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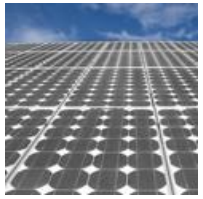


Transatlantic Perspectives After Paris:
Carbon Markets and the linking of Emission Trading Systems

Michael Mehling

23 May 2016

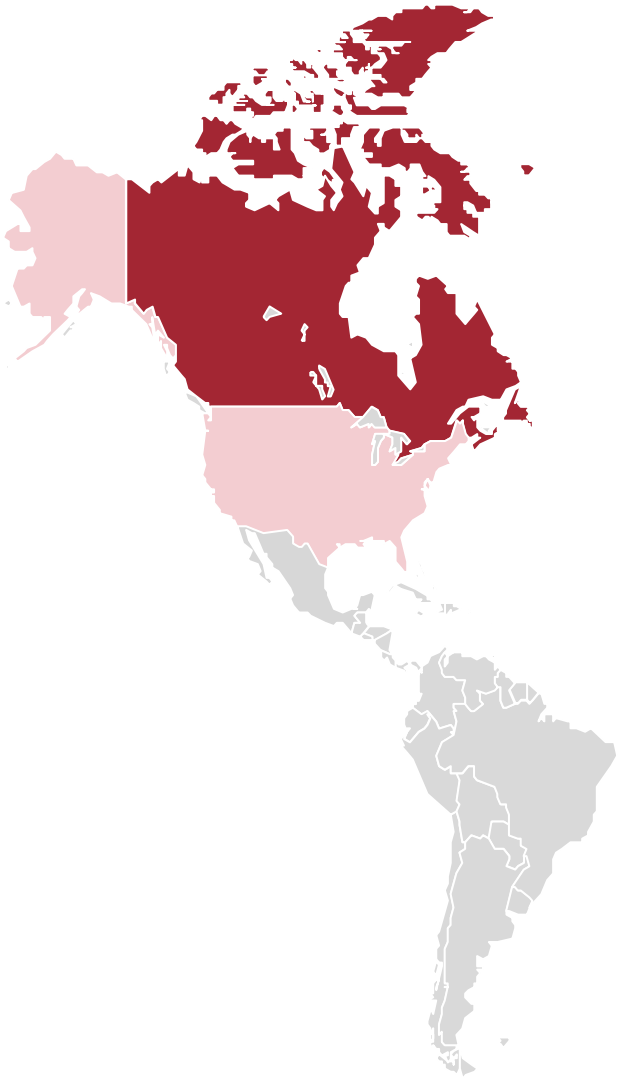
Massachusetts Institute of Technology

Evolution of Carbon Markets in North America

- 1969: Canadian John H. Dales explores the idea of emissions trading in a book (*Pollution, Property and Prices*, U. Toronto Press)
- 1982: First market-based instruments used for conventional environmental pollutants (1982: lead; 1995: SO_2; 1998: NO_x)
- 1993: President Clinton proposes a broad energy tax ("BTU Tax") in his State of the Union Address, but the measure fails
- 2001: President Bush declares withdrawal from the Kyoto Protocol
- 2005: Seven U.S. states announce regional trading system (RGGI)
- 2007: Supreme Court Decision in *Mass. v. EPA*; WCI emerges
- 2009: Emissions trading begins in ten U.S. states (RGGI)
- 2010: Broad cap-and-trade bill fails in Senate after passing House
- 2013: Emissions trading begins in California and Québec (WCI)
- 2014: California and Québec link their trading systems (WCI)
- 2015: EPA passes final rule on Clean Power Plan

Carbon Markets in the Americas

2008-2012



Carbon Markets in the Americas

2009

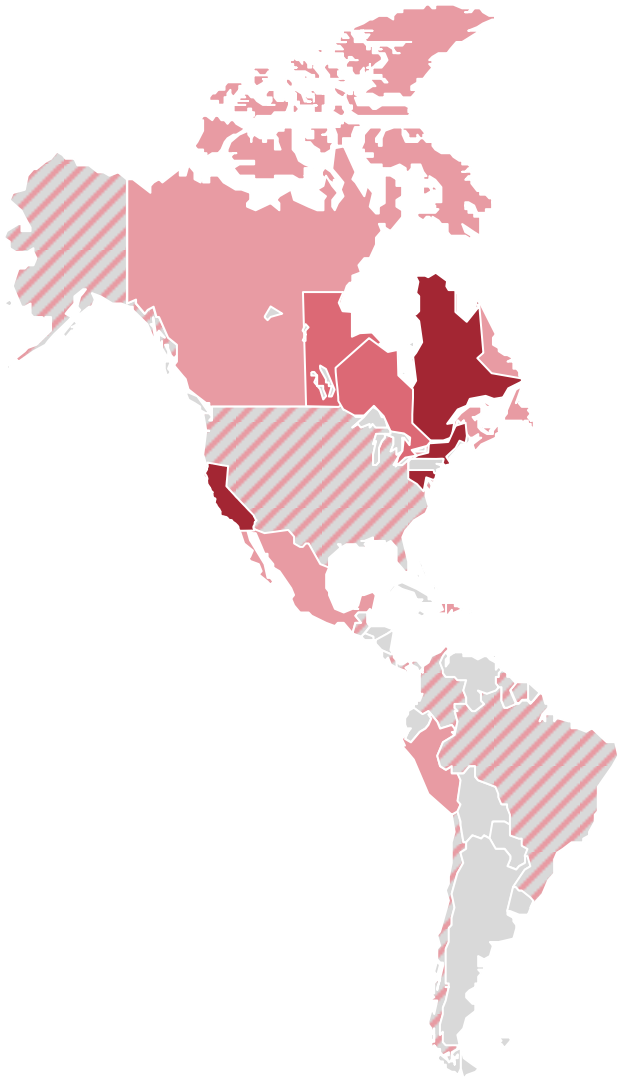
Carbon Markets in the Americas

2013

Carbon Markets in the Americas

2017

- Existing
- Intended
- Mention in INDC
- Considering



U.S. Clean Power Plan

On 3 August 2015, the EPA issued a final rule ("Clean Power Plan") for **existing power plants** under Sec. 111(d) CAA:

- Aims to achieve a 32% reduction from 2005 in emissions from **existing** power plants nationwide by 2030, with State Implementation Plans due at the latest by September 2018
- States are assigned **rate- and mass-based** mitigation goals, reflecting the degree of abatement achievable through application of a source-specific **best system of emission reduction** (BSER) given the current generation portfolio
- BSERs are based on an analysis of what is technically feasible using three categories of abatement opportunities:
  - Increasing the operational efficiency of coal-fired power plants
  - Shifting electricity generation to natural gas-fired power plants
  - Increasing electricity generation from zero-emitting sources

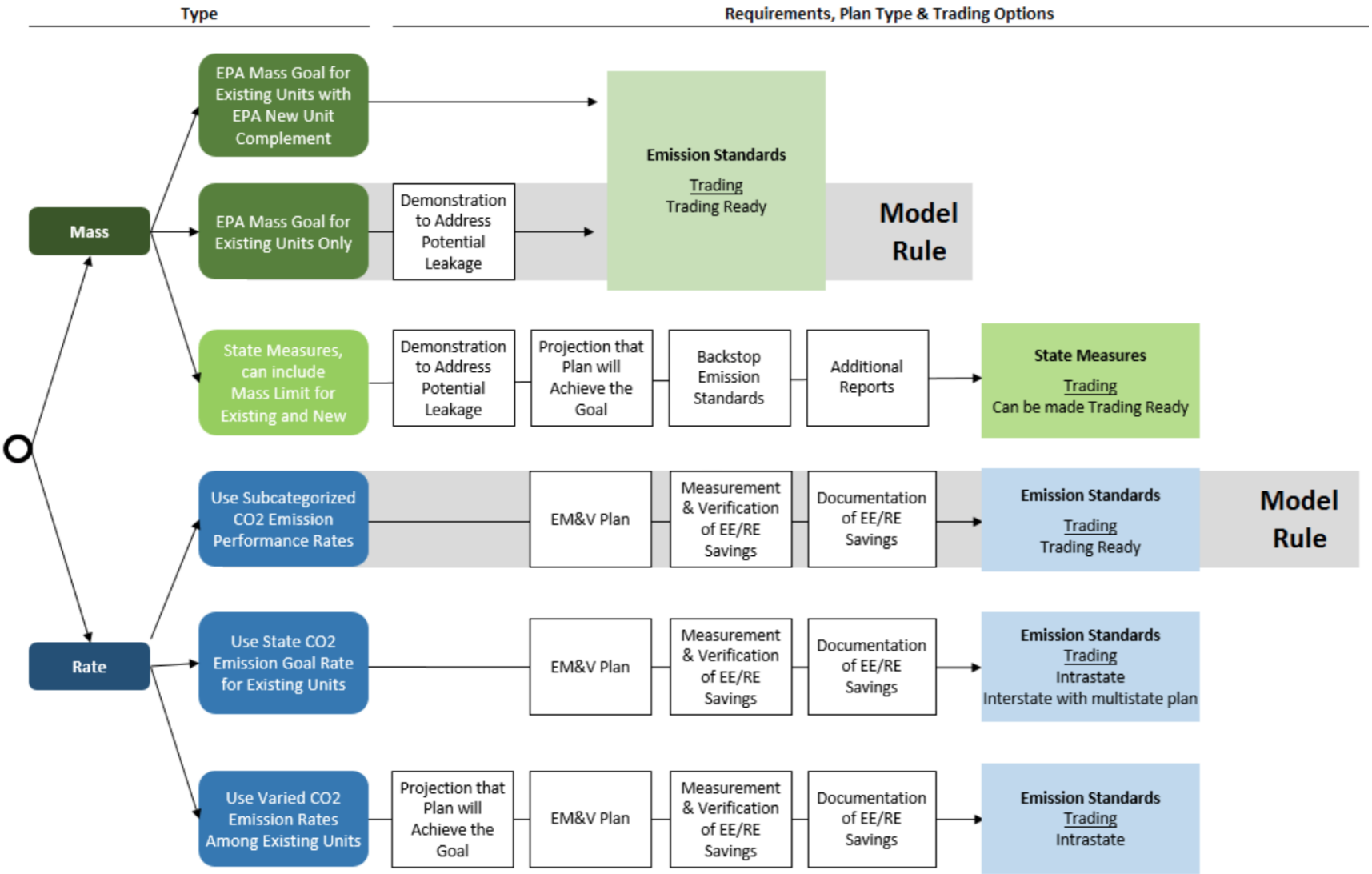
U.S. Clean Power Plan: A Court Drama

- 2007: With Mass. v. EPA, Supreme Court opens the door to regulation of greenhouse gas emissions under the CAA
- 23 Oct. 2015: CPP enters into force with publication in the Federal Register
- 23 Oct. 2015: Coalition of states, utilities and other parties file CPP lawsuits before U.S. Court of Appeals, D.C. Circuit
- 9 Feb. 2016: Supreme Court narrowly votes to stay implementation of Clean Power Plan pending review of its merits
- 13 Feb. 2016: Justice Scalia, one of the supporters of the stay, passes away, vacating a seat in the Supreme Court
- 17 May 2016: District Court decides to forego three-judge panel and instead opts for 'en banc' hearing in September

Trading under the U.S. Clean Power Plan

- Under the CPP, states have emission performance rates and mass-based emission budgets
- 23 Oct. 2015: Federal plan and model trading rule proposal
  - Rate-based and mass-based federal plan
  - Rate-based and mass-based model trading rule
- Mass-based trading:
  - EPA-operated tracking system; banking; set-asides for clean energy incentive program, output-based allocation and renewable energy
- Rate-based trading:
  - Unit: Emissions Rate Credit (ERC) = 1 MWh @ 0 lbs. CO_2
  - ERCs can be generated from RES and nuclear generation, overachieving subcategory emissions standard and NGCC redispatch

Clean Power Plan: Compliance Options



Integrating Markets through Linking

U.S.-Canada Joint Statement on Climate, Energy, and Arctic Leadership, 10 March 2016:

"Recognizing the role that carbon markets can play … both countries commit to work together to support robust implementation of the carbon markets-related provisions of the Paris Agreement … will explore options for ensuring the environmental integrity of transferred units, in particular to inform strong INDC accounting and efforts to avoid 'double-counting' of emission reductions … will expand their collaboration in this area over time."

Maroš Šefčovič, European Commission Vice President for Energy Union, 25 February 2016:

"We're ready to explore with our international partners like China, Quebec, Ontario, Manitoba, California and South Korea the possibilities of a global system of linked markets."

Are We Any Closer Than a Decade Ago?

California Governor Arnold Schwarzenegger

Executive Order S-20-06, 16 October 2006:

"[S]hall develop (...) a comprehensive market-based compliance program with the goal of creating a program that permits trading with the European Union (...) and other jurisdictions."

German Foreign Minister Frank-Walter Steinmeier

Strategy Paper, 5 July 2007:

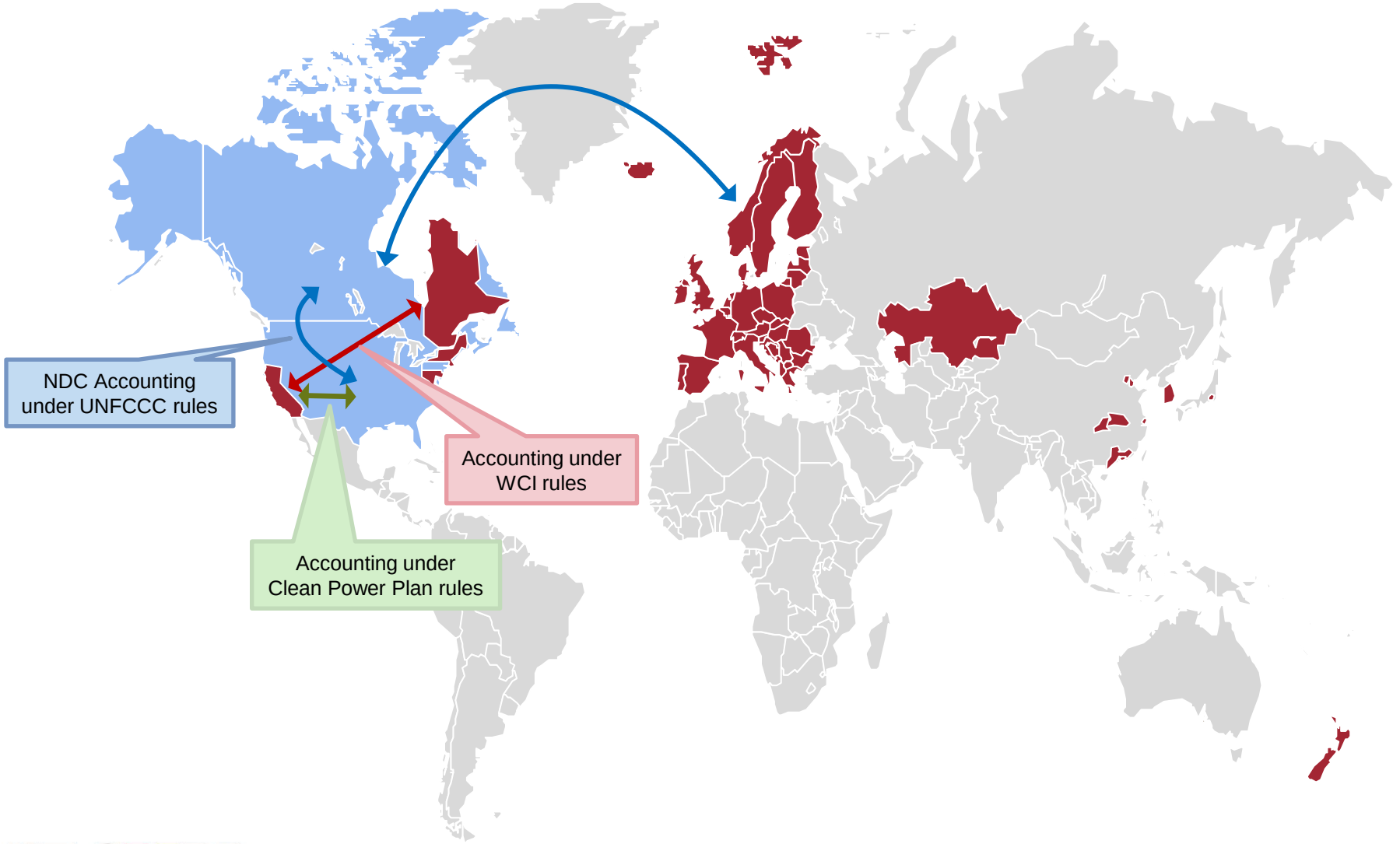
"[For] the next phase of international climate negotiations (...) the goal has to be a powerful new trans-Atlantic market"

Linking in a Multilevel Trading Architecture: Case Study on California and Québec

Accounting under the WCI

Potentially: Accounting under the CPP

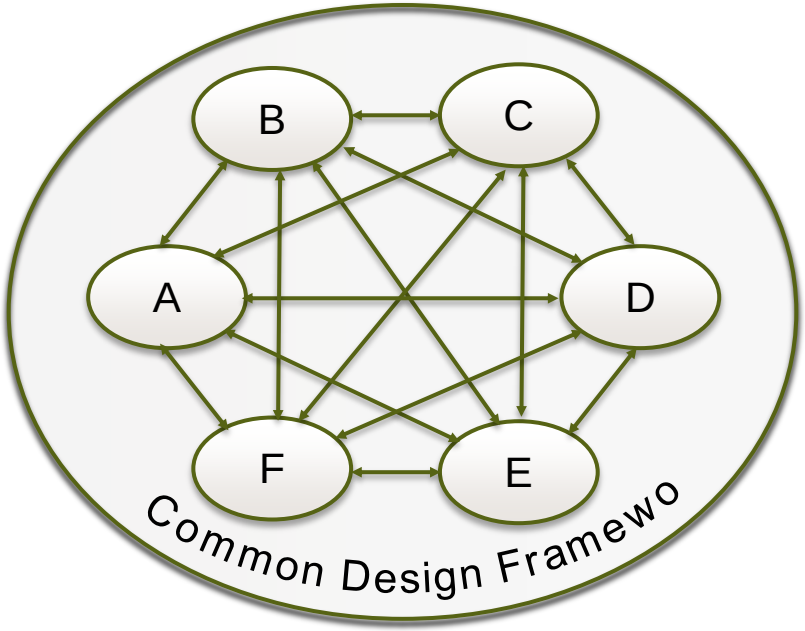
Accounting under the Paris Agreement



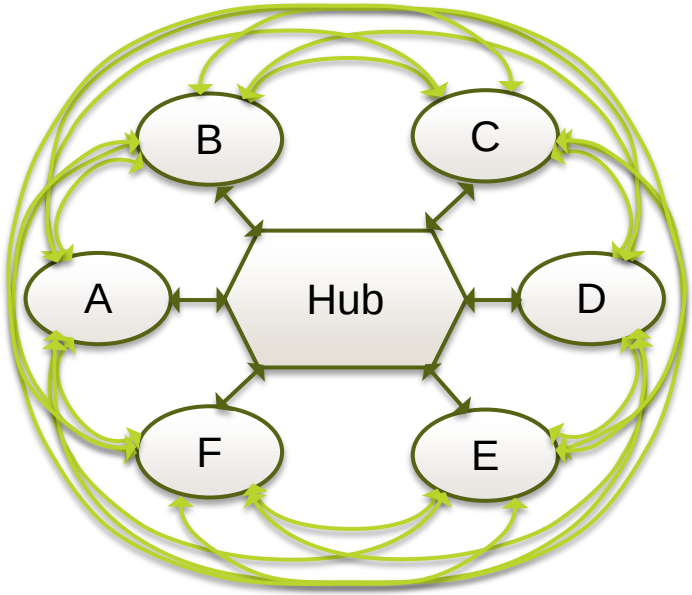
Heterogeneity as a Challenge for Linking

- Heterogeneity of Targets
  - Absolute emissions limitation or reduction targets
  - Relative emissions limitation or reduction targets (GDP, BAU, MWh)
  - Renewable energy or energy efficiency targets
- Heterogeneity of Units
  - Allowances issued under mass-based cap-and-trade systems
  - Credits issued under baseline-and-credit systems (incl. ERCs, but also offset projects, sectoral crediting, REDD+ (?), SDM (?))
  - Renewable energy or energy efficiency credits/certificates (incl. ERCs, but also RECs or Green Certificates, White Certificates)
- Heterogeneity of Policies and Measures
  - Quantity rationing (emissions trading)
  - Pricing (carbon taxes, fees and charges)
  - Regulation (e.g. performance standards)

Managing Heterogeneity: Two Options



Harmonization Approach



Hub-Based Approach

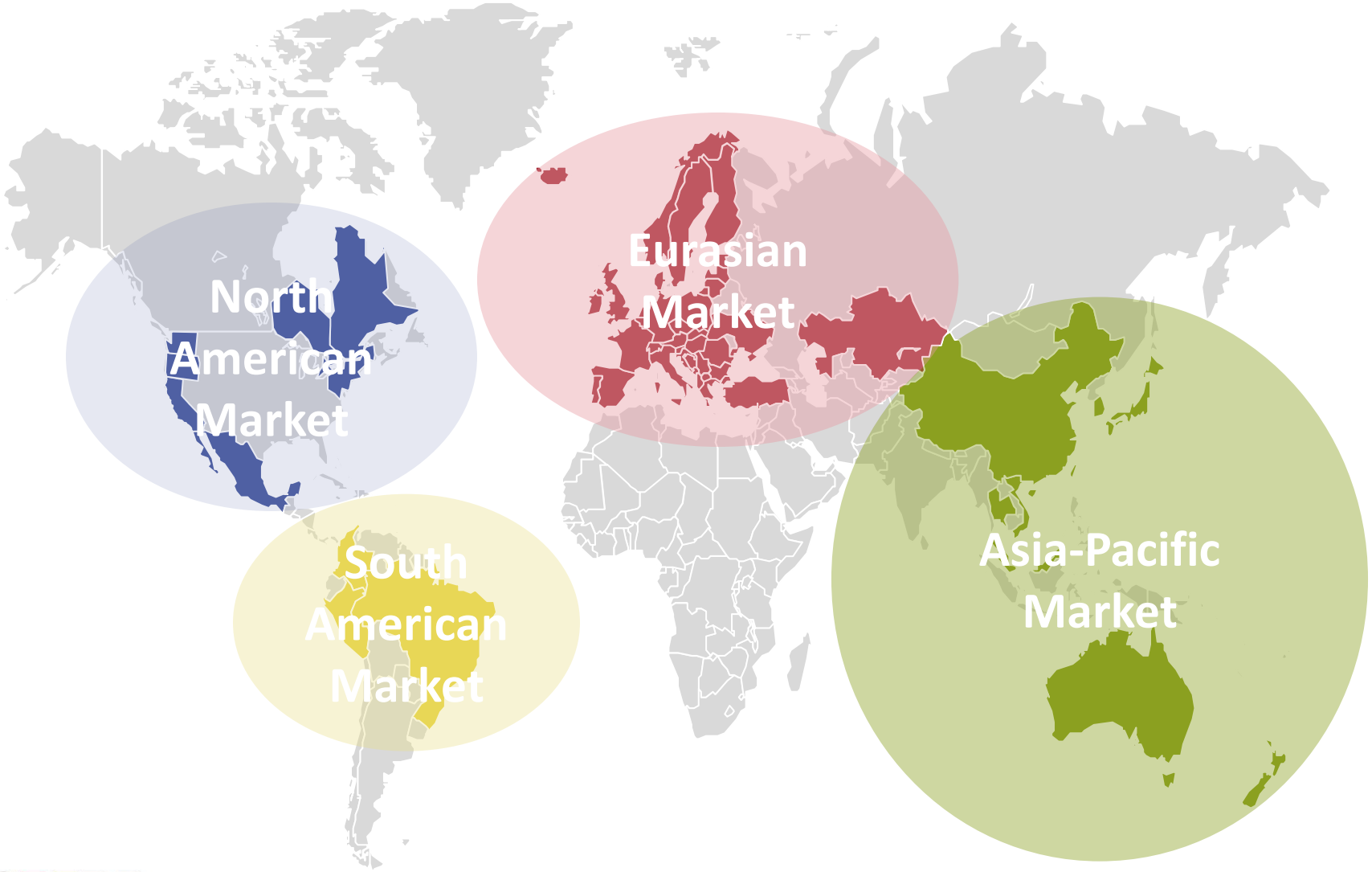
Source: Mehling and Görlach, 2016

Harmonization Approach

Example: Western Climate Initiative

- Based on a "Western Regional Climate Action Initiative Agreement" signed on 26 February 2007
- WCI members adopted a common **"Design for the WCI Regional Program"** in 2010, setting out a template for a regional emissions trading system
- California and Québec have each adopted mandatory mitigation targets, emission reporting rules, and **emission trading systems** based on the common design
- Joint administrative organization **(WCI, Inc.)** created in 2011 maintains a registry, manages joint auctions, oversees offset crediting and monitors the market

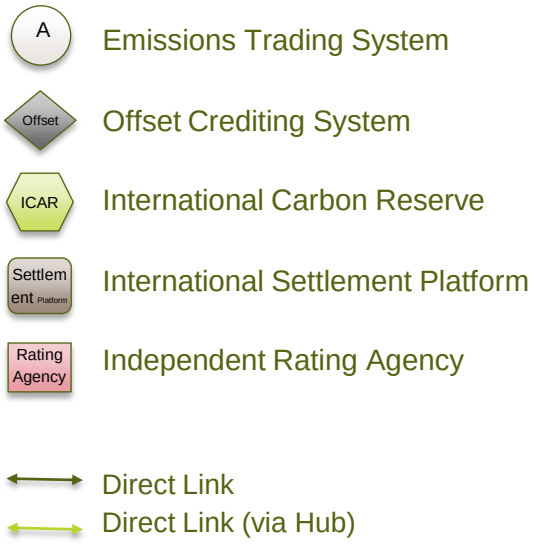
Emergence of Clusters or “Clubs”

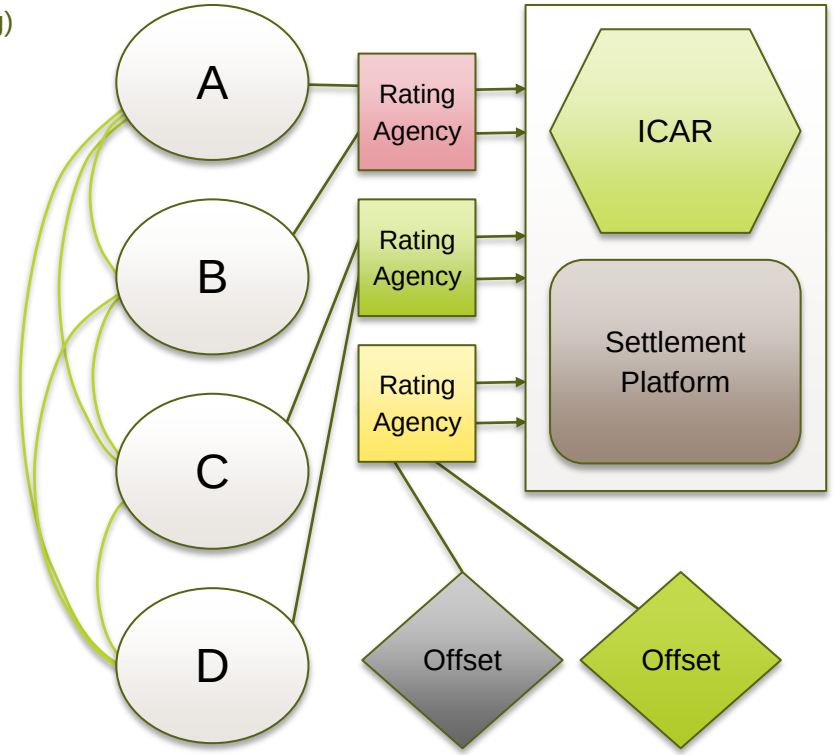


From Compatibility to Comparability

Networked Carbon Markets

(All Systems Linked via Hub with Risk-Based Rating)





Rating = f {program rating, credibility rating, ambition adjustment}

Source: World Bank, 2014

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Massachusetts Institute of Technology (MIT)
MIT Building E19-411 400 Main Street, 4th Floor Cambridge, MA 02142-1017

@ ceepr@mit.edu
☎ 617-253-3551 🖷 617-253-9845

Massachusetts Institute of Technology