New developments in the Emission Inventory of the Netherlands

Portland, 3th June 2008

TNO | Knowledge for business

Peter Coenen

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- Annual Inventory Process
- Future Challenges and new Developments
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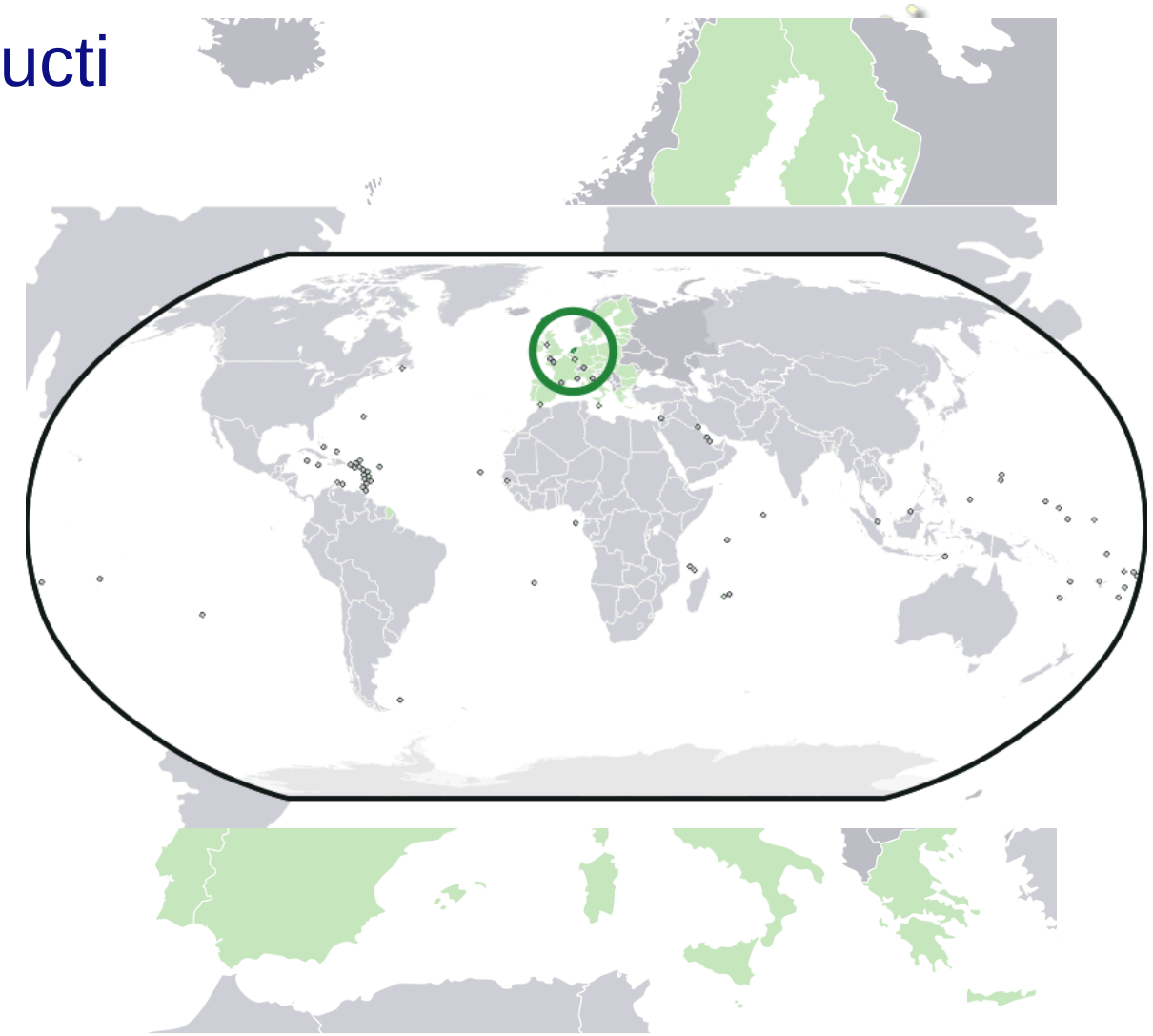
Introducti



Brief history of the inventory (I)

- Inventory started in 1974 commissioned by Ministries of VROM and Transport, Public Works and Water management.
- Team of TNO experts visited individual companies and determined the emissions to air and water.
- Estimation methods for non industrial sources were developed in cooperation partners in the inventory.
- Additional data from Netherlands Statistics, competent authorities (permits) and water authorities

Brief history of the inventory (II)

- 1974 – 1991 (5 inventory rounds)
  - Emissions to the air
  - Emissions to surface water
  - 6300 (in 7 years) → → 700 companies/year
  - Other non-industrial sources
  - Emissions to soil (agriculture)

- Estimates based on Emission factors from literature and/or determined by actual measurements

