

| I_P, t                 | 1990    | 1991    | 1992    | 1993    | 1994    | 1995    | 1996    | 1997    | 1998    | 1999    | 2000    | 2001    | 2002    | 2003    | 2004    | 2005    | 2006    | 2007    |
|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Albania                | 1.9     | 1.9     | 1.9     | 1.9     | 1.9     | 1.9     | 1.9     | 1.9     | 1.9     | 1.9     | 1.9     | 1.9     | 1.9     | 1.9     | 1.8     | 1.8     | 1.8     | 1.8     |
| Armenia                | 1.4     | 1.4     | 1.4     | 1.4     | 1.4     | 1.4     | 1.4     | 1.4     | 1.4     | 1.4     | 1.4     | 1.4     | 1.5     | 1.5     | 1.6     | 1.6     | 1.6     | 1.7     |
| Austria                | 3.8     | 3.9     | 2.9     | 2.2     | 2.0     | 2.1     | 2.4     | 2.1     | 2.0     | 1.9     | 1.8     | 2.1     | 2.2     | 2.4     | 2.4     | 2.4     | 2.4     | 2.2     |
| Azerbaijan             | 3.0     | 3.0     | 3.0     | 3.0     | 3.0     | 3.0     | 3.0     | 3.0     | 3.0     | 3.0     | 3.0     | 3.1     | 3.2     | 3.2     | 3.3     | 3.4     | 3.5     | 3.5     |
| Belarus                | 5.7     | 5.7     | 5.7     | 5.7     | 5.7     | 5.7     | 5.7     | 5.7     | 5.7     | 5.7     | 5.7     | 5.7     | 5.6     | 5.4     | 5.0     | 5.6     | 6.2     | 5.9     |
| Belgium                | 5.5     | 5.5     | 5.5     | 5.5     | 5.5     | 5.5     | 5.5     | 5.5     | 5.5     | 5.5     | 5.5     | 5.3     | 5.0     | 4.7     | 4.5     | 4.2     | 3.9     | 3.6     |
| Bosnia&Herzegovina     | 5.1     | 5.1     | 5.1     | 5.1     | 5.1     | 5.1     | 5.1     | 5.1     | 5.1     | 5.1     | 5.1     | 4.8     | 4.6     | 4.4     | 4.2     | 3.9     | 3.7     | 3.5     |
| Bulgaria               | 5.2     | 5.2     | 5.2     | 5.2     | 5.2     | 5.2     | 5.2     | 5.2     | 5.2     | 5.2     | 5.2     | 5.0     | 4.9     | 4.7     | 4.6     | 4.4     | 4.2     | 4.1     |
| Croatia                | 3.0     | 2.8     | 2.6     | 2.4     | 2.3     | 2.1     | 1.9     | 1.9     | 1.8     | 1.6     | 1.9     | 1.5     | 1.5     | 1.9     | 1.9     | 1.8     | 1.8     | 1.5     |
| Cyprus                 | 0.1     | 0.0     | 0.0     | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.0     | 0.0     | 0.0     | 0.0     | 0.1     | 0.1     | 0.1     | 0.1     |
| Czech Republic         | 8.8     | 8.8     | 8.8     | 8.8     | 8.8     | 8.8     | 8.8     | 8.8     | 8.8     | 8.8     | 8.8     | 7.5     | 6.2     | 5.4     | 5.8     | 5.6     | 3.9     | 3.9     |
| Denmark                | 1.6     | 1.8     | 1.8     | 1.9     | 1.8     | 1.8     | 1.8     | 1.8     | 1.6     | 1.6     | 2.0     | 2.1     | 2.0     | 2.3     | 2.5     | 2.8     | 3.1     | 3.6     |
| Estonia                | 2.1     | 2.0     | 1.5     | 1.3     | 1.6     | 2.7     | 3.2     | 3.1     | 2.5     | 2.4     | 2.4     | 2.3     | 2.4     | 2.5     | 2.6     | 2.3     | 2.0     | 2.5     |
| Finland                | 3.4     | 2.7     | 2.7     | 2.7     | 3.7     | 3.6     | 3.5     | 3.4     | 3.4     | 3.5     | 3.3     | 3.4     | 3.6     | 3.5     | 3.5     | 2.8     | 2.8     | 2.8     |
| France                 | 7.3     | 8.6     | 8.0     | 7.8     | 6.7     | 6.7     | 7.0     | 6.2     | 6.3     | 6.0     | 5.6     | 5.2     | 4.7     | 4.9     | 4.7     | 4.4     | 4.2     | 3.9     |
| Georgia                | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.2     | 0.1     | 0.2     |
| Germany                | 50      | 39      | 29      | 27      | 25      | 25      | 25      | 27      | 25      | 25      | 25      | 28      | 26      | 26      | 25      | 24      | 26      | 25      |
| Greece                 | 4.6     | 4.6     | 4.6     | 4.6     | 4.6     | 4.6     | 4.6     | 4.6     | 4.6     | 4.6     | 4.6     | 4.7     | 4.8     | 4.9     | 5.0     | 5.2     | 5.3     | 5.4     |
| Hungary                | 11      | 11      | 6.5     | 6.3     | 5.9     | 5.3     | 5.2     | 4.7     | 3.5     | 3.6     | 3.5     | 3.6     | 3.8     | 4.3     | 4.0     | 4.7     | 5.1     | 3.1     |
