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Transboundary pollution by heavy metals and POPs

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Executive summary

Heavy metals and persistent organic pollutants (POPs) are hazardous environmental contaminants that can adversely affect human health and ecosystems. Environmental pollution by these contaminants is addressed under various international frameworks, including the UNECE Convention on Long-range Transboundary Air Pollution (CLRTAP, or Air Convention). The Convention's Protocols on Heavy Metals and POPs identify a number of priority pollutants, including lead (Pb), cadmium (Cd), mercury (Hg), polychlorinated biphenyls (PCBs), polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/Fs), hexachlorobenzene (HCB), and polycyclic aromatic hydrocarbons (PAHs). Within the PAH group, four compounds are specifically identified: benzo(a)pyrene (B(a)P), benzo(b)fluoranthene (B(b)F), benzo(k)fluoranthene (B(k)F), and indeno(1,2,3-cd)pyrene (IP).

Scientific support for implementing the Protocols on Heavy Metals and POPs under the Air Convention is provided by the Co-operative Programme for Monitoring and Evaluation of Long-range Transmission of Air Pollutants in Europe (EMEP, www.emep.int). EMEP delivers essential information on emissions, monitoring, and modelling of transboundary pollution. Research and operational assessments of heavy metal and POP pollution are carried out by specialised EMEP Centres, including the Centre on Emission Inventories and Projections (CEIP), the Chemical Coordinating Centre (CCC), and the Meteorological Synthesizing Centre-East (MSC-E).

This report provides an overview of the activities undertaken by three EMEP Centres – CEIP, CCC, and MSC-E – in the research and operational assessment of heavy metal and POP pollution in 2024, in accordance with the 2026–2027 workplan for the implementation of the Air Convention (ECE/EB.AIR/158/Add.1). The report details emissions, monitoring, model assessments of heavy metal and POP pollution, their transboundary transport among the Convention Parties, research activities, and other relevant information.

Emissions

The completeness and consistency of emission reporting under EMEP have improved considerably over time. In 2026, 45 Parties (88%) submitted emission data to CEIP, all reporting priority heavy metals (Cd, Hg, and Pb), while 44 Parties reported POP emissions. Most Parties (43) provided complete time series. However, the quality and completeness of reported data still vary among countries, particularly for heavy metals and POPs, and uncertainties in national and sectoral emission estimates remain relatively high. Some countries also continue to use older versions of the EMEP/EEA emission inventory guidebook.

Overall, emission trends differ markedly between the EMEP West and East areas, reflecting differences in both emission reductions and the completeness of national reporting. In EMEP West, reported emissions generally show consistent downward trends: between 2000 and 2024, PCDD/F, PCB, HCB, and PAH emissions decreased substantially, with reductions of about 79%, 81%, 97%, and 31%, respectively, while priority heavy metals also exhibited a relatively smooth decline. In contrast, emission trends in EMEP East are considerably more variable and uncertain due to incomplete and inconsistent reporting, with individual countries and sectors strongly influencing regional trends. These reporting limitations are particularly pronounced for POPs and complicate the assessment of long-term changes in both POP and heavy metal emissions in the eastern part of the EMEP region.

Emission data reported by the Parties are processed by CEIP, including gap-filling of missing or erroneous information, and aggregated into 13 GNFR sectors for use in EMEP modelling. Industrial activities and fossil fuel combustion are major sources of heavy metals, accounting for 45% of Pb, 37% of Cd, and 53% of Hg emissions. Other stationary combustion, particularly residential coal and wood burning, dominates PAH emissions (75%) and also contributes substantially to PCDD/Fs, while industrial sources dominate PCB emissions (93%).

For 2024, heavy metal and POP emissions were gap-filled and spatially distributed on a 0.1° × 0.1° grid at the GNFR sector level using the CEIP gridding system. Reported gridded emissions were used where available, while various global and regional datasets served as proxies for spatial disaggregation of missing data. The resulting emission fields were further pre-processed by MSC-E to account for temporal and vertical distribution of emissions and Hg chemical speciation for use in GLEMOS modelling.

Monitoring

Heavy metals and POPs have been included in the EMEP monitoring programme since 1999, with historical measurements available for some sites from earlier periods. In 2024, heavy metals were monitored at 74 sites across 23 Parties, including 31 sites measuring mercury, while POP measurements were reported by 17 Parties at 39 sites. The monitoring programme covers priority heavy metals (Hg, Cd, and Pb) and a broad range of POPs, with increasing attention also given to contaminants of emerging concern (CECs). All measurement data are available through the EBAS database.

In 2024, more than 30 trace elements were reported to EMEP, with Cd, Pb, Ni, As, Zn, Cu, and Cr monitored at more than 50 sites. Elevated heavy metal concentrations were generally observed in Central and Eastern Europe and at some sites in Western and Southern Europe. POP monitoring coverage varied considerably among compounds, being most extensive for PAHs and more limited for legacy POPs and contaminants of emerging concern. Most POPs showed a general south-to-north decreasing gradient over Europe.

A new open-source tool, the Linear Spline Trend Estimator (SPLINTER), has been developed for analysing long-term trends in EMEP monitoring data and will be integrated into the EBAS database. Unlike the previously used Digital Filtration method, SPLINTER can identify changes in trends over time by detecting statistical breakpoints and fitting multiple linear segments.

Per- and polyfluoroalkyl substances (PFAS) are widespread environmental contaminants of growing concern due to their persistence and long-range transport, with several compounds already regulated under international conventions. Within EMEP, PFAS monitoring is currently concentrated in the Arctic and Scandinavia, where volatile precursors generally occur at higher concentrations than ionic PFAS. To improve spatial coverage, a coordinated EMEP passive air sampling campaign is planned for 2027 to assess the distribution of volatile PFAS precursors across the wider EMEP monitoring network.

Long-term EMEP monitoring indicates a generally slow decline in atmospheric PAH concentrations, although trends vary among sites and periods. BaP concentrations are typically highest in winter due to residential combustion, while wildfires can also affect seasonal and long-term variability. Phenanthrene shows declining trends at most monitoring sites, including in the Arctic, with a more pronounced decrease at Pallas in recent years. However, substantial spatial and temporal variability remains, and recent changes at some sites require further investigation.

Status of HM and POP air pollution in 2024

Assessment of heavy metal and POP pollution of the EMEP region is performed using both modelling results and measurement data and includes evaluation of spatial patterns of pollution levels as well as transboundary transport in 2024.

Most pollutants show broadly similar spatial patterns, with elevated concentrations and deposition across Central, Eastern, and Southeastern Europe and lower levels in Northern Europe and remote regions. Poland, Czechia, Germany, the Netherlands, the Western Balkans, northern Italy, and Türkiye frequently exhibit relatively high levels of Pb, Cd, PAHs, and PCDD/Fs, although the location and intensity of hotspots differ among pollutants. PCB-153 is more strongly enhanced in Southern and Central Europe, while Hg and HCB show more distinct spatial patterns, with Hg deposition strongly influenced by precipitation.

Seasonal variations differ substantially among pollutants, reflecting the influence of emissions, meteorology, atmospheric processes, and surface exchange. Pb, Cd, PAHs, and PCDD/F concentrations are generally highest in winter or early spring and lowest in summer, largely following seasonal changes in anthropogenic emissions, while Pb and Cd can also be affected by episodic dust resuspension. Hg^0 shows only weak seasonality, although Hg deposition is enhanced in spring and summer. In contrast, PCB-153 and HCB concentrations increase during the warmer months due to enhanced re-emission from environmental reservoirs.

Pb and Cd deposition is strongly influenced by primary anthropogenic emissions within the EMEP region, while secondary sources and contributions from outside the EMEP region become important in some countries, particularly near its southern and eastern boundaries. PAH deposition is also dominated by EMEP anthropogenic sources, with secondary and non-EMEP sources generally playing a smaller role. In contrast, Hg deposition is largely driven by transboundary transport from non-EMEP sources, while secondary re-emissions dominate PCB-153 and HCB deposition and contribute substantially to PCDD/F deposition.

Considering anthropogenic emissions within the EMEP region, transboundary transport between EMEP countries is an important contributor to deposition and generally dominates over domestic sources in countries with relatively low national emissions and/or small territories. Contributions from other EMEP countries exceed those from domestic sources in the majority of countries for Pb, Cd, Hg, PCB-153, and HCB, and in about half of the countries for PCDD/Fs. In contrast, domestic emissions tend to dominate in major emitting countries, including Poland, Germany, Italy, Spain, the United Kingdom, and several countries in Southeastern Europe, depending on the pollutant.

Overall, the model reproduces the observed spatial patterns and concentration levels of heavy metals and POPs reasonably well. Pb and Cd air concentrations, PAHs, PCB-153, and HCB show high spatial correlations with observations, with most modelled values within a factor of two of measurements. Hg concentrations agree well with observations, with a small negative bias. Wet deposition is generally reproduced with somewhat larger uncertainties: Pb shows good agreement, while Cd and PAHs tend to be underestimated and Hg wet deposition is overestimated. Despite site-specific discrepancies and the limited availability of measurements for some pollutants, particularly PCDD/Fs, the evaluation generally supports the model's ability to reproduce regional-scale pollution patterns across the EMEP region.

Research and developments

MSC-E continues research and development activities focused on in-depth process studies of HM and POP pollution, as well as on improving the quality of operational pollution assessments. This year's research topics include model assessment and source attribution of PAH pollution in the Arctic; analysis of the origin and dynamics of reactive Hg in the free troposphere as a potentially important pathway of Hg input to terrestrial and aquatic ecosystems; continued assessment of PAH pollution in Slovenia and the Western Balkan countries, currently focused on the development of a fine-resolution emission inventory for model assessment; and, finally, a pilot study of the global dispersion and cycling of a contaminant of emerging concern (CEC) – perfluorooctane sulfonate (PFOS).

A multi-decadal GLEMOS assessment of Arctic PAH pollution for 1990-2021 reveals substantial changes in both deposition trends and source contributions. PAH deposition generally declined from 1990 to 2010 but increased again toward 2020, particularly in the Low Arctic and mainly due to low molecular weight PAHs. At the same time, the dominant sources shifted from long-range transport of anthropogenic emissions from Europe, East Asia, and Northern Asia toward increasing contributions from natural and secondary sources, including wildfires and re-emission of historically accumulated PAHs. By 2020, the Arctic itself had become the dominant source region for PAH deposition in the Low Arctic. These results indicate a growing influence of climate-related processes on Arctic PAH pollution, with important implications for future pollution trends and emission control strategies.

A detailed analysis of long-term reactive mercury (RM) measurements at a high-altitude site (Mauna Loa Observatory) was performed to investigate the influence of the free troposphere on atmospheric Hg cycling. Statistical decomposition of Hg fractions and other parameters combined with air-mass back trajectories, indicates that elevated RM concentrations are primarily associated with episodic downward transport of dry, ozone-rich air from the upper troposphere rather than with local boundary-layer processes. The analysis also revealed variability over synoptic to multiannual timescales and a long-term decline in GOM concentrations. These findings highlight the potential importance of upper-tropospheric and stratospheric Hg oxidation for enhanced Hg deposition in high-altitude regions, although assessment of this effect in the EMEP region remains limited by the lack of RM measurements.

An atmospheric modelling assessment of PAH pollution at the country scale is being conducted by MSC-E as part of a pilot study for Slovenia and the Western Balkan countries. The current stage of the study focuses on the development of a high-resolution PAH emission inventory for Slovenia and neighbouring regions. Official EMEP emissions were refined down to 2 km spatial resolution using sector-specific spatial proxies, including dwelling and population density, building height, industrial land cover, and road networks. The approach, demonstrated for B(a)P, identifies residential combustion and industry as the main emission sectors and captures major emission hotspots while maintaining consistency with officially reported emission totals. The inventory will be further refined in cooperation with national authorities and used for high-resolution modelling, evaluation against atmospheric and moss measurements, and source attribution of PAH pollution.

MSC-E conducted pilot simulations of PFOS atmospheric pollution to explore the potential for future assessment of contaminants of emerging concern. Long-term global GLEMOS simulations for 1950-2020 indicate substantial accumulation of PFOS in environmental media, with soils acting as the dominant long-term sink, followed by ocean waters and vegetation, while degradation remains negligible. The highest PFOS concentrations were estimated in major source regions of the Northern Hemisphere, particularly East and South Asia, Europe, and eastern North America, with substantially lower levels in remote regions and the Southern Hemisphere. The results demonstrate the importance of historical emissions and environmental accumulation for PFOS pollution, while also highlighting considerable uncertainties related to physicochemical properties and emission estimates.

Cooperation

MSC-E maintains scientific cooperation with a range of international and national organisations, supporting the further development of the Centre's research and assessment methods and the exchange of scientific knowledge generated under the Convention. This cooperation involves the EMEP Task Forces, the International Cooperative Programmes of the Working Group on Effects (WGE), the Minamata Convention on Mercury, the Baltic Marine Environment Protection Commission (HELCOM), the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR), the Arctic Monitoring and Assessment Programme (AMAP), and other international organisations.

In 2026, MSC-E continued its active cooperation with the Task Force on Measurements and Modelling (TFMM) and the Task Force on Hemispheric Transport of Air Pollution (TF HTAP). MSC-E co-hosted the 27th annual TFMM meeting in Bled, presenting its research and model development activities on mercury, PAHs, dioxins, marine pollution, and the use of moss biomonitoring for model evaluation. Within TF HTAP, MSC-E contributed to several international initiatives, including MCHgMAP, HTAP-Fires, and HTAP-PFAS. At the annual TF HTAP meeting in Hamburg, the Centre organised and chaired the MCHgMAP session, presented results on reactive mercury and PCDD/F emissions and modelling, and contributed to the development of future research activities on wildfires and PFAS pollution.

Results from the first phase of the MCHgMAP project, included in the OESG Scientific Report for the Minamata Convention on Mercury, indicate declining Hg levels in the Northern Hemisphere due to reductions in anthropogenic emissions, while trends in the Southern Hemisphere remain more uncertain. The assessment also highlights the dominant role of legacy re-emissions from soils and oceans in the global Hg cycle (~70%), compared with current anthropogenic emissions (~25%), and demonstrates the importance of emissions, meteorology, and surface characteristics in controlling Hg concentrations and deposition. The next phase of MCHgMAP will focus on processes governing atmosphere–ocean and atmosphere–vegetation exchange, atmospheric chemistry, and simulations of prehistorical and future scenarios.

MSC-E also participated in the annual ICP-Vegetation meeting in Rome, presenting work that combines atmospheric modelling and moss biomonitoring for source attribution of PAHs.

Cooperation with ICP-Vegetation will continue through joint analyses of heavy metal and POP pollution, using moss measurements to support model evaluation and assess spatial patterns and temporal trends, particularly in regions with limited air monitoring coverage.

In 2026, MSC-E strengthened cooperation with AMAP, HELCOM, and OSPAR on the assessment of POP and heavy metal pollution. Within AMAP, the Centre contributed a multi-decadal analysis of Arctic PAH pollution and source attribution, highlighting the growing importance of climate-driven secondary emissions. Cooperation with HELCOM and OSPAR focused on long-term trends, spatial patterns, and sources of atmospheric deposition to the Baltic Sea and North-East Atlantic. The assessments show substantial declines in Pb, HCB, and PCDD/F deposition since 1990, while Cu deposition has changed less markedly and exhibits considerable interannual variability.

Future directions

Future MSC-E activities will focus on further development of the GLEMOS modelling system and improvement of key processes governing heavy metal and POP cycling, including Hg chemistry and POP atmospheric partitioning and degradation. Research will continue on country-scale PAH pollution, Hg trends within MCHgMAP, wildfire impacts, and multi-compartment PFAS modelling. MSC-E will also strengthen cooperation with TFMM, TF HTAP, ICP-Vegetation, HELCOM, and OSPAR, integrating modelling with observational and biomonitoring data and supporting assessments of pollution in terrestrial and marine environments.

Contents

Introduction

Heavy metals and persistent organic pollutants (POPs) are hazardous environmental contaminants that can adversely affect human health and ecosystems. Environmental pollution by these contaminants is addressed under various international frameworks, including the UNECE Convention on Long-range Transboundary Air Pollution (CLRTAP, or Air Convention). The Convention's Protocols on Heavy Metals and POPs identify a number of priority pollutants, including lead (Pb), cadmium (Cd), mercury (Hg), polychlorinated biphenyls (PCBs), polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/Fs), hexachlorobenzene (HCB), and polycyclic aromatic hydrocarbons (PAHs). Within the PAH group, four compounds are specifically identified: benzo(a)pyrene (B(a)P), benzo(b)fluoranthene (B(b)F), benzo(k)fluoranthene (B(k)F), and indeno(1,2,3-cd)pyrene (IP).

Scientific support for implementing the Protocols on Heavy Metals and POPs under the Air Convention is provided by the Co-operative Programme for Monitoring and Evaluation of Long-range Transmission of Air Pollutants in Europe (EMEP, www.emep.int). EMEP delivers essential information on emissions, monitoring, and modelling of transboundary pollution. Research and operational assessments of heavy metal and POP pollution are carried out by specialised EMEP Centres, including the Centre on Emission Inventories and Projections (CEIP), the Chemical Coordinating Centre (CCC), and the Meteorological Synthesizing Centre-East (MSC-E).

Under the revised mandate (ECE/EB.AIR/144/Add.1), MSC-E provides scientific support to the Convention through model-based assessments of transboundary pollution by heavy metals and POPs. This work involves preparing the input data required for modelling, including emission, meteorological, and atmospheric composition data; conducting global- and regional-scale simulations of transboundary pollution; and evaluating model results against observations.

This report provides an overview of the activities undertaken by three EMEP Centres – CEIP, CCC, and MSC-E – in the research and operational assessment of heavy metal and POP pollution in 2024, in accordance with the 2026–2027 workplan for the implementation of the Air Convention (ECE/EB.AIR/158/Add.1). The report is organised into six chapters. Chapter 1 reviews the status of emission reporting and the preparation of emissions data for modelling. Chapter 2 describes observational data from the EMEP monitoring network. Chapter 3 presents the model assessment results for 2024. Chapter 4 describes ongoing research and model development activities. Chapter 5 summarises MSC-E cooperation with EMEP Task Forces and other international bodies. Finally, Chapter 6 outlines priorities for future research and development.

1. Reporting of heavy metal and POP emissions

Parties are formally only required to report on the substances and for the years set forth in the Air Convention and the protocols and their amendments that they have ratified and that have entered into force (*UNECE*, 2022). Parties that have obligations to report emission inventories under protocols that they have ratified and that are in force shall annually report emission inventories (*UNECE*, 2022). In addition, in line with the Article 8 of the Convention (*UNECE*, 1979) and Annex I of the EB Decision 2022/2 all pollutants mentioned in EB Decision 2022/2 have to be reported, unless the information is not available or the EB Decision lists them as "if a Party considers it appropriate". The substances for which there are existing reporting obligations in the Convention and the protocols include: SO_x, NO_x, NMVOCs, NH_3, CO, heavy metals, POPs, particulate matter (PM). Substances for which emission reporting is encouraged include: Black carbon (BC), total suspended particulate matter (TSP), As, Cr, Cu, Ni, Se and Zn (*UNECE*, 2022). Parties are strongly encouraged to submit the Informative Inventory Report (IIR). The IIR should be submitted annually (*UNECE*, 2022). Every four years from 2017 onward, Parties shall report for the year x-2 updated aggregated sectoral (GNFR) gridded emissions and LPS emissions (*UNECE,* 2022). Parties are encouraged to update their gridded and LPS data and report annually where changes in spatial patterns have occurred, so that the EMEP models can represent the most up-to-date information (*UNECE*, 2022).

1.1. Reporting of emission inventories in 2026

The completeness and consistency of submitted data have improved significantly since EMEP began collecting information on emissions (Fig. 1.1). Forty-five (88%) Parties submitted data to CEIP in 2026[1], and all of these Parties reported data on priority heavy metals (Cd, Hg, Pb). 43 Parties provided the full time series. Thirty-nine Parties reported data on five additional heavy metals (Arsenic (As), chromium (Cr), copper (Cu), nickel (Ni), selenium (Se), zinc (Zn) and their compounds) (Fig. 1.2). Forty-four Parties reported data on POPs (total PAHs, PCDD/Fs, HCB, PCBs), and all of them also reported data on additional PAHs (B(a)P, B(b)F, B(k)F, IP).

The quality of submitted data across countries varies significantly. When compiling the inventories, countries have to use the latest available version of the EMEP/EEA air pollutant emission inventory guidebook, which is the version of 2023 (EMEP/EEA 2023). However, several countries still use the Guidebook 2019 (EMEP/EEA 2019) or older versions. Uncertainty of reported data (national totals, sectoral data) is considered to be relatively high (Schindlbacher et al., 2021). The completeness of reported data is still an issue especially for heavy metal and POPs reporting. Detailed information

[1] The original submissions from the Parties can be accessed via the CEIP website on https://www.ceip.at/status-of-reporting-and-review-results/2026-submission

on recalculations, completeness and key categories, plus additional review findings, can be found in the annual CEIP technical inventory review reports and its Annexes (Schindlbacher et al., 2026)[2,3].

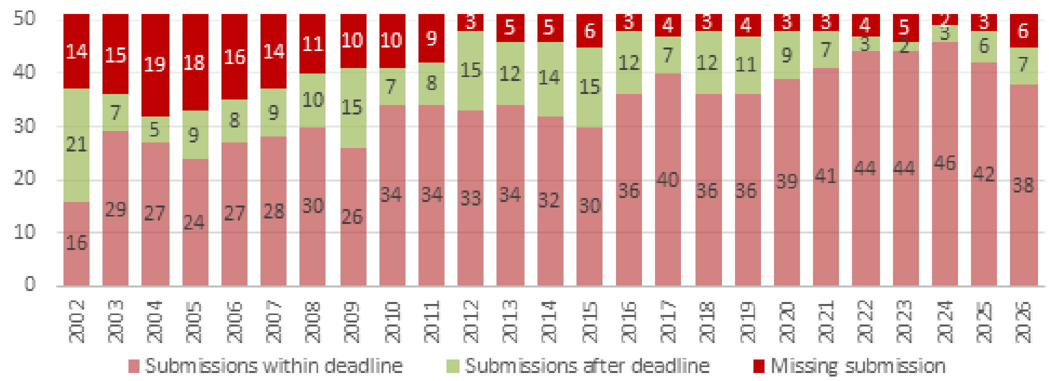


Fig. 1.1. *Number of Parties reporting emission data to EMEP since 2002, as of 05 June 2026.*

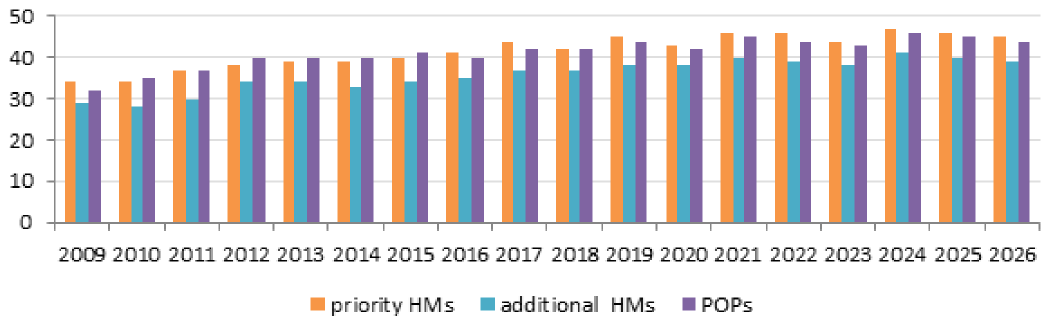


Fig. 1.2. *Number of Parties reporting of heavy metals and POPs to EMEP since 2009, as of 05 June 2026.*

1.2. Emission trends in the EMEP area – reported data

For priority heavy metals and POPs the emission trends and completeness of reported data show a different picture for the EMEP East and EMEP West area. The EMEP West area includes the EU27 countries, Monaco, Albania, Bosnia & Herzegovina, North Macedonia, Montenegro, Serbia, Iceland, Liechtenstein, Norway, Switzerland and the United Kingdom. The EECCA countries and Türkiye are summarized in the EMEP East area.

1.2.1. EMEP West area – POPs

The large fluctuations in emission trends of POPs for the EMEP West area (Fig. 1.3) are mostly due to individual countries. The high reductions of HCB from 2001 to 2002 are due to the strong decrease in emissions reported by Germany. Liechtenstein does not report PCB. Bosnia & Herzegovina does not report any data. Albania did not report data for 2024.

2 https://www.ceip.at/ceip-reports

3 https://www.ceip.at/status-of-reporting-and-review-results/2026-submission

Table 1.1 shows reported data, and Fig. 1.3 demonstrates the indexed trend (year 2000 = 100%) for POPs 2000 to 2024 in the EMEP WEST area.

Table 1.1. *POPs 2000-2024 in the EMEP West area (reported data)*

	B(a)P (t)	B(b)F (t)	B(k)F (t)	IP (t)	PAHs (t)	PCDD/F (g I-TEQ)	HCB (kg)	PCBs (kg)
2000	279	303	147	145	947	7 895	4 056	12 292
2001	283	305	150	147	957	7 072	4 177	11 233
2002	280	301	147	141	941	6 889	895	10 085
2003	288	307	149	146	966	7 513	453	9 185
2004	287	306	149	145	965	7 516	392	8 310
2005	298	314	152	148	992	6 788	349	7 750
2006	309	322	155	152	1 020	5 948	348	7 329
2007	300	315	151	152	1 001	4 802	326	6 836
2008	314	329	157	159	1 032	3 992	285	6 298
2009	308	316	150	156	982	2 431	257	5 563
2010	330	339	160	167	1 060	2 555	284	5 143
2011	302	309	147	152	974	2 414	370	4 795
2012	315	324	153	162	1 012	2 351	295	4 489
2013	309	317	150	159	990	2 327	357	4 131
2014	280	287	136	143	904	2 210	392	3 892
2015	281	289	138	145	911	2 241	273	3 735
2016	287	294	141	147	928	2 098	341	3 577
2017	280	287	136	143	921	2 099	357	3 482
2018	279	292	142	145	919	2 118	282	3 348
2019	255	268	130	137	847	2 017	252	3 193
2020	251	261	125	133	818	1 933	173	2 994
2021	254	266	128	138	843	1 983	149	3 003
2022	229	242	118	127	763	1 833	141	2 671
2023	213	223	109	117	704	1 740	126	2 452
2024	196	207	102	109	654	1 693	127	2 344
Relative change 2000 to 2024	-30%	-32%	-31%	-25%	-31%	-79%	-97%	-81%
Change 2000 to 2024	-83	-96	-46	-36	-293	-6 203	-3 929	-9 949

From 2000 to 2024, PCDD/F emissions have been reduced by 79% (-6203 g I-TEQ) with major reductions between 2000 and 2010 (-68%). Major reductions are reported by Bulgaria (-2 771 g I-TEQ), France (-464 g I-TEQ), Slovakia (- 1060 g I-TEQ), Romania (- 583 g I-TEQ) and Portugal (-307 g I-TEQ). All countries except Macedonia (+105%) and Serbia (+22%) reported decreasing emissions since the year 2000.

The strongest PCDD/F emissions reductions since the year 2000 occurred in GNFR-sectors *D_Fugitive* (-2721 g I-TEQ) *A_PublicPower* (-1145 g I-TEQ), *J_Waste* (-1377 g I-TEQ) and *B_Industry* (-586 g I-TEQ). PCDD/F emissions from *C_OtherStationaryComb* have the highest share (41%) in 2024 but have been reduced by only -238 g I-TEQ since 2000.

From 2000 to 2023, HCB emissions have been reduced by 97% (-3929 kg) with major reductions between 2000 and 2002 (-78%, -3160 kg) which is mainly due to the reporting of Germany for G-NFR sector *B_Industry* (-2860 kg). All countries except Latvia, Montenegro and Malta report decreasing emissions since the year 2000. From 2002 to 2024, HCB emissions decreased by 86% (-769 kg) with the largest decreases reported by Czechia (-229 kg), Hungary (-119 kg) and Portugal (-101 kg). In 2024, HCB emissions from *A_PublicPower* have the highest share (38%, 473kg), followed by *B_Industry* (32%, 41 kg), *C_OtherStationaryComb* (17%, 21 kg) and *J_Waste* (7%, 8 kg).

From 2000 to 2023, PCB emissions have been reduced by 81% (-9949 kg) with major reductions in sector *B_industry* (-8515 kg) and *J_Waste* (-938 kg). All countries except Greece, Malta and Norway reported decreasing emissions since the year 2000.

From 2000 to 2024, PAH emissions have been reduced by 31% (-293 t) with major reductions in sector *B_Industry* (-85 t) and *C_OtherStationaryComb* (-160 t). All countries except Germany, Finland and Montenegro reported decreasing emissions since the year 2000.

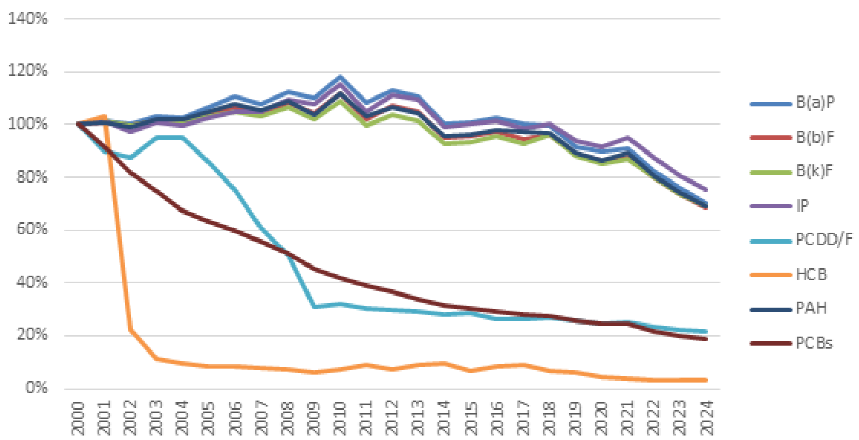


Fig. 1.3. *Emission trends of POPs 2000-2024 in the EMEP West area (reported data)*

1.2.2. EMEP East area – POPs

Reporting of POPs in the EMEP East area is quite incomplete and shows high peaks and inconsistent time series. The Russian Federation reported some POPs for the year 2000 and 2005 only and Türkiye did not report any POPs at all. Belarus did not report PAH for the year 2000 and 2001. Georgia reported complete time series but comparatively high values of HCB for 2014-2024 and unreasonably high levels of PCBs for 2000-2024 in G-NFR sector *B_Industry*. Kazakhstan reported complete time series but comparatively high values of PAH. Armenia reported incomplete or no data for 2000 to 2015 and complete data for 2016 to 2024.

Figure 1.4 shows emission trends of POPs 2002-2024 in the EMEP East area (reported data) excluding the Russian Federation, Ukraine, HCB from Kazakhstan, HCB from Georgia and PCDD/F from Kazakhstan. The trend (e.g., the strong increase in 2015) and absolute values of B(a)P emissions and other PAH components (e.g., the drop in 2021 for B(k)F), are dominated by the reporting of Kazakhstan. The peak of PCB emissions 2021 is due to the reporting of Kazakhstan.

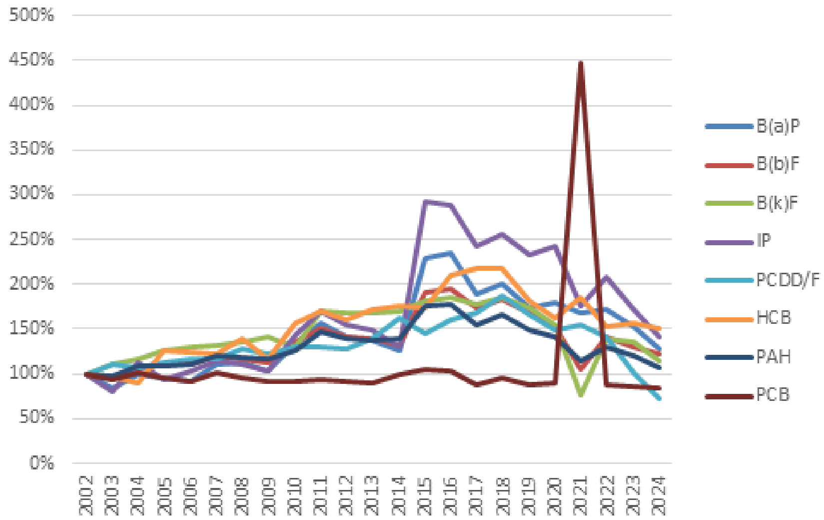


Fig. 1.4. *Emission trends of POPs 2002-2024 in the EMEP East area (reported data) excluding the Russian Federation, Ukraine, HCB from Kazakhstan, HCB from Georgia and PCDD/F from Kazakhstan.*

1.2.3. EMEP West area – priority heavy metals

Priority heavy metals of the EMEP West area show a rather smooth downwards trend and a dip in the year 2009, which reflects the economic recession leading to lower industrial production in that year (Fig.1.5). The strong decrease of Pb emissions from 2000 to 2002 is mainly due to lower emissions in the transport sector in Italy and Spain.

