a non-binding aim of reducing their emissions to 1990 levels by 2000.

1995 - Berlin Mandate, 1995- called for the negotiation of binding targets for developed countries.

1997 – Kyoto Protocol adopted, Annex I countries committed to emission reduction targets of at least 5% below 1990 levels

2001 – U.S. rejected Kyoto Protocol

2005 – Kyoto Protocol entered into force, after Russia ratified the Protocol

2008-12 – First commitment period to achieve emission reduction targets

183 countries and the EU have ratified the Kyoto Protocol. Among Annex I countries, Australia ratified the Protocol in 2007 but US remains outside

Objectives and implementation mechanisms

Emissionsreduction targets:

- u 5.2% reduction of emissions from Annex I in 2008-12 compared with 1990
- u 30% reduction compared to BaU

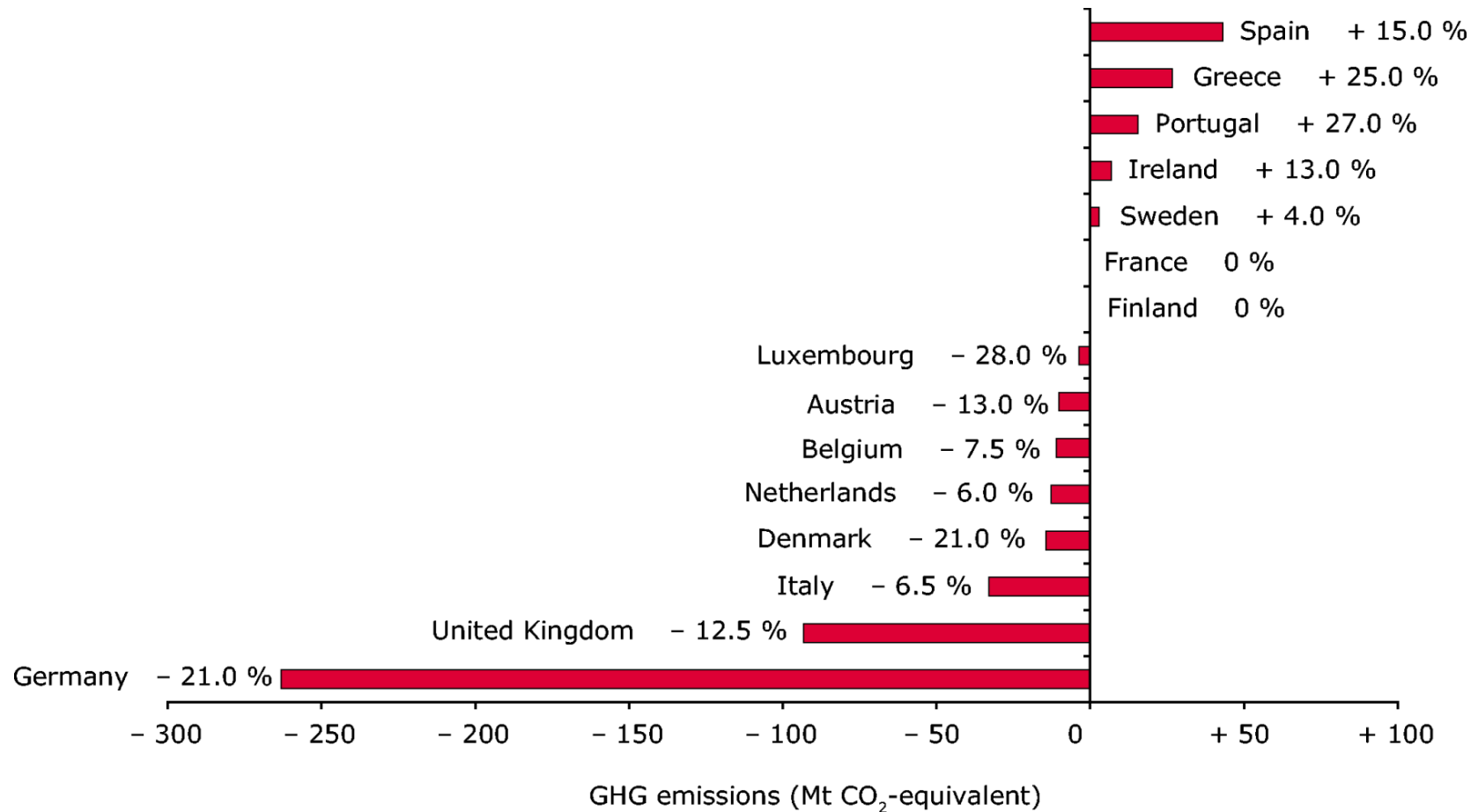
Implementation “mechanisms”