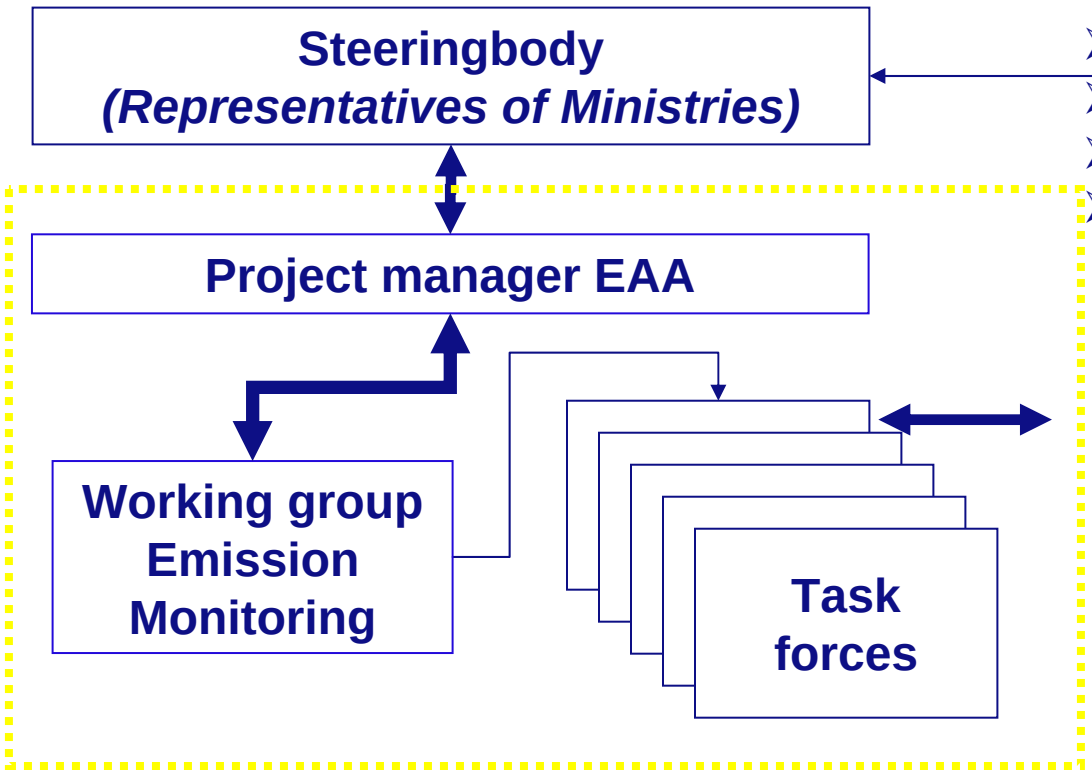
Brief history of the inventory (III)

- Since 1982 annual inventory
- From 1998 onwards mandatory environmental reports from individual companies (approx. 470 for air and 500 water) increasingly important
- These reports have replaced traditional inventory methods for individual companies (optimizing data process)
- Thanks to IT technology companies can upload their emission data to the inventory
- They are now responsible for data quality

Proces

- Environmental Assessment Agency (EAA) is responsible for the inventory process.
  - distinction between environmental policy <-> monitoring of policy implementation/ effectiveness;
  - improved efficiency (objective)
- > 50 people involved (~20 at EAA);
- Annual budget: ~ €2,5 Mio at EAA, activities of others are financed “in kind” (work for data);
- About 170 gases/ substances in the inventory; most of them because of international reporting obligations;

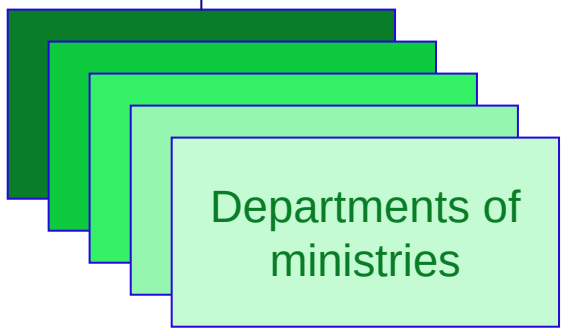
Responsibilities in the inventory:



Task:

- Provide financial means
- Decide upon priorities
- New/improved methodologies
- How and what to report

Recommendations



Task:

- Coordination
- Fixation of the database

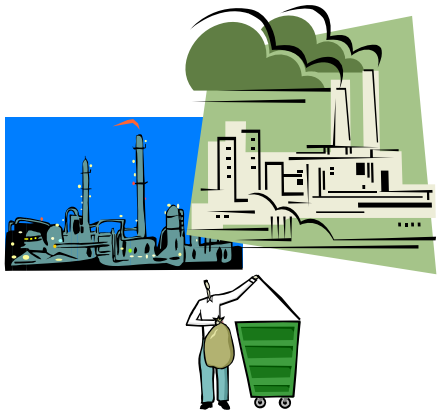
Task:

- Data collection
- Emission calculation
- Input to database

Task:

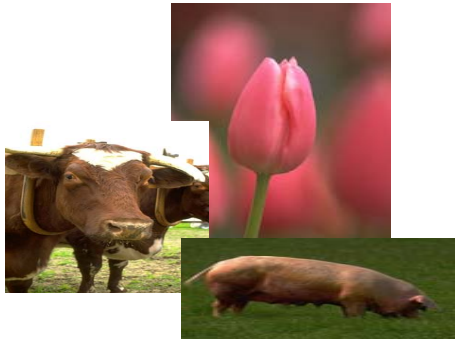
- Annual data set
- Scientific sound (TCCCA)
- Consistent time series
- Effective and Efficient

The task forces



- **Industry & Energy**
  - ✓All Dutch combustion Emissions from stationary Sources
  - ✓Process Emissions from Industry
  - ✓Incorporation of AER's in database
  - ✓Emissions from Land-fills and Waste treatment

- **Traffic & Transport**
  - ✓All emissions from mobile sources (cars, motorbikes,trains, airplanes and ships)