The continuous decrease of Hg emissions since the year 2010 is mainly due to decreases reported by France, Albania, Germany, Italy, Poland and the United Kingdom. The downward and upward trends in Hg emissions 2019 to 2021 are dominated by Germany, Italy, Poland and Spain. The drop in 2024 Hg emissions (-9.1%) is dominated by Italy (-24%), Germany (-5%), Czechia (-15%) and Poland (-11%).

The decreasing Pb emissions trend 2019 to 2020 (-12%) is mainly due to lower emissions reported by France (-12%), Germany (-10%), Spain (-18%), United Kingdom (-17%), Italy (-11%), Poland (-8%) and Serbia (-31%). The decrease in 2024 Pb emission (-4,7%) is mainly due to the United Kingdom (-6%) and Spain (-15%).

The decreasing Cd emissions trend 2018 to 2020 (-9%) is mainly due to lower emissions reported by Germany (-8%), Spain (-12%), Poland (-9%), the Netherlands (-20%), Italy (-11%), Greece (-24%) and the United Kingdom (-10%).

Table 1.2 and Fig. 1.5 show reported data and trends for priority heavy metals 2000 to 2024 in the EMEP West area.

Table 1.2. *Priority heavy metals 2000-2024 in the EMEP West area (reported data)*

	Cd (t)	**Hg (t)**	**Pb (t)**
2000	128	107	4 468
2001	123	103	3 417
2002	120	101	2 804
2003	111	98	2 627
2004	106	93	2 484
2005	100	90	2 332
2006	99	88	2 277
2007	93	83	2 206
2008	88	79	2 066
2009	80	68	1 733
2010	79	70	1 789
2011	80	70	1 501
2012	74	68	1 449
2013	71	65	1 415
2014	71	62	1 419
2015	69	60	1 399
2016	70	57	1 342
2017	71	55	1 376
2018	71	55	1 354
2019	68	49	1 317
2020	64	44	1 163
2021	64	47	1 272
2022	62	43	1 246
2023	58	40	1 189
2024	59	36	1 159
Relative change 2000 to 2024	-54%	-66%	-74%
Change 2000 to 2024	-69	-71	-3 309

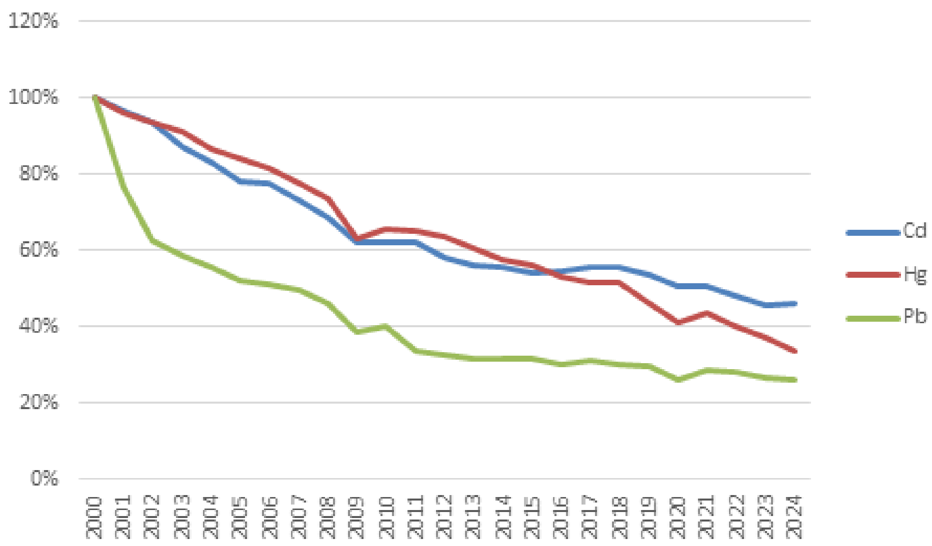


Fig. 1.5. *Emission trends of priority heavy metals 2000-2024 in the EMEP West area (reported data).*

1.2.4. EMEP East area – priority heavy metals

Unlike EMEP West, priority heavy metals of the EMEP East area show an unstable trend from 2000 to 2007, which is mainly due to incomplete reporting (Fig. 1.6). The Russian Federation has been excluded from Fig. 1.6 because reported data for heavy metals is only available for the years 2000, 2002 to 2006 and 2009 with a high contribution to the EMEP East area for those years. Belarus did not report heavy metals for 2000 and Armenia did not report for 2000-2015 except for the years 2002, 2003, 2007 and 2014.

The increase in Cd emissions from 2000 to 2004 is mainly due to reporting of Ukraine for GNFR sector *B_Industry*. The drop from 2008 to 2009 Cd emissions is mainly due to reporting of Ukraine for GNFR sectors *B_Industry* and the drop in 2024 emissions is mainly due to a sharp decrease in Kazakhstan GNFR *I_Offroad* emissions.

The peak in Hg emissions in the period 2016-2017 and the drop in 2021 is mainly due to the reporting of Kazakhstan for GNFR *B_Industry*. The high level of Hg emissions from 2018 is due very high emissions reported by Armenia for 2018 (GNFR sector *E_Solvents*, the value is about 400 times higher than for 2017 and 2019). The overall trend in Pb emissions for the is dominated by the comparatively high values reported by Ukraine for GNFR sector *B_Industry*.

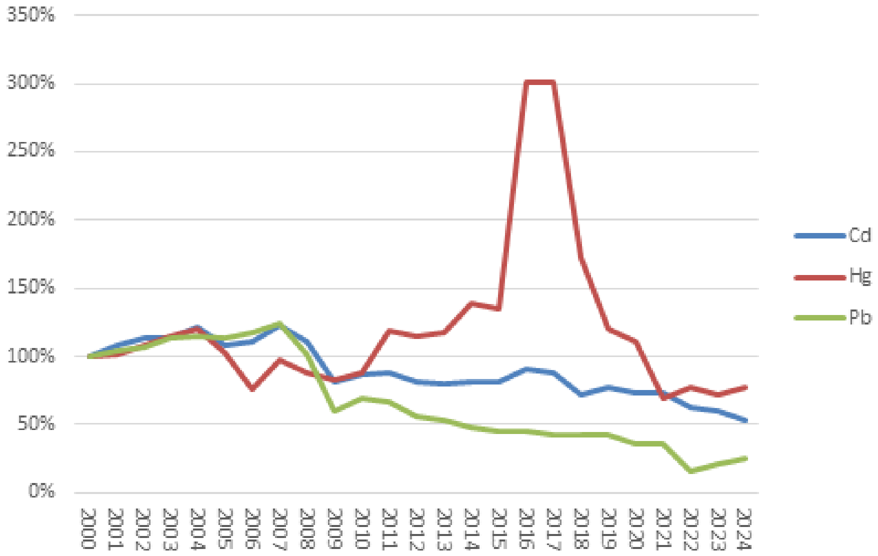


Fig. 1.6. *Emission trends of priority heavy metals 2000-2024 in the EMEP East area (reported data) excluding the Russian Federation.*

1.3. Comparison of 2023 data reported in 2025 and in 2026

Emission data for 2023 reported in 2026 were compared with 2023 emissions reported in 2025. For 20 countries, data changed by more than ±15 % for at least one pollutant (see Fig. 1.7 and Annex A.2). Albania, Armenia, and Georgia were the only countries that did not revise heavy metals or POPs emissions for 2023.

Ukraine revised individual pollutants by more than 250% (see right part of Fig. 1.7, which is displayed in logarithmic scale).

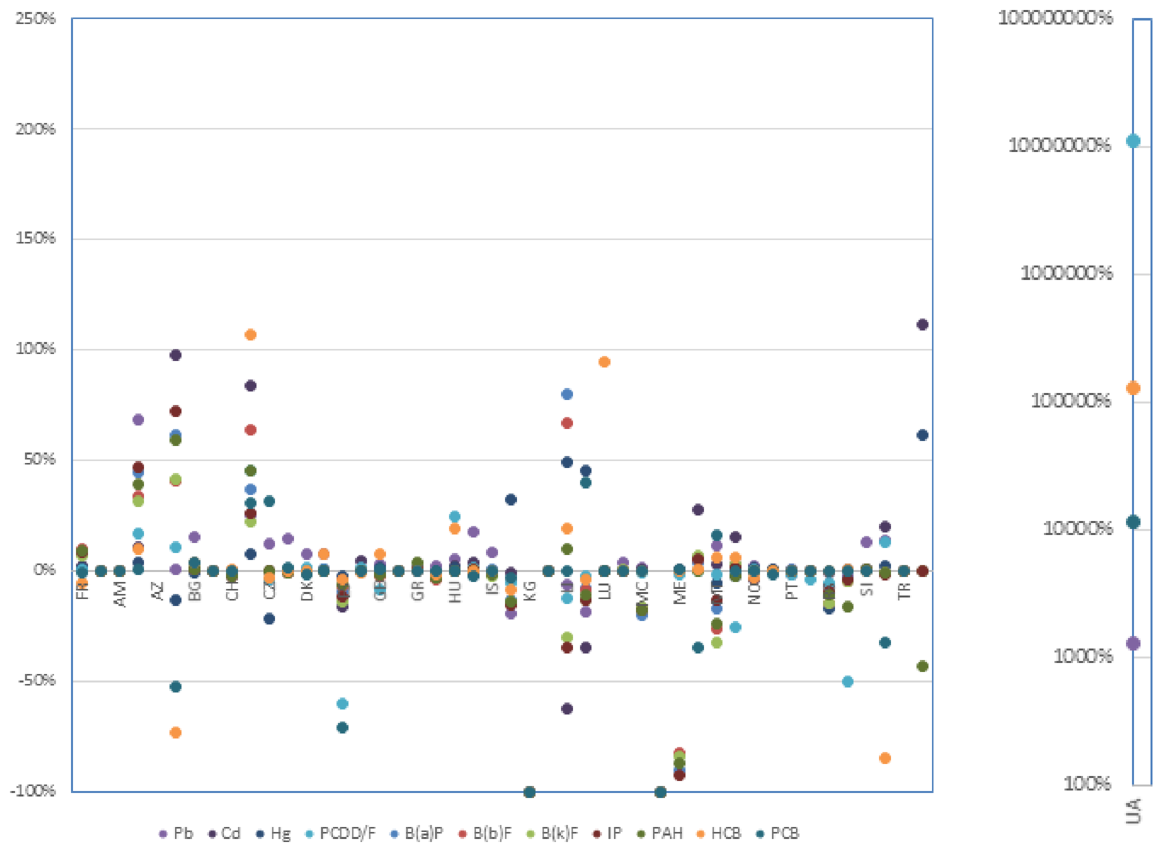


Fig. 1.7. *Recalculations between the 2026 and 2025 submission for 2023 values (reported data). The separate chart on the right shows countries and pollutants with recalculations > 250%, expressed as factors in logarithmic scale.*

1.4. Data sets for modellers in 2026

Data used by CEIP were reported by the Parties to the Air Convention as sectoral emissions (NFR19) and National Total emissions according to the UNECE guidelines for reporting emissions and projections data under the LRTAP Convention, Annex I (UNECE 2025).

Reported (NFR4) sector data were aggregated to 13 GNFR sectors. In several cases, no data were submitted by the countries, or the reporting was not complete or contained errors. Before modellers can use such emission data, missing or erroneous information has to be filled in or replaced by expert estimates. To gap-fill missing/erroneous data, CEIP typically applies different methods. After the gap-filling, sector emissions are used for spatial distribution (mapping) to the EMEP grids.

The Parties for which reported data were (partly) replaced are listed in Annex A.3.

4 NFR – Nomenclature for Reporting

1.4.1. Contribution of individual sectors to total EMEP heavy metals and POPs emissions

Figure 1.8 shows the contribution of each GNFR sector to the total emissions of individual air pollutants (Cd, Hg, Pb, B(a)P, B(b)F, B(k)F, IP, PAHs, PCDD/F, HCB, PCB). To provide as complete a picture as possible of the share of the individual sectors in total EMEP emissions, data as used for EMEP models (i.e., gap-filled data) were used for the calculations. The analysis does not include sea regions.

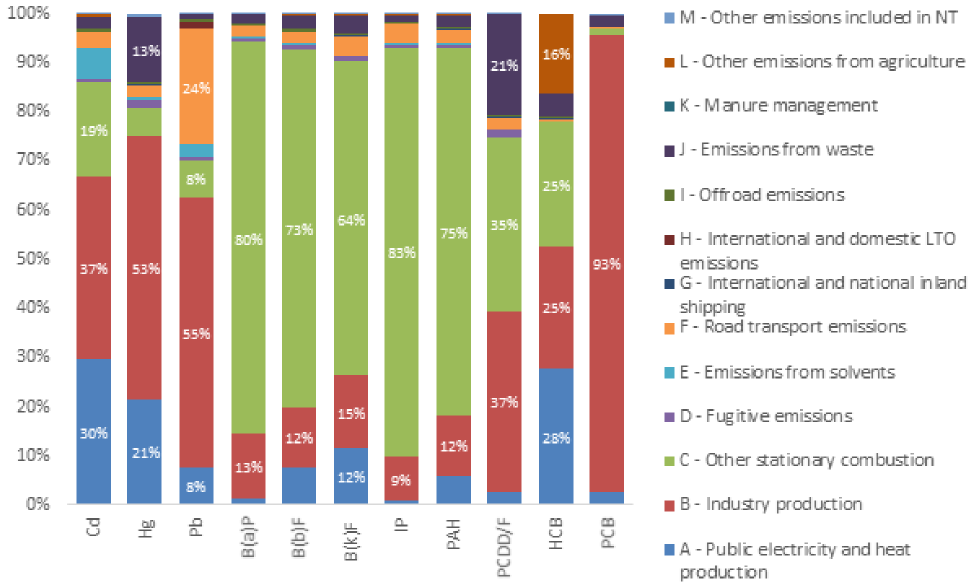


Fig. 1.8. *GNFR sector contribution to national total emissions in 2024, EMEP area without sea regions (only percentages above 10% are labelled).*

It is evident that the combustion of fossil fuels and processing of raw materials is responsible for a significant part of heavy metals and POPs emissions. Industry production emits about 37 % of **Cd** emissions, followed by 30% from public power and heat plants. Energy industries (mainly from coal power plants) emit about 21% of total **Hg** emissions and manufacturing industries emit about 53% of total emissions. About 45% of **Pb** emissions are released by the industry production sector and road transport (leaded gasoline) contributes 24%.

The largest source of **PAHs** and its compounds (B(a)P, B(b)F, B(k)F, IP) is the 'other stationary combustion' sector, which contributes 75% of total PAH emissions. The main source of PAH emissions are coal and wood stoves/boilers in households. About 9% of PAH emissions are related to the industry production sector. Sector 'other stationary combustion' sector contributes 35% to total **PCDD/F** emissions, mainly from coal and wood stoves/boilers in households and Industry production plants (metal industries) contribute 37%. The waste sector contributes 21% to PCDD/F emissions of which Spain contributes to about 20%. With 28% of total emissions, 'public electricity and heat production' contributes most to **HCB** emissions, followed by other stationary combustion with a share of 25% and industry production with a share of 25%. Another large source of HCB emissions is the agriculture sector with a share of 16%. The dominating sector for **PCB** emissions is the industrial sector, which 93% to total emissions.

Figure 1.9 illustrates the sector contribution for the EMEP West area and the EMEP East area. North Africa is included in the EMEP East area. The comparison of both graphs highlights some significant differences between West and East.

The continuous revision of inventory data for many countries shows that POPs emissions have the highest uncertainties of all pollutant groups. In addition, data for the EMEP East area is subject to incomplete reporting or delays in reporting. Especially for POPs, one should therefore draw conclusions carefully when comparing the shares between EMEP East and EMEP West.

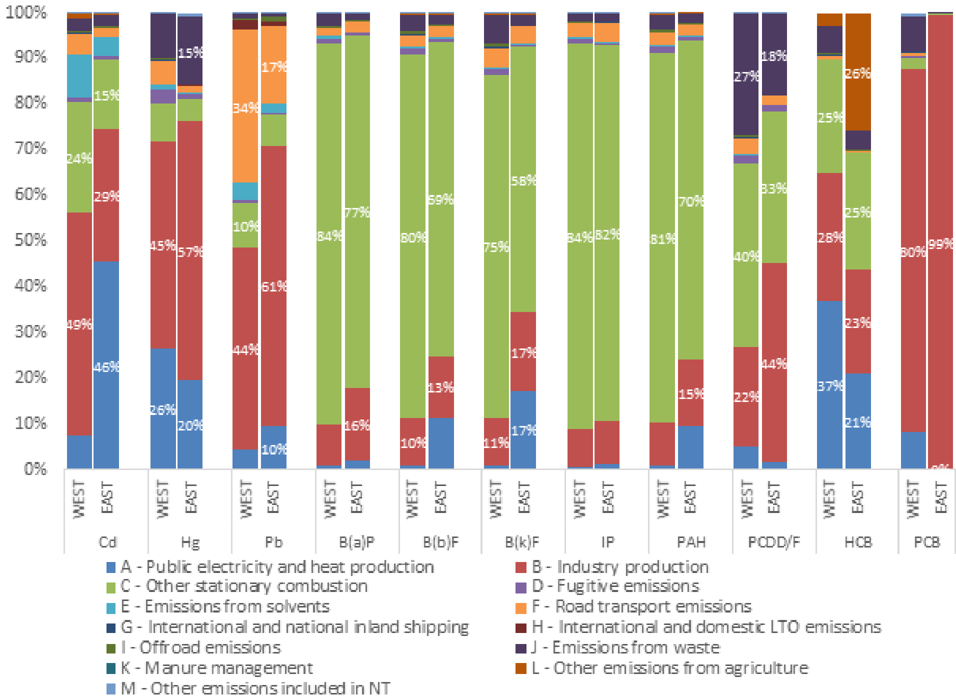


Fig. 1.9. *GNFR sector contribution to national total emissions in 2024 for the EMEP West and EMEP East areas (Only percentages above 10% are labelled. 'Remaining Asian Areas' are included in the EMEP East area and North Africa is included in the EMEP West area).*

1.4.2. Reporting of gridded data

After the submissions in 2017 and 2021, 2025 was the third year for which EMEP countries were obliged to report gridded emissions in the grid resolution of 0.1°x0.1° (long/lat). As of June 2026, 41 of the 48 countries which are part of the EMEP area reported sectoral gridded emissions in this resolution.

Most gridded sectoral emissions in 0.1°x0.1° (long/lat) resolution have been reported for the years 2023 (38 countries), 2019 (37 countries) and 2015 (33 countries). For 2020 by eight countries, 2017, 2018 and 2022 by five countries as well as for 2016, 2021 and 2024 by four countries. Comparing to reporting in 2021, reported gridded data are available for four more countries in 2026.

Fifteen countries reported gridded emissions additionally for previous years (one country for the whole time series from 1980 to 2024; one country for the time series from 1990 to 2024; seven countries for the years 1990, 1995, 2000, 2005 and 2010; one country for the years 1990, 2000, 2005 and 2010; one country for the years 2000, 2005 and 2010; one country for the year 2005; one country for the year 2010; one country for the year 2013 and three countries for the year 2014).

Reported gridded sectoral emissions data in 0.1°x0.1° (long/lat) resolution, which are used for the preparation of gridded emissions for modellers, cover less than 25 % of the cells within the geographic EMEP area. For remaining areas (or for EMEP countries that have no reported gridded data) missing emissions are gap-filled and spatially distributed using independent estimates from global and regional emissions datasets. Reported grid data can be downloaded from the CEIP website[5]. An overview of gridded data in 0.1°x0.1° (long/lat) resolution reported until 2017, 2021 and 2026 is provided in Table 1.3.

Table 1.3. *Gridded emissions in 0.1°x0.1° (long/lat) resolution reported until 2017, 2021 and 2026*

Country	**2017** Gridded data available for the years…	**2021** Gridded data available for the years…	**2026** Gridded data available for the years…	**Comments**
Armenia			2023	
Austria	2015	2000, 2005, 2010, 2015, 2019	2000, 2005, 2010, 2015, 2019, 2023	
Belgium	2015	2015, 2019	2015, 2019, 2023	
Belarus		2019	2019, 2023	Reported gridded data was replaced by GAINS proxies
Bulgaria	2015	2015, 2019	2015, 2019, 2023	
Croatia	1990, 1995, 2000, 2005, 2010, 2015	1990, 1995, 2000, 2005, 2010, 2015, 2019	1990, 1995, 2000, 2005, 2010, 2015, 2019, 2020, 2023	
Cyprus		1990, 1995, 2000, 2005, 2010, 2015, 2019	1990, 1995, 2000, 2005, 2010, 2015, 2019, 2023	For 1990 and 1995 no PM grid reporting
Czechia	2015	2015, 2019	2015, 2019, 2023	
Denmark	2015	2015, 2019	2015, 2019, 2023	
Estonia		2019	2019, 2023	
Finland	2013, 2014, 2015	1990, 1995, 2000, 2005, 2010, 2013, 2014, 2015, 2016, 2017, 2018, 2019	1990, 1995, 2000, 2005, 2010, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023	

5 https://www.ceip.at/status-of-reporting-and-review-results/2026-submission

Country	2017 Gridded data available for the years…	2021 Gridded data available for the years…	2026 Gridded data available for the years…	Comments
France		2015, 2019	2015, 2019, 2023	
North Macedonia		2015, 2019	2015, 2019, 2023	
Georgia		2015	2015, 2024	
Germany	1990, 1995, 2000, 2005, 2010, 2015	1990, 1995, 2000, 2005, 2010, 2015, 2017, 2019	1990, 1995, 2000, 2005, 2010, 2015, 2017, 2019, 2020, 2023	For 1990 no PM grid reporting
Greece		2015, 2019	2015, 2019, 2023	
Hungary	2015	2015, 2019	2015, 2019, 2023	
Iceland		2015, 2019	2015, 2019, 2023	For 2015 and 2019 gridded data was reported only for POPs
Ireland	2015	2015, 2019	2015, 2019, 2023	
Italy		2015, 2019	2015, 2019, 2023	Reported gridded data was replaced by GAINS proxies
Kazakhstan			2023	Reported gridded data was replaced by EDGAR proxies
Kyrgyzstan		2019	2019	Reported gridded data was replaced by EDGAR proxies
Latvia	2015	2015, 2019	2015, 2019, 2023	
Lithuania	2015[a]	2015, 2019	2015, 2019, 2023	[a] Reported gridded emissions in 2017 only on national total level
Luxembourg	2015	2015, 2019	2015, 2019, 2023	
Moldova			2022	
Malta		2016, 2019	2016, 2019, 2023	For 2016 gridded data was reported with invalid grid cell coordinates
Monaco	2014, 2015	2014-2019	1990, 1995, 2000, 2005, 2010, 2014-2024	
Netherlands		1990, 1995, 2000, 2005, 2010, 2015, 2019	1990, 1995, 2000, 2005, 2010, 2015, 2019, 2023	
Norway	1990, 1995, 2000, 2005, 2010, 2015	1990, 1995, 2000, 2005, 2010, 2015, 2019	1990, 1995, 2000, 2005, 2010, 2015, 2019, 2023	
Poland	2014, 2015	2014, 2015, 2018, 2019	2014, 2015, 2018, 2019, 2023	
Portugal	2015	2015, 2019	2015, 2019, 2023	

Country	2017 Gridded data available for the years…	2021 Gridded data available for the years…	2026 Gridded data available for the years…	Comments
Romania	2005	2005, 2015	2005, 2015, 2019, 2023	Gridded data for 2005 was reported only for HMs and POPs
Slovakia	2015	2015, 2019	2015, 2019, 2023	
Slovenia	2015	2015, 2019	2015, 2019, 2023	
Serbia			2015, 2019, 2020, 2023	Reported gridded data was replaced by GAINS proxies
Spain	1990-2015	1990-2019	1990-2024	For 1990 to 1999 no PM grid reporting
Sweden		1990, 2000, 2005, 2010, 2015, 2019	1990, 2000, 2005, 2010, 2015, 2019, 2020, 2023	
Switzerland	1980-2015	1980-2019	1980-2024	
United Kingdom	2010, 2015	2010, 2015, 2019	2010, 2015, 2019, 2023	
Russian Federation		2019	2019	Gridded data was reported only for main pollutants and PM Reported gridded data was replaced by EDGAR proxies

1.4.3. Gridded data of 2023 in resolution 0.1° x 0.1° (long/lat)

This year, gap-filling and gridding was done for the year 2024 in 0.1°x0.1° longitude/latitude resolution on GNFR sector level.

The 0.1° x 0.1° GNFR grids of heavy metals (Cd, Hg, Pb) and POPs (B(a)P, B(b)F, B(k)F, IP, PCDD/Fs, HCB) were spatially distributed based on the gridding system developed by CEIP. A map of total Pb emissions in 2024 is shown in Fig. 1.10 as an example. The system uses as a first step reported gridded emission data for each country and sector where it is available and usable. If no reported gridded data in the 0.1°x0.1° (long/lat) resolution is available, Global unintentional POP Emissions data from the Emission Database for Global Atmospheric Research (EDGAR v6.0, JRC) is used as a proxy for spatial disaggregation of POP emissions. In case of HM emissions reported gridded PM data is used as a proxy for spatial disaggregation if no reported gridded data in the 0.1° x 0.1° (long/lat) resolution is available. If reported PM data or POP data from EDGAR v6.0 is not available either, PM data from the Greenhouse Gas and Air Pollution Interactions and Synergies model (GAINS/Eclipse v6b) and EDGAR 8.1 (JRC) is used as a proxy.

Reported gridded data in 0.1°x0.1° (long/lat) resolution was used from Armenia, Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Moldova, Monaco, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

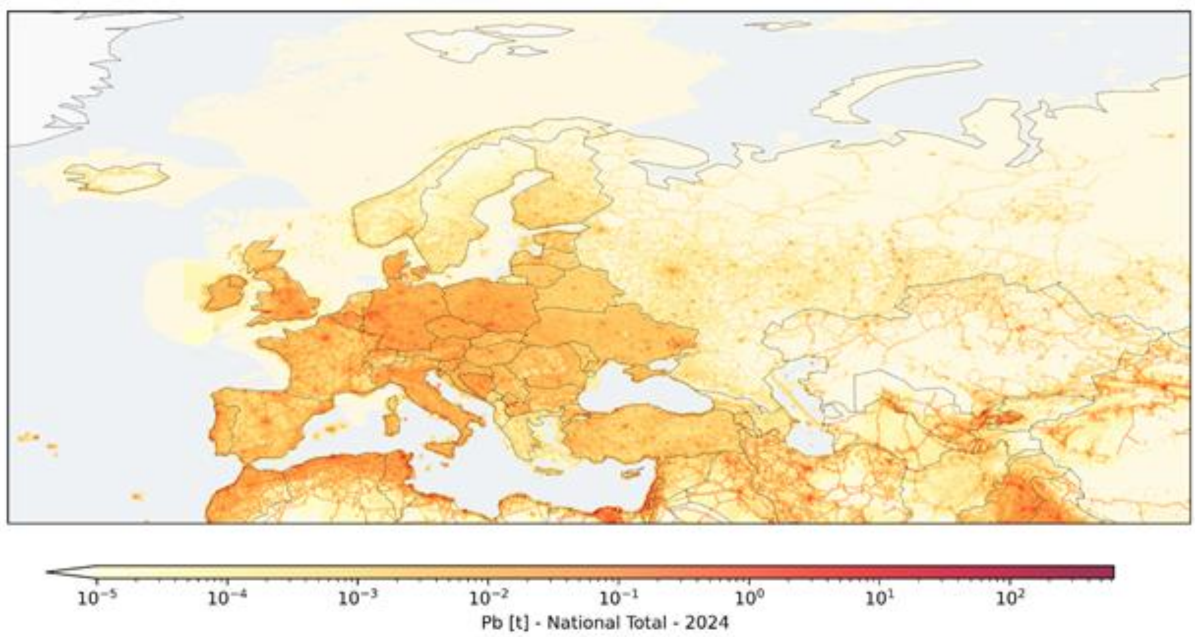


Fig. 1.10. *Visualized gap-filled and gridded Pb emissions for the year 2024 in 0.1°x0.1° long-lat resolution.*

1.4.4. Significant changes in data set for modellers between 2024 and 2023

National totals of gap-filled data used in models in the year 2026 with national totals of gap filled-data used in 2025 are compared (for more details see Annex A.2).

Table 1.4 shows countries and substances for which gap-filled data changed by more than ±15%. Cases, where PAH has been calculated by adding up the four individual (reported) compounds are not listed because changes are mainly a matter of reported data.

Table 1.4. *Changes in gap-filled data 2024 to 2023 larger than ± 15%.*

Country	Pollutant	Change	Comment[6]
Azerbaijan	PAH	52%	New reported and gapfilled
	PCB	25%	New reported
Austria	PAH	33%	reported (with some gapfilling)
Bulgaria	PAH	-23%	reported (with some gapfilling)
Italy	PAH	-19%	reported (including gapfilling of iron and steel industries)
Serbia	PAH	-21%	reported (with some gapfilling)
Sweden	PAH	-17%	reported (with some gapfilling)
Türkiye	Cd	-27%	reported (including gapfilling for power plants)

[6] 'New reported' means, that 2022 data has been gap-filled and 2023 data has been reported.

1.5. Pre-processed emissions data for model assessment

The gridded emission data were additionally pre-processed by MSC-E to account for parameters such as intra-annual variation, the vertical distribution of emissions, and the chemical speciation of Hg. The required temporal and vertical disaggregation were performed using the emission pre-processing tool developed at MSC-E for the GLEMOS modelling system. A detailed description of the emission pre-processing procedure is provided by Ilyin et al. (2018).

Officially reported emissions of four PAHs (B(a)P, B(b)F, B(k)F, and IP) were supplemented with expert estimates from the GEMS global emission inventory (Dai et al., 2025; GEMS, 2026) to fill spatial gaps in Northern Africa and Asia outside the EMEP countries.

Emissions of PCBs and HCB were further refined using a combination of officially reported data and expert estimates. Since reported PCB inventories provide only total emissions without distinguishing individual congeners, the congener-specific global inventory of Breivik et al. (2007) was used for modelling. PCB-153 was selected as an indicator of transboundary transport and PCB pollution, with its spatial distribution based on reported gridded emissions or, where these were unavailable, derived using population density.

Reported HCB emissions are subject to considerable uncertainty due to incomplete coverage of potential sources (Breivik et al., 2004), which may result in underestimation of atmospheric releases. To account for this uncertainty, an alternative scenario representing the upper estimate of direct anthropogenic emissions was developed following the methodology of Ilyin et al. (2022) and incorporating country-reported emission uncertainties. Under this scenario, total HCB emissions in the EMEP region were, on average, 2.85 times higher than those reported in the official inventories.

Figures 1.11–1.13 present the spatial distributions of anthropogenic emissions of Pb, Cd, Hg, B(a)P, B(b)F, B(k)F, IP, PCDD/Fs, PCB-153, and HCB over the EMEP region used in the model simulations for 2024.