- u Clean Development Mechanism (CDM)
- u Joint Implementation
- u Emissions trading

Emission Reduction Targets for Annex I Countries

Country	Binding Target (2008-2012)
EU-15 (EU Bubble)	-8%
Bulgaria, Czech Republic, Estonia, Latvia, Liechtenstein, Lithuania, Monaco, Romania, Slovakia, Slovenia, Switzerland	-8%
USA	-7%
Canada, Hungary, Japan, Poland	-6%
Croatia	-5%
New Zealand, Russian Federation, Ukraine	0
Norway	+1%
Australia	+8%
Iceland	+10%

Emission Reduction Burden Sharing Among EU-15



CO₂ markeder globalt

Global carbon market

- fragmented market

Allowance market (cap and trade system)

- Emission allowances are defined by regulations at the international, national, regional or firm level - Kyoto-ET, EU-ETS, Domestic: UK, Japan, Canada, Korea. Firms: BP, Shell
- Linkage between EU ETS and project-based mechanisms

Project-based (baseline and credit system)

- Emission reductions are created and traded through a given project or activity (JI and CDM)

Voluntary market

- Individuals and companies account and trade their greenhouse gas emissions on a voluntary basis (carbon compensation and travel compensation schemes)
- Several companies expressed interest in buying project-based credits (CERs and ERUs)

Markets are likely to emerge over time as agreement widens

Carbon markets surpassed US\$100 billion by the end of 2007...

**Allowance markets
(US\$ million)**



New South Wales
Certificates
220



**Project-based transactions
(US\$ million)**



JI
500



Voluntary market in 2007 – niche segments (US\$ million)

