Statuts and prospects for Carbon pricing in Europe
The EU ETS

Meriem Hamdi-Cherif (OFCE – Sciences Po)
Paul Malliet (OFCE – Sciences Po)

Prospects for Carbon Pricing in Europe and United States
A research workshop Co-Hosted by:
Harvard Project on Climate Agreements
Centre for European Studies and comparative Politics, Sciences Po Paris

Introduction

- Emission Trading Systems are key tools for reducing greenhouse gas emissions cost-effectively.

- The European trading scheme market is the first international cap-and-trade market to be implemented on carbon emissions.

- The EU emissions trading system (EU ETS) is a cornerstone of the EU's climate policy …

  … a key instrument to achieve a climate neutral by 2050

  and the intermediate target of an at least 55% net reduction in greenhouse gas emissions by 2030

  … the EU's key tool for cutting GHG emissions from large-scale facilities in the power and industry sectors, as well as the aviation sector

- It covers
  - 11 000 installations
  - → It represents more than 40% of the EU's GHG emissions, around 10% of developed countries' emissions and 4% of global GHG emissions.

Historical framework: Origins of the EU environmental policies

- The **Single European Act (1986)**

  The environment is integrated into the Community Treaty

- The **Maastricht Treaty (1993)**

  → The foundation treaty of the EU considers that *"environmental protection requirements must be integrated into the definition and implementation of other Community policies"*

  paves the way for a common energy and environmental approach to climate change

- **Subsidiarity principle**

  Climate change is a shared competence between the Community and the Member States

Historical framework

- The **Kyoto Protocol** to the UN Framework Convention for Climate Change (UNFCCC)
  - agreed upon in 1997
  - set legally-binding GHG reduction targets (caps) for 37 industrialised countries for the first commitment period (2008–2012)

- The need for policy instruments to meet the Kyoto commitments

- In March 2000, the European Commission presented a green paper on *"Greenhouse gas emissions trading within the European Union"* with some first ideas on the designs of the EU ETS.

- It served as a basis for numerous stakeholder discussions that helped shaped the EU ETS in the first phases.

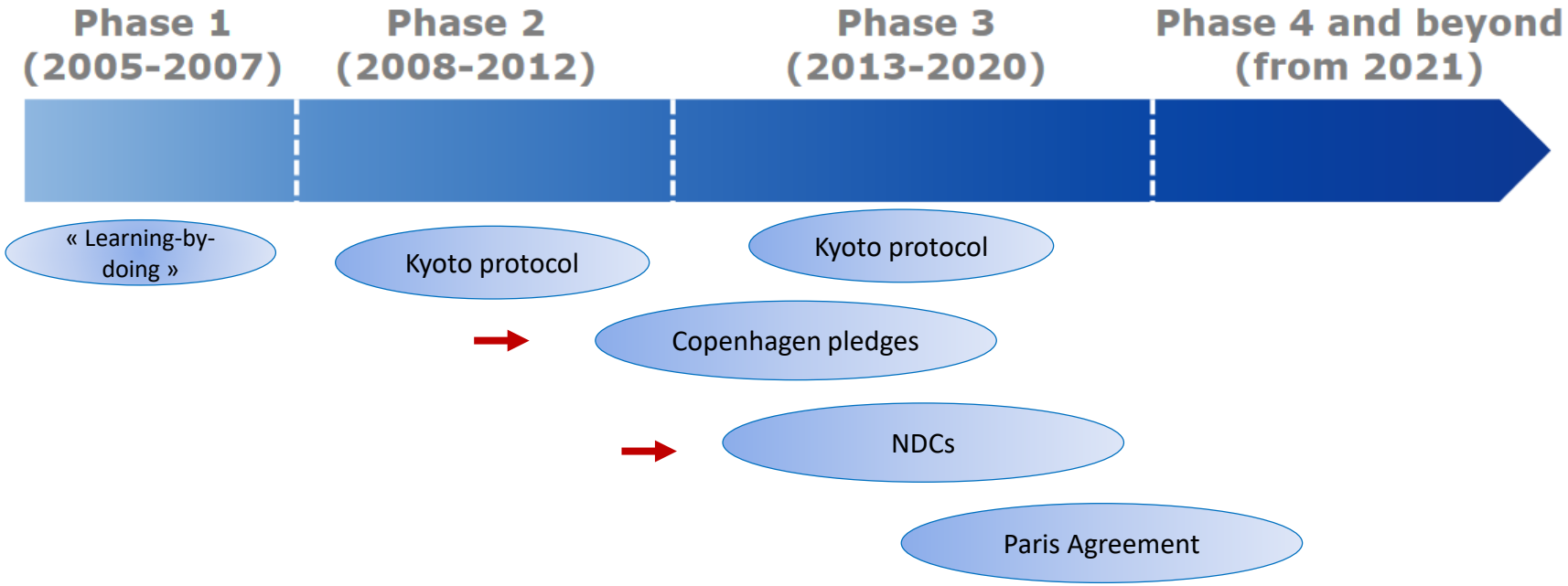
→ The adoption of the EU ETS Directive in 2003

