



Greenhouse gases and emission trading

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.... Greenhouse gases and emission trading...

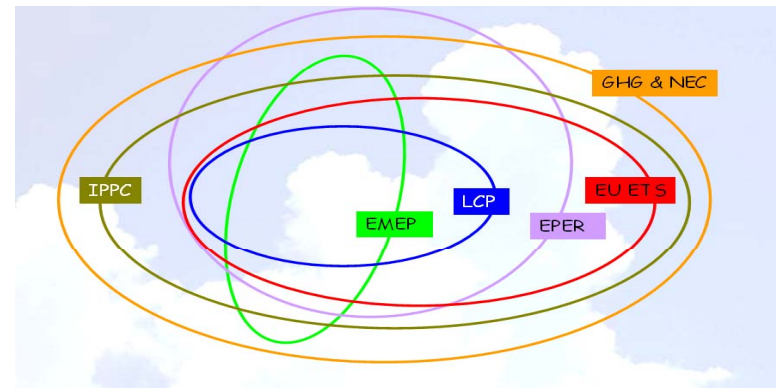
**Getting emissions reported at national level for
International agreements to match up with emissions
reported from industrial facilities for process
regulation**

- **ISO:EN 11771 'Air Quality — Determination of time averaged mass emissions and emissions factors — General approach' will:**
 - **improve the emissions data used to develop air pollution and climate change policies;**
 - **be a tool to fine tune the regulation of industrial emissions; and**
 - **provide new business opportunities to stack testers.**
- **To be published late 2009**

.. adding up our emissions is necessary but complicated...

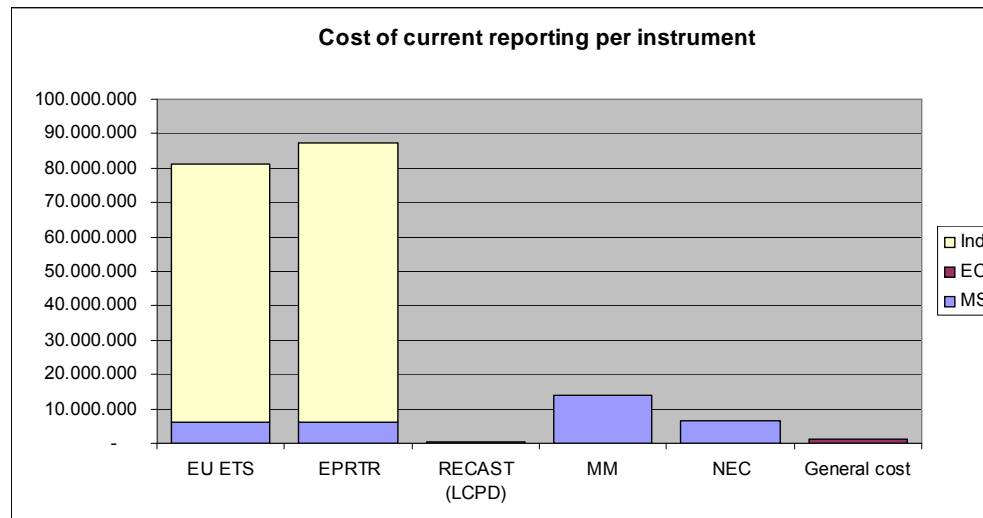
1. Tackling air pollution and climate change needs countries to work together to reduce the mass of contaminants emitted.

2. Implementing International agreement often requires regulating emissions at source



Source: air-climate.eionet.europa.eu/docs/meetings/060209_cons_GHGinv_rep_EU_ETS_WS/06_Fontelle_ETS-GHG_inv_FR.ppt

