

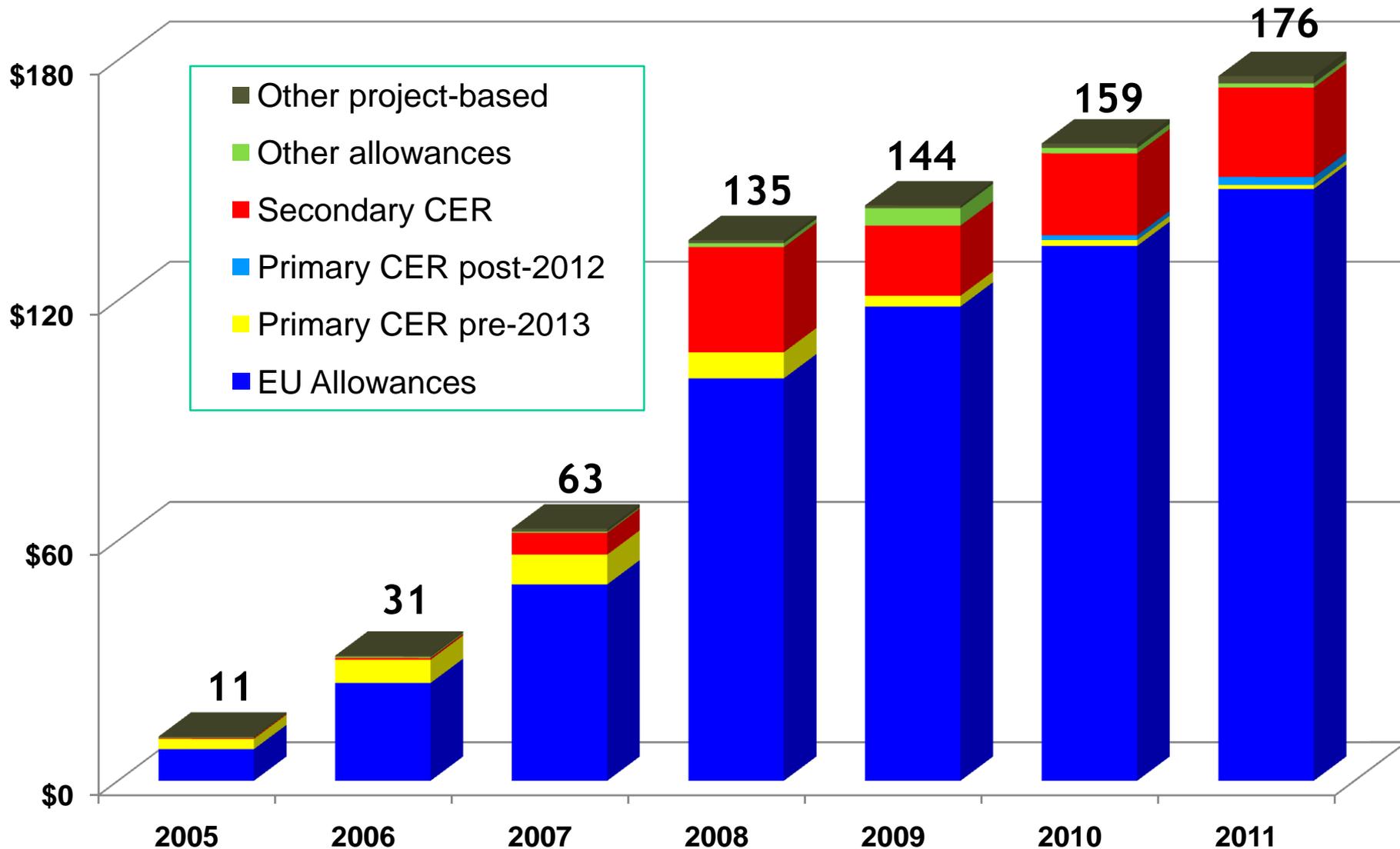
STATE AND TRENDS OF THE  
**carbon  
market**  
2012

Washington DC, May 2012



# Steady increase of global market value

(in Billion US\$)



# EU and other markets increasing value

(in Billion US\$)