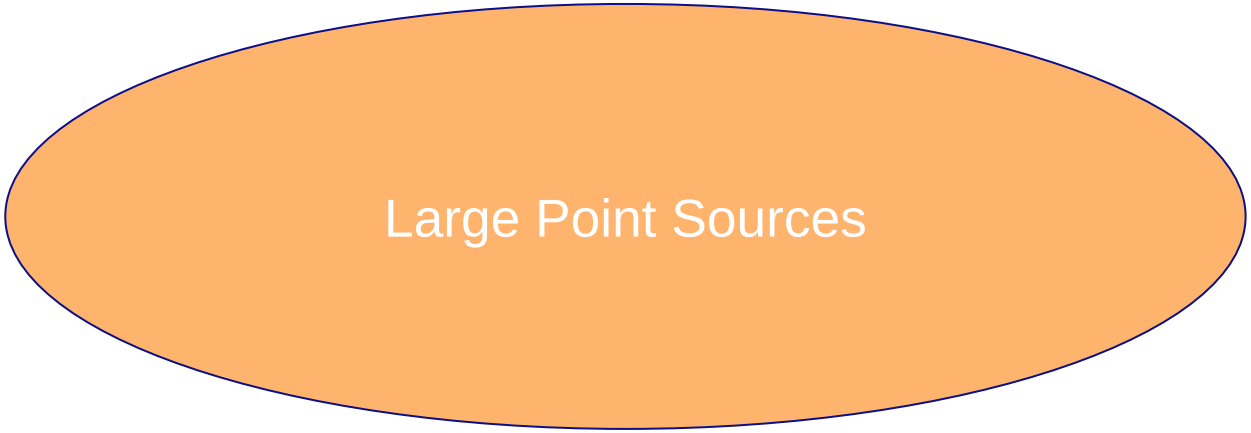


- **Agriculture**
  - ✓All emissions from Agriculture, Land Use Change and natural Sources

- **Consumers & Services**
  - ✓Emissions from non-industrial product-use

- **Water**
  - ✓All direct and indirect emissions to water
  - ✓Load of pollutants to waterways, rivers and lakes
  - ✓Load to the North Sea

General principles of the inventory:



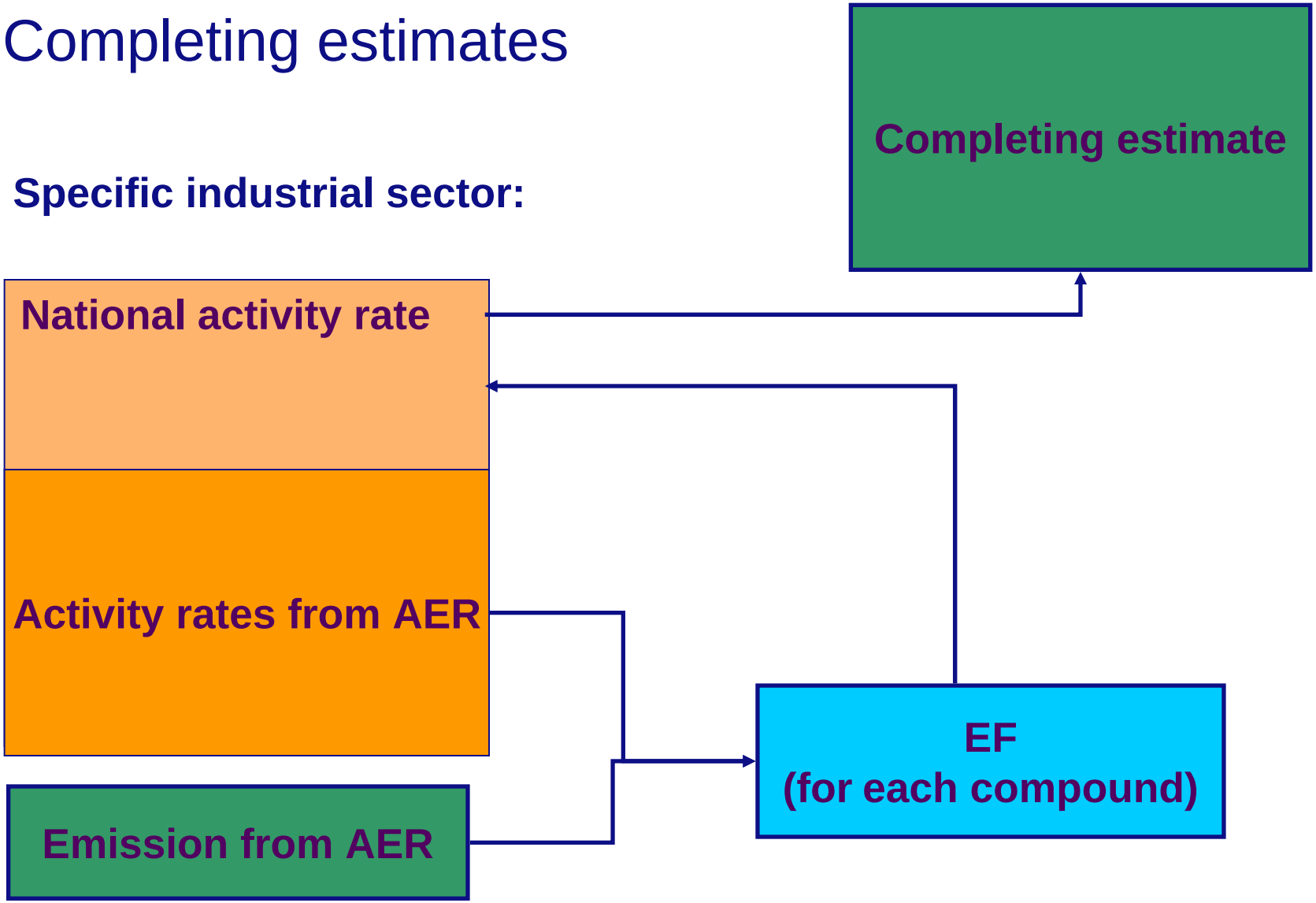
Emission from mandatory annual environmental reports (AER)

