Carbon-based accessibility instruments: visual tools for low carbon mobility options

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Final Conference of the mobil.LAB Doctoral Research Group

September 14, 2020
The challenge

Evolution of CO$_2$ emissions in the EU by sector (1990-2016).

Accessibility planning

https://www.accessibilityplanning.eu/
Carbon-based accessibility instruments

<table>
<thead>
<tr>
<th>Land Use Component</th>
<th>Spatial Dimension</th>
<th>Scenario Building Capabilities</th>
<th>Communicability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable decision-making related to land use policies and/or location choices</td>
<td>Contain a model of the characteristics of the land use and transport system</td>
<td>Respond to policy interventions in the land use and/or transport system</td>
<td>Feature easily understandable outputs and transparent workings</td>
</tr>
</tbody>
</table>
Transport interventions

Carbon-based accessibility by car within 750 grams of CO$_{2e}$

Default: 7,886 workers

Occupancy rate 1.2 → 2: 27,204 workers

Conventional car → electric car: 24,857 workers

580 g/kWh → 464 g/kWh 34,757 workers

Firm locations

Carbon-based accessibility by transit

Previous location within 1 kg CO$_2$: 628,253 workers
Current location within 1 kg CO$_2$: 399,634 workers

Previous location within 0.25 kg CO$_2$: 129,182 workers
Current location within 0.25 kg CO$_2$: 12,339 workers


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Car and transit accessibility on the metropolitan level

By car
2030 threshold: 1,900 g CO$_{2e}$
Accessibility to workers (absolute number)

By transit
2030 threshold: 1,900 g CO$_{2e}$
Accessibility to workers (absolute number)

## Application potential

### IDENTIFICATION
- Options or needs for interventions in the land use system
- Options or needs for interventions in the transport system
- Spatial impacts of emission budgets and emission reduction targets

### ASSESSMENT
- Impacts of interventions in the land use system
- Impacts of interventions in the transport system

### COMMUNICATION
- Interdisciplinary communication
- Political decision-makers
- Private decision-makers

### PRICING
- Individual impacts of carbon pricing strategies
- Land taxes based on emission impacts
Contributions to low carbon mobility planning

- Focusing on emission impacts
- Integrating land use and transport
- Addressing decision-makers

Image sources: Stefan Redel / Fotolia; Frederik Buchleitner / flickr; THANANIT / Fotolia
Thank you!

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