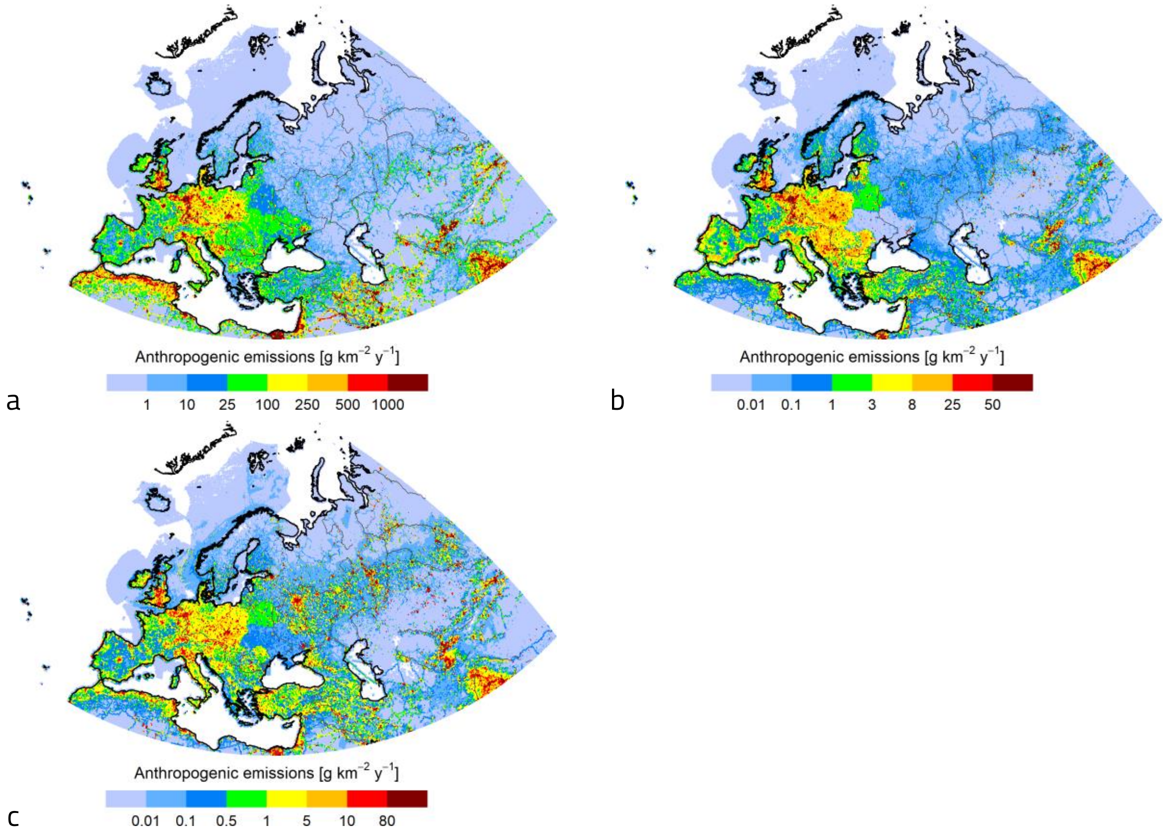


Fig. 1.11. *Annual anthropogenic emissions of Pb (a), Cd (b), and Hg (c) in 2024.*

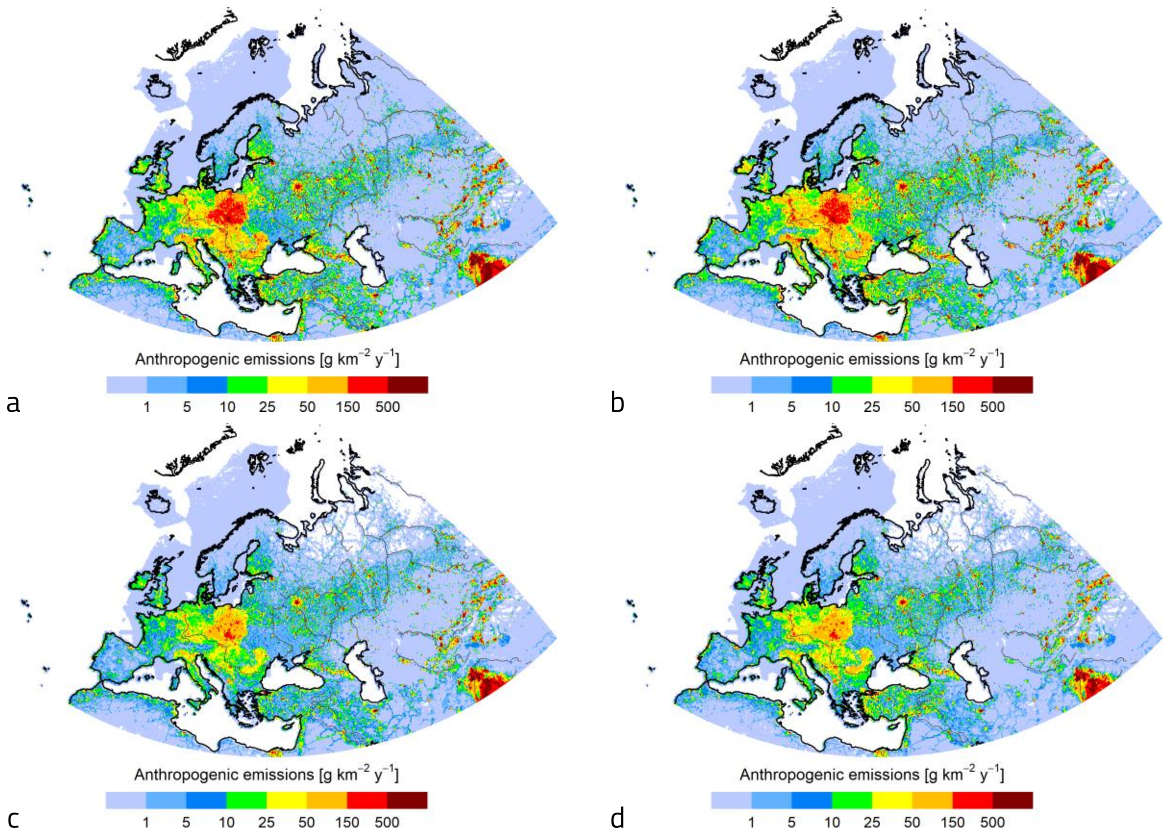


Fig. 1.12. *Annual anthropogenic emissions of B(a)P (a), B(b)F (e), B(k)F (c), and IP (d) in 2024.*

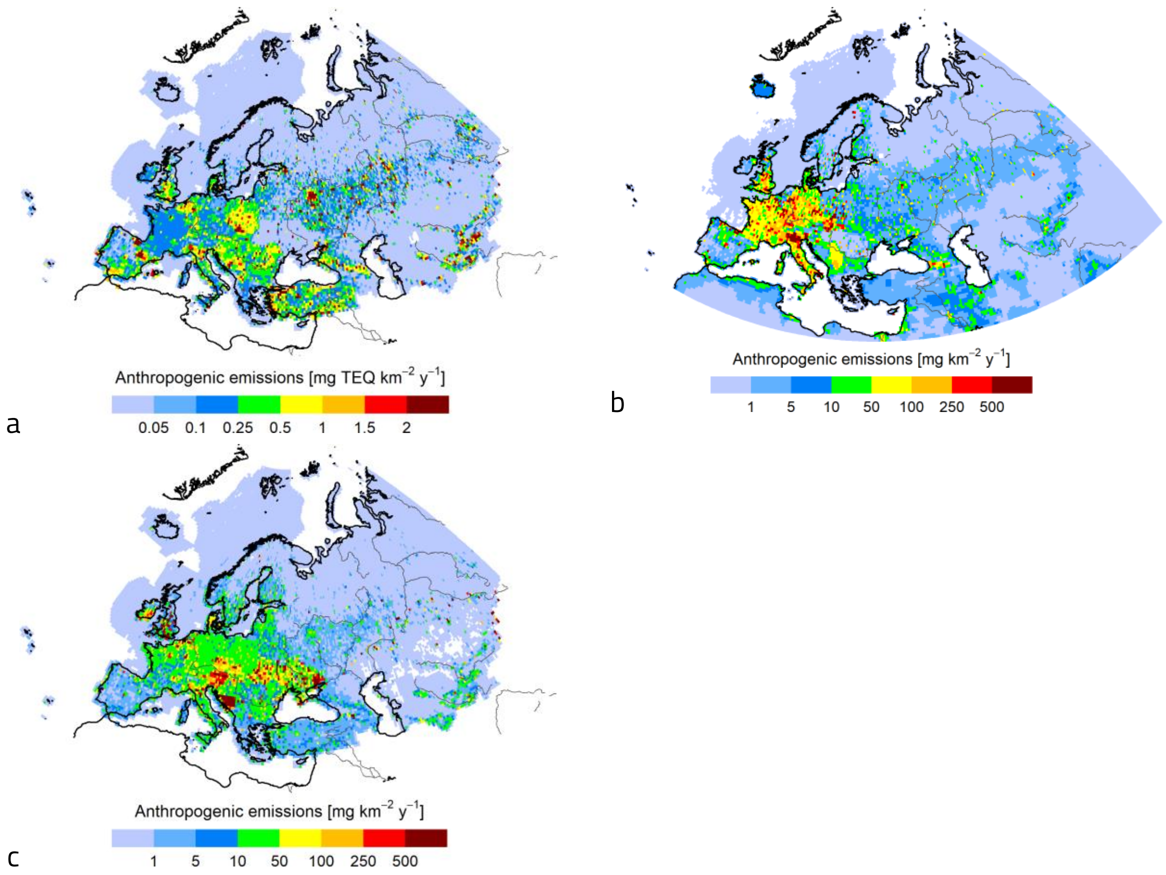


Fig. 1.13. *Annual anthropogenic emissions of PCDD/Fs (a), PCB-153 (e), and HCB (c) in 2024.*

2. Monitoring of heavy metals and POPs

Heavy metals and persistent organic pollutants (POPs) were included in EMEP's monitoring program in 1999. However, earlier data have been reported and are available. The EMEP database, especially for heavy metals, also includes older data, even back to 1976 for a few sites. A number of countries have been reporting heavy metals and POPs within the EMEP area in connection with different national and international programmes such as HELCOM, AMAP and OSPAR.

The EMEP monitoring strategy (UNECE, 2019) defines the monitoring obligations for the Parties. For POPs, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), hexachlorobenzene (HCB), chlordanes (CHLs), lindane/γ-hexachlorohexane (γ-HCH), α-HCH, and DDT/DDE are part of the compulsory monitoring programme, while for heavy metals, Hg, Cd and Pb are 1st priority elements while Cu, Zn, As, Cr, Ni are 2nd priority. In addition to these compounds several Parties report other POPs and trace elements. In addition to regulated POPs, it is recommended to increase the attention on organic contaminants of emerging concerns (CECs) (Aas et al., 2024).

All the data are available from the EBAS database (http://ebas.nilu.no/), and more detailed information about the sites and the measurement methods are found in EMEP/CCC's data report on heavy metals and POPs (Aas et al., 2026).

Figure 2.1 shows an overview of which sites have reported data to EMEP in 2024. In 2024, there were 42 sites measuring heavy metals in both aerosols and precipitation, and altogether there were 74 measurement sites. 31 sites were measuring mercury in either air and precipitation, 16 of these with co-current measurements in air and precipitation. In total, respectively 23 and 15 Parties to the Convention report heavy metals and mercury data. For POPs it was in 17 Parties reporting 2024 data, in total 39 sites. Of these, 31 sites measured in both aerosol and in precipitation or deposition. One should further note that several of the Parties only measure PAHs (i.e., 4 Parties and 20 sites).

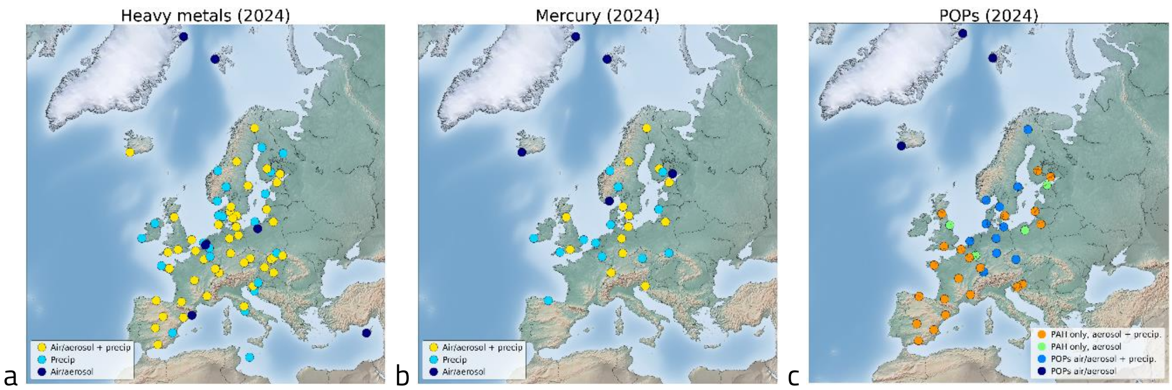


Fig. 2.1. *Overview of sites measuring heavy metals (a), mercury (b) and POPs (c) in 2024*

2.1. Monitoring of heavy metals

In total, more than 30 different trace elements have been reported to EMEP in 2024. The most common elements are Cd, Pb, Ni, As, Zn, Cu and Cr measured at more than 50 sites while V, Mn, Co, Hg and Fe at 20 or more sites. Annual averages of As, Cd, and Pb concentrations in aerosols in 2024 are presented in Fig. 2.2 and in precipitation in Fig. 2.3. The highest concentrations for these elements in aerosols are generally observed around the British Channel, Cyprus and in Eastern Europe. For precipitation, the highest levels are seen in Eastern Europe, but elevated levels are also observed at other sites, such as in Spain depending on the component.

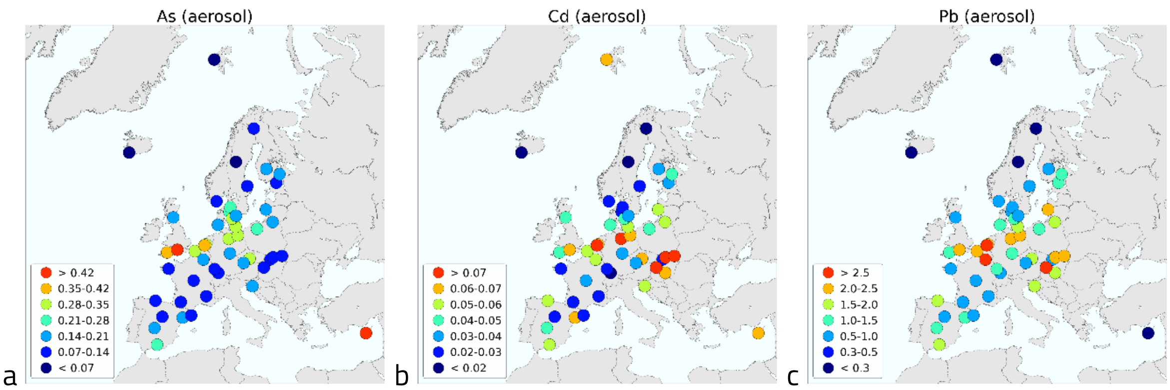


Fig. 2.2. *Annual mean concentrations of As (a), Cd (b), and Pb (c) in aerosols (ng/m^3) in 2024.*

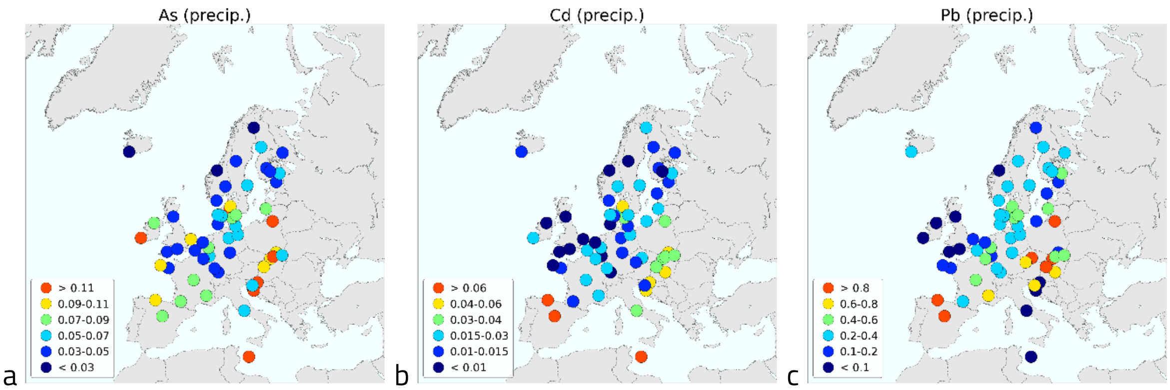


Fig. 2.3. *Volume weighted annual mean concentrations of As (a), Cd (b), and Pb (c) in precipitation (mg/L) in 2024.*

For total gaseous and elemental mercury, the highest concentration in 2024 is seen at the Waldhof site in Germany followed by the arctic Norwegian site, and a tendency for highest concentration in central Europe (Fig. 2.4). The concentrations at the two Swedish sites Bredkälen and Hallahus show unusual low annual mean concentrations, both below 1.1 ng/m^3. For precipitation, the highest concentrations are observed in central and eastern Europe. In addition, very high levels (25 ng/L) are seen at ES0008 in Spain, the reason is unclear. In IE0031 the level is also high (10 ng/L), but this is due to very high detection limit which all the data are below.

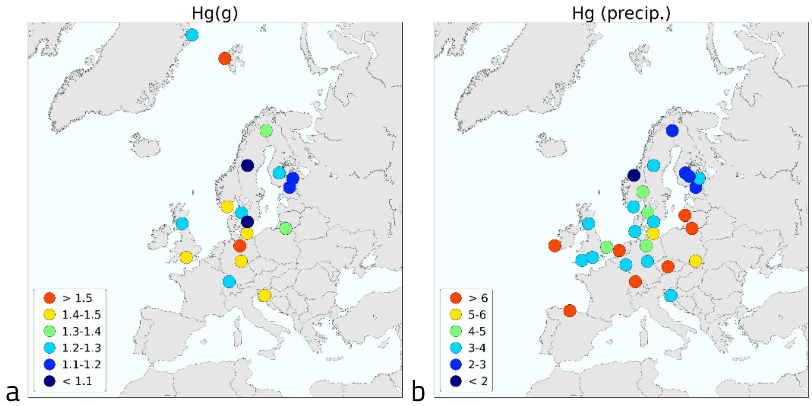


Fig. 2.4. *Annual mean concentrations of total- or gaseous elemental mercury in air (a, ng/m3) and volume weighted average concentrations of mercury in precipitation (b, ng/L) in 2024*

2.2. Monitoring of POPs

The spatial coverage of sites monitoring POPs in Europe differs between the different components; The highest coverage is found for the PAHs, e.g., Benzo(a)pyrene is measured at 36 sites in air and aerosols. In comparison, the legacy POPs; PCBs, HCHs and DDTs, are measured at 14 sites depending on compound, while the chemicals of emerging concern (e.g., dechlorane plus and PFOA) are reported at even fewer sites and only from the Nordic countries as discussed in the next chapter.

The spatial distributions of concentrations of selected POPs are shown in Fig. 2.5. In general, the concentrations of most POPs decrease from the south/south-east to the north of Europe.

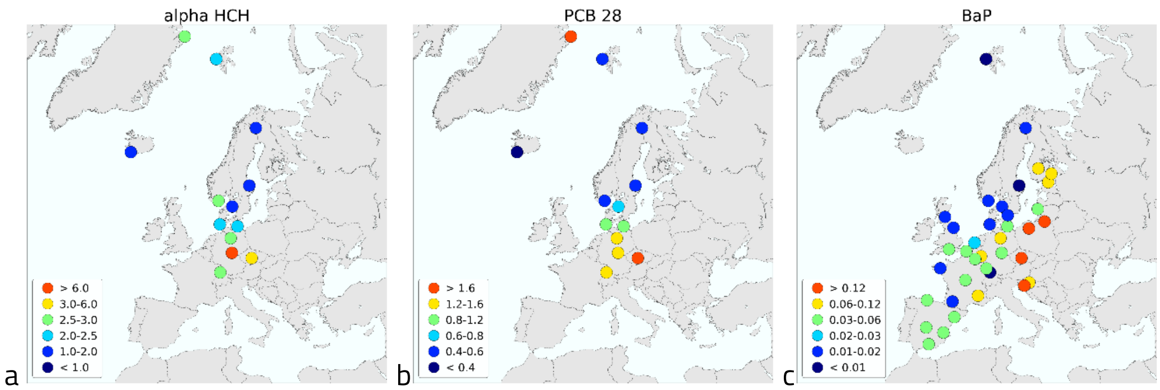
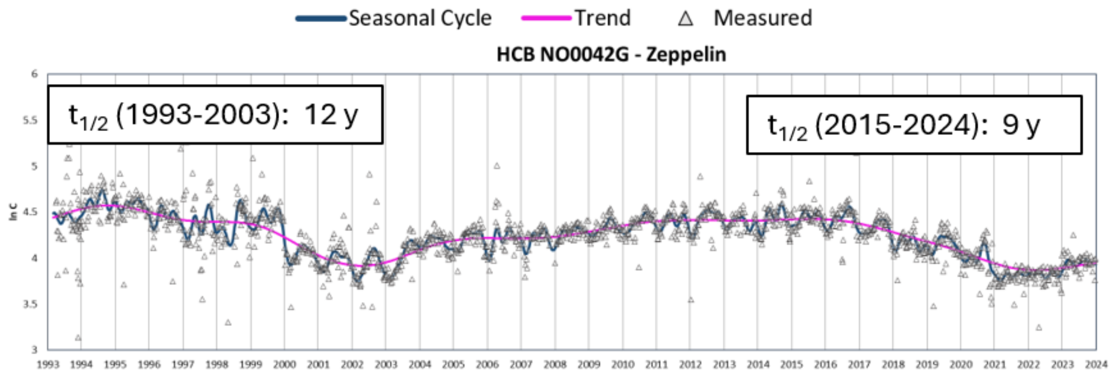


Fig. 2.5. *Annual mean concentrations of a-HCH, PCB-28 (pg/m3) and benzo[a]pyrene (ng/m3) in air and aerosols at EMEP sites in 2024.*

2.3. New trend analysis tool

As part of the ongoing AMAP assessment work, a new tool for quantifying long-term time trends has been developed. The Linear Spline Trend Estimator (SPLINTER), developed by Matt MacLeod (Stockholm University) in collaboration with Sabine Eckhardt (NILU), replaces the Digital Filtration

(DF) technique previously used for trend analysis (Hung et al., 2016). The open-source software SPLINTER will be implemented in the next version of EBAS, making consistent and transparent trend analyses of EMEP data readily available. Analysis and plots performed by the tool are currently accessible at: https://atmo-access.nilu.no/POPTRENDS.py.



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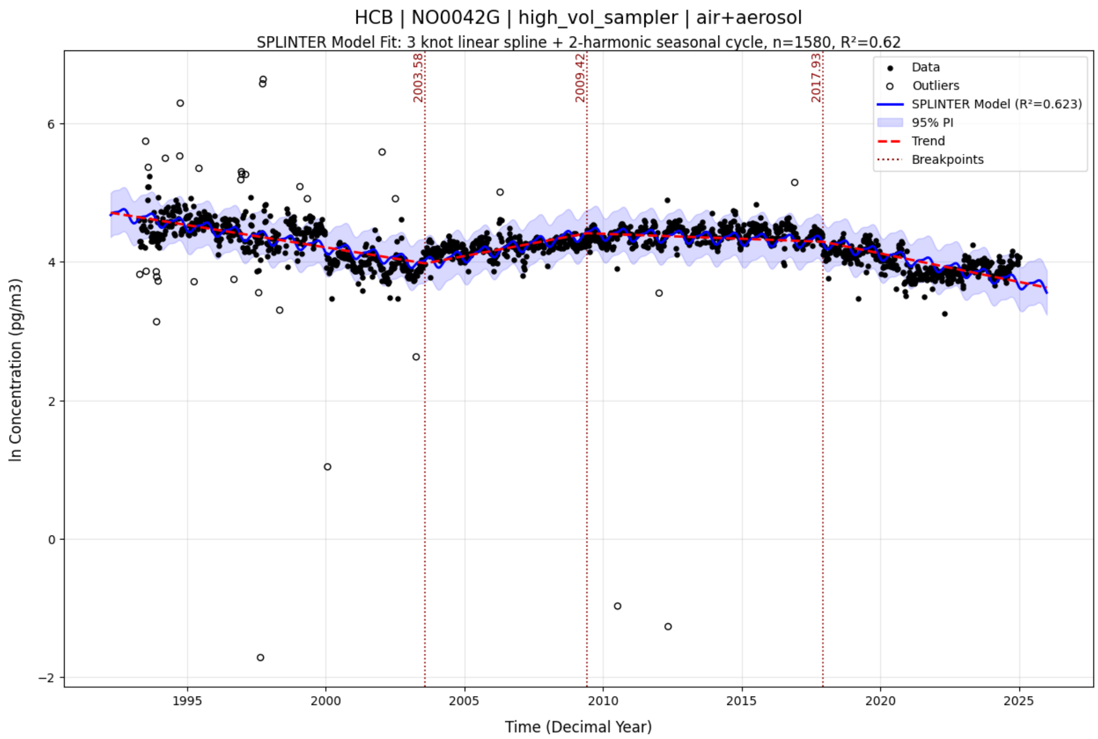


Period	Duration (yr)	Slope p-value	Half-life (yr)	Description
1992.25–2003.58	11.3	0.0000	10.8	decreasing
2003.58–2009.42	5.8	0.0000	-9.3	increasing
2009.42–2017.93	8.5	0.0000	48.9	decreasing
2017.93–2025.00	7.1	0.0000	8.4	decreasing

b

Fig. 2.6. *Timeseries and trend analysis for HCB measured at Zeppelin using the DF method (a) and the method implemented in SPLINTER (b).*

Like the DF technique, SPLINTER analyses the natural logarithm of air concentrations over time while accounting for seasonal variability. However, instead of fitting a single log-linear trend, it identifies statistically derived breakpoints and fits multiple linear segments, allowing changes in trends over time to be detected. For consistent comparisons between sites, a Generalized Additive Model (GAM) is also fitted over selected time periods (e.g., the last 10 years), from which an apparent first-order half-life and annual percentage change are calculated. Positive half-lives (or negative annual percentage changes) indicate declining concentrations, while negative half-lives (or positive annual percentage changes) indicate increasing concentrations. Trends with very small, non-significant changes are interpreted as representing steady-state conditions.

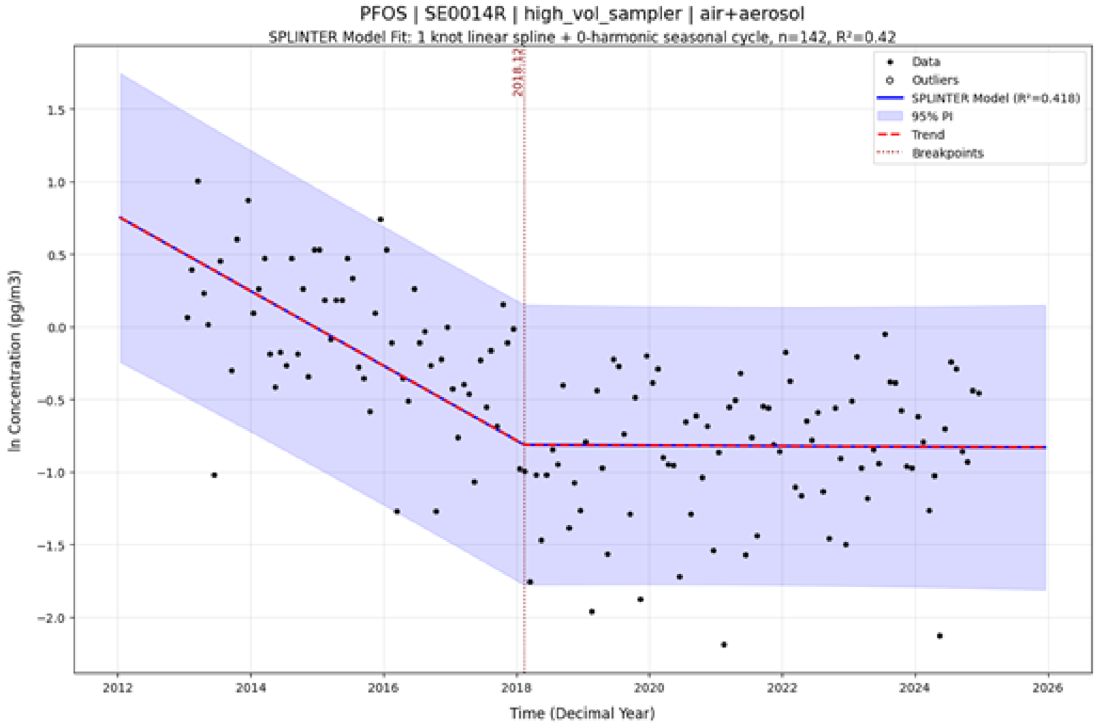
Figure 2.6 shows a comparison of the HCB time trend at Zeppelin derived using the DF method and SPLINTER. Both methods show an overall decline with similar estimated half-lives. SPLINTER additionally reveals that the decrease has not been constant over time.

2.4. PFAS monitoring

Per- and polyfluoroalkyl substances (PFAS) area large number of substances that have been widely used in industrial applications and consumer products. Their ubiquitous detection in remote regions, including the Arctic, has contributed to the regulation under the Aarhus Protocol and the Stockholm Convention. This include perfluorooctane sulfonic acid (PFOS), which was added in the amendments to the Aarhus Protocol in 2009, and perfluorooctanoic acid (PFOA) which is currently not listed in the Aarhus Protocol, but in Annex A (elimination) under the Stockholm convention in 2019. Monitoring PFAS in air is essential for assessing long-range atmospheric transport, evaluating the effectiveness of regulatory measures, and identifying precursors which can be oxidised to perfluoroalkyl carboxylic and sulfonic acids. PFOS-related precursors include sulfonamides, e.g. Perfluorooctane sulfonamide (FOSA). The volatile fluorotelomer alcohols, e.g., 4:2 FTOH, are another important group of precursors, which typically form, for example, perfluorobutanoic acid (PFBA).

Within EMEP, ionic PFAS (i.e., perfluoroalkyl carboxylic and sulfonic acids) are currently monitored in air at Villum/Station Nord (since 2021), Zeppelin (since 2006), Pallas (since 2017), Birkenes (since 2006) and Råö (since 2009), and was also monitored at Andøya between 2009 and 2021. PFOS, PFOA and PFBA are typically measured in aerosol, collected on a glass- or quartz fibre filter (GFF/QFF), whereas volatile PFAS (e.g., FTOHs) are measured in air, collected using a PUF/XAD-2/PUF sandwich situated in series after a GFF/QFF. In 2023-2024, PFAS has also been measured in precipitation at Pallas, Norunda Stenen and Råö.

In general, the volatile FTOHs are found in highest concentrations (reported from Station Nord and Zeppelin), while the concentrations of perfluoroalkyl carboxylic and sulfonic acids are generally low and close or below the detection limits. For PFOS, Råö is the only station with detectable concentrations in all samples. The time-trend (SPLINTER) for PFOS at Råö 2013-2024 (Fig. 2.7) shows a decreasing trend until 2018, and steady concentrations the more recent years.



Period	Duration (yr)	Slope p-value	Half-life (yr)	Description
2012.04-2018.12	6.1	0.0000	2.7	decreasing
2018.12-2024.96	6.8	0.9064	267.7	uncertain

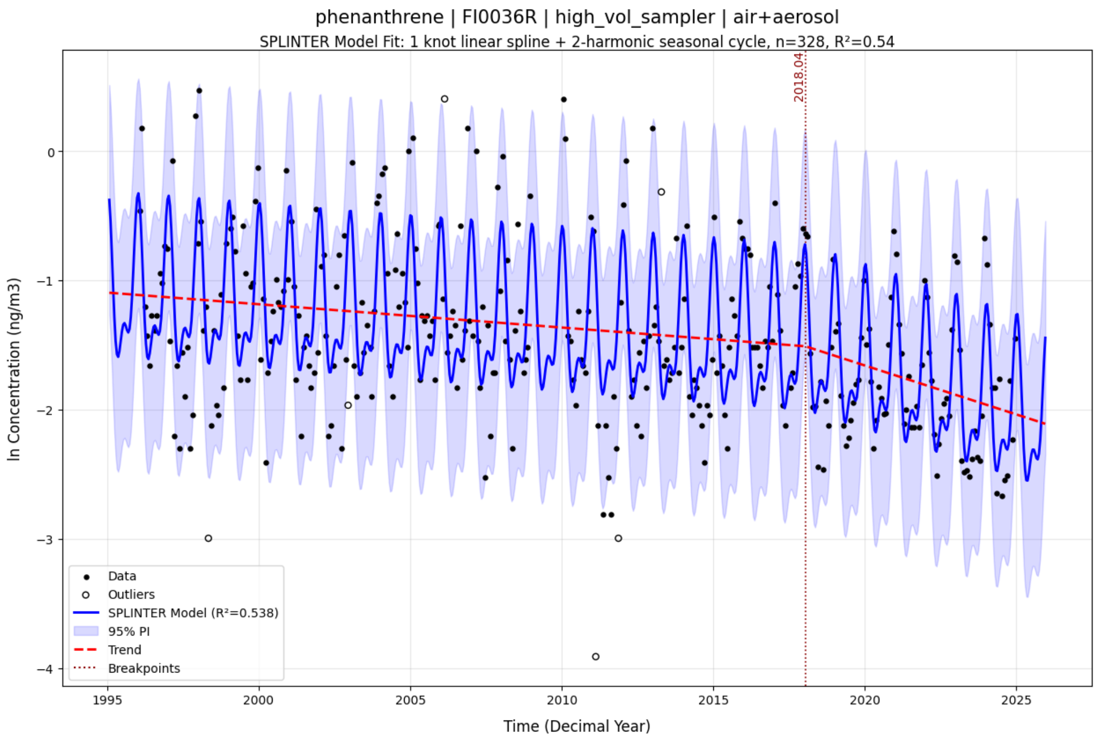
Fig. 2.7. *Timeseries and trend analysis (SPLINTER) for PFOS at Råö 2013-2024.*

At the EMEP CECs workshop (Aas et al., 2024), a need for generating data outside of the Arctic/Scandinavian region was identified. Thus, a coordinated EMEP passive air sampling campaign for CEC is planned for the summer of 2027. The campaign would use passive "bird feeder" samplers equipped with XAD-2 sorbent to measure neutral PFAS, including key volatile PFAS precursors such as fluorotelomer alcohols (FTOHs), perfluoroalkane sulfonamides (FASAs), and perfluoroalkane sulfonamido ethanols (FASEs). These volatile neutral precursors provide an important source for the distribution of ionic PFAS in the remote environment. There is also the possibility of including cyclic volatile methyl siloxanes (cVMS) to broaden the scope of the measurements. The campaign would provide valuable information on the spatial distribution of volatile PFAS precursors across the EMEP monitoring network.

2.5. PAH trends

Polycyclic aromatic hydrocarbons (PAHs) are formed during incomplete combustion processes. The highest concentrations of compounds such as the indicator benzo(a)pyrene (BaP) are generally observed during winter due to increased domestic wood and coal burning. PAH concentrations show strong spatial variability, reflecting differences in local and regional emission sources. While residential heating dominates winter emissions, wildfires occurring in spring and summer can also influence seasonal patterns and long-term trends.

