

CEPD TAIPEI, June 26, 2011

SUSTAINABLE URBAN ENVIRONMENTS IN EUROPE – ASSESSMENT PRACTICES

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- Population forecasts in Europe entail both a large amount of new building and a large amount of adaptive reuse. The energy crunch and scarcity of natural resources will impose new constraints on ways of building and on spatial development patterns.

- These environmental challenges, at each spatial level:
 - Long-life or recyclable building materials,
 - “Sustainable” buildings, blocks or super-blocks,
 - “Green” neighbourhoods, cities and regions.

- Developing sustainable urban environments calls for examples of good practices that can be taken advantage from (“bench-learning”). Many award schemes and certifications attempt to set best practices. What are their criteria and selection methods?

1. FROM GREEN BUILDING MATERIALS TO GREEN BUILT ENVIRONMENTS: ASSESSMENT OF PRACTICES

- Assessing and certifying sustainability of buildings

2. DEFINING AND INDEXING GREEN CITIES AND BUILT ENVIRONMENTS

- Criteria & methods for assessing “green cities”

European Green Capital Award 2010/2011 (Expert panel)	European Green Capital Award 2012/2013 (Expert panel)	European Green Capital Award 2012/2013 (jury)	European Green City Index	Mercer Eco-city 2010 (European cities)	Mercer Quality of Life Index 2010 (European cities)	EIU Liveability Index 2011 (European cities)	Globe Sustainable City Award (European cities)	Monocle's most liveable Cities Index 2010 (European cities)
Hamburg	Barcelona	Vittoria-Gasteiz	Copenhagen	Helsinki	Vienna	Vienna	Malmö	Munich
Stockholm	Malmö	Nantes	Stockholm	Copenhagen	Zurich	Helsinki	Murcia	Copenhagen
Munster	Vittoria-Gasteiz		Oslo	Oslo	Geneva		Stargard Szczecinski	Zurich
Amsterdam	Nuremberg		Vienna	Stockholm	Düsseldorf			Helsinki
Freiburg	Nantes		Amsterdam	Nuremberg	Frankfurt			Stockholm
Oslo	Reykjavik		Zurich	Bern	Munich			Paris
Bristol			Helsinki	Zurich	Bern			Vienna
Copenhagen			Berlin	Aberdeen	Copenhagen			Madrid

Table 1: selection of city rankings (up to place 8); adapted from KPMG, 201



European Green Capital Award	European Green City Index	Urban Ecosystem Europe	Urban Metabolism headline indicators	Mercer Eco-city	Mercer Quality of Life Index	EIU Liveability Index	Globe Sustainable City Award
Local contribution to global climate change	CO ₂	energy and climate change	Per capita CO ₂ emissions from energy consumption				
	energy						
Local transport	transport	Planning , design and better mobility	Energy efficiency of transport; Public transport network length; Registered cars	traffic congestion	public services and transportation	infrastructure	Technical and Infrastructure Capital - Transportation and ICT
Green urban areas			Green space access				
Sustainable land use	waste and land use		Urban land take; Land use efficiency				
	buildings		Efficiency of residential energy use		housing	infrastructure	
		Local action for health and natural common goods					
Nature and biodiversity							
Quality of local ambient air	air quality		NO ₂ concentrations; PM ₁₀ concentrations	air pollution			
Noise pollution							
		responsible consumption and lifestyle choices					
Waste production and management	waste and land use		Waste intensity; Recycling	waste removal			



Water consumption	water		Efficiency of urban water use	water availability; water potability			
Waste water treatment				sewage			
Environmental management of the municipality	environmental governance	local management towards sustainability and governance					
					natural environment	culture and environment	Environmental Capital - Natural Resources Preservation
		social equity, justice and cohesion	Unemployment rate		political and social environment	Stability	Political Capital - Confidence and Public Trust
		vibrant, sustainable local economy	GDP per capita		economic environment		Financial Capital - Assets and Financial Management
					socio-cultural environment		Social Capital - Well being and Social Relations
					health and sanitation	healthcare	
					schools and education	education	
							Human and Intellectual Capital - Innovation and Social Intelligence
					recreation		Culture and Leisure Capital - Experience
					consumer goods		