→ The introduction of the EU ETS in 2005

- The cap on allowances was set at national level through national allocation plans (NAPs).

EU ETS … Four phases

- The system has undergone several changes since 2005
- The implementation of the system has been divided up into distinct trading periods over time, corresponding to commitments within the UNFCCC protocols and agreements



Phase I : 2005 - 2007

- The primary purpose of this 'learning by doing' pilot phase:
  - ensure the EU ETS functioned effectively ahead of 2008
  - ensure that it would allow the EU Member States to meet their Kyoto targets.
- Key features
  - EU 25 + Romania and Bulgaria in 2007
  - Only **CO_2** emissions from **power generators** and **energy-intensive industries**
  - **Almost all** allowances were given to businesses **for free** (~ 95%)
  - **No banking** (phase 1 allowances could not be banked for use in phase II)
  - The penalty for non-compliance was **40 €/**tCO2eq
- Phase I succeeded in establishing
  - a **price** for carbon
  - free **trade** in emission allowances across the EU
  - the **infrastructure** needed to **monitor, report and verify emissions** from the businesses covered.
- No reliable emissions data

→ Caps were set on the basis of estimates

→ The total amount of **allowances issued exceeded emissions**

→ Supply significantly exceeding demand + No banking allowed: the **price of allowances fell to zero in 2007**.

Phase II: 2008-2012

- 2008-2012: the **first commitment period of the Kyoto Protocol**, where the countries in the EU ETS had concrete emissions reduction targets to meet.

- Key features :

  → EU 27+ Norway, Liechtenstein and Iceland

  - **Lower cap** on allowances (~ 6.5% lower /2005)
  - **N_2O** emissions from chemicals production included by a number of countries
  - The proportion of **free allocation** fell slightly to around **90%**
  - Several countries **held auctions**
  - **Banking** of allowances possible
  - The penalty for non-compliance was increased to **100 €/**tCO2eq
  - Businesses were allowed to buy **international credits**
  - **Union registry** replaced national registries
  - Integration of the **aviation sector** in 2012 (only for flights between airports located in the European Economic Area)

- Verified annual emissions data from the pilot phase was available

  → Based on actual emissions, the **cap on allowances was reduced**
  (2 100 MtCO2eq/year vs. 2 300 MtCO2eq/year in phase I)

- 2008 economic crisis
  - ➔ Greater emissions reductions than expected
  - ➔ a large **surplus of allowances and credits**
  - ➔ **Low/very low carbon price** throughout the period
  (30€/tCO2 in July 2008; 9€ in Feb 2009; 16€ in May 2011 and **6 € in Jan 2012**)

Phase III: 2013-2020

- In a context of more biding targets

  In 2020, the target is for the emissions from EU ETS sectors to be **21% lower** than in 2005.