post-2012  
CDM  
2.0

+63%

New Zealand

0.4

+249%

N. America

0.5

-18%

Secondary  
CDM + JI  
23.1

+12%

EU ETS Allowances  
147.8

+11%

pre-2013 CDM

1.0

-32%

JI

0.3

-36%

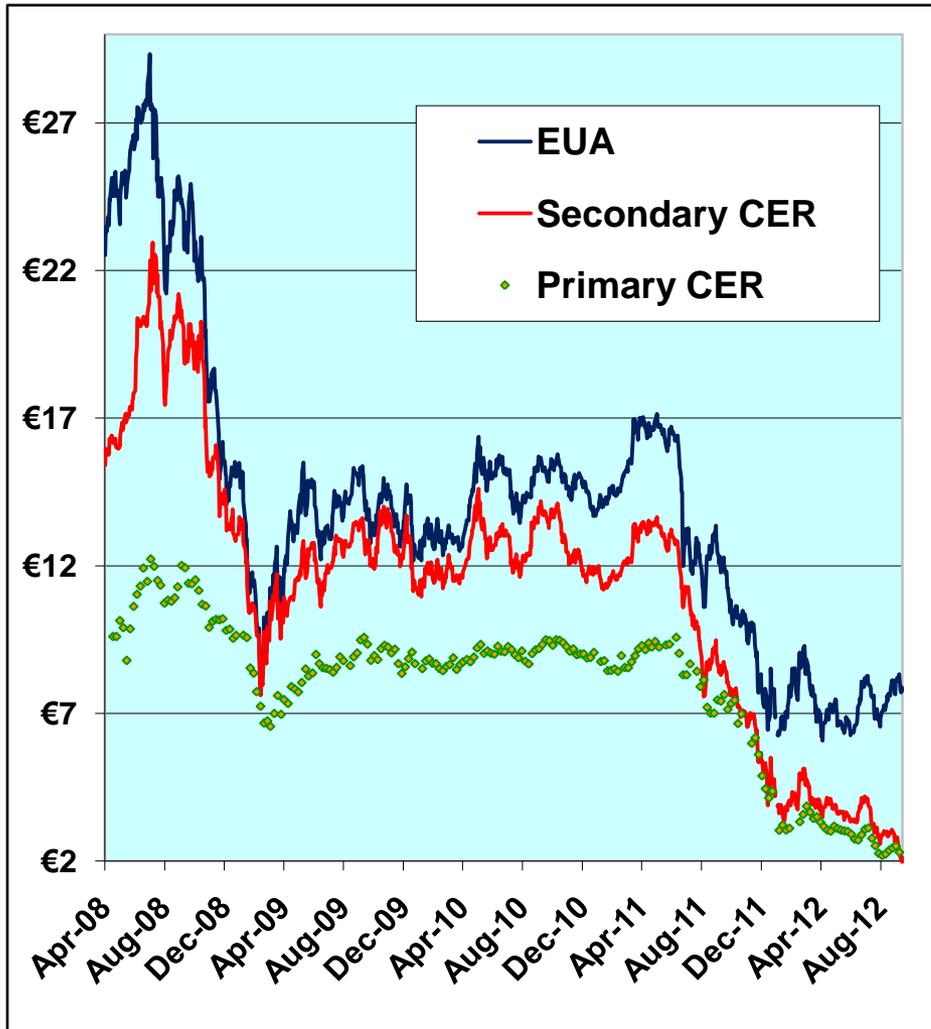
AAU

0.3

-49%

# EU ETS: how to deal with oversupply

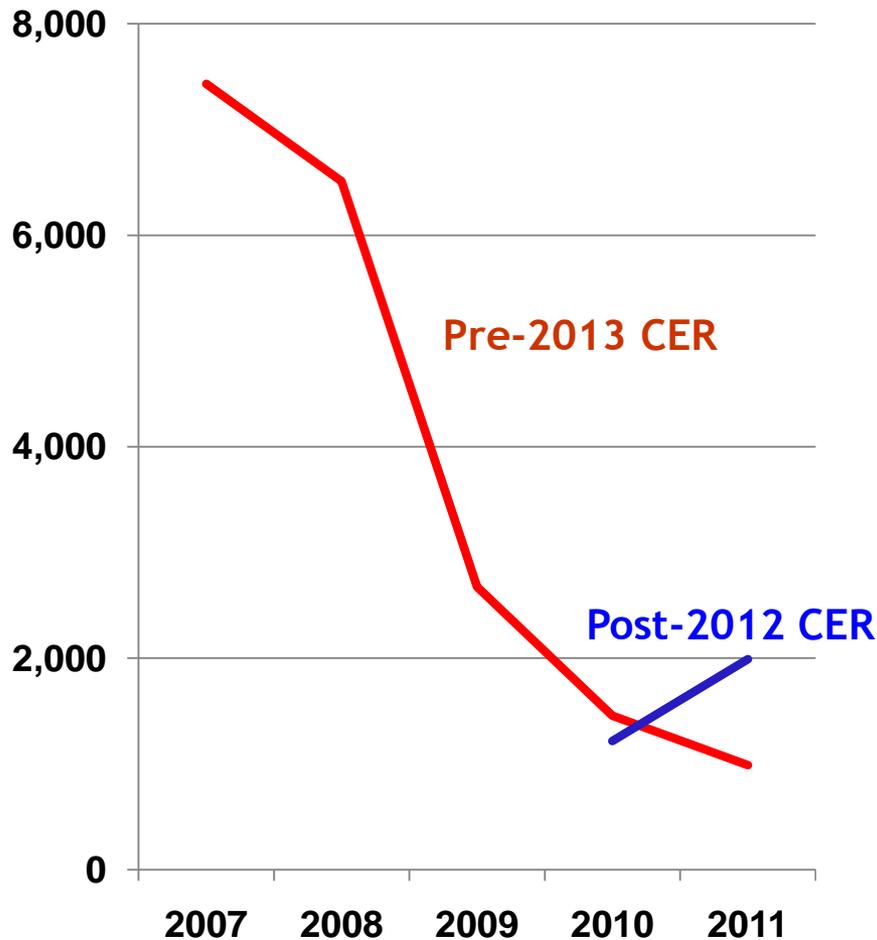
EUA, secondary CER & primary CER prices  
(€ per tCO<sub>2</sub>e)