Chicago Climate Exchange
70



Voluntary & retail
270



Source: WB State and Trends of the Carbon Market 2008, Reuters 2008

Carbon market development

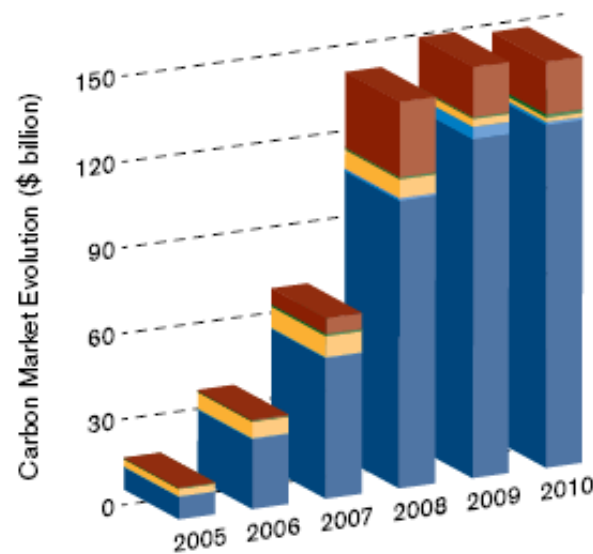
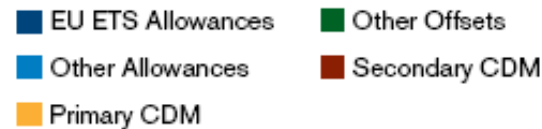
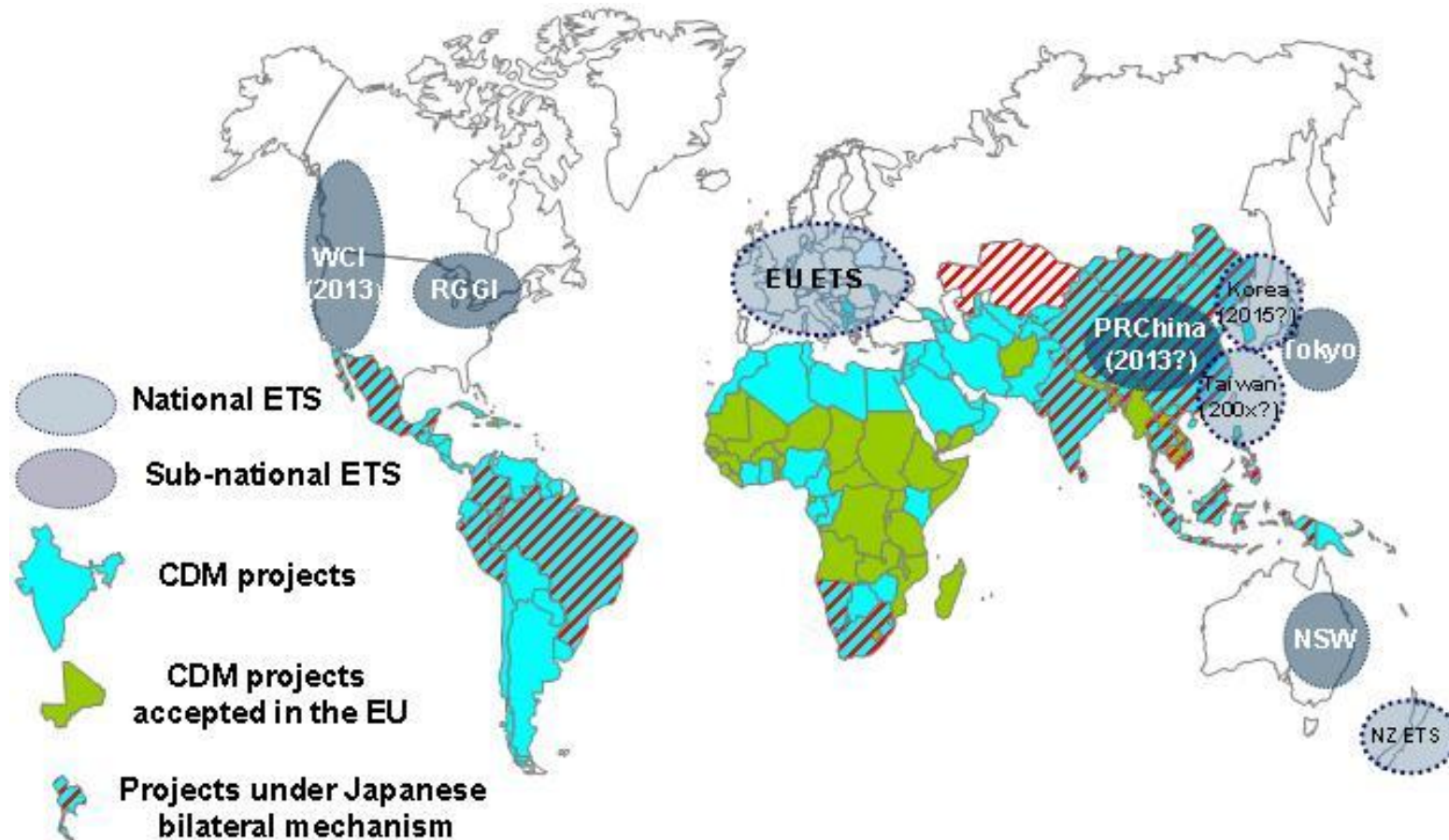


Figure 1. Carbon Market at a Glance, Market Values, 2004-10



Sources: World Bank, Thomson Reuters Point Carbon, Bloomberg New Energy Finance, and Ecosystem Marketplace

