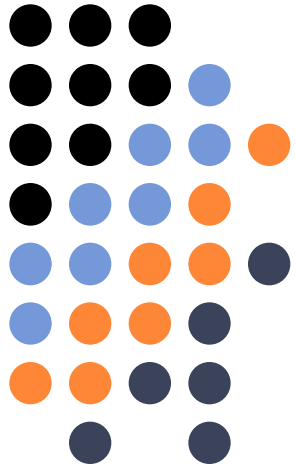
Status and Outlook of Global Carbon Market

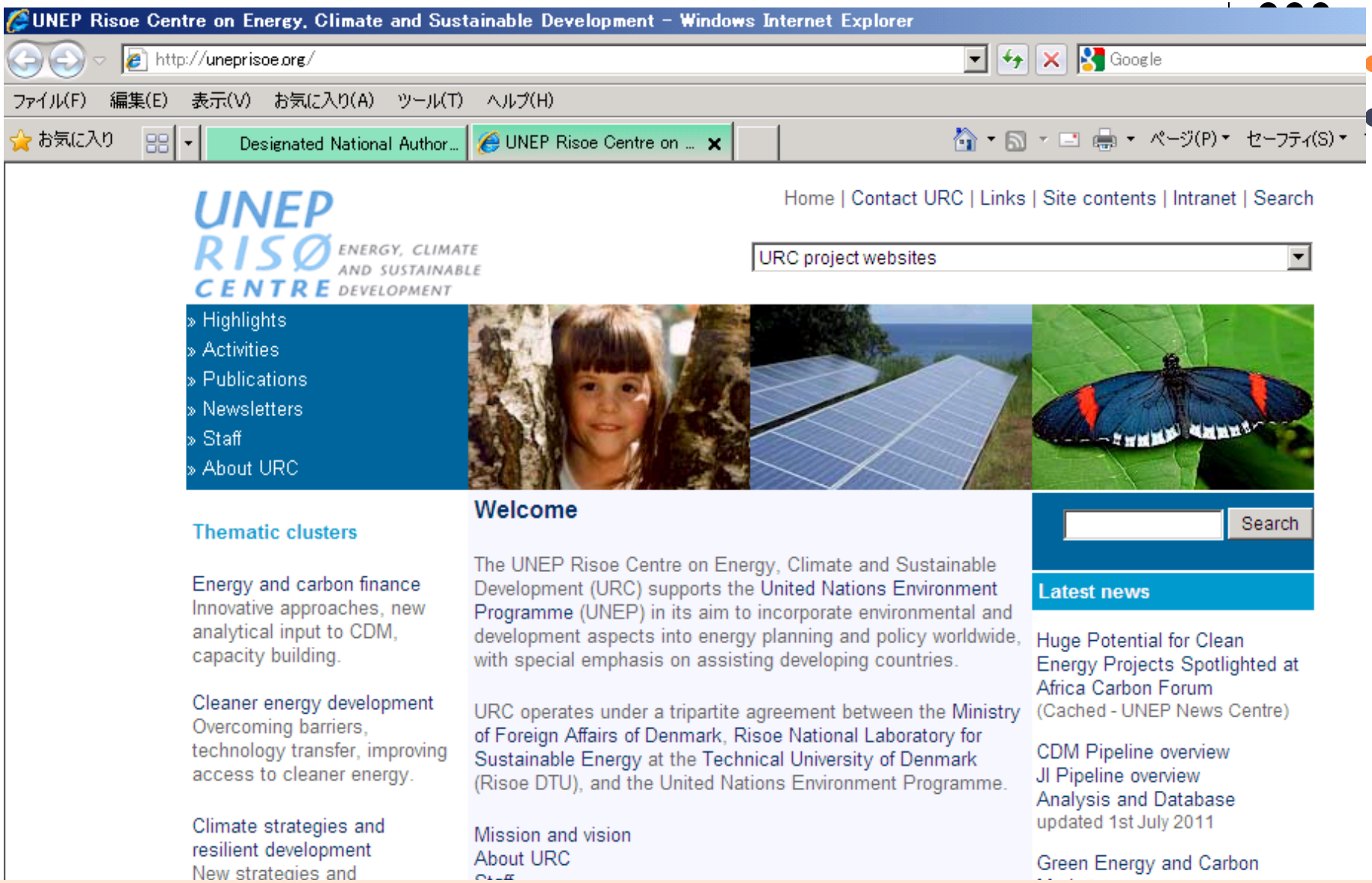
Presentation prepared for

Private Sector Seminar in Sri Lanka

July 21, 2011

JICA Expert Team



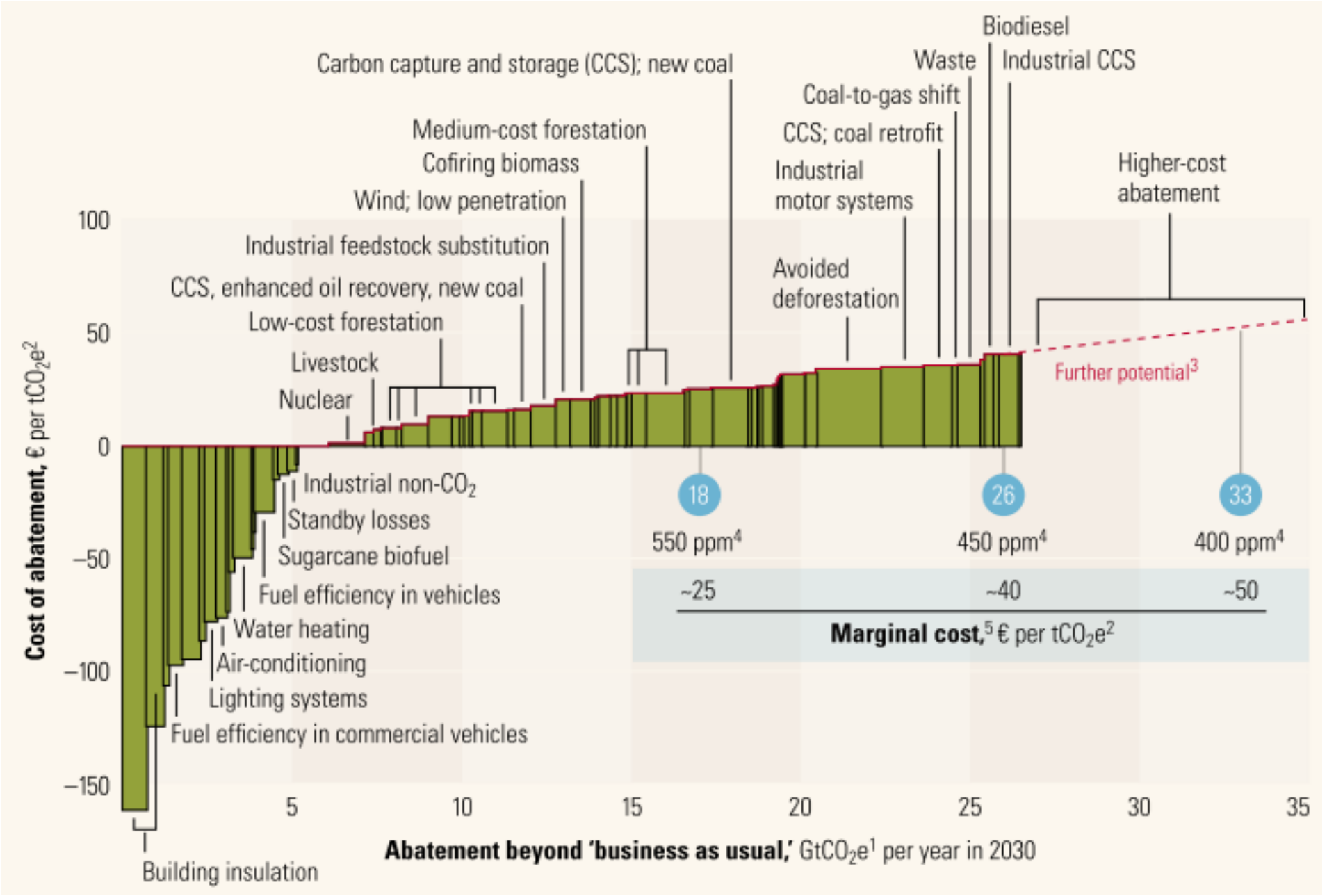


http://uneprisoe.org/

Content

