The European Union Emissions Trading System (EU ETS): design elements and reporting framework

Technical Training on Carbon Pricing

Bangkok, 25 September 2018

João Aleluia, PhD

Climate Change Specialist, Regional Collaboration Centre for Asia and the Pacific

UNFCCC Regional Collaboration Centres (RCCs)

- **RCC Bangkok** is a collaboration between the UNFCCC Secretariat and IGES
- Hosted by IGES Regional Office in Bangkok, Thailand
- The fifth RCC globally, launched in September, 2015

- Set up to **spread the benefits of the CDM**, and to help **under-represented regions** increase their attractiveness and potential for CDM, by building their capacity and reducing the risk for investors
- **Broader role since Paris** - supporting development and implementation of countries' NDCs, with focus on market mechanisms.

IGES Institute for Global Environmental Strategies

Collaborative Instruments for Ambitious Climate Action (CI-ACA)

Goal

- Assist Parties in the development of carbon pricing approaches for implementing their NDCs under the Paris Agreement

Activities under the project

- Identification of carbon pricing options and how these can fit into national circumstances and objectives
- Development of synergies and collaboration opportunities through alignment, convergence and multi-country approaches
- Improvement of capacities on carbon pricing, nationally and regionally

Current initiatives in Asia-Pacific

- Scoping study on MRV as a foundation for integrated carbon pricing instruments in ASEAN
- Scoping study on carbon pricing options for Pakistan

Outline

I. The EU ETS and its key design elements

II. Progress since 2005 and future outlook

III. Monitoring, Reporting and Verification in the EU ETS

IV. Lessons learned

ETS basics

- **What?**

A competent authority **sets limits** for GHGs emissions for the participants of the ETS, and **distributes allowances**, which are **fungible and tradable**

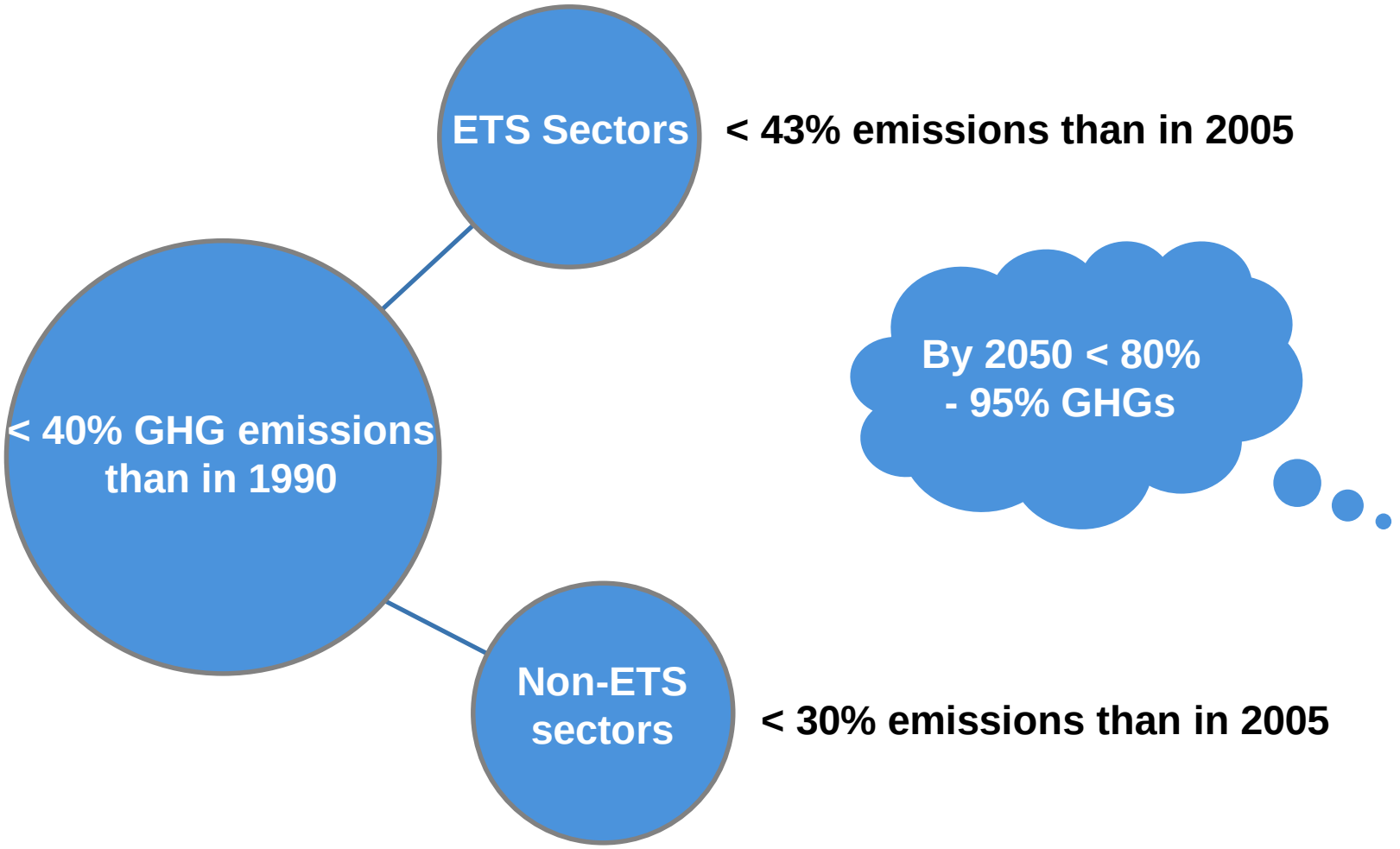
- **How it works?**

If an agent overruns its emission limits, compliance is possible by buying spare allowances from another participant of the ETS

- **Why ETS?**

(1) Ensures that a **pre-established emission target** is met; **(2)** enables cost-effectiveness of emission reductions among participants; **(3)** all with a relatively **low administrative cost for Member States**

ETS and EU reduction targets for 2030



Source: European Commission, 2018

Status of the EU ETS

The EU ETS is the world's largest cap-and-trade programme:

- Limits emissions from **11,000 installations** and **500 aircraft operators**
- Over **45% of EU GHG emissions** are covered by the ETS
- Revenues from auctioning: **€3.7 billion** in 2013; **€3.2 billion** in 2014; and **€4.9 billion** in 2015
- EU regulation requires that 50% of auctioning revenues are used to tackle climate change in the EU
- Member States' reports indicate that 80% of auctioning revenues were invested in energy and climate related projects

Source: European Commission, 2018

EU ETS Phases

Phase 1 (2005-2007)

- Pilot phase
- Only CO_2 emissions covered
- No auctioning of allowances
- Banking of allowances to next phases not pertmitted
- Cap set based on national allocation plans (NAPs)

Phase 2 (2008-2012)

- Coincided with the first commitment period of the Kyoto Protocol
- Lower cap on allowances
- Banking allowed between phases
- Aviation sector joined from 1 January 2012 onwards

Phase 3 (2013-2020)

- Single EU wide cap
- Cap decreases 1.74% yearly
- Coverage of PFCs and N_2O emissions included

Phase 4 (2021-2030)

- Cap decreases 2.2% yearly
- Stricter criteria for free allocation and focusing on sectors at higher risk

Market stability reserve (MSR) from 2019 onwards

Source: European Commission, 2018

Allowance allocation methods

- **Auctioning**

Participants of the ETS bid for emission allowances, which are taken by the ones with the highest offers**.**

- **Free allocation based on benchmarking**

The most efficient GHG emitters of a sector are used as a reference for distributing allowances to agents from that same sector. Distribution of allowances based on a uniform GHG performance level per unit of product (generally, top X%).

Free allowance distribution can prevent industries subject to international competition to relocate their facilities ("**carbon leakage**").

Flexibility in compliance and conditions

Meeting emission goals with Kyoto Credits is allowed. **Restrictions apply since ETS Phase 2**

Quantitative restriction:

International credits allowed for **partial** compliance only

Qualitative restrictions:

From Phase 2, no credits from LULUCF, nuclear plants and the destruction of industrial gases (HFC-23 and N_2O). Restrictions in the use of credits from hydro power projects.

From Phase 3, the use of new project credits/CERs is not accepted unless the project is registered in an LDC.

No international offsetting envisaged for ETS Phase 4!

Since ETS Phase 2:

Banking of surplus allowances for compliance in later Phases is permitted

Borrowing next-year allowances **within a same Phase** is possible

Legislative snapshot

The EU ETS is supported by a comprehensive legislative framework

Directive 2003/87/EC: establishment of the EU ETS

Directive 2004/101/EC: allows use of Kyoto Credits for compliance

Directive 2008/101/EC: caps the aviation sector from 2012

Directive 2009/29/EC: introduction of a single cap in the EU from 2013

EU Regulation 600/2012: sets out accreditation and verification requirements

EU Regulation 601/2012: sets out monitoring and reporting requirements

Decision 2015/1814: launches the market stability reserve from Jan. 2019

Source: European Commission, 2018

Outline

I. The EU ETS and its key design elements

II. Progress since 2005 and future outlook

III. Monitoring, Reporting and Verification in the EU ETS

IV. Lessons learned

Progress since 2005

	Phase 1	Phase 2	Phase 3	Phase 4
Coverage	Only CO_2 emissions from EU countries	Iceland, Liechtenstein & Norway	Switzerland joined through linking N_2O and PFCs included	No changes envisaged
Sectors included	Power generators & Energy-intensive industries	Aviation	CCS installations Production of petrochemicals, ammonia & metals	No changes envisaged
Non-compliance penalty	€40 / tonne	€100 / tonne		To be determined

Sources: European Commission, 2017; ICAP, 2018

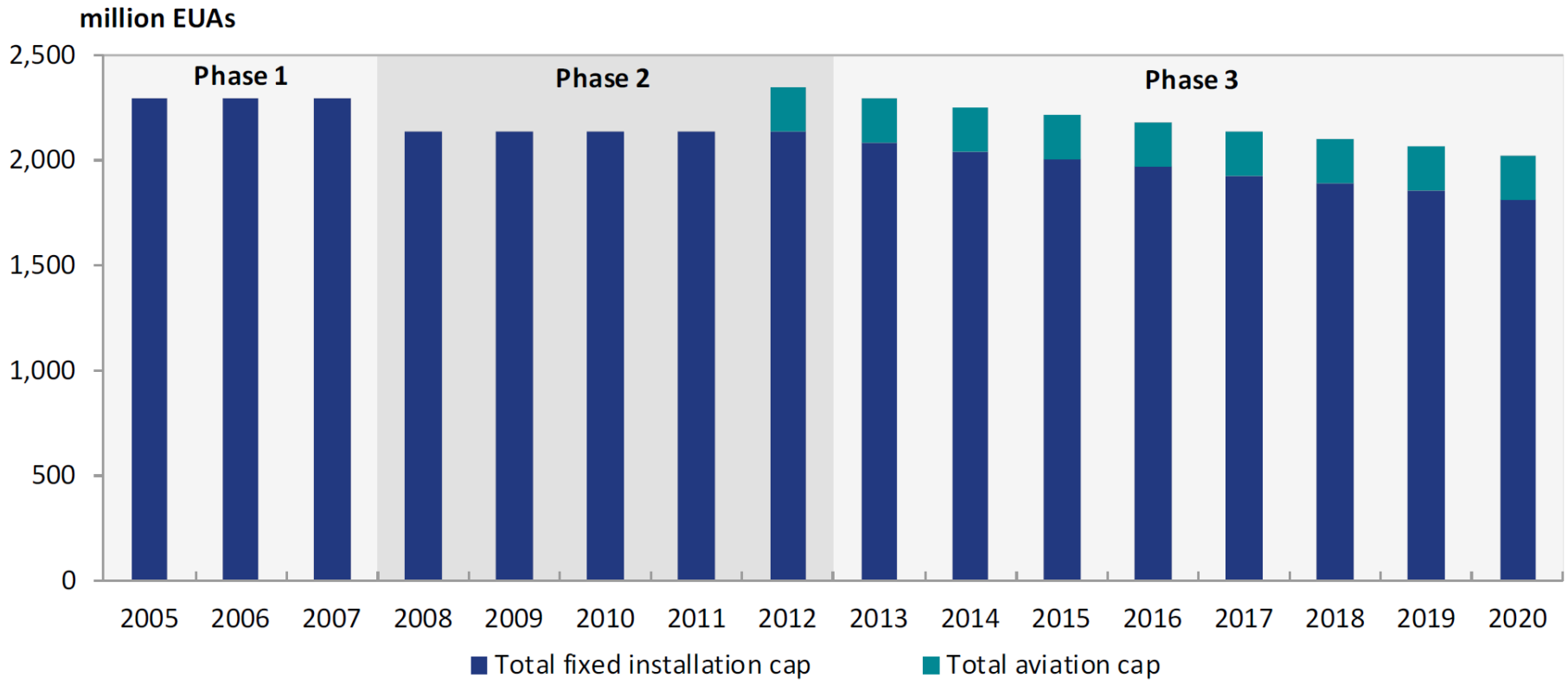
Progress since 2005 (cont.)

	Phase 1	Phase 2	Phase 3	Phase 4
Cap evolution (fixed installations)	Decentralized EU cap (set from the 27 NAPs of Member States)		Linear reduction factor introduced: cap decreases 1.74% yearly	Cap decreases 2.2% yearly
Free Allocation	~100% freely allocated	~97%	~43%	~1%
Use of international credits	Unlimited	Limited		No use envisaged

Sources: European Commission, 2017; ICAP, 2018

Cap evolution

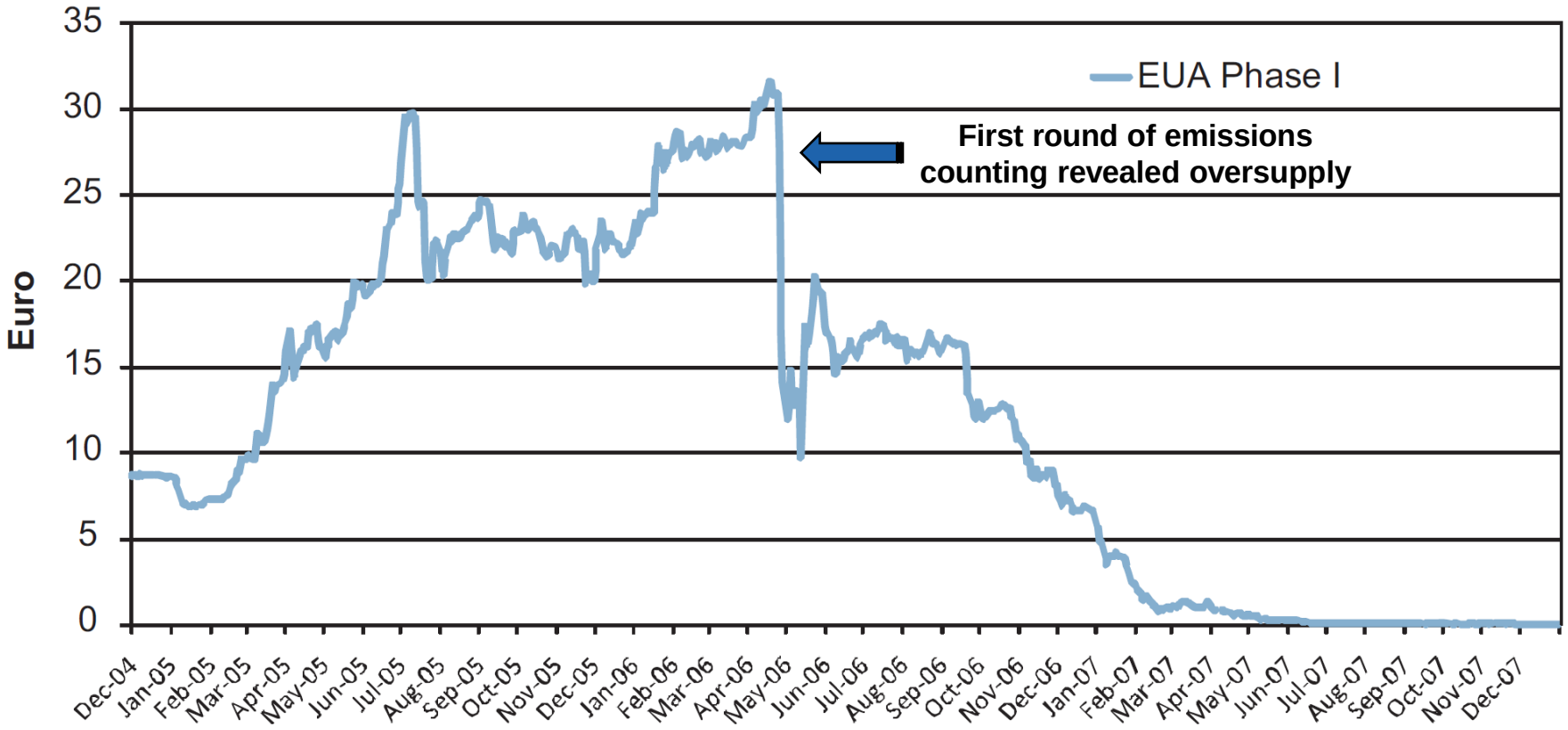
Fixed installation cap decreasing at a rate of 1.74% from 2013 levels, while aviation cap set at 95% of historical emissions of the sector



Source: EU ETS Handbook, 2017

Phase 1 (2005-2007)

Allowance price evolution during EU ETS Phase 1



Source: Hintermann, 2010

Market Stability Reserve (MSR)

Why?

- The MSR was introduced to address the **imbalances between supply and demand** for emission allowances

Objective:

- Improve the system's **resilience** to major shocks by adjusting the supply of allowances to be auctioned

How?

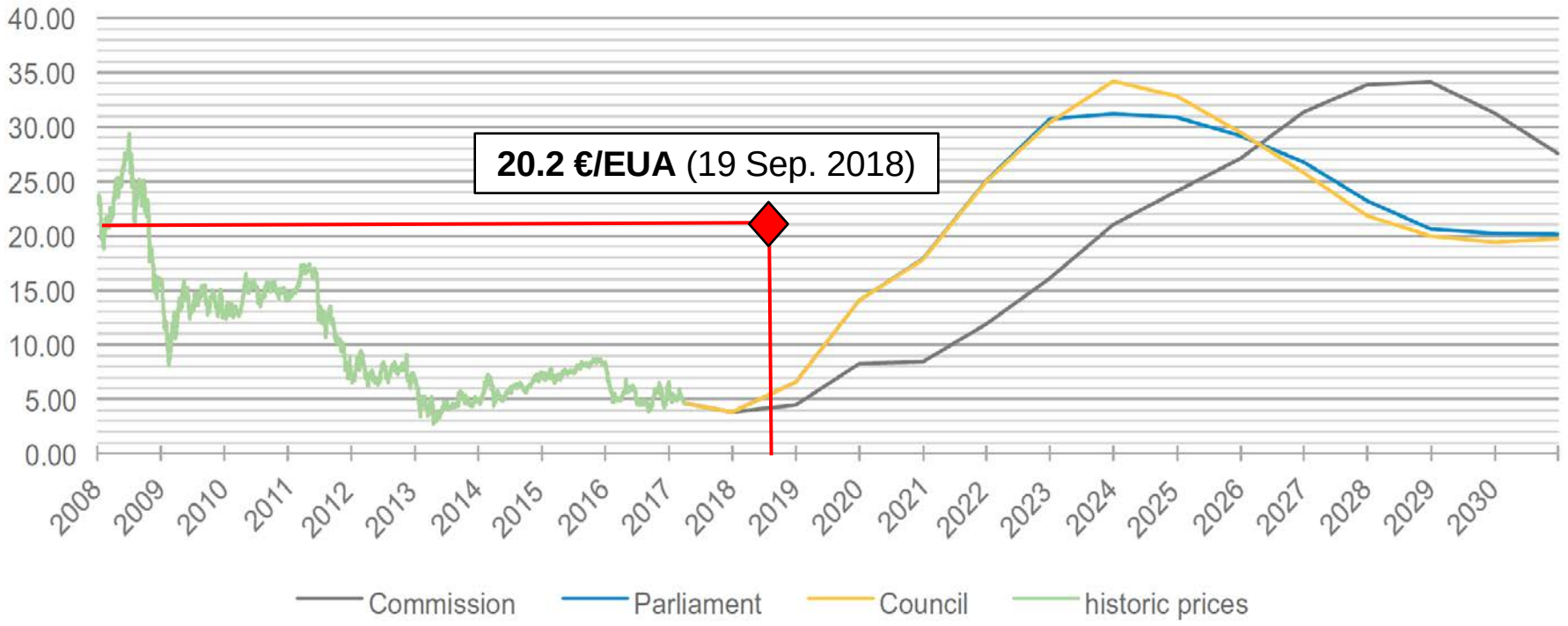
- **If more than ~ 833 million units are in circulation, surplus allowances are put in the reserve**
- It will be introduced in **January 2019**

Source: European Commission website, 2018

Market Stability Reserve (MSR)

Expected impact of the MSR on EUAs

EUA price (€/tonne)



Sources: ICIS, 2017; EEX, 2018

Outline

I. The EU ETS and its key design elements

II. Progress since 2005 and future outlook

III. Monitoring, Reporting and Verification in the EU ETS

IV. Lessons learned

MRV requirements in the EU ETS

Why?

- To ensure the integrity of the system: 1 tCO_2 emitted = 1 tCO_2 reported
- High level of accuracy of emissions measured, reported and verified

MRV requirements are legislated:

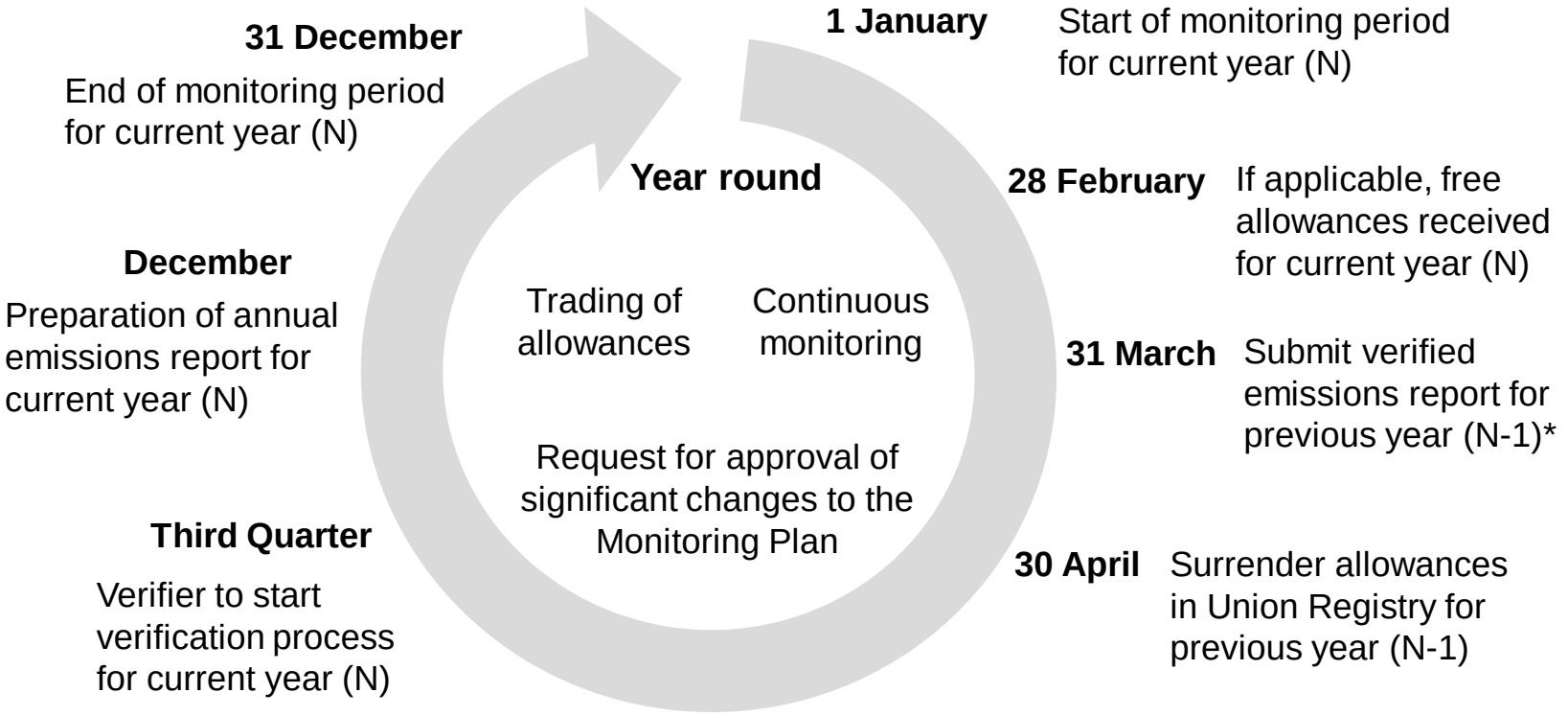
- Monitoring and Reporting Regulation
- Accreditation and Verification Regulation

Key elements of the MRV system:

- Monitoring plan
- Verified annual emissions report
- EU Registry

Annual compliance cycle

Entities covered under the EU ETS are required to monitor and report on their annual emissions to their Competent Authority



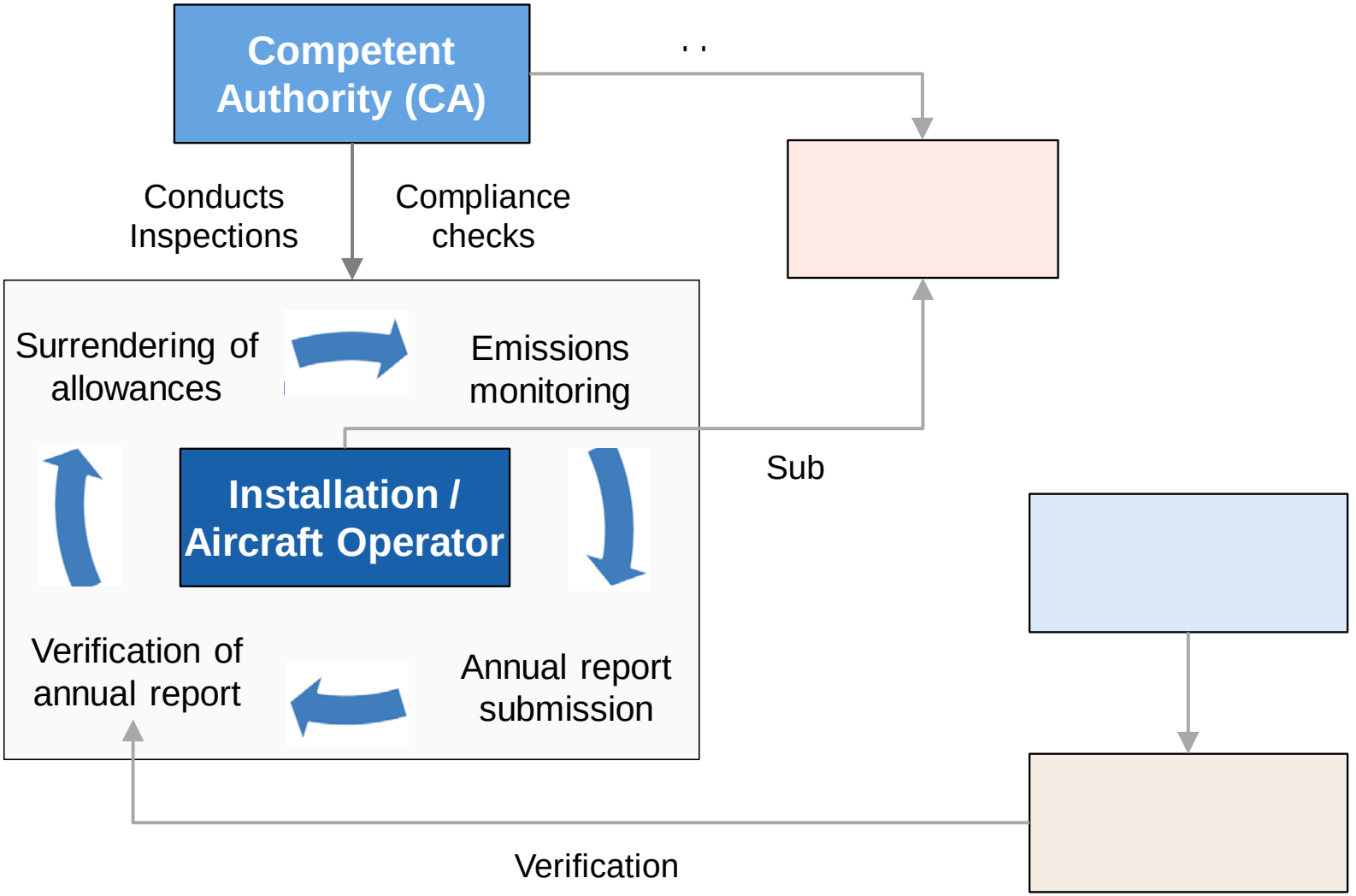
* In some Member States, verified emissions report of year N-1 may be required as early as 28 February

Source: EU ETS Handbook, 2017

Roles and responsibilities of stakeholders

Stakeholder	Responsibilities
Installation or aircraft operator	➢ Preparing and submitting a monitoring plan and verified annual emission report to the Competent Authority ➢ Surrendering allowances equivalent to annual GHG emissions at the end of the compliance cycle ➢ Purchasing additional allowances for compliance if required ➢ Striving for improvements of the monitoring methodology, and update of the monitoring plan if appropriate
Competent Authority	➢ Approval of the monitoring plan and checking of annual emissions reports ➢ Compliance check: carrying out of inspections ➢ Enforce penalties in case of non-compliance ➢ Reporting to the Commission on national performance. ➢ Demanding improvements of the monitoring plan, if found necessary
Third party verifier	➢ Obtaining and maintaining accreditation for the scopes relevant for his clients' installations or aviation activities ➢ Verifying annual emission reports
National accreditation body	➢ Accreditation and surveillance of verifiers.

Roles and responsibilities of stakeholders (cont.)



Source: EU ETS Handbook, 2017

Monitoring of emissions

- **Monitoring plan** plays a central role in the whole MRV system
- Basic principle: largest emissions should be monitored most accurately, while less ambitious methods may be applied for smaller emitters
- Four types of installation are distinguished based on their average verified annual emissions:
  - **Category A**: ≤ 50,000 tCO_2e/year
  - **Category B**: 50,000 < emissions ≤ 500,000 tCO_2e/year
  - **Category C**: > 500,000 tCO_2e/year
  - **Installations with low emissions** - category A installations emitting less than 25,000 tCO_2e/year

Source: Monitoring and Reporting Regulation, 2012

Monitoring of emissions: methodologies

- Cost-effectiveness in the MRV framework is possible due to the flexibility in the choice of the monitoring methodology

- The following methodologies are available

  a) Calculation based — **Most widely applied**

     - Standard methodology
     - Mass balance

  b) Measurement based approaches

  c) “Fall-back approach” (i.e. not based on tiers)

  d) Combination of approaches

Monitoring of emissions: tier system

Tier system:

- Defines accuracy levels based on the amount of annual emissions of an installation
- Installations qualifying as categories B and C installations are required to apply the highest tier for each parameter

Tier Level	Fuel quantity*	Net calorific value	Emission factor	Biomass fraction	Oxidation factor
Tier 4	± 1.5%	To be determined by laboratory analysis	To be determined by lab. analysis	To be determined by lab. analysis	To be determined by lab. analysis
Tier 3	± 2.5%				
Tier 2	± 5%	Country specific / from fuel invoices	Country specific/ proxy values from analysis		Country specific
Tier 1	± 7.5%	Standard factors	Standard factors	Standard factors	1

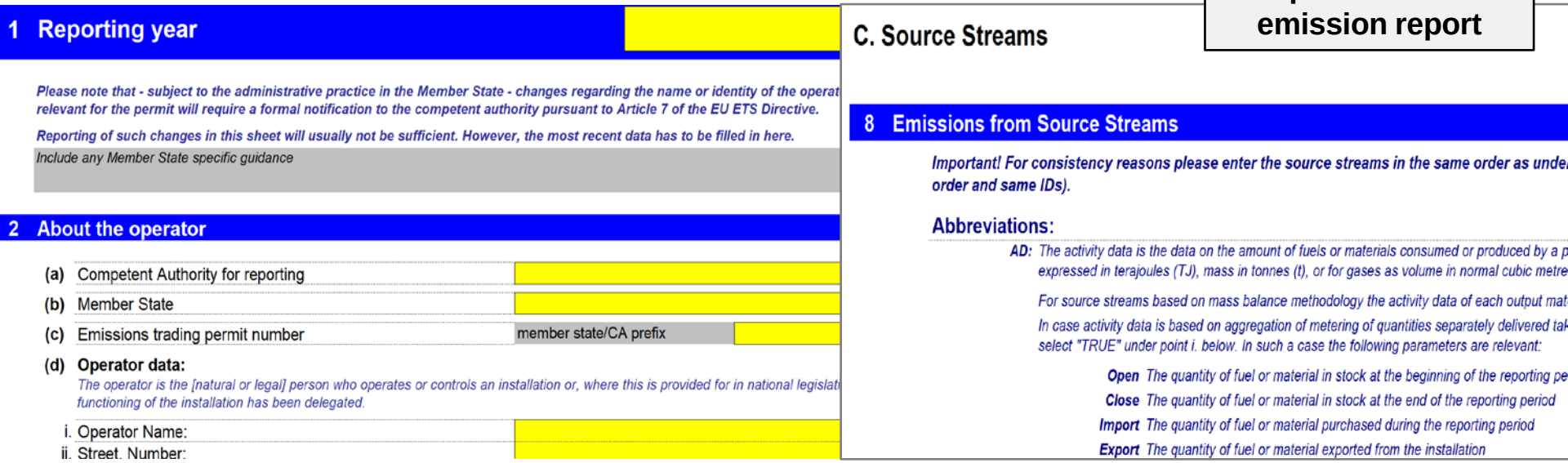
* Maximum uncertainty in fuel amount

Source: EU ETS Handbook, 2017

Annual emissions report

- The annual GHG emissions report needs to be in line with the monitoring plan approved by the Competent Authority
- Once completed, the report needs to be verified by an accredited entity before submission to the Competent Authority
- Operators need to surrender the equivalent number of allowances as the reported direct emissions
- Electronic template provided by the European Commission which assists operators issuing the report

Template for annual emission report



1 Reporting year

Please note that - subject to the administrative practice in the Member State - changes regarding the name or identity of the operat
relevant for the permit will require a formal notification to the competent authority pursuant to Article 7 of the EU ETS Directive.

Reporting of such changes in this sheet will usually not be sufficient. However, the most recent data has to be filled in here.

Include any Member State specific guidance

2 About the operator

(a) Competent Authority for reporting

(b) Member State

(c) Emissions trading permit number — member state/CA prefix

(d) **Operator data:**
The operator is the [natural or legal] person who operates or controls an installation or, where this is provided for in national legislat
functioning of the installation has been delegated.

i. Operator Name:
ii. Street, Number:

C. Source Streams

8 Emissions from Source Streams

Important! For consistency reasons please enter the source streams in the same order as unde
order and same IDs).

Abbreviations:

AD: *The activity data is the data on the amount of fuels or materials consumed or produced by a p*
expressed in terajoules (TJ), mass in tonnes (t), or for gases as volume in normal cubic metre

For source streams based on mass balance methodology the activity data of each output mat
In case activity data is based on aggregation of metering of quantities separately delivered tak
select "TRUE" under point i. below. In such a case the following parameters are relevant:

Open *The quantity of fuel or material in stock at the beginning of the reporting pe*
Close *The quantity of fuel or material in stock at the end of the reporting period*
Import *The quantity of fuel or material purchased during the reporting period*
Export *The quantity of fuel or material exported from the installation*

The Union Registry

The **EU ETS** registry is a web based platform that holds accounts for participants to the EU ETS

- The registry keeps track of the following activities:
  - Allowances allocated and held in registry accounts
  - Annual verified CO_2 emissions
  - Reconciliation of allowances and verified emissions
  - Transfer of allowances among account holders
- Prior to 2012, each EU Member State had its own emissions allowances registry. Since then, registries were replaced by the single Union Registry

Outline

I. The EU ETS and its key design elements

II. Progress since 2005 and future outlook

III. Monitoring, Reporting and Verification in the EU ETS

IV. Lessons learned

Lessons learned

- Challenge of setting a cap: e.g. reliable emissions data as a basis for sound allowance allocation
- Challenge of conciliating quantitative target (cap) and desired price signal in light of evolving circumstances (e.g. 2008 economic crisis): may require an adjustment mechanism
- The need for periodic review of rules & regulations in order to adjust to new circumstances and the growing complexity of the system
- The importance of having a clear legal framework as a basis for enforcing MRV requirements on different stakeholders
- The need to articulate GHG emission reduction targets under an ETS with “complementary” mitigation policies

Thank you for the attention!

João Aleluia, PhD

Regional Collaboration Centre for Asia and the Pacific