International Climate Policy and the Road to Paris

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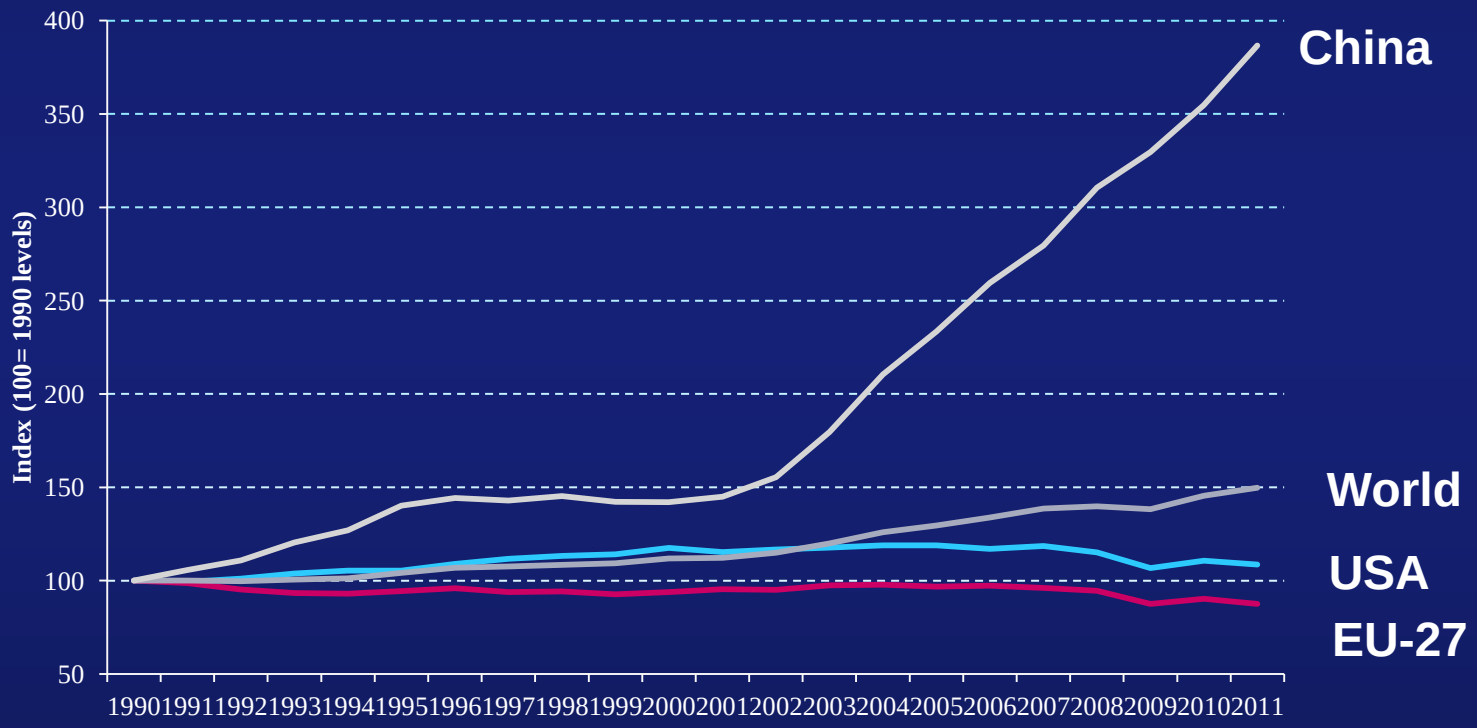
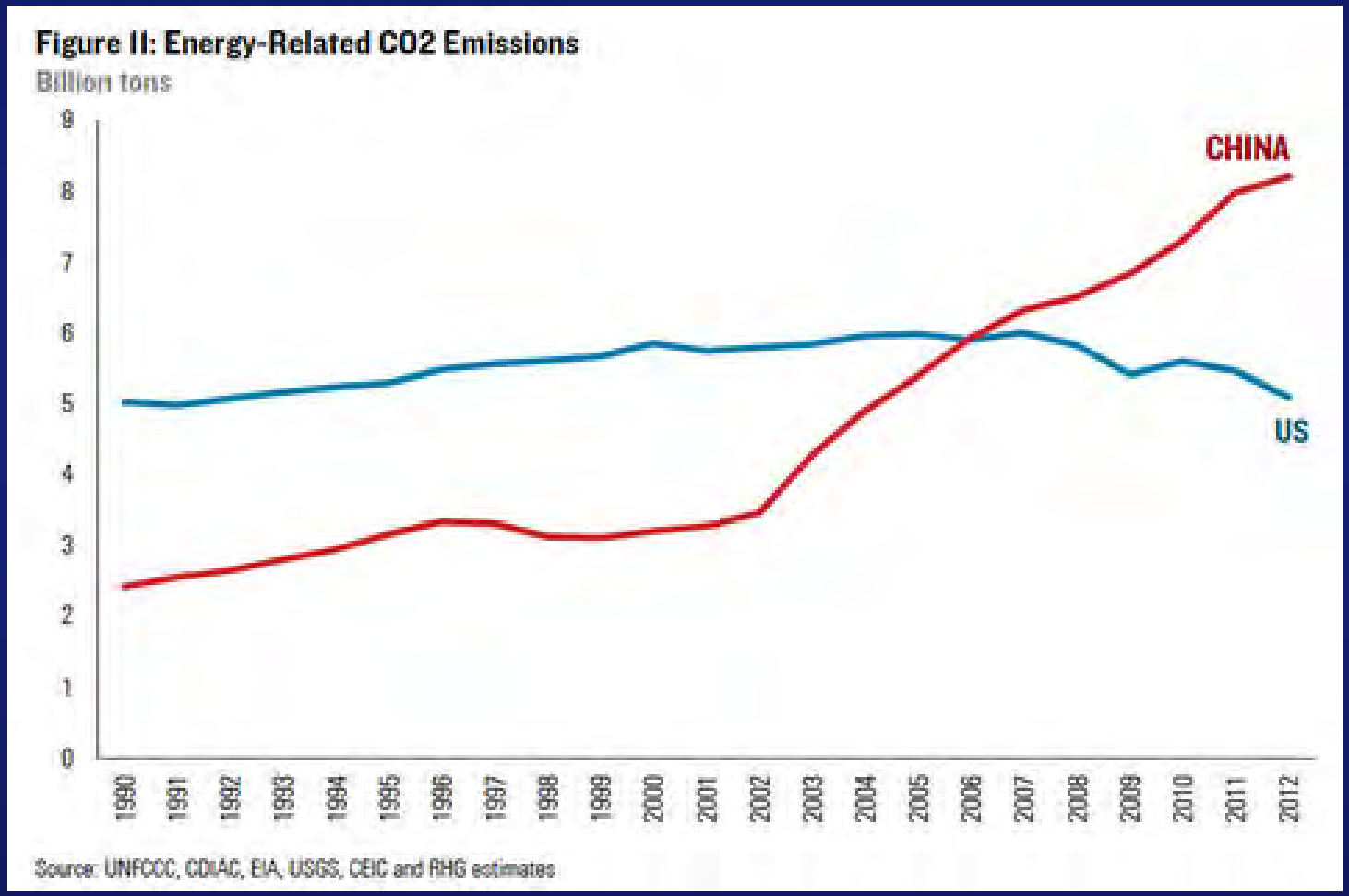
OUTLINE