PAHs have been monitored at several EMEP sites for more than two decades. The long-term trend of BaP was examined in (Travnikov et al., 2024), and is slowly declining. The three-ring PAH, Phenanthrene, is among the most abundant PAHs in European air, and is currently measured at 20 sites within Europe. Yu et al. 2019 has previously reported that the concentrations have not decreased significantly in the Arctic since early 2000s to 2015 (using Dynamic Harmonic Regression and the seasonal Kandall test), and predicted that climate change may alter the decline of PAHs. The GAM analysis performed at the POP EMEP sites suggests an overall, but slow decline at most of the sites for the whole measuring period ($t_{1/2}$ = 8.8-27 y) and after 2015 ($t_{1/2}$ = 8.9 - 33 y), also for the Arctic stations. Figure 2.8 shows the SPLINTER trend for Pallas, which indicates a very slow decline until 2018 ($t_{1/2}$ = 38 y), more or less in line with what was reported by Yu et al. 2019. However, the recent years, a larger decrease in concentrations ($t_{1/2}$ = 9.2 y) are observed. This suggests possible reduced emissions which may be related to the national phase out of coal-fired energy production since 2019.



Period	Duration (yr)	Slope p-value	Half-life (yr)	Description
1995.07–2018.04	23.0	0.0000	38.3	decreasing
2018.04–2024.96	6.9	0.0000	9.2	decreasing

Fig. 2.8. *Timeseries and trend analysis (SPLINTER) for phenanthrene at the Arctic station, Pallas.*

The spatial and temporal variability in annual mean concentrations of phenanthrene across EMEP, is shown in Fig. 2.9. While there seems to have been an increase in the air concentrations at the German sites, the GAM analysis reveals that the trends 2015-2024 are not statistically significant. Despite this, it can be noted that Germany experienced a temporary increase in coal-fired electricity generation during the 2022 energy crisis, but further study is needed to evaluate if the observed change in air concentrations is linked to this.

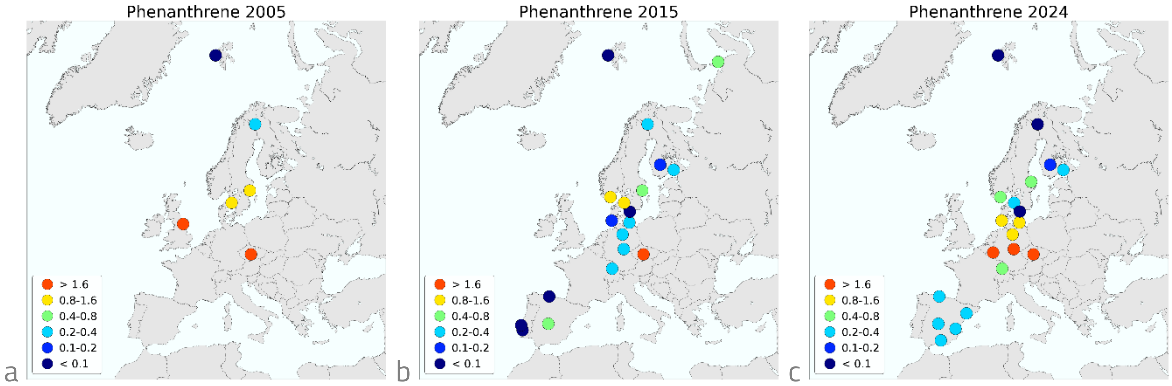


Fig. 2.9. *Annual mean concentrations of phenanthrene (ng/m3) in 2005, 2015 and 2024 in air and aerosols.*

3. Status of HM and POP air pollution in 2024

This chapter discusses the status of atmospheric pollution by heavy metals and POPs in the EMEP countries in 2024. The assessment is based on model simulations conducted with the latest version of the GLEMOS model and the emissions data officially reported to the Convention in 2026 (Chapter 1). It characterises both the spatial and seasonal variability of pollution levels, as well as the current status of transboundary pollution transport among the countries. Numerical information on the source attribution of heavy metal and POP deposition is presented in the form of source-receptor matrices in Annex B. Statistics from the evaluation of the modelling results against EMEP observations (Chapter 2) are included in Annex C.

3.1. Model setup

The model assessment was performed using the latest version of the GLEMOS model (v2.3.2; https://github.com/glemos-model). Recent model updates included multiple technical improvements and the transition of the model's land-cover representation to the updated and improved Terra and Aqua MODIS Land Cover Type (MCD12Q1) Version 6.1 data product (*Friedl and Sulla-Menashe*, 2022). Current research activities aimed at the application and further development of the model are described in Chapter 4. The simulations were conducted using a multi-scale nested approach that included both global- and regional-scale simulations coupled through boundary conditions at the boundaries of the regional model domain. This modelling approach therefore accounts for the effects of emission sources located both inside and outside the EMEP modelling domain.

Meteorological parameters for the model simulations were generated using operational analysis data from the European Centre for Medium-Range Weather Forecasts (*ECMWF*, 2026) and pre-processed with the Weather Research and Forecasting (WRF) modelling system (v3.7.1) (*WRF*, 2026). Three-dimensional atmospheric concentrations of chemical reactants and particulate matter required for simulating Hg and POP chemistry in the atmosphere were extracted from simulations performed with the community-based global chemistry transport model GEOS-Chem (v14.5.1) (*GEOS-Chem*, 2026). In addition, wind-driven resuspension of particle-bound heavy metals (Pb and Cd) from soil and seawater into the atmosphere was simulated using the updated dust preprocessor (*Ilyin et al.*, 2007; *Travnikov et al.*, 2025).

The most recent gridded emissions data for 2024 were prepared by CEIP for all assessed pollutants (Pb, Cd, Hg, B(a)P, B(b)F, B(k)F, IP, HCB, PCBs, and PCDD/Fs) for the entire EMEP domain based on the officially reported emissions (submission 2026), as described in Chapter 1. Additional emission parameters, including the vertical distribution and seasonal variation of heavy metal and POP emissions, as well as the chemical speciation of Hg emissions, were generated using approaches developed at MSC-E (see Section 1.5). Global-scale simulations used the UNEP Global Mercury Assessment 2018 inventory (*AMAP/UN Environment*, 2019), the global PAH emissions inventory from the Global Emission Modeling System (GEMS) of Peking University (*GEMS*, 2026; Dai et al., 2025), the congener-specific global PCB emissions inventory developed by *Breivik et al.* (2007), expert estimates of historical HCB emissions by *Shatalov et al.* (2010), and the latest global PCDD/F emissions inventory by *Song et al.* (2023).

3.2. Meteorological conditions in 2024

Meteorological conditions play an important role in the atmospheric dispersion and deposition of pollutants, determining their vertical mixing, transport pathways, chemical transformations, scavenging, and uptake by the surface. Air temperature and precipitation are among the most important parameters governing the processes responsible for pollutant behaviour, including atmospheric chemistry, gas-particle partitioning, removal, and re-emission. The spatial and temporal variation of air temperature and precipitation over the model domain is discussed below based on the model meteorological input and the annual Bulletin of the American Meteorological Society (*Blunden and Reagan*, 2025).

Annual mean surface air temperature varied zonally from above 20°C in the southernmost regions, including the Eastern Mediterranean, to below 0°C in the High Arctic (Fig. 3.1a). In Central and Southern Europe, annual mean temperatures generally ranged between 10 and 15°C, decreasing northeastward to about 5°C in Eastern Europe and around 0°C in Scandinavia and central Russia. Exceptions include mountainous regions, such as the Alps, the Caucasus, and the Himalayas, which are characterized by considerably lower temperatures. Monthly mean temperatures averaged over the EMEP countries ranged from approximately -5°C in winter to 20°C in summer (Fig. 3.1b). The domain-average temperature exhibited a more moderate seasonal cycle, with winter temperatures remaining close to 0°C owing to the influence of the warmer regions of North Africa and Asia.

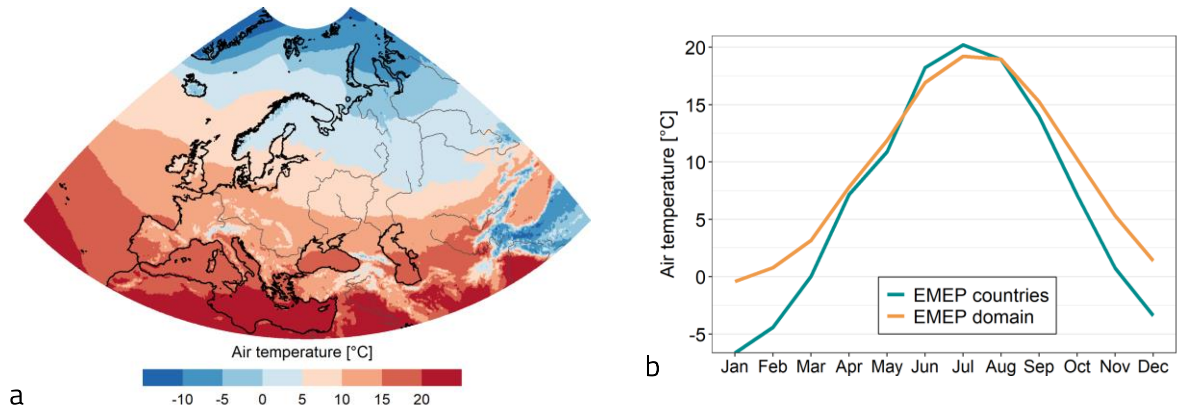


Fig. 3.1. *Spatial distribution of annual mean air temperature (a) and seasonal variation of monthly mean air temperature in the EMEP countries and for the entire EMEP domain (b) in 2024.*

Annual precipitation amounts generally ranged between 400 and 1000 mm over the EMEP countries, with a relatively uniform distribution of about 600-800 mm in Eastern Europe and Scandinavia and somewhat higher precipitation in parts of Central, Western, and Southern Europe (Fig. 3.2a). Significantly higher precipitation occurred in the mountainous regions of the Alps and the Caucasus, as well as along the windward coasts of Scandinavia, the British Isles, the Iberian Peninsula, and the Balkans. Much lower precipitation was typical of Central Asia, parts of the Mediterranean, and other southernmost regions of the domain. Seasonally, the domain-average monthly precipitation was distributed relatively evenly throughout the year, ranging from 45 to 55 mm, whereas monthly precipitation in the EMEP countries exhibited a pronounced summer peak, reaching up to 78 mm (Fig. 3.2b).

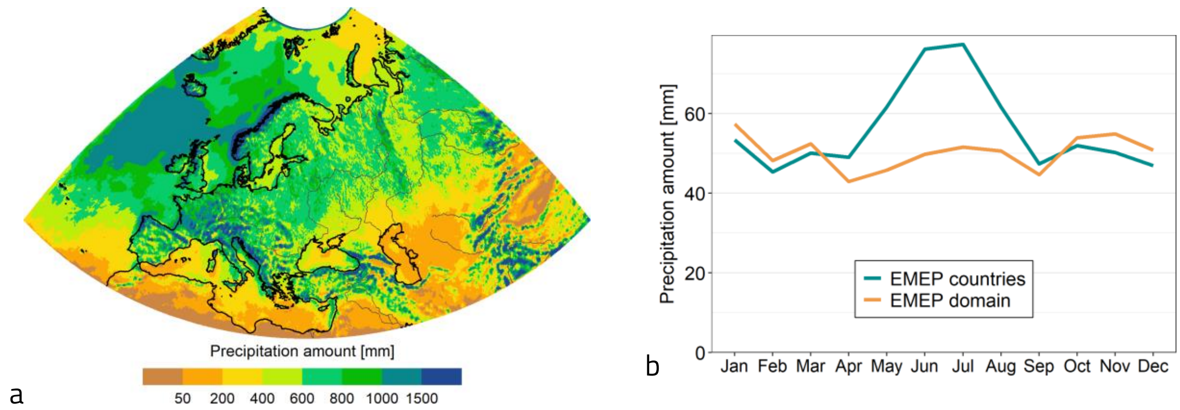


Fig. 3.2. *Spatial distribution of annual precipitation amounts (a) and seasonal variation of monthly mean precipitation in the EMEP countries and for the entire EMEP domain (b) in 2024.*

According to the *State of the Climate in 2024* bulletin of the American Meteorological Society (*Blunden and Reagan*, 2025) the year 2024 was exceptionally warm across Europe, with above-average temperatures recorded over almost the entire continent. The largest positive temperature anomalies occurred in Central and Eastern Europe and over the Balkan Peninsula, where annual mean temperatures were up to 3-4°C above the 1991-2020 climatological average (Fig. 3.3a). Western Europe experienced more moderate warming, while Iceland was the only region with below-average temperatures. Overall, 2024 ranked among the warmest years on record across all European subregions.

Annual precipitation amounts in 2024 were generally close to the long-term average over most of Europe (90% to 110% of normal), although substantial regional differences were observed (Fig. 3.3b). Wetter-than-normal conditions prevailed over Western and Central Europe, the Iberian Peninsula, and parts of the South Caucasus (up to 170% of normal). In contrast, drier-than-normal conditions affected much of Eastern Europe, the Nordic and Baltic countries (except Denmark and Norway), Türkiye, the Middle East, and parts of the Mediterranean region (as low as 50% of normal).

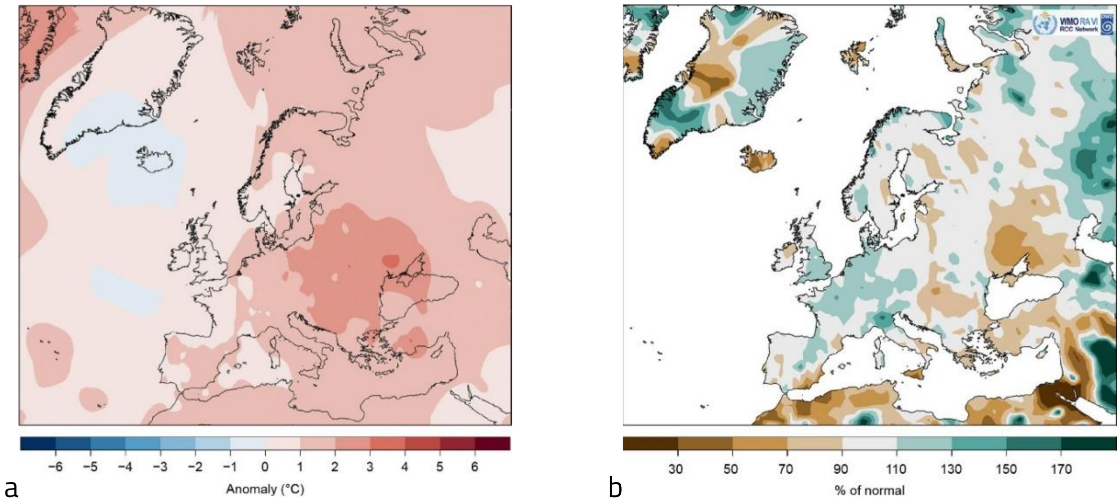


Fig. 3.3. *Annual mean temperature (a) and precipitation (b) anomalies in Europe in 2024, relative to the 1991–2020 reference period. Adapted from Blunden and Reagan (2025).*

3.3. Lead

Lead is a toxic airborne pollutant with adverse effects on human health, particularly on the nervous system, cardiovascular system, and child development (*Navas-Acien et al.*, 2007; *Lanphear et al.*, 2018). Once emitted to the atmosphere, it can be transported over long distances and deposited to terrestrial and aquatic ecosystems, where it accumulates and persists adversely affecting soil and aquatic microorganisms, plant growth, and wildlife through chronic toxicity and bioaccumulation (*Shahid et al.*, 2018; *Vijver et al.*, 2021). Lead is largely emitted to the atmosphere from industrial sources, road transport, power generation and other stationary combustion sources (Chapter 1). As it is transported predominantly in particulate form, its atmospheric behaviour is largely determined by the properties of atmospheric aerosols.

Lead concentrations in the ambient air of the EMEP countries varied over a wide range, from below 0.3 ng m^{-3} to above 20 ng m^{-3} (Fig. 3.4a). Generally, concentrations decrease from the southernmost regions of the domain to the north, with distinct hotspots in Central and Eastern Europe, Central Asia, as well as in some regions outside the EMEP countries, including Northern Africa and Asia. The highest concentrations are associated with the location of strong anthropogenic emission sources or with areas of intensive wind resuspension of dust from the ground. The highest average levels of Pb air concentrations are estimated for Czechia, Poland, Germany, the Netherlands, and Belgium, as well as for Uzbekistan and Turkmenistan. Seasonally, Pb concentrations showed a typical variation pattern, with elevated levels in winter and lower concentrations in summer, affected by the seasonality of anthropogenic emissions (Fig. 3.4b). Additionally, distinctive concentration peaks occurred in February and September, associated with intensive dust resuspension episodes in the Sahara (*CAMS*, 2024) and Central Asia (*NASA MODIS*, 2024), respectively.

Simulated Pb concentrations reproduce EMEP observations in the region reasonably well, demonstrating high spatial correlation (0.79) and overall agreement with measurements within a factor of 2 for 74% of measurement sites (Fig. 3.4a; Annex C, Table C1). Nevertheless, the model tends to overestimate observed concentrations by 53% on average with most significant overestimation in Central Europe.

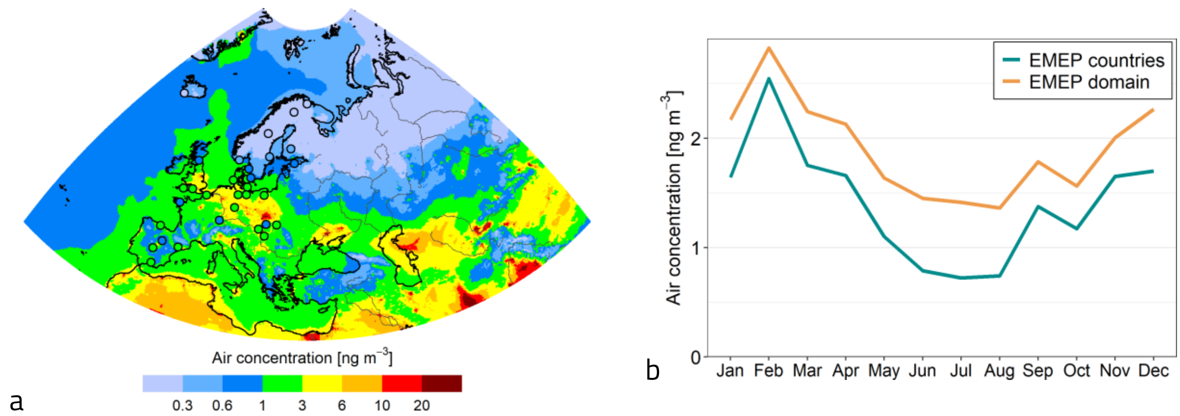


Fig. 3.4. *Annual mean air concentrations of Pb (circles on the map show observed values in the same colour scale) (a) and seasonal variation of mean Pb air concentrations in EMEP countries and for the entire EMEP domain (b) in 2024.*

Wet deposition of Pb, a prevailing removal mechanism for this pollutant from the atmosphere, varied in 2024 from low values below 0.05 kg km^{-2} y^{-1} in remote and arid areas to above 0.8 kg km^{-2} y^{-1} in regions with strong emissions accompanied by intensive precipitation (Fig. 3.5a). Elevated Pb wet deposition fluxes are characteristic of Central and Western Europe, northern Italy, and the Western Balkans, as well as some parts of northern Africa, the Middle East, and Asia. EMEP countries with the highest average Pb wet deposition include Bosnia and Herzegovina, the Netherlands, Poland, Montenegro, and Monaco. In contrast, the lowest wet deposition is estimated for northern countries – Norway, Iceland, Sweden, Russia, and Finland. The seasonal pattern of monthly average wet deposition shows a pronounced maximum in spring and a minimum in late summer, mainly following the seasonality of anthropogenic and secondary emissions (Fig. 3.5b). The maximum in the EMEP countries is somewhat shifted from February-March to April-May compared with that for the whole EMEP domain.

Simulated Pb wet deposition agrees reasonably well with observations at EMEP measurement sites, with a spatial correlation coefficient of 0.70 and a mean bias of -16% (Fig. 3.5a; Annex C, Table C1). The model slightly underestimates wet deposition on average, while 74% of the model-measurement pairs are within a factor of two.

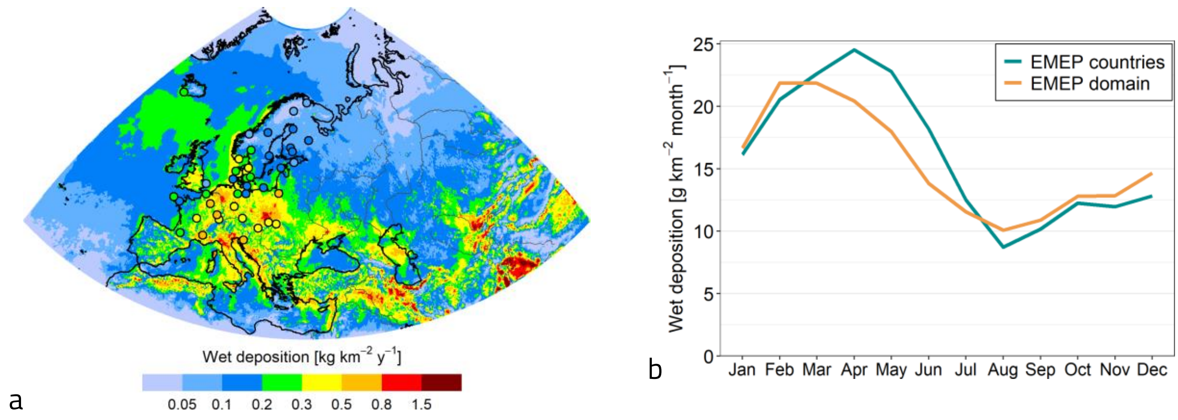


Fig. 3.5. *Annual wet deposition flux of Pb (circles on the map show observed values in the same colour scale) (a) and seasonal variation of mean Pb wet deposition in EMEP countries and for the entire EMEP domain (b) in 2024.*

The spatial pattern of Pb total deposition generally follows that of wet deposition, with elevated fluxes in Central and Western Europe, northern Italy, and the Western Balkans, as well as in major source regions outside the EMEP countries (Fig. 3.6a). However, the contribution of dry deposition enhances total deposition in and around major emission source regions, resulting in more pronounced spatial gradients and local hotspots compared with wet deposition. The highest country-average total deposition is estimated for Poland, Czechia, Bosnia and Herzegovina, Germany, Slovakia, and the Netherlands. Seasonally, total deposition closely follows the variation of wet deposition, with elevated levels in late winter and spring, a pronounced maximum in April, and a gradual decrease towards a minimum in August (Fig. 3.6b). The seasonal variation is more pronounced in the EMEP countries than for the entire EMEP domain.

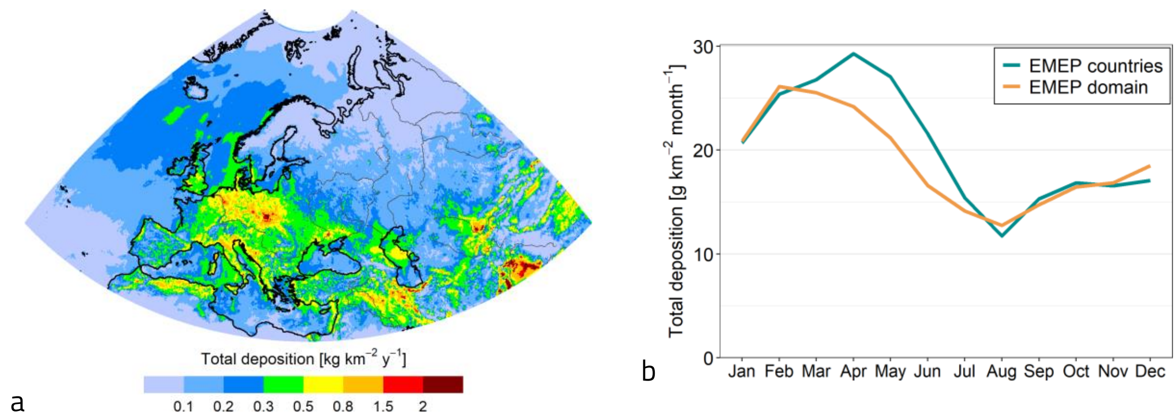


Fig. 3.6. *Annual total deposition flux of Pb (a) and seasonal variation of mean Pb deposition in EMEP countries and for the entire EMEP domain (b) in 2024.*

Deposition of Pb and other pollutants to EMEP countries originates from a variety of primary anthropogenic and secondary sources located both within and outside the EMEP region, and their relative contributions differ among countries (Fig. 3.7). The highest Pb deposition levels are commonly associated with large contributions from EMEP primary sources, with the largest contributions estimated for Poland, Bosnia and Herzegovina, Germany, and Belgium. Similar or even larger contributions to Pb deposition are made by secondary emissions caused by dust resuspension, which are most significant in Czechia, Poland, the Netherlands, Germany, and Slovakia. In addition, non-EMEP anthropogenic and secondary sources, including emissions from Africa and Asia, as well as Saharan dust resuspension outside the model domain, contribute considerably to Pb deposition in some countries, such as Montenegro, Albania, Cyprus, Monaco, North Macedonia, and Bosnia and Herzegovina.

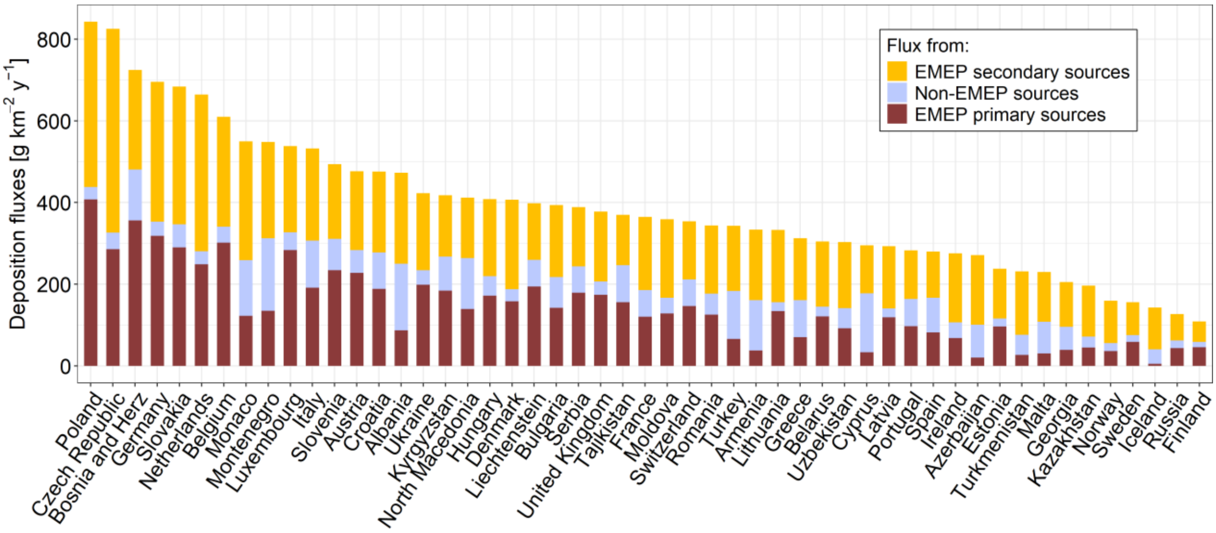


Fig. 3.7. *Country-average deposition of Pb to EMEP countries from EMEP primary anthropogenic, secondary and non-EMEP emission sources in 2024.*

The anthropogenic component of Pb deposition from EMEP primary sources comprises contributions from domestic emissions and emissions from other EMEP countries, the latter representing transboundary transport of pollution. Their relative shares differ significantly among countries (Fig. 3.8a). The largest anthropogenic deposition fluxes can be driven primarily by domestic emissions, as in Poland, Bosnia and Herzegovina, and Germany, or by transboundary transport from other EMEP countries, as in Belgium, Slovakia, Czechia, and Luxembourg. The largest relative contribution of transboundary transport is characteristic of smaller countries with relatively low national emissions, such as Monaco, Liechtenstein, Kyrgyzstan, Montenegro, and Moldova (Fig. 3.8b). In contrast, the dominant contribution of domestic sources is typical of countries with large national emissions and/or those geographically more isolated from other EMEP countries, such as Poland, Spain, the United Kingdom, Italy, and Portugal. Overall, the contribution of transboundary transport exceeds that of domestic sources in 39 of the 51 EMEP countries.

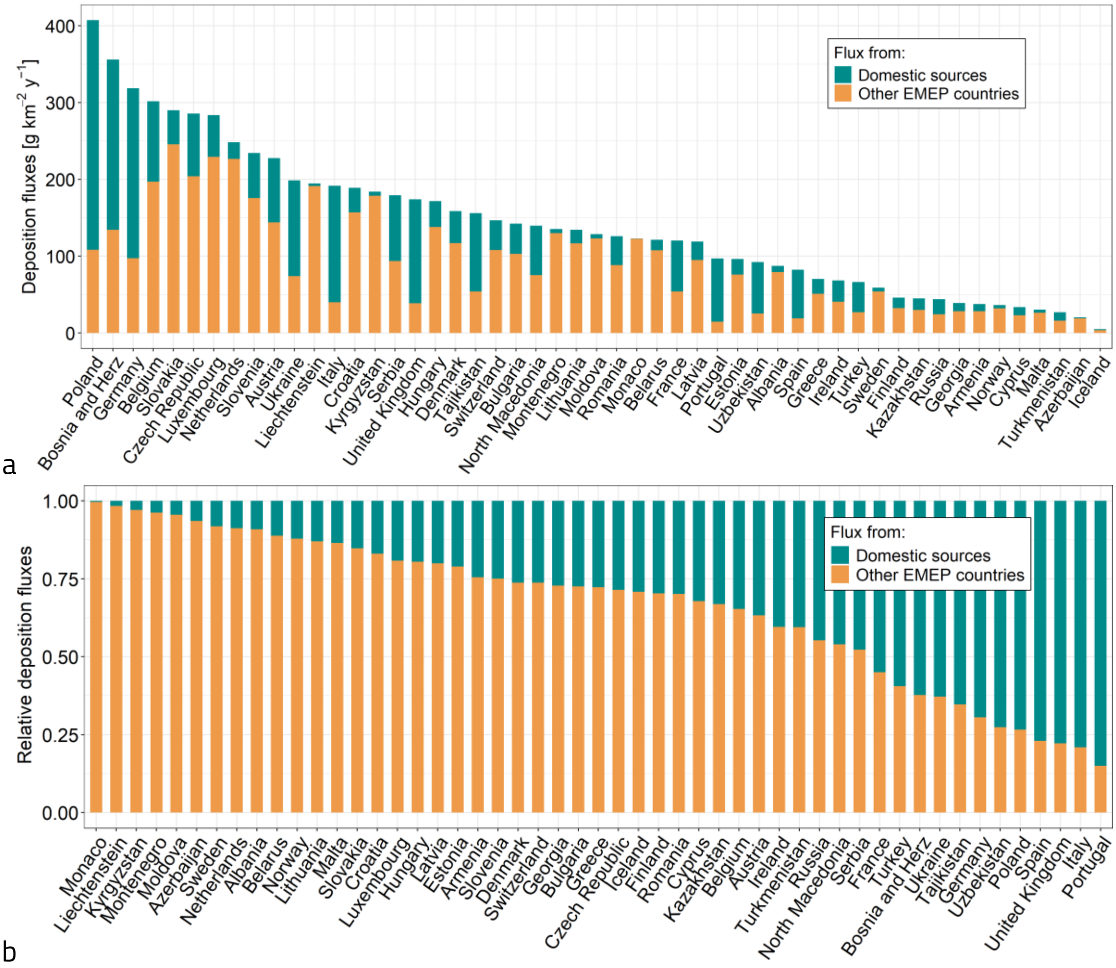


Fig. 3.8. *Country-average Pb anthropogenic deposition to EMEP countries (a) and relative contribution of domestic and foreign sources to Pb anthropogenic deposition in EMEP countries (b) in 2024.*

3.4. Cadmium

Cadmium is a toxic airborne pollutant that poses serious risks to human health, particularly through kidney damage, skeletal disorders, and cancer (*Xu et al.*, 2025). Atmospheric deposition leads to its accumulation in terrestrial and aquatic environments, where it can disrupt soil biological activity, impair plant growth, and cause chronic toxicity to aquatic and terrestrial organisms (*Haider et al.*, 2021; *Morais et al.*, 2026). The main emission sources of Cd to the atmosphere include industrial processes, power generation, other stationary combustion sources, and solvent use (Chapter 1). In the atmosphere, Cd is transported as part of atmospheric aerosols, which largely determine its behaviour and properties.