Fragmentering af CO₂ markedet



Source: Axel Michaelowa in *Perspectives* 2011, Forthcoming

CO₂ handel i EU

EU ETS – i grundtræk

EU beskriver ETS som et fleksibelt, markeds-baseret system:

- Startede I 2005 for at hjælpe EU medlems lande med at opfylde deres fælles Kyoto reduktionsmål
- EU ETS er det største i verden af sin slags (12,000 virksomheder)
- Opdelt i faser der dækker på hinanden følgende tidsperioder
- Dækker (i fase 2: 2008-12) energi-intensive installationer i sektorer såsom elektricitet, jern og stål, papir og masse, metal.
- Ikke-omfattede sektorer er bla. kemikalier, transport, husholdninger og små installationer
- EU-ETS dækker ca. 50% af EU's CO₂ udledninger svarende til ca. 40% af EU's samlede drivhusgas-emissioner
- National Allokerings Plan (NAP) for hver fase for hvert land
- Cap and Trade (= 'kvote' og handel)

Tre faser af EU-ETS

- **Fase I** løb fra 1 januar 2005 til 31 december 2007 og var en 'læringsfase'
- **Fase II** løber fra 1 januar 2008 til 31 december 2012 og inkluderer reviderede monitorerings og rapporterings regler, mere stringente reduktionsmål og additionelle kilder til udslip
- **Fase III** vil løbe fra fra 1 Januar 2013 til 31 december 2020 og bringer store forandringer, inklusiv harmoniserede allokeringer metoder og additionelle drivhusgasser og kilder

Tre faser af EU-ETS

- **Fase I** løb fra 1 januar 2005 til 31 december 2007 og var en 'læringsfase'. Problemer med design fejl såsom decentral, gratis overallokering og prisfald.
- **Fase II** løber fra 1 januar 2008 til 31 december 2012 og inkluderer reviderede monitorerings og rapporterings regler, mere stringente reduktionsmål og additionelle kilder til udslip.
- **Fase III** vil løbe fra fra 1 Januar 2013 til 31 december 2020 og bringer store forandringer, inklusiv harmoniserede allokerings metoder og additionelle drivhusgasser og kilder.

2008-12: Kyoto perioden

- Allokeringstilgang: 90% af kvoterne tildeles gratis, 10% auktioneres
- Sanktioner og straf:
Pris = € 100/over mål ton CO₂
- Begrænsninger af 'offsets': max. 10% af medlemslandenes totale kvote må komme fra brug af Kyoto's fleksible mekanismer
 - kvalitative begrænsninger: minus brug af atomkraft eller LULUCF (=skov og landskabs) kreditter

2013-2020: EU ETS fase 3

- Allokeringstilgang: Én central EU kvote, der falder med 1,74% årligt fra 2013. 100% auktonering af kvoter for elektricitets installationer, stigende grad af auktonering for industrielle sektorer, differentierede krav for medlemslande med lavt BNP.
- Begrænsning af 'offsets': max. 50% af den samlede EU reduktions mål. Ubrugte CDM/JI kreditter fra fase 2 kan bruges i fase 3. Adgang til brug af 'hjemlige offsets' fra ikke kvotebelagte sektorer.
 - kvalitative begrænsninger: minus brug af HFC og N₂O adipic acid og kun adgang for LDC lande

Problemstillinger for CO₂ handel, særligt 'offsets'

- hjemlig EU reduktion versus omkostnings-effektiv global reduktion
- miljømæssig og social integritet af 'offsets', særligt CDM (additionalitet, kvalitative restriktioner af LULUCF, HFC-23 og N₂O, svagt bidrag til bæredygtig udvikling i værtslande, undgå skader på mennesker og miljø)
- bidrag fra udviklingslandene til globale reduktioner vs. 'offsetting'
- 'carbon leakage' / konkurrenceevne

Fase 3 efterspørgsel for 'offsets':

