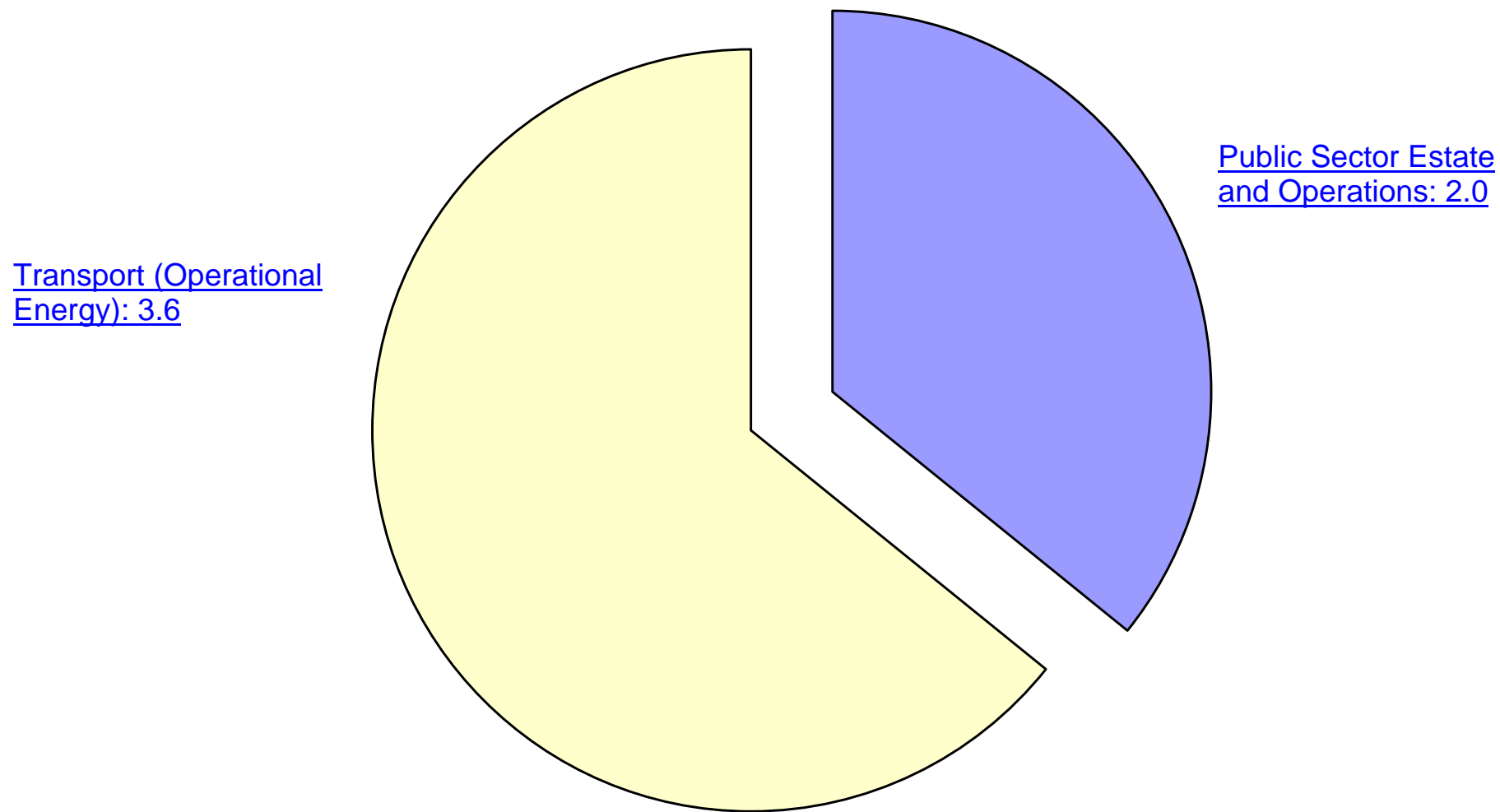


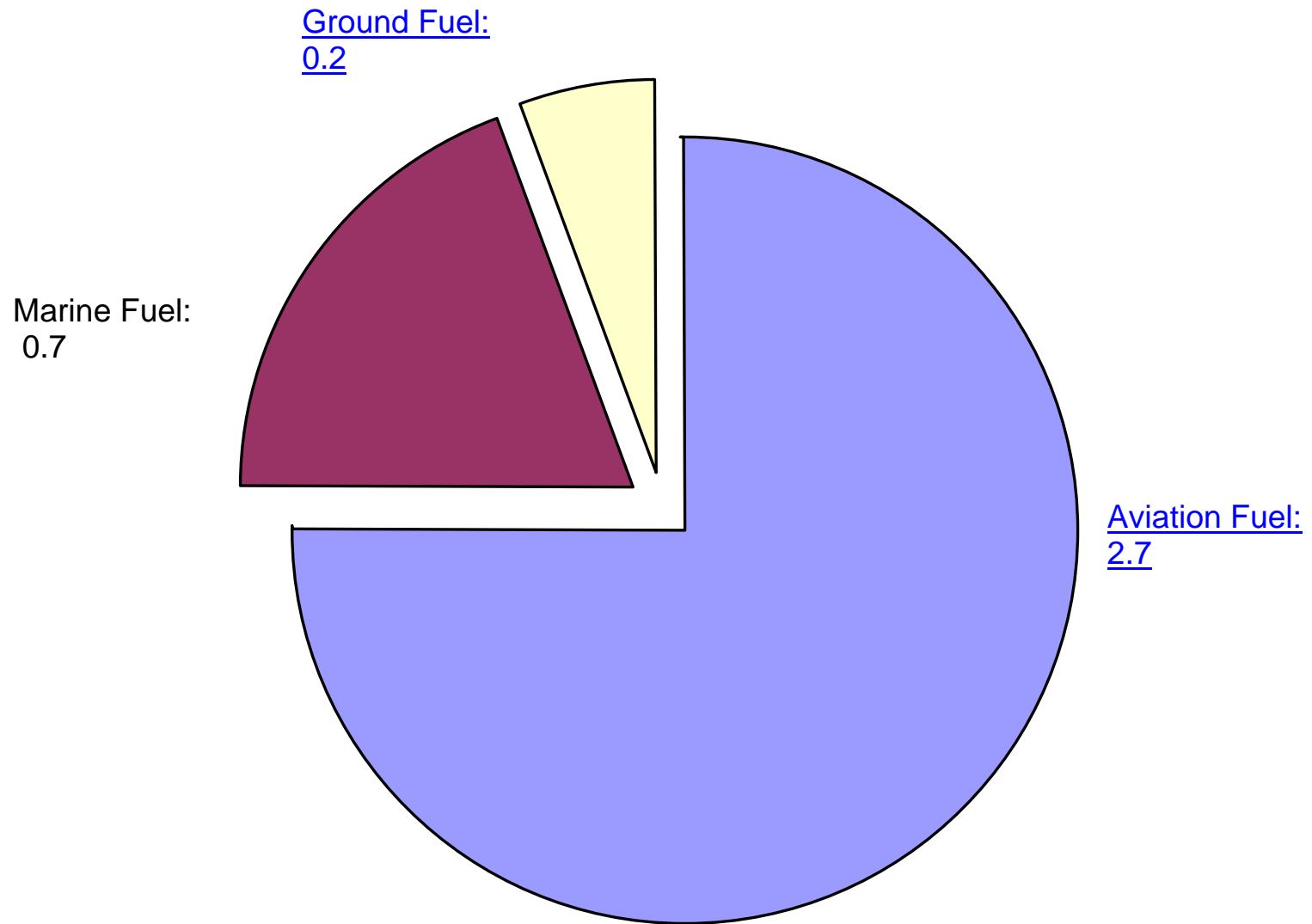
This document provides a full breakdown of MOD CO2 emissions for 2008/09. All figures are in million tonnes CO2. Notes and assumptions and the current conversion factors are provided on pages 9, 10 & 11.