- Reporting by companies via WEB application
- Validation of figures by competent authority
- Data stored in a separate database

Data are used to calculate activity specific emission factors for the completing estimates

Completing estimates

Specific industrial sector:



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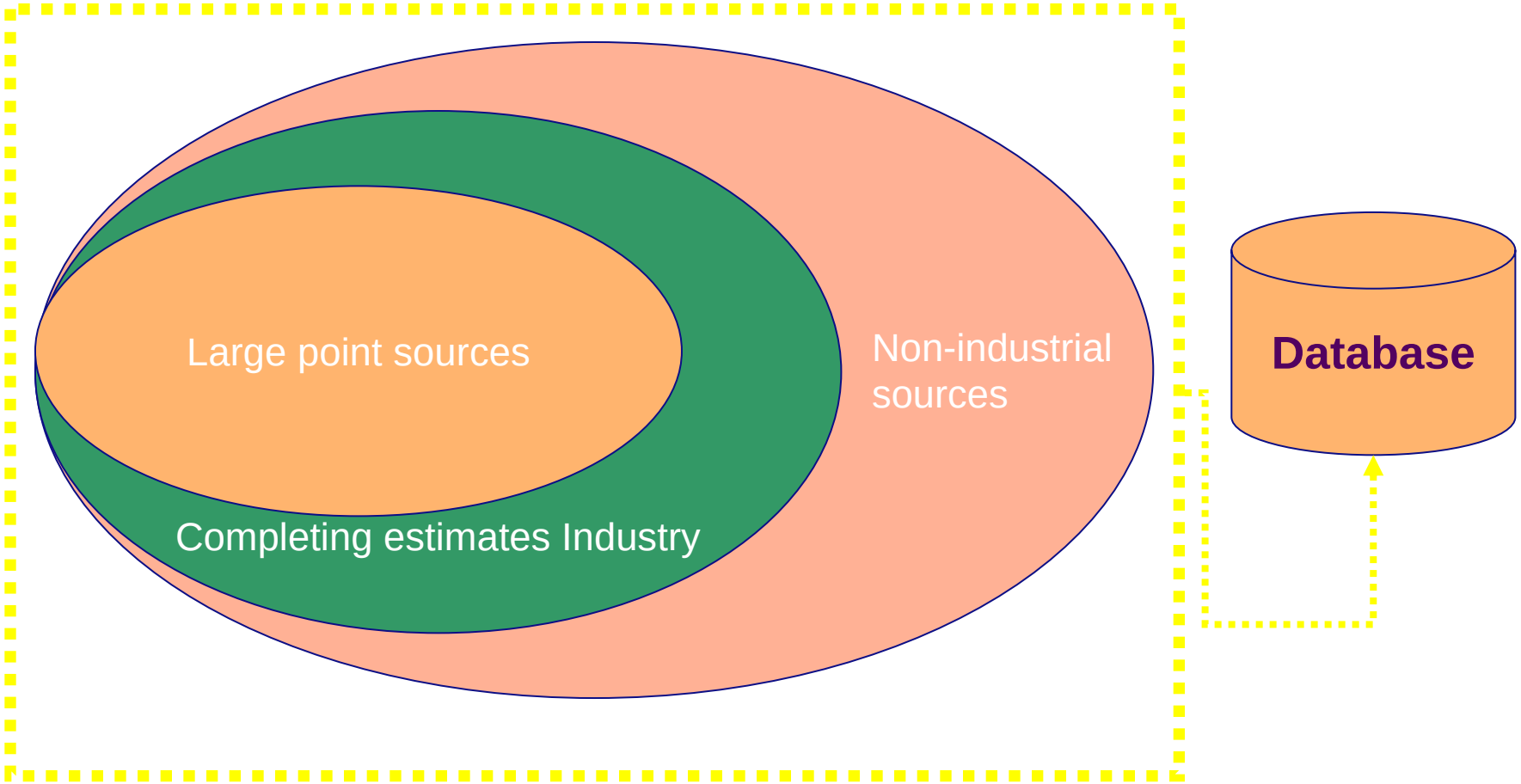
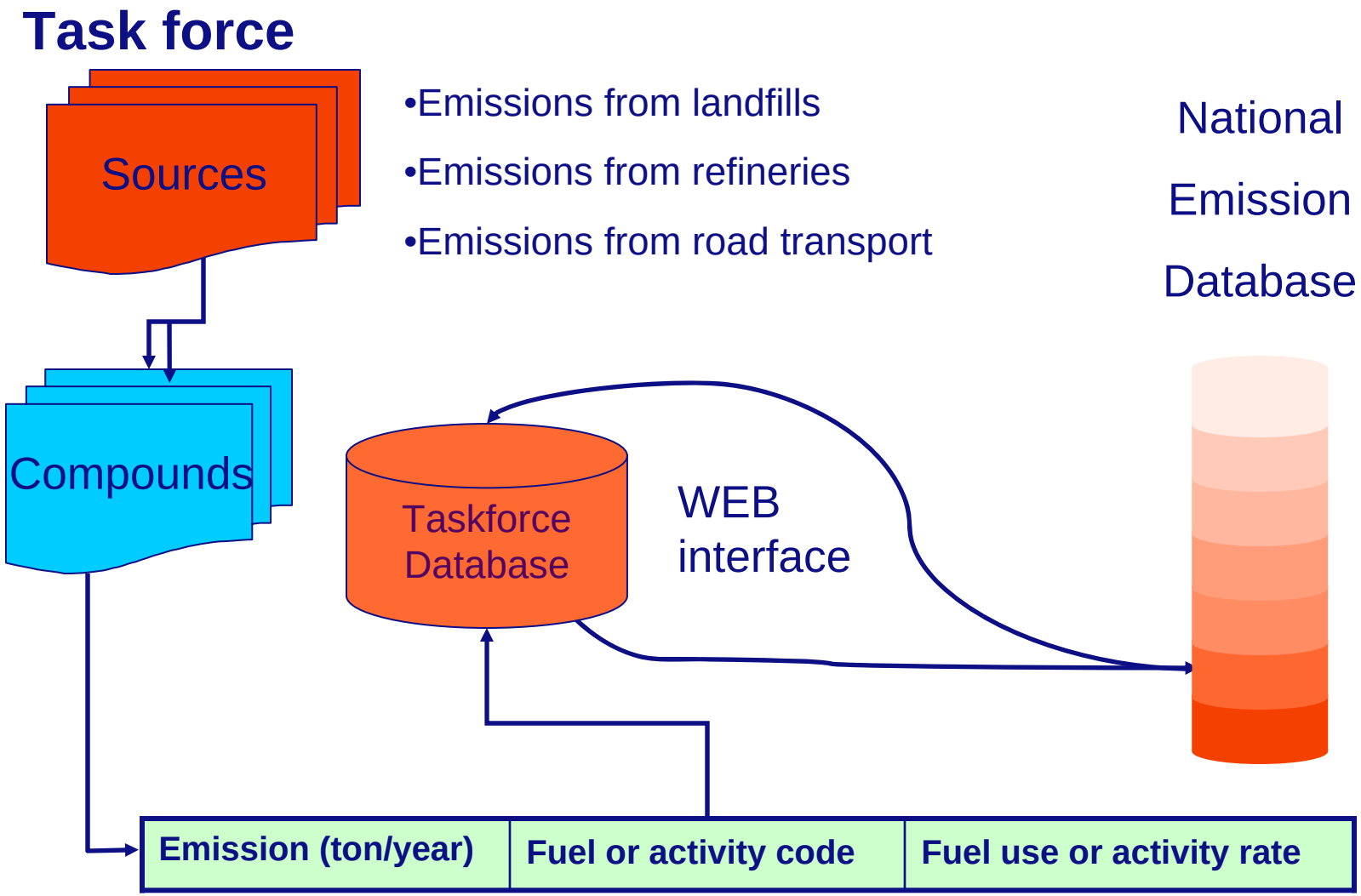