Estimated cost of current reporting by instrument



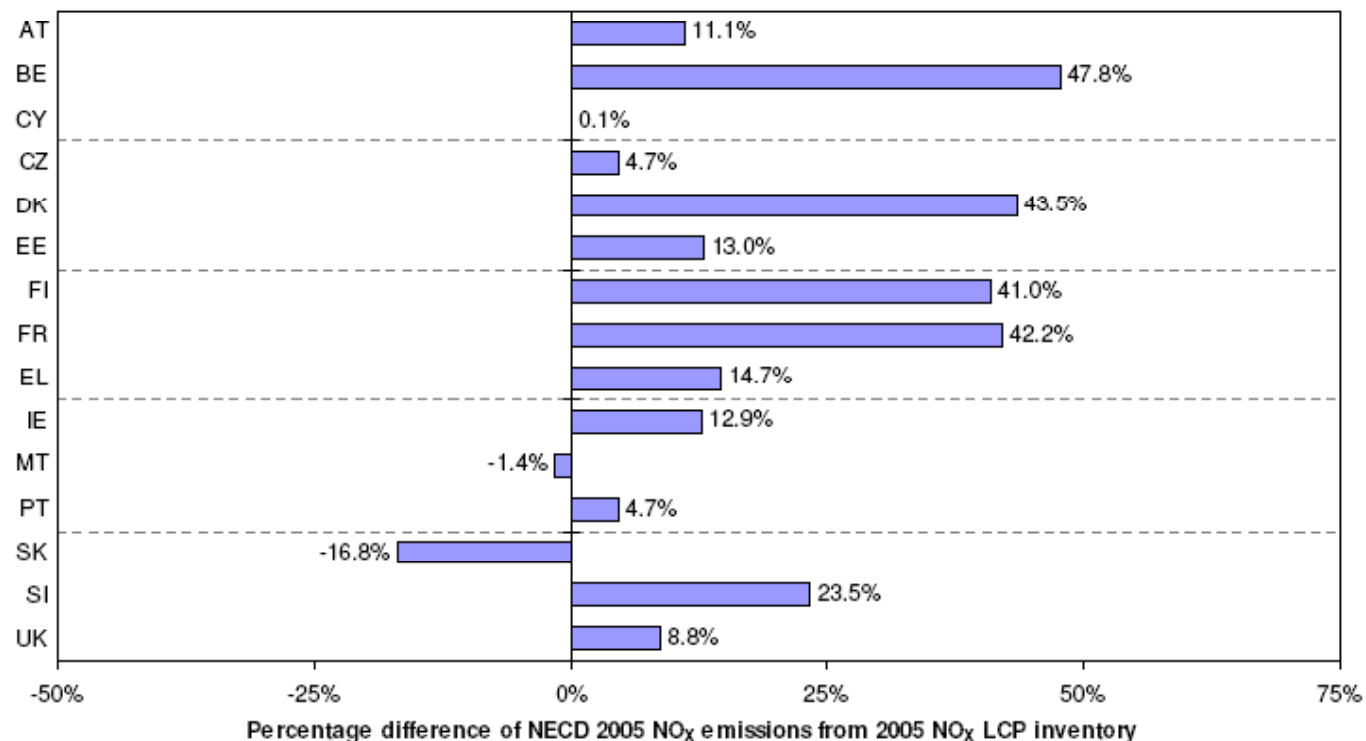
3. Problems with emissions reporting:

- Duplication
- Lack of clarity
- Missing and inaccurate data.