**MOD CO2 Emissions 2008/09**  
**5.6 million tonnes CO2**

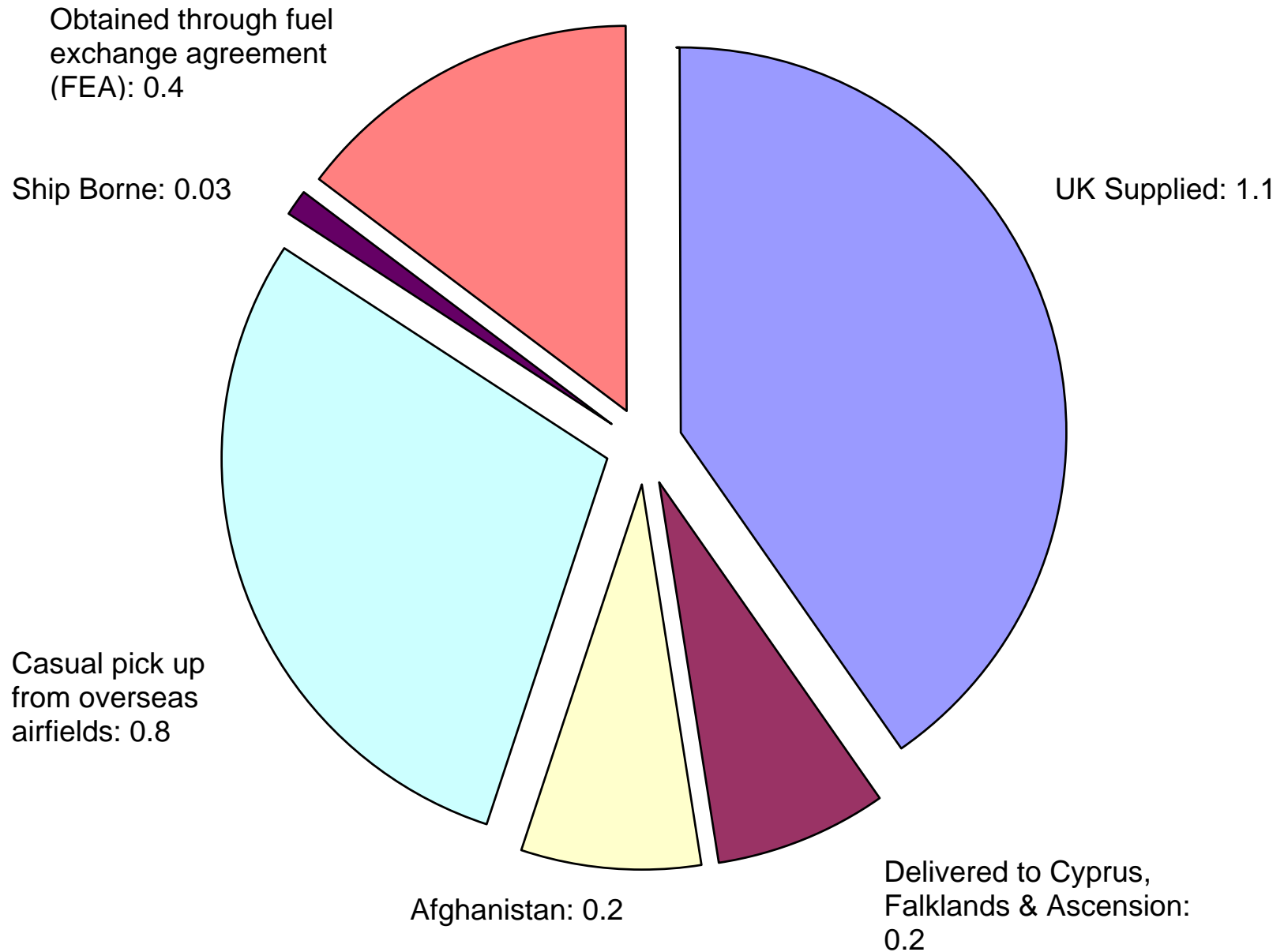


## Transport (Operational Energy)

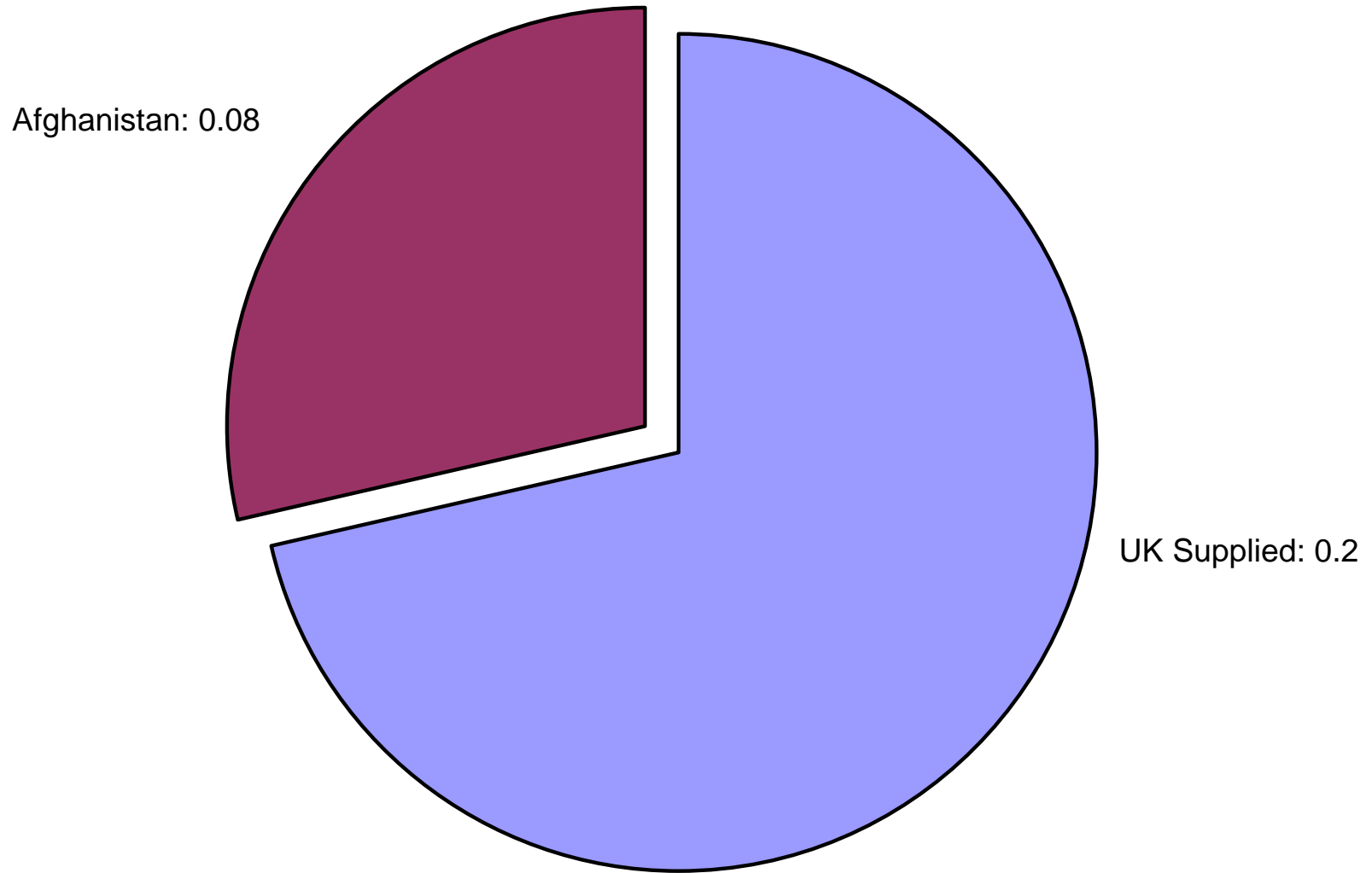
3.6 million tonnes CO2



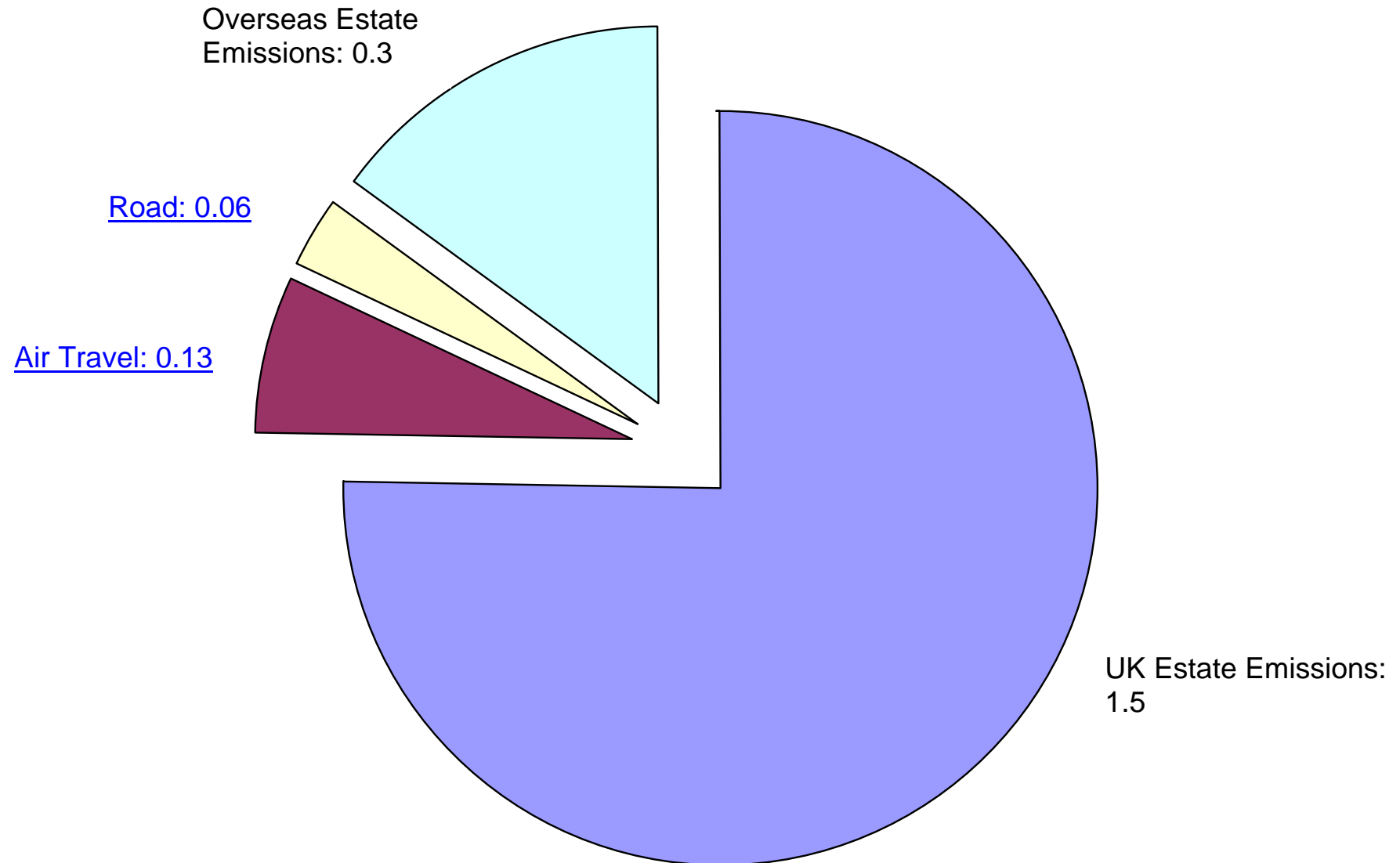
**Aviation Fuel**  
**2.7 million tonnes CO2**



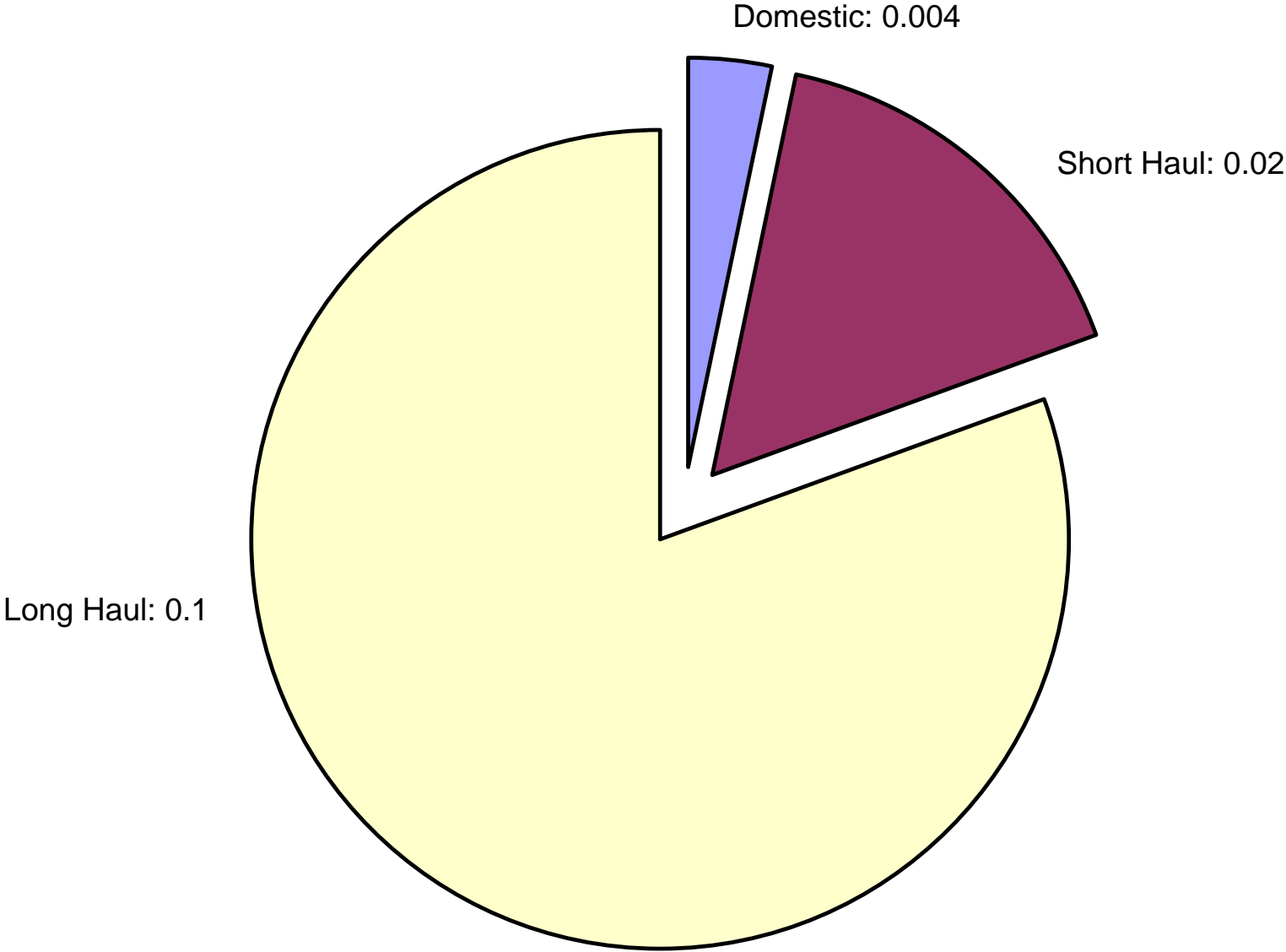
**Ground Fuel**  
**0.2 million tonnes CO2**



