Comparative Analysis of Local GHG Inventory Tools for Cities

CEPS task force meeting
Bruxelles 15 October 2009

15 October 2009
From measurements to measures

15 October 2009
From measurements to measures

And many more…
Take Home Message

- Do these GHG inventory tools differ?
- If so, does it matter?
- Is it possible to get comparable results?
Take Home Message

• Do these GHG inventory tools differ?
• Yes
• If so, does it matter?
• Yes
• Is it possible to get comparable results?
• Yes, to some extent.
Tools analysed

- **CO2 Grobbilanz/EMSIG** (Climate Alliance Austria, Energy Agency of the Regions)

- **ECO2Region** (Climate Alliance, Ecospeed)

- **GRIP** (Tyndall Centre, UK Environment Agency)

- **Bilan Carbone** (ADEME)

- **CO2 Calculator** (Danish National Environmental Research Institute, Local Government Denmark, COWI)

- **Project 2 Degrees** (ICLEI, Clinton Climate Initiative, Microsoft)
A Framework for Analysis

• 1. Identification of methodological problems related to GHG accounting

• 2. The specific issues when working with cities

• 3. Comparison of GHG inventory tools and identification of critical variables
The variables

- GHG measured / quantification methods / Measurement boundaries / Sectors / Functions / Usability etc…

*CO₂, SF₆, CH₄, N₂O, HFCs, PFCs*

SCOPE 1
- DIRECT
- FUEL COMBUSTION
- PURCHASED ELECTRICITY FOR OWN USE

SCOPE 2
- INDIRECT
- COMPANY OWNED VEHICLES
- OUTSOURCED ACTIVITIES

SCOPE 3
- INDIRECT
- PRODUCTION OF PURCHASED MATERIALS
- EMPLOYEE BUSINESS TRAVEL
- WASTE DISPOSAL

*the GHG Protocol corporate standard, World Resources Institute 2002, p. 7*
A Framework for Analysis

• 1. Identification of methodological problems related to GHG accounting
  GHG, GWP, sectors

• 2. The specific issues when working with cities
  Territory, Boundaries, Responsibility, Availability

• 3. Comparison of GHG inventory tools and identification of critical variables

Synopsis
What is measured?

Different GHG

Different sectors

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What is measured?

- Different GHG are measured
  - The six GHGs of the Kyoto Protocol
  - Carbon dioxide, methane and nitrous oxide
  - Carbon dioxide

<table>
<thead>
<tr>
<th></th>
<th>Carbon dioxide</th>
<th>Methane</th>
<th>Nitrous oxide</th>
<th>Sulphur Hexafluoride</th>
<th>Hydrofluorocarbons</th>
<th>Perfluorocarbons</th>
<th>Other GHGs</th>
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<tr>
<td>CO2 Grobbilanz</td>
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How are GHG measured?

Different Global Warming Potential values are used

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Whose emissions are measured?

Issue 1: Activity boundaries:
• the activities of the public authority or
• all the activities of the city?

Issue 2: Territory boundaries:
• administrative boundaries of the city or
• greater agglomeration of the city?

Data availability (No municipal data in Greece)
What is measured?

- **Point of use:** In general local GHG inventories are based on the *territory principle*: the GHG are allocated to the territory where they were emitted.

- **Point of generation:** In some cases, GHG that are emitted outside the territory are also included in the inventory because the *activity principle* is applied (e.g. flight of the Mayor).
What is measured?

- Different scopes of measurement
- The allocation of electricity emissions illustrates how the scope of the measurement differs

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Lack of a common reporting standard

- a) The inventories following the recommendations of the Climate Alliance are not consistent with the IPCC guidelines. However, the Eco2-Region tool allows also for the compilation of inventories that are consistent with the IPCC guidelines.
- b) GRIP inventories allocate electricity to the point of use and not the point of generation. Otherwise they are consistent with the IPCC guidelines.
- c) Project 2 Degrees states that the inventory is consistent with the IPCC. However, it is not clear whether some adjustment for the local level (and if so in which fields) have been made.

<table>
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Lack of a common reporting standard

- Different standards in use
- no standard seems to be widely accepted
- Tools are not always consistent with IPCC guidelines:
  1. Transparency
  2. Completeness
  3. Consistency
  4. Comparability
  5. Accuracy
# Results Synopsis

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Aiming at Interoperability:

• Objectives:
  – ensuring interoperability of methodologies to allow cities to gauge their policies;
  – facilitate an effective action-driven decision-making process

• The options:
  – Enabling communication between existing tools
  – development of an international standard
  – adoption of a unique tool

Principles:
GHG inventories for cities should use the principles and methods developed by the Intergovernmental Panel on Climate Change (IPCC).
The WRI/ WBSCD protocol should be followed for out-of-boundary emissions.
They should be sufficiently disaggregated and consistent to enable effective policy development.
Uncertainty assessment and quality assurance are encouraged.
Recommendations (2)
Out-of-boundaries emissions

Urban GHG inventories must include:

- Out-of-boundary emissions from the generation of electricity and district heating which are consumed in cities (including transmission and distribution losses);

- Emissions from aviation and marine vessels carrying passengers or freight away from cities;

- Out-of-boundary emissions from waste that is generated in cities.
Credits

– Nikolas Bader

– Raimund Bleischwitz
Thank you for your attention

Gaell.mainguy@institut.veolia.org

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