Economic of climate change

Lesson for MCCD at Vietnam Japan University

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2020

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15	Wrap-up and discussion

Grading

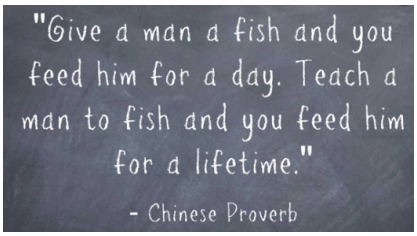
- Attendance and **active participation** in class 10%
- Problem-based assignment 15%
- Individual presentation 15%
- Exam 60%

Contents of class (from 11-21 March 2020)

- Lesson 1: Climate policy and two sides of climate policy: Adaptation and mitigation (Wed, 11/3)
- Lesson 2: International agreements and implications to economics of climate change (Thu, 12/3)
- Lesson 3: Public finance and climate finance (Thu, 12/3)
- Lesson 4: Carbon market and carbon emission trading (Mon, 16/3)
- Lesson 5: Climate policy and climate finance in Vietnam (Wed, 18/3)
- Lesson 6: Students' individual presentations (Sat, 21/3)

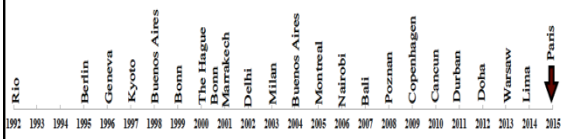
Lesson 2
International agreements and implications to economics of climate change

What did you learn yesterday?



What international agreement tell us?

Timeline of international effort on climate change response



IPCC, 1988

Assessment report
AR 1st 1990
AR 2nd 1995
AR 3rd 2001
AR 4th 2007
AR 5th 2014
AR 6th 2022

- UNFCCC

COP 1, 1995
COP 2, 1996
COP 3, 1997
COP4, 1998
COP 5, 1999
COP 6, 2000
COP 7, 2001
COP 8, 2002
COP 9, 2003
COP 10, 2004
COP 11, 2005
COP 12, 2006
COP 13, 2007
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COP 25, 2019

https://en.wikipedia.org/wiki/United_Nations_Climate_Change_conference

1998 IPCC established
1990 AR 1st – scientific evidence of climate change
1992 Rio Earth Summit in Rio de Janeiro – UNFCCC was signed
1995 COP1, AR2 (human-made CO2 emissions as one predominantly caused CC)
1997 COP3, KP adopted

1997 COP3, Kyoto

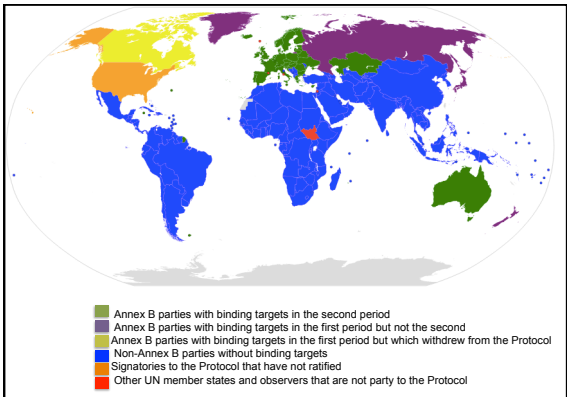
- Greenhouse gas emissions reduction
- Kyoto Protocol adopted
- Kyoto mechanisms: emissions trading (ET), clean development mechanism (CDM), and joint implementation (JI).
- European countries and most industrialized countries agreed to reduce emissions by 6-8% compared to 1990 for the 2008-2012 period (first emission budget period).

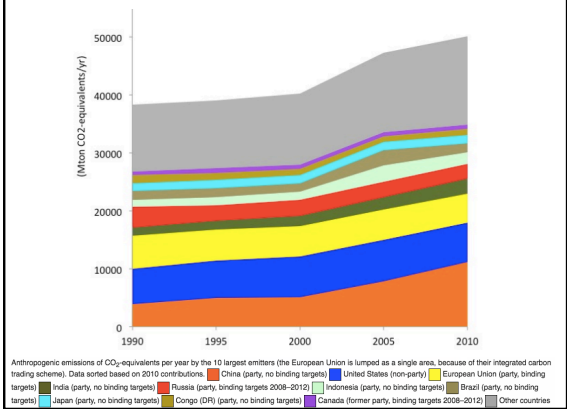
2005 COP 11, Montreal

- largest intergovernmental conferences on climate change
- **Kyoto Protocol** came into force
- **Montreal action plan**
- An **international climate roadmap** after 2012

KYOTO PROTOCOL

- part of UNFCCC with the goal of cutting greenhouse gas emissions.
- announced at the 3rd Conference of Parties (COP-3) in Kyoto (1997) and officially took effect from February 16, 2005.
- More than 195 Parties of the Convention have ratified the KP (mainly divided into Group of Annex and Non-Annex Countries).