The spatial pattern of Cd air concentrations reflects the distribution of major source regions, characterized by anthropogenic emissions in the temperate latitudes of Western, Central, and Eastern Europe, wind-driven re-emission in Central Asia and Northern Africa, as well as both direct and secondary emissions in the South and East Asian parts of the domain (Fig. 3.9a). The highest Cd concentrations in hotspots in Europe and Asia exceed 0.5 ng m^{-3}, whereas the lowest concentrations in Scandinavia and Northern Russia are below 0.01 ng m^{-3}. Among EMEP countries, the highest average Cd concentrations were estimated for Serbia, the Netherlands, Uzbekistan, Poland, Belgium, and Hungary, whereas the lowest average concentrations were estimated for Iceland, Finland, Norway, and Sweden. Seasonal concentration changes follow changes in anthropogenic emissions, with higher levels in winter and the lowest concentrations in summer (Fig. 3.9b). Domain-average concentrations were also strongly affected by Saharan dust outbreaks in February (*CAMS*, 2024), whose influence was less pronounced in the EMEP countries.

Simulated Cd air concentrations agree well with observations at EMEP measurement sites (Fig. 3.9a; Annex C, Table C1), demonstrating a high spatial correlation (0.79) and a low average relative bias (26%). The model tends to overpredict concentrations at some sites in Central Europe; nevertheless, modelled concentrations are within a factor of two of the measurements at 79% of the available sites.

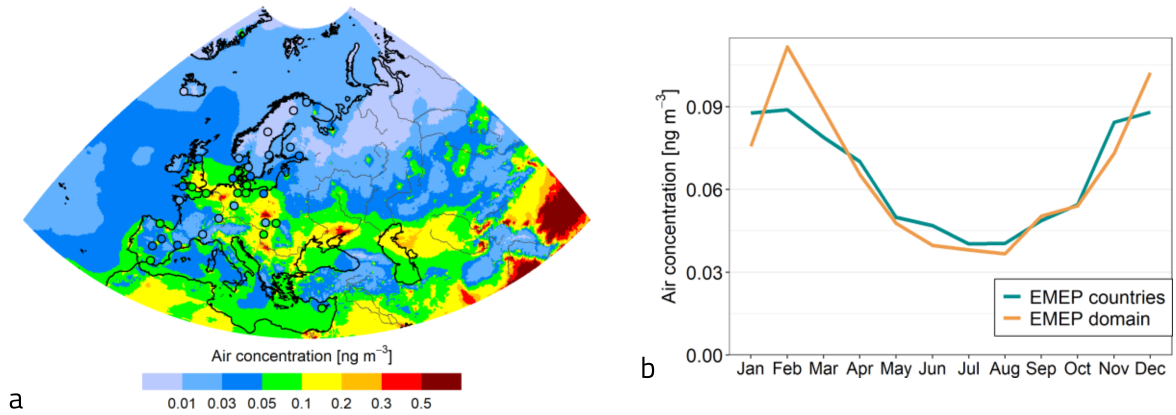


Fig. 3.9. *Annual mean air concentrations of Cd (circles on the map show observed values in the same colour scale) (a) and seasonal variation of mean Cd air concentrations in EMEP countries and for the entire EMEP domain (b) in 2024.*

Wet deposition of Cd shows pronounced spatial gradients, with the highest fluxes in Central and Western Europe, northern Italy, the Western Balkans, and some parts of Eastern Europe, as well as in some source regions outside the EMEP countries, reflecting the distribution of major anthropogenic emission source regions and precipitation patterns (Fig. 3.10a). The countries with the highest average Cd wet deposition (above 15 g km^{-2} y^{-1}) are Bosnia and Herzegovina, Montenegro, the Netherlands, Albania, Serbia, and Bulgaria. Lower deposition levels (below 5 g km^{-2} y^{-1}) are characteristic of Scandinavia, northern Russia, and other remote regions. Seasonally, monthly average Cd wet deposition is highest in late winter and spring and decreases considerably during summer, reaching a minimum in July-August (Fig. 3.10b). The seasonal variation is more pronounced in the EMEP countries, with a distinct maximum in March, while domain-average deposition shows a broader maximum in February-March.

The model demonstrates moderate performance in simulating Cd wet deposition compared with EMEP measurements. Despite an average underestimation, with a negative bias of -35%, it generally reproduces the spatial variability of observed wet deposition, with a correlation coefficient of 0.54 (Annex C, Table C1). The model reproduces many of the available observations across Europe but underestimates some measurements in Western and Northern Europe (Fig. 3.10a). Nevertheless, at almost 70% of the measurement sites, modelled deposition is within a factor of two of the observations.

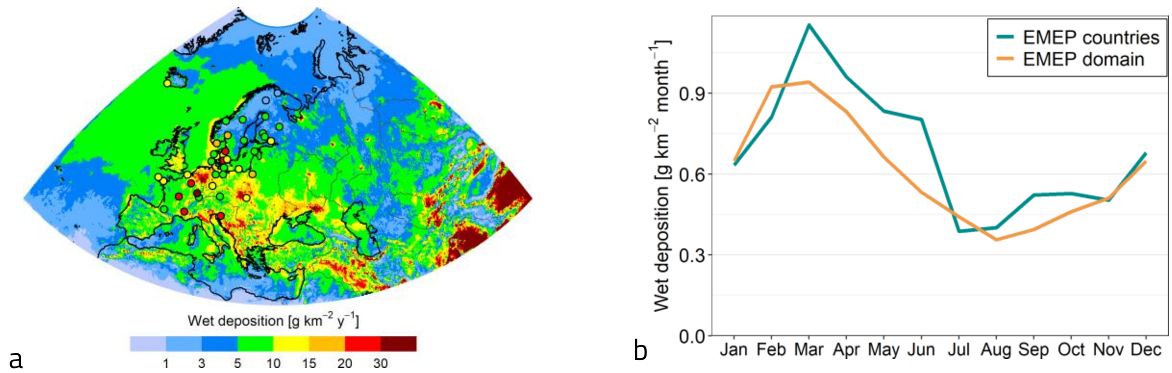


Fig. 3.10. *Annual wet deposition flux of Cd (circles on the map show observed values in the same colour scale) (a) and seasonal variation of mean Cd wet deposition in EMEP countries and for the entire EMEP domain (b) in 2024.*

The spatial distribution of Cd total deposition is characterized by elevated fluxes over large parts of Central and Western Europe, northern Italy, and the Western Balkans, with pronounced hotspots in major source regions (Fig. 3.11a). High deposition fluxes are also estimated for some regions outside the EMEP countries, particularly in the eastern and southeastern parts of the model domain. The highest country-average total deposition is estimated for Bosnia and Herzegovina, Poland, the Netherlands, Serbia, Belgium, Slovakia, Montenegro, and Germany. The seasonal variation of total deposition is similar to that of wet deposition, with elevated levels in late winter and spring followed by a considerable decrease towards summer (Fig. 3.11b). For the EMEP countries, total deposition reaches a pronounced maximum in March and a minimum in July-August, while the seasonal cycle averaged over the entire EMEP domain is smoother, with a broader maximum in February-March.

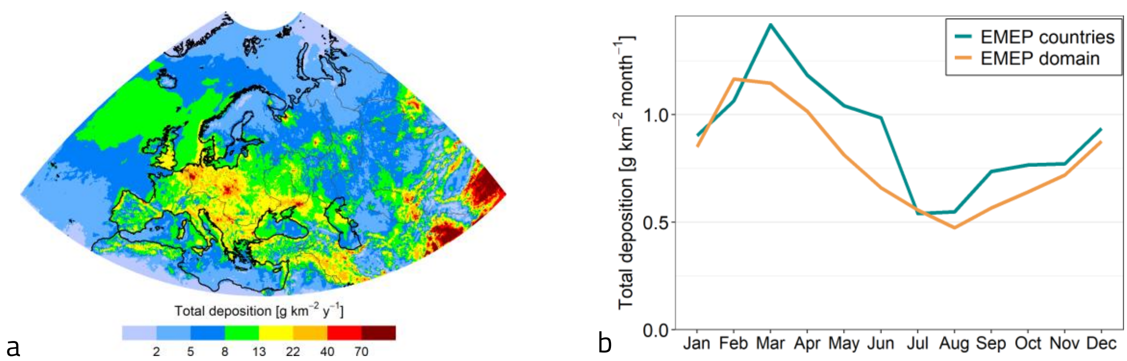


Fig. 3.11. *Annual deposition flux of Cd (a) and seasonal variation of mean Cd deposition in EMEP countries and for the entire EMEP domain (b) in 2024.*

Similar to Pb, the relative contributions of different source types to Cd deposition vary considerably among the EMEP countries (Fig. 3.12). EMEP primary sources dominate Cd deposition in most countries and make particularly large contributions in Poland, Bosnia and Herzegovina, Serbia, Belgium, Slovakia, and Germany. Secondary and natural sources also contribute substantially to Cd deposition, with their largest contributions estimated for the Netherlands, Moldova, Poland, and Ukraine. The contribution of non-EMEP sources becomes also important in some countries, particularly Montenegro, Albania, North Macedonia, Bosnia and Herzegovina and other countries located closer to the southern and eastern boundaries of the EMEP region.

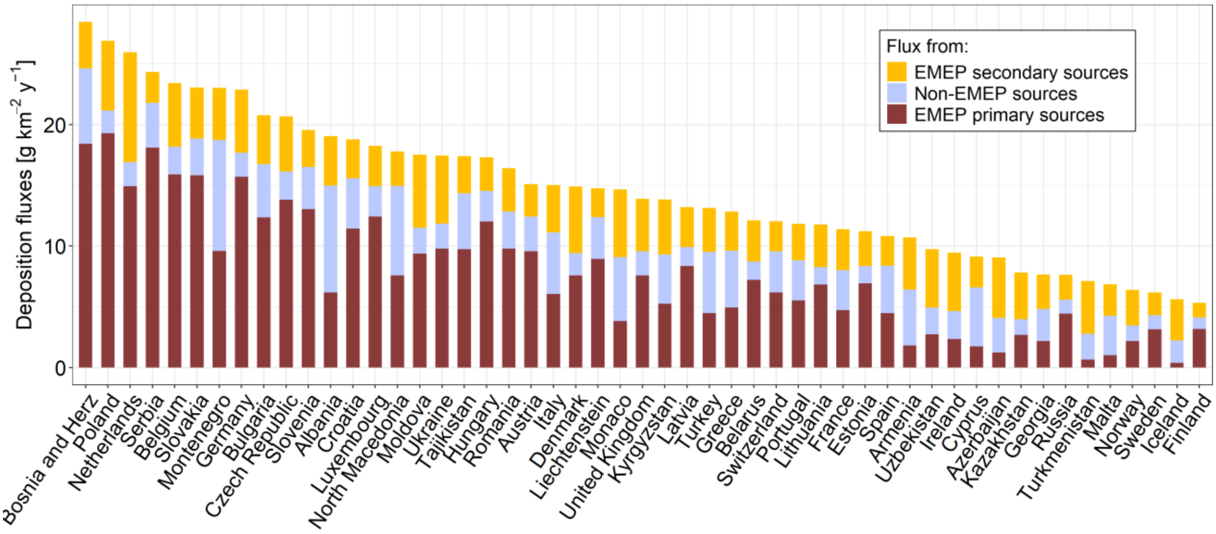


Fig. 3.12. *Country-average deposition of Cd to EMEP countries from EMEP primary anthropogenic, secondary and non-EMEP emission sources in 2024.*

The balance between domestic and transboundary contributions to Cd deposition varies considerably among EMEP countries (Fig. 3.13a). In absolute terms, domestic emissions make particularly large contributions in Poland, Bosnia and Herzegovina, Serbia, Germany, Belgium, and the Netherlands, whereas deposition from other EMEP countries is especially important in Belgium, Slovakia, Germany, Czechia, Luxembourg, and several other Central European countries. Transboundary transport accounts for the majority of Cd deposition from EMEP primary sources in most countries, reaching particularly high shares in Liechtenstein, Monaco, Kyrgyzstan, Malta, Turkmenistan, and Lithuania. In contrast, domestic sources prevail in Portugal, Spain, the United Kingdom, Russia, Germany, Poland, Serbia, and Italy (Fig. 3.13b).

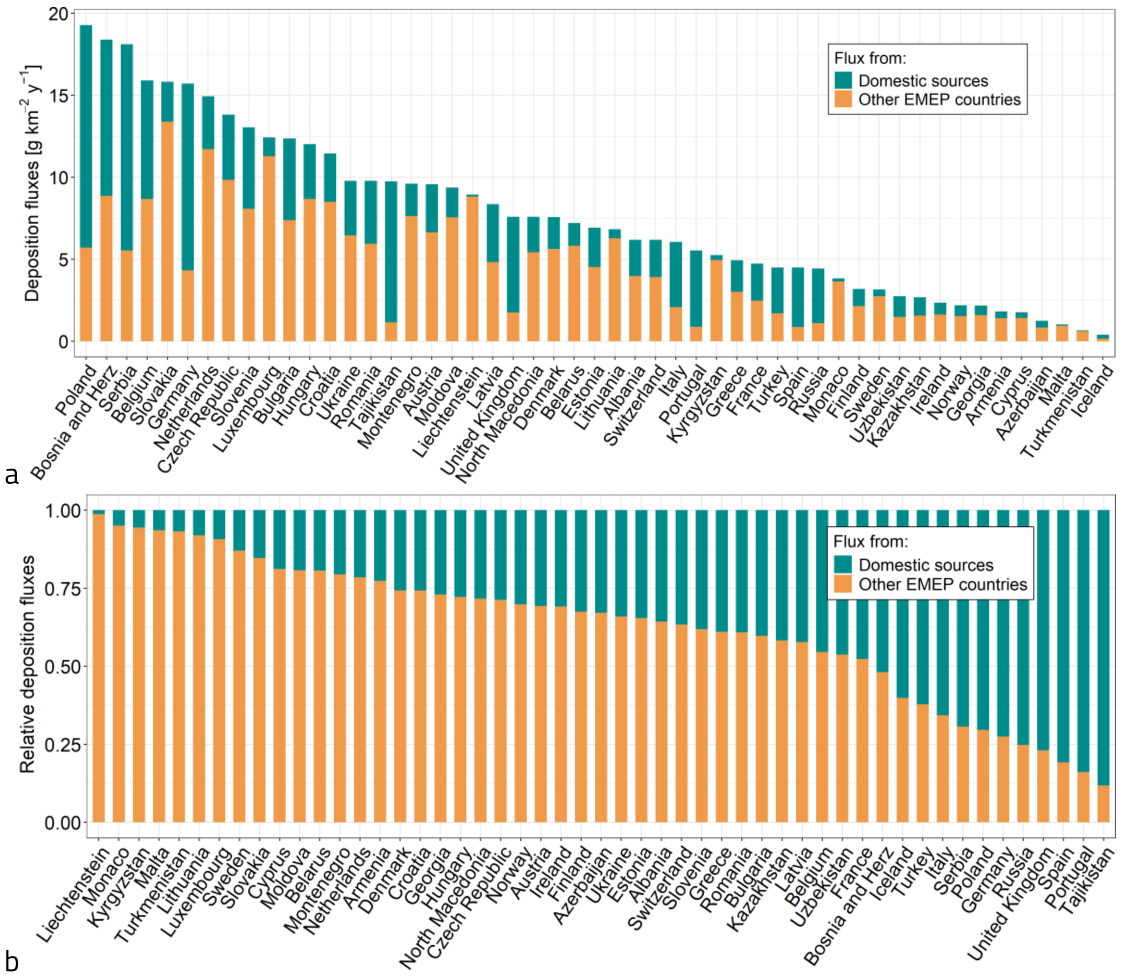


Fig. 3.13. *Country-average Cd anthropogenic deposition to EMEP countries (a) and relative contribution of domestic and foreign sources to Cd anthropogenic deposition in EMEP countries (b) in 2024.*

3.5. Mercury

Mercury is liquid at normal temperature and pressure, which gives it unique properties among other metals. Its predominant atmospheric form, elemental mercury (Hg^0), has a long atmospheric lifetime, which enables global transport of Hg. Therefore, Hg can reach regions far from emission source, potentially affecting ecosystems and communities that are not directly responsible for the original emissions. Through a series of physicochemical transformations, Hg^0 can be converted to oxidized and particulate atmospheric Hg forms, although these processes are also reversible. These Hg forms are subsequently removed from the atmosphere through wet and dry deposition and transferred to aquatic and terrestrial environments. Consequently, the atmospheric lifetime of Hg^0, together with its transformation into other Hg species, controls the transport, deposition, and the overall environmental fate of Hg.

The variability of atmospheric Hg^0 concentrations is relatively small in comparison to other pollutants (Fig. 3.14a). This is caused by the relatively small contribution of local emissions in comparison to the global background Hg^0 concentrations. Although regional variability is small, differences exist between EMEP countries. Values above 1.6 ng m^{-3} are noted for Italy, Greece, Bulgaria, Ukraine, Russia, Uzbekistan, Kyrgyzstan, Tajikistan, Pakistan, Iraq, and Iran. On the other hand, Hg^0 concentrations lower than 1.2 ng m^{-3} are seen in Switzerland, the central part of France, Finland, Ireland, United Kingdom, Scandinavia, Baltic states, as well as in remote regions (e.g. the Arctic).

For the whole EMEP region, the average Hg^0 concentration for 2024 is 1.2 ng m^{-3}. Compared with 2023, when the average Hg^0 concentration across the EMEP region was 1.3 ng m^{-3} (Travnikov et al., 2025), the 2024 average is slightly lower. No major disagreements were found between modelled Hg^0 concentrations and Hg^0 measurements recorded at the EMEP measurement stations (N = 15, circles in Fig. 3.14a). Mean bias for modelled versus measured Hg^0 concentrations amounted to −10%. The largest difference between modelled and measured results amounted to 0.4 ng m^{-3}, at the EMEP measurement station Waldhof (Germany). This mismatch may be related to nearby local emission sources that were not represented in the emission inventory used by the model. When examining the seasonality of Hg^0 (Fig. 3.14b), the amplitude of seasonal variation is very small, with average monthly Hg^0 concentrations ranging from 1.1 to 1.3 ng m^{-3}. Again, this reflects the fact that global background Hg^0 concentrations are a major contributor to trends observed in the EMEP region, effectively dampening the seasonality of local Hg^0 emissions.

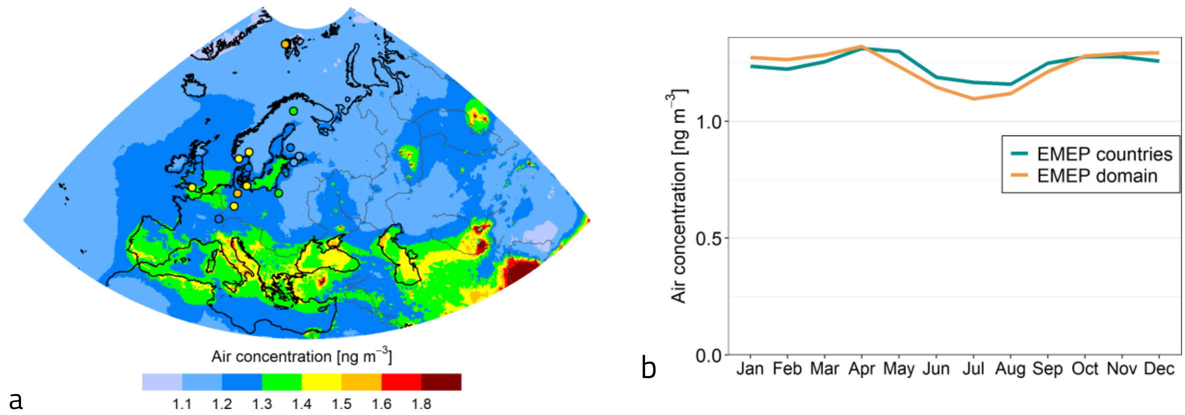


Fig. 3.14. *Annual mean air concentrations of Hg^0 (circles on the map show observed values in the same colour scale) (a) and seasonal variation of mean air Hg^0 concentrations in EMEP countries and for the entire EMEP domain (b) in 2024.*

Mercury deposits into terrestrial an aquatic environment through wet and dry deposition; combined deposition is referred to as total deposition. The rate of Hg deposition is the fastest for oxidized and particulate forms of Hg, which contribute substantially to wet deposition fluxes of atmospheric Hg. In contrast, the uptake of Hg^0 by vegetation is the major pathway contributing to dry deposition fluxes. Oxidized and particulate forms of atmospheric Hg are either directly emitted to the atmosphere or produced through redox reactions from Hg^0. Therefore, the spatial distribution of Hg deposition depends on several factors, including the spatial distribution of emissions, meteorological variability, and the distribution of areas where atmospheric oxidation is particularly intensive.

The spatial pattern of Hg wet deposition (Fig. 3.15a) roughly reflects the combined influence of high precipitation amounts and elevated atmospheric Hg concentrations. This pattern is particularly evident in certain mountainous areas in the EMEP region, such as the Pyrenees, the Caucasus, and parts of the Alps, where wet deposition values are higher than in surrounding lowland areas. Overall, the spatial pattern is similar to that of Hg total deposition (further details are provided in the discussion on Hg total deposition). The modelling results generally overestimate Hg wet deposition measured at the EMEP measurement stations (N = 22, shown as circles in Fig. 3.15a), with an overestimation by approximately a factor of two. The overprediction is associated with uncertainties in the model's Hg chemical scheme and the applied speciation scheme for anthropogenic Hg emissions. Future model developments will therefore focus on improving the representation of atmospheric Hg chemistry. The largest difference between modeled and measured values was 10 g km^{-2} y^{-1}, at the EMEP measurement station Iskrba, Slovenia. Again, this difference may be related to missed local emission sources or uncertainties in simulated precipitation amount. The seasonal pattern of Hg wet deposition (Fig. 3.15b) indicates higher modelled values (above 0.6 g km^{-2} month^{-1}) for spring and summer months (March to August), and lower modelled values for autumn and winter months (September to February).

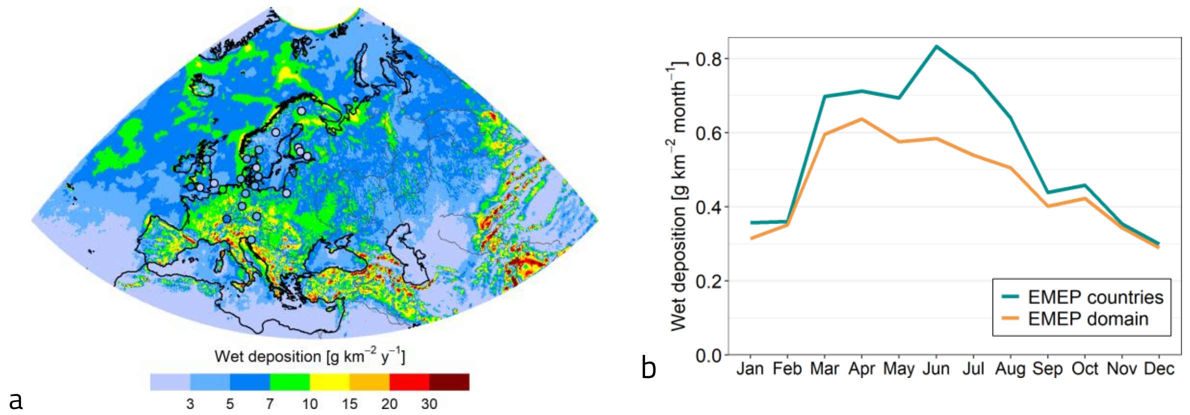
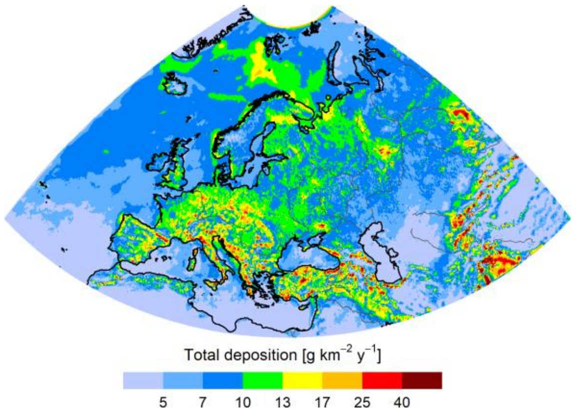


Fig. 3.15. *Annual wet deposition flux of Hg (circles on the map show observed values in the same colour scale) (a) and seasonality of mean Hg wet deposition in EMEP countries and EMEP domain (b) in 2024.*

The highest total Hg deposition fluxes (Fig. 3.16a, higher than 40 g km^{-2} y^{-1}) were modelled for certain mountain ranges like the Pyrenees, Caucasus, and parts of alps, reflecting the wet deposition and precipitation patterns. Still, places with high anthropogenic Hg emissions also exhibit high total Hg deposition values. Namely, parts of Russia, Armenia, Georgia, Ukraine, Uzbekistan, and Türkiye. Relatively high total Hg deposition fluxes, exceeding 25 g km^{-2} y^{-1}, were also modelled for Central and Southern Europe, including parts of France, Germany, Poland, Czechia, Slovakia, Romania, Italy, Spain, Croatia, Bosnia and Herzegovina, and Bulgaria. The high Arctic also shows enhanced total Hg deposition, particularly in spring. This increase is associated with intensified oxidation and deposition of Hg^0 during Atmospheric Mercury Depletion Events (AMDEs). However, a substantial fraction of the mercury deposited onto snow is subsequently re-emitted back to the atmosphere. The seasonal distribution of Hg total deposition (Fig. 3.16b) indicates that highest values (above 0.8 g km^{-2} month^{-1}) are modelled for spring and summer months (March to August), while lower Hg total deposition was modelled for autumn and winter months (September to February). Overall, wet and total Hg deposition show comparable seasonal behaviour. The amplitude of seasonal variation for both wet and total deposition exceeds the seasonal variation amplitude of Hg^0 concentration, which indicates that Hg deposition is driven by more local factors than Hg^0 concentration.



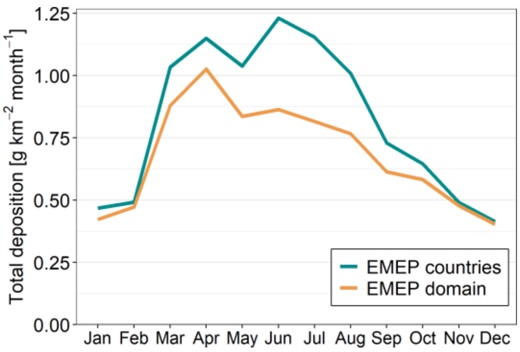


Fig. 3.16. *Annual total deposition flux of Hg (a) and seasonality of mean Hg total deposition in EMEP countries and EMEP domain (b) in 2024.*

The model assessment of long-range Hg transport shows that Hg pollution across the EMEP domain is driven mainly by transboundary inflow of globally dispersed Hg, rather than by primary and secondary Hg sources within the EMEP region itself. This reflects the global character of Hg pollution: emissions released in one region can contribute to deposition far beyond national borders. Individual countries therefore contribute not only to Hg deposition within their own territories, but also to deposition in other countries. The magnitude of this contribution of a specific EMEP country to transboundary pollution depends on national emission levels, country size, and geographical position.

For 2024, Montenegro is the largest recipient of transboundary Hg deposition per km^2 (Fig. 3.17); Bosnia and Herzegovina, Liechtenstein, and Albania are the only other recipients of transboundary Hg deposition fluxes above 15 g km^{-2} y^{-1}. Non-EMEP countries are the largest contributors to the transboundary Hg deposition (more than 50 % of contribution for all EMEP countries). The only countries that have more than 40 % of contribution from EMEP countries are Czechia and Poland. For 34 EMEP countries, transboundary transport from non-EMEP sources contributed to more than 75% of the deposition flux. The impact of regional secondary/natural sources is insignificant, contributing less than 3% to the deposition flux for all EMEP countries.

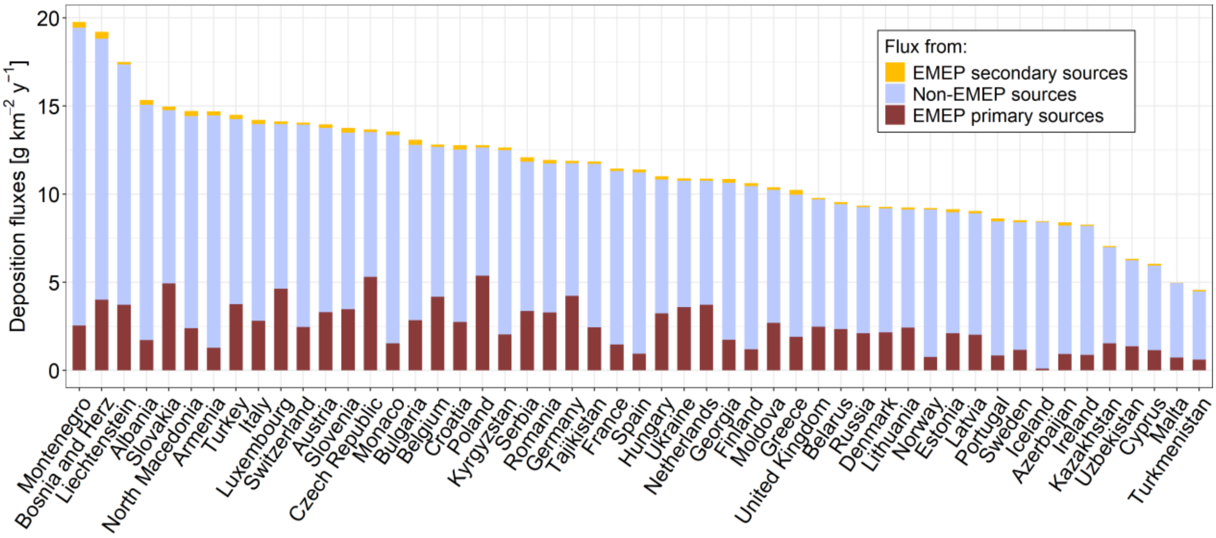
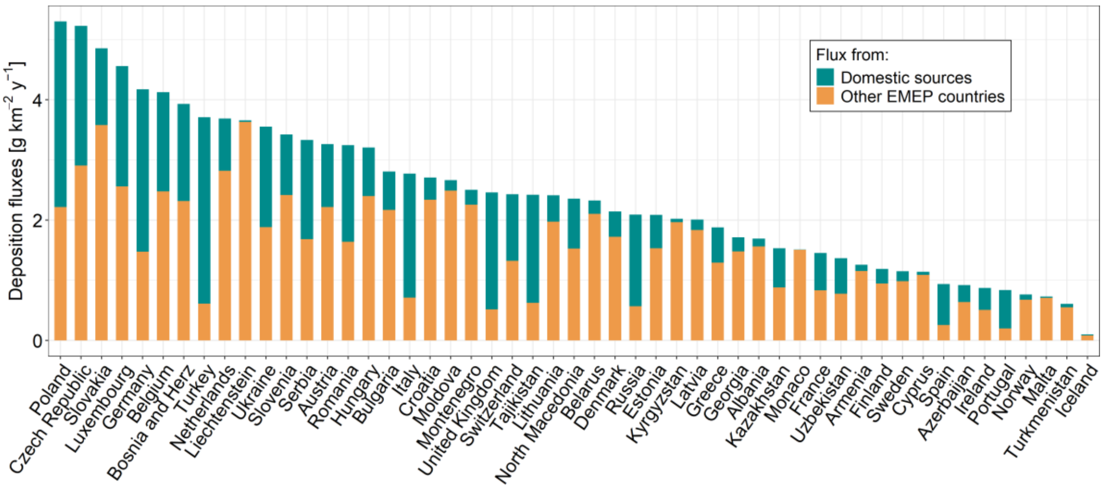
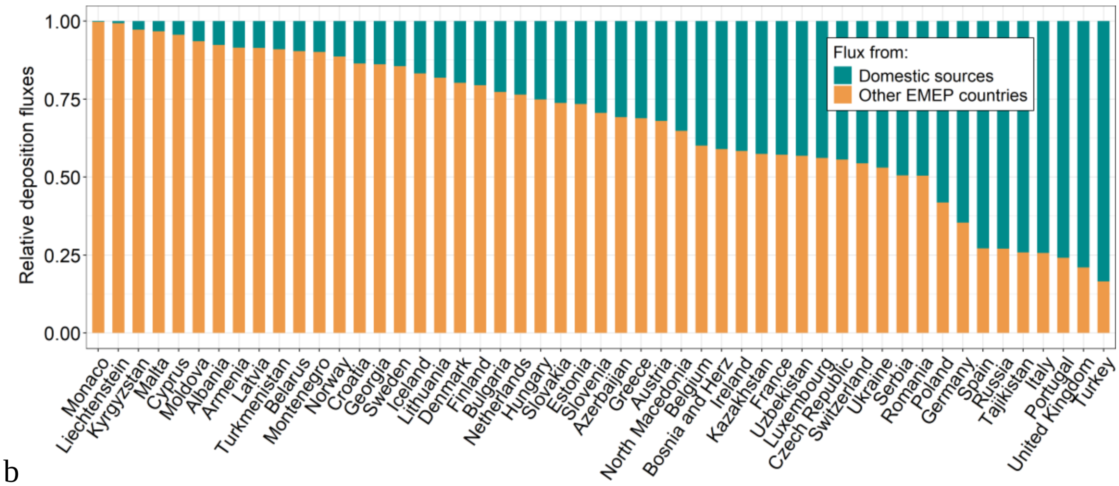


Fig. 3.17. *Country-average deposition of Hg to EMEP countries from EMEP primary anthropogenic, secondary and non-EMEP emission sources in 2024.*



a



b

Fig. 3.18. *Country-average Hg anthropogenic deposition to EMEP countries (a) and relative contribution of domestic and foreign sources to Hg anthropogenic deposition in EMEP countries (b) in 2024.*

When considering only Hg deposition originating within the EMEP countries (Fig. 3.18a), most countries received a larger fraction of their Hg deposition from emissions in other EMEP countries than from domestic emissions. In 42 countries, contributions from other countries of the region accounted for more than 50% of total EMEP-origin deposition. Countries where domestic sources contributed more than other EMEP countries generally had relatively high national Hg emissions, including Czechia, Serbia, Poland, Germany, Italy, Spain, Portugal, Russia, Tajikistan, the United Kingdom, and Türkiye. By contrast, countries with low national emissions, such as Monaco, Liechtenstein, Kyrgyzstan, Malta, and Cyprus, showed almost entirely transboundary EMEP-origin Hg deposition, with contributions from other EMEP countries approaching 100% (Fig. 3.18b).