- INTRODUCTION: EMISSION PATHS & SCENARIOS
- FUNDAMENTAL ECONOMICS OF GLOBAL CLIMATE CHANGE POLICY
- NEGOTIATIONS, PART I: THE KYOTO PROTOCOL
- ALTERNATIVE POLICY ARCHICTURES
- NEGOTIATIONS, PART II: COPENHAGEN … LIMA
- THE PATH AHEAD – ON THE ROAD TO PARIS

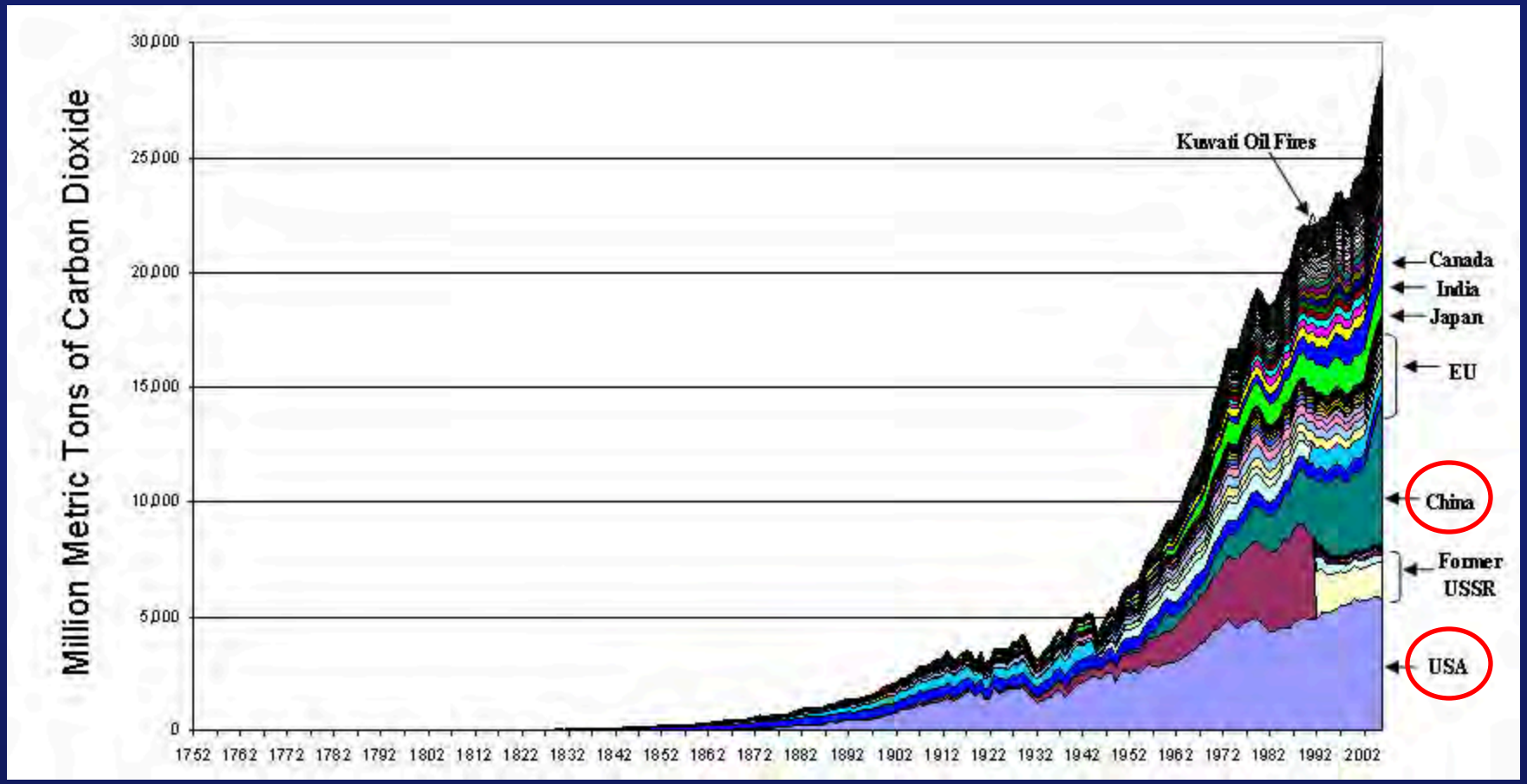
Change in Total CO_2 Emissions: USA, China, EU, & World