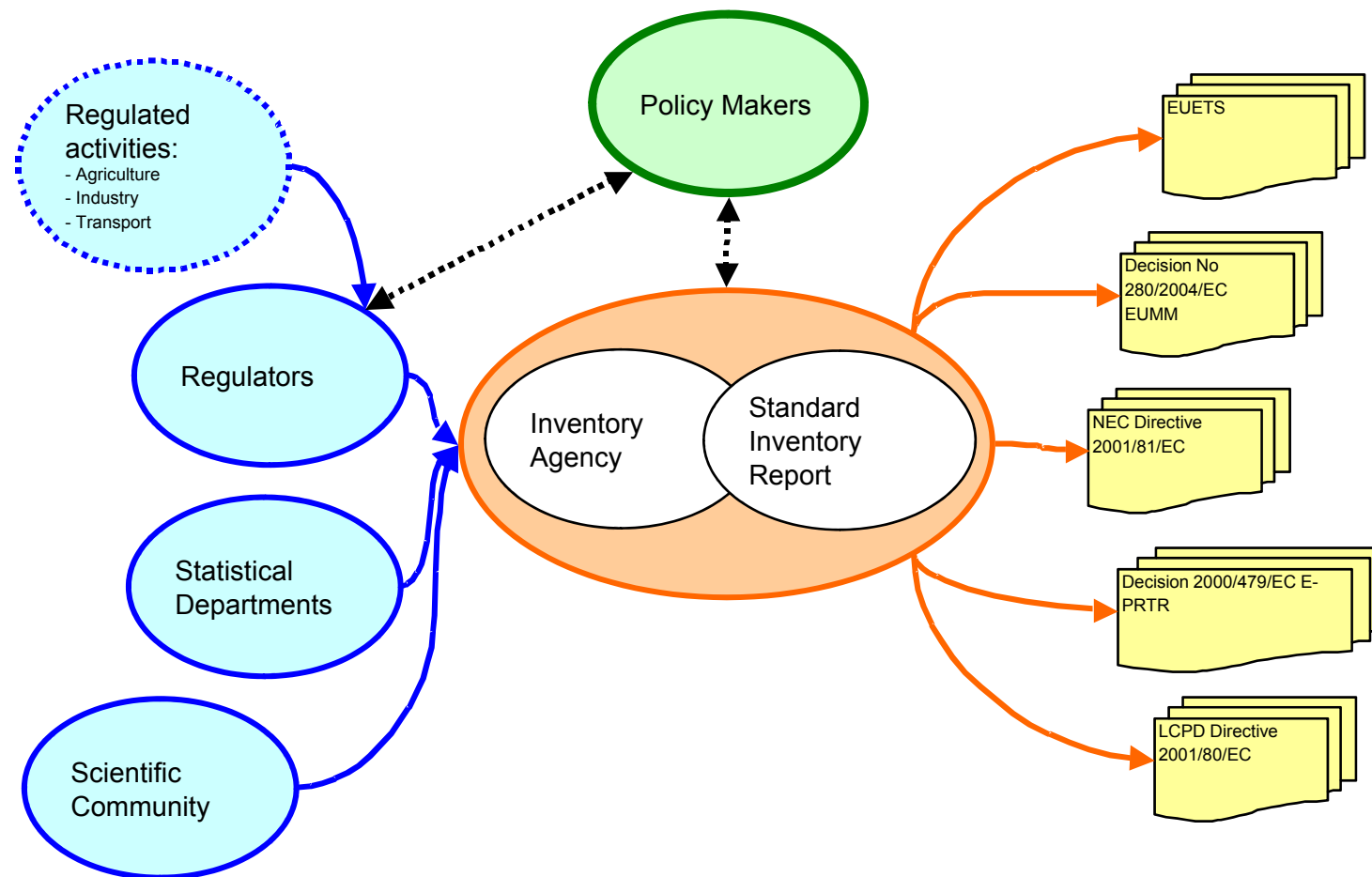
..and cost!

..its difficult to reconcile Top down with Bottom up reporting ...

Figure 4.23 Percentage difference of NECD national inventories (IPCC code 1A1a) from 2005 NO_x emissions as reported in MS LCP inventories (sectors ESI and district heating)



..ideally it would look like this...



..so there's a need to align Reporting Instruments...

- Different perspectives
 - International policies require reductions of national emissions
 - (UNFCCC Kyoto protocol, ECE LRTAP Convention, EU NEC Directive, etc)
 - Reducing national emissions needs controls on individual industrial facilities, vehicles, households etc.
 - EUETS & Industrial Emissions Directive – the recast of the IPPC Directive, WID, SED etc.
- Emissions from industries are regulated for:
 - Effective management of HSE issues
 - Prevention of barriers to trade
 - Equitable regulation
 - Public reassurance
- EU Member States are likely in the future to be required to use much more measurement derived data for reporting their emissions under the EUETS, the IPPC Directive and for reporting their annual emissions to the EPRTTR.

..a case for standardisation if ever there was one!

- Linking by common reporting systems:
 - Content: [nomenclature](#), pollutants, resolution, activities etc
 - Procedures: emission estimation procedures ([emission factors](#))
 - Tools: reporting guidelines, formats and [data bases](#)
- [International Standards](#)
- Air Quality
 - ISO TC 146/CEN TC 264/BSI EH 2
- UK initiatives
 - MCERTS - EN 14181 & EN 15267
 - [Volumetric Flow](#)
 - [Mass emission EN:ISO 11771](#)

So ... starting with standardised approach ...

- Approach from ISO 9000, 14000, 14064
 - Customer focussed, reflecting business practice, and continuous improvement.
 - Linking AP and CC practice
 - Links to the EU ETS MRG (Specifying the measurement requirement)
- Structure from DD CEN/TS 15674:2007 Measurement of stationary source emissions – Guidelines for the elaboration of standardised methods
 - Air Quality context (using the right procedures, methods, equipment, & staff)
- Planning from EN15259:2007 - Measurement of stationary source emissions. Requirements for measurement sections and sites and for the measurement objective, plan and report
- Implementation from DD CEN/TS 15675:2007 - Air quality. Measurement of stationary source emissions. Application of EN ISO/IEC 17025:2005 to periodic measurements
- Measurements from various ISO/EN reference methods for standards + EN 14181
- uncertainty characteristics from ISO/IEC Guide 98-3 GUM; ISO 20988; ISO 11222:

...and agreeing how to determine mass emission rates and emission factors...

- Increasing emphasis on reducing the mass of material emitted (over a period of time)
- The mass emission rate is,

$$\dot{m} = c_m \cdot \dot{V}$$

– C_m = average mass concentration; \dot{V} = volumetric flow rate

- The time averaged emission factor F of a measured component is

$$F = \frac{\dot{m}}{A}$$

A = value of activity data

..using BS:EN:ISO 11771 Time averaged mass emissions and emissions factors

Scope

- Making mass emissions and mass emission factors derived from facility level data suitable for use with national statistics to improve national inventories by specifying a generic method for the determination and the reporting of time averaged mass emissions from a specific installation, or of a family of installations using data collected by measurements.

BS:EN:ISO 11771 Time averaged mass emissions and emissions factors

Step 1 – Establish the measurement requirement in a Measurement Plan

- To provide measurement personnel with the instructions needed to enable them to determine time averaged mass emissions and emission factors with known uncertainty characteristics -
 - Objectives – why (IPCC, LRTAP, ETS, E-PRTR etc)
 - Data needed - what & how
 - Concentration of substance (NO₂, SO₂, etc)
 - Volume of emission (M³/sec)
 - Activity rate (tonnes/day production)
 - Source description: installation ID, feedstock, process factors etc.
 - Data processing: mass emission/emission factor: tonnes/hr; kg of pollutant/tonne of product produced etc.

BS:EN:ISO 11771 Time averaged mass emissions and emissions factors

- Step 2 – Determine the mass emission rate by measuring, simultaneously, the concentration and gas flow using standardized manual or automatic methods, estimate the uncertainty of the measurements.
 - Measure the mass concentration - C_m
 - Determine the temperature, pressure, humidity & oxygen
 - Measure the volumetric flow rate - V

- Calculate the mass emission rate

$$\dot{m} = c_m \cdot \dot{V}$$

- Determine the expanded uncertainty
- Determine the time averaged mass emission rate using time series of mass emission rate values, their uncertainty characteristics, and the expanded uncertainty of the average.

BS:EN:ISO 11771 Time averaged mass emissions and emissions factors

Step 3 – Calculate time averaged emission factors for a specific installation or of a family of installations and their associated uncertainty characteristics by:

- Calculating time averaged emission factors
 - ...over a time period that is typical of the process emissions for the period covered by the available activity statistics or for the time period specified in the measurement plan.
- Estimating the uncertainty of time averaged emission factors
 - ...and expanded uncertainty
- Aggregating emission factors
 - ...to form a common source type
- Estimating the uncertainty of aggregates
 - ...by pooling independently determined estimates to create a hypothetical population & re-sampling to determine the mean, standard deviation, and associated coverage factors

BS:EN:ISO 11771 Time averaged mass emissions and emissions factors

- Other bits!
 - Quality Management
 - Reporting
 - Refers to EN15259

...so getting the numbers lining up will be a business opportunity

- In the future EU Member States are likely to be required to use much more measurement derived data for reporting their National emissions.
- This will need to draw on measurement derived data used to report under the:
 - EUETS,
 - the Industrial Emissions Directive,
 - EPRTTR
- BS:EN:ISO 11771 will put in place the infrastructure needed to ensure that emission reports are aligned, and that emission factors are comparable between legal instruments.
 - A truly International standard
- It is likely to generate new business opportunities for stack testers.