3.6. Polycyclic Aromatic Hydrocarbons (PAHs)

Polycyclic Aromatic Hydrocarbons (PAHs) are organic compounds composed of two or more fused aromatic rings, formed primarily through the incomplete combustion of fossil fuels, biomass, and other carbon-based materials. While natural processes such as wildfires and volcanic activity contribute to their formation, anthropogenic sources, including industrial emissions, vehicular exhaust, and residential heating, dominate environment levels. Their chemical stability and hydrophobicity allow PAHs to persist in soils and sediments, and bioaccumulate in aquatic organisms, posing significant health risks, as several are mutagenic, teratogenic, or carcinogenic. This section presents the model assessment of pollution by four PAHs – B(a)P, B(b)F, B(k)F, and IP – that are included in the POP Protocol.

Figure 3.19a shows the spatial distribution of average annual modelled atmospheric concentrations of the sum of four PAHs across the EMEP domain. As in previous years, the highest values remain concentrated in Central and Eastern Europe: levels above 1.5 ng m^{-3} persist across Poland and Czechia, as well as in certain areas of Türkiye, Serbia, northern Italy, and other countries, with peaks exceeding 7 ng m^{-3} in southern Poland and pronounced hotspots near the Dardanelles and Bosphorus straits. Concentrations stay moderate across much of Central and Eastern Europe, and lower across Northern and Western Europe, especially in Norway, Sweden, France, the United Kingdom, and Spain, a pattern essentially unchanged from 2023. Seasonal variation also follows the established cycle, with peaks in winter due to increased residential combustion emissions and a drop to the lowest values in summer owing to decreased emissions and enhanced atmospheric degradation (Fig. 3.19b). Also, December shows higher concentrations for EMEP countries, a departure from the more evenly matched December-January levels seen in previous years.

Modelled air concentrations of the sum of four PAHs were compared against observations at 16 sites in the United Kingdom, Norway, Sweden, Finland, Poland, France and Czechia. The model reproduced measured concentrations well, with a spatial correlation of 0.81 (Fig. 3.19a; Annex C,

Table C1). Across these sites, the mean relative bias is slightly negative (-7%), indicating a modest underestimation of the observed concentrations.

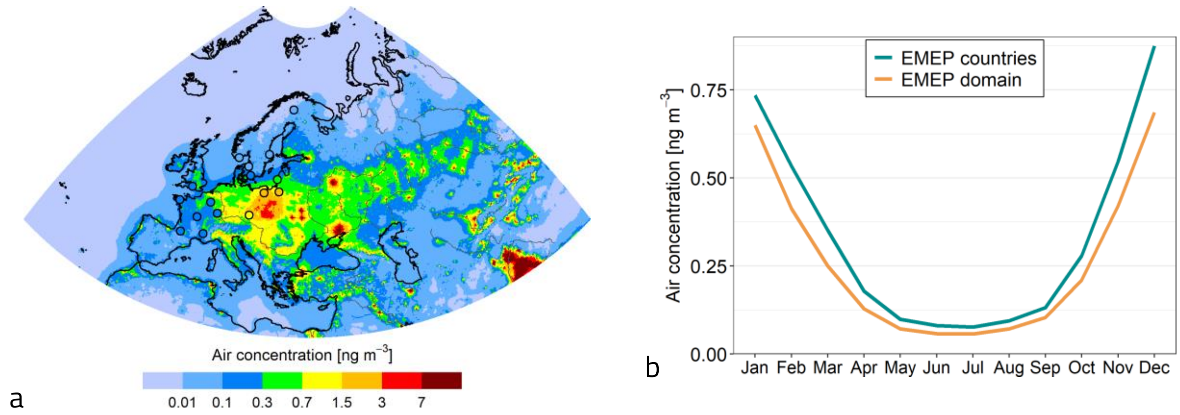


Fig. 3.19. *Annual mean air concentrations the sum of 4 PAHs (circles on the map show observed values in the same colour scale) (a) and seasonal variation of the sum of 4 PAHs air concentrations in EMEP countries and for the entire EMEP domain (b) in 2024.*

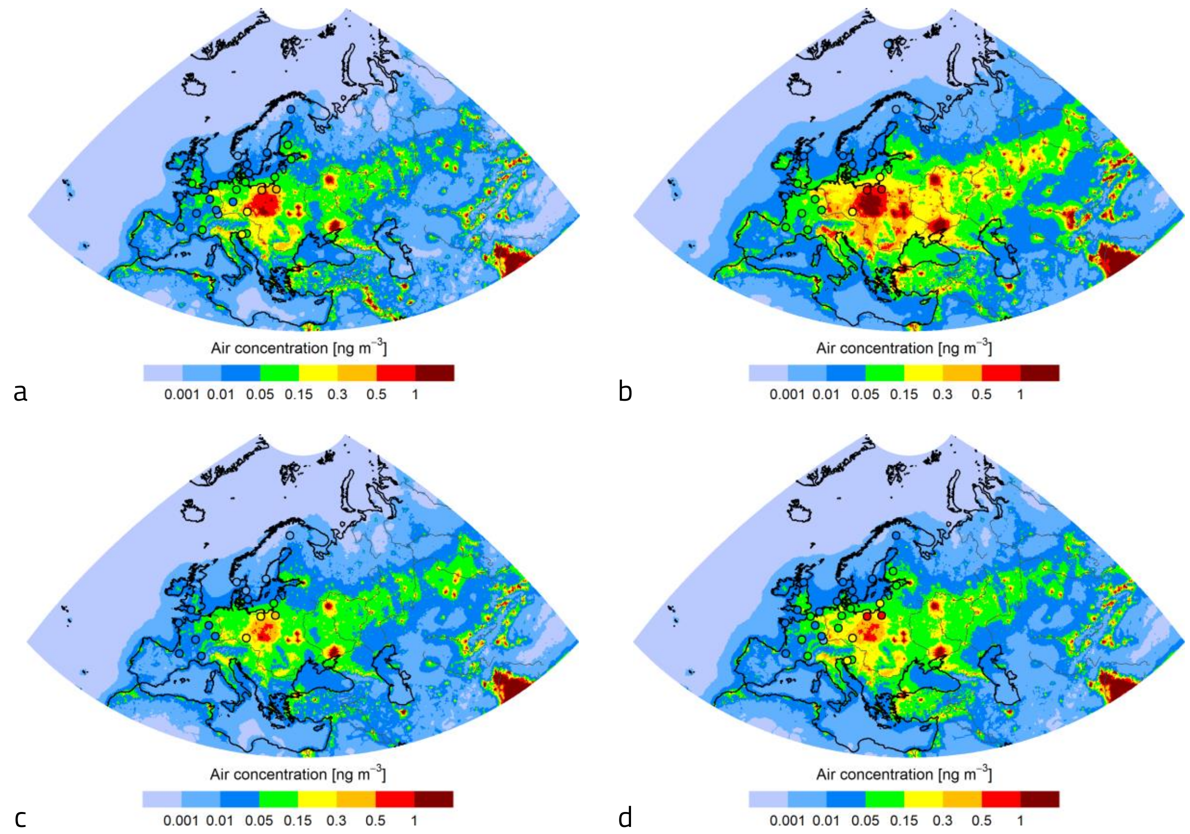
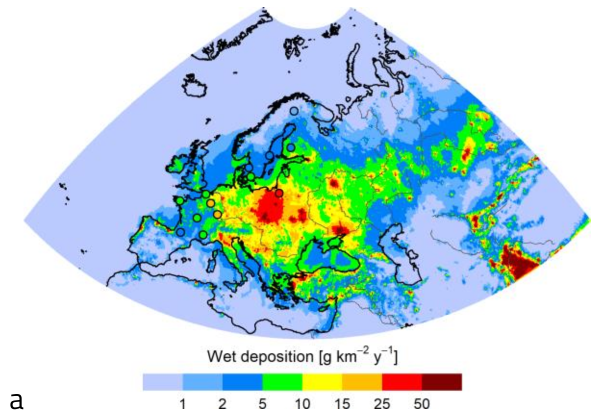


Fig. 3.20. *Annual mean air concentrations of B(a)P (a), B(b)F (b), B(k)F (c), and IP (d) in 2024 (circles on the maps show observed values in the same colour scale).*

Annual average air concentrations of each of the four individual PAHs are presented in Fig. 3.20. Their spatial patterns are broadly similar, with relatively high levels in Poland, Czechia, and parts of

Eastern Europe, and lower levels in Western and Northern Europe. B(b)F remains the PAH compound with the highest concentration over the EMEP region, consistent with both modelled and measured data. Compared with the previous year, areas exceeding 1 ng/m^3 of B(a)P air concentrations have decreased, most notably in Poland, and average concentrations of all four PAHs have slightly decreased across EMEP countries. Nevertheless, areas exceeding 0.5 and1 ng/m^3 are still concentrated in southern Poland, eastern Czechia, Eastern Europe and over the Dardanelles and Bosporus straits.

The spatial distribution of modelled wet deposition fluxes for the sum of four PAHs in 2024, alongside observations, is shown in Fig. 3.21a. The pattern closely tracks the distribution of air concentrations, with a notably elevated signal over some locations in Central and Eastern Europe, as well as over the Dardanelles and Bosporus straits. Seasonal variation also mirrors air concentration with fluxes peaking in January, consistent with last year's pattern, and remaining at their lowest from around June through August, before rising sharply again from October onward (Fig. 3.21b). In general, wet deposition has decreased across most of the region, with the exception of areas over Romania and France. The highest annual deposition fluxes occur in the central EMEP region, along with some distant hotspots, such as the northern coast of Spain and areas in Pakistan and southern Kazakhstan. The lowest wet deposition in EMEP countries is estimated for the Scandinavian region, northern Russia, and central Spain.



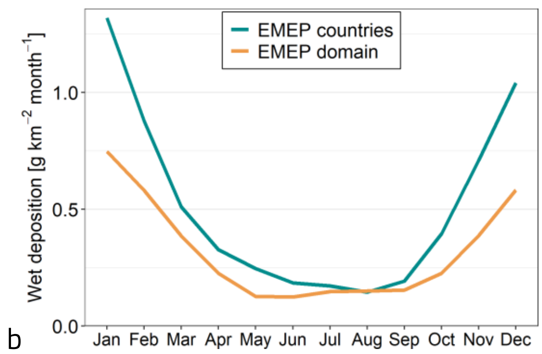


Fig. 3.21. *Annual wet deposition flux of the sum of 4 PAHs (circles on the map show observed values in the same colour scale) (a) and seasonal variation of the sum of 4 PAHs wet deposition in EMEP countries and for the entire EMEP domain (b) in 2024.*

Wet deposition patterns for individual PAHs show similar spatial trends but differ in magnitude (Fig. 3.22). All four PAHs exhibit elevated deposition in Central Europe, particularly in Poland and neighbouring countries, along with several hot-spots in Eastern Europe and Central Asia, gradually declining towards the north and northeast of the region. Among the four PAHs, B(b)F has the highest wet deposition levels, followed by B(a)P, IP, and B(k)F. As with air concentration, wet deposition has decreased compared with last year, with very few areas exceeding 10 g km^{-2} y^{-1} for B(a)P, B(k)F and IP, and 25 g km^{-2} y^{-1} for B(b)F.

Observations confirm both this trend and underlying spatial patterns (Fig. 3.22; Annex C, Table C1). Model-to-measurement comparison show a high spatial correlation for all four PAHs, ranging from 0.76 to 0.91. However, the model tends to underestimate observed wet deposition fluxes, with a mean relative bias between -9% and -42%. Even so, more than two thirds of the simulated annual wet deposition values at the measurement sites agree with observations within a factor of two.

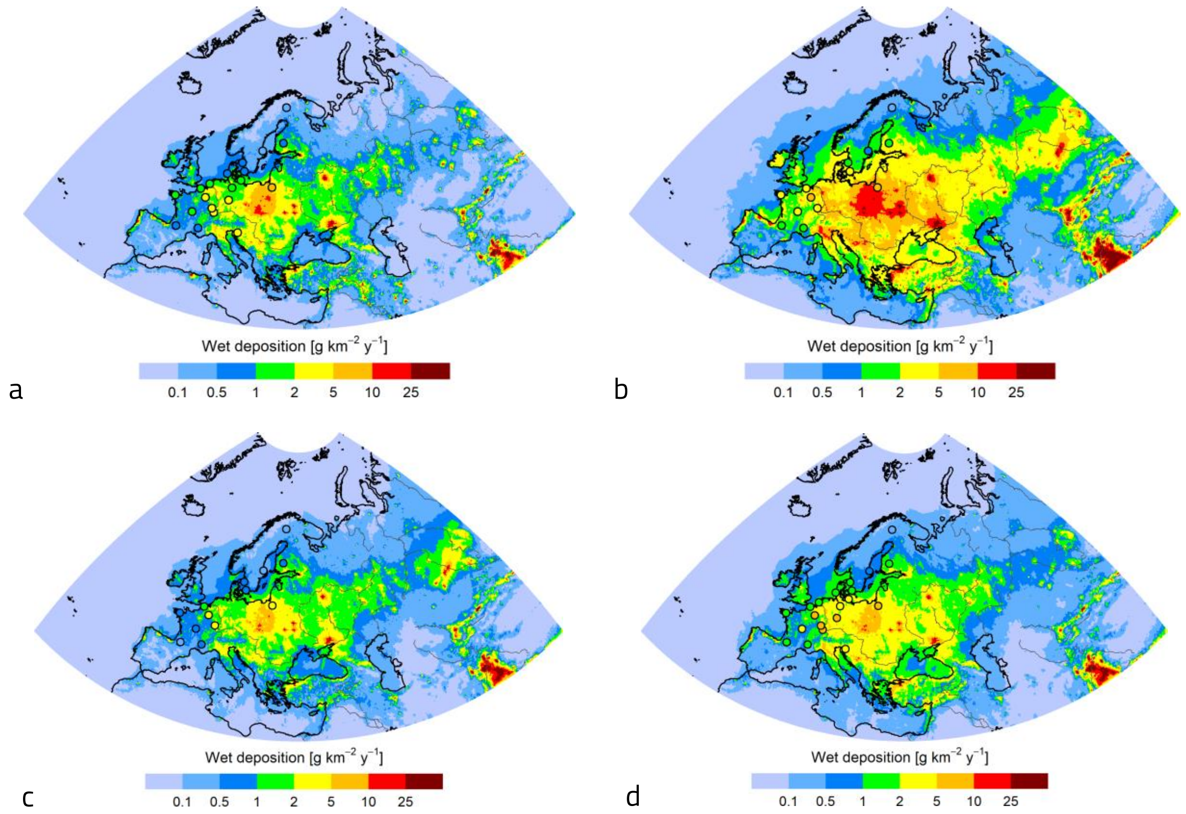


Fig. 3.22. *Annual wet deposition flux of B(a)P (a), B(b)F (b), B(k)F (c), and IP (d) in 2024 (circles on the maps show observed values in the same colour scale).*

Figure 3.23a shows the spatial distribution of total deposition fluxes for the sum of four PAHs in 2024. As with air concentration, the highest annual mean deposition occurs in Central Europe, with the greatest deposition fluxes in Poland, Ukraine, northern Czechia and Slovakia, southern Germany, Serbia, and Bosnia and Herzegovina, plus a distinct hotspot along the Turkish coast near the Dardanelles and Bosporus straits. Spain, France, the United Kingdom, Greece, and the Scandinavian countries remain the areas with lowest total deposition. Compared with last year, total deposition has decreased in parts of Central Europe such as Germany and the UK, while increasing in others, such as Romania. Seasonally, deposition fluxes remain the highest in winter, driven by domestic heating emissions, while the lowest are observed in spring when degradation is the most intensive (Fig. 3.23b). Contrary to last year, total deposition rose again after March, and continued increasing through the rest of the year, without the mid-summer dip seen in 2023. This shift is likely linked to dry deposition and seasonal changes in vegetation canopy, as denser vegetation during the growing season increases the surface available for PAH uptake, sustaining elevated dry deposition through summer and into early autumn.

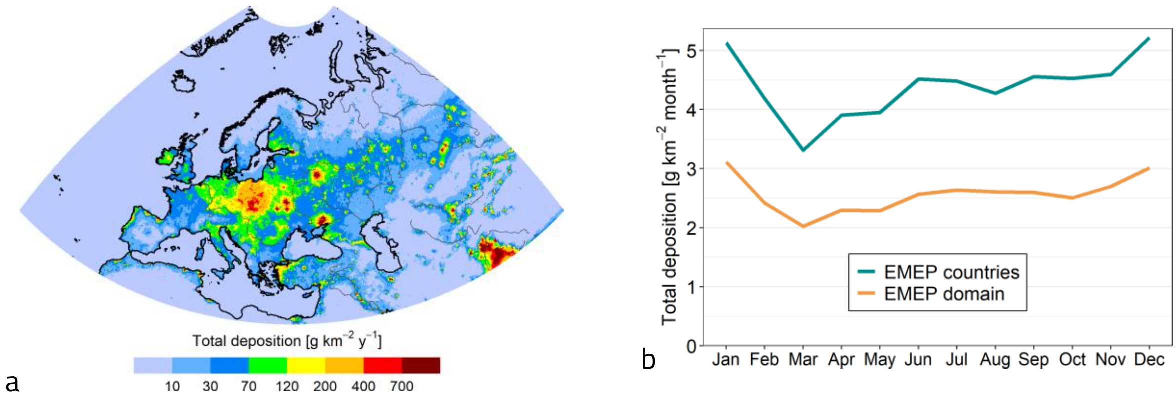


Fig. 3.23. *Annual total deposition flux of the sum of 4 PAHs (a) and seasonal variation of the sum of 4 PAHs total deposition in EMEP countries and for the entire EMEP domain (b) in 2024.*

PAH deposition across the EMEP region stems from a mix of primary anthropogenic emissions within EMEP countries and contributions from secondary and non-EMEP sources (Fig. 3.24). Because PAHs have a short atmospheric residence time and weak re-emission fluxes from surfaces, non-EMEP and secondary sources play only a limited role in most countries. Overall, these sources account for 9% to 45% of total deposition across EMEP countries, with the highest shares observed in remote areas and countries near the domain edges, including Iceland, Portugal, Spain, Ireland, Finland, Cyprus and United Kingdom.

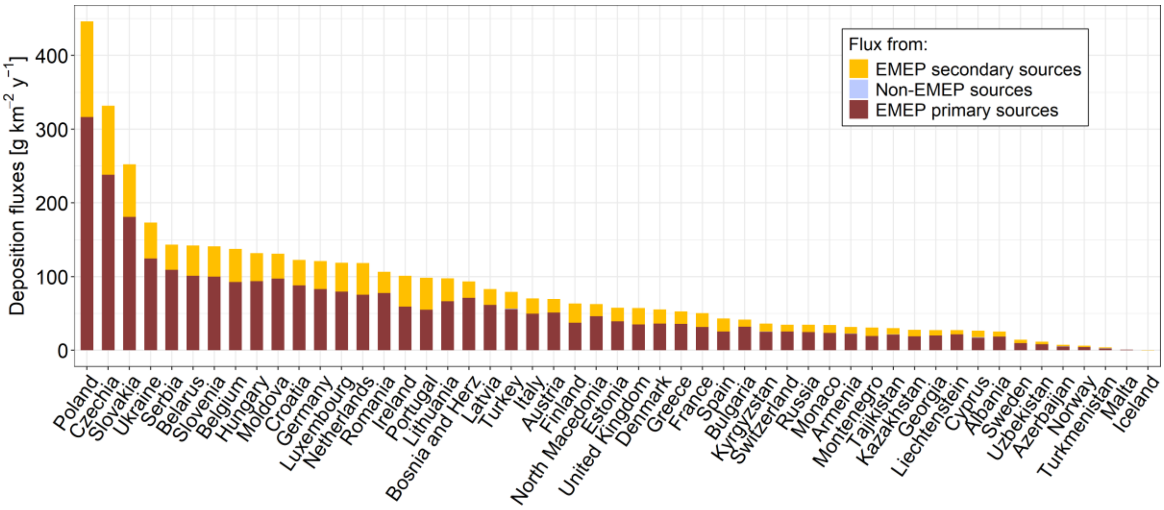


Fig. 3.24. *Country-average deposition of the sum of 4 PAHs to EMEP countries from EMEP primary anthropogenic, secondary and non-EMEP emission sources in 2024.*

Primary EMEP emissions can be further split into domestic and foreign sources, highlighting the role of transboundary pollution. Domestic sources dominate in about half of the countries, exceeding 65% in Italy, Türkiye, Poland and Ukraine (Fig. 3.25). The highest domestic-source deposition fluxes are observed in Poland and Czechia, reaching 217 and 114 g km^{-2} y^{-1}, respectively.

By contrast, transboundary transport dominates in countries with low anthropogenic emissions, such as Monaco, Liechtenstein, and Albania, where it accounts over 70%, 80% and 65% of deposition respectively, and exceeds 40% in Austria, Switzerland, Lithuania, Luxembourg and Malta. Because all four considered PAHs are short-lived, the largest absolute contributions from transboundary transport occur in Central and Eastern European countries adjacent to major emission sources – Czechia, Slovakia, Belarus, Russia, Ukraine, Poland, and Germany – though domestic sources remain significant in these countries as well.

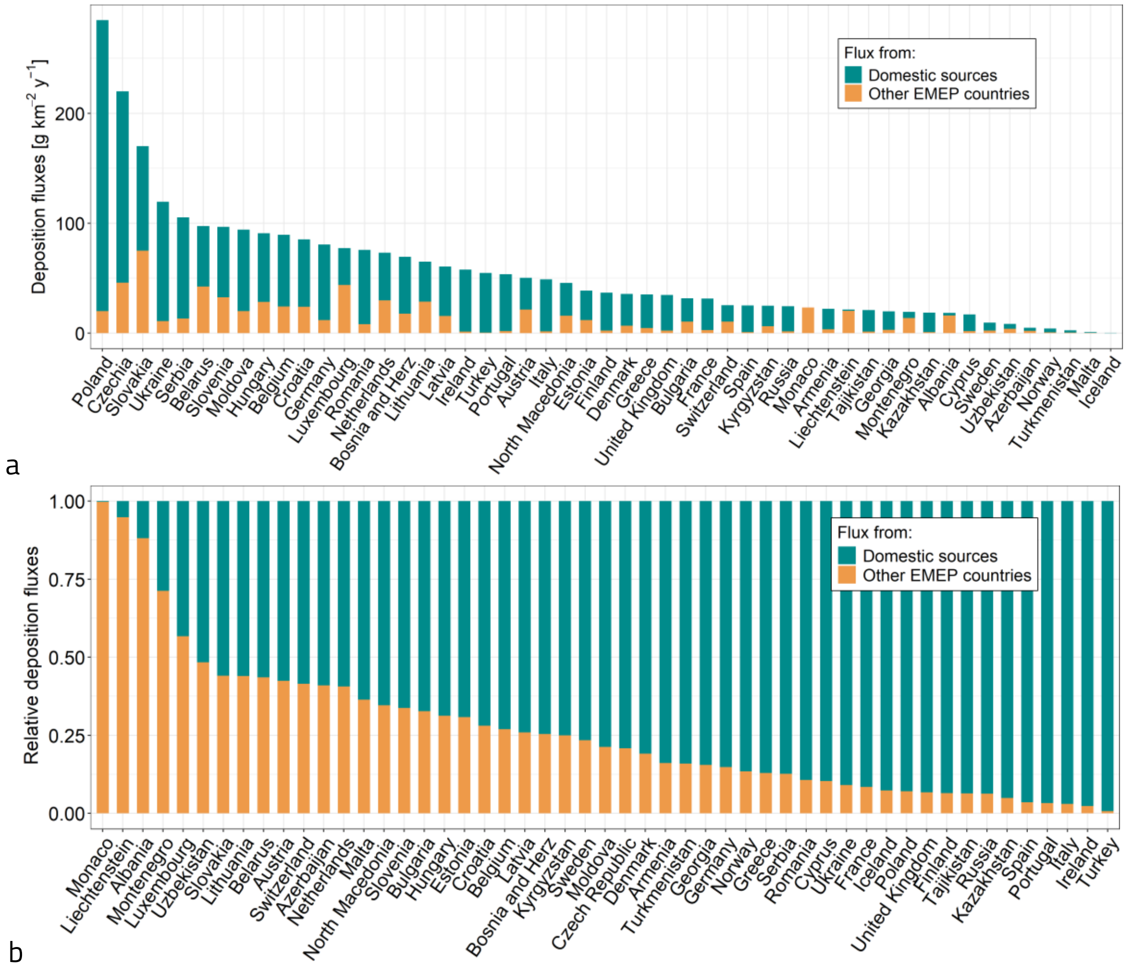


Fig. 3.25. *Country-average anthropogenic deposition of the sum of 4 PAHs to EMEP countries (a) and relative contribution of domestic and foreign sources to the sum of 4 PAHs anthropogenic deposition in EMEP countries (b) in 2024.*

3.7. PCDD/Fs, PCBs, HCB

This section provides an overview of the spatial distributions of modelled concentrations and deposition for three POPs across the EMEP region in 2024 and evaluates these results against available observational data. Despite decades of efforts to reduce emissions, these toxic semi-volatile organic pollutants remain widely distributed in the environment. Their persistence, toxicity, bioaccumulation in food webs, and adverse effects on humans and biota make them pollutants of ongoing environmental concern (Hoyeck et al., 2022; Landrigan, 2024; Mishra et al., 2022; WHO 2000, 2003). Their resistance to degradation, combined with their ability to be transported hundreds to thousands of kilometres through the atmosphere and oceans, promotes their widespread distribution across regional and continental environments. HCB, PCBs, and PCDD/Fs are produced predominantly as unintentional by-products of anthropogenic processes, including fossil fuel combustion, chemical production, and waste incineration. They occur in the atmosphere in both gaseous and particulate forms, and the partitioning between the phases is strongly influenced by air temperature. In addition, their long-term accumulation in soils, vegetation, and aquatic environments promotes secondary emissions through re-volatilization, sustaining atmospheric concentrations and contributing to pollution even in remote regions.

Polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/Fs)

In 2024, the spatial distribution of atmospheric PCDD/Fs concentrations across the EMEP region was characterized by the lowest levels over the North Atlantic and northern Scandinavia, whereas the elevated concentrations occurred in Central, Southern, and Eastern Europe (Fig. 3.26a). Distinct hotspots were identified in northern Italy, southern and northern Türkiye, and parts of the Caucasus and Central Asia. Western European countries, including France, Spain, Portugal, the Netherlands, and Belgium, had moderate concentration levels. In contrast, relatively high concentrations were observed across several countries in Central Europe and the Balkans, including Czechia, Hungary, Poland, Croatia, Serbia, and Romania. The spatial distribution exhibited a clear gradient, with concentrations declining from Central and parts of Southern Europe toward the western and northern regions of the EMEP domain.

The seasonal distribution of atmospheric PCDD/Fs concentrations is presented in Fig. 3.26b. Concentrations were highest during winter (December–February), followed by a substantial decrease through spring (March–May). Levels reached their annual minimum in late spring and then increased gradually throughout summer and autumn. Throughout the year, the mean concentration over the EMEP countries remained consistently higher than the corresponding mean for the entire EMEP domain, reflecting the stronger influence of primary anthropogenic emissions and secondary emissions within the EMEP countries.

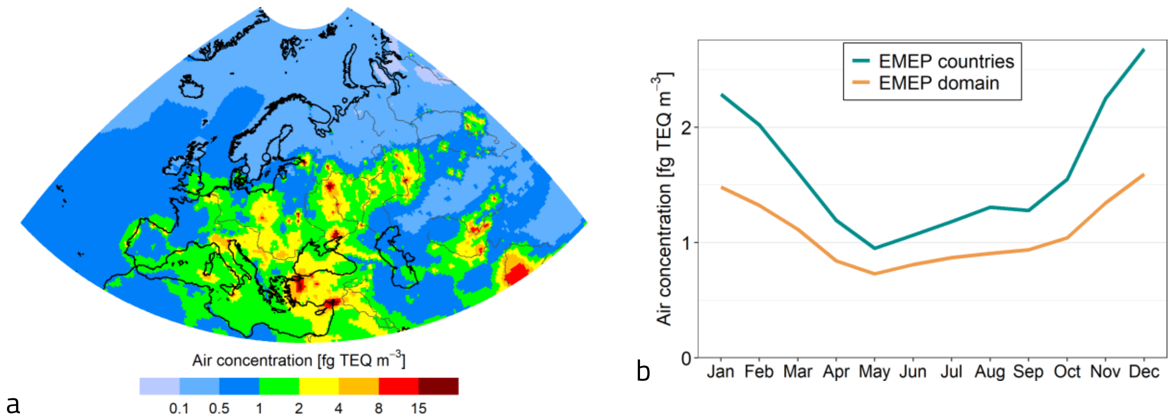


Fig. 3.26. *Annual mean air concentrations of PCDD/Fs (circles on the map show observed values in the same colour scale) (a) and seasonal variation of mean PCDD/Fs air concentrations in EMEP countries and EMEP domain (b) in 2024.*

Measurements of PCDD/Fs air concentrations in 2024 were available from two EMEP monitoring stations in Sweden: Råö (SE0014R) and Norunda Stenen (SE0022R). At both stations, the modelled concentrations were within a factor of 2.2 of the observations. The model overestimated the measured concentration at Råö and underestimated it at Norunda Stenen. Despite these site-specific differences, the model reproduced the observed concentration levels reasonably well, with an average relative bias of 23% for the annual mean concentration of PCDD/Fs (Fig. 3.26; Annex C, Table C1).

Wet deposition represents one of the principal mechanisms by which POPs are removed from the atmosphere, transferring these compounds to terrestrial and aquatic compartments through scavenging by precipitation. In general, the spatial pattern of wet deposition corresponds to the distribution of atmospheric concentrations, although the magnitude of deposition is also influenced by regional differences in precipitation.

In 2024, the highest wet deposition fluxes of PCDD/Fs within the EMEP domain were observed across Central, Southern, and Eastern Europe, as well as parts of the Balkans, whereas substantially lower fluxes were found over Northern and Northeastern Europe (Fig. 3.27a). The most notable deposition hotspots were identified in Türkiye, Italy, the Caucasus region, and the western Balkans, including Croatia and Serbia. These elevated fluxes reflect the combined influence of high atmospheric PCDD/Fs concentrations and moderate to high precipitation, which enhance wet scavenging. The spatial distribution of wet deposition closely followed the patterns of atmospheric concentrations and the distribution of anthropogenic emission sources across the EMEP domain. Outside Europe, elevated wet deposition fluxes of PCDD/Fs were also observed over northern India, western China, and parts of Central Asia, particularly Kazakhstan and Kyrgyzstan. Additional local deposition hotspots were identified in northern and western Iran and across the Caucasus, including Azerbaijan, Armenia, and Georgia. Seasonal variation in the wet deposition of PCDD/Fs followed a distinct annual cycle, with the highest deposition fluxes in winter (December-January) and the lowest in summer (June-August) (Fig. 3.27b). Monthly wet deposition declined steadily from January to July, when the annual minimum was reached. Thereafter, deposition increased from late summer onward, with a more pronounced rise over the EMEP countries beginning in August and ending in a winter maximum in December. For most of the year, the monthly mean wet deposition averaged over the EMEP countries exceeded that for the entire EMEP domain, reflecting the combined effects of higher atmospheric PCDD/Fs concentrations linked to anthropogenic emissions and more efficient precipitation scavenging over Europe. The difference between the two regional averages was greatest during autumn and early winter, whereas deposition levels were similar in April and August.