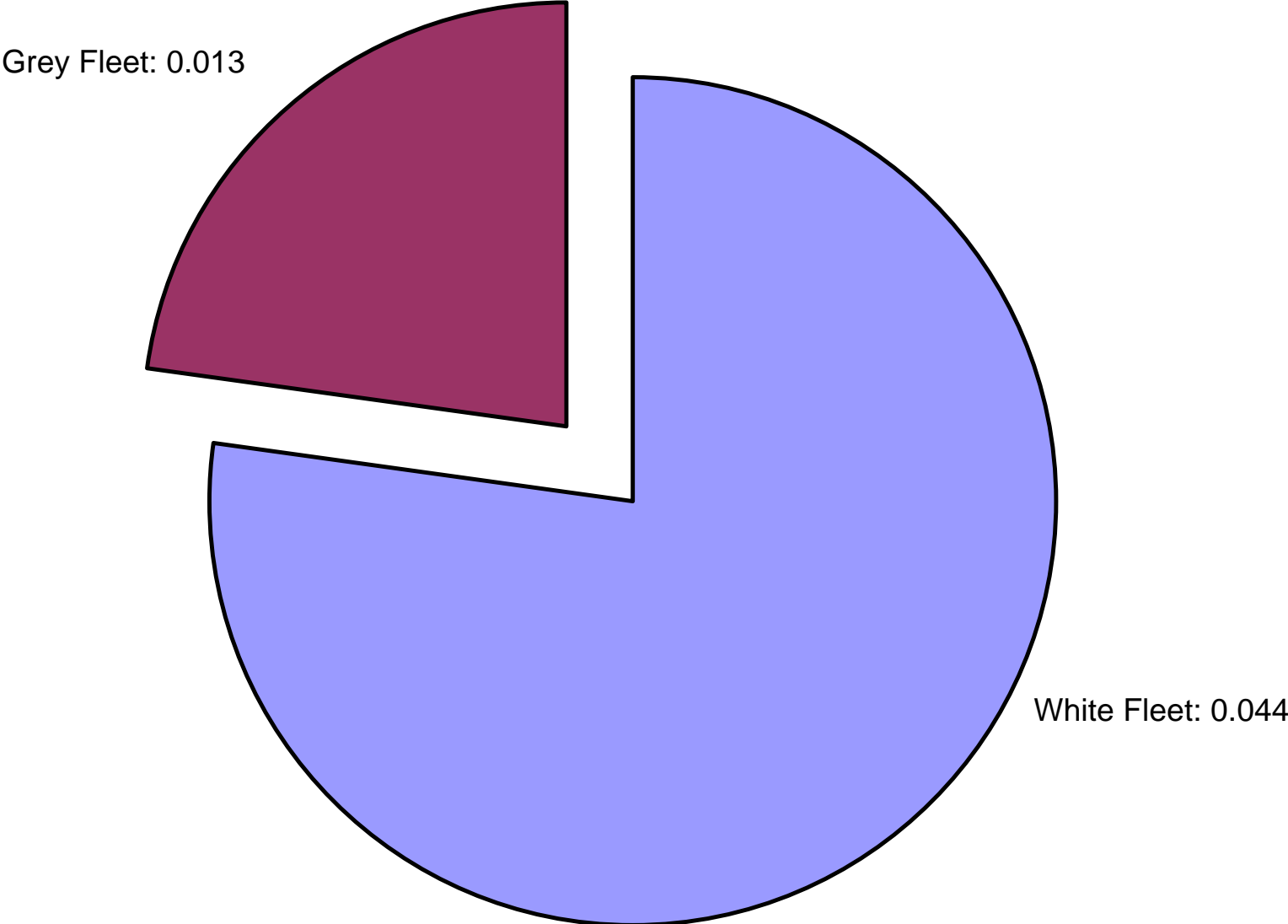
**Public Sector Estate and Operations**  
**2.0 million tonnes CO2**



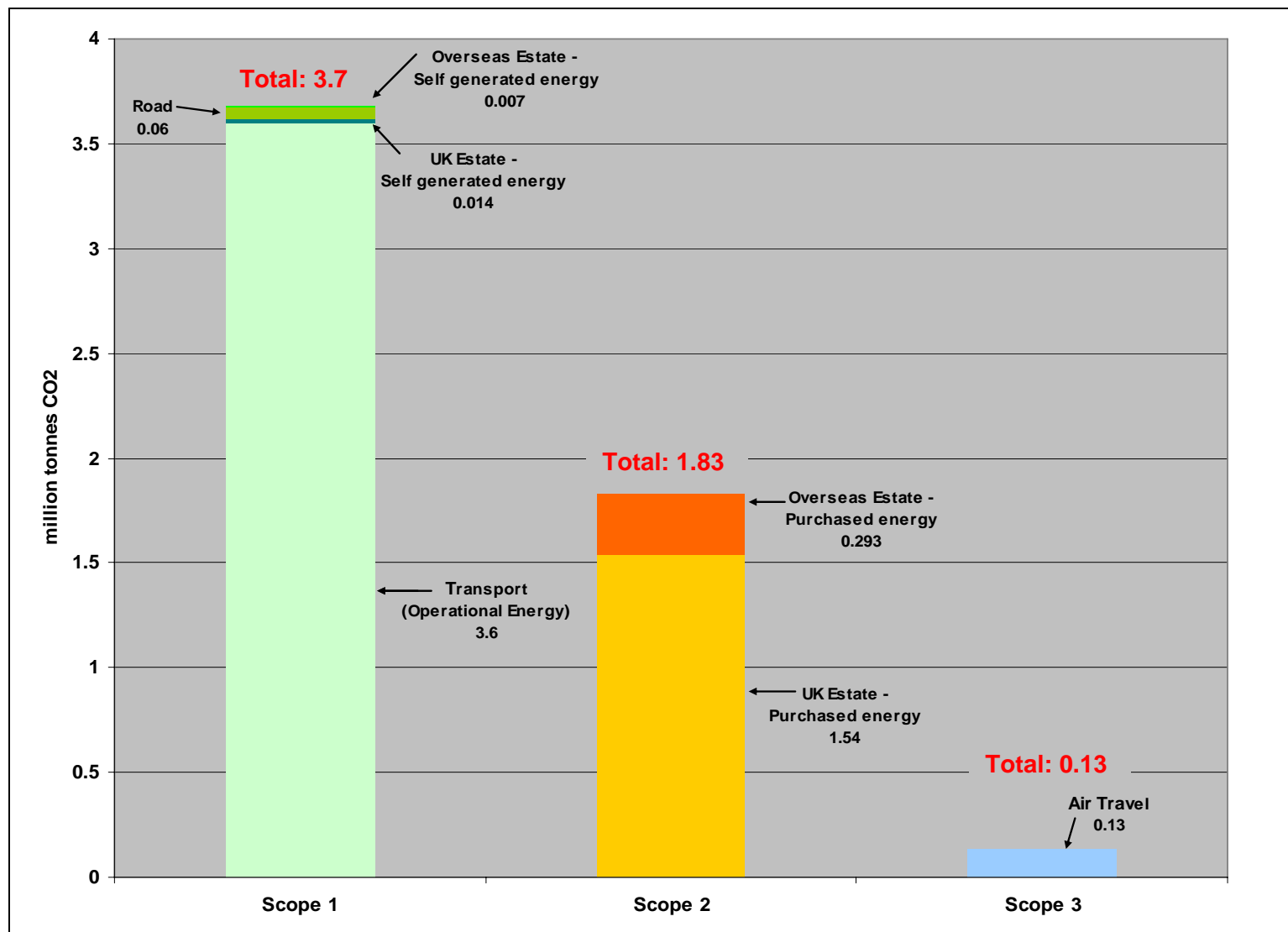
**Air Travel**  
**0.13 million tonnes CO2**