- Unilateral commitment by the EU to reduce its GHG emissions by 20% (compared to its 1990 emissions)

  A **single, EU-wide cap** on emissions applies in place of the previous system of national caps

- More sectors and gases included (CO_2, N_20 (chemicals) **+ PFCs** from aluminum production)

- **Auctioning** is the **default method** for allocating allowances (instead of **free allocation**),

  And harmonized allocation rules apply to the allowances still given away for free (businesses exposed to carbon leakage)

- **Cap on allowances significantly reduced:** ~1 950 $MtCO_2eq$ in 2013 decreasing every year by 1.74% of the average allocation 2008-2012

- 300 million allowances set aside in the New Entrants Reserve to fund the deployment of innovative, renewable energy technologies and carbon capture and storage through the **NER 300 program**

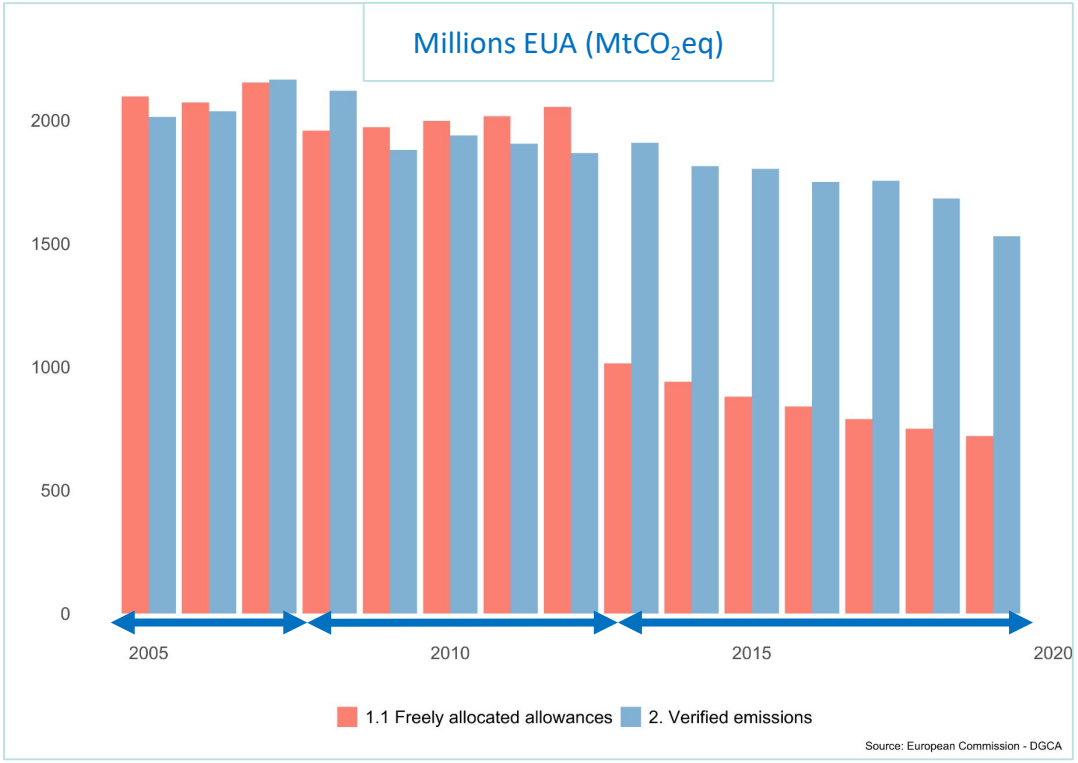
- The penalty for non-compliance increased by inflation (**100 €/**tCO2eq + **inflation**)

Sectors, gases and installations

- The system focuses on emissions that can be **measured, reported and verified** with a high level of accuracy
- EU ETS covers
  - **CO_2** from [**power and heat generation**] + [**energy-intensive industry** sectors] + [**commercial aviation**]
  - **N_2O** from **chemical** production
  - **PFCs** from **aluminum** production