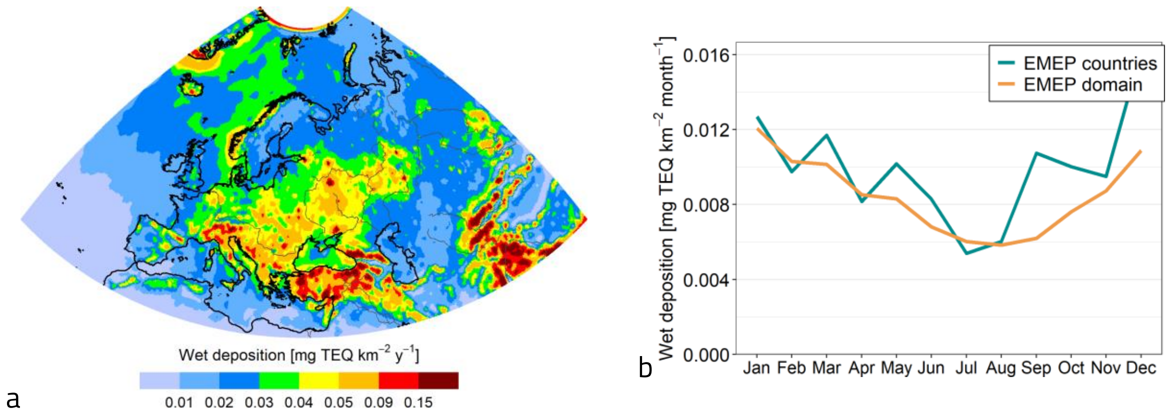


Fig. 3.27. *Annual wet deposition flux of PCDD/Fs (a) and seasonal variation of mean PCDD/Fs wet deposition in EMEP countries and EMEP domain (b) in 2024.*

Total deposition comprises the combined effects of wet deposition, resulting from the scavenging of atmospheric pollutants by precipitation, and dry deposition, which occurs through the direct transfer of pollutants from the atmosphere to terrestrial and aquatic surfaces. Its spatial distribution largely follows the pattern of atmospheric concentrations and is governed by the distribution of primary emission sources, precipitation, land-surface characteristics, and secondary emissions. Dry deposition constitutes an important component of the total deposition budget, especially in forested areas and regions receiving relatively low annual precipitation.

Figure 3.28a shows the modelled spatial distribution of total PCDD/Fs deposition across the EMEP domain in 2024. The highest deposition fluxes occur in Southeastern Europe, particularly in parts of Türkiye, Cyprus, the Eastern Mediterranean, and the Balkan region. Moderate deposition fluxes are found across parts of Central Europe, including Germany, Poland, and Czechia, as well as in regions of Spain, Portugal, France, Italy, western Russia, Belarus, and Ukraine. In contrast, the lowest deposition fluxes are observed in Northern Europe, including Scandinavia, northern Russia, and the Arctic, as well as over adjacent marine areas such as the North Sea, the Baltic Sea, and the North Atlantic Ocean. Overall, deposition exhibits pronounced spatial variability across Europe, with the highest levels in Central and Southeastern Europe and lower fluxes towards the northern parts of the EMEP domain. Seasonal variations in total PCDD/Fs deposition across the EMEP countries and the entire EMEP domain in 2024 are presented in Fig. 3.28b. Monthly mean total deposition fluxes were lowest in winter (December-February), then increased gradually through spring (March-May), reaching an annual maximum in summer (July-August). Afterward, total deposition fluxes declined steadily in autumn (September-November) and returned to their winter minimum in December. It is worth mentioning that the seasonal cycle of PCDD/F total deposition is largely driven by dry deposition to vegetation, whose contribution is significantly higher than that of wet deposition, particularly during the summer growing season.

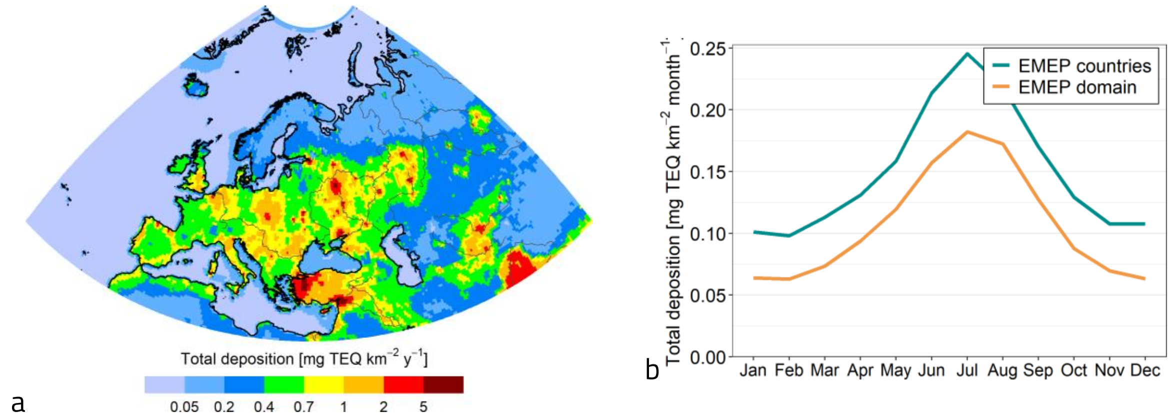


Fig. 3.28. *Annual deposition flux of PCDD/Fs (a) and seasonal variation of mean PCDD/Fs deposition in EMEP countries and EMEP domain (b) in 2024*

The contributions of the various source categories differ considerably across the EMEP region. Separating the effects of primary anthropogenic emissions from EMEP countries, secondary emissions arising from re-volatilization within the region, and long-range atmospheric transport from non-EMEP countries enables source attribution of atmospheric pollution in EMEP countries.

Country-average deposition fluxes of PCDD/Fs across the EMEP domain showed a clear spatial variation in 2024, with the highest deposition in parts of southern, western, and central Europe, and in the Balkan region (Fig. 3.29). In most of these countries, EMEP primary anthropogenic emissions (red bars) and EMEP secondary emission sources (yellow bars) contributed nearly equally to total deposition, although some countries showed a stronger influence from one source category. The source apportionment analysis indicates that secondary emission sources make a substantial contribution to total deposition in many countries, particularly those with the highest deposition fluxes, such as Türkiye and Cyprus. This finding highlights the important role of atmospheric recycling and re-volatilization from historically contaminated surfaces in sustaining current atmospheric deposition. In contrast, primary anthropogenic emissions accounted for a larger share of total deposition in several industrialized central and western European countries, including Belgium, Poland, and Bosnia and Herzegovina. The contribution from non-EMEP sources (blue bars) was generally small throughout the domain, although it represented a relatively larger fraction of total deposition in countries with low overall deposition, particularly in northern Europe and parts of Central Asia. In these regions, primary and secondary emission sources generally contributed comparable amounts to total deposition, with exceptions such as Iceland and Finland, where secondary emissions were the dominant contributor, although their absolute contributions remained low. Secondary emissions also predominated in several countries in the Caucasus and Central Asia. In general, the results show that PCDD/Fs deposition within the EMEP domain is controlled primarily by the combined influence of current anthropogenic emissions and secondary re-emissions, whereas long-range transport from outside the EMEP domain makes a comparatively minor contribution.

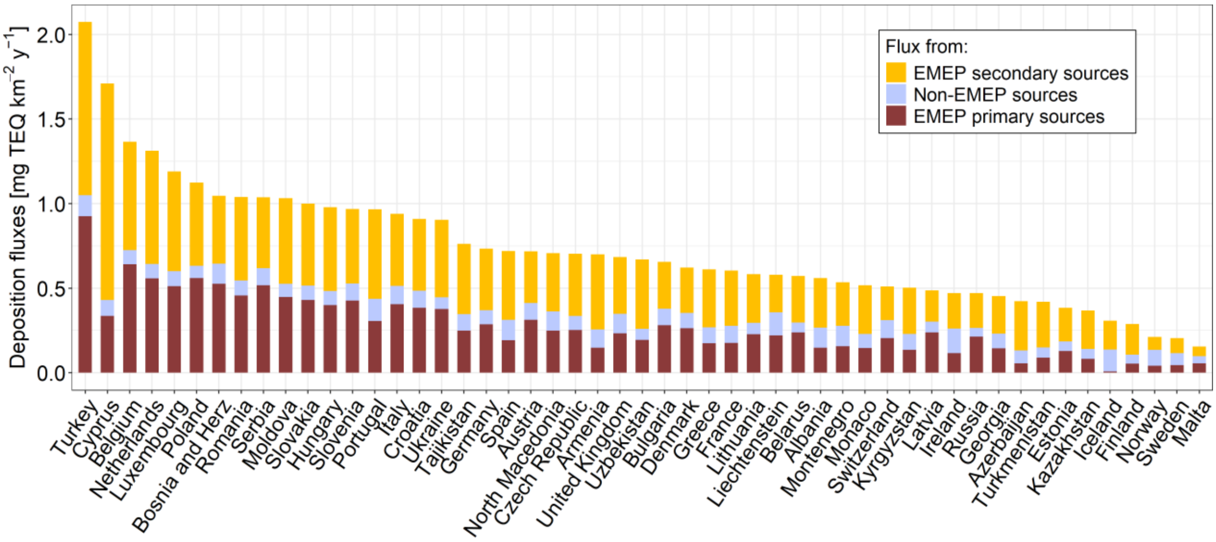


Fig. 3.29. *Country-average deposition of PCDD/Fs to EMEP countries from EMEP primary anthropogenic, secondary and non-EMEP emission sources in 2024.*

Anthropogenic deposition received by EMEP countries can be separated into two components: deposition from emission sources within the receiving country (domestic sources) and deposition from transboundary atmospheric transport from emission sources in other EMEP countries (foreign sources). The modelled relative contributions of these domestic and foreign sources to PCDD/Fs deposition are presented in Fig. 3.30.

Figure 3.30a presents country-average deposition fluxes of PCDD/Fs from anthropogenic emission sources within the EMEP domain in 2024. The highest total deposition fluxes occur in countries such as Türkiye, Belgium, Poland, Bosnia and Herzegovina, Serbia, and Romania, where deposition is dominated by domestic anthropogenic emissions. In these countries, contributions from other EMEP countries are present but account for a smaller share. In contrast, several Western, Central, and Southern European countries, including the Netherlands, Switzerland, Luxembourg, Moldova, Greece, and Hungary, show a more balanced contribution from domestic and transboundary sources, highlighting the importance of regional atmospheric transport. The lowest total deposition fluxes are found in Northern Europe, the Caucasus, and Central Asia, including the Scandinavian countries (Sweden, Finland, Norway, and Iceland), as well as Azerbaijan, Kazakhstan, and Turkmenistan. In these countries, transboundary transport generally contributes a larger share of total deposition than domestic emissions, reflecting their relatively low national emission levels. The results indicate that domestic anthropogenic emissions remain the dominant contributor to PCDD/Fs deposition in countries with the highest deposition fluxes, while transboundary transport represents an important component across much of the EMEP domain and contributes substantially to total deposition, particularly in countries with relatively low domestic emissions. Figure 3.30b shows the relative contributions of domestic and foreign sources to total anthropogenic PCDD/Fs deposition in each EMEP country. The modelling results indicate that transboundary transport accounts for more than 50% of total anthropogenic PCDD/Fs deposition in 26 of the 51 EMEP countries, representing roughly half of the countries in the domain.

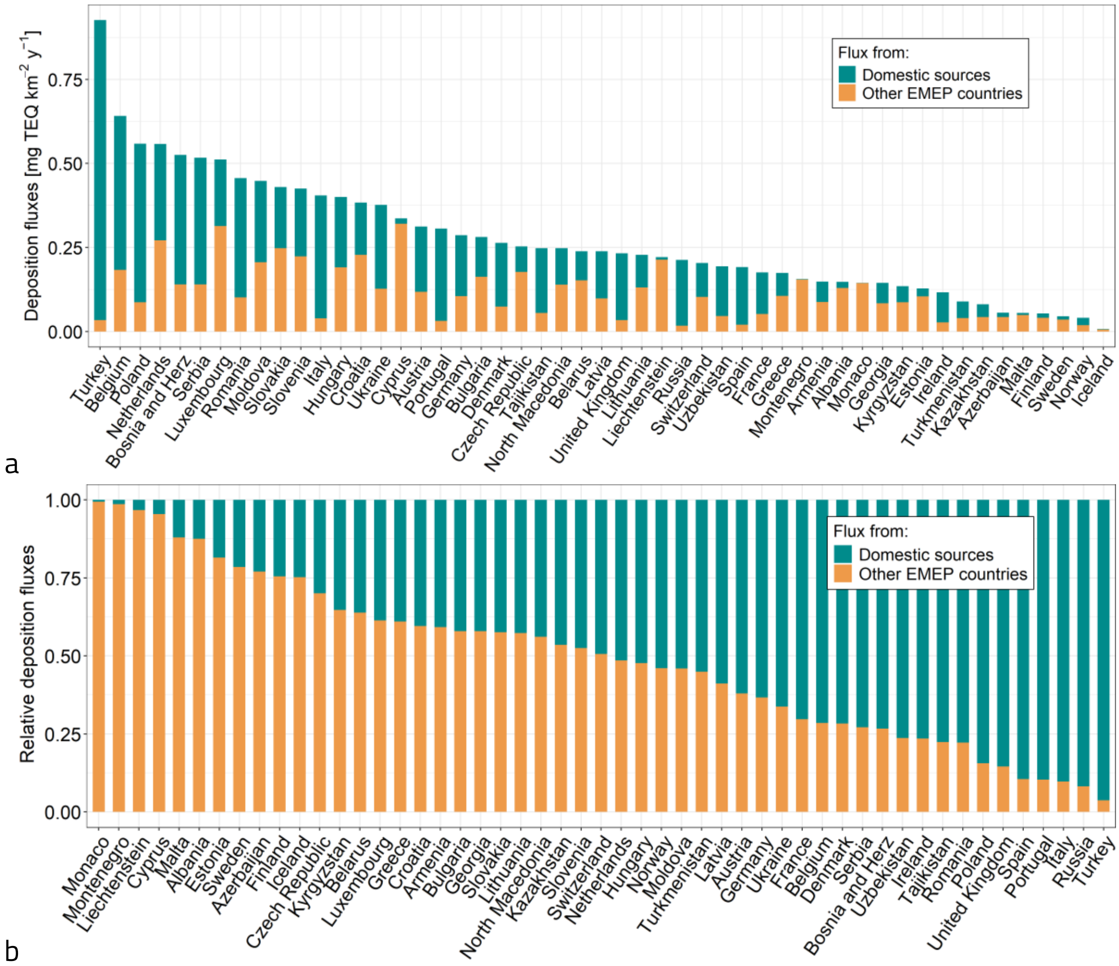
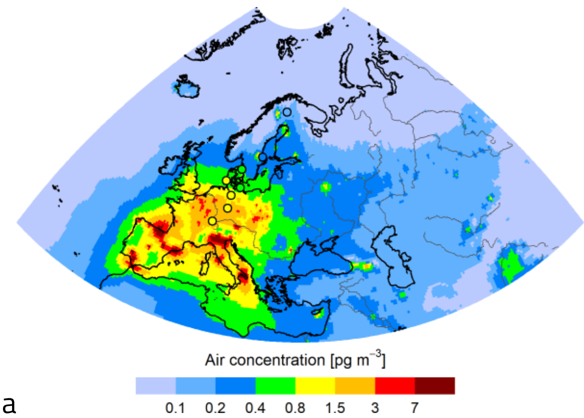


Fig. 3.30. *Country-average PCDD/Fs anthropogenic deposition to EMEP countries (a) and relative contribution of domestic and foreign sources to PCDD/Fs anthropogenic deposition in EMEP countries (b) in 2024.*

Polychlorinated biphenyls (PCBs)

Across the EMEP region, annual mean air concentrations of PCB-153 showed noticeable spatial variability in 2024 (Fig. 3.31a). The highest concentrations were observed in Southern and Central Europe, particularly in the Mediterranean region, including Spain, Italy, and parts of the Balkan countries. These elevated levels are primarily associated with stronger anthropogenic emissions and enhanced secondary re-emissions from historically contaminated surfaces. In contrast, the lowest concentrations occurred in Northern and Eastern Europe, where cooler climatic conditions limit volatilization from environmental reservoirs and consequently reduce atmospheric PCB-153 levels. Generally, the spatial distribution followed a clear south-to-north and southwest-to-northeast gradient, with concentrations decreasing gradually toward the northern and northeastern parts of the EMEP region. Seasonal variation in atmospheric PCB-153 concentrations also displayed a marked annual cycle, with concentrations increasing from spring to summer before declining through autumn to their lowest levels during winter (Fig. 3.31b). This seasonal pattern reflects enhanced secondary emissions during the warm season, when higher air temperatures promote re-volatilization from soils, vegetation, and other environmental reservoirs. Significant difference between the PCB-153 concentrations in EMEP countries and other areas of the domain reflects general distribution of primary and secondary emissions predominantly located in Central and Southern Europe (Chapter 1, Fig. 1.13b).

The model reproduced the observed spatial distribution well, with a spatial correlation coefficient of 0.83 and a relative bias of 16% (Fig. 3.31a; Annex C, Table C1). Furthermore, the modelled concentrations were within a factor of two of the observations at all monitoring stations. The model slightly underestimated PCB-153 concentrations at Westerland (Germany), Zeppelin Mountain (Norway), and Råö (Sweden). Although differences between modelled and observed concentrations were evident at individual stations, with both underestimation and overestimation occurring, no systematic bias was identified. Overall, the results demonstrate that the model provides a reliable representation of the regional-scale atmospheric distribution of PCB-153.



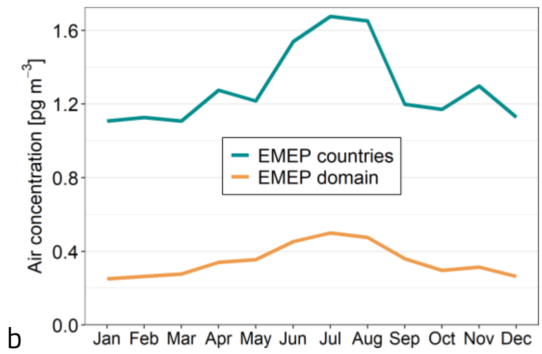


Fig. 3.31. *Annual mean air concentrations of PCB -153 (a) (circles on the map show observed values in the same colour scale) and seasonal variation of mean PCB-153 air concentrations in EMEP countries and EMEP domain (b) in 2024*

The spatial distribution of PCB-153 wet deposition in 2024 was characterized by enhanced deposition across parts of Southern and Central Europe, while substantially lower deposition occurred throughout Northern and Eastern Europe (Fig. 3.32a). Areas of increased deposition included Italy, northeastern Spain, Czechia, Hungary, Slovakia, Austria, and the western Balkan countries, particularly Croatia and Serbia. These patterns reflected the combined influence of elevated atmospheric PCB-153 concentrations and favorable precipitation conditions, which promoted efficient wet scavenging. In contrast, lower deposition fluxes over the northern and northeastern parts of the EMEP domain were associated with lower atmospheric PCB-153 concentrations. The seasonal evolution of PCB-153 wet deposition exhibited a clear maximum during late spring and early summer (May-June) (Fig. 3.32b). Following this period, deposition gradually declined through summer and autumn, although a secondary increase was evident over the EMEP countries during early autumn in September before decreasing again toward the end of the year.

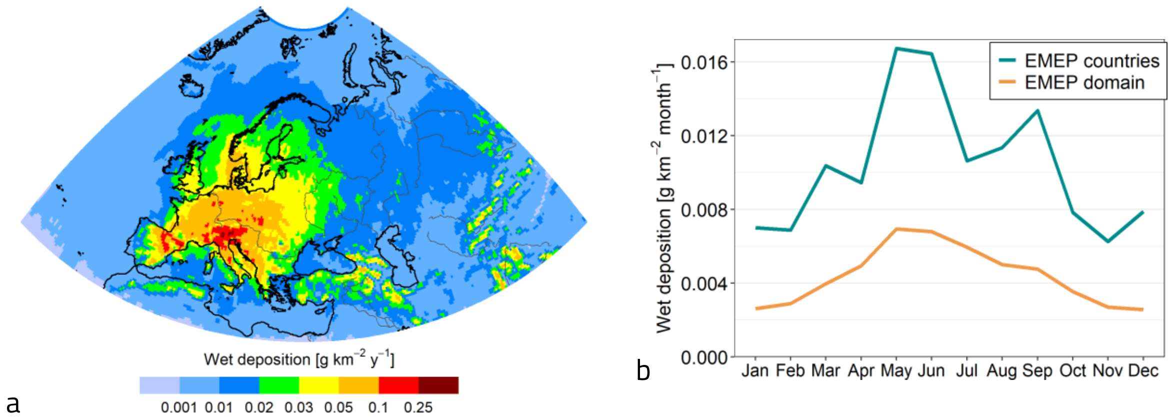


Fig. 3.32. *Annual wet deposition flux of PCB-153 (a) and seasonal variation of mean PCB-153 wet deposition in EMEP countries and EMEP domain (b) in 2024.*

Fig. 3.33a shows the annual total deposition of PCB-153 across the EMEP domain in 2024. The lowest deposition occurred in the northernmost parts of Scandinavia and Russia, where limited regional emissions and cold climatic conditions restrict atmospheric deposition. Deposition increased progressively toward Central, Southern, and Western Europe, with moderate levels across much of Eastern Europe and southern Scandinavia. Elevated deposition was observed over parts of Central and Southern Europe, including Hungary, Slovakia, Poland, Czechia, Austria, Switzerland, and several Western Balkan countries, while localized maxima occurred in northern Spain, northern France, northern Italy, southern Portugal, Poland, and Slovakia.

The seasonal variation in total PCB-153 deposition is presented in Fig. 3.33b. Deposition increased progressively from winter to spring, reached its annual maximum in early summer (June-July), and then declined through late summer and autumn before returning to its lowest levels in winter. This seasonal pattern reflects enhanced re-emission of PCB-153 from contaminated environmental reservoirs during the warmer months, along with increased dry deposition to vegetation during the growing period. Throughout the year, monthly mean total deposition over the EMEP countries remained consistently higher than the average for the entire EMEP domain.

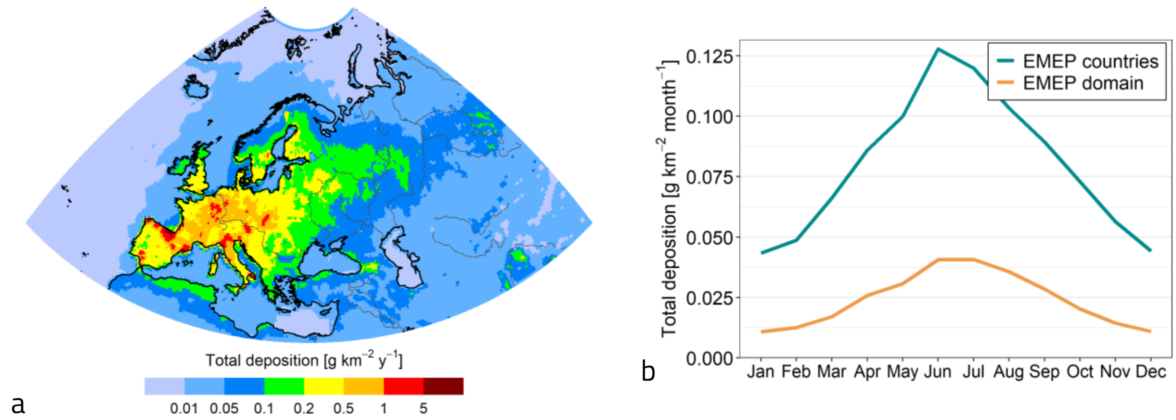


Fig. 3.33. *Annual deposition flux of PCB-153 (a) and seasonal variation of mean PCB-153 deposition in EMEP countries and EMEP domain (b) in 2024.*

Figure 3.34 illustrates the country-averaged PCB-153 deposition fluxes across the EMEP domain in 2024. While primary anthropogenic emissions (red bars) contribute significantly in several Western European countries, Central Europe, and parts of Southern Europe, secondary emission sources (yellow bars) are the principal component of PCB-153 deposition across most of the EMEP region. This widespread dominance of secondary sources reflects the continued importance of re-emissions from historically contaminated soils and vegetation. Contributions from non-EMEP sources (blue bars) are insignificant across the domain. In countries with relatively low overall deposition, contributions from primary anthropogenic and non-EMEP sources are of similar magnitude. The results indicate that current PCB-153 deposition across the EMEP region is governed primarily by secondary re-emissions, whereas current anthropogenic emissions and long-range transport from outside the domain make comparatively smaller contributions.

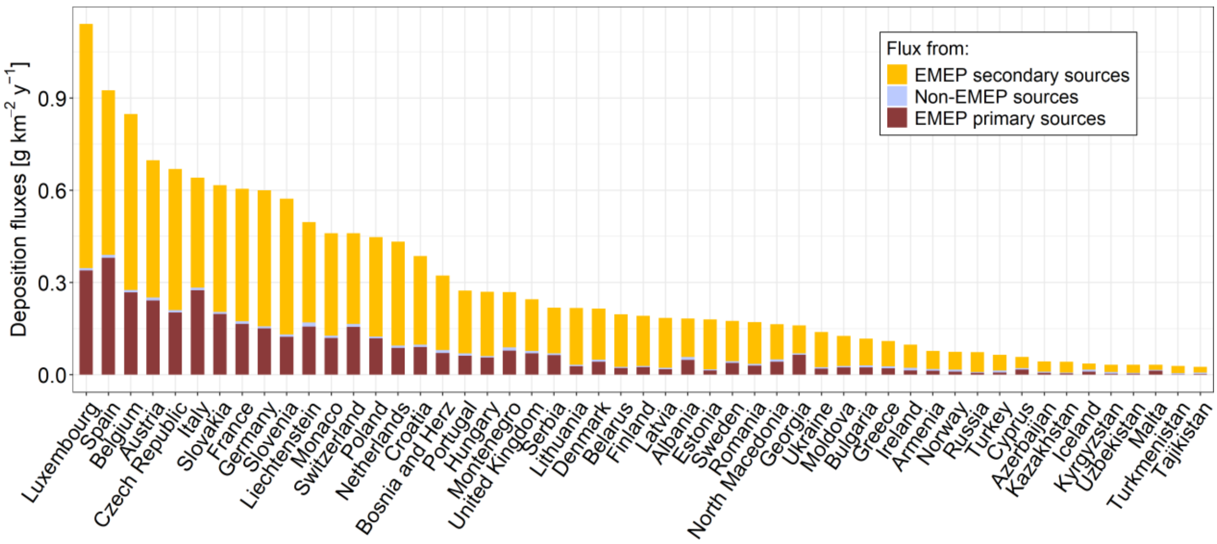


Fig. 3.34. *Country-average deposition of PCB-153 to EMEP countries from EMEP primary anthropogenic, secondary and non-EMEP emission sources in 2024*

Figure 3.35a presents the country-averaged anthropogenic deposition of PCB-153 across EMEP domain in 2024. The highest deposition occurs in Western, Central, and Southern Europe (Spain, Luxembourg, Italy, Belgium, Austria, Slovakia, Czechia, and France), whereas substantially lower deposition is observed in Central Asia and Northern Europe (Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan, Russia, Norway, and Iceland). The contribution of transboundary atmospheric transport is greatest in countries with relatively small land areas and/or limited domestic emissions (Slovenia, Liechtenstein, Monaco, the Netherlands, and Bosnia and Herzegovina), where pollution originating from other EMEP countries constitutes a major component of total anthropogenic deposition. In contrast, countries with relatively large territories and higher emissions (Spain, the UK, and Italy), receive a greater proportion of deposition from domestic sources, resulting in a smaller relative contribution from transboundary transport. Figure 3.35b illustrates the relative contributions of domestic and foreign sources to total anthropogenic PCB-153 deposition for each EMEP country. The modelling results show that transboundary transport accounts for more than 50% of total anthropogenic PCB-153 deposition in 35 of the 51 EMEP countries, highlighting the importance of long-range atmospheric transport in determining deposition patterns across the region.

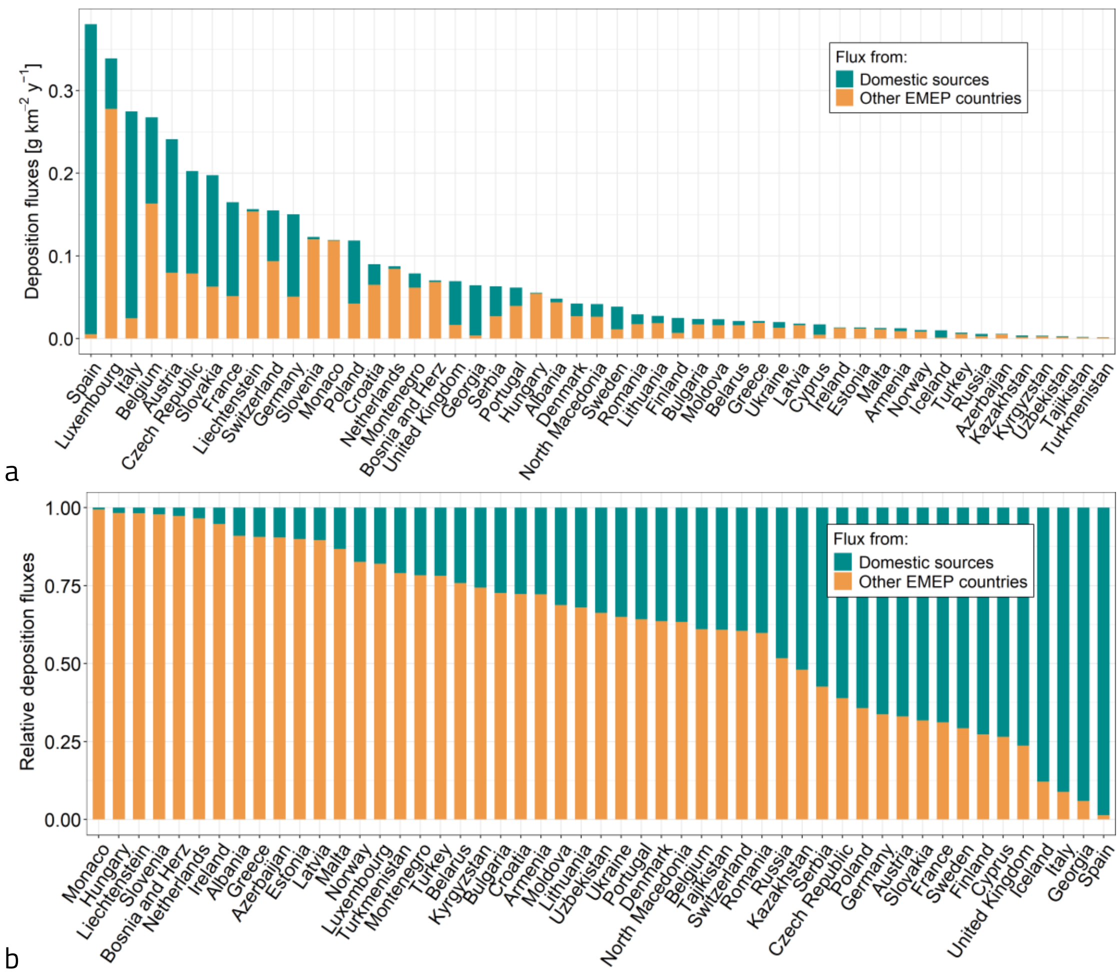


Fig. 3.35. *Country-average PCB-153 anthropogenic deposition to EMEP countries (a) and relative contribution of domestic and foreign sources to PCB-153 anthropogenic deposition in EMEP countries (b) in 2024.*

Hexachlorobenzene (HCB)

In 2024, the annual mean air concentrations of HCB were relatively uniform, although several regional hotspots were evident in the Balkan region and the eastern part of Central Europe (Fig. 3.36a). This distribution reflects the high atmospheric persistence of HCB, which promotes widespread dispersion and a comparatively homogeneous regional concentration field. The highest concentrations occurred over Central Europe and the western part of Eastern Europe, where large areas exceeded 20 pg m^{-3} and isolated hotspots over 30 pg m^{-3}. The maximum concentrations occurred over Belarus and adjacent areas. Other regions with elevated concentrations included Lithuania, Moldova, Georgia, the Balkans – particularly Serbia – as well as parts of the Mediterranean. Moderate concentrations extended across much of Central and Eastern Europe and into western Russia. In contrast, the lowest concentrations, below 13 pg m^{-3}, were observed over the North Atlantic, northern Scandinavia, northern Russia, and nearby marine regions. Observations from monitoring stations (circles) closely matched the modelled distribution, confirming relatively high HCB concentrations across Central and Eastern Europe and lower concentrations in Northern Europe.

Figure 3.36b illustrates the seasonal evolution of atmospheric HCB concentrations averaged over the EMEP countries and the entire EMEP domain in 2024. HCB concentrations followed a distinct annual cycle, with the lowest levels in winter (December-February). Concentrations increased gradually in spring (March-May) and continued to rise through early summer, reaching their annual peak in August. Following this peak, concentrations declined sharply during autumn, returning to their winter minima by December. The seasonal cycle differed slightly between the two regions. During winter, autumn, and early spring, mean HCB concentrations were generally higher over the EMEP countries than over the entire domain. In contrast, from June to September, the domain-wide average exceeded that over the EMEP countries, with the greatest divergence in mid-summer.