Status and Outlook of Carbon market

- Demand of Carbon Credit
- Supply of Carbon Credit
- “Carbon Credit Pricing 101”
- Environment of “Environment” markets



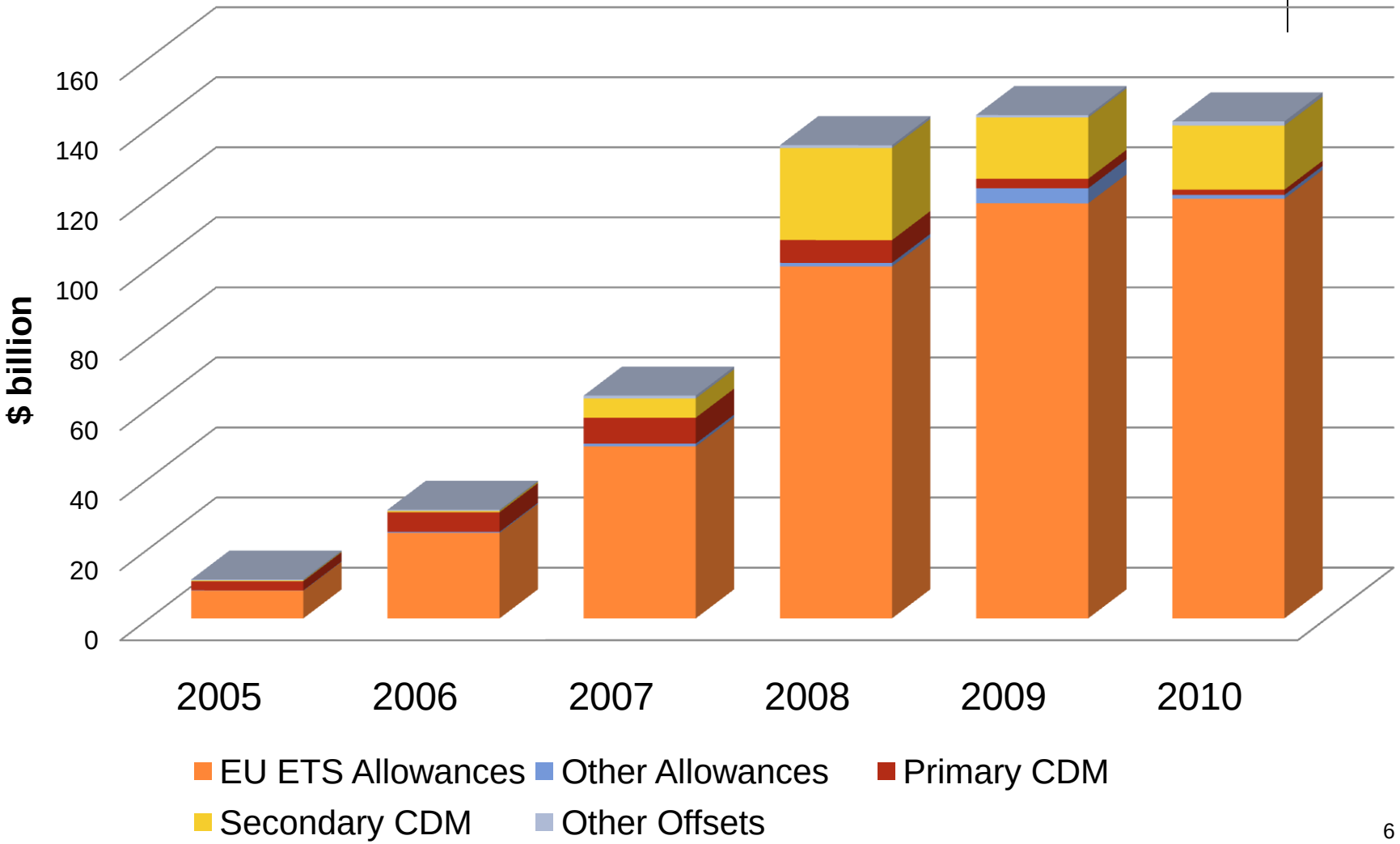
Source: Enkvist, et al. *A cost curve for greenhouse gas reduction*, McKinsey Quarterly, 2007 No.1

