| **Fuel Emission Factor Database** | | | |
| --- | --- | --- | --- |
|  | **CO₂** | **CH₄** | **N₂O** |
| **Fuel** | **EF (kg CO₂/ kg fuel)** | **EF (kg CO₂e/ kg fuel)** | **EF (kg CO₂e/kg fuel)** |
| Coal | 2.2889 | 0.005666 | 0.010130 |
| LPG | 2.9846 | 0.001183 | 0.004229 |
| **Fuel** | **CO₂** | **CH₄** | **N₂O** |
| **EF (kg CO₂/ litre fuel)** | **EF (kg CO₂e/ litre fuel)** | **EF (kg CO₂e/litre fuel)** |
| Diesel | 2.6765 | 0.002709 | 0.006458 |
| Petrol | 2.2718 | 0.002459 | 0.005861 |
| Furnace Oil | 3.0254 | 0.002932 | 0.006989 |
| **Electricity Emission Factors (2009-10)** | | **Passenger Flight Emission Factors (Economy Class)** | | | |
| **Grid** | **EF (kg CO₂e/KWh)** |  | **CO₂** | **CH₄** | **N₂O** |
| NEWNE, India | 0.84 | **Flight Type** | **EF (kg CO₂/passenger km)** | **EF (kg CO₂e/passenger km)** | **EF (kg CO₂e/passenger km)** |
| South, India | 0.90 | Short Haul | 0.18690 | 0.00014170 | 0.00184210 |
| Indonesia (Jamali) | 0.891 | Medium Haul | 0.10077 | 0.00001090 | 0.00099190 |
| Thailand | 0.529 | Long Haul | 0.09007 | 0.00000000 | 0.00088290 |
| US | 0.350 |  | | | |
| Sri Lanka | 0.6766 | **Train Type** | **EF (kg CO₂e/passenger km)** | | |
|  |  | Rail | 0.0096 | | |
|  |  | Delhi Metro | 0.044118 | | |

| **Emission Factors for Waste** | | |
| --- | --- | --- |
| Waste | EF (kg CO2e/kg paper) | 0.8421 |

**Vehicle Emission Factors (ARAI, 2009)**

| Vehicle Type | Stroke | Fuel | Emission Standard | Vintage (model) | CO2 (g/km) |
| --- | --- | --- | --- | --- | --- |
| 2-W-M | 4 | Petrol | Pre ES | 1991-1995 | 22.95 |
| 2-W-M | 4 | Petrol | E-I/I-2000 | 1996-2000 | 23.71 |
| 2-W-M | 4 | Petrol | E-II/B-II | 2001-2005 | 24.89 |
| 2-W-M | 4 | Petrol | E-III/B-III | 2006-2010 | 45.60 |
| 2-W-M | 4 | Petrol | E-IV/B-IV | 2011-2015 | 45.60 |
| 2-W-S | 2 | Petrol | Pre ES | 1991-1995 | 24.75 |
| 2-W-S | 2 | Petrol | E-I/I-2000 | 1996-2000 | 24.24 |
| 2-W-S | 2 | Petrol | E-II/B-II | 2001-2005 | 29.62 |
| 2-W-S | 2 | Petrol | E-III/B-III | 2006-2010 | 38.54 |
| 2-W-S | 2 | Petrol | E-IV/B-IV | 2011-2015 | 38.54 |
| 2-W-S | 4 | Petrol | E-II/B-II | 2001-2005 | 33.83 |
| 2-W-S | 4 | Petrol | E-III/B-III | 2006-2010 | 42.06 |
| 2-W-S | 4 | Petrol | E-IV/B-IV | 2011-2015 | 42.06 |
| 2-W-S | 4 | Petrol | E-V/B-V | 2015-2017 | 42.06 |
| Auto | 2 | Petrol |  | 2S-POST-2000 | 54.50 |
| Auto | 2 | Petrol |  | 2S-Ret-Pre2000 | 54.50 |
| Auto | 4 | Petrol |  | 2000 | 57.44 |
| Auto | 4 | Petrol |  | 2005 | 73.80 |
| Auto | 4 | CNG | E-III/B-III | 2006-2010 | 73.80 |
| Auto | 4 | CNG | E-IV/B-IV | 2011-2015 | 73.80 |
| Auto | 4 | CNG | E-V/B-V | 2015-2017 | 73.80 |
| Car | 4 | Petrol | Pre ES | 1991-1995 | 95.65 |
| Car | 4 | Petrol | E-I/I-2000 | 1996-2000 | 106.96 |
| Car | 4 | Petrol | E-II/B-II | 2001-2005 | 126.37 |
| Car | 4 | Petrol | E-III/B-III | 2006-2010 | 172.95 |
| Car | 4 | Petrol | E-IV/B-IV | 2011-2015 | 172.95 |
| Car | 4 | Petrol | E-V/B-V | 2015-2017 | 172.95 |
| Car | 4 | Diesel | Pre ES | 1996-2000 | 129.09 |
| Car | 4 | Diesel | E-I/I-2000 | 2001-2003 | 156.76 |
| Car | 4 | Diesel | E-II/B-II | 2003-2005 | 148.76 |
| Car | 4 | Diesel | E-III/B-III | 2006-2010 | 148.76 |
| Car | 4 | Diesel | E-IV/B-IV | 2011-2015 | 148.76 |
| Car | 4 | Diesel | E-V/B-V | 2015-2017 | 148.76 |
| Car | 4 | LPG | Pre ES | 1996-2000 | 0 |
| Car | 4 | LPG | E-I/I-2000 | 2001-2005 | 140.05 |
| Car | 4 | LPG | E-II/B-II | 2006-2010 | 140.05 |
| Car | 4 | LPG | E-III/B-III | 2011-2015 | 140.05 |
| Car | 4 | LPG | E-IV/B-IV | 2015-2017 | 140.05 |
| Car | 4 | CNG | E-V/B-V | 2006-2010 | 149.36 |
| Car | 4 | CNG | E-III/B-III | 2006-2010 | 131.19 |
| Car | 4 | CNG | E-IV/B-IV | 2011-2015 | 143.54 |
| Car | 4 | CNG | E-V/B-V | 2015-2017 | 143.54 |
| Buses | 4 | Diesel | Pre ES | 1991-1995 | 817.52 |
| Buses | 4 | Diesel | Pre ES | 1996-2000 | 920.77 |
| Buses | 4 | Diesel | E-I/I-2000 | 2001-2005 | 753.51 |
| Buses | 4 | Diesel | E-II/B-II | 2006-2010 | 602.01 |
| Buses | 4 | Diesel | E-III/B-III | 2006-2010 | 602.01 |
| Buses | 4 | Diesel | E-IV/B-IV | 2011-2015 | 602.01 |
| Buses | 4 | Diesel | E-V/B-V | 2015-2017 | 602.01 |
| Buses | 4 | CNG | E-II/B-II | 2001-2005 | 806.50 |
| Buses | 4 | CNG | E-III/B-III | 2006-2010 | 806.50 |
| Buses | 4 | CNG | E-IV/B-IV | 2011-2015 | 806.50 |
| Buses | 4 | CNG | E-V/B-V | 2015-2017 | 806.50 |