Estimates from other task forces

Database structure



Working process (I)

- **In the year t:**
  - ✓**Final emission data for t-2**
  - ✓**Estimates fr t-1**

In the year 2008:

- ✓Final data for 2006
- ✓Estimates for 2007

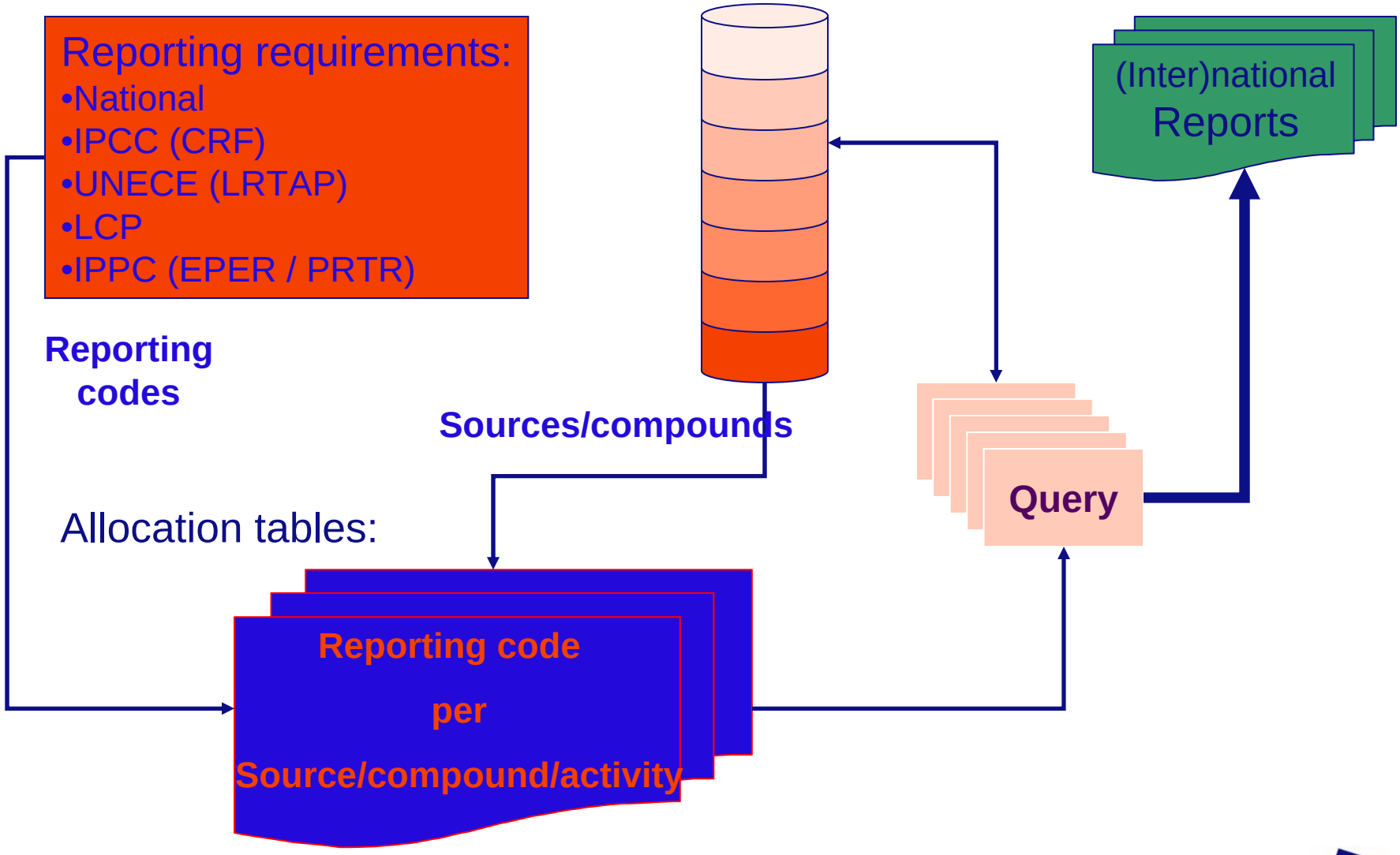
- Each of the taskforces downloads a part of the database for updating
  - ✓ Starts October / November of the year t-1
  - ✓Taskforces estimate emissions for t-2 and t-1.

