ASTUS TOOLS

CO₂L

Julia Kinigadner & Benjamin Büttner (Technical University of Munich), Gesa Volpers (Munich Transport and Tariff Association)

CO₂L calculates the CO₂ emissions from transport activities for a given spatial area. The toolkit supports the scenario-building process and consists of three parts. The first part is a calculator of CO₂ emissions based on population, mode share, trip rate, trip length, occupancy rate and emission factors. The second part provides sample input data from various countries. The third part provides the user with land use and transport planning measures which can be implemented to reduce CO₂ emissions.

### PLANNING APPROACHES

**Intended user group:** Local authorities, Decision-makers

**Tool benefits:** Quantify current and future emission levels, Identify options for intervention, Highlight the emission reduction potential, Raise awareness

**Main functions:** Provide basic input data on transport parameters, Quantify transport-related emissions for both the baseline and a set of scenarios, Identify measures for producing low carbon scenarios

**Tool format:** MS Excel calculator

### TOOL FUNCTIONS

**Type of emissions addressed:** CO₂, CO₂e

**Analyzed transport modes:** Private Car, Cycling, Public Transport, Walking

**Type of output:** Emission Estimation

**Output format:** Numerical

**Spatial unit of detail:** Region, Municipality

**Applicable coverage area:** Any given area where suitable data is available

### TOOL UTILIZATION

**Required skills:** Basic understanding of MS Excel

**Required hardware, software and operating system:** MS Excel calculator sheet

**Required input data:** Population of the study context, Trip Rate, Trip length, Mode Share, Occupancy rates, Emission factors

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<table>
<thead>
<tr>
<th>Mode Share</th>
<th>Trips / Person</th>
<th>Passenger-km / Trip</th>
<th>Vehicle-km / Passenger-km</th>
<th>grams of CO₂ / Vehicle-km</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foot</td>
<td>26%</td>
<td>0.664</td>
<td>1.4</td>
<td>1</td>
</tr>
<tr>
<td>Bicycle</td>
<td>7%</td>
<td>0.236</td>
<td>3.4</td>
<td>1</td>
</tr>
<tr>
<td>Car</td>
<td>56%</td>
<td>1.904</td>
<td>16</td>
<td>0.8</td>
</tr>
<tr>
<td>Public transport</td>
<td>15%</td>
<td>0.974</td>
<td>8</td>
<td>0.1</td>
</tr>
<tr>
<td>Other</td>
<td>6%</td>
<td>0.367</td>
<td>3</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>3.4</strong></td>
<td><strong>10.442</strong></td>
<td></td>
</tr>
</tbody>
</table>
EVALUATION OF THE TOOL WITH THE FINAL USER

CO$_2$L

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USER-FRIENDLINESS

The tool is easy to use
My organization has the required skills to use the tool
The tool strikes a good balance between scientific rigour and practical usability
It is easy to understand the input data, assumptions and calculations behind the tool
I do not feel I need to understand the input data, assumptions and calculations behind the tool to use it effectively
The tool outputs are understandable and easy to interpret
The tool performs at a sufficient speed for real-time adaptations

USEFULNESS

The tool outputs are valuable in supporting interaction and discussion amongst stakeholders
The tool outputs are valuable in developing strategies
The tool outputs can be communicated effectively to non-expert decision makers
The level of detail (spatial extent) of the tool corresponds to the problem under discussion
I have confidence in the soundness and quality of the tool outputs
My expectations of the tool before the workshop were met
I would like to have access to the tool for future use