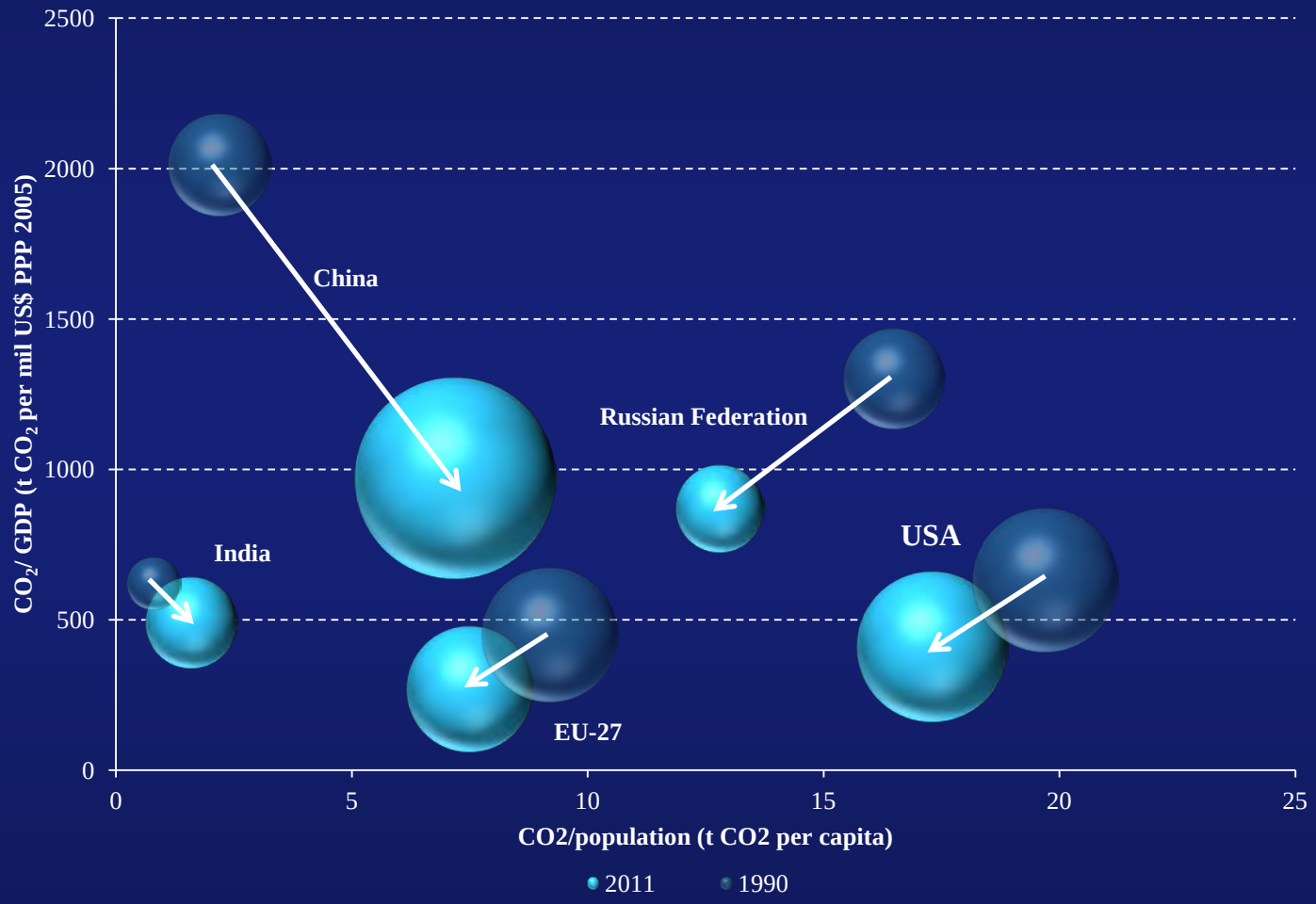
Energy-Related CO_2 Emissions, China & US, 1990-2012



Cumulative CO_2 Emissions
1752-2002



CO_2 Emission Intensity and Per Capita Trends for Top Five Emitters



Note: Size of circle represents CO2 emissions in given year.

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Basic Economics of Climate Change: Spatial Dimension

- **Climate change is a global commons problem**
  - Any jurisdiction taking action – a country, province, or city – incurs the costs of its actions
  - But the benefits (averted climate change) are distributed globally
  - Hence, for virtually any jurisdiction, the benefits it reaps from its actions will be *less* than the costs it incurs ….
    - despite the fact that the global benefits may be *greater* – possibly much greater – than the global costs
- **This presents a classic free-rider problem, ….**
  - which is why *international*, if not global, cooperation will be essential.

Basic Economics of Climate Change: Temporal Dimension

- Atmospheric lifetimes of most GHGs: decades to a century or more
- It's a marathon, not a sprint
  - Scientifically: stock, not flow environmental problem
  - Economically: cost-effective path is gradual global ramp-up in target severity (to avoid unnecessary capital-stock obsolescence)
  - Economically: technological change is key, hence long-term price signals
  - Administratively: creation of durable international institutions is essential
- International climate negotiations will be an ongoing process – much like trade talks – not a single task with a clear end-point
  - So, sensible goal for climate negotiations is progress on sound foundation for meaningful long-term action, not necessarily an immediate "solution"

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International climate negotiations

- **The Rio Earth Summit (1992)**
  - United Nations Convention on Climate Change (UNFCCC) – principle of "*common but differentiated responsibilities*" (CBDR)
- **First Conference of the Parties (COP-1, Berlin, 1995)**
  - Berlin Mandate: *Annex I (OECD+/-) countries will commit* to targets and timetables for *emission reductions*, but *no commitments* for other countries
- **Kyoto Protocol (1997)**
  - KP *fulfilled* Berlin Mandate with quantitative targets for *Annex I countries only*
- **Preview of a Key Problem**
  - Annex I countries alone cannot reduce global emissions
  - Fifty non-Annex I countries have greater per capita income than poorest of Annex I
  - Dichotomous distinction makes progress impossible

The Kyoto Protocol: The Basics

- **Framework Convention on Climate Change (1992)**
  - Treaty requires signatories to "achieve … stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with climate system."
  - Subsequent Berlin mandate (1995) proposed notion of targets and timetables for the industrialized countries (only)
- Kyoto Protocol (1997)
  - Short-term targets for industrialized (Annex I) countries only, average 5.2% below 1990 by 2008-2012 commitment period
    - U.S. target — 7% decrease (but 35% growth of GDP during 1990s)
    - EU — 8% decrease (but German reunification & UK coal privatization)
    - Japan — 6% decrease
    - Russia — 0%
    - Australia — 8% increase

Can the Kyoto Protocol Provide the Way Forward?