- EU's 20-20-20 mål: 20% reduktion i drivhusgasser i 2020 ift. 1990-niveau, 20% stigning i brug af vedvarende energi i 2020, 20% reduktion i energiforbrug gennem forbedret energi effektivitet i 2020.
 - VE og EE målene alene anslås at give en reduktion i udslip af drivhusgasser på 25% ift. 1990-niveau. Kun et 30% EU reduktionsmål vurderes at give en forøget efterspørgsel efter 'offsets' i fase 3 (Egenhofer, *Perspectives 2011*, forthcoming)

Clean Development Mechanism (CDM)

CDM Basics

CDM allows Annex I countries meet part of their emission reduction requirements for first commitment period 2008-2012 at lower costs in non-Annex I countries than could be done domestically.

Annex I countries are allowed to acquire Certified Emission Reductions (CERs) by implementing GHG mitigating CDM projects in non-Annex I countries.

Selling CERs is an additional stream of cash inflow to the project, which improves project economics.

ODA (Official Development Assistance) funds can not be used in CDM investments.

CDM projects shall support sustainable development in the host country

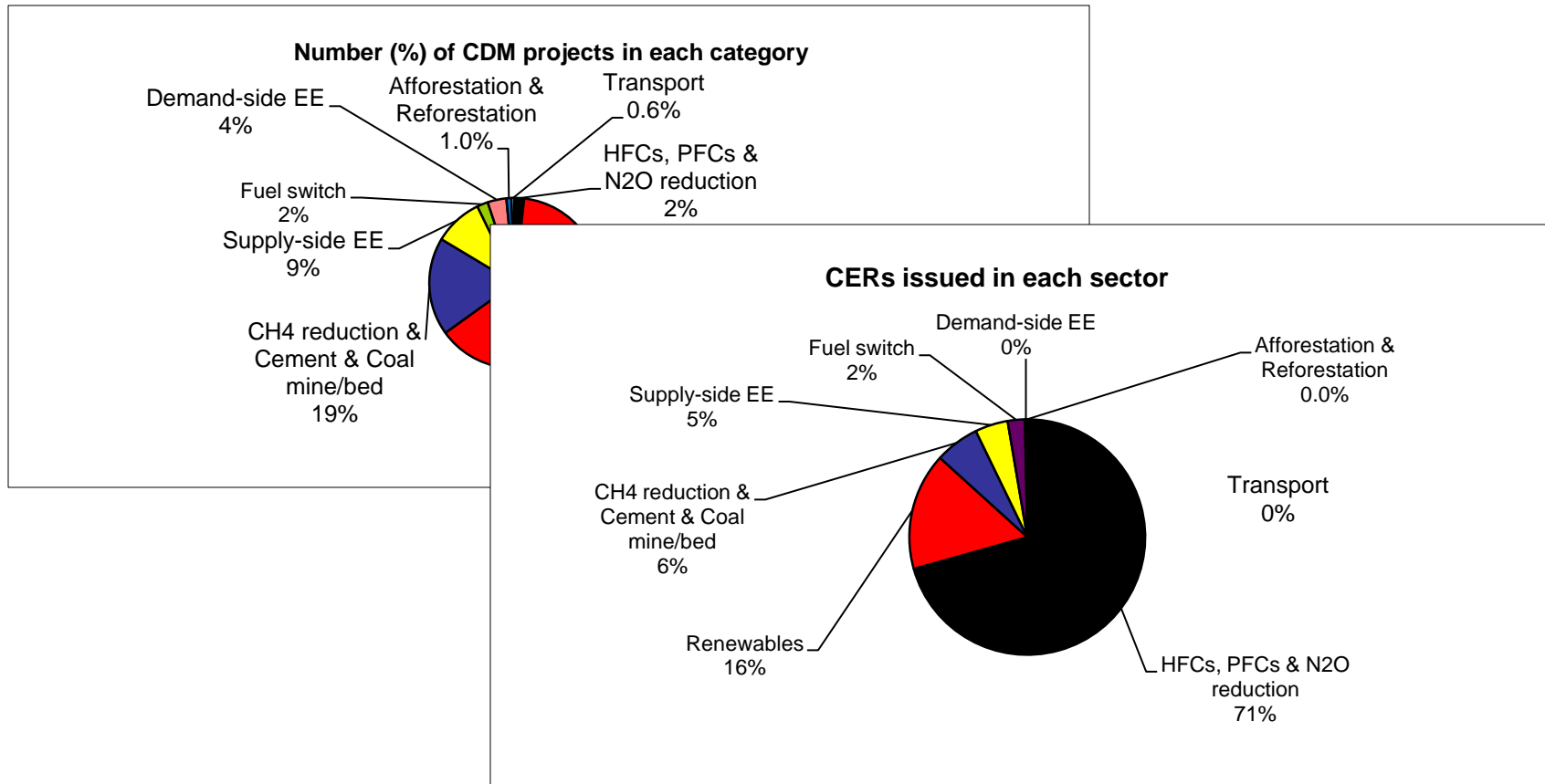
CDM is considered one of the major achievements of Kyoto

