SCC Americas
A Sindicatum Carbon Capital Company

West Virginia 2008 Energy Summit "Carbon Mitigation"

Susan Wood

December 9, 2008

SCC Americas
A Sindicatum Carbon Capital Company

Sindicatum Carbon Capital Americas

- **US Climate Change and Clean Energy project developer (LFG, CMM, Agriculture, Biomass)**
- **End-to-end turnkey solutions to achieve greenhouse gas emission reduction at the least cost**
  - Project origination
  - Project planning
  - Project management and execution
  - Climate change expertise
  - Funding
- **A wholly owned subsidiary of Sindicatum Carbon Capital, an international CDM project developer**

SCC Americas
A Sindicatum Carbon Capital Company

What is Carbon Mitigation?

Reducing the amount of greenhouse gas (GHG) emitted from a source, usually through implementation of a project, to comply with or create value in the global carbon markets.

- *Regulated source (eg, coal fired power plant)*
- *Unregulated source (eg, coal mine)*

SCC Americas
A Sindicatum Carbon Capital Company

What do all of Those Terms Mean?

- ***Kyoto Protocol***
- ***EU ETS***
- ***Allowances***
- ***Offsets***
  - *CERs (Certified Emission Reductions)*
  - *VERs (Verified or Voluntary Emission Reductions)*
- ***CDM (Clean Development Mechanism)***
- ***JI (Joint Implementation)***
- ***GWP (Global Warming Potential)***
- ***RGGI***
- ***CCAR***
- ***WCI***
- ***Midwestern MRP***

SCC Americas
A Sindicatum Carbon Capital Company

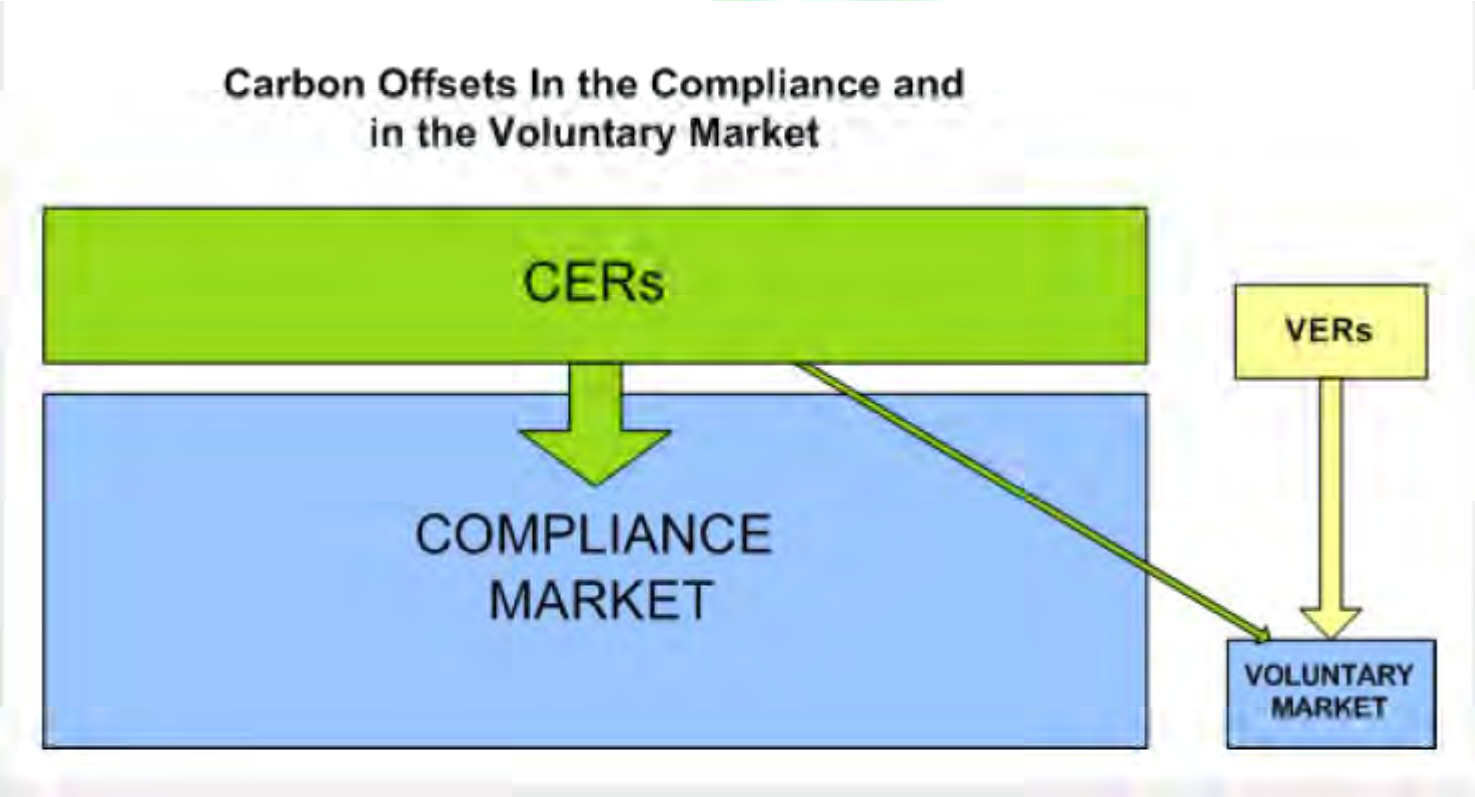
What are the Markets for Carbon?