**Road**  
**0.06 million tonnes CO2**



## Scope<sup>1</sup> of MOD CO2 Emissions 2008/09



<sup>1</sup> Definitions of Scope can be found in [Table 2](#) on page 11

## Notes and Assumptions

**Table 1 Notes and Assumptions for CO2 emissions**

<b>MOD CO2 EMISSIONS 2008/09</b>	
<p>As part of the Carbon Budgets<sup>2</sup> the MOD has been allocated responsibility for reducing emissions from the following sectors: Public Sector Estate and Operations, and Transport.</p>	
<p style="text-align: center;"><b>Transport (Operational Energy)</b></p> <p><b>Definition</b> Operational energy is defined as “<i>the energy used to deliver propulsive power and electricity in generation, sustainment and recuperation of fighting power</i>”. This equates to all the fuel used to power MOD ships, aircraft, vehicles and generators in the UK or overseas.</p> <p><b>General Assumptions</b> Data is based on fuel supplied to units rather than fuel burnt, bulk fuel delivered to units by contractors includes fuel that is subsequently sold to 3<sup>rd</sup> parties, the data does not contain the following:</p> <ul style="list-style-type: none"> <li>▪ Bulk fuel purchased outside UK (e.g. Germany, Canada, Belize, Kenya etc).</li> <li>▪ Fuel purchased using agency cards provided by HQUKSC(G).</li> <li>▪ Fuel purchased using Government Procurement Cards (GPC).</li> <li>▪ Fuel purchased by individuals and claimed back on expenses</li> </ul> <p><b>Ground Fuel – UK Supplied</b></p> <ul style="list-style-type: none"> <li>▪ Fuel used in ground vehicles of all types</li> <li>▪ Data includes fuel supplied by Defence Fuels Group, fuel purchased commercially and fuel purchased using “Monitor Cards”.</li> </ul> <p><b>Ground Fuel – Afghanistan</b></p> <ul style="list-style-type: none"> <li>▪ These figures are an estimate based on fuel delivered to theatre as fuel is regularly shared between coalition forces.</li> </ul>	<p style="text-align: center;"><b>Public Sector Estate and Operations</b></p> <p><b>Definition</b> Public Sector Estate and Operations includes UK and Overseas estate energy use and business travel.</p> <p><b>UK and Overseas Estate Emissions</b> Total energy consumption from all fuel types*, in million tonnes CO2 for MOD activities in the world, excluding operational theatres, some Trading Fund Agencies and Non-Departmental Public Bodies.</p> <p>Carbon conversion and weather correction is conducted by the Building Research Establishment (BRE)</p> <p>*Fuel types include electricity (both grid and self generated), natural gas, LPG, Oil (kerosene, plant derv, FFO), coal and heat (either from CHP systems such as Whitehall District Heating Scheme or third party waste to incineration as in Germany).</p> <p><b>Air Travel - Commercial</b></p> <ul style="list-style-type: none"> <li>▪ Air travel undertaken by MOD staff on official business.</li> <li>▪ This data does not include flights booked on Government Procurement Cards or those purchased by individuals and claimed back.</li> <li>▪ The split between domestic, Short Haul and Long Haul are estimated based on 2007/08 data as a breakdown was not available for 2008/09</li> <li>▪ A radiative forcing factor of 2 has been applied to short haul and long haul air travel. Radiative forcing is the change in the energy balance in the lower atmosphere by a climate change mechanism.</li> </ul>

<sup>2</sup> Additional information on Carbon Budgets can be found within [‘Defence in a Changing Climate’](#)

<b>Transport (Operational Energy)</b>	<b>Public Sector Estate and Operations</b>
<p><b>Ground Fuel – Iraq</b> This data is not available for 2008/09</p> <p><b>Marine Fuel</b></p> <ul style="list-style-type: none"> <li>▪ The data includes fuel obtained through the Fuel Exchange Agreement (FEA) with the United States</li> <li>▪ The data does not include fuel supplied under Host Nation Agreements.</li> </ul> <p><b>Aviation Fuel – Afghanistan</b></p> <ul style="list-style-type: none"> <li>▪ High consumption of aviation fuel in Afghanistan due to NATO Single Fuel Policy<sup>3</sup></li> <li>▪ Figures are an estimate based on fuel delivered to theatre.</li> <li>▪ Fuel is regularly shared between coalition forces and as such this figure is only an estimate.</li> <li>▪ This data does not include fuel purchased locally</li> </ul> <p><b>Aviation Fuel – Obtained through FEA</b></p> <ul style="list-style-type: none"> <li>▪ Data includes fuel supplied through a FEA with the United States of America.</li> </ul> <p><b>Aviation Fuel – Casual pick up from overseas airfield</b></p> <ul style="list-style-type: none"> <li>▪ Data for aviation fuel purchased at third party airfields, known as ‘casual uplift’ has been estimated based on data from 2006/07 and 2007/08.</li> </ul>	<p><b>Road – General</b> This data does not contain the following:</p> <ul style="list-style-type: none"> <li>▪ Fuel purchased using agency cards provided by HQUKSC(G)</li> <li>▪ Fuel purchased using Government Procurement Cards</li> <li>▪ Fuel purchased by an individual and claimed back.</li> </ul> <p><b>Road – White Fleet</b></p> <ul style="list-style-type: none"> <li>▪ The use of UK based vehicles under the “White Fleet” contract (made up of continuous use fleet and hire car fleet).</li> <li>▪ Continuous use fleet data is based on an average mileage of 18,000 miles per vehicle (based on sampled data)</li> <li>▪ Continuous use fleet includes all vehicles up to 7 seats. Excludes minibuses.</li> <li>▪ Hire Car fleet data based on an estimated journey of 250 miles per hire (based on sampled data)</li> <li>▪ The continuous use fleet average CO2 g/km is an actual average across the fleet</li> <li>▪ The white fleet covers the majority of MOD’s UK road transport (business administration) but not all due to additional contracts</li> <li>▪ The data includes some non-business use</li> <li>▪ This data is based upon the vehicle ordered. When a vehicle type is unavailable any upgrade is not recorded.</li> <li>▪ Data is not collected on overseas white fleet or overseas units white fleet use in the UK if not booked through the UK contract.</li> </ul> <p><b>Road – Grey Fleet</b></p> <ul style="list-style-type: none"> <li>▪ The use of personal vehicles by civilians for business purposes (excluding motorbikes or overseas use)</li> <li>▪ This data assumes “average car” (see conversion factors table)</li> </ul> <p><b>Rail</b></p> <ul style="list-style-type: none"> <li>▪ Data for rail travel is currently unavailable. MOD aims to report rail data from 09/10</li> </ul>

<sup>3</sup> MOD is a signatory of the NATO Single Fuel Policy which requires military vehicles on operations to be run on aviation fuel.

**Table 2 Notes for Scope data**

Scope	Definition
<b>Scope 1 (Direct Emissions)</b>	Activities owned or controlled by the MOD that release emissions straight into the atmosphere e.g. combustion in owned or controlled boilers, furnaces or owned or controlled vehicles.
<b>Scope 2 (Indirect energy)</b>	Emissions released into the atmosphere associated with the consumption of purchased electricity, heat, steam and cooling. These are indirect emissions that are a consequence of MOD activities but which occur at sources that are not owned or controlled by the MOD.
<b>Scope 3 (Indirect)</b>	Emissions into the atmosphere as a consequence of actions which occur at sources that the MOD do not own or control and which are not classified as Scope 2 (see above) e.g. business travel by means not owned or controlled by the MOD, waste disposal, use of sold products or services.

**Table 3 Conversion Factors<sup>4</sup>**

Fuel Type	Input	Multiplied by	Output	Transport type	Input	Multiplied by	Output
Petrol	Litres	0.00231	Tonnes CO <sub>2</sub>	Grey Fleet	Miles	0.000332	Tonnes CO <sub>2</sub>
Diesel	Litres	0.00263	Tonnes CO <sub>2</sub>	Petrol Car (small)	Miles	0.000291	Tonnes CO <sub>2</sub>
Av Gas	Litres	0.00252	Tonnes CO <sub>2</sub>	Petrol car (medium)	Miles	0.000344	Tonnes CO <sub>2</sub>
Kerosene	Litres	0.00252	Tonnes CO <sub>2</sub>	Petrol car (large)	Miles	0.000476	Tonnes CO <sub>2</sub>
LPG	Litres	0.0015	Tonnes CO <sub>2</sub>	Diesel car (small)	Miles	0.000244	Tonnes CO <sub>2</sub>
Naptha	Litres	0.00252	Tonnes CO <sub>2</sub>	Diesel car (medium)	Miles	0.000303	Tonnes CO <sub>2</sub>
UL Gas	Litres	0.0023	Tonnes CO <sub>2</sub>	Diesel car (large)	Miles	0.000415	Tonnes CO <sub>2</sub>
Marine Diesel	Litres	0.00263	Tonnes CO <sub>2</sub>	Air (Domestic)	Miles	0.30751	Tonnes CO <sub>2</sub>
				Air (Short Haul)	Miles	0.17244	Tonnes CO <sub>2</sub>
				Air (Long Haul)	Miles	0.19401	Tonnes CO <sub>2</sub>

<sup>4</sup> 2008 Department for Environment, Food and Rural Affairs (DERFA) Conversion Factors