- Concerns:
  - Even with complete participation and compliance by all Annex I countries, global emissions increase
  - Costs much greater than need be, due to exclusion of most countries, including key emerging economies – China, India, Brazil, Korea, South Africa, Mexico (conservative estimate: costs were four times cost-effective level)
  - Short-term targets excessively ambitious for some countries
    - USA: August 1997, Byrd-Hagel Resolution, 95-0; no ratification
- Nevertheless, can the *structure* of the Kyoto Protocol be useful?

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ipcc
INTERGOVERNMENTAL PANEL ON climate change

International Cooperation: Agreements and Instruments

CLIMATE CHANGE 2014

Mitigation of Climate Change

Robert Stavins and Zou Ji
Coordinating Lead Authors, Chapter 13

Working Group III contribution to the
IPCC Fifth Assessment Report

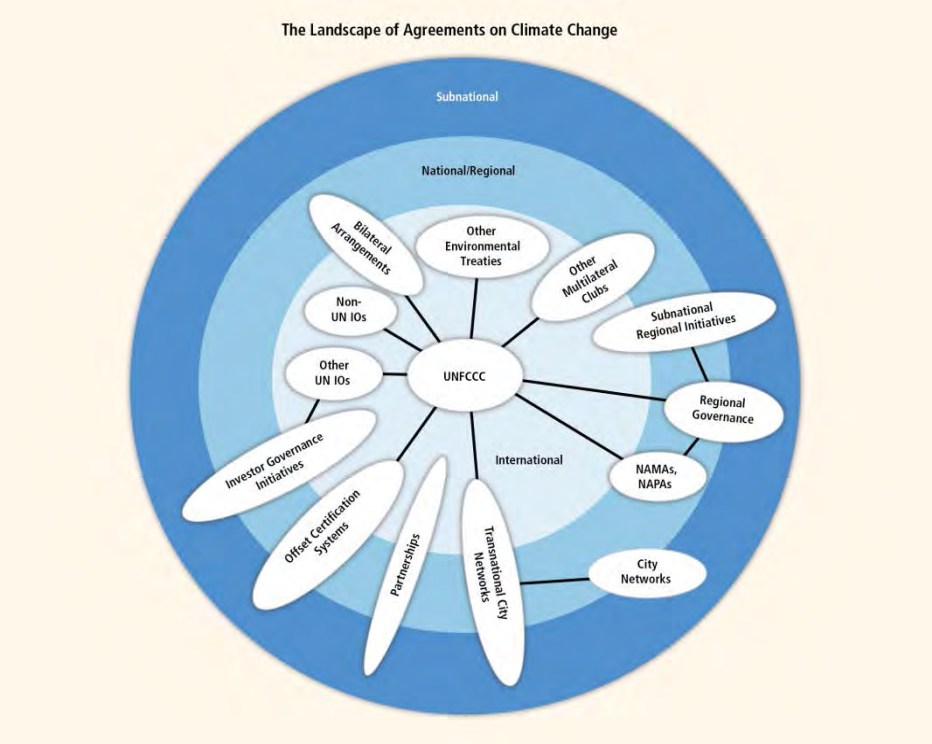
WMO UNEP

International cooperation is necessary to significantly mitigate climate change impacts