Number of CDM projects

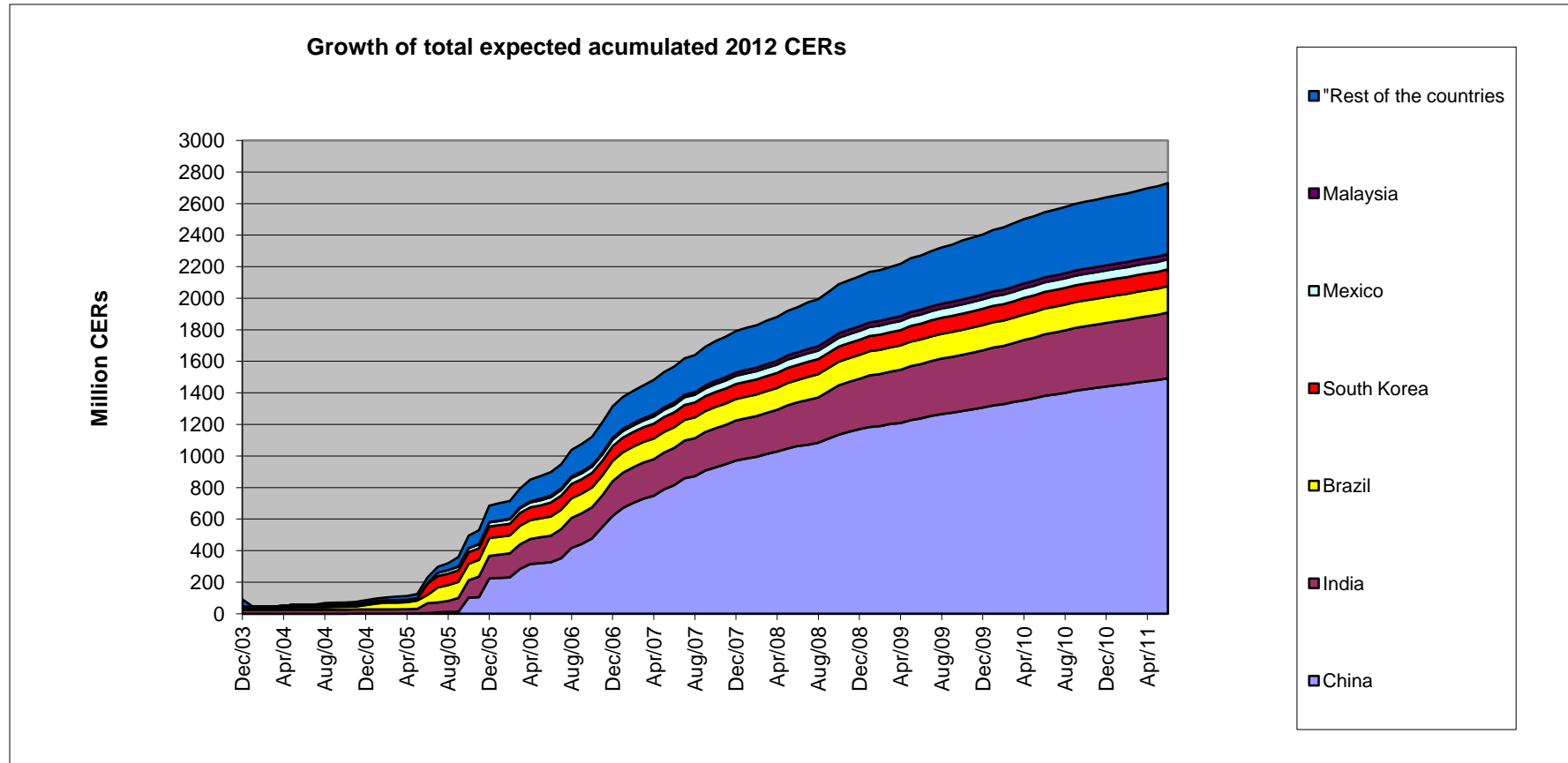
Status of CDM projects	Number
At validation	3323
Request for registration	64
Request for review	48
Correction requested	3
Under review	
Total in the process of registration	115
Withdrawn	53
Rejected by EB	206
Validation negative by DOE	194
Validation terminated by DOE	986
Registered, no issuance of CERs	2295
Registered. CER issued	1197
Total registered	3492
Total number of projects (incl. rejected & withdrawn)	8369