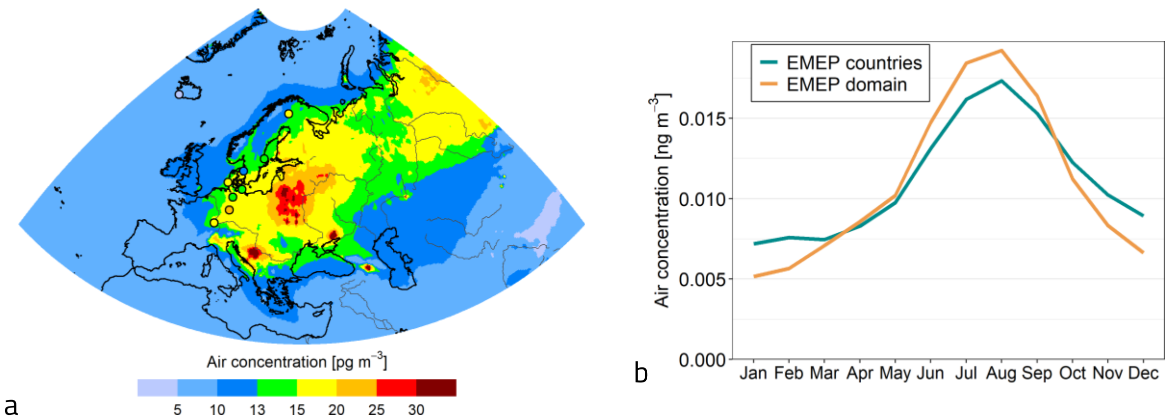


Fig. 3.36. *Annual mean air concentrations of HCB (a) (circles on the map show observed values in the same colour scale) and seasonal variation of mean HCB air concentrations in EMEP countries and EMEP domain (b) in 2024.*

Modelled HCB air concentrations were in good agreement with measurements from the EMEP monitoring stations in 2024. The model successfully reproduced the observed spatial distribution, with a spatial correlation coefficient of 0.74 and a relative bias close to zero (Fig. 3.36a; Annex C, Table C1). Moreover, the modelled concentrations remained within a factor of two of the observations at all monitoring stations. The model underestimated HCB concentrations at Westerland, Schauinsland, and Schmücke (Germany), as well as at Pallas (Finland). Although differences between modelled and observed concentrations were found at individual stations, including both underestimation and overestimation, no consistent bias was identified. Overall, the results indicate that the modelling system provides a robust representation of the regional-scale atmospheric distribution of HCB.

The annual wet deposition of HCB exhibited pronounced spatial variability across the EMEP domain in 2024 (Fig. 3.37a). The lowest deposition fluxes occurred in northern Scandinavia and parts of western Europe, while moderate deposition extended across most of central and eastern Europe. The highest wet deposition was found in southern Europe and the Balkan region, with particularly elevated fluxes over northern and central Italy, Albania, Bulgaria, Serbia, Croatia, Türkiye, and parts of the Caucasus. Lower deposition was also evident over much of northern Europe, western Russia, and adjacent marine areas. Outside Europe, enhanced wet deposition was observed over northern India, western China, and parts of Central Asia. Additional localized deposition hotspots were present in northern and western Iran and across the Caucasus, including Azerbaijan, Armenia, and Georgia.

HCB wet deposition exhibits a distinct seasonal cycle, with deposition fluxes increasing from winter through spring and reaching their annual maximum in April-May (Fig. 3.37b). Following this spring peak, wet deposition decreases throughout the summer months (June-August). Over the EMEP countries, the monthly mean wet deposition reaches its highest level in May, whereas the average across the entire EMEP domain peaks slightly earlier, in April. After the spring maximum, wet deposition declines substantially over the EMEP countries during summer, followed by a modest increase in late August. Thereafter, deposition decreases progressively through autumn and into early winter. Unlike the spatial distribution of atmospheric HCB concentrations, the pattern of wet deposition is strongly influenced by regional precipitation. Areas with high precipitation generally show higher wet deposition, even where atmospheric HCB concentrations are only moderate, whereas regions with lower precipitation show reduced deposition despite comparable atmospheric concentrations. This indicates that precipitation is a crucial factor controlling the spatial distribution of HCB wet deposition across the EMEP domain.

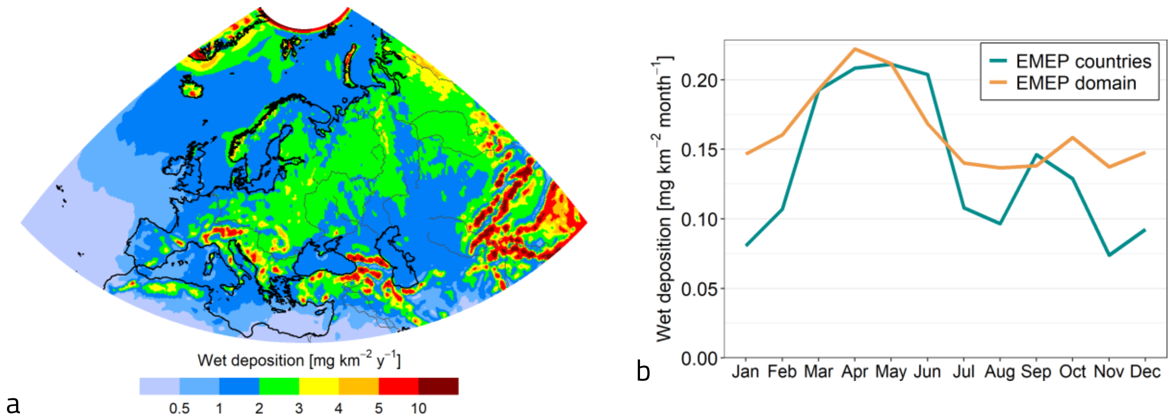


Fig. 3.37. *Annual wet deposition flux of HCB (a) and seasonal variation of mean HCB wet deposition in EMEP countries and EMEP domain (b) in 2024.*

Figure 3.38a illustrates the modelled annual total HCB deposition across the EMEP domain in 2024. Total deposition exhibits a clear spatial gradient, with the highest values in Eastern and Northeastern Europe and gradually lower values toward Southern and Western Europe. The largest deposition fluxes are found across broad areas of northwestern Eastern Europe and northeastern Russia. Relatively high deposition also extends across the Baltic region, including Lithuania, Latvia, Estonia, Belarus and parts of Central Russia. Moderate total deposition fluxes are observed throughout much of Central Europe, including Germany, Poland, Czechia, Slovakia, and Austria, and extending into parts of the Western Balkans. The lowest deposition occurs across most of Southern Europe, including Spain, Portugal, southern Italy, Greece, and Türkiye, as well as across large parts of the Caucasus and Central Asia, the Mediterranean, the Black Sea, and adjacent marine areas. In contrast to the total deposition patterns of PCDD/Fs and PCB-153, HCB exhibits a distinct south-to-north increase in total deposition. This pattern corresponds to regions with long-term HCB accumulation in terrestrial compartments, where extensive forested areas enhance HCB dry deposition. The high deposition over Northeastern Europe and Northern Asia therefore reflects the combined effects of long-term historical HCB accumulation in terrestrial ecosystems, high re-emission to the atmosphere, and efficient uptake by forest canopy, which enhances dry deposition. In comparison, the relatively low deposition observed across Southern Europe is associated with lower re-emission and reduced overall deposition efficiency.

Figure 3.38b illustrates the seasonal variation in total HCB deposition over the EMEP countries and the entire EMEP domain. Total deposition fluxes exhibit a distinct seasonal cycle, rising steadily from late winter through spring and reaching their highest levels in summer. At the seasonal peak, the monthly mean total deposition averaged over the EMEP domain is about 1.3 times higher than the corresponding average for the EMEP countries. After reaching its summer maximum, total deposition decreases gradually during autumn and returns to its lowest levels by December. Throughout most of the year, the monthly mean total deposition is higher across the entire EMEP domain than over the EMEP countries, with the largest difference in August. This seasonal behavior is associated with the combined effects of higher HCB re-emission during the warm season and stronger dry deposition over the extensive forested areas of northeastern Europe, where total HCB deposition is greatest.

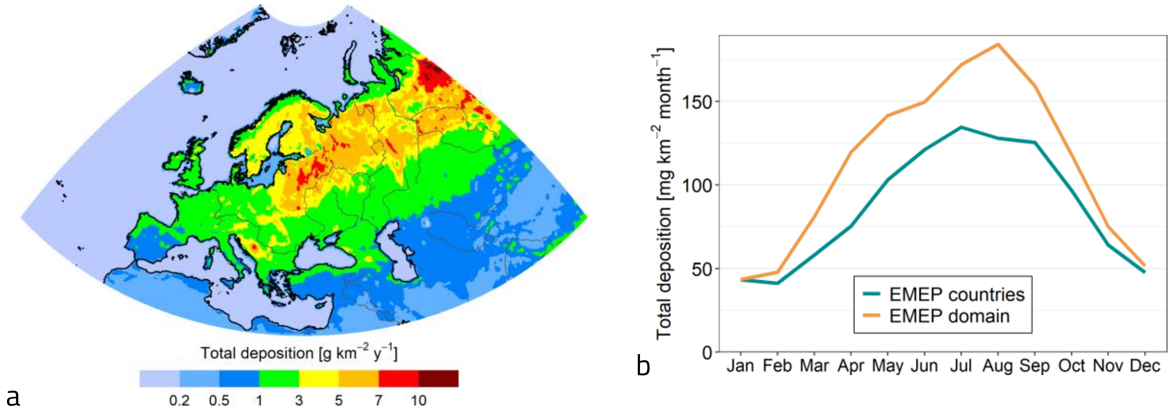


Fig. 3.38. *Annual deposition flux of HCB (a) and seasonal variation of mean HCB deposition in EMEP countries and EMEP domain (b) in 2024.*

Unlike PCDD/Fs and PCB-153, HCB showed higher seasonal mean air concentrations and both wet and total deposition fluxes, when averaged over the entire EMEP domain, than over the EMEP countries. This difference is closely linked to the environmental behaviour of HCB, which is currently driven more by secondary emissions than by primary anthropogenic sources. Extensive historical accumulation of HCB in soils, particularly across western Siberia and other temperate regions of Eurasia (Travnikov et al. 2025, p. 97, Fig. 4.20b), provides a substantial reservoir for re-volatilization. The resulting secondary emissions lead to elevated atmospheric concentrations over these regions and, consequently, increased atmospheric deposition. This mechanism also explains the considerable total deposition fluxes simulated over Northern and Eastern Europe, especially Scandinavia and western Russia, where long-term soil reservoirs sustain atmospheric HCB levels despite relatively limited contemporary emissions.

Figure 3.39 presents the country-averaged HCB deposition fluxes across the EMEP domain in 2024. In most EMEP countries, direct contributions from primary anthropogenic emissions within the EMEP region are limited. Noticeable contributions from primary sources are confined to a relatively small group of countries, including Bosnia and Herzegovina, Croatia, Austria, Ukraine, and Georgia. The influence of non-EMEP sources is generally modest and shows little spatial variation across the domain, although somewhat higher contributions are observed in the UK, Ireland, and Bosnia and Herzegovina. In contrast, secondary emission sources within the EMEP region account for the largest share of total HCB deposition in the majority of countries. Exceptions occur in several Central Asian countries, notably Tajikistan, Turkmenistan, and Kyrgyzstan, as well as in Malta and Cyprus, where contributions from EMEP secondary sources and non-EMEP sources are of similar importance. The source apportionment results for HCB indicate that secondary re-emissions are the principal driver of deposition across the EMEP region, underscoring the key role of atmospheric transport and the recycling of historically accumulated pollutants in shaping the spatial distribution of these POPs.

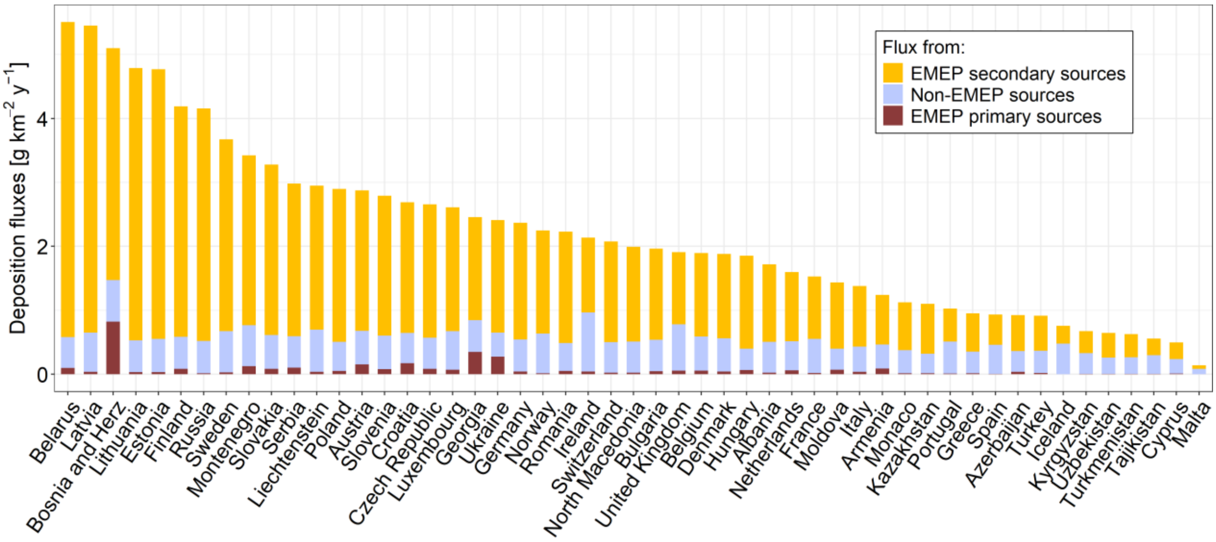


Fig. 3.39. *Country-average deposition of HCB to EMEP countries from EMEP primary anthropogenic, secondary and non-EMEP emission sources in 2024.*

Figure 3.40a shows the country-averaged anthropogenic deposition fluxes of HCB across EMEP countries in 2024. The highest anthropogenic deposition generally occurred in parts of the Balkans, the Caucasus, and southeastern and eastern Europe (Bosnia and Herzegovina, Georgia, Ukraine, Montenegro, and Croatia), indicating a strong influence of national and regional emission sources. In contrast, the lowest deposition fluxes were observed mainly in northern and eastern Europe and Central Asia, including Iceland, Norway, Russia, Malta, Kyrgyzstan, Tajikistan, Turkmenistan, Spain and Portugal. Countries with higher deposition fluxes showed a larger contribution from domestic sources, whereas transboundary transport accounted for a greater share of total deposition in countries with lower anthropogenic deposition. In countries such as Liechtenstein, Azerbaijan, Monaco, and Armenia, anthropogenic HCB deposition was dominated by transboundary transport, indicating a limited influence of domestic emissions. By contrast, domestic sources contributed most of the anthropogenic deposition in Bosnia and Herzegovina, Georgia, Finland, Ukraine, and the UK, reflecting the greater importance of national emissions in these countries. Figure 3.40b presents the relative contributions of domestic and foreign sources to total anthropogenic HCB deposition in each EMEP country. According to the modelling results, transboundary transport contributed more than 50% of total anthropogenic deposition in 40 of the 51 countries, highlighting the dominant influence of cross-border transport on HCB deposition across much of the domain.

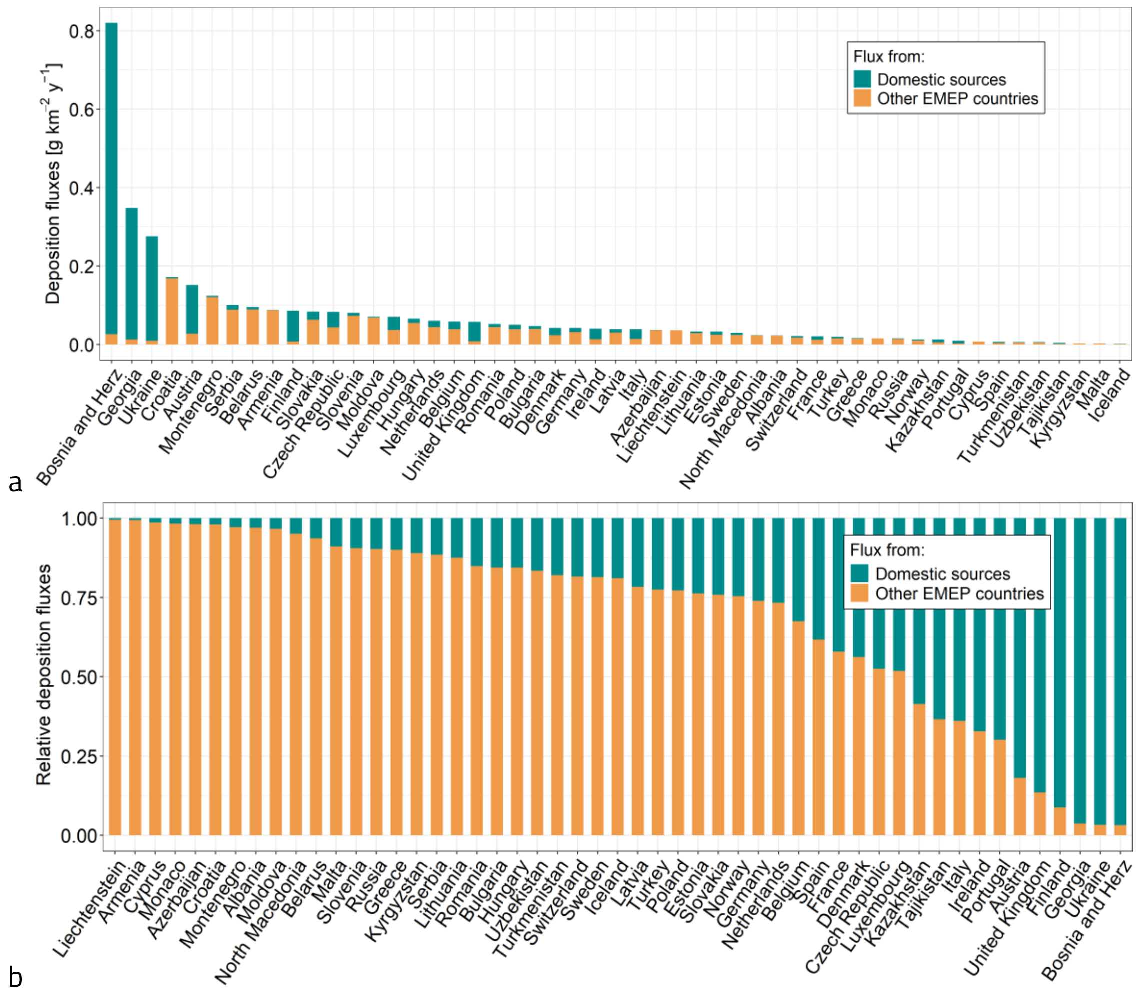


Fig. 3.40. *Country-average HCB anthropogenic deposition to EMEP countries (a) and relative contribution of domestic and foreign sources to HCB anthropogenic deposition in EMEP countries (b) in 2024.*

4. Research and developments

MSC-E continues research and development activities focused on in-depth process studies of HM and POP pollution, as well as on improving the quality of operational pollution assessments. This year's research topics include model assessment and source attribution of PAH pollution in the Arctic; analysis of the origin and dynamics of reactive Hg in the free troposphere as a potentially important pathway of Hg input to terrestrial and aquatic ecosystems; continued assessment of PAH pollution in Slovenia and the Western Balkan countries, currently focused on the development of a fine-resolution emission inventory for model assessment; and, finally, a pilot study of the global dispersion and cycling of a contaminant of emerging concern (CEC) – perfluorooctane sulfonate (PFOS).

4.1. Model assessment of PAH pollution in the Arctic

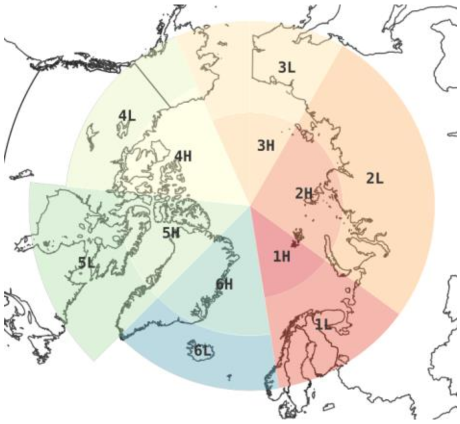
Polycyclic aromatic hydrocarbons (PAHs) reach the Arctic through long-range atmospheric transport, driven by poleward circulation, cold condensation, and Arctic Haze dynamics, despite the region having negligible local emission sources (Balmer et al., 2019; Wania & Mackay, 1993; Stohl, 2006; Dotrikova et al., 2021). Cold temperatures, polar night, and extensive snow and ice reservoirs further promote accumulation once deposited (Friedman and Selin, 2012; Dotrikova et al., 2021). Climate change is, however, fundamentally altering this picture: Arctic warming, permafrost thaw, sea ice loss, and intensifying wildfire activity are mobilising legacy PAH reservoirs and generating new emission sources within the Arctic itself (Song et al., 2023; Hung et al., 2016; AMAP, 2021; Ma et al., 2011), progressively transforming the region from a passive receptor into an active participant in its own contamination.

MSC-E conducted a multi-decadal analysis of atmospheric PAH burden and source attribution in the Arctic for the period 1990-2021 as part of the ongoing AMAP POP/CEAC Temporal Trend Assessment. Global field and source attribution simulations of the 16 EPA priority PAHs (Wise et al., 2025; Keith, 2015; Table 4.1) were performed with the GLEMOS multi-media chemical transport model using emission estimates from the GEMS database (Dai et al., 2025; GEMS, 2026).

Simulated air concentrations and total deposition were analysed for the Arctic as a whole and separately for the High and Low Arctic subregions (Fig. 4.1a). Source attribution was conducted using GEMS sectoral emissions – covering agriculture, commercial activity, industrial processes, industrial combustion, residential combustion, transport, electricity generation, and natural sources – further disaggregated by region of origin based on the grouped IPCC regions shown in Fig. 4.1b (Arctic, Eastern Europe and Northern Asia, Europe, North America, East Asia, South Asia, the Middle East, the Ocean, among others), yielding a sector–region tag for each simulated contribution.

Results are summarised as sums of low molecular weight (LMW) and high molecular weight (HMW) PAH groups (Table 4.1).

LMW PAHs are predominantly in the gas-phase in the atmosphere with higher vapour pressure and water solubility, while HMW PAHs are predominantly particle-bound, presenting lower vapour pressure and higher octanol-air partition coefficient (Chimjarn et al., 2021; Keyte et al., 2013). Consequently, LMW PAHs present greater long-range transport potential, faster re-volatilisation from surfaces, and shorter atmospheric residence times due to higher photochemical reactivity; whereas HMW PAHs are more persistent and less reactive in the atmosphere, strongly associated with combustion sources, and more efficiently scavenged by dry and wet deposition – including snow and ice in the Arctic (Keyte et al., 2013; Daly & Wania, 2004; Lei & Wania, 2004).



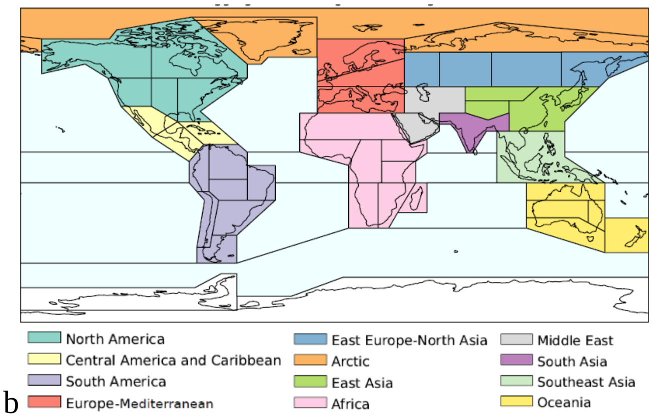


Fig. 4.1. *Arctic subregions (a), including the High Arctic (1H, 2H, 3H, 4H, 5H) and the Low Arctic (1L, 2L, 3L, 4L, 5L, 5Lp, 6L), and grouped IPCC regions (b).*

Table 4.1. *The 16 EPA priority PAHs and their classification into low molecular weight (LMW; 2-3 rings) and high molecular weight (HMW; 4-6 rings) groups.*

Compound	Code	Rings	Class	Compound	Code	Rings	Class
Naphthalene	NAP	2	LMW	Benzo[a]anthracene	BaA	4	HMW
Acenaphthylene	ACY	3	LMW	Chrysene	CHR	4	HMW
Acenaphthene	ACE	3	LMW	Benzo[b]fluoranthene	BbF	5	HMW
Fluorene	FLO	3	LMW	Benzo[k]fluoranthene	BkF	5	HMW
Phenanthrene	PHE	3	LMW	Benzo[a]pyrene	BaP	5	HMW
Anthracene	ANT	3	LMW	Indeno[1,2,3-cd]pyrene	IP	6	HMW
Fluoranthene	FLA	4	HMW	Dibenz[a,h]anthracene	DahA	5	HMW
Pyrene	PYR	4	HMW	Benzo[g,h,i]perylene	BghiP	6	HMW

Results indicate that the total deposition of the summed 16 PAHs declines notably in the High Arctic from 1990 to 2010, followed by an increase toward 2020 (Fig. 4.2a). The Low Arctic exhibits a similar decreasing pattern over the first two decades, but a substantially stronger increase in the final decade (Fig. 4.2b). In both subregions, the recent increase is predominantly driven by LMW compounds. A key structural difference emerges between subregions: although LMW PAHs dominate throughout the study period in both subregions, HMW PAHs account for up to 40% of total deposition in the High Arctic during the first decade, with their contribution declining thereafter. In contrast, their contribution does not exceed 8% in the Low Arctic throughout the period.

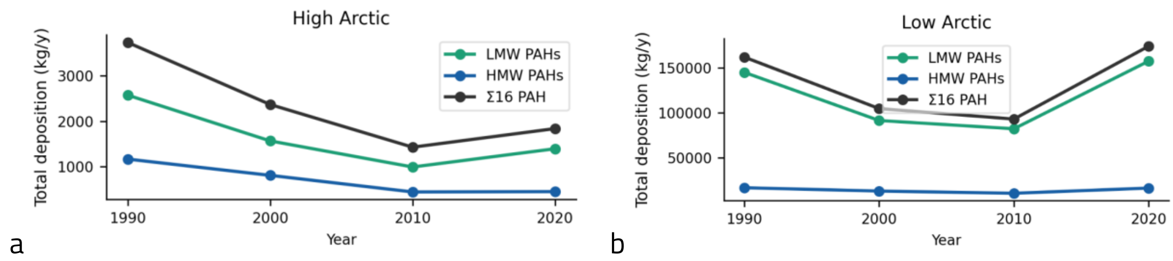


Fig. 4.2. *Annual total deposition of the sum of LMW, HMW and all 16 PAHs over the 1990-2020 period in the High Arctic (a) and the Low Arctic (b).*

Spatially, deposition fluxes are highest over the European and North Asian sectors of the Arctic domain (Fig. 4.3). Comparing the first and last decades of the study period, a clear decrease in deposition flux is evident over European source regions, with more modest and localised changes over parts of North America, Northern Asia, and western Greenland.

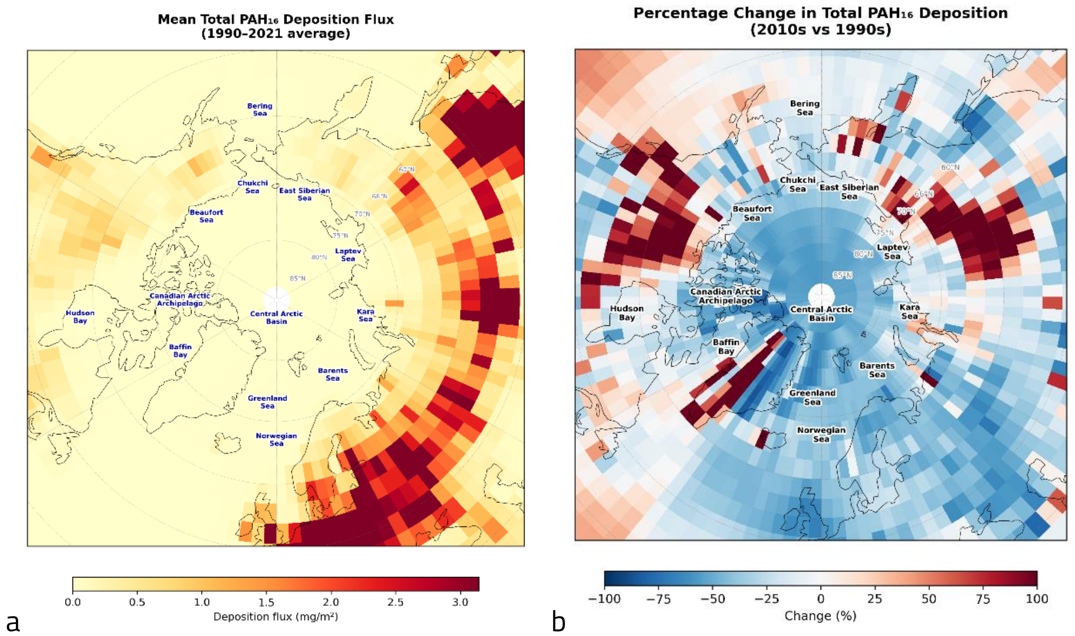


Fig. 4.3. *Spatial distribution of the mean total deposition flux of the sum of 16 PAHs over the period 1990-2021 (a) and the relative change in total deposition between the 1990-2000 and the 2010-2021 subperiods (b).*

Source attribution analysis reveals a marked shift in the composition and origin of the Arctic PAH burden over the three decades (Fig, 4.4). Residential combustion remains the dominant sectoral contributor to HMW deposition throughout the period, though its relative share has declined gradually, particularly in the Low Arctic. Transport shows a decreasing trend for LMW compounds, while industrial combustion has marginally increased its contribution to the Low Arctic across both compound groups. The most significant change is the growing contribution of natural and secondary emissions – encompassing wildfires and re-emission of legacy compounds (both recently deposited and long-term accumulated) – which now represent the leading source category, most prominently in the Low Arctic. Re-emission, relevant primarily for lighter, more volatile LMW compounds, has grown into a substantial source signal, predominantly expressed in the gas phase.

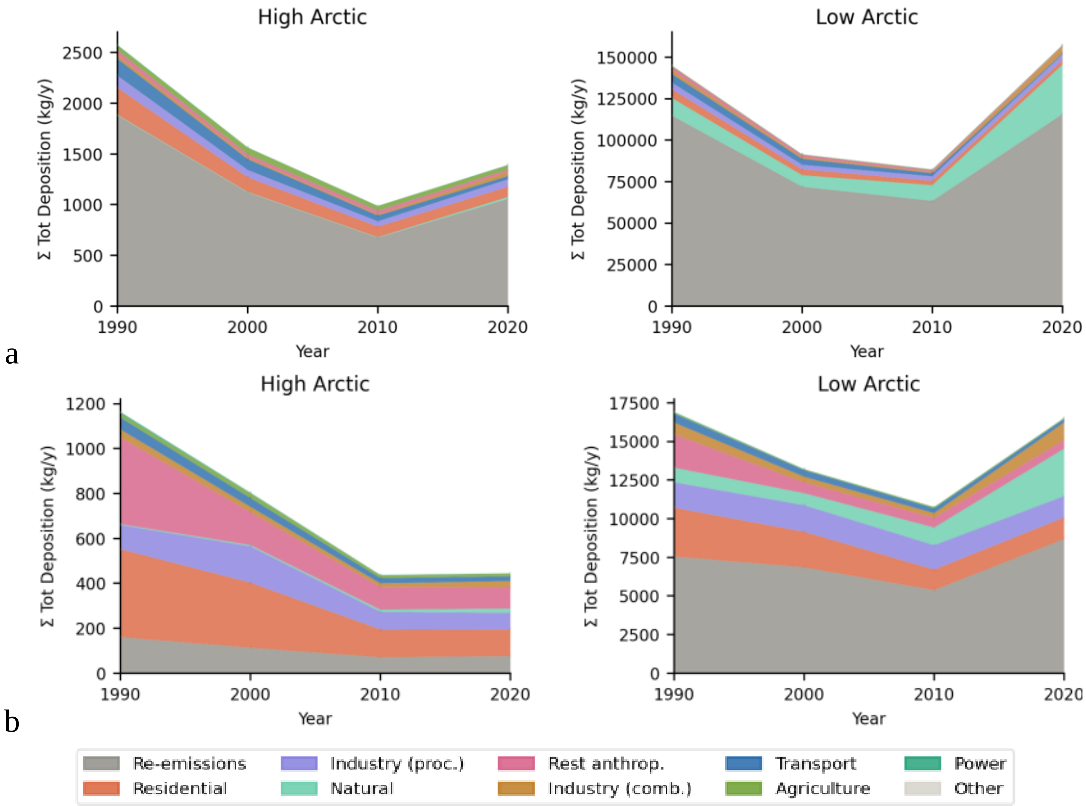


Fig. 4.4. *Sectoral contributions to the total deposition of the sum of LMW PAHs (a), and HMW PAHs (b) in the High Arctic and the Low Arctic for 1990, 2000, 2010, and 2020.*

The regional attribution reflects an equally pronounced transition. Europe and East Asia were the dominant contributing regions in 1990-2000, with Europe maintaining strong influence over High Arctic LMW deposition throughout the period and East Asia remaining relevant for High Arctic HMW compounds (Fig. 4.5). Eastern Europe and Northern Asia sustain a broadly constant and dominant contribution to HMW deposition across the full Arctic. Most notably, the Arctic region itself has emerged as the primary contributing region for Low Arctic total deposition by 2020, