

## Air Emission Accounting in Finland

Study visit of ICBS  
27.8.2014  
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### Basics on air emission accounts

- Emissions by
  - economic activity (NACE A\*64) and
  - by 14 emission type, including greenhouse gases
- Bridging tables between GHG reporting and air emission accounts
- **Economic activities**, not **sectors** like in GHG reporting



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### Emissions

#### Greenhouse gases

- CO<sub>2</sub> from fossil fuels
- N<sub>2</sub>O
- CH<sub>4</sub>
- HFC
- PFC
- SF<sub>6</sub>
- Can be aggregated as tons of CO<sub>2</sub>-equivalent

#### Other emissions

- CO<sub>2</sub> from biomass
- NO<sub>x</sub>
- SO<sub>x</sub>
- NH<sub>3</sub>
- NMVOC
- CO
- PM<sub>10</sub>
- PM<sub>2.5</sub>



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Compiling methods 1(5)

- Starting point: Greenhouse gas inventory system and Greenhouse gas emissions calculation system (ILMARI)
- Road transport and heating of public sector are allocated to branches by using monetary input-output tables
- Working machines are allocated with the models from Technical Research Centre of Finland and expert estimation

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Compiling methods 2(5)

- Other big data package comes from Finnish Environment Institute including PM, NH3, NMVOC and F-gasses
- The distribution to the branches is done with help of other data (inventory, intermediate consumption, building stock - statistics) and expert estimation.

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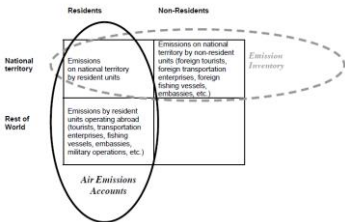
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Compiling methods 3(5): Bridging table

Figure 10: Differences between geographic and economic definitions of a country



Source: adapted from draft SEEA Energy (EN 2008)

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Compiling methods 4(5)  
Bridging table

- Emissions from Finnish residents' road traffic abroad
  - Statistics Finland: Energy statistics, border interviews, supply and use tables
  - Finnish Bus Association
  - Automobile and Touring Club of Finland (ATCF)
  - Road traffic calculation model (LIISA)
- Emissions from foreign water and air transport:
  - Physical and monetary data on bunker fuels from inventory and national accounts

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Compiling methods 5(5)  
Bridging table

- Emissions from non-residents' road traffic in Finland
  - Vehicle kilometres of foreign buses in Finland are approximately the same as vehicle kilometres of Finnish buses abroad
  - Fuel purchases for cars (tourism account of National Accounts and border interviews of Statistics Finland)
  - Shares of taxes in prices of gasoline and diesel fuel (Energy statistics of Statistics Finland)
  - Fuel consumption of Russian tourists and transit traffic (Survey of Technical Research Centre of Finland - VTT)

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Future

- After finishing Energy Accounting the approach of AEA calculation will be changed from inventory-first-approach to energy-first-approach

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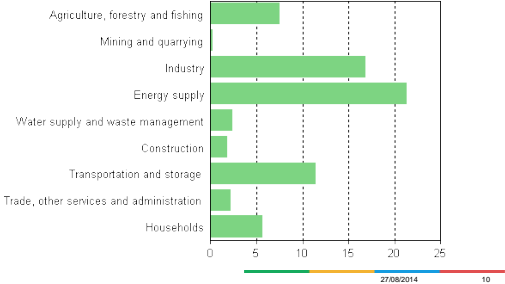
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Greenhouse gas emissions by industry 2011, million tonnes CO2 equivalent



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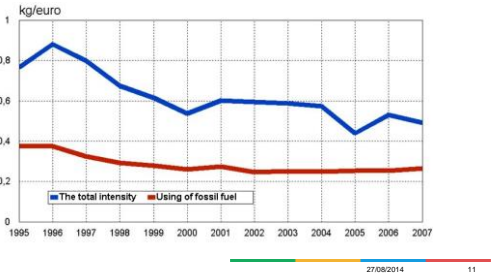
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Examples 2(2)  
Emission intensity of pulp and paper industry  
Fossil CO2 emissions per total output



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Hybrid accounts: how data from energy accounts, air emission accounts and environmental taxes are linked to the economy

|  | Total energy use | CO2 emissions     | Energy taxes |                | Output         | Gross value added | Employment |
|--|------------------|-------------------|--------------|----------------|----------------|-------------------|------------|
|  | TJ               | tonnes            | EUR million  | EUR million    | EUR million    | 1000 persons      |            |
| Households   | 274 788          | 5 364 252         | 1214         |                |                |                   |            |
| <b>Total industries</b>                                | <b>2 927 978</b> | <b>55 411 002</b> | <b>2 662</b> | <b>380 370</b> | <b>170 454</b> | <b>2 516</b>      |            |
| A Agriculture, forestry and fishing                    | 144 392          | 1 733 998         | 121          | 9 266          | 4 649          | 115               |            |
| B Mining and quarrying                                 | 327 093          | 302 810           | 13           | 2 179          | 810            | 7                 |            |
| C Manufacturing  | 1 380 532        | 16 539 413        | 563          | 119 260        | 32 164         | 369               |            |
| D Energy management                                    | 734 165          | 21 074 156        | 215          | 8 034          | 3 812          | 13                |            |
| E Water supply and waste management                    | 2 553            | 334 109           | 35           | 3 167          | 1 554          | 12                |            |
| F Construction   | 37 488           | 1 834 897         | 178          | 30 130         | 10 905         | 194               |            |
| H Transportation and storage                           | 166 760          | 11 300 959        | 728          | 22 918         | 8 715          | 155               |            |
| G, I S Trade, other service activities, administration | 134 995          | 2 290 662         | 809          | 185 241        | 107 670        | 1 641             |            |
| T Household service activities                         |                  |                   |              | 175            | 175            | 9                 |            |

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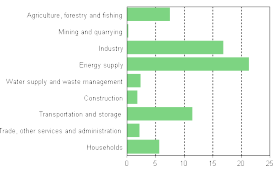
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Greenhouse gas emissions by industry 2011, million tonnes CO2 equivalent



Environmental taxes by industry group and tax type in 2011, EUR million

