

**Umwelt
Bundesamt**



DEHSt
Deutsche
Emissionshandelsstelle

Study Tour on ETS – Delegation from Chile



Monitoring and Reporting

From the perspective of the regulator

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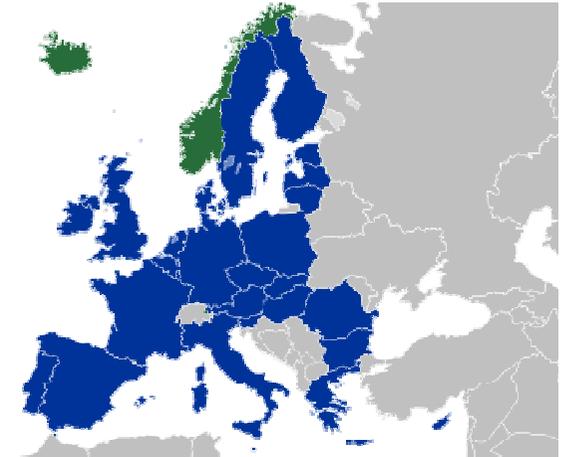
E 2.3 Economic Aspects, Monitoring and Evaluation
13 December, 2017 – DEHSt / German Emissions Trading Authority

Outline

- Part I: Legal framework
- Part II: EU ETS Compliance Cycle for Monitoring, Reporting and Verification
- Part III: Main elements of Monitoring & Reporting
- Part IV: Lessons learnt

Legal framework

Legal Framework in EU and Germany



- EU ETS Directive 2003/87/EC
 - **1st and 2nd trading period (2005-2012):**
Monitoring & Reporting Guidelines (MRG - Decision 2007/589/EC):
provided the framework for monitoring, reporting & verification of emissions until the end of 2012 (no detailed regulation on accreditation)
 - **GHG Emissions Trading Act (“TEHG”)** – provided the legal framework for national implementation of ETS, e.g. competence distribution between authorities, deadlines, procedural aspects, rules for auctioning and free allocation, sanctioning and fines.
- ➔ Need for more harmonization!
- ➔ **3rd trading period (2013-2020):**
- EU Monitoring and Reporting Regulation (2012)
 - EU Accreditation and Verification Regulation (2012)
 - Adjusted TEHG and national ET regulation with some specified requirements

Activities and GHG Gases under EU-ETS (Directive 2003/87/EC)

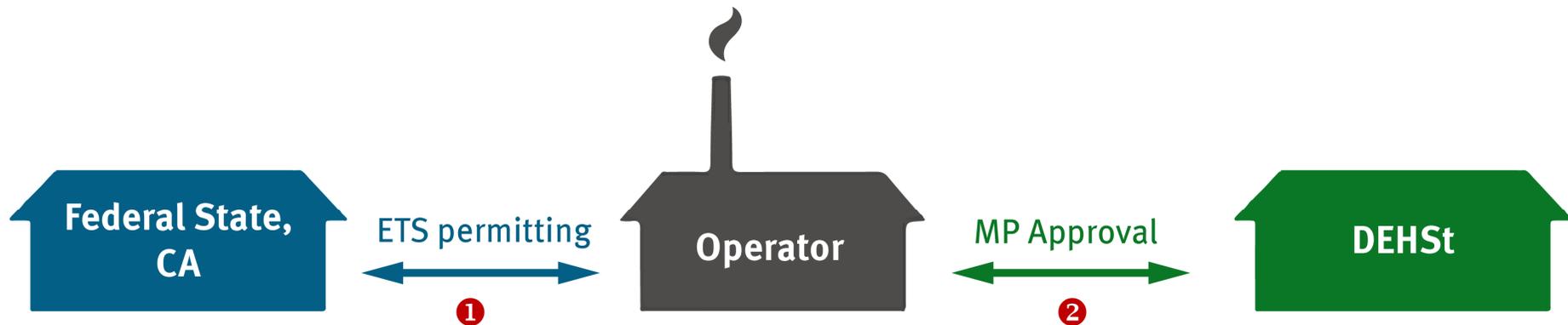
- All combustion installation with a total rated thermal input > 20 MW
Exception:
 - Installation with exclusive combustion of dangerous or municipal waste
 - Installations using only biomass
- Industries like Refinery, Iron and Steel, Metal roasting and Sintering, Cement, Lime, Glas, Pulp and Paper, Ceramic, Non-ferrous metals, Gypsum, Chemicals
with varying thresholds for each sectors (max. production capacity/day (or hour))
- Aviation with threshold 10,000t CO₂ /year

GHG Gases: CO₂ + further greenhouse gases:

- N₂O from chemical activities
- PFC from production of processing of aluminum

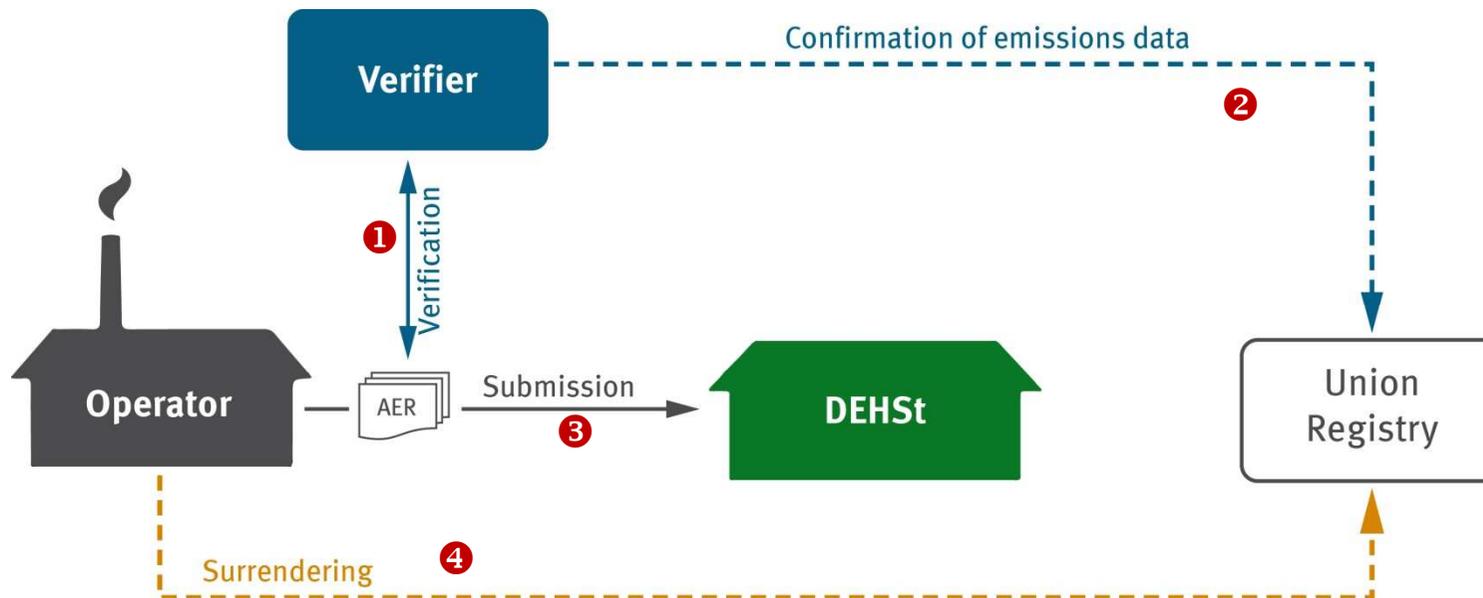
EU ETS Compliance Cycle for Monitoring, Reporting and Verification

Installation-specific Monitoring Plan



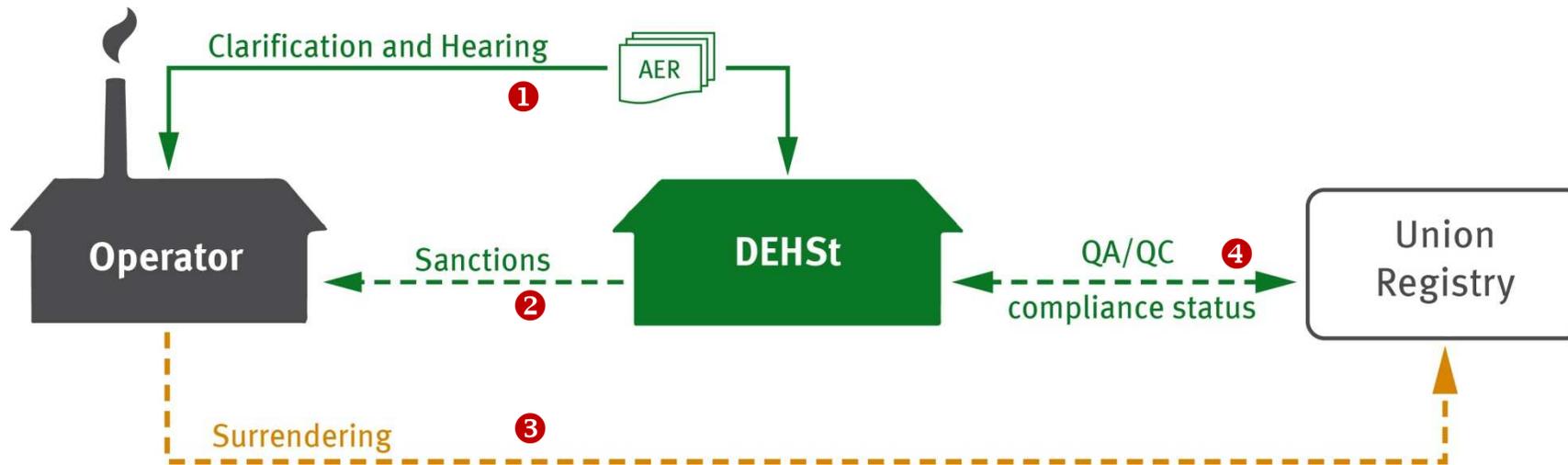
- Competent Authorities of Federal States is **1** in charge for **ETS permitting**
- Installation-specific Monitoring Plan (MP) must be **approved** by DEHSt (national CA) **2**
- ▶ Annual Emissions Reporting (AER) is based on the installation-specific MP
- ▶ Approval of MP creates legal certainty for the operator

Annual Emissions Reporting (AER), Verification and Surrendering Allowances



- Operator drafts the AER and Verifier **1** carries out the Verification
- Verifier **2** **confirms** the total amount of CO₂e emissions in the Union Registry previously entered by operator or verifier,
- Operator **3** **submits** AER to DEHSt, and operator **4** **surrenders** the verified amount of allowances

Compliance Checks and Sanctioning



- DEHSt **examines** AERs with automatic checks for all and manual checks for some questionable reports, and DEHSt **1** asks for **clarification** if required
- If reporting is incorrect DEHSt **2** **requests** corrective actions by the operator; otherwise the amount of CO₂ will be estimated by DEHSt, which leads to an adjusted entry in the Union Registry; in consequence operators **3** **surrender** the shortfall quantity of allowances and pay fines imposed by DEHSt
- DEHSt **4** **carries** out QA/QC measures by means of comparing figures of AER, entry and surrender, incl. compliance status checks

EU ETS Compliance Cycle for Monitoring, Reporting and Verification



black: Operator's tasks
blue: Authority's tasks
red: Verifier's tasks

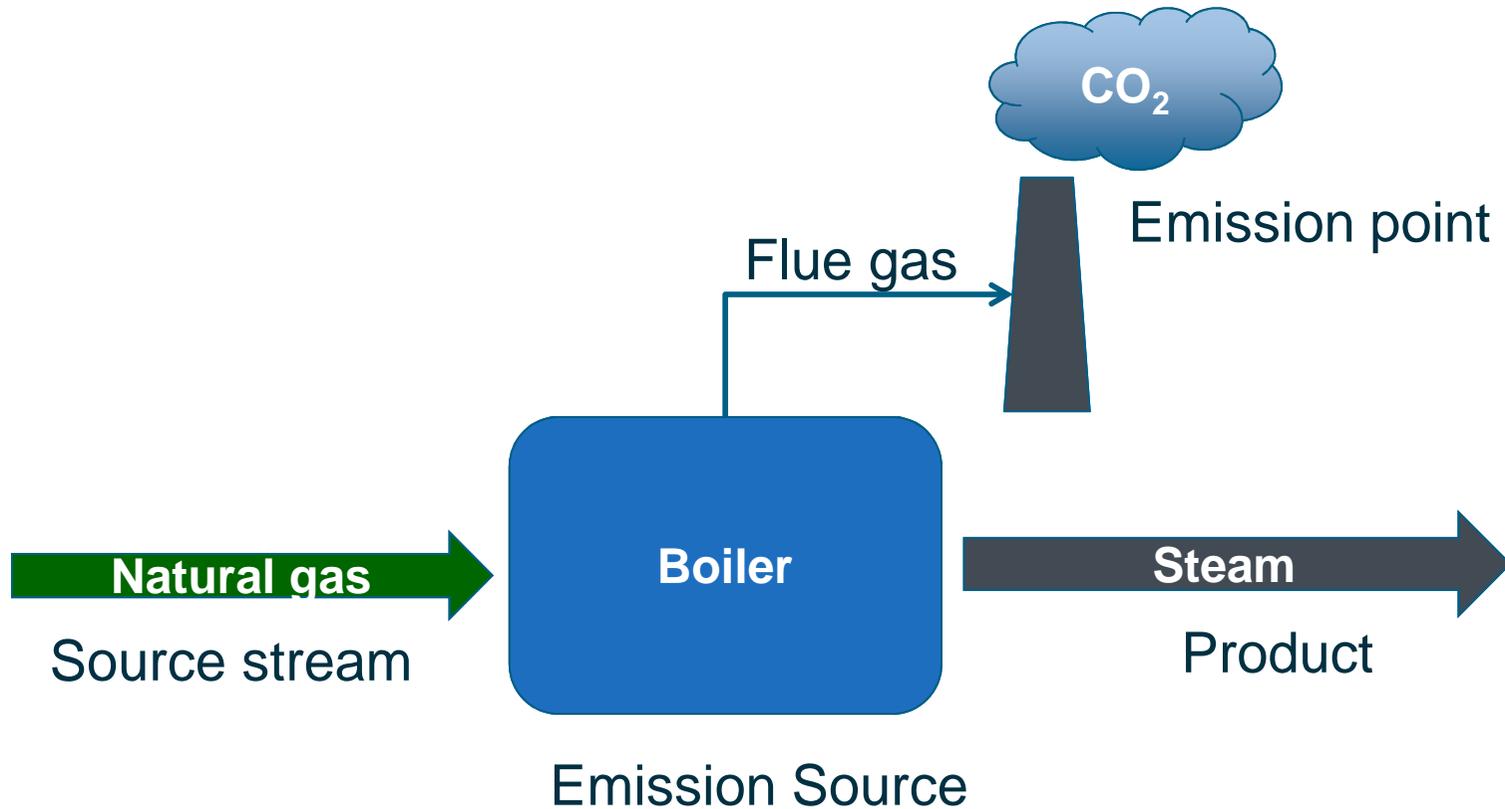
Main elements of Monitoring & Reporting

Installation boundaries – What belongs to an ETS installation?

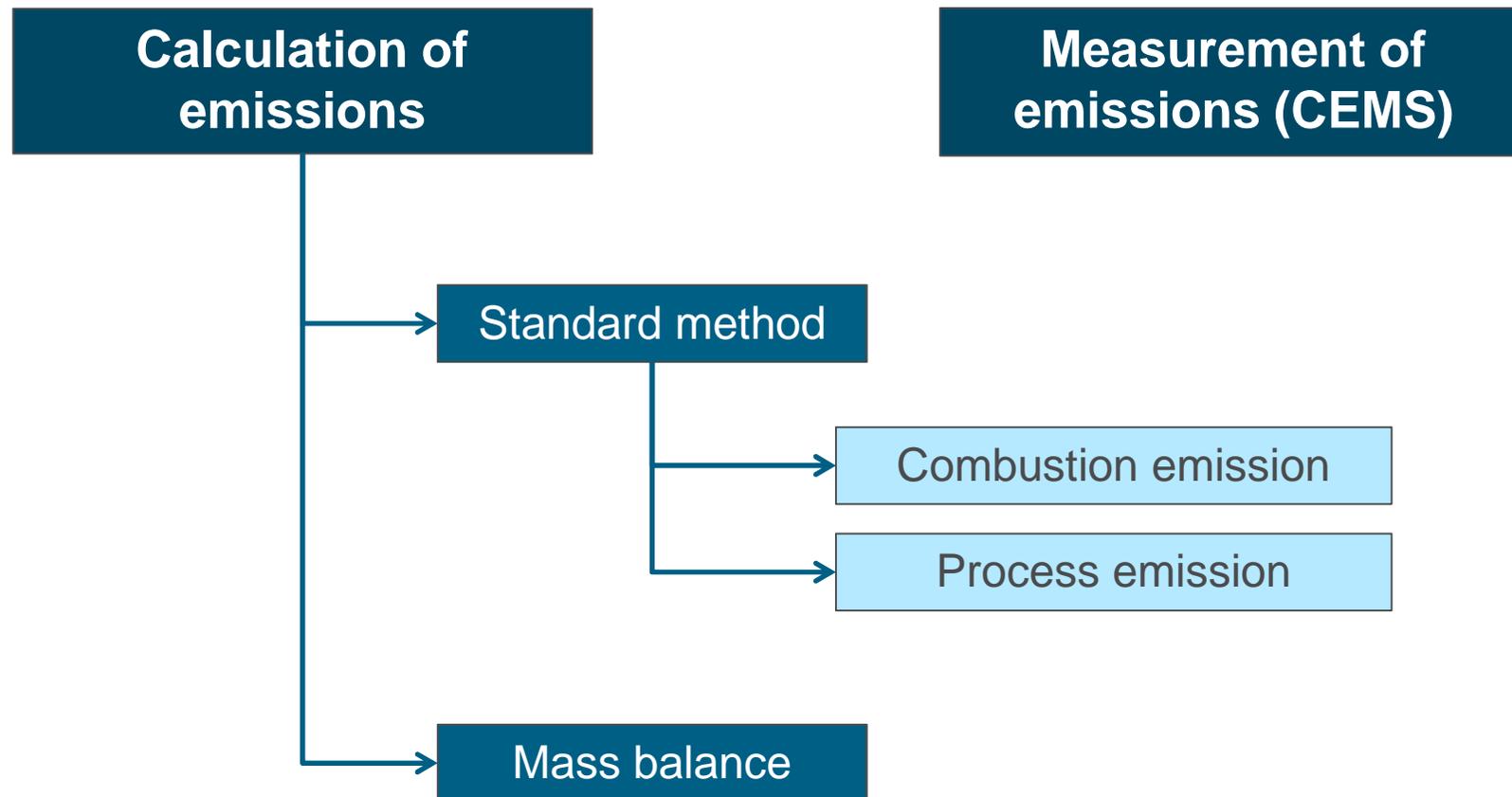
All parts

- under the control of the operator
 - necessary for running the installation's activities, e.g.
 - At least all potential emission sources listed in Annex IV MRR, e.g. furnaces, kilns, flares, etc.
 - Excluding mobile machinery (e.g. forklifts)
- covered by the GHG permit

Explanation of terminology used in ETS



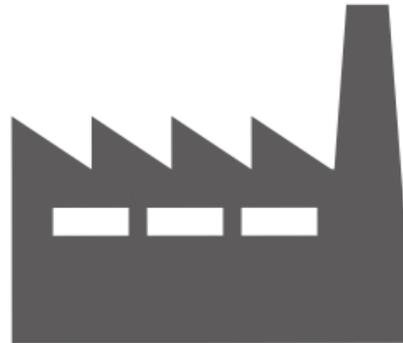
Principle methods for determination of emissions (Art. 21 MRR)



Standard method – combustion emission

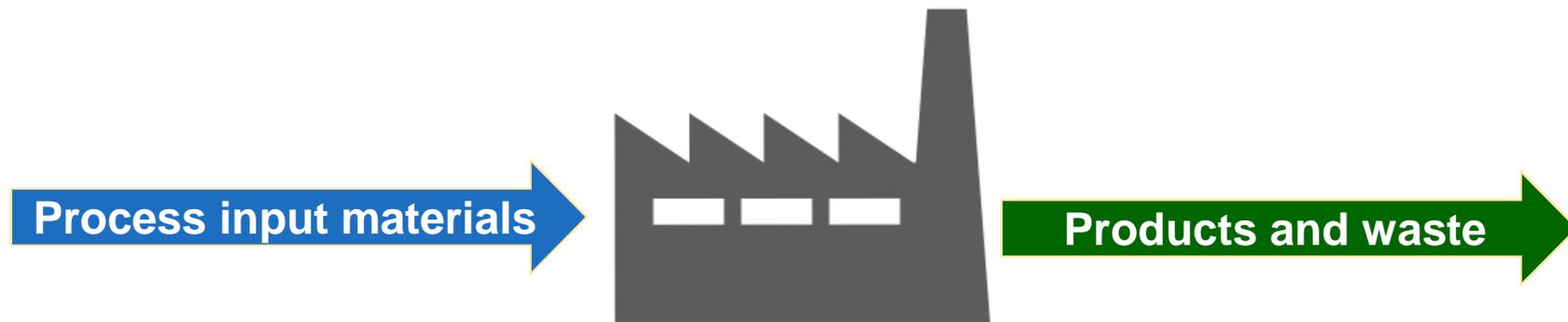
$$Emissions = FuelInput * NCV * EmissionFactors * OxidationFactor$$

Fuels for combustion



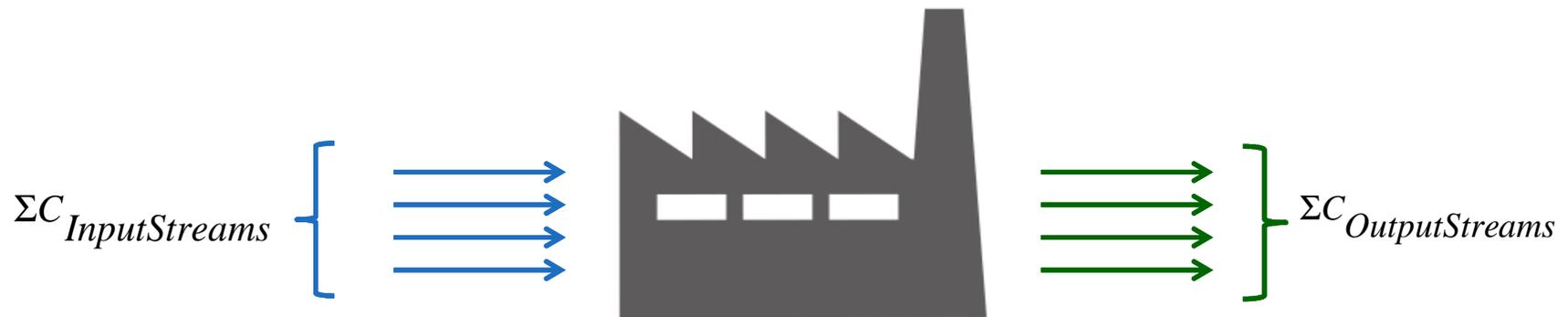
Standard method – process emission

$$Emissions = InputStream * EmissionFactors * ConversionFactor$$



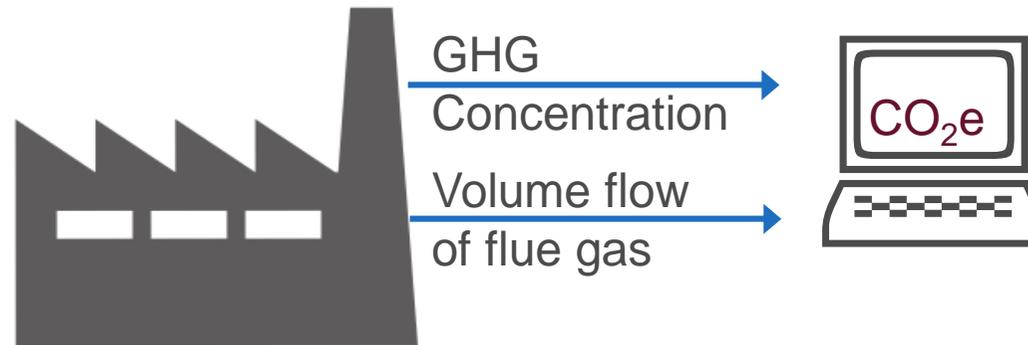
Mass balance

$$Emissions = 3.664 * \left[\begin{array}{l} \Sigma(InputStreams * CarbonContent) \\ - \Sigma(OutputStreams * CarbonContent) \end{array} \right]$$



Continuous Emission Measurement System (CEMS)

$$Emissions = \sum GHG_{concentration} * FlueGasFlow$$



Tier approach

Tier = means a set requirement used for determining activity data, calculation factors, annual emissions and annual average hourly emission, as well as for payload (MRR, Art.3 (8))

Activity data (source stream amount)	Calculation factors
Tier 1 = $\pm 7,5 \%$	International standard value (e.g. IPCC)
Tier 2 = $\pm 5 \%$	National standard value (e.g. from national inventories, literature values agreed with CA)
Tier 3 = $\pm 2,5 \%$	Individually determined by analysis
Tier 4 = $\pm 1,5 \%$	---

Low data quality



High data quality

- Sector specific deviations possible

Categorizations of Installations and Source Streams

Category B (> 50,000 t CO₂/yr) and C installations (> 500,000 t CO₂/yr):

- must generally meet highest tiers

Category A installations (≤ 50,000 t CO₂/yr):

- must meet minimum tier requirements

Installations with low emissions (< 25,000 t CO₂/yr):

- additional monitoring simplifications

Lower tiers are allowed for

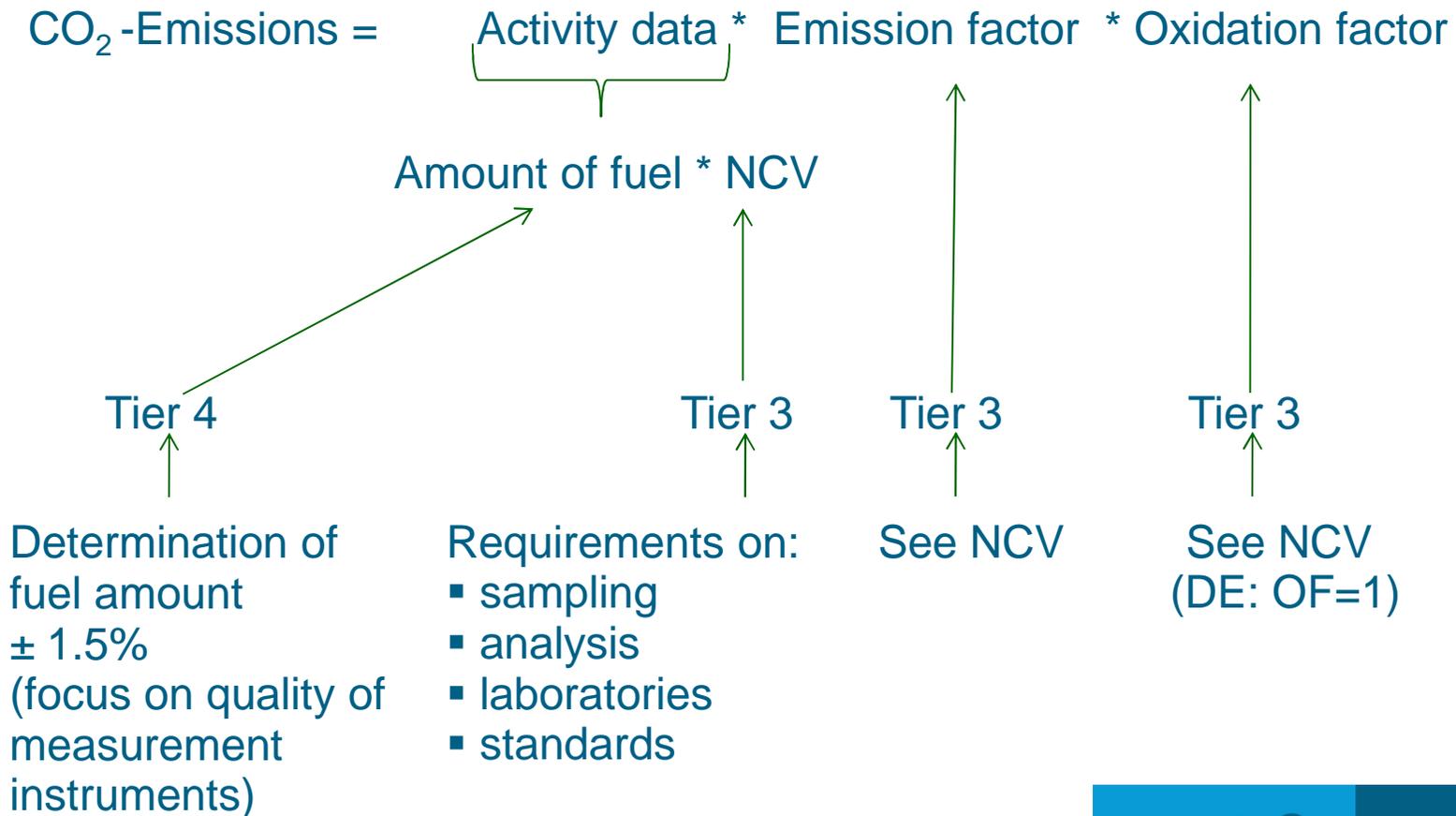
- minor and de-minimis source streams
- source streams with biomass fraction ≥ 97%
- commercial standard fuels

Temporary or individual deviations are allowed for

- technical or economic reasons
(subject to approval)

Example

Gas-fired power plant with total emissions of > 50,000 t CO₂/yr
→ highest tiers have to be met



Lessons learnt

Lessons learnt (I)

Time – a repeatedly underestimated factor

- Preparation of **sound legal text**
- Preparation of (**electronic**) **forms, setting up procedural instructions and priorities**
- **Training of CA inspectors** (procedural instructions, workshops)
- **Training of operators**
 - How? By guidance, workshops and permanent help desk
 - What? Practical implementation, regular communication with CA (FMS + additional information)

Boundaries and scope: cost vs. benefit, limitation of power

- Suppliers **outside** the EU-ETS are outside authorities' power
- **Effort for installations with low emissions** is disproportional higher

Scope

Installation category	Number of installations in Germany*	Total annual emissions*	
Category C (>500 kt CO ₂ -eq/a)	145	380.4 Mio. t CO ₂ -eq	82 %
Category B (>50 kt CO ₂ -eq/a)	412	62.5 Mio. t CO ₂ -eq	14%
Category A (≤ 50 kt CO ₂ -eq/a) [installation with low emissions, i.e. 25 ...]	1348 [1077]	18.3 Mio. t CO ₂ -eq [8.7 Mio. t CO ₂ -eq]	4% [1,9%]

* total: 1.905 installations, 461.2 Mio. t CO₂-eq, VET 2014

Lessons learnt (II)

Challenges for Competent Authorities:

- **Technical understanding** of production processes, measuring, sampling and analysis etc.
- **Juridical knowledge** (principles of administrative law, principles of interpretation of monitoring rules)
- **Exercising discretion** ('principle of proportionality')
- **Harmonized enforcement**

Thank you for your attention!

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