- If recalculation is necessary also 1990 ,1995, 2000 and t-3 and for GHG total time series

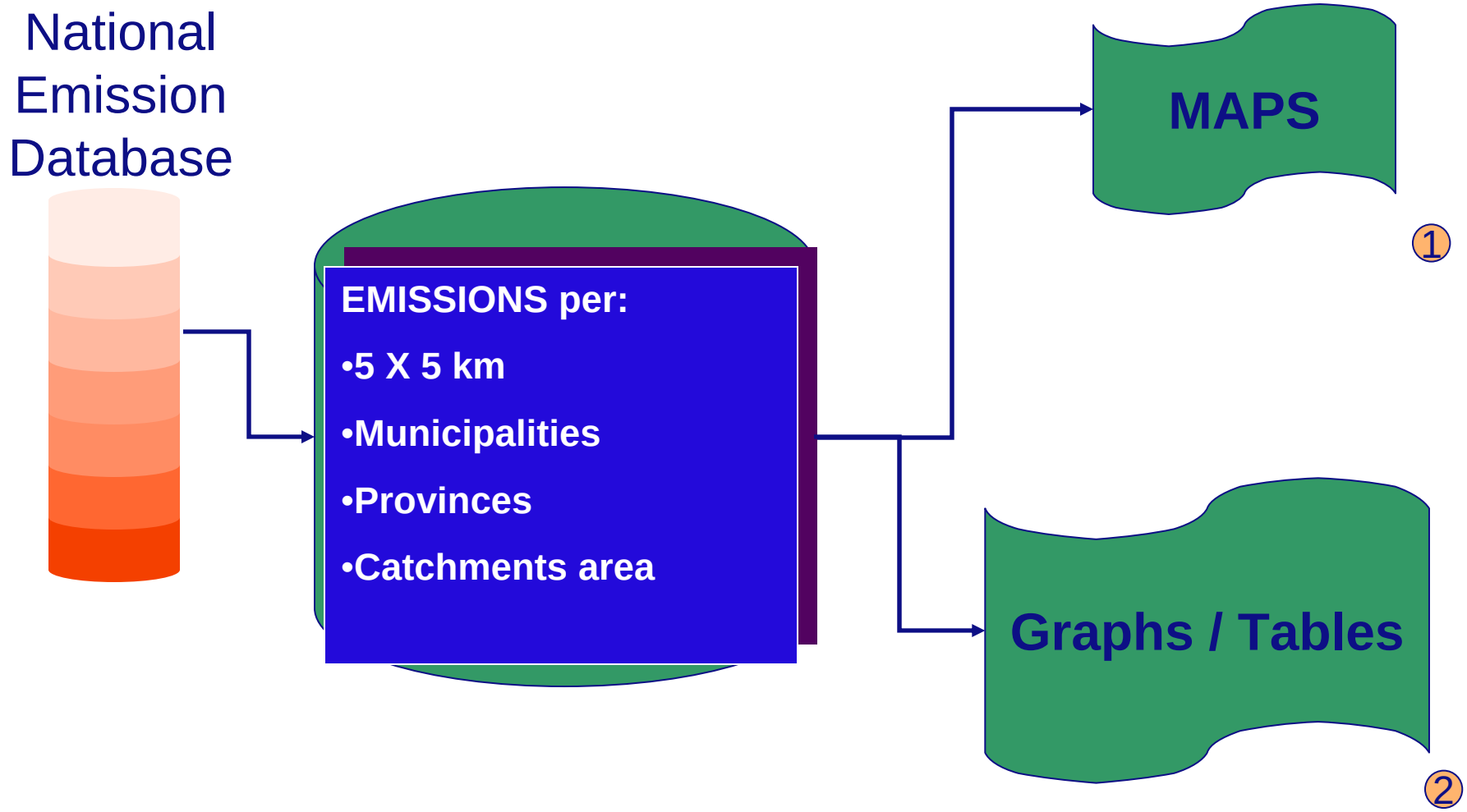
Working process (III)

