Side Event at COP14

Benchmarking local climate policies
- qualitative and quantitative results

- The Project
- The Benchmarking
- The Results
- The Lessons learned
The project aims at:

- (re-) activating existing town twinnings in the field of climate change

- to bring US/DE/JP cities together for:
  - exchange of experience
  - 'joint implementation' of projects

- to analyse activities on climate change mitigation, CO₂ balances and other quantitative achievements

- to develop the Climate Cities Benchmarking system
The project partnership

Climate Alliance
European city network with 1,400 cities

IFEU Heidelberg Institute for Energy and Environmental Research, Germany

Nagoya University Graduate School of Environmental Studies, Japan

Funded by:
Federal Environment Agency, Germany
Aims of the Climate Cities Benchmarking Project

- to analyse and balance \( \text{CO}_2 \) emissions
- to compare climate change mitigation activities
- to advance understanding on site
- to be a base for two-way assistance and exchange
- The Benchmark has to be simple
  - *but*
- it has to answer a lot of methodical questions how to balance GHG emissions and how to compare climate action of cities
Looking at CO₂ emissions only is not enough!

Development of CO₂-emissions in Mainz according to the sector

Source: City of Mainz, IFEU Heidelberg
process chain included  
IFEU 2007
That’s why a multiple benchmark approach is needed!

Step 1: Activity profile

Step 2: CO₂ balance sheet

Step 3: Set of indicators
Element 1: Activity Profile – input ...

5 fields of action (climate policy, energy, waste, mobility)

4 steps

<table>
<thead>
<tr>
<th>Energy</th>
<th>1: getting started</th>
<th>2: moving forward</th>
<th>3: forging ahead</th>
<th>4: taking the lead</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>Bring your own facilities up to scratch</td>
<td>Check selected own facilities in terms of energy use and saving potentials</td>
<td>Install an energy management system for all municipal buildings, including energy audits</td>
<td>Monitor your own facilities and the CO2 reduction impact of individual measures</td>
</tr>
<tr>
<td>E2</td>
<td>Motivate your staff to save energy (including economic incentives)</td>
<td>Inform your employees about the environmental impact of their energy use</td>
<td>Set up an user-oriented energy management plan for the local administration and related institutions (e.g. schools, hospitals, recreation facilities)</td>
<td>Encourage energy sensible behaviour by offering incentives to save energy, e.g. 50.60, ESCO</td>
</tr>
<tr>
<td>E3</td>
<td>Become a role model for sustainable energy supply</td>
<td>Estimate the potentials of sustainable energy use in your community and define a package of sustainable energy measures</td>
<td>Generate a share of your municipalities electricity and/or heat demand in own RES and/or CHP plants</td>
<td>Purchase green power to supply a portion of your energy demand</td>
</tr>
<tr>
<td>E4</td>
<td>Define energy efficiency as a basic principle in urban planning</td>
<td>Introduce basic energy criteria for urban planning processes in the city (refers to urban planning in general, not only government related)</td>
<td>Find partners to carry out pilot projects, introducing high standards of energy efficiency</td>
<td>Set high energy efficiency requirements for properties sold by the city government</td>
</tr>
<tr>
<td>E5</td>
<td>Refurbish existing housing stock of private households, industry and trade</td>
<td>Inform house-owners about the potentials to increase the energy efficiency of their building</td>
<td>Label the housing stock according to their energy efficiency and offer targeted advice and recommendations (e.g. European energy label)</td>
<td>Set up loan programme for retrofitting the housing stock in terms of energy efficiency</td>
</tr>
</tbody>
</table>
Element 1: Activity Profile – … and output

Activity Profile Germany

Transport
- Sustainable car use
- Parking space management
- Public transportation
- Low-CO2 emission traffic
- Transport planning
- Own fleet of vehicles

Energy
- Cooperation with SMEs
- Civic participation
- Renewable energies

Waste
- Waste management
- Cooperation with energy supply companies
- Cooperation with large-scale consumers

Climate Policy
- Targets / Concepts
- GHG-monitoring
- Institutionalisation
- Action program
- Involvement of the public
- Participation of local actors
- Regionalisation
- CO2 compensation

ifeu 2008
Element 1: Activity Profile – … and output

Activity Profile USA
9 big cities

Transport
- Sustainable car use
- Parking space management
- Public transportation
- Low-CO2 emission traffic
- Transport planning
- Own fleet of vehicles

Waste
- Waste management
- Cooperation with energy supply companies
- Cooperation with large-scale consumers
- Cooperation with SME's
- Civic participation
- Renewable energies
- CHP and district heating

Energy
- Efficiency
- CO2 compensation
- Climate Policy
- Targets / Concepts
- GHG monitoring
- Institutionalisation
- Action program
- Involvement of the public
- Participation of local actors
- Regionalisation
- Energy management
- Staff motivation
- City as a role model
- Urban planning
- Efficient sanitation

Project
Benchmarking
Results
Lessons learned
Element 1: Activity Profile – … and output

Activity Profile Japan

Transport
- Sustainable car use
- Parking space management
- Public transportation
- Low-CO2 emission traffic
- Transport planning
- Own fleet of vehicles

Waste
- Waste management
- Cooperation with energy supply companies
- Cooperation with large-scale consumers
- Cooperation with SME’s
- Civic participation
- Renewable energies
- CHP and district heating

Energy
- major city
- medium-sized town
- small town

Climate Policy
- Targets / Concepts
- GHG-monitoring
- Institutionalisation
- Action program
- Involvement of the public
- Participation of local actors
- Regionalisation
- CO2 compensation
- Energy management
- Staff motivation
- City as a role model
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ifeu 2008
CO$_2$ emissions of German Cities 1990 - 2005

Project Benchmarking Results Lessons learned

[Graph showing CO$_2$ emissions trends for various cities from 1990 to 2005.]

Ifeu 2008
Element 3: 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 % renewable or zero tons of CO$_2$) which is not necessarily a practicable one
Indicators: National Mean Values

Project
Benchmarking
Results
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LGCP: Citywide and National Indicators ifeu 2008
... and how it looks like for a city

Project Benchmarking Results Lessons learned

Example Set of Indicators

Climate Cities Benchmark

0 points = poor
10 points = very good

- 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 waste

average Germany, average city, best-practice city, example
Concrete Solutions for Change

- 44 examples from 22 German cities

Project
Benchmarking
Results
Lessons learned
Concrete Solutions for Change

• Local authorities &

Tübingen: - 95% of CO₂ emissions due to fleet renewal, use of regional biodiesel, eco-driving

Bonn: Use of public roofs for solar plants, Wood pellet heating

Tübingen: Climate campaign together with shopkeepers and businesses

Heidelberg: Testimonial campaign – “all of us can” – 400 participants
Concrete Solutions for Change

- **Urban Planning**

**Freiburg:** energy features taken into account in early planning steps, obligation for builders to implement most sustainable energy solution, Low-Energy-Standard

**Stuttgart:** Strategic approach: compact urban development vs. conservation of green space

**Heidelberg:** largest passive house building project in the world: funding programme, consultancy concept for builders, rest heating from biomass and geothermal, electricity-saving concept
Concrete Solutions for Change

- **Smart Financing Mechanisms**

  **Stuttgart:**
  - Savings in Energy costs: 1.2 million Euro
  - Water: 32,000 m³
  - Heating: 15,000 MWh
  - Electricity: 2,000 MWh
  - Due to City-Internal Contracting

  **Berlin:**
  - Energy Saving Partnership Contracting of 22 pools with a total of 1,300 buildings
  - Investments: 60 million Euro
  - Energy Saving: 15 to 36 %
  - CO₂ reduction: 60,000 t/a
Concrete Solutions for Change

- Renewable Energies

Rostock: futuristic residential area “Saw Tooth Houses”

Offenbach: 877 kWp output
662,000 kWh/a
$CO_2$: - 600 t/a
due to roof renting to private investors

Bonn: 1 wood pellet heating
= less $CO_2$ acc. to 130 single houses
heated by natural gas

Munich: Solar District Heating
large seasonal hot water reservoir
- 60 % heating than with natural gas supply
Concrete Solutions for Change

• **Energy Efficiency**

**Frankfurt am Main:**
“Capital“ of Cogeneration
120 plants with 24,000 kW_{el} 
- 75,000 t CO_2/a

**Münster:** Gas and Steam Cogeneration Plant
Factor 3 increase in energy efficiency: - 190,000 t CO_2/a

& **combatting Energy Poverty**

**Nuremberg:**
Specific advisory service for low-income households
60 % of energy savings potentials by altering heating or lighting habits identified:
training & small investments
Concrete Solutions for Change

**Buildings**

- **Cologne:**
  - 11 energy efficient housing estates with 900 residential units
  - Latest project:
    - Improvements in thermal insulation by 80 %
    - Central heating with wood pellets
    - 150 m² of solar thermal collectors
    - 200 m² photovoltaics

- **Hanover:**
  - Integrated retrofitting in 300 apartments
  - On-site training of architects and craftsmen, quality assurance briefings
Concrete Solutions for Change

- **Awareness raising, campaigns**

  **Bonn:**
  Yearly Energy Day

  **Lübeck:**
  Partner in Climate Alliance's Ice Block Bet
Concrete Solutions for Change

- **Partnerships**

**Hanover:**
Climate Alliance 2020

**Bonn:**
Low-Emission Mobility Partnership

**Hamburg:**
Environmental Partnership Programme
Concrete Solutions for Change

Project
Benchmarking
Results
Lessons learned

Nuremberg
Rostock

Transport

Dresden
Münster
Lübeck

Esslingen
Concrete Solutions for Change

- **Waste Management**

**Munich:**
Green electricity from biowaste via dry fermentation
supply of 1,600 households

**Freiburg:**
Methane from landfill for co-generation
Heat supply of 7,000 households
- 10,000 t CO$_2$ emissions

**Mainz:**
Electricity supply for 40,000 households
+ heat + process steam
Next Steps

Germany

- Improving the Benchmark System
- Linking Benchmarking to project database
- Creating a web-based platform
- Joining of more than 100 German cities

Japan

- Adapting the Benchmark
- Joining of more than 100 Japanese cities

USA

- Adapting the Benchmark
- Joining of more than 20 cities
- Final Workshop in the USA
on the benchmarking, how to join ...:

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