



Operator preparing a monitoring plan

Reasons for derogations, small installations

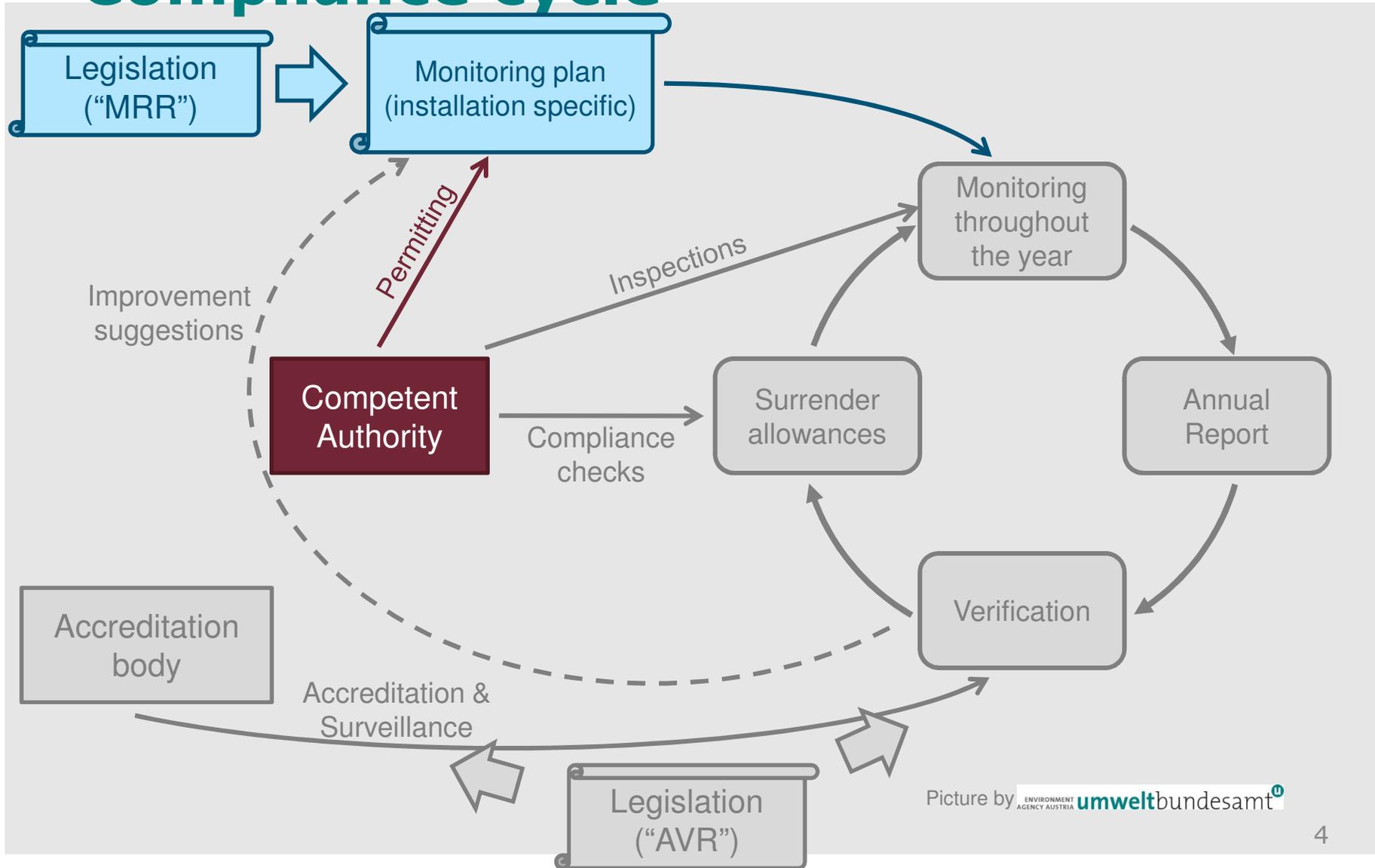
Christian Heller



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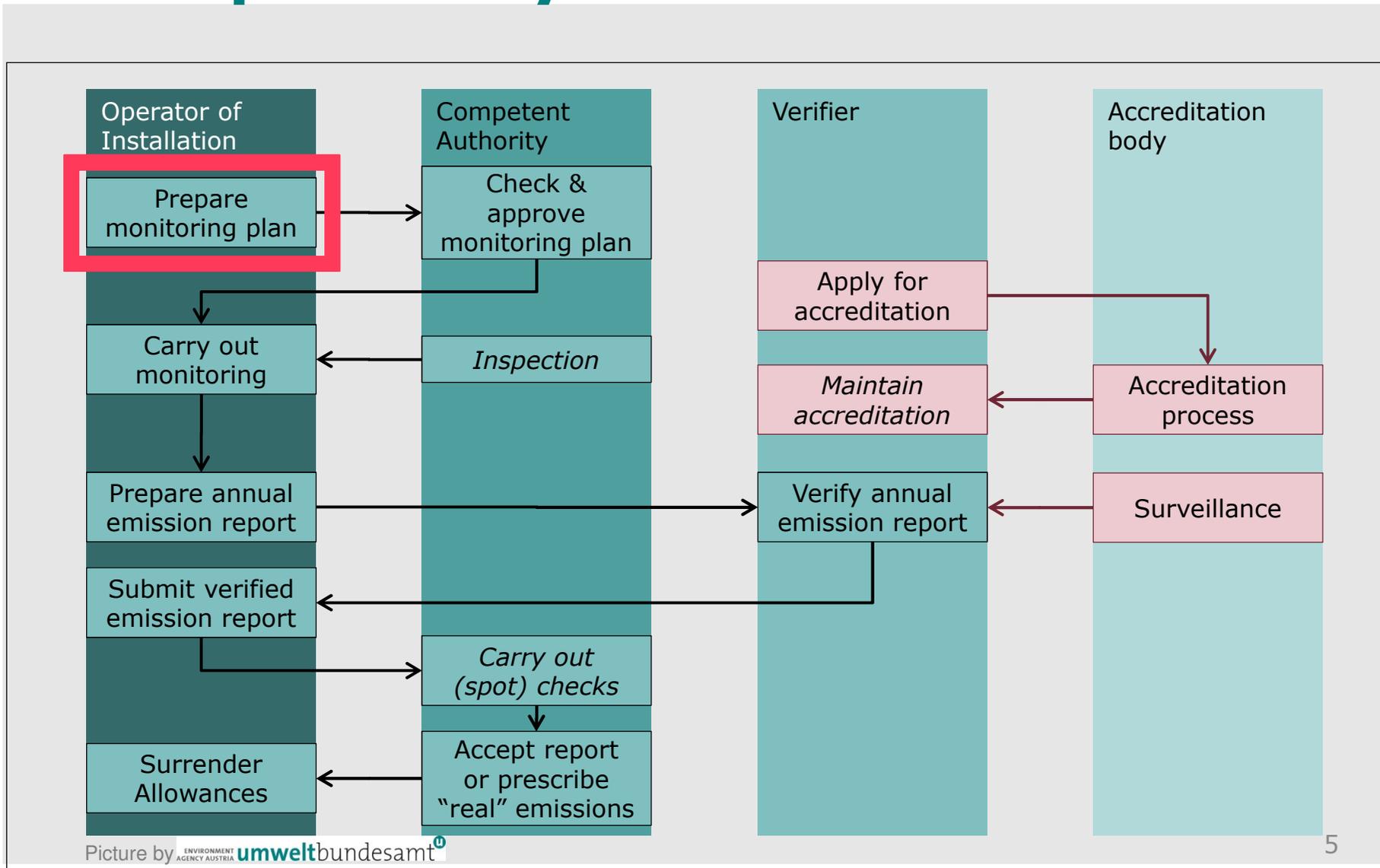
- Step 1: Tier requirements - Derogations
 - technical infeasibility
 - discussion of the concept of unreasonable costs
- Step 2: Simplifications for installations with low emissions

Compliance cycle



Picture by ENVIRONMENT AGENCY AUSTRIA **umwelt**bundesamt^u

Compliance cycle



Which tier to be applied?