KYOTO PROTOCOL

- **Long-term goal**: to achieve the objective of the Convention to **prevent dangerous human-induced interference with the climate system**.
- **Specific objectives**: industrialized countries will **reduce greenhouse gas emissions** (at least 5% compared to 1990 levels in the 2008-2012 period).
- Applied to 6 GHGs
- Principle of common but differentiated responsibilities (CBDR)
- **Adaptation fund for climate change and financial commitment**

KYOTO PROTOCOL

- **Including 28 Articles:**

Article 1: Related definitions
Article 2: Commitments to policies and measures
Article 3: Commitments to limit and reduce GHG emissions
Article 4: Agreement on implementation of commitments
Article 5: Responsibilities of the Parties on the assessment of GHG emissions
Article 6: Transfer and receive emission reductions
Article 7: Inventory of GHG emissions
Article 8: Pricing for implementation of commitments
Article 9: Conference of the Parties (1)
Article 10: Cooperation to implement commitments
Article 11: Financial mechanism
Article 12: Clean development mechanism
Article 13: Conference of the Parties (2)
Article 14: Secretariat
Article 15: Department of Science and Technology Support (SBSTA) and supporting agency to implement the Convention (SBI)
Article 16: Modification of multilateral consultation process
Article 17: Guidance on emissions trading
Article 18: Handling of non-compliance with terms
Article 19: Dispute settlement
Article 20: Proposal to amend the Protocol
Article 21: Proposals on the annex to the Protocol
Article 22: Voting
Article 23: Storage
Article 24: Signing the Protocol
Article 25: Effect of the Protocol
Article 26: Reservations
Article 27: Withdrawal from the Protocol
Article 28: Original documents

KYOTO PROTOCOL

- **Flexible Mechanisms:**
  - Project-based mechanism:
    - Joint implement (JI) - ERUs: between countries in Annex I
    - Clean Development Mechanism (CDM) - CERs: *help to set the **emission reduction targets and implementation** for developed countries.*
  - International Emission Trading (IET) - *AAUs: allow countries to trade / exchange within the specified emission limit for other countries*
  - *Additionally: Each project must show that the **emission reductions** it produces are additional to what would have happened without the project.*

Joint Implementation

- Start 2008
- 22 JI projects had been officially approved and registered
- Emission savings include cuts in methane, HFC, and N2O emissions
- Russia accounts for about two-thirds

Clean Development Mechanism

- Start 2001
- To 2012, CDM produced abt 1.5 billion tons of CO2e in emission reductions
- Focuses: renewable energy commercialization, energy efficiency, and fuel switching
- Largest potential for production of CERs are in China (52% of total CERs) and India (16%)

International Emissions Trading

- ETS applied in Japan, EU, US, Canada, Australia, New Zealand, etc.
- **European Union Emissions Trading System** – EU ETS (2005) → 2013: 11,000 installations → By 2020, cut EU GHGs by 20% compared with 1990
- **Green Investment Scheme** (GIS): no compulsory, no official definition, more flexible for buyers (i.e. Japan).

2009 COP 15 & MOP 5

- The forum promoted dialogue between developed and developing countries.
- The BASIC group was formed
- Developing countries agree to voluntarily reduce emissions, **with financial support**.
- *Developed countries spend 30 billion USD in the period of 2010-2012 and 100 billion USD per year in 2020.*
- Enact **Green Climate Fund**, **technology transfer mechanism** and **REDD + mechanism**

2010 COP 16, Cancun

- Agree on target **2^0C**
- Establishment of **Global climate fund (GCF)**.
- **Adaptation Committee, Center of Climate Technology Network** went into action

2011 COP17, Durban

- Agree with the expanded commitment period of the Kyoto Protocol (up to 2015).
- Improve transparency
- Operate GCF in 2012

2012 COP18, Doha

- AILAC (Independent Association of Latin America and the Caribbean) was established.
- The 27 EU member states together with Norway, Iceland, Liechtenstein, Monaco, Croatia, Switzerland, Ukraine, Kazakhstan and Australia entered a second **legally commitment period under the Kyoto Protocol**. **Only they are allowed to carry out emission trading with Russia.**

2015, COP21 Paris
Paris Agreement

- Transition of the global economy to a low emission economy
- Reach the largest emission level as soon as possible and **lower the emission level** in the second half of this century
- **Keeping the global temperature does not increase by more than 2 degrees Celsius** and attempts to limit the increase to 1.5 degrees Celsius
- **Evaluate the process every 5 years**
- By 2020, provide **$ 100 billion** per year to developing countries and commit to continuing support in the future.