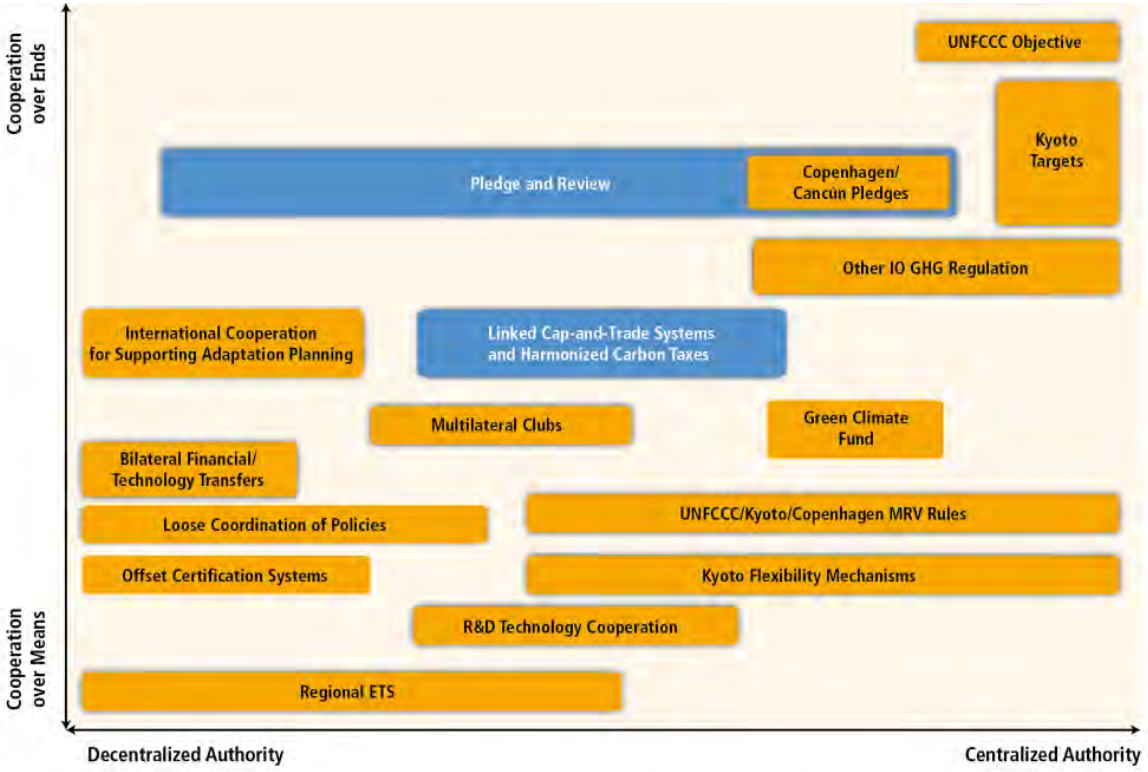
- This is principally due to the fact that greenhouse gases (GHGs) mix globally in the atmosphere, making anthropogenic climate change a *global commons problem*
- International cooperation has the potential to address several challenges:
  - Multiple actors that are diverse in their perceptions of the costs and benefits of collective action
  - Emissions sources that are unevenly distributed
  - Heterogeneous climate impacts that are uncertain and distant in space and time
  - Mitigation costs that vary

International cooperation on climate change has diversified over the past decade

- The United Nations Framework Convention on Climate Change (UNFCCC) remains a primary international forum for negotiations
  - It enjoys broad legitimacy, due in part to virtually universal membership
- But other institutions have emerged at multiple scales
  - This diversity arises in part from the growing inclusion of climate change issues in other policy arenas



Existing and proposed international climate agreements vary in the degree to which their authority is centralized



Loose coordination of policies: examples include transnational city networks and Nationally Appropriate Mitigation Actions (NAMAs); R&D technology cooperation: examples include the Major Economies Forum on Energy and Climate (MEF), Global Methane Initiative (GMI), or Renewable Energy and Energy Efficiency Partnership (REEEP); Other international organization (IO) GHG regulation: examples include the Montreal Protocol, International Civil Aviation Organization (ICAO), International Maritime Organization (IMO); See WGIII Figure 13.1 for the details of these examples.

Potential International Climate Policy Architectures (from the Harvard Project on Climate Agreements)

- **Centralized architectures**
  - Kyoto Protocol
  - Formulas for Assigning Targets
  - Portfolio of International Agreements

- **Harmonized national policies**
  - Harmonized National Carbon Taxes
  - Trading Regimes
  - Standards

- **Decentralized architectures and coordinated national policies**
  - Linkage of Regional, National, & Sub-National Cap-and-Trade Systems
  - Linkage of Heterogeneous National Policies
  - Portfolio of Commitments: Pledge & Review

Four lessons have emerged

1. **Market-based approaches are essential**

2. **Getting (carbon) prices right is necessary, but *not* sufficient**
   - Because of *public-good nature of R&D*, private sector will under-invest
   - Possible need for *government-funding of private-sector R&D*, such as for CCS

3. **"Developing county" participation is essential**
   - *Impossible* to address climate change *without* meaningful participation by China & other key emerging economies (*even if* OECD emissions were *zero*)
   - *Central task* in international negotiations is developing means of bringing key emerging economies on board

