



**WILDERNESS**  
FOUNDATION SOUTH AFRICA

## ASSUMPTIONS

### CLIMATE ACTION PARTNERSHIP PERSONAL HOUSEHOLD CARBON FOOTPRINT CALCULATOR

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The CAP Personal household carbon footprint calculator is based on the assumptions that follow below.

#### ELECTRICITY

- Households consuming below 600kW.hr per month (R270) receive 50kW.hr free electricity and are charged at 49 cents/kW.hr (incl. VAT) on the remaining consumption. Above a consumption of 600kW.hr per month, the household moves to being a high level domestic consumer - receiving no free electricity and the tariff changes to 36 cents/kW.hr (incl. VAT).
- Electricity CO<sub>2</sub> emissions are estimated at 0.978 kg CO<sub>2</sub>/kW.hr based on Eskom's 2006 Electricity Emissions levels (Eskom annual report 2007).

#### TRANSPORT

- Where the accurate fuel consumption of a vehicle is not known, the fuel consumption assumed for the various engine sizes is shown below, as reported in the AA 2007 tables (<http://www.aa.co.za/>).

<b>Engine</b>	<b>L/100 km (petrol)</b>	<b>L/100 km (diesel)</b>
Hybrid	4.5	4.0
Under 350	3.0	2.5
351-1100	5.0	4.5
1101-1300	7.9	4.0
1301 - 1500	8.1	5.0
1501 - 1800	9.4	6.0
1801-2000	9.6	7.1
2001-2500	10.9	9.7
2501-3000	12.5	10.5
3001-4000	13.8	10.2
over 4000	15.7	14.0

- It is assumed that an SUV/bakkie is 25% less efficient and a motorcycle 25% more efficient than a sedan vehicle, due to vehicle mass.

- CO<sub>2</sub> emissions are 2.3 kg CO<sub>2</sub> per liter petrol and 2.7 kg CO<sub>2</sub> per liter of diesel (chemical fact from numerous sources).

## FLIGHTS

- Flying economy class is assumed to be 50% more efficient than flying business or first class.
- An average local trip is estimated at 1000km, while an international trip to Europe is 10,000km, to N America is 15,000km and to S America is 7,500km.
- Aviation CO<sub>2</sub> emissions are estimated at 0.12 tons CO<sub>2</sub> per 1000km for short haul flights and 0.15 tons CO<sub>2</sub> per 1000km for long haul flights (source: Calculating the Environmental Impact of Aviation Emissions, Oxford University Centre for the Environment, 2005).

## WASTE

- Municipal wheelie bins are estimated to hold 60kg waste each.
- The breakdown of average domestic waste is estimated as shown in the table below. Also shown is the kg CO<sub>2</sub>e emitted per kg of each type of waste, including both the production and decomposition emissions. Note that there are no SA studies on CO<sub>2</sub> emissions per kg waste (including production) so these are estimates based on French figures (see [http://www.manicore.com/anglais/documentation\\_a/greenhouse/waste.html](http://www.manicore.com/anglais/documentation_a/greenhouse/waste.html)).

Type of waste	Estimated % waste makeup	kg CO <sub>2</sub> e per kg waste (includes production and decomposition emissions)*
Organic Material	29%	0.62
Paper	25%	2.13
Plastic	11%	3.30
Glass	13%	1.03
Metal	4%	2.20
Others	18%	1.83
<b>TOTAL</b>	<b>100%</b>	-

\* Calculated as the kg carbon equivalent per kg of waste thrown x the CO<sub>2</sub> conversion factor of 0.2727

## PER CAPITA EMISSIONS

- The South African per capita CO<sub>2</sub>e emission rate is estimated at 9.3 tons (Government of the Republic of South Africa (2000). Initial Communication under the UNFCCC. Emissions: Page 23, Table 2.2, Aggregated total for 1994. Population: Page 3, Paragraph 7.).