Source: UNEP Risoe Centre CDM Pipeline dated 1 oktober 2011

Types of CDM projects



Host countries of CDM projects



Source: UNEP Risoe Centre CDM Pipeline dated 1 July 2011

CDM project example

Kuyasa, Cape Town, South Africa

- low-income housing retrofit in 2309 RDP houses
- Install SWH, insulated ceilings, and CFL lighting
- first registered SA project
- first Gold Standard project in housing sectors



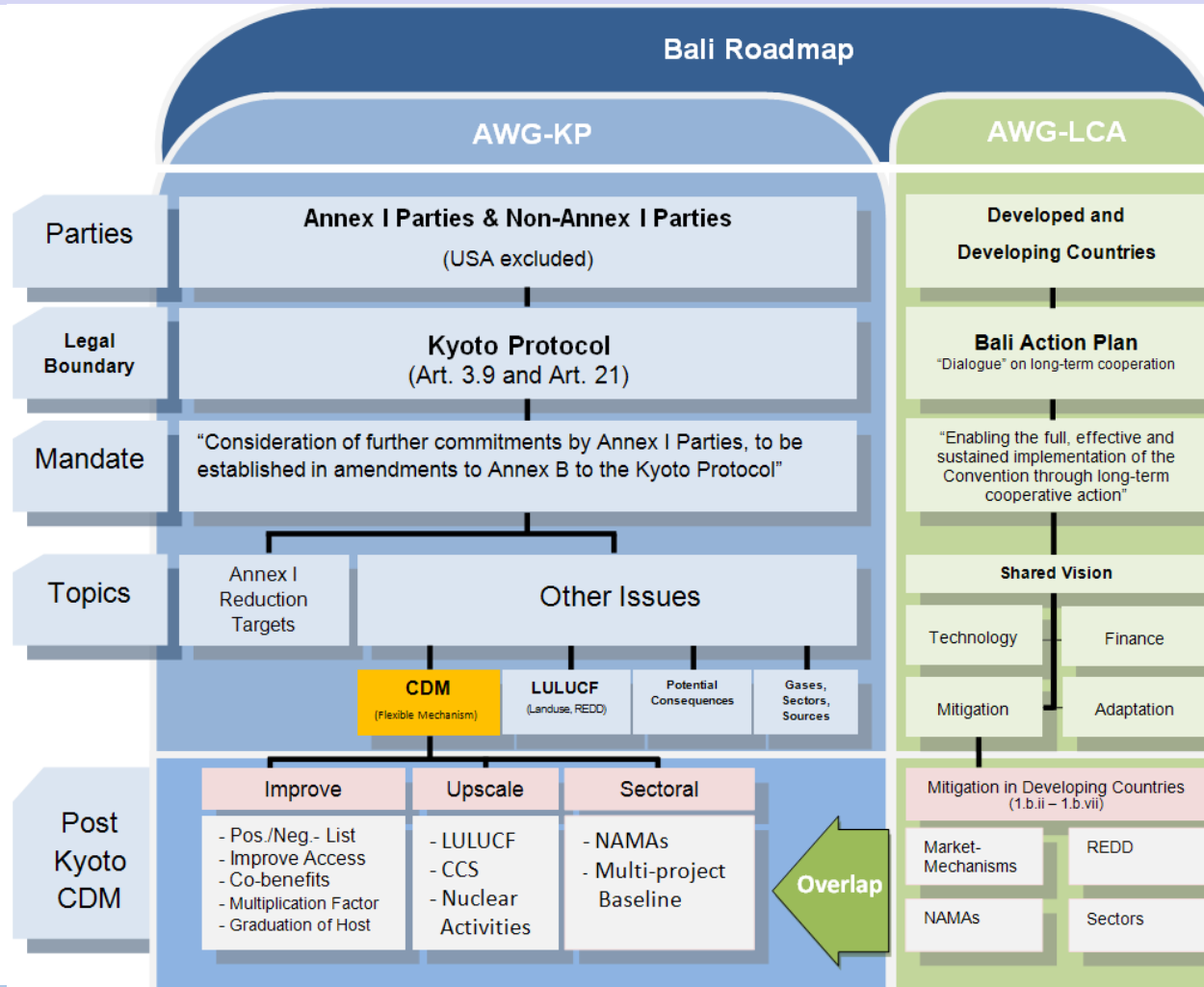
Proposal to upscale to a programmatic CDM project:

- VISION: A clearing house which enables and incentivises access to financing for clean energy services in all low income housing in South Africa
- MISSION: To establish a Facility which 1) administers a CDM programme, and 2) leverages and manages access to the additional upfront financing required for the incremental capital costs of sustainable energy interventions in low income housing



Forhandlingerne i Durban, COP-17

The post-2012 negotiation structure and agenda



Typen af nye markedsmekanismer – under forhandling & udvikling

	What	Objective	Who
Programmatic CDM	Aggregation of many/all possible activities in a sector or sub-sector, initiated by political or similar actor	Assisting Annex I countries in achieving targets cost-efficiently, contributing to sustainable development of host country	Private entities, governments
Standardised Baselines, “Sectoral CDM”	Setting a baseline for all installations or activities in a sector or sub-sector in a country	Assisting Annex I countries in achieving targets cost-efficiently, contributing to sustainable development of host country	Private entities, governments
Sectoral Crediting	Decoupled from specific activities, credits are awarded if emissions from a sector are kept below a pre-defined level	Achieving large-scale net emission reductions in developing countries in the context of sustainable development, and assisting Annex I countries in achieving targets cost-efficiently	Governments, private entities?
Sectoral Trading	Decoupled from specific activities or policies, allowances are issued ex ante based on a sectoral target, penalty for missing target	Achieving large-scale net emission reductions in developing countries in the context of sustainable development, and assisting Annex I countries in achieving targets cost-efficiently	Governments, (private entities?)
NAMA Crediting	Crediting of specific NAMAs or based on sectoral thresholds	Achieving large-scale net emission reductions in developing countries in the context of sustainable development, and assisting Annex I countries in achieving targets cost-efficiently	Governments, (private entities?)

Source: Wolfgang Sterk, *Perspectives* 2011, forthcoming



Thank you!!

UNEP RISØ CENTRE



More information:
<http://uneprisoe.org>
<http://cd4cdm.org>
<http://cdmbazaar.net>
<http://cdmpipeline.org>