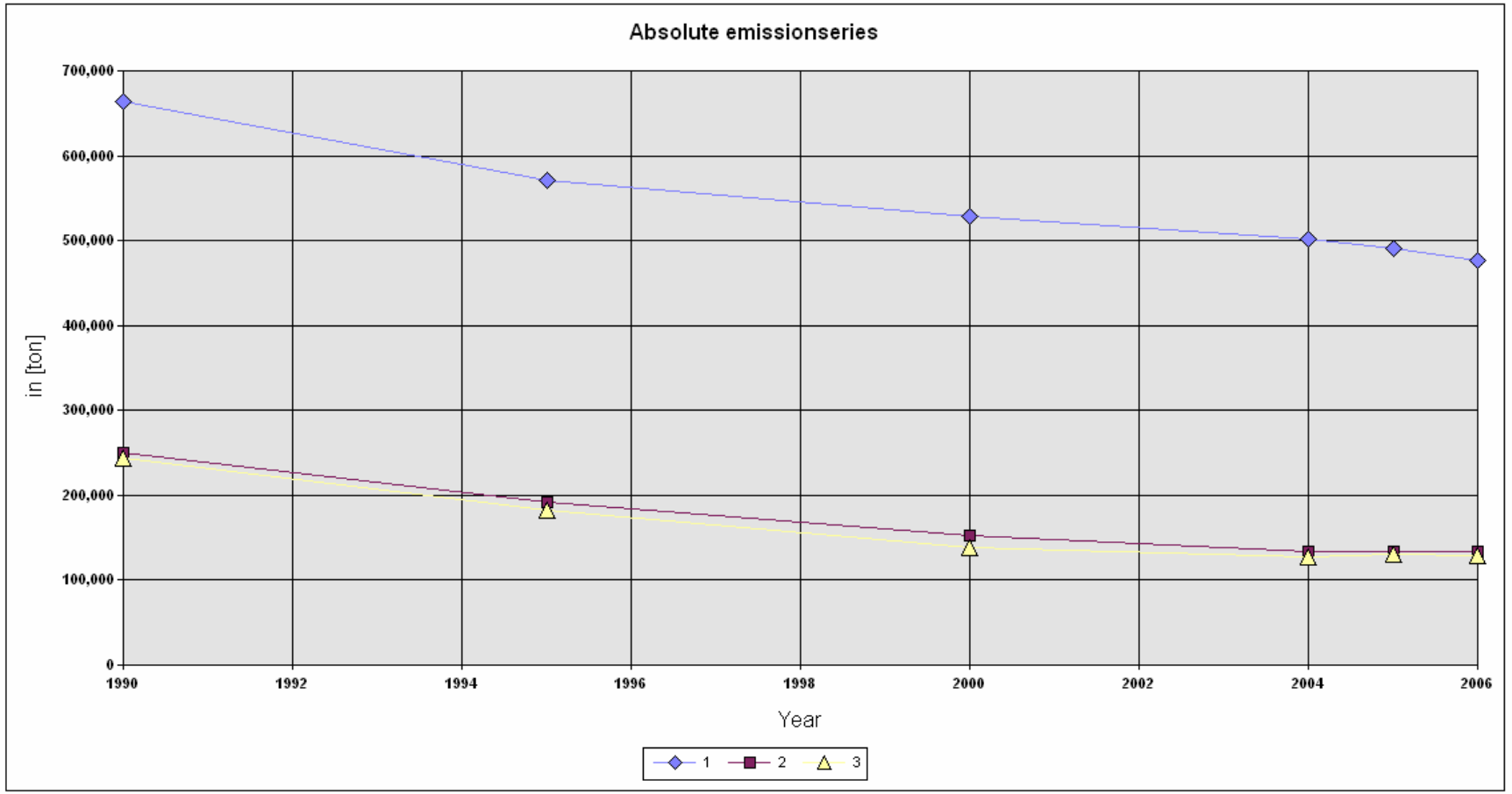
- Upload of data (t-2) to national database before 1st of February
- Data can be checked by all inventory participants (download facility)
- In March a joined meeting is organized (all taskforces attend) to perform a final trend analysis of the data (t-2) in the database.
- Additional QA/QC actions to improve data set:
  - Error corrections;
  - Explanations of trends
- Result:
  The (accepted) official Dutch data (t-3, t-2, 2005, 2000, 1995 and 1990) available before April.
- From march to July similar process for the t-1 data (not for water emissions)