Compliance Market:

Cap-and-trade

Voluntary Market

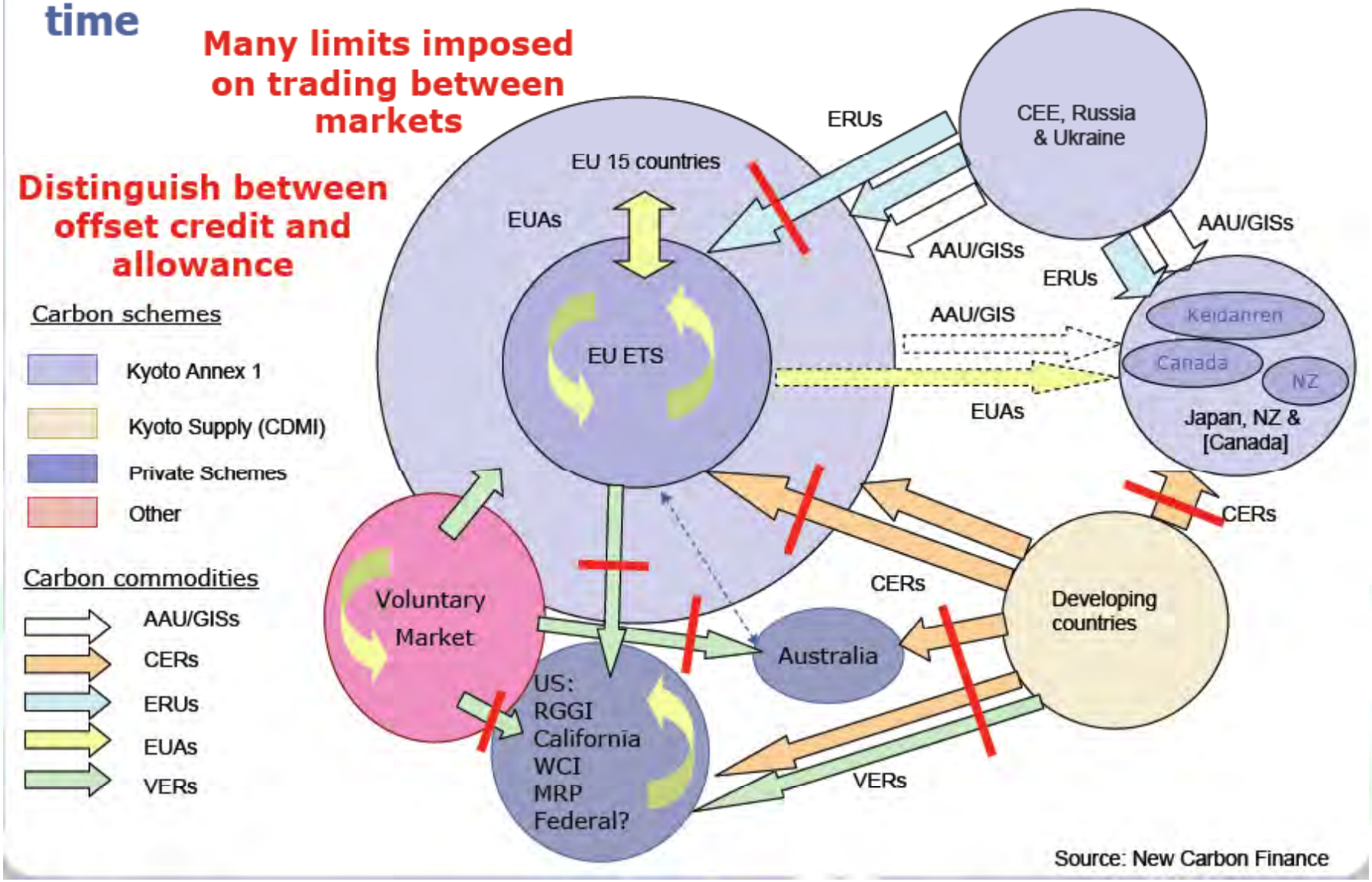
The Carbon Market – Simple…



Carbon markets have come a long way in a short period of time

Many limits imposed on trading between markets

Distinguish between offset credit and allowance



SCC Americas
A Sindicatum Carbon Capital Company

Compliance GHG Programs

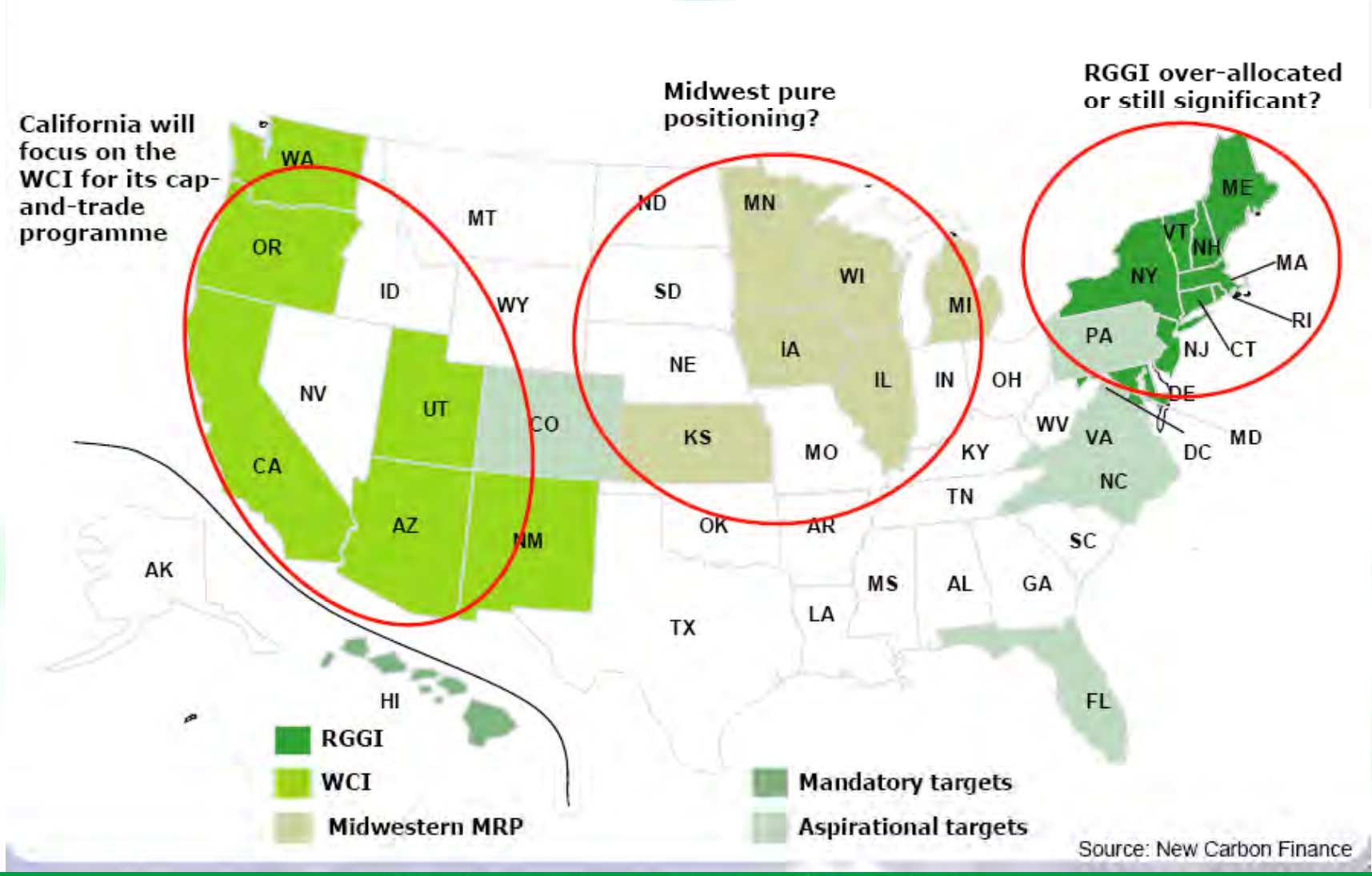
International Offset Mechanisms		Coal Methane	Methodology
	Clean Development Mechanism (CDM)	yes	CDM
	Joint Implementation (JI)	yes	CDM
Mandatory Cap and Trade Systems (Offset Features)			
	EU Emissions Trading System (EU-ETS)	Yes	CDM/JI
	Australian Carbon Pollution Reduction Scheme	under development	
	Canada's Offset System for Greenhouse Gases	No	
	New South Wales Greenhouse Gas Reduction Scheme	No	
	Regional Greenhouse Gas Initiative	No	
	Western Climate Initiative	under development	
Other Mandatory Systems (Offset Features)			
	Alberta-Based Offset Credit System	No	
	State Power Plant Rules (OR, WA, MA)	No	

SCC Americas
A Sindicatum Carbon Capital Company

Voluntary GHG Programs

Carbon Offset Funds		Coal Methane	Methodology
	World Bank Carbon Finance Funds	No restrictions	
Voluntary Cap and Trade Systems (Offset Features)			
	Chicago Climate Exchange (CCX)	Yes	CCX
Voluntary GHG Reduction Programs			
	Climate Leaders (US)	No	
	California Climate Action Registry	No	
	Climate Friendly (AU)	No	
Voluntary GHG Accounting Protocols (entity-wide and offset-project-specific)			
	WBSCD/WRI GHG Protocol for Project Accounting	N/A	
	ISO 14064	N/A	
Voluntary Standards for Offset Projects and Retailers			
	Gold Standard	No	
	Voluntary Offset Standard (VOS)	Yes	CDM
	Voluntary Carbon Standard 2007 (VCS 2007)	Yes	CDM
	VER+	Yes	CDM
	Green-e Climate Protocol for Renewable Energy	No	
	Green-e Climate Program	(Yes)	CDM
	Climate, Community & Biodiversity Standards (CCB)	No	
	Plan Vivo	No	
	Social Carbon	No	

US GHG Programs



SCC Americas
A Sindicatum Carbon Capital Company

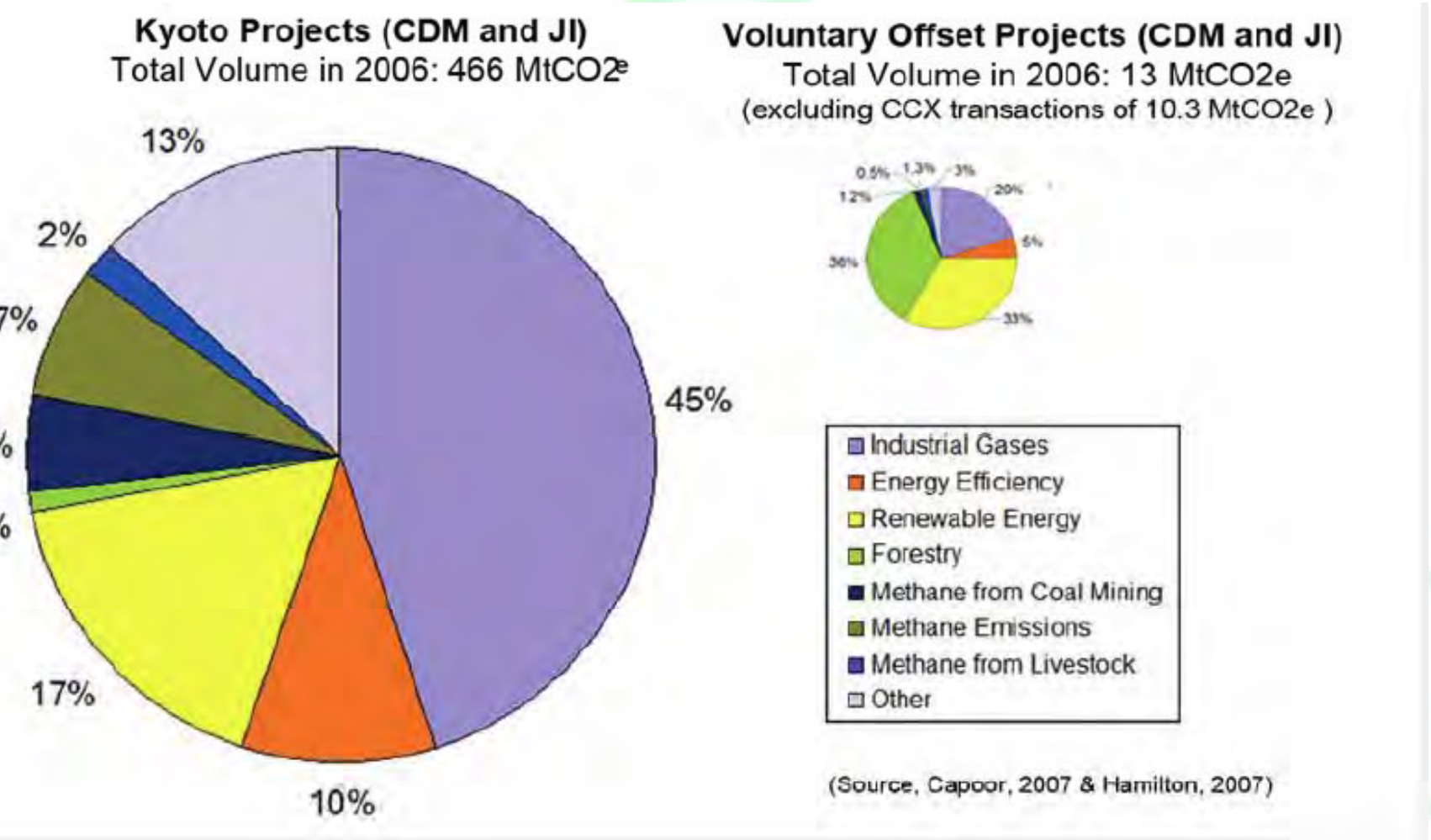
ap-and-Trade Legislation

l	Scope of Coverage	2010-2019 Cap	2020-2029 Cap	2030-2050 Cap
han – 1)	All 6 GHGs Economy wide – upstream for transport fuels & natural gas; downstream for large coal users; separate cap for HFC consumption	4% below 2005 level in 2012	19% below 2005 level in 2020	71% below 2005 level in 2050
an – 6)	All 6 GHGs Economy wide – upstream for natural gas & petroleum; downstream for coal	2012 level in 2012	2006 level in 2020	1990 level in 2030 President may set long-term target ≥80% below 2006 level by 2050 contingent upon international effort
– han)	All 6 GHGs Economy wide – upstream for transportation sector; downstream for electric utilities & large sources	2004 level in 2012	1990 level in 2020	20% below 1990 level in 2030 60% below 1990 level in 2050
s –)	All 6 GHGs Economy wide – not specified	2010 level in 2010 2% per year reduction from 2012-2020	1990 level in 2010	27% below 1990 level in 2030 53% below 1990 level in 2040 80% below 1990 level in 2050
)	All 6 GHGs Economy wide – not specified	2010 level in 2010	1990 level in 2020 2.5% per year reduction from 2020-2029	3.5% per year reduction from 2030-2050
st 20)	All 6 GHGs Economy wide – upstream for transportation sector; downstream for electric utilities & large sources	2004 level in 2012	1990 level in 2020	22% below 1990 level in 2030 70% below 1990 level in 2050
n 590)	All 6 GHGs Economy wide – not specified	2009 level in 2010 2% per year reduction from 2011-2020	1990 levels in 2020 5% per year reduction from 2020-2029	5% per year reduction from 2030-2050 80% below 1990 levels in 2050

Modified from Pew Center on Global Climate Change, *Comparison of Economy-Wide Cap-and-Trade Proposals in the 110th Congress* (January 2008) www.pewclimate.org

SCC Americas
A Sindicatum Carbon Capital Company

ize of the Carbon Markets



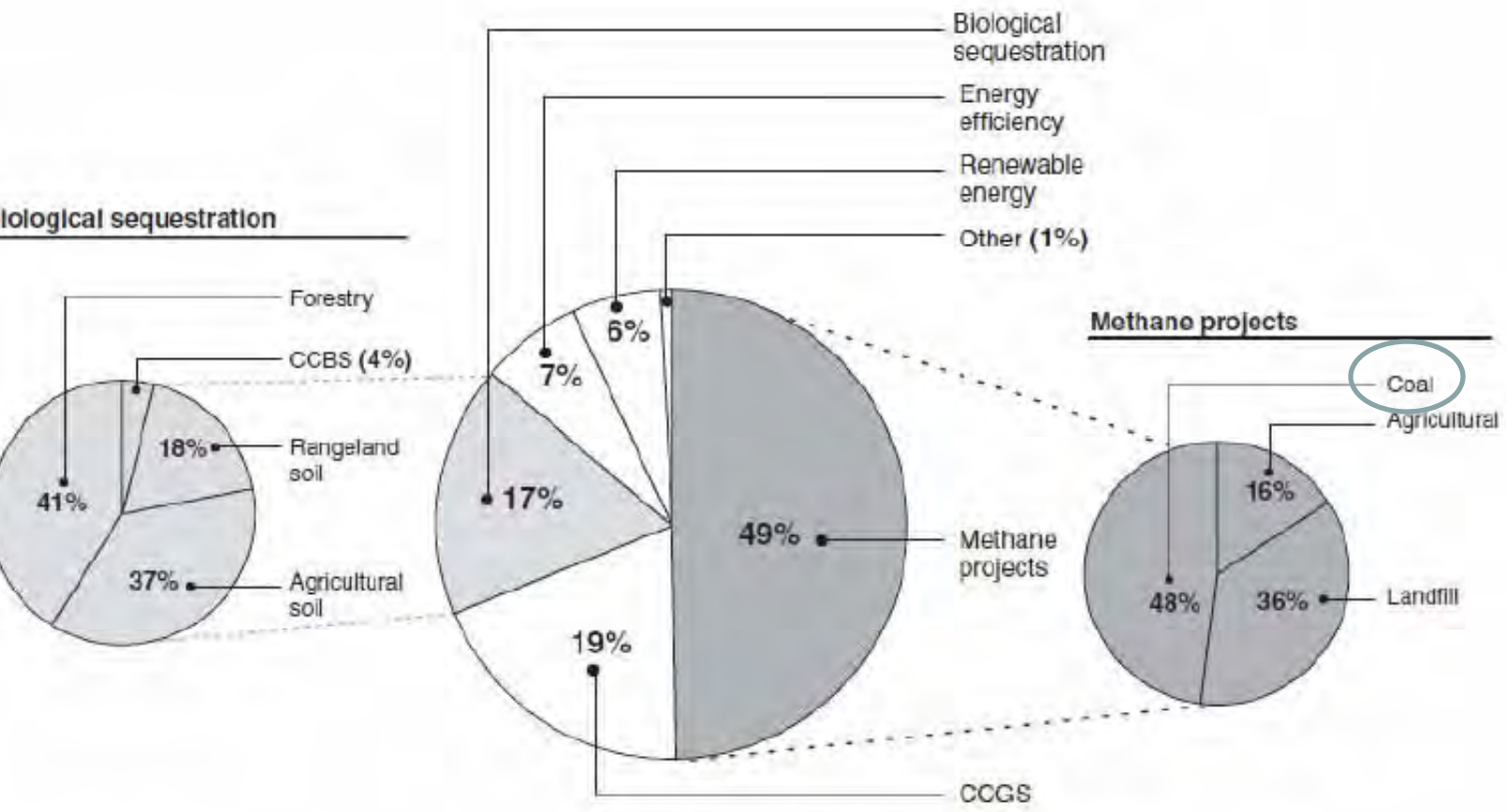
SCC Americas
A Sindicatum Carbon Capital Company

Offsets" – GHG Market Value

- ✓ Is it ***real***?
- ✓ Is it ***surplus/additional***?
- ✓ Is it ***verifiable***?
- ✓ Is it ***permanent***?
- ✓ Is it ***enforceable***?

SCC Americas
A Sindicatum Carbon Capital Company

S Offset Supply by Project Type



Source: GAO analysis of Point Carbon data.

Notes: CCBS refers to carbon capture and biological storage. Totals may not equal 100 because of rounding.

SCC Americas
A Sindicatum Carbon Capital Company

oal and Climate Change

- 20% of global GHG emissions.
- Highest per BTU carbon emissions of all fossil fuels.
- 50% of the electricity generated in the US is from coal.
- 27% of total U.S. GHG emissions,
- Projected to grow by a third by 2025.

- Coal is cheap.
- U.S. coal reserves last well over 250 years.

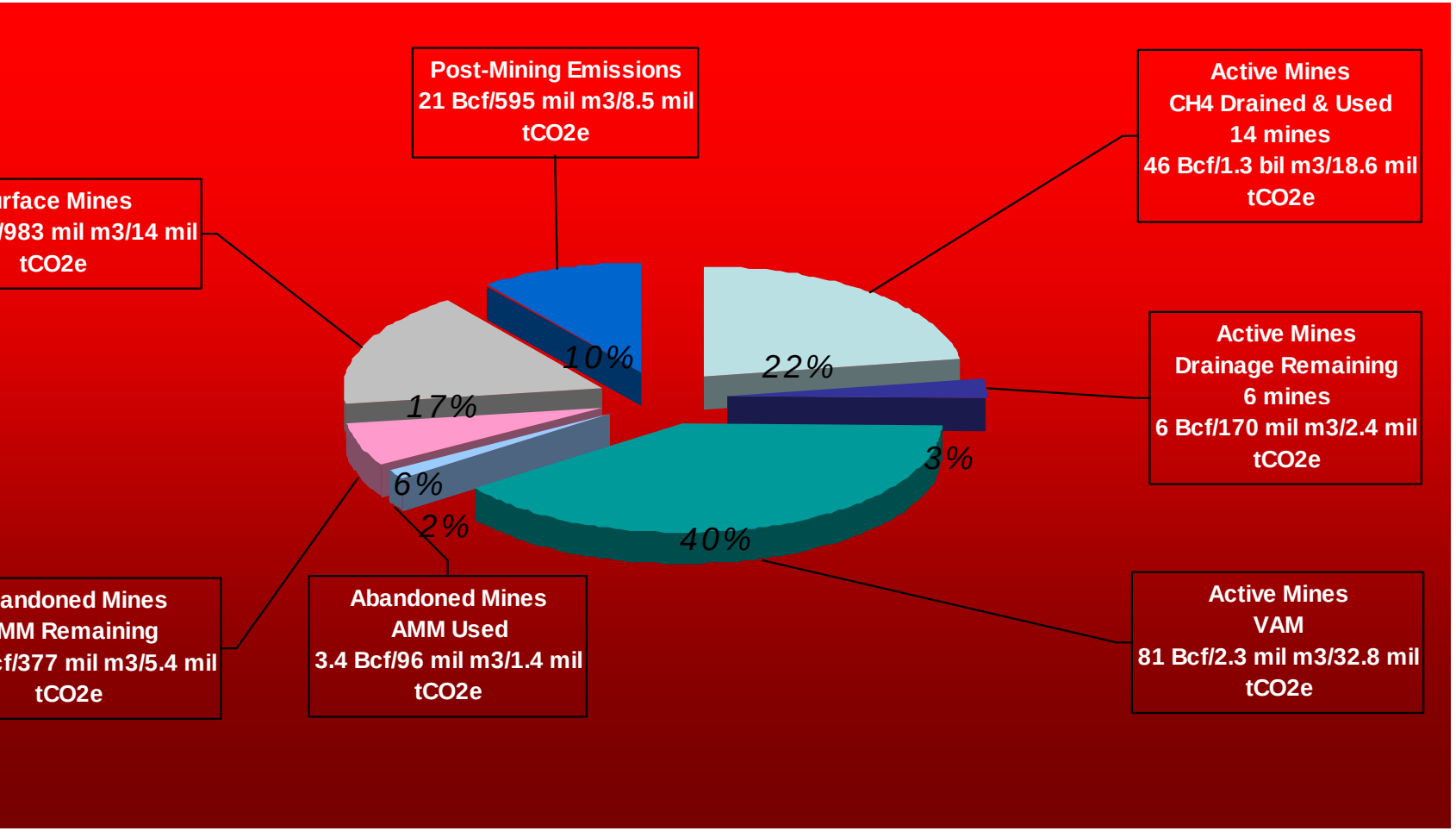
SCC Americas
A Sindicatum Carbon Capital Company

GHG mitigation projects offer real benefits to a coal mining business

- Prepare for more stringent climate change regulatory environment
- Maintain a viable coal business in a carbon sensitive world
- Demonstrate corporate social responsibility
- Protect and enhance reputation
- Reduce business risk
- Add value to the business

SCC Americas
A Sindicatum Carbon Capital Company

US 2006 Mine Methane Inventory
202 Bcf/81.7 mtCO2e Liberated



SCC Americas
A Sindicatum Carbon Capital Company

emoval of ventilation air methane

Destruction of methane that is emitted in ventilation air.

Technology is developing to achieve the most cost-effective solution

SCC Americas
A Sindicatum Carbon Capital Company

arbon Capture & Sequestration

GAO investigators cited underdeveloped and costly emissions-capture technology and legal uncertainties about the permitting and liability for CO2 that would be stored underground.

"GAO officials also concluded that widespread deployment of CCS is unlikely to happen unless Congress passes binding limits on carbon dioxide emissions."

McKinsey: Cost of capturing and storing carbon emissions from power plants and industrial installations could become commercially viable by 2030, according to a report published today from consultants.

SCC Americas
A Sindicatum Carbon Capital Company

limate Mitigation Policies

Carbon Tax
Cap and Trade
Regulation
Efficiency Standards
Building Codes
Tax Incentives
Subsidies
Offsetting
...

SCC Americas
A Sindicatum Carbon Capital Company

n Conclusion

- **US carbon legislation is coming**
- **International carbon markets have shown there is significant value to be extracted from the market**
- **Coal will be a major player in the market**
- **Coal is well positioned to be a leader in the market**
- **Coal projects that reduce GHG are available**
- **Technology is the key:**
  - **"He who builds the better mousetrap wins"**

Susan Wood

Susan.wood@sccamericas.com

(713) 425-4955