2015, COP21 Paris

Arguments

- **Common but differentiate responsibilities** (CBDR), principle of international environmental law establishing that all states are responsible for addressing global environmental destruction yet not equally responsible
- Keep the increase of temperature below 1.5ºC.
- Voluntary Emissions Compensation System

Agreement

- Evidence-based
- Five-year assessment of emissions
- Monitors the progress of countries on meeting their carbon targets.

Why 1.5ºC and 2ºC

Paris Agreement implies to carbon pricing

- Article 6.2: *Establishes the potential of trading emission reduction credits across borders, between nations or jurisdictions.* This can encourage the linking of carbon pricing approaches across countries and jurisdictions resulting in the reduction of emissions by a magnitude greater than what is possible solely domestically or nationally.
- Article 6.4: *Creates a new international mitigation mechanism to help countries reduce emissions and promote sustainable development.* The mitigation engendered under this mechanism can also be used by Parties other than the host Party to fulfill their NDC. In other words, this provision allows for offsetting through the trading of emission reduction credits.
- Article 6.5: *Puts in place robust accounting measures to avoid double counting of emission reductions and increase transparency*, thereby ensuring the integrity of the proposed market-based approaches.

What will you support for? Why?

- **Limit the temperature rise below 2°C**
- Developing countries will strengthen efforts to mitigate and encourage the economy to shift to an economy that reduces emissions.
- The term of 100 billion USD expands from 2020 to 2025.
- Transparency
- Need to clarify the phrase CBDR.

What international agreement tell us?

+ Paris Agreement: finance for to climate change response

(1) Developed countries will provide financial resources for developing countries, support efforts to mitigate & adapt to climate change, and have public reports.

(2) A commitment of $ 100 billion / year will be at the lowest and must be achieved before 2025

+ COP 21 provides mechanisms for development and technology

(1) The technology framework is provided to guide the strategy

(2) Regulations on financial support for developing countries to address technology transfer issues

+ Prioritize the development and capacity building for the most vulnerable countries such as underdeveloped countries (COP 21)

Question for discussion:
Is Climate policy is good economic policy?

Why and Why not?

Is Climate policy is good economic policy?

- A lack of climate policy would **reduce average income by** 23% by 2100
- Implementing climate policy while g**rowing the economy**
- A climate policy might lead to important **co-benefits** beyond itself (Clean Power Plan -> worthwhile investment, with net gains billions of dollars (assessed by US EPA)
- Climate policy also leads to **new opportunities** and **innovation**
- With the right policies, the benefits **of avoiding CC/ mitigation CC impacts** will far outweigh the costs

Is Climate policy is good economic policy?

- How about the **Cost of climate policy?**
- **Cost-effective** of enacting climate policy compare to cost of emission?
- Challenges with **uncertainty of CC**: How to quantify uncertainty with precision and make a right decision?

Discussion point:

Which climate policy should focus on: mitigation or adaptation?

Economic aspects of adaptation to climate change

- ***Adaptation is often costly either in structural or non-structural formats*** (i.e Building sea walls to control flooding from SLR or storm surges)
- ***Adaptation is not the same as climate-proofing***: people may prefer more developmental investment in schools or hospitals, combined with acceptance of some degree of flooding, rather than an expensive structure that totally prevents local inundation
- ***Adaptation to CC is often shared limited society's resources with other socially desirable investment*** such as education, health or defense → Adaptation projects also compete
- ***The study of the economic dimensions of adaptation mainly focus on***: the costs of adaptation, fiscal instruments to facilitate adaptation, and decision-making tools for adaptation

Economic aspects of adaptation to climate change

- World Bank (2010) has estimated the **global costs of adaptation** ($70-100 billion annually out to 2050, in 2005 prices)
- The total **cost of adaptation measures in agriculture in Vietnam** is estimated to be about $210 million per annum at 2005 prices over the period 2010-2050 (nearly 1% GDP in 2005)
- Construction of **sea dikes** and other flood defenses for urban **infrastructure** and the most valuable agricultural land is separately estimated at **$20-50 million** per annum.

Economic aspects of adaptation to climate change

- **Challenges**:
  - costing adaptation to future CC requires an ability to distinguish clearly between the **components of expenditure** that are attributable respectively to **adaptation** and to **development**
  - A focus on costs **reduces the importance of uncertainty**
  - Focus on cost also **affect policy** reform: introducing rational pricing policies for water in drought-affected areas might lead to savings on the construction of new dams.
  - Adaptation costs may be useful **for international fund-raising campaigns**, and may in some cases help with the planning of adaptive responses, but they **do not serve as a good guide for policy-making.**

Homework

Analyze the economic aspects to climate change mitigation
(take the above example as reference)

How do you define a good climate policy?