- Participation in the EU ETS is **mandatory for companies in the concerned sectors**, but
  - in some sectors only plants above a certain size are included
  - certain small installations can be excluded if governments put in place fiscal or other measures that will cut their emissions by an equivalent amount
  - in the aviation sector, until 31 December 2023 the EU ETS will apply only to flights between airports located in the European Economic Area (EEA).
- Obligations of an installation subject to the EU ETS
  - Obligation to have an account with the national administrator of the European register (e.g. in France: the Caisse des Dépôts et Consignations is responsible for this role)
  - Requirement to monitor, report and have emissions verified annually by an independent auditor
  - Obligation to surrender allowances corresponding to verified emissions
  - Obligation to communicate annually all useful information concerning planned or actual changes having an impact on the allocation of free allowances

Quantities of allowances and price dynamics



The Market Stability Reserve

- The EU Commission acknowledges the issue imposed by a surplus in the allocation of EUA on undermining the functioning of the ETS from 2012
  - Surplus of EUA largely due to the 2009 economic crisis and international credits
- Backloading of 900 millions EUA to be auctioned during the phase 3 in 2014-2016
- The Market Stability Reserve (MSR) has been implemented in 2019 as quantity-control instrument
- The MSR fully plays its stabilizing role during the covid-19 crisis with a return to pre-covid EUA price by June 2020.
- However, long term effects remain more uncertain and the more permanent the shock is, the less effective is the MSR (Gerlagh et al. , 2020)

Prospect on the Phase IV of the EU ETS (2021-2030)

- The Phase 4 can be characterized by a more direct control of allowances in circulation in the EU ETS and progressively phase-out free allocation of EUA
- Allowances will decrease at an annual rate of 2.2% from 2021 onwards (compared to 1.74% in the Phase 3: 2013-2020)
- Revision of the mid-term emissions reduction objective from -44% to -56% by 2030 w.r.t 1990 , in line with the engagement of the EU Commission to achieve carbon-neutrality by 2050
- International credits, including certified emission reduction (CER) units that are generated from clean development mechanism (CDM) and Joint Initiative (JI) project activities under the Kyoto Protocol, can no longer be used in Phase 4
- The MSR will be reviewed in 2021 in order to increase the stringency of the EUA in circulation.
  - Between 2021 and 2023, the volume of EUA put in the reserve will double to 24% of the allowances in circulation
  - From 2023 onwards the number of allowances held in the reserve will be limited to auction volume of the previous year.

Border carbon adjustment and imported emissions

- The new Commission issued a first proposal in 2020 stating its wilk to put a carbon price on imports of certain goods from outside the EU and will publish a formal proposition in June
  - Avoiding carbon leakage induced by domestic carbon pricing
  - Planned to be operational from 2023

- A Carbon-based adjustment Mechanism (CBAM) aims at restoring the distortion imposed by a unilateral carbon pricing policy between different jurisdictions.
  - Carbon taxation is still at an early stage since only 15 % of global GHG emissions are covered by a pricing mechanism (Ramstein et al., 2019)
  - 22% of the world GHG emissions stem from the production of goods and services that are consumed in a different country (Peters et al., 2012),

- From a carbon accounting perspective, it operates a shift from a producer to a consumer-based approach.

- No strong evidence of a carbon leakage induced by the EU ETS in the past (Naegele and Zaklan ,2017) but that could become more stringent with a rising ETA price.
  - A low allowance market price
  - Overallocation of free allowances and sectoral exemption for energy-intensive sectors (Schimdt and Heitzig, 2014)

Border carbon adjustment and imported emissions

- The mechanism design is important in order ensure WTO compatibility rules.

- The European parliament has voted for a resolution in favor of a CBAM mechanism taking the form of purchase of EUA from the foreign firms with a carbon intensity exceeding the European norms

  - Suppose a phasing-out of sectoral exonerations of the exposed firms

- Beyond the mechanism-designed and its compatibility with WTO rules, technical questions remain unsolved (Cosbey et al., 2019)
  - How to effectively monitor and control for emissions in over jurisdictions ?
  - How to address the upstream carbon emissions along the global value chain of the imported goods ?
  - How to fully assess the price premium from importers on domestic firms due to a less stringent environmental policy?