Function of Carbon Credits

- Mobilize resources to the cost-effective measures to achieve the most economical society-wide emission reductions.

	Taj Plant Reduction Cost: $/t 10	Cinnamon Plant Reduction Cost: $/t 25
Case A Reduce 400tCO2 200t each	200t $/t 10 x 200t = $2,000	200t $/t 25 x 200t = $5,000
Case B Reduce 400tCO2 On;y by Taj	400t $/t 10 x 400t = $4,000	0t
Case C Spend $4,000 as a society & reduce 400t CO2.	600t $/t 10 x 600t = $6,000 $6,000 - $2,000 = $4,000	BUY 200t of credit ▲$2,000 $/t 2,000 ÷ $/t10 = 200t

Carbon Market Status
Recovery & Uncertainty



Source: “Status and Trends of the Carbon Market 2010” Table 3

Who's buying?

		Potential Demand	Contracted CERs and ERUs		AAUs	Residual Demand
			nominal	adjusted for performance		
		MtCO2e	MtCO2e	MtCO2e	MtCO2e	MtCO2e
		a		b	c	d = a - (b+c)
EU						
	Government (EU-15)	315	270	132 (48.9%)	54	129
	Private Sector (EU ETS)	750	1,598	751 (47.0%)	0	-1
Japan						
	Government	100	34	21 (61.8%)	76	3
	Private Sector	200	338	159 (47.0%)	115	-74
Rest of Annex B						
	Government	22	34	21 (61.8%)	1	1
	Private Sector	5	3	1 (33.3%)	0	4

Source: Status and Trends of the Carbon Market 2010, The World Bank, Table 6

Carbon Market Status

2009

- Lehman Shock
- Financial drawbacks impacts CDM.
- CDM Project origination reduced.
- Annex I country's economy down-turn results in less demand for credits.
- Trade down-turn over all stringent forcing players to exit the businesses.

2010

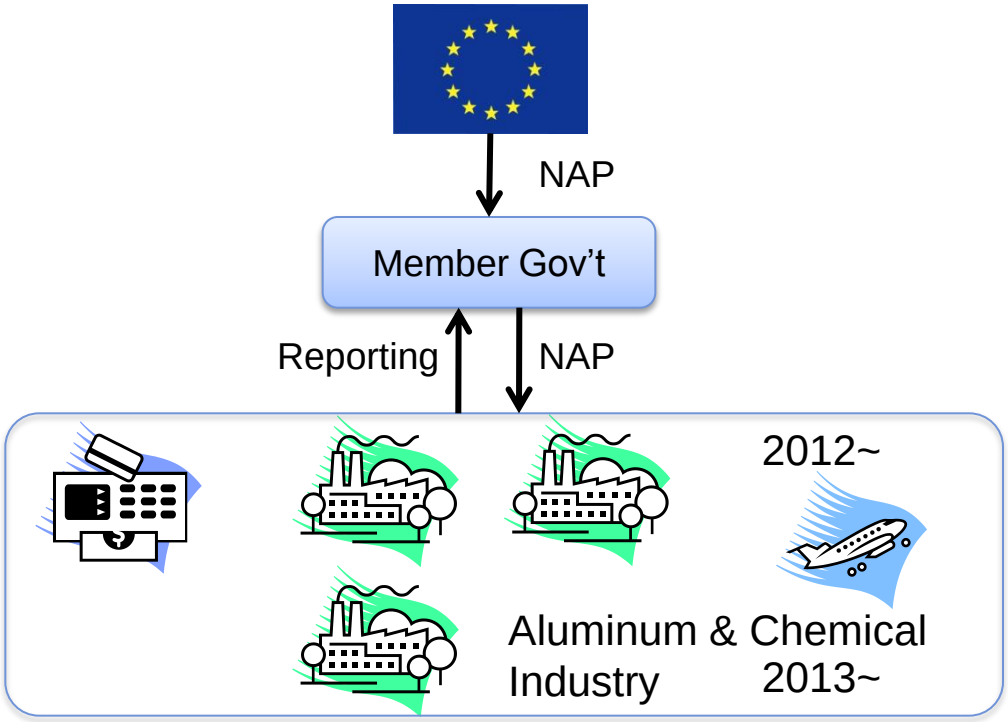
- Subtle recovery
- The growth in *non-CDM* renewable energy projects in Europe, US and domestic market outgrows the CDM project development.
- Rule modifications are made in insignificant details, but not drastically improve performance of CDM.

2011

- Final stretch to the end of 1st commitment period.
- No significant improvement or forecast provided regarding "Post Kyoto", so far.
- Japan hit by a earthquake and shut-down Nucs.
- Germany shut down Nucs followed by Incidents.

