CLIMATE CHANGE SOLUTIONS FOR U.S. AND GERMAN CITIES
The Local Governments Climate Partnership Initiative
How to develop an international Benchmark - Tool
Hans Hertle, IFEU Heidelberg, Germany
Chicago, 22 - 23 February 2010

Visiting Heidelberg Castle
don’t forget:
Here we are!
ifeu – Institute for Energy and Environmental Research
ifeu – Institut für Energie- und Umweltforschung Heidelberg

- IFEU is a non-profit private company founded in 1978.
- Its expertise covers areas like environmental implications of transport, energy supply and renewable energy sources, life cycle assessment, air pollution control, sustainable development, environmental impact assessment and environmental management.

One Focus: Benchmark

- CO2-Balance of Cities since 1990
- Energy label for buildings since 1995
- Carbon Footprint of Citizens 2005

ClimateCitiesBenchmark
www.benchmark-kommunaler-klimaschutz.net

And then? National Welfare Index?
www.umweltbundesamt.de
Aims of Climate City’s Benchmark (CCB)

- to analyse and balance CO₂ emission
- to compare climate cities activities
- to advance understanding on site
- to be a base for two-way assistance
- The Benchmark has to be simple

but

- it has to answer lots of methodical questions how to balance GHG emissions and how to compare climate action of cities

Country Specific Datas: Inhabitants

USA 300 Mio.
Germany 82 Mio.
Japan 127 Mio.

source: SASI Group, Mark Newman 2006 (www.worldmapper.de)
Country Specific Data: CO₂ per Inhabitant

USA
20 tons/cap

Germany
11 tons/cap

Japan
10 tons/cap

source: SASI Group, Mark Newman 2006 (www.worldmapper.de)

Energy consumption of households (nation wide)

Country specific data: Electricity

Germany:
- Others: 11%
- Renewables: 26%
- Nuclear Power: 2%
- Oil: 10%
- Natural Gas: 49%
- Coal: 4.9%
- Waterpower: 0.1%

Japan:
- Others: 0.8%
- Renewables: 29.1%
- Nuclear Power: 8.2%
- Oil: 10%
- Natural Gas: 27.2%
- Coal: 6.5%
- Waterpower: 0.1%

USA:
- Others: 19.3%
- Renewables: 3%
- Nuclear Power: 19.1%
- Oil: 24.7%
- Natural Gas: 49.7%
- Coal: 6.5%
- Waterpower: 0.1%


CO₂ – Benchmark: Any more questions?

- Data often not available
- Different calculation method between cities and countries
- Influence of climate partly not included
- Emission of all GHGs or only CO₂?
- Emission including process chain?
- National emission factor for power plants or citywide factor including regional power plants?
- ……..
**CO₂ emissions of German Cities 1990 -2005 [%]**

- Mainz
- Augsburg
- Dresden
- Freiburg
- Kaiserslautern

**LGCP final energy matrix Mainz**

62 % reduction of final energy from 1990 to 2005 but: Industrial production shifted to other countries

- Mobility - 3 %
- Industry - 62 %
- Trade + 2 %
- Household +/- 0 %
- City - 33 %

*Quelle: City of Mainz, ifeu Heidelberg*

*Datum: ifeu 2007*
Multiple Benchmark Approach is needed

Step 1: Activity profile

Step 2: Balancing sheet

Step 3: Set of indicators
Activity Profile (mask)

4 steps
5 applications
(Climate Policy, Energy, Waste, Mobility)

Activity Profile USA

Waste
Reduce and Reuse
Sustainable car use
Parking space management
Public transportation
Low CO2-emission traffic
Own fleet of vehicles
Transport planning
Urban planning
Cooperation with energy suppliers
Cooperation with large-scale consumers
Cooperation with SME's
Civic participation

Climate Policy
Action program
Public relations
Participation of local actors
Regionalization
CO2 compensation
Energy management
Staff motivation
City as a role model
Efficient refurbishment
CHP and district heating
Renewable energies

CCB
Last Step of Benchmark: Indicators

- Indicators guarantee a clear and transparent review of activities
- They reveal which fields of action should be enforced in the participating cities
- The result is measured by a point scale from 0 to 10
- The 10 point mark is defined as the theoretical maximum (e.g. 100 percent renewable or zero tons of CO₂) which is not necessarily a practicable one

Indicators: Minimum and Maximum

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO₂ per capita</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>renewable energy (Power)</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>renewable energy (heat)</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>combined heat and power (CHP)</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>energy consumption of households</td>
<td>15000</td>
<td>0</td>
</tr>
<tr>
<td>energy consumption of commerce</td>
<td>80000</td>
<td>0</td>
</tr>
<tr>
<td>transport choice</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>private car fleet</td>
<td>10000</td>
<td>0</td>
</tr>
<tr>
<td>municipal solid waste</td>
<td>1000</td>
<td>0</td>
</tr>
</tbody>
</table>
Indicators on National Level

- CO2 per capita
- renewable energy (power)
- renewable energy (heat)
- combined heat and power (CHP)
- energy consumption of households
- energy consumption of commerce
- compensation measures
- transport choice
- private car fleet
- municipal solid waste

Länderspezifische Punkte: USA JAPAN Germany

LGCP: Citywide and National Indicators

Indicators: Example Freiburg

Climate Cities Benchmark

- CO2 per capita federal
- CO2 per capita regional
- renewable energy (power)
- renewable energy (heat)
- combined heat and power (CHP)
- energy consumption of households
- energy consumption of commerce
- transport choice
- private car fleet
- municipal waste

Average Germany Average Community Best Practice City
Indicators of municipality only

Activity Profile and Support

Example of an action plan

Crosslink to catalog of measures
Thank you for listening!

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