Reporting procedures



Informing the public





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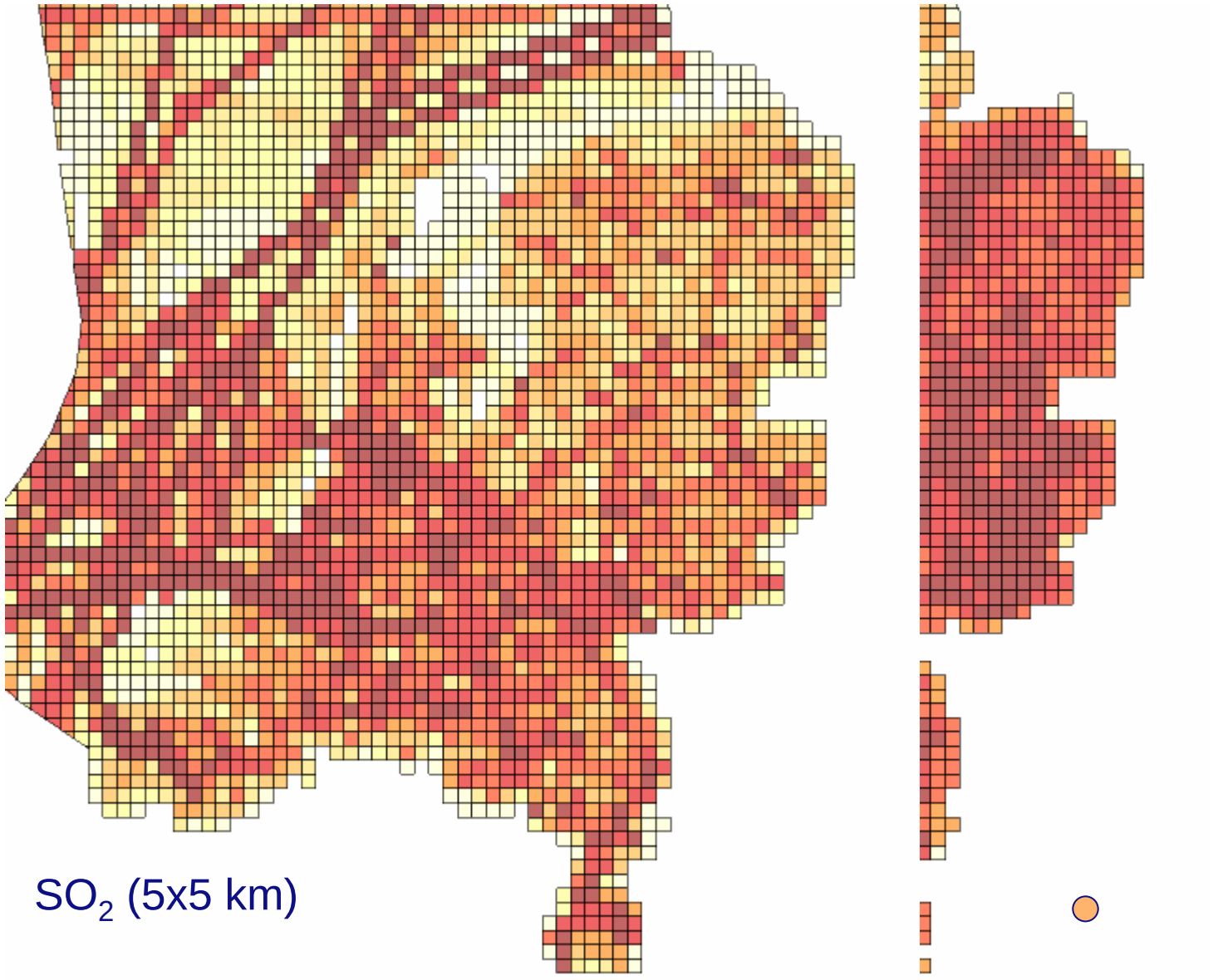
#		Sector/Activity	Theme	Pollutant	Unit	Sectortype	Sector	1990	1995	2000	2004	2005	2006	Activity	Facility	Compartment
1	☐	Total		Nitrogen Oxides (as NO2)	ton			664000	571700	529000	502000	490700	476800			Air
2	☐	Total		Ammonia	ton			249800	192600	152200	133900	133000	133000			Air
3	☐	Total		Sulphur Oxides (as SO2)	ton			243100	182300	138400	128100	130600	129100			Air


SO_2 (5x5 km)

Future Challenges and planned New Developments

- Principal dilemma:

  Decrease in funding ⟷ demand for improved data quality

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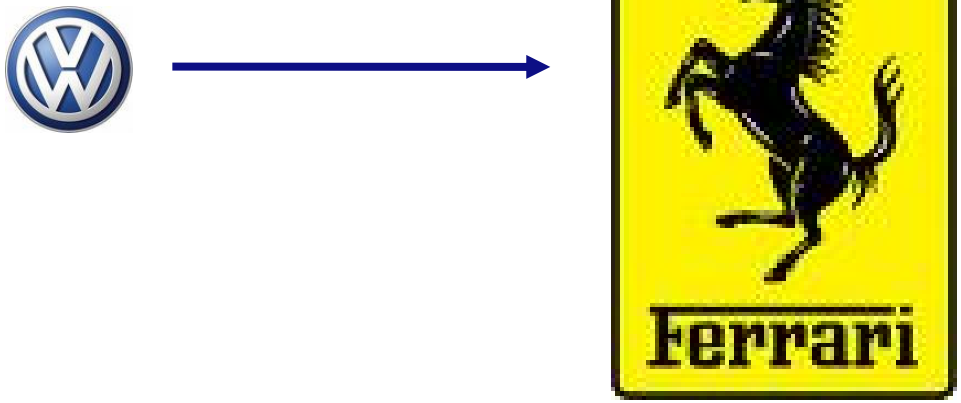

Decreased funding

- Past decade the primary process is slimmed down;
  - Automation
  - Restructuring work processes
  - Prioritizing

- Threats for coping with budget cuts;
  - New and changing reporting obligations
  - New “players” (ETS, local authorities, the public)

- Challenge:
  - Financier must redefine involvement and task for each “stakeholder” in the inventory
  - Limit/prioritize
    - Less detail (compounds, subcategories)
    - What is really obligatory
    - Frequency of updating inventory data

Demand for improved quality

- Change reporting obligations
  - Need for additional classifications of emission data;
  - New methodologies
- Spatial planning linked to air quality
  - Need for emission data on local scale
- Due to budget cuts no longer technical abatement information available in the database
  - How to monitor emission reduction policy ??
  - How to asses background air quality on detailed level

New developments

- Development of instruments for local inventories to be incorporated in the national inventory
- Improvement of AER data (simple to use validation tool)
- Budget for new methodologies:
  - PAH speciation
  - Abatement technology inventory
  - Top down methodologies for “missing components”
- Improvement data on dispersion characteristics of LPS
- Improvement of PRTR website

Closing remarks

- The data process in the last decade optimized with the help of IT technology
- During the process we lost useful data and methodological working methods. These have to be repaired by additional research
- *Lessons learned:*

Keep methodological issues always in mind, IT doesn't.

Thanks for your attention


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