Demand Side: Europe

- In the middle of EU-ETS Phase 2
- Phase 2 period continues up to 2012
- Phase 3 sets as 2013 – 2020.



EU-ETS allows participants to use CERs to attain its allowance limits. However, the amount of CER adopted is limited to 6%.

The quality of CER used in the scheme also restricted.

◆Hydro: <10MW, WDC check requires if it is larger.

◆No more industrial gas origin credits approved for EU-ETS

Demand Side: Japan

Uncertainty 1
Does Japan maintain Kyoto target “by all means”?

Japanese Government still maintain/made no calibration for its 25% reduction targets after 3/11. Electricity alternation from nuclear to fossil power lead to economy-wide surge of GHG emissions.

Uncertainty 2
How does economic downturn and loss of power affect emissions?

The World Bank expects minimal growth for Japanese GDP for 2011 (+1.8%→+0.1%). Further downturn, slows down economy and reduce CO2 emissions in the economy.

Uncertainty 3
Does contracted GIS project implemented successfully?

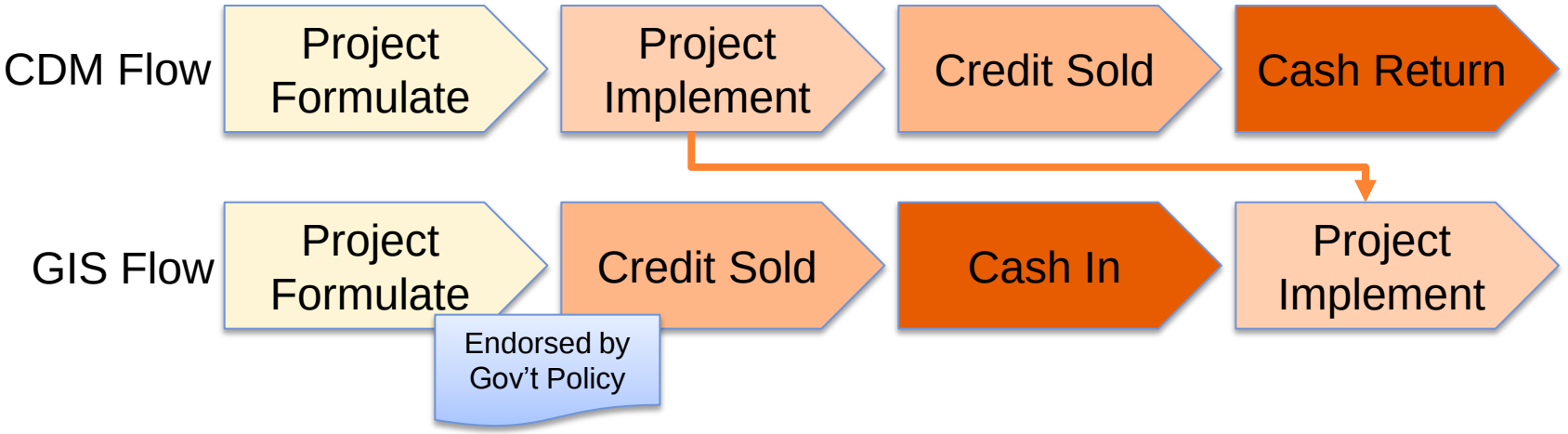
Origin	Amount
Slovakia	15 Mil t
Ukraine	30 Mil t
Czech	40 Mil t

Will these project stably yield AAUs as it was planned?

Supply Side:
GIS, Bi-lateral Offset Mechanism & More

GIS (Green Investment Scheme)

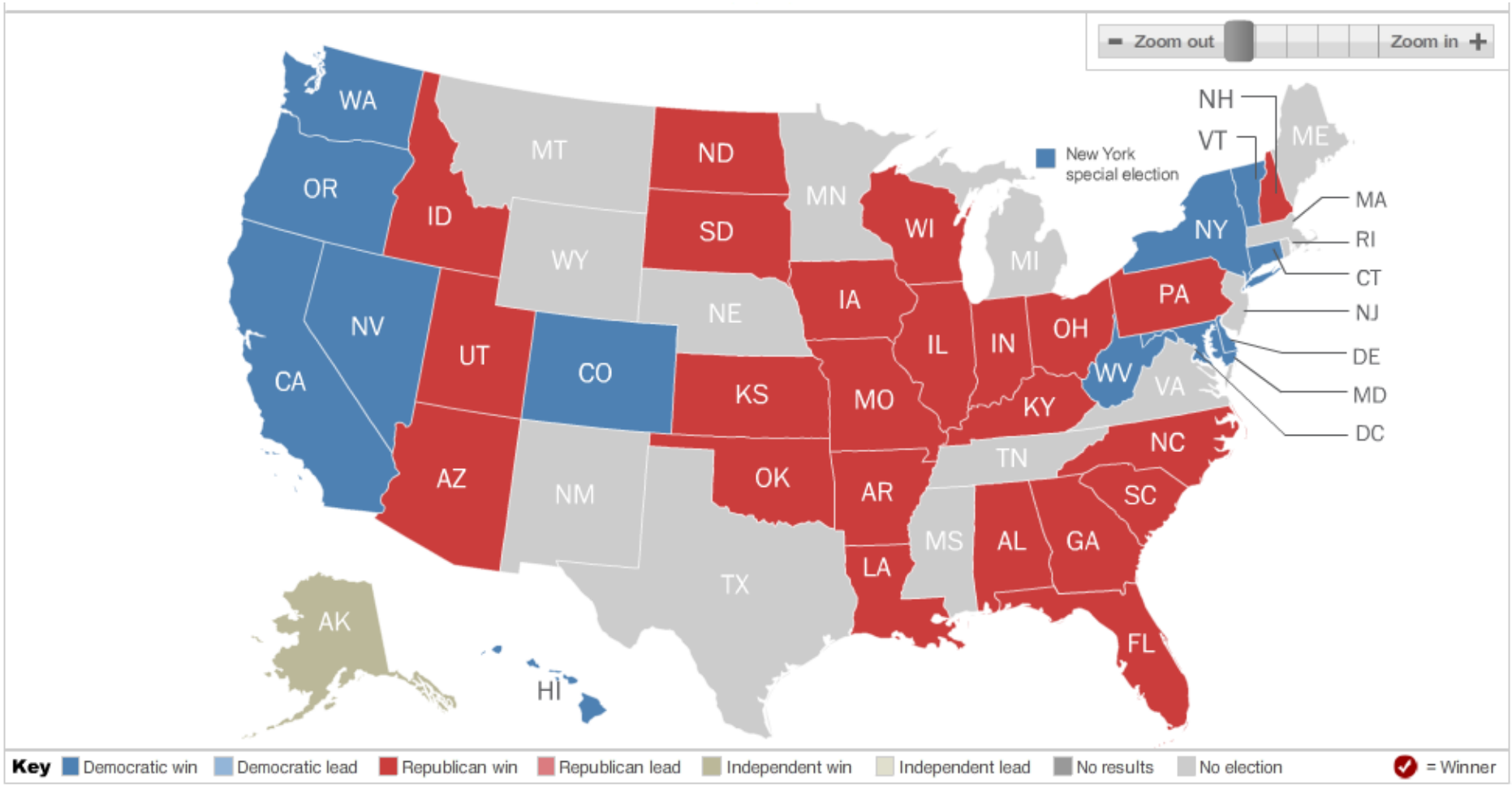
- International Emission Trading outlined under Kyoto Protocol between developed nations.
- Trade surplus allowances called “Hot-Air”.
- Japan purchased credit through GIS 135 Mil tones. (275 Mil tons from CDM).



Bilateral offsetting mechanism

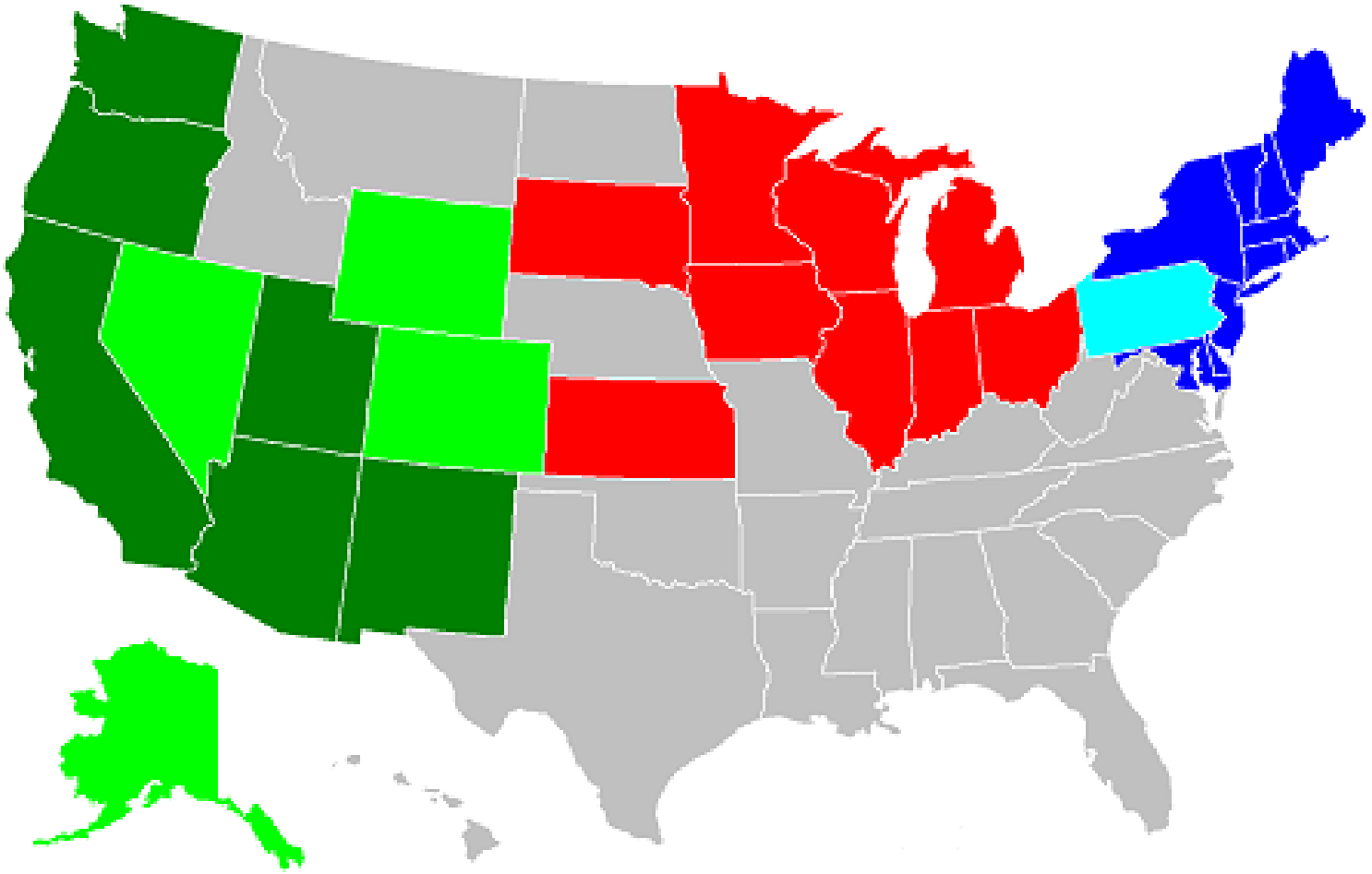
- Project implemented under bilateral agreement can yield credits
- The projects has to be “MRV”ed to yield credits.
- Projects not covered by CDM can implemented through BOM.

Blue = Democratic Party Lead, Red = Republican Party Lead

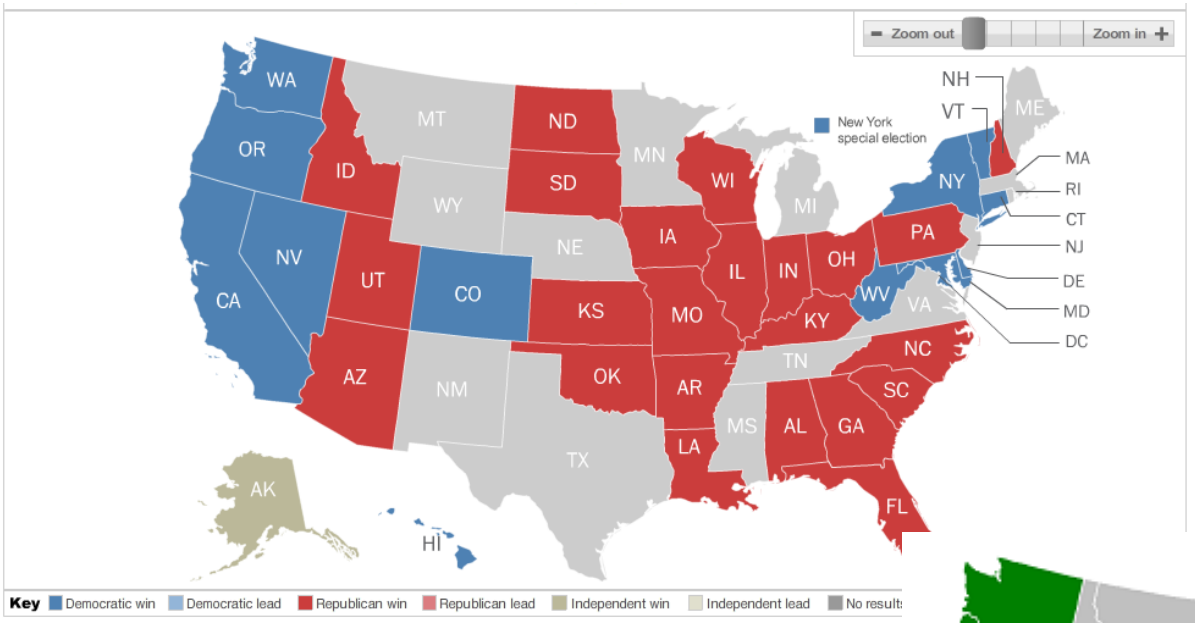


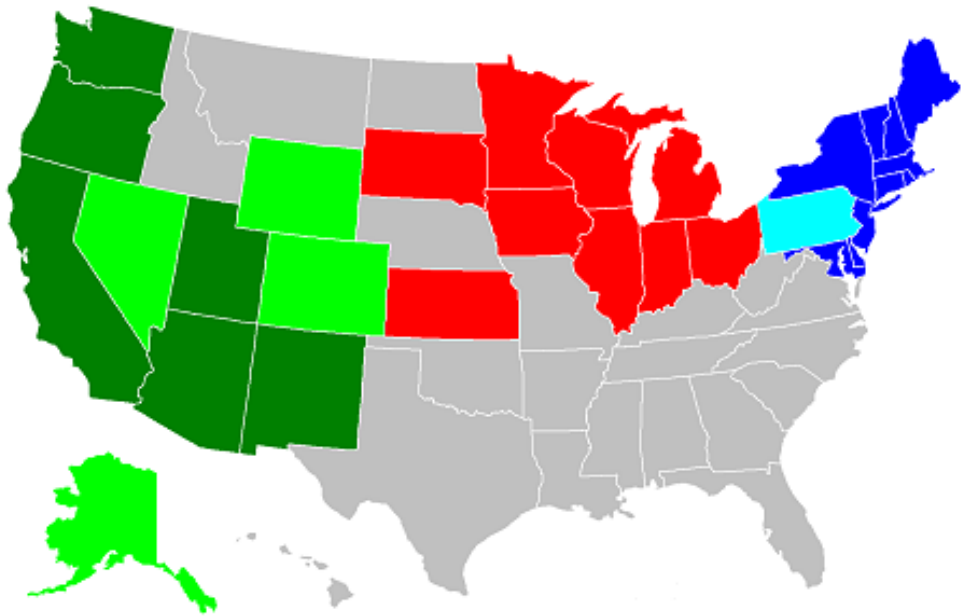
Source: Washington Post Website

Blue = Regional Greenhouse Gas Initiative
Red = Midwestern GHG reduction Accord
Green = Western Regional Climate Action Initiative



Source: No Right Turn website: http://norightturn.blogspot.com/2007/11/climate-change-working-around-bush.html





US is also prepared at the state level to cut emissions, regardless ideological differences.

Demand Side: USA, Australia

USA

Likelihood of ETS implementation

- US economy's recovery
- Recovery of president's leadership

Republican States even start to consider introduction of ETS

- Texas
- Florida
- Colorado
- Utah

The demand for project-based reduction efforts tend to focus on Latin American countries and not in Asia or Africa.

Australia

- Girrard Administration announced an introduction of cap & trade scheme from July 2012.
- The credit priced at A$23(LKR2,720) per ton of CO2.
- The carbon emission cuts 5% from 2000 by 2020.
- Targets are set for
  - ◆Stationary combustion
  - ◆Waste
  - ◆Rail
  - ◆Domestic aviation
  - ◆Shipping
  - ◆Off-road transport
  - ◆Industrial process
  - ◆Fugitive emissions

VER: Alternative Market?

- VER market does not go well due to lack of demand.
- Compliance buyers are not interested in VERs, because one cannot use it for fulfilling their reduction target.
- Demands are largely in USA, but VERs are generated within US boundary to fulfill CSR.

	Volume (M tCO2)	Value (US$ Mil)	Price
pCER	211	2678	€8.95 $12.69
JI	26	354	€9.60 $13.62
Voluntary Market	46	338	€5.18 $7.35

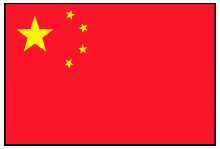
⇨ VER price stick in lower range.

CCX Daily Transactions

Updated 05/25/11

Trade Date	Vintage	Qty (contracts)	Price $/mt	Type of Transaction	CFI Delivered	Country
05/18/11	2005	20	$2.00	OTC	Forestry Offset	USA
05/16/11	2003	866	$0.08	OTC	Allowance	
05/10/11	2008	50	$1.50	OTC	Forestry Offset	USA
05/10/11	2008	28	$1.50	OTC	Forestry Offset	USA
05/10/11	2008	11	$1.50	OTC	Forestry Offset	USA
05/10/11	2007	6	$1.50	OTC	Forestry Offset	USA
05/10/11	2006	6	$1.50	OTC	Forestry Offset	USA
03/03/11	2003	358	$0.05	OTC	Allowance	
03/03/11	2004	357	$0.05	OTC	Allowance	
03/03/11	2005	358	$0.05	OTC	Allowance	
03/03/11	2006	357	$0.05	OTC	Allowance	
03/03/11	2008	1,770	$0.05	OTC	Allowance	
03/03/11	2009	9	$0.05	OTC	Allowance	
03/03/11	2010	555	$0.05	OTC	Allowance	
02/14/11	2010	1	$2.75	OTC	Organic Waste Disposal Methane Offset	USA
02/03/11	2007	200	$0.10	OTC	Renewable Energy Offset	USA
02/01/11	2008	20	$0.60	OTC	Renewable Energy Offset	Brazil
02/01/11	2008	9	$0.80	OTC	Agricultural Methane Offsets	USA
01/18/11	2007	150	$0.25	Platform	Landfill Methane Offset	USA

Supply Side: China & India



- Chinese CDM projects are overflowed in the market
- Markets are become more selective to choose Chinese projects in terms of project size, seeking other verification to prove project integrity
- Within China, there are domestic markets established to trade credits for the sake of investment.

- Unilateral CDM project owners are started to sell their credits but the contracts only up to 2012.
- Domestic energy saving efforts are implemented in parallel.
- Performance, Achieve and Trade (PAT) scheme examined by BEE(Bureau of Energy Efficiency).
  - PAT allocates a cap for 700+ industry facilities in India.
  - Energy reduction certificate will issue from 2014.

Not many people believes the two countries remain as a “supplier” of credits.

Supply Side: CDM or New CDM?

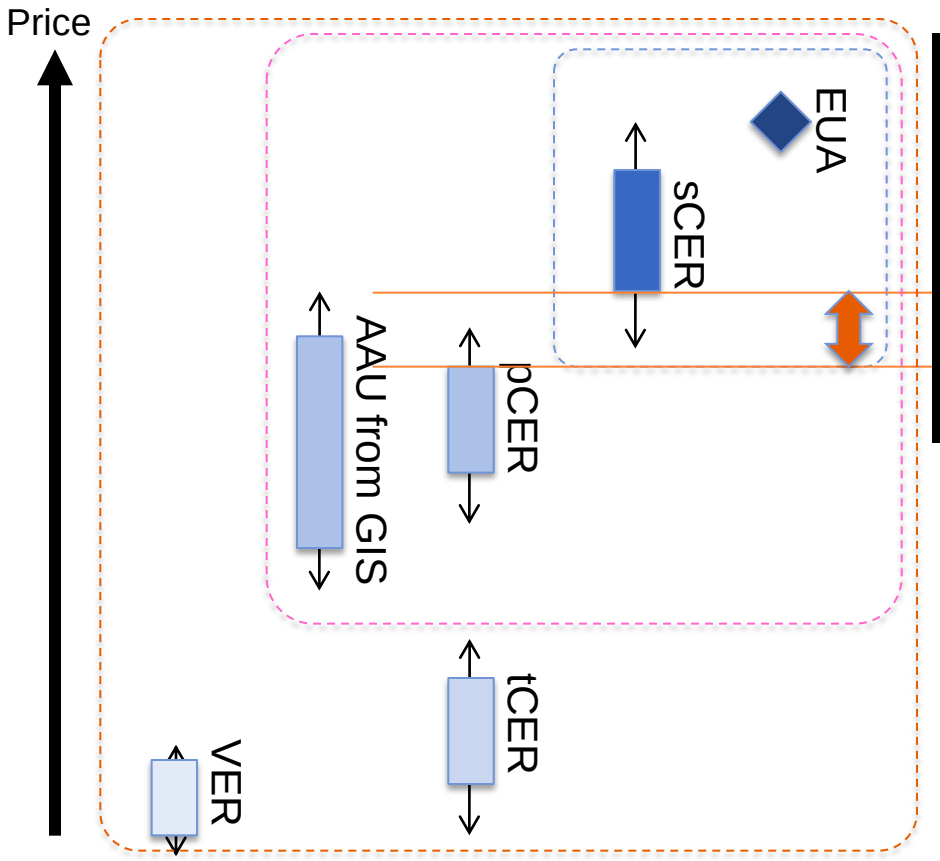
Some projects currently explored offers large amount of credit to deteriorate market balance. Would these projects development is a positive or negative??

	Registered	CER (ktCER)	% yield	Average CER (ktCER/year)
REDD	---	---	---	400~1,000
CCS	---	---	---	1,000
HFC	18	266,642	109%	14,813
Hydro	274	35,584	86%	129
Biomass	138	17,476	86%	126
LFG	59	13,352	38%	226

Source: UNEP Resoe Centre

Large amount of credit inflow distort current market balance and plunge CER price to the bottom.

Price Differences of Credits



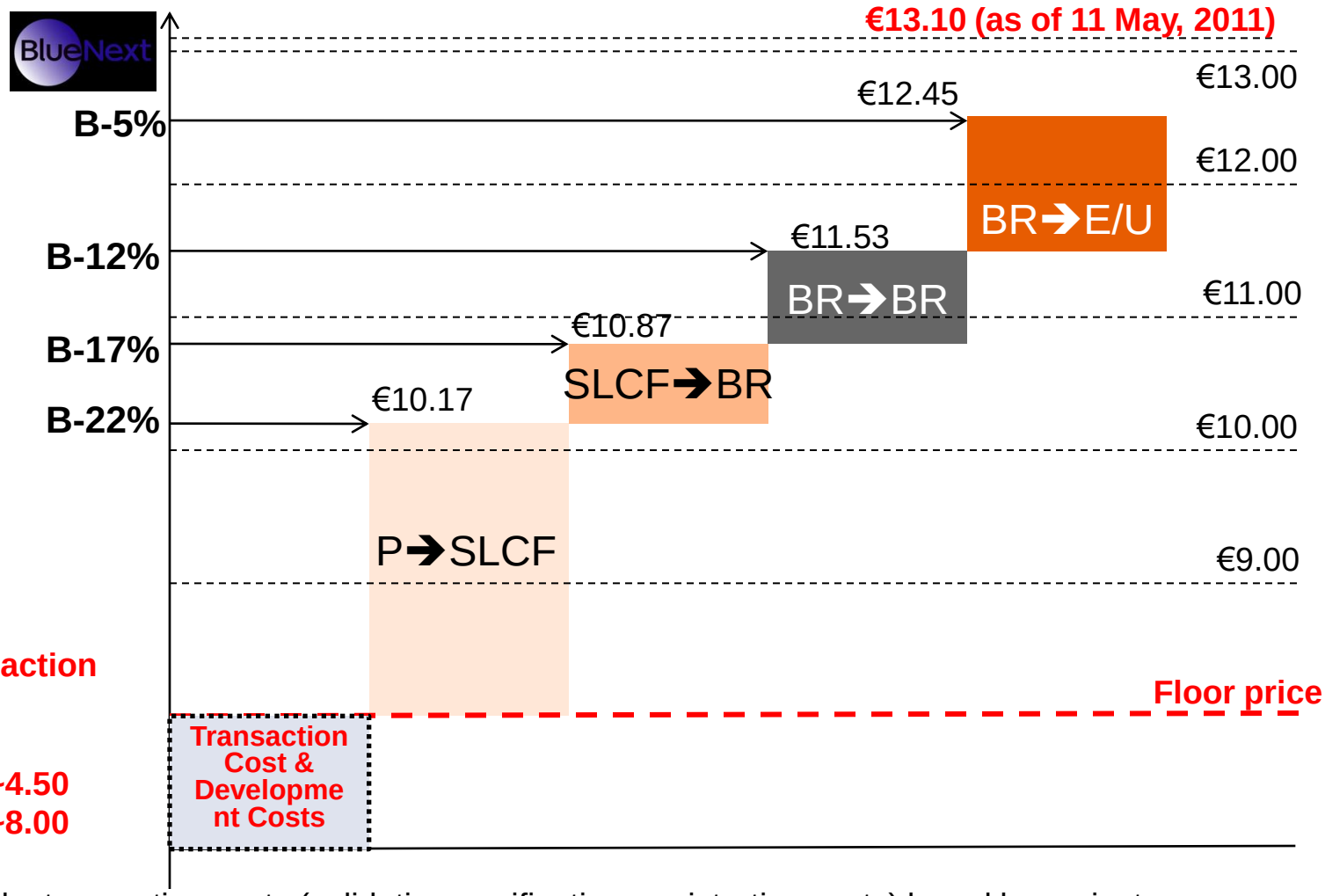
SPOT	price €/T	volume T	updated
EUA 08-12	11.96	515 000	11-07
CER	10.10	10 000	11-07
GREEN CER	10.15	115 000	11-07
ERU	10.00	0	11-07

Source: http://www.bluenext.eu/

EU-ETS	Phase II (-2012)		Phase III (-2020)	
	EUA	sCER	EUA	sCER
Barclays	13.5-24	12-18	35	20
Deutche B	25	n.a.	48	n.a.
Orbeo	18.8	15.9	30.1	n.a.

Source: World Bank 2010, Table 5

Carbon Price Structure (Example)



Floor Price
Aimed to cover transaction costs when market collapsed.
Floating: EUR 3.00~4.50
Fixed: EUR 6.00~8.00

a) Whereby transaction costs (validation, verification, registration costs) beard by project owner, the purchasing price are usually increase to compensate the expenses.
b) All payments are pay-on-delivery basis, no advance payment envisaged.
c) Detailed conditions are stipulated in ERPA.

Is Carbon Market Sustainable?

- **Global Clean Energy Investment Reached Record $243 Billion in 2010**
- Global EV number 2009 684,000 units, 2020 3,750,000 units
- Lithum battery market
  - 2010 JPY 0.4 bil 2020 JPY 313 Bil

- Could carbon market outstrip these innovation?
- How could it be co-exist?

The only thing we know about the future is that it will be different.

Peter Drucker