

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



ECO₂Region

PROJECT
TWO DEGREES

CO₂-Grobbilanz



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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)

CO2-Grobbilanz

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

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


The Greenhouse Gas Regional Inventory Project

- **Bilan Carbone** (ADEME)



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

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- **Project 2 Degrees** (ICLEI, Clinton Climate Initiative, Microsoft)

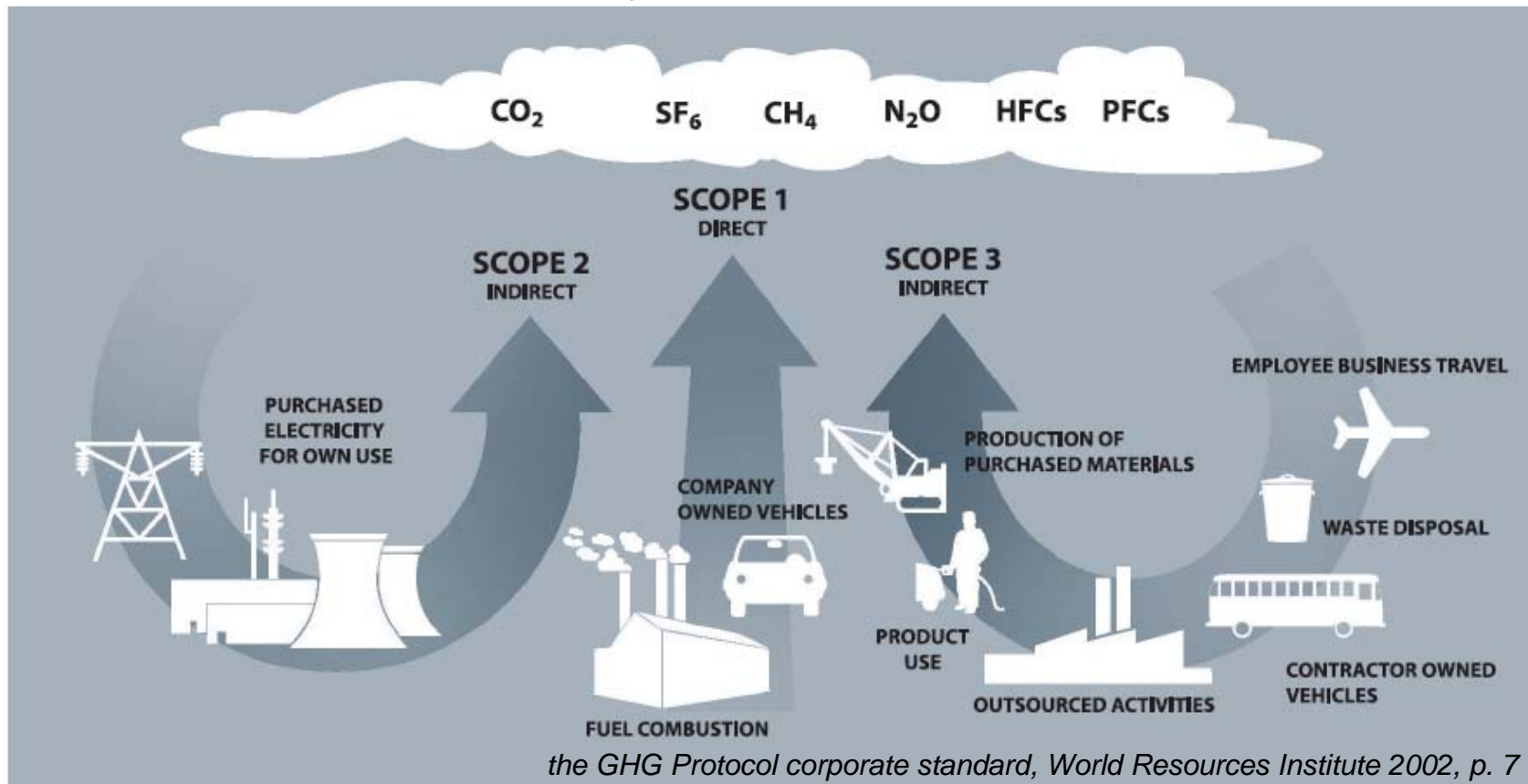
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A Framework for Analysis

- 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...



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

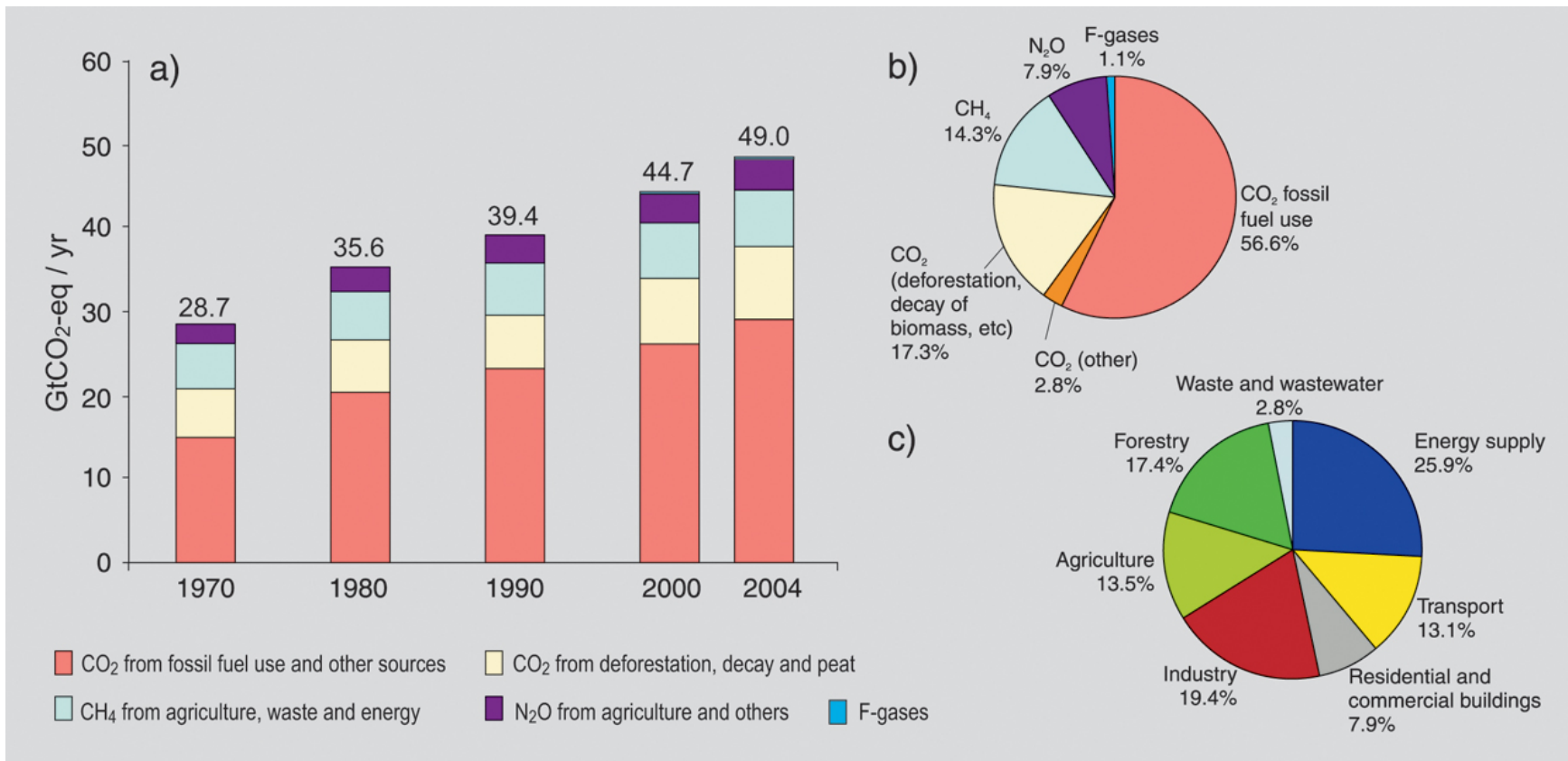
- 3. Comparison of GHG inventory tools and identification of critical variables

Synopsis

What is measured?

Different GHG

Different sectors



What is measured?

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

	Carbon dioxide	Methane	Nitrous oxide	Sulphur Hexafluoride	Hydrofluorocarbons	Perfluorocarbons	Other GHGs
CO2 Grobbilanz	X	X	X				
Eco2-Region	X	(X)	(X)	(X)	(X)	(X)	
GRIP	X	X	X	X	X	X	
Bilan Carbone	X	X	X	X	X	X	X
CO2 Calculator	X	X	X				
Project 2 Degrees	X	X	X	X	X	X	

How are GHG measured?

Different Global Warming Potential values are used

	Second Assessment Report (1995)	Third Assessment Report (2001)	Fourth Assessment Report (2007)
CO2 Grobbilanz		X	
Eco2-Region	X		
GRIP	X		
Bilan Carbone		X	
CO2 Calculator		X	
Project 2 Degrees	X	(X)	(X)

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

	Point of use	Point of generation
CO2 Grobbilanz	X	
ECO2Region	(X)	(X)
GRIP	X	
Bilan Carbone	X	X
CO2 Calculator		X
Project 2 Degrees	X	X

Lack of a common reporting standard

	GHG Protocol	ISO	ICLEI	IPCC
CO2 Grobbilanz				
ECO2Region	(X) a	(X) a		(X) a
GRIP				(X) b
Bilan Carbone		X		
CO2 Calculator				X
Project 2 Degrees	X	X	X	(X) c

- 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.

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

Variable	Range of variation
GHG measured	Only CO ₂ ⇔ all GHGs
Global warming potential values	2 nd IPCC AR ⇔ 4 th IPCC AR
Setting organizational boundaries	only operations controlled by the public authority ⇔ all activities of the city
Scope of measurement	only direct emissions ⇔ direct, indirect and life cycle emissions
Sector definitions	Highly variable: e.g. transport
Quantifying emissions	Default emission factors ⇔ regional/local emission factors

Results Synopsis

	Variable	Range of variation
T	GHG measured	Only CO ₂ ⇔ all GHGs
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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

Recommendations for an International Standard for Determining Greenhouse Gas Emissions for Cities

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

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– Raimund Bleischwitz



Thank you for your attention

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