4. **Defacto *interim* (or post-2020) policy architecture *may* already be emerging**
   - Direct and indirect linkage of regional, national, and sub-national cap-and-trade and other policy instruments

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Copenhagen, Cancun, & Durban Negotiations

- **Copenhagen Accord (COP-15, 2009) & Cancun Agreements (COP-16, 2010)**
  - Began to *blur* – while still maintaining – the Annex I/non-Annex I distinction (in a non-binding pledge & review system)
- **Durban Negotiations (COP-17, 2011)**
  - COP-17 extended Kyoto Protocol for a second commitment period (2013-2017/20)
  - *Durban Platform for Enhanced Action* – mandate to adopt by 2015 a new legal framework to include *all key countries* for implementation in 2020
  - This *broke* with the Berlin Mandate, and set the negotiations on a *new path*
  - It *won't* satisfy 350.org crowd, and it must *annoy* opponents of climate policy action,
  - but in the *real world* of international climate negotiations, this is what *success* looks like.
  - At a minimum, it signaled a new opening for outside-the-box thinking!

COP-18 in Doha, Qatar (December 2012)

- **The "Doha Gateway"**
  - ➢ Kyoto Protocol second commitment period, 2013-2020
    - Only EU and Australia participating, covers 14% of global emissions; parties set their own targets
    - KP market mechanisms continue, but available only to EU and Australia
  - ➢ Durban Platform for Enhanced Action
    - No progress, but did no harm

- The climate negotiations are a long relay race, with each negotiation being one leg of the race.
- In Doha (2012), Warsaw (2013), & Lima (2014), the baton was passed.

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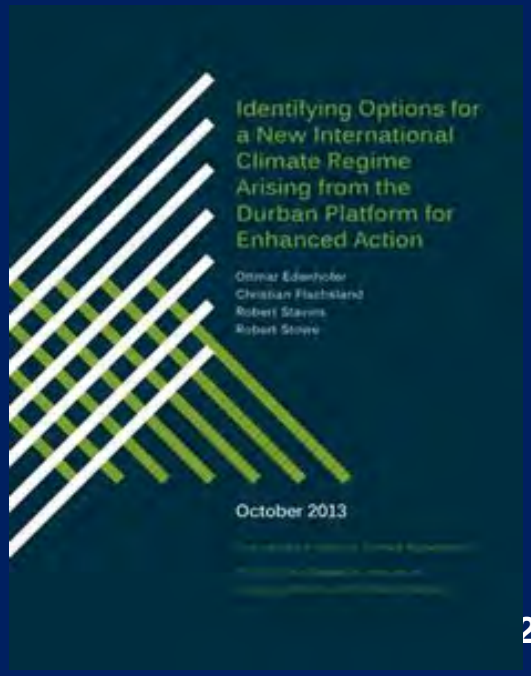
The Path Ahead to COP-21 in Paris, December 2015

- **Central framework is the Durban Platform for Enhanced Action (2011)**
- **A "hybrid" international climate policy architecture is emerging**
  - Bottom-up: "Intended Nationally Determined Contributions" (INDCs, targets and actions) arise from – or at least are consistent with – national policies and goals.
  - Top-down: Centralized oversight, guidance, and coordination.
- **Great challenges remain after COP-20 in Lima**
- **But China-USA joint announcement in November, 2014, provides positive inertia going forward …**



Origins: A Convergence of Perspectives

1. **Annual CO_2 emissions have converged**
   - U.S. emissions in 1990 were twice Chinese, but China overtook U.S. in 2006
   - These are the world's two largest emitters
2. **Cumulative CO_2 emissions will likely converge in future decades**
   - Date will depend on relative rates of economic growth *and* carbon policies
3. **Both countries have huge coal reserves, as well as natural gas**
   - Both countries have concerns about health impacts of correlated pollutants
4. **Both countries have featured use of sub-national cap-and-trade policies**
5. **Convergence of global geopolitics**
   - 20th century was the "American Century"
   - 21st century may be the "Chinese Century" – one of global leadership, not obstruction

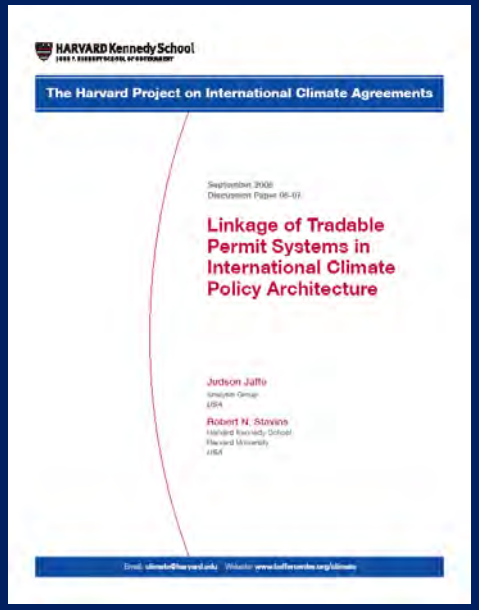
Significance: Cooperation, Foundation, Reductions