| Iceland                | 0.01    | 0.01    | 0.01    | 0.01    | 0.01    | 0.01    | 0.01    | 0.01    | 0.01    | 0.01    | 0.02    | 0.02    | 0.02    | 0.02    | 0.02    | 0.02    | 0.02    | 0.02    |
| Ireland                | 2.6     | 2.3     | 1.9     | 1.9     | 1.7     | 1.6     | 1.5     | 1.4     | 1.4     | 1.1     | 1.1     | 1.0     | 1.0     | 0.9     | 0.9     | 0.9     | 0.9     | 0.9     |
| Italy                  | 22      | 24      | 23      | 24      | 25      | 25      | 23      | 26      | 25      | 27      | 27      | 27      | 25      | 26      | 30      | 29      | 30      | 33      |
| Kazakhstan             | 11      | 11      | 11      | 11      | 11      | 11      | 11      | 11      | 11      | 11      | 11      | 11      | 11      | 12      | 12      | 12      | 12      | 13      |
| Kyrgyzstan             | 2.9     | 2.9     | 2.9     | 2.9     | 2.9     | 2.9     | 2.9     | 2.9     | 2.9     | 2.9     | 2.9     | 3.0     | 3.0     | 3.1     | 3.2     | 3.3     | 3.3     | 3.4     |
| Latvia                 | 2.0     | 2.0     | 1.8     | 1.8     | 1.7     | 1.7     | 1.7     | 1.8     | 1.8     | 1.8     | 1.8     | 1.5     | 1.5     | 1.5     | 1.5     | 1.5     | 1.5     | 1.5     |
| Lithuania              | 5       | 7       | 8       | 10      | 11      | 13      | 15      | 16      | 18      | 16      | 14.2    | 12      | 11      | 10      | 5.3     | 5.3     | 5.4     | 5.0     |
| Luxembourg             | 0.43    | 0.43    | 0.43    | 0.43    | 0.43    | 0.43    | 0.43    | 0.43    | 0.43    | 0.43    | 0.43    | 0.42    | 0.40    | 0.39    | 0.38    | 0.37    | 0.35    | 0.34    |
| Malta                  | 0.013   | 0.013   | 0.013   | 0.013   | 0.013   | 0.013   | 0.013   | 0.013   | 0.013   | 0.013   | 0.013   | 0.013   | 0.013   | 0.013   | 0.013   | 0.013   | 0.013   | 0.013   |
| Monaco                 | 0.00002 | 0.00002 | 0.00003 | 0.00003 | 0.00003 | 0.00003 | 0.00003 | 0.00004 | 0.00004 | 0.00004 | 0.00004 | 0.00004 | 0.00004 | 0.00004 | 0.00004 | 0.00003 | 0.00002 | 0.00003 |
| Netherlands            | 4.1     | 4.1     | 4.1     | 4.1     | 4.1     | 4.1     | 4.1     | 4.1     | 4.1     | 4.1     | 4.1     | 3.9     | 3.8     | 3.6     | 3.4     | 3.3     | 3.1     | 3.0     |
| Norway                 | 1.2     | 1.1     | 1.1     | 1.1     | 1.1     | 1.1     | 1.2     | 1.2     | 1.2     | 1.0     | 1.1     | 1.2     | 1.3     | 1.0     | 1.1     | 1.3     | 1.3     | 1.1     |
| Poland                 | 48      | 52      | 51      | 76      | 69      | 71      | 67      | 58      | 53      | 53      | 50      | 51      | 49      | 47      | 48      | 51      | 50      | 48      |
| Portugal               | 1.7     | 1.7     | 1.8     | 1.8     | 1.7     | 1.7     | 1.9     | 1.8     | 1.7     | 1.8     | 1.7     | 1.9     | 2.0     | 2.1     | 2.2     | 2.2     | 2.1     | 2.1     |
| Republic of Moldova    | 3.0     | 2.5     | 1.6     | 1.1     | 1.6     | 1.4     | 1.8     | 1.7     | 1.5     | 1.3     | 1.7     | 1.6     | 1.6     | 1.8     | 1.5     | 1.2     | 1.3     | 1.3     |
| Romania                | 88      | 82      | 77      | 71      | 66      | 60      | 55      | 49      | 44      | 38      | 33      | 27      | 22      | 16      | 11      | 11      | 11      | 11      |
| Russia (European part) | 14      | 13      | 12      | 12      | 12      | 12      | 12      | 12      | 11      | 12      | 12      | 13      | 14      | 14      | 14      | 14      | 14      | 14      |
| Russia (Asian part)    | 3.8     | 3.6     | 3.2     | 3.2     | 3.2     | 3.2     | 3.1     | 3.1     | 3.0     | 3.2     | 3.2     | 3.4     | 3.7     | 3.7     | 3.7     | 3.7     | 3.7     | 3.7     |
| Serbia&Montenegro      | 7.8     | 7.8     | 7.8     | 7.8     | 7.8     | 7.8     | 7.8     | 7.8     | 7.8     | 7.8     | 7.8     | 7.6     | 7.4     | 7.2     | 7.0     | 6.8     | 6.6     | 6.4     |
| Slovakia               | 6.7     | 8.9     | 8.0     | 7.0     | 6.1     | 3.5     | 4.9     | 3.2     | 3.2     | 3.2     | 3.1     | 3.1     | 2.7     | 2.9     | 3.2     | 4.1     | 3.9     | 3.8     |