- The use of the CBAM revenues is also key in enhancing its effectiveness and acceptability
  - The Commission estimates a revenue between 5 and 14€ billions depending on the scope of the tax
  - There is a trade-off in the revenue recycling towards domestic agents and external agents

- However, if the main aim is to phase-out the exonerations for exposed sectors without facing a carbon leakage, the use of the resource can be seen as a second objective.
  - Current discussion about CBAM funding the General EU Budget
  - Expected retaliation measures from trade partners

Carbon Price-floor

- The EU ETS has been conceived as a purely quantitative policy instrument, based on the regulation of a cap on emissions, steadily declining with regard of the emissions target.
- However, some design flaws and distortions can when facing unexpected events lead to a drop of carbon price below a significant threshold (overallocations of quotas, exogenous shocks, technological shocks, myopic behaviour of participants)
- UK has introduced a carbon floor-price in 2013 as a domestic carbon tax on energy plants and other ETS (Québec-California, China) already adopt a similar mechanism
- The introduction of a carbon price floor would allow for correcting these distortions (Flaschland et al., 2019) and can be complementary to the MSR by reducing the price variability and strengthening the long-term price-signal of the EUA price

ETS International cooperation and markets interlinking

- Issued from the Kyoto protocol, the international credits generated by CDM and JI will not be longer useable in the frame of the EU ETS
  - A new mitigation mechanism established by the Paris agreement will replace CDM and JI
  - The EU prefers to concentrate its effort on domestic emissions
- Norway, Liechtenstein and Iceland joined in 2008 the EU ETS via a multilateral linkage and a in 2020, EU and Swiss bilaterally linked their ETS
- The environmental ambition of an ETS can ben scrutinized through three dimensions
  - The emissions coverage
  - The stringency that translates the marginal cost of compliance
  - The determinacy which is the quality of an abatement target to ensure emissions stay below a certain level
- Interlinking two ETS with different rules and different objectives can lead to pervasive effects (Doda et al., 2019 ; Hintermann and Gronwald, 2019)
  - Uncertainty about respective marginal abatement cost
  - Translation of the price formation mechanism under different set of rules
  - The exchange rate between allowances