- **Most important: China & U.S. are cooperating in the context of the Durban Platform for Enhanced Action**
  - Second commitment period of Kyoto Protocol accounts for only 14% of global emissions
  - Anticipated China & U.S. INDCs for 2015 Paris agreement will account for nearly 40% of global CO_2 emissions
  - With Europe, more than 50% of global CO_2 emissions covered
  - Pressure for other large emitters to announce INDCs that are more ambitious than they otherwise would have been
- What matters most for long-term meaningful emissions reduction: an adequate foundation (adequate scope of participating countries)
  - Durban Platform offered promise of this
  - The China-U.S. joint announcement launched the realization of that promise
- Also, the China-U.S. quantitative pledges are themselves significant
  - U.S. 26-28% cut below 2005 by 2025: *doubles pace* of cuts under previous commitment
  - China caps emissions by 2030 & increases non-fossil energy generation to 20%: will require "more aggressive measures" (MIT analysis)

The Path Ahead to COP-21 in Paris, December 2015

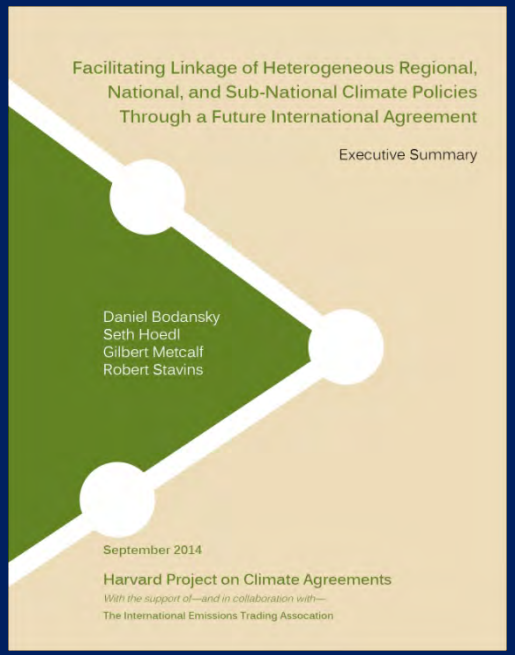
- **Key Question**
  - Can such an agreement that is *anchored* in domestic political realities, …
  - … *adequately* address emissions with sufficient ambition?
  - Are there ways to enable and facilitate *increased ambition* over time?
  - *Linkage* of regional, national, and sub-national policies can be part of the answer.

- **Cap-and-trade systems are preferred approach in many countries and regions – EU, New Zealand, California, Quebec, Korea, Mexico, China, etc.**
  - Linking these cap-and-trade systems *reduces overall costs, market power, and price volatility*
  - *Linkage also possible between heterogeneous policy instruments*, including cap-and-trade, taxes, and performance standards



What needs to be in the 2015 Paris Agreement to facilitate effective linkage?

- **New research from the Harvard Project on Climate Agreements**
  - "Facilitating Linkage of Heterogeneous Regional, National, and Sub-National Climate Policies through a Future International Agreement"
  - First principal: *Do No Harm* …
    - If poorly designed, the 2015 agreement could actually inhibit effective linkage
    - Example: "supplementarity requirements," as were discussed in Kyoto
  - What *should* the 2015 agreement *include*? …



What should the 2015 Paris Agreement include?

- **Design elements** for inclusion in the Paris agreement, *either* directly or by establishing a process for subsequent international elaboration:
  - Effective linkage requires *common definition of key terms* (in particular, units used for compliance purposes)
  - *Registries and tracking* are necessary – key role for top-down part of hybrid architecture will be *tracking, reporting, and recording* of unit transactions *across jurisdictions*
- **Inclusion of detailed rules in core agreement is *not* desirable**
  - It could make it difficult for rules to evolve in light of experience
  - Standards to ensure environmental integrity should be elaborated in *subsequent COP decisions*
  - Requirements for National MRV, registries, crediting mechanisms
- **Core agreement**: articulate general principles regarding linkage, and authorize the COP to develop more detailed rules later
  - Less can be more on the road to Paris and beyond!

Thank You!