- Oversupplied Phases II + III reflected in historic low prices
- Increasing trading volumes as demand shrinks: financially-driven trades
- Policy intervention under discussion to deal with the imbalance: supply set-aside

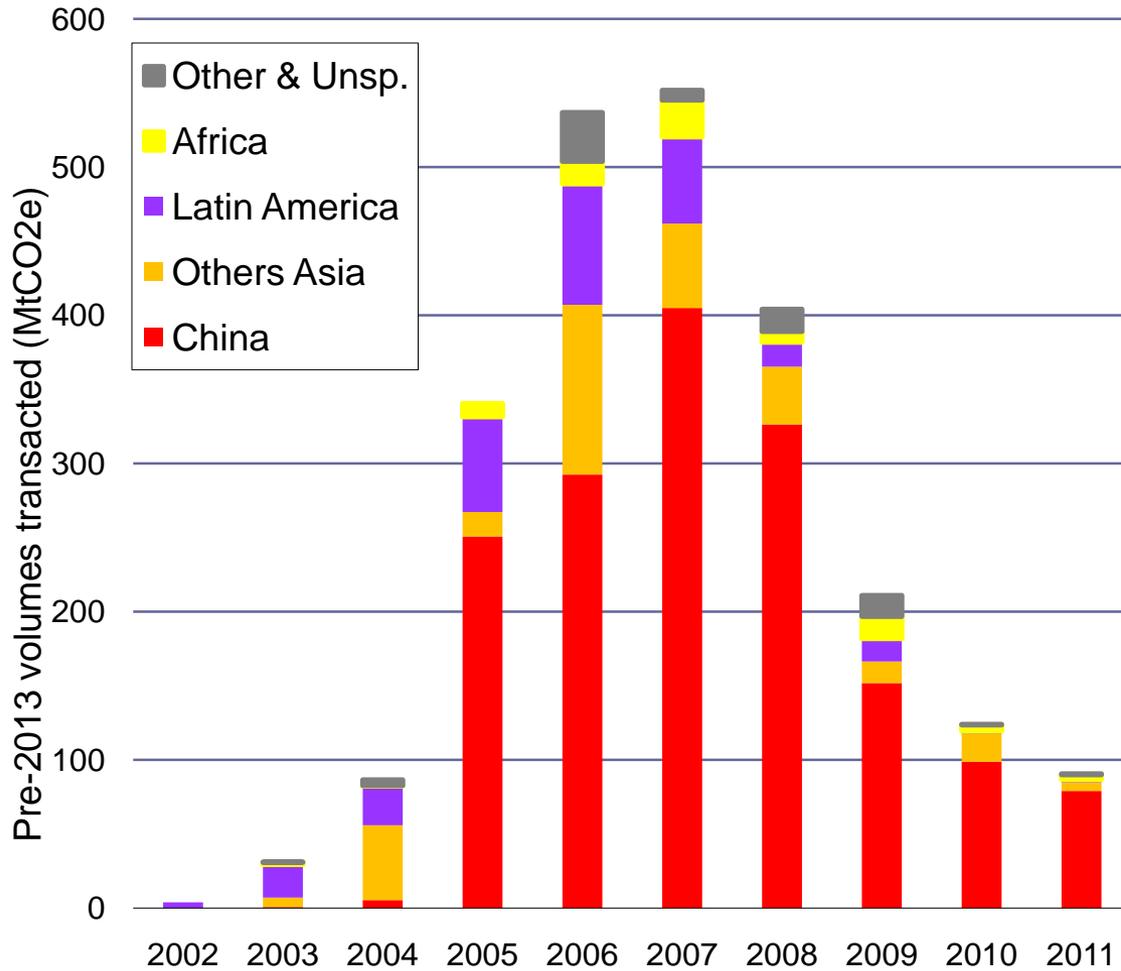
# An emerging post-2013 CDM market

Pre-2013 and post-2012 market values (US\$ million)