|                           |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |
|---------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Slovenia                  | 2.7        | 2.8        | 2.7        | 2.6        | 2.5        | 2.5        | 2.5        | 2.4        | 2.4        | 2.4        | 2.4        | 2.1        | 2.1        | 2.1        | 2.1        | 2.0        | 2.0        | 2.1        |
| Spain                     | 20         | 20         | 20         | 20         | 20         | 20         | 20         | 20         | 20         | 20         | 20         | 19         | 19         | 18         | 17         | 16         | 16         | 15         |
| Sweden                    | 3.5        | 5.8        | 3.4        | 3.3        | 3.3        | 3.5        | 3.6        | 3.1        | 3.3        | 3.6        | 2.9        | 3.1        | 3.0        | 3.4        | 3.3        | 3.7        | 3.9        | 4.1        |
| Switzerland               | 0.28       | 0.28       | 0.27       | 0.22       | 0.21       | 0.20       | 0.21       | 0.21       | 0.21       | 0.22       | 0.22       | 0.22       | 0.22       | 0.23       | 0.23       | 0.23       | 0.20       | 0.18       |
| Tajikistan                | 0.77       | 0.77       | 0.77       | 0.77       | 0.77       | 0.77       | 0.77       | 0.77       | 0.77       | 0.77       | 0.77       | 0.77       | 0.77       | 0.77       | 0.77       | 0.77       | 0.77       | 0.77       |
| The FYR of Macedonia      | 0.87       | 0.87       | 0.87       | 0.87       | 0.87       | 0.87       | 0.87       | 0.87       | 0.87       | 0.87       | 0.87       | 0.87       | 0.87       | 0.87       | 0.87       | 0.87       | 0.87       | 0.87       |
| Turkey                    | 39         | 39         | 39         | 39         | 39         | 39         | 39         | 39         | 39         | 39         | 39         | 38         | 38         | 37         | 36         | 35         | 34         | 33         |
| Turkmenistan              | 0.09       | 0.09       | 0.09       | 0.09       | 0.09       | 0.09       | 0.09       | 0.09       | 0.09       | 0.09       | 0.09       | 0.09       | 0.09       | 0.09       | 0.09       | 0.09       | 0.09       | 0.09       |
| Ukraine                   | 64         | 64         | 64         | 64         | 64         | 64         | 64         | 64         | 64         | 64         | 64         | 64         | 65         | 65         | 65         | 65.6       | 65.92      | 66.24      |
| United Kingdom            | 31         | 29         | 25         | 18         | 16         | 12         | 6.5        | 5.1        | 3.8        | 3.8        | 2.8        | 2.6        | 2.1        | 1.9        | 1.7        | 1.6        | 1.7        | 1.8        |
| Uzbekistan                | 0.41       | 0.41       | 0.41       | 0.41       | 0.41       | 0.41       | 0.41       | 0.41       | 0.41       | 0.41       | 0.41       | 0.41       | 0.41       | 0.41       | 0.41       | 0.41       | 0.41       | 0.41       |
| <b>Extended EMEP grid</b> | <b>509</b> | <b>503</b> | <b>470</b> | <b>479</b> | <b>464</b> | <b>456</b> | <b>443</b> | <b>430</b> | <b>414</b> | <b>408</b> | <b>396</b> | <b>390</b> | <b>375</b> | <b>367</b> | <b>357</b> | <b>359</b> | <b>358</b> | <b>353</b> |

Official data on I\_P emissions

I\_P emissions estimated on the basis of the official total PAH emission data

Expert estimates:

I\_P emission values were estimated using official emission data for the European part of Russia and keeping ratio between the European and Asian data on the population density derived from the GEIA inventory

Expert estimates:

Denier van der Gon, H.A.C., M. van het Bolscher A.J.H. Visschedijk P.Y.J. Zandveld [2005]  
Study to the effectiveness of the UNECE Persistent Organic Pollutants Protocol and costs of possible additional measures Phase I: Estimation of emission reduction resulting from the implementation of the POP Protocol, TNO report B&O-A R 2005/194

Expert estimates:

Zhang Y. and S.Tao [2008] Global atmospheric emission inventory of Polycyclic Aromatic Hydrocarbons (PAHs) for 2004.  
Atmos. Environ., vol.43, pp.812-819

Expert estimates:

MEPA [2007] Interim report on the preliminary assessment of arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air in Malta. Malta Environment and Planning Authority Pollution Prevention and Control Unit