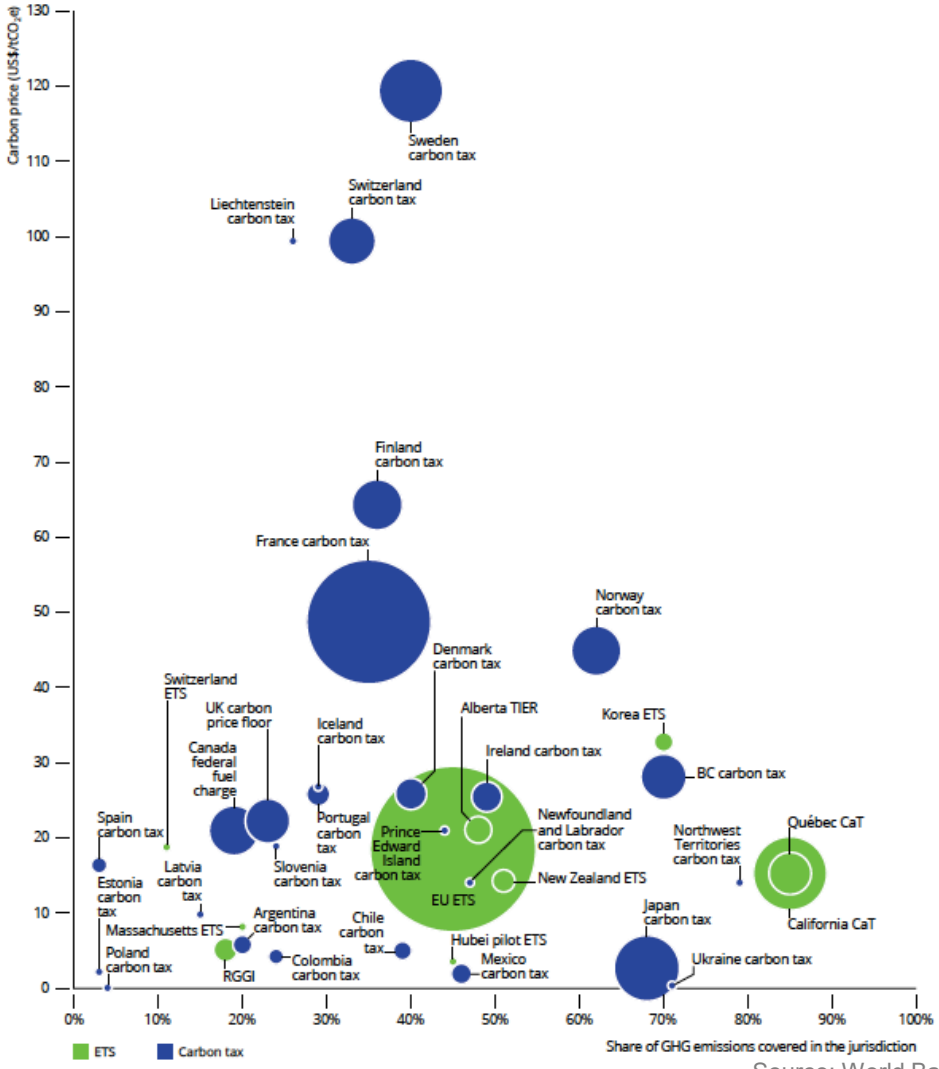
Conclusion

- The EU ETS strengthen itself over the past years to keep a stable price signal reflecting the emissions reduction target efficiently
- EU ETS can play a role in speeding up the transition to a low-carbon economy through the use of auctioning revenues,, as stated by Article 10 of the EU ETS Directive
  - Member States are supposed to use at least half of the revenues for climate and energy related purposes
  - In 2018, total revenues from EUA auctioning reached €14.2 billion
- The integration of policy instruments to the new ETS should aim at lowering the distortions that could potentially weaken the functioning of the EU ETS
  - CBAM lowering the carbon leakage risk
  - PMR lowering the over-allocation of permits risk
  - CPF to provide a long-term price-signal to participants and avoid myopic risk
- International carbon market promotion through Interlinking EU ETS with other ones remains a challenging task
  - Risk of ill-design that would alter the internal functioning of ETS.
  - Misalignment of climate ambition
  - EU should envision an internal consolidation of its ETS functioning before aiming an international integration of other ETS

Thank you for your attention

Annex

EU ETS: the world's first major carbon market



Source: World Bank, 2020

Evolution of the European carbon market: Phase I & II

- In phase I:

  Trading volumes:

  - **321 million allowances in 2005**
  - 1.1 billion in 2006
  - **2.1 billion in 2007** (World Bank's annual Carbon Market Reports).

- The EU ETS remained the main driver of the international carbon market during phase II. In 2010, for example, EU allowances accounted for 84% of the value of the total global carbon market.

  Trading volumes jumped from **3.1 billion in 2008** to 6.3 billion in 2009.

  In **2012, 7.9 billion** allowances were traded (worth €56 billion).

- Daily trading volumes exceeded 70 million in mid-2011, data compiled by Bloomberg New Energy Finance and London Energy Brokers Association show

Use of carbon revenues

- Member States are supposed to use at least half of the revenues for climate and energy related purposes, as stated by Article 10 of the EU ETS Directive

➔ The EU ETS can play a role in speeding up the transition to a low-carbon economy through the use of auctioning revenues.
In 2018, total revenues from the auctioning of allowances reached €14.2 billion, which represents an increase of more than 150% compared to the previous year (I4CE elaboration on EEX, 2019 and ICE, 2019).

➔ According to the Commission (European Commission, 2019f), over the period 2013-201716, around 80% of auction revenues were spent for climate and energy purposes, mainly within the EU