Table 2: indicator areas used in different indexes

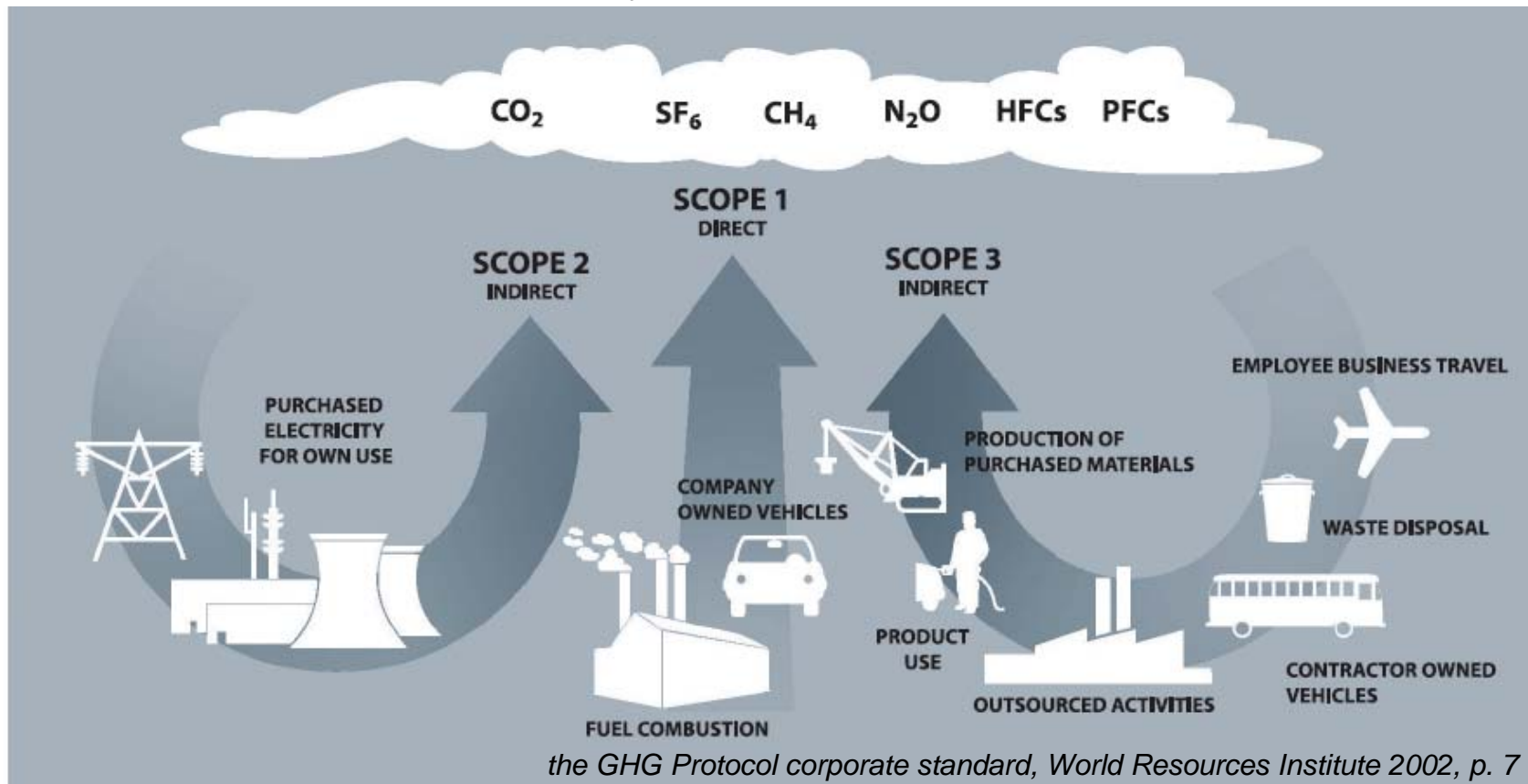
3. ESTIMATING GREENHOUSE GAS EMISSIONS/ENERGY EFFICIENCY AND BIODIVERSITY AT CITY LEVEL

1) Developing a framework for analysis

- Whose emissions are measured?
- What is measured?
- How are GHG measured?

2) Identifying variables

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



3) 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)

Sample results (1)

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	

Sample results (2)

What is measured?

- Different scopes of measurement
- E.g. 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

Sample results (3)

How are GHG measured?

Different GWP values are used

- The values of the second, third and fourth assessment report 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)

Results (4)

Lack of a common reporting standard

- Different standards are used but no standard seems to be widely accepted
- Four tools are based on IPCC guidelines but are not always completely consistent with them

	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

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

4. URBAN SUSTAINABILITY BEST PRACTICES – DEFINITIONS AND CASE HISTORIES