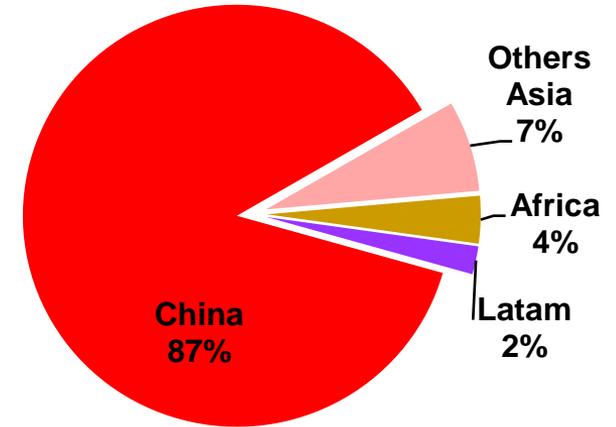


- Pre-2013 market closing and a post-2012 market emerging
- EU ETS oversupply and uncertain non-EU eligibility criteria and volumes lead to weak contractual obligations
  - Provisional safety clauses
  - “Quasi-options”
- More prominent Africa as buyers seek risk management and portfolio diversification

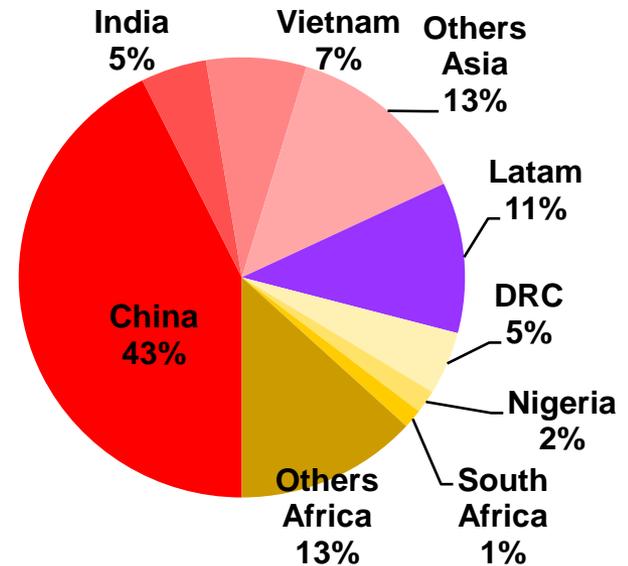
# Who's selling



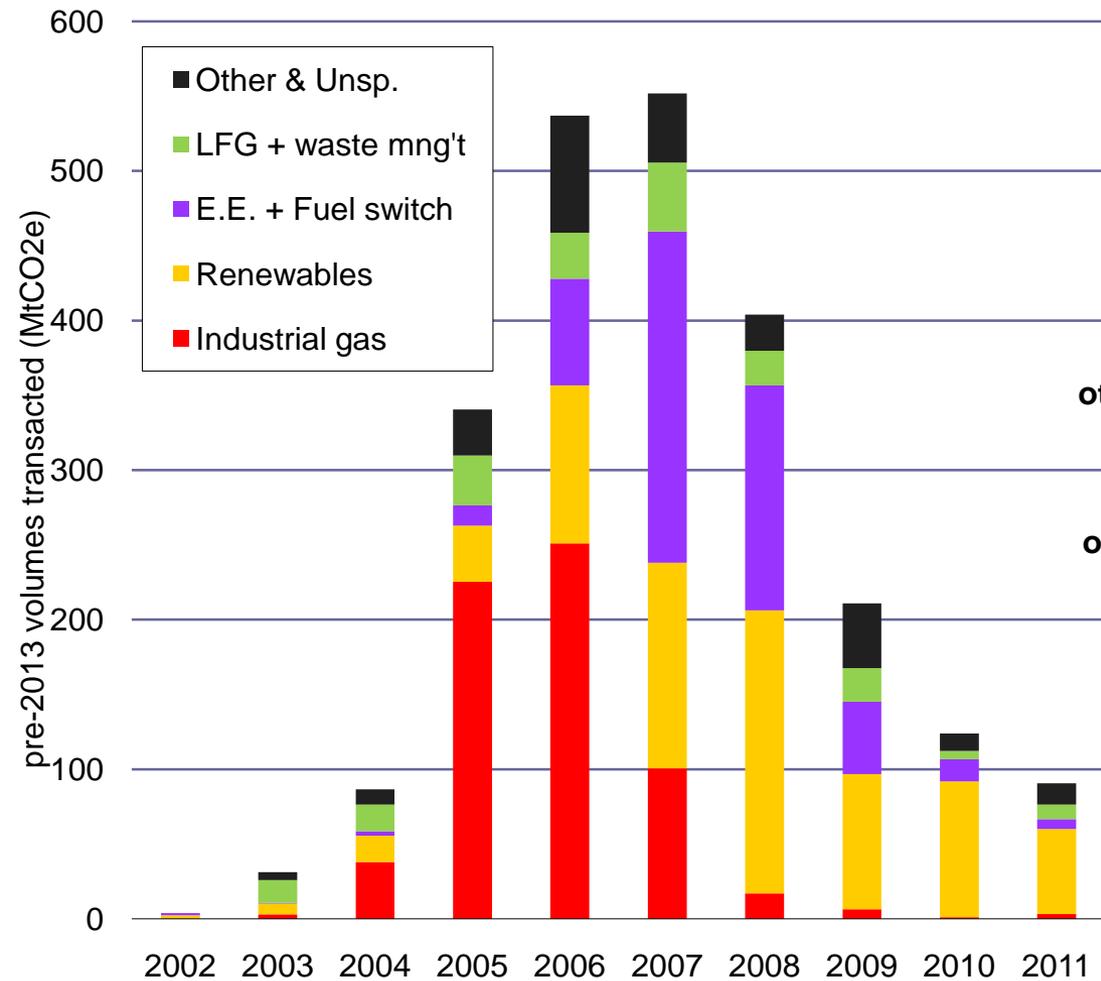
## Pre-2013



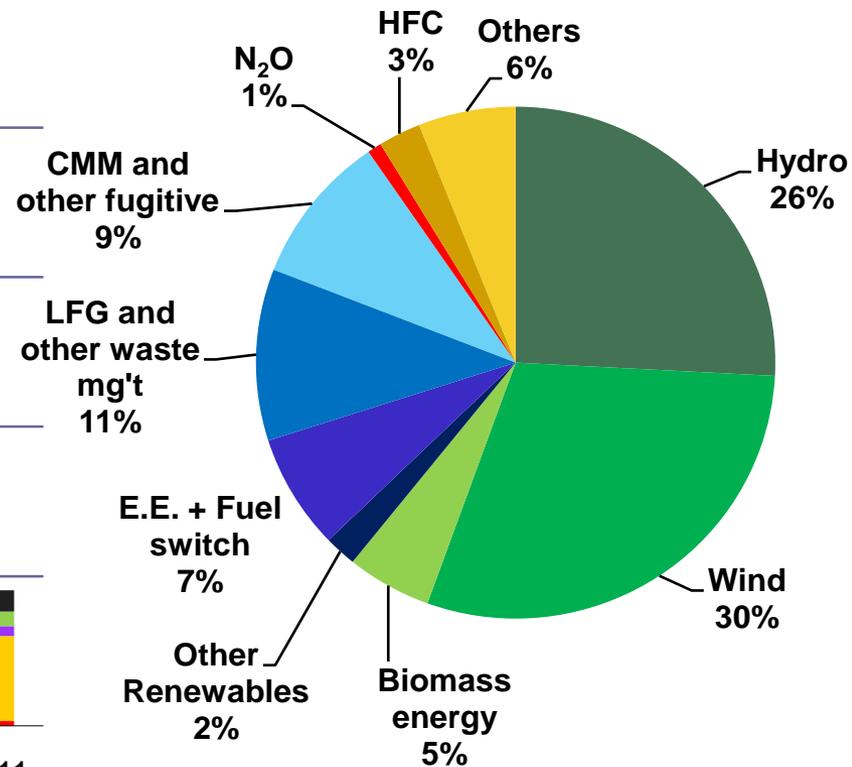
## Post-2012



# CDM Sectors (pre-2013)



2011



# CF Impact on Project's IRR

INCREMENTAL IRR - CARBON FINANCE						
Renewable Energy						
ER Prices	Purchase period					
	5y ('08-'12)	7y	10y	14y	21y	
\$5.00	0.5%	0.6%	0.8%	1.0%	1.2%	
\$10.00	1.0%	1.4%	1.7%	2.1%	2.3%	
\$15.00	1.6%	2.1%	2.7%	3.1%	3.3%	
\$20.00	2.2%	2.9%	3.6%	4.1%	4.5%	

Impact per Unit
\$3.16 / MWh
\$6.33 / MWh
\$9.49 / MWh
\$12.65 / MWh

INCREMENTAL IRR - CARBON FINANCE						
Solid Waste						
ER Prices	Purchase period					
	5y ('08-'12)	7y	10y	14y	21y	
	0.58 tCO2e/tSW	0.74 tCO2e/tSW	0.93 tCO2e/tSW	1.11 tCO2e/tSW	1.29 tCO2e/tSW	
\$5.00	17.9%	24.1%	29.2%	31.7%	32.8%	
\$10.00	52.3%	59.1%	62.4%	63.5%	63.8%	
\$15.00	88.2%	93.3%	95.4%	95.9%	96.0%	
\$20.00	123.7%	127.3%	128.6%	128.8%	128.9%	

Impact per Unit
\$41 / MWh
\$82 / MWh
\$124 / MWh
\$165 / MWh

\*tSW = ton solid waste

INCREMENTAL IRR - CARBON FINANCE						
HFC23						
ER Prices	Purchase period					
	5y ('08-'12)	7y	10y	14y	21y	
\$5.00	110.8%	112.3%	112.7%	112.7%	112.7%	
\$10.00	176.7%	177.3%	177.4%	177.4%	177.4%	
\$15.00	227.3%	227.6%	227.7%	227.7%	227.7%	
\$20.00	270.0%	270.2%	270.2%	270.2%	270.2%	

\*65% tax applied on carbon revenues

# ...but Secured Underlying Finance: IIC Ecuador Abanico Hydro

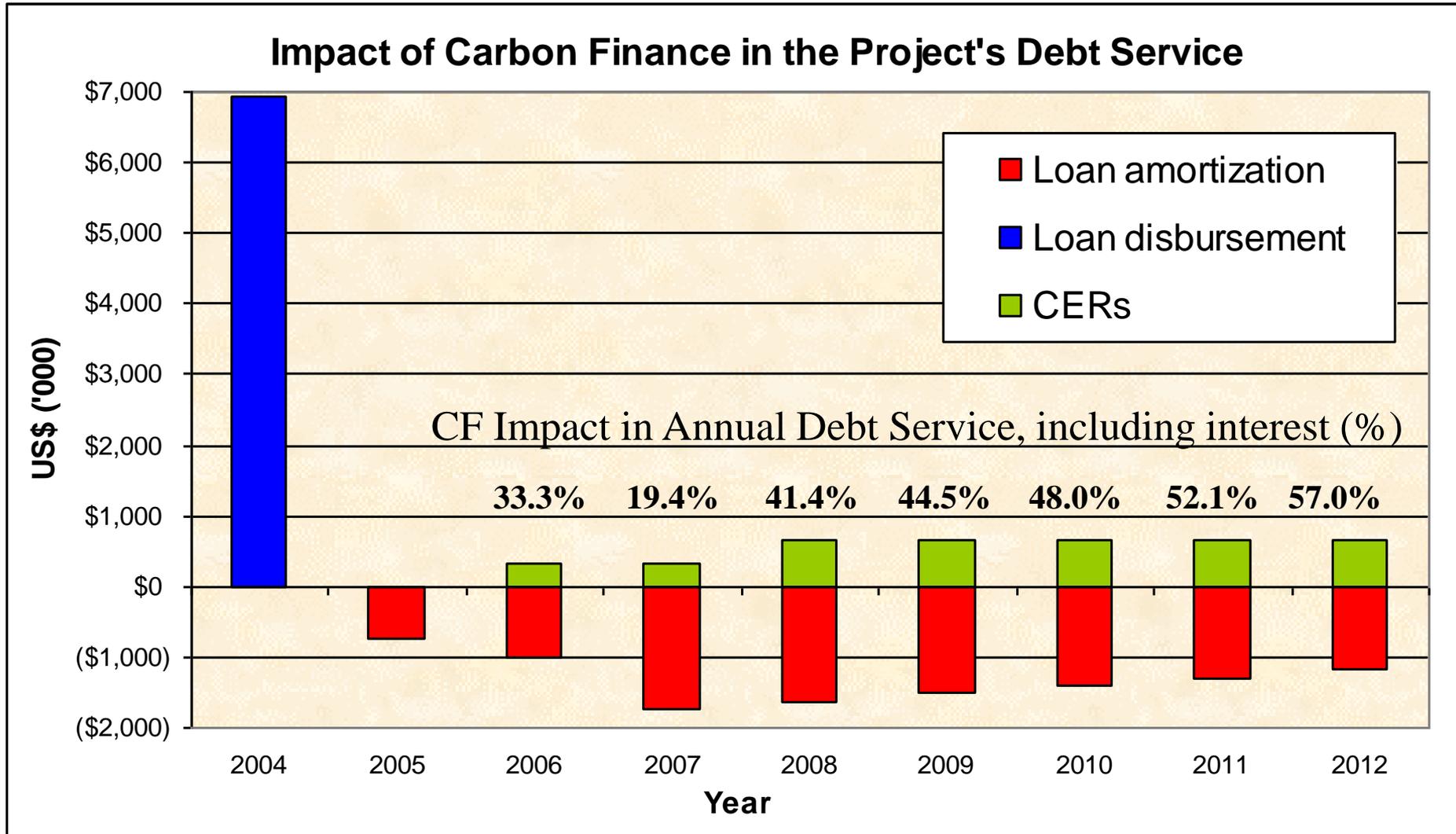
**30 MW ROR hydro**  
**85% capacity factor**  
**\$33.3 m cost**  
**IRR 15.6%**



**800,000 tCO<sub>2</sub>e ERs**  
**ERPA \$4.3 m**

**ΔIRR 0.7% => 16.3%**

# Impact CDM RE/EE



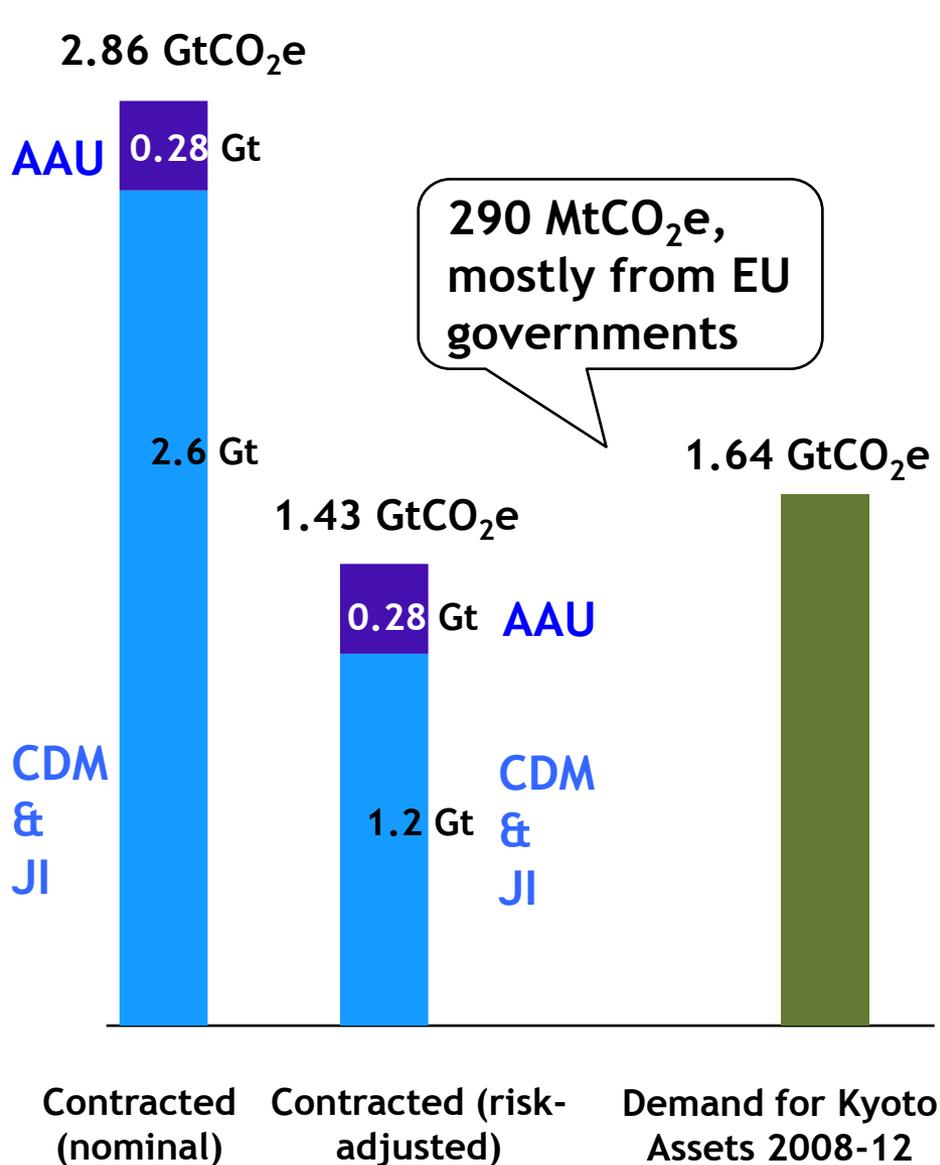
*CER payments helped project meet IIC (IADB) investment criteria*

# Impact CDM RE/EE

- Quantitative impact: Additional annual streams and IRRs
  - Up to 4% incremental IRR in RE
  - ~3,000 tCO<sub>2</sub>e/year at \$5-20/ton (\$3-10 per MWh)
  - NPV of \$80k to \$500k per MW = 5%-25% CAPEX
- Qualitative impact: High quality cash flow and contract
  - VERs (no regulatory risk; bankable)
  - OECD buyers (investment-grade, creditworthy payers)
  - Hard currency \$ or € denominated (mitigates devaluation risk)
  - Long-term contract with fixed price (no price fluctuation)
  - Payments abroad eliminate currency convertibility & transfer risks
  - Monetization of future receivables to support CAPEX

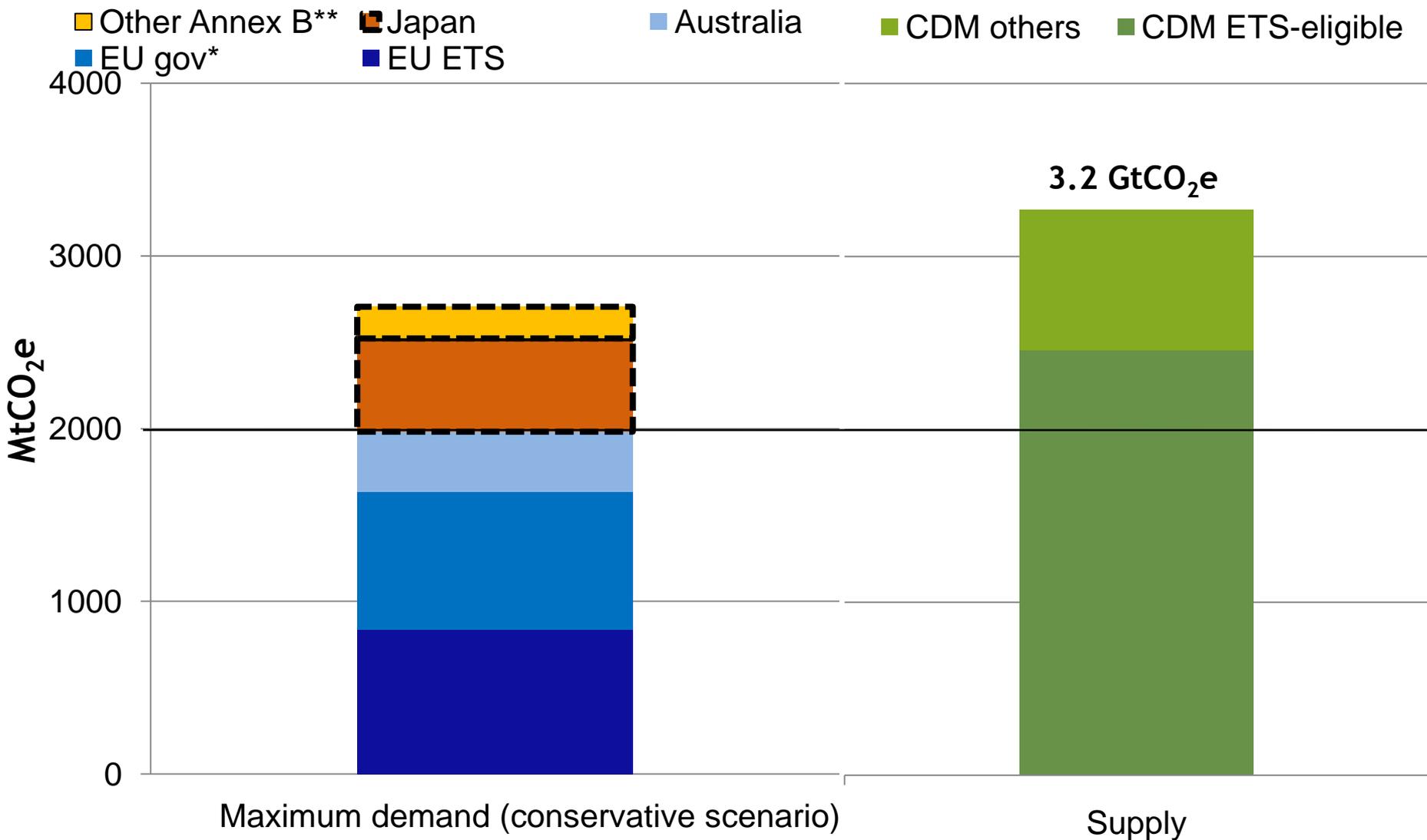
**CF revenue streams + Financial engineering allow access to capital markets and boost project bankability**

# New data shows demand until 2012



- Demand: 1.64 billion tCO<sub>2</sub>e
- Supply:
  - 2.6 billion CERs & ERUs + 280 million AAUs = 2.86 GtCO<sub>2</sub>e (nominal)
  - 1.15 + 0.28 = 1.43 GtCO<sub>2</sub>e (risk-adjusted)
- Aggregate picture; not all buyers purchased the volume they need
- Residual demand: 290 MtCO<sub>2</sub>e (136 Mt in 2011)

# Market projections indicate constrained demand over 2013-20



\*Including Iceland, Liechtenstein, and Norway

\*\* Including New Zealand, North America, and Switzerland

# Regulatory improvements & new markets popping up worldwide



- Durban decisions increased the regulatory clarity on existing market and advanced on new market instruments
- Several jurisdictions passed climate bills, including market initiatives
  - Australia, California, Quebec, Republic of Korea, Mexico
- AU - EU linkage no later than 2018
- New initiatives signal that solutions to climate challenge will emerge.

# Thank you

Carbon Finance  at the World Bank

Full report available at

[www.carbonfinance.org](http://www.carbonfinance.org)

# Who buys until 2012 (+1-3y for govts.)

	Potential demand	Contracted CERs and ERUs		AAUs/RMUs	Residual demand
		nominal	Adjusted for performance		
	(MtCO <sub>2</sub> e)	(MtCO <sub>2</sub> e)	(MtCO <sub>2</sub> e)	(MtCO <sub>2</sub> e)	(MtCO <sub>2</sub> e)
<b>EU</b>	<b>1,293</b>	<b>2,175</b>	<b>969</b>	<b>79</b>	<b>245</b>
<i>Government (EU-15)</i>	428	259	141	79	208
<i>Private sector (EU ETS)</i>	865	1,916	828	0	37
<b>Japan</b>	<b>300</b>	<b>380</b>	<b>169</b>	<b>194</b>	<b>9</b>
<i>Government of Japan</i>	100	34	15	76	9
<i>Japanese private sector</i>	200	346	154	119	0 (-73)
<b>Rest of Annex B and others</b>	<b>51</b>	<b>29</b>	<b>13</b>	<b>4</b>	<b>35</b>
<i>Government</i>	46	24	11	0	35
<i>Private sector</i>	5	5	2	4	0 (-1)
<b>Total</b>	<b>1,644</b>	<b>2,584</b>	<b>1,151</b>	<b>277</b>	<b>290</b>
<i>Government</i>	574	316	167	154	253
<i>Private sector</i>	1,070	2,267	984	122	37