For major source streams:

- ❑ **Highest** tier for **Category B and C** installations (Art 26 MRR)
- ❑ At least the **minimum tiers specified in Annex V** MRR for
 - category A installations
 - commercial standard fuels (only for calculation factors)
- ❑ Subject to satisfaction of Competent Authority concerning **technical feasibility or unreasonable costs**
 - one level lower for Category C installations
 - up to two tier levels lower for Category A and B installations
- ❑ Where this is still **technically not feasible or would lead to unreasonable costs**, the CA may allow the operator to apply a lower tier to a minimum of tier 1
 - Only for a transitional period of up to three years
- ❑ **Installation with low emissions** may apply tier 1 unless higher tier possible without additional effort, e.g. if higher tier is applied anyway

Which tier to be applied? (2)



For non-major source streams:

❑ **For minor source streams**

- highest tier that is technically feasible and does not incur unreasonable costs (minimum of tier 1)

❑ **For de-minimis source streams**

- conservative estimates (no-tier approaches), unless a defined tier methodology is possible without additional effort

❑ **For oxidation and conversion factors**

- As a minimum the lowest tiers listed in Annex II

Tier requirements

Installation category	Source stream category	Tier required**	Minimum tier (tier required technically not feasible or unreasonable costs)	Absolute minimum tier (technically not feasible or unreasonable costs for transitional period of up to three years)	If not at least tier 1 is possible
Cat. C* (> 500kt)	Major	highest tier in Annexes II & IV	highest tier in Annexes II & IV minus 1 (minimum tier 1)	tier 1	Fall-back approach
	Minor	highest tier in Annexes II & IV	tier 1	n.a.	
	de-minimis	conservative estimates unless tier is achievable without additional effort			n.a.
Cat. B* (50 < x ≤ 500kt)	Major	highest tier in Annexes II & IV	highest tier in Annexes II & IV minus 2 (minimum tier 1)	tier 1	Fall-back approach
	Minor	highest tier in Annexes II & IV	tier 1	n.a.	
	de-minimis	conservative estimates unless tier is achievable without additional effort			n.a.
Cat. A (≤ 50kt)	Major	tier in Annex V	tier in Annex V minus 2 (normally tier 1)	tier 1	Fall-back approach
	Minor	tier in Annex V	tier 1	n.a.	
	de-minimis	conservative estimates unless tier is achievable without additional effort			n.a.
Inst. with low emissions (< 25kt)	Major	tier 1 unless higher tier is achievable without additional effort			Fall-back approach
	Minor	tier 1 unless higher tier is achievable without additional effort			
	de-minimis	conservative estimates unless tier is achievable without additional effort			n.a.

* for calculation factors (emission factor, net calorific value,..) of source streams that are commercial standard fuels the same tier requirements as for category A installations apply

** for oxidation and conversion factor the minimum requirement is to apply the lowest tier in Annexes II & IV (normally tier 1 = 100%)

Which tier to be applied? (3)

For continuous emission monitoring system (CEMS):

- ❑ **Art 41(1) MRR**
- ❑ **“Major” emission source:** each emission source which emits more than 5,000 t of CO₂ per year, or which contributes more than 10% of the total annual emissions
→ apply highest tier in the following table

	Tier 1	Tier 2	Tier 3	Tier 4
CO ₂ emission sources	± 10%	± 7,5%	± 5%	± 2,5%
N ₂ O emission sources	± 10%	± 7,5%	± 5%	
CO ₂ transfer	± 10%	± 7,5%	± 5%	± 2,5%

- ❑ **“Minor” emission source:** emission sources which emits less
→ apply one level lower than major emission sources

Reasons for derogation



- ❑ **Technical infeasibility (Art 17 MRR)**
- ❑ **Unreasonable costs (Art 18 MRR)**
 - Costs are considered unreasonable, where the “**costs exceed the benefit**”!
 - Costs to be taken into account:
 - Investment costs: Annual costs will be calculated by linear depreciation
 - O&M costs: including own labour costs
 - Other costs: e.g. costs for analyses
 - **IMPORTANT!** Only costs which are additional and can be clearly attributed to the improvement measures can be taken into account → no double counting

✓ *“Unreasonable costs” rule provides objective calculation procedure to achieve cost-efficient flexibility*

Reasons for derogation (2)

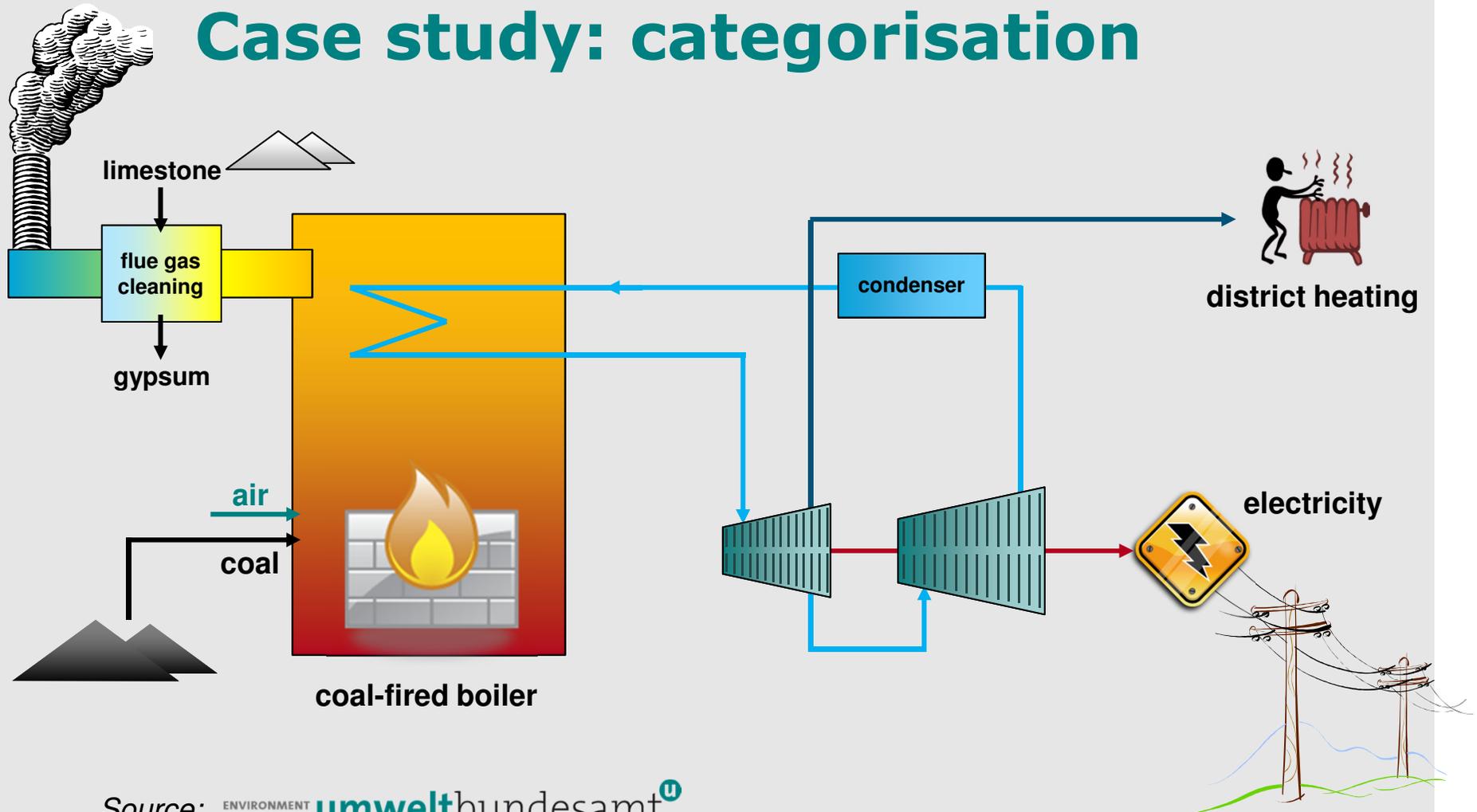


❑ Unreasonable costs (Art 18 MRR)

$$Benefit = P \cdot AEm \cdot IF$$

- C Costs [€/year] – taking depreciation costs into account
 - P specified allowance price = 20 € / t CO₂(e)
 - AEm Average emissions from related source stream(s) [t CO₂(e)/year]
 - IF Improvement factor
-
- ❑ Consideration of unreasonable costs is not relevant regarding an accumulated amount of up to 500 € for installations with low emissions, or 2000 € in the case of other installations
 - ❑ Improvement factor for Activity Data:
“Uncertainty achieved – Uncertainty required”
 - ❑ Improvement factor for improvements not related to Activity Data: **1%**

Case study: categorisation



Source: ENVIRONMENT AGENCY AUSTRIA **umwelt**bundesamt^u

Categorisation of installations: Example installation

- ❑ Installation is a 300 MW coal-fired CHP power plant
- ❑ Equipped with a flue gas desulphurisation unit using limestone
- ❑ Key parameters:
 - Annual fuel input from coal: 8,000 TJ / year
 - Limestone consumption: 3,400 t / year
 - Electricity production: 800 GWh / year (2.880 TJ /year)
 - District heat production: 2,800 TJ / year
 - **Emissions from coal: 760,000 t CO₂ / year**
 - **Emissions from limestone: 1,496 t CO₂ / year**
 - **Total annual emissions: 761,496 t CO₂ / year**

Reasons for derogation (3)

- ❑ Unreasonable costs (Art 18 MRR) for Activity Data

$$Benefit = P \cdot AEm \cdot (U_{curr} - U_{new\ tier})$$

Improvement factor

- U_{curr} Current uncertainty (not the tier) [%]
- $U_{new\ tier}$ Uncertainty threshold of the new tier to be reached [%]

- ❑ Example:

- ❑ Current measuring instrument's uncertainty: 2.8%
 - ❑ Uncertainty required by MRR: 1.5%
 - ❑ Source stream's annual emissions: 760 kt CO₂ / year
- **Benefit:** 20 €/t CO₂ x 760 kt CO₂ x 1.3% = **197,600 €**

✓ *Costs (e.g. investment, O&M, etc. costs for new equipment) up to 197,600 € per year not considered unreasonable!*

Reasons for derogation (3)

- ❑ Unreasonable costs (Art 18 MRR) for e.g. analysis carried out by an accredited laboratory or not

$$Benefit = P \cdot AEm \cdot 1\%$$

Improvement factor

- ❑ Example:
 - ❑ Source stream's annual emissions: 760 kt CO₂ / year
 - **Benefit:** 20 €/t CO₂ x 760 kt CO₂ x 1.0% = **152,000 €**

✓ *Costs for analysis by an accredited laboratory up to 152,000 € per year not considered unreasonable!*



Unreasonable costs

- See practical demonstration in the “Tool for Unreasonable Costs”



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Installations with low emissions



- **Art 47 MRR**
- “installations with average annual emissions, excluding CO₂ stemming from biomass and before subtraction of transferred CO₂, of less than **25,000 tonnes of CO₂(e)** per year”

Installations emitting 25,000 t CO ₂ per year			
MW (th)		fuel	
		coal	natural gas
full load hours	2.000	36	62
	3.500	21	35
	5.000	14	25
	7.500	10	17
	8.500	9	15

- CA may allow installations with low emissions to **submit a simplified monitoring plan** (not for installations carrying out N₂O related activities)
- **Typical sectors** exhibiting installations with low emissions: district heating, ceramics, glass, fine chemicals, biomass-consuming industries (e.g. wood-based panels),..

Installations with low emissions



- ❑ Exempt from the requirement to submit to the CA an **uncertainty assessment and risk assessment**
Note: Not exempt from carrying out those assessments! → make available to verifier
- ❑ May not take into account **stock changes in the uncertainty assessment**
- ❑ May **apply tier 1 for Activity Data and Calculation Factors** unless a higher tier is possible without additional effort (applies to all source streams, emission sources)
- ❑ May determine amount of fuel/material consumed by **using documented purchasing records and estimated stock changes**
- ❑ May **use any laboratory that is technically competent** and able to generate valid results → only provide evidence for Art 34(3)(j) MRR, (i.e. QA measures)
- ❑ **Exempt from reporting on improvements** in response to verifier's recommendations

Questions?

Where to find more information?

Regulation No. 601/2012 (MRR)

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2012R0601:20120801:EN:PDF>

Guidance Documents on European Commission's website

http://ec.europa.eu/clima/policies/ets/monitoring/documentation_en.htm

*MRR Guidance Document No. 1 General guidance for installations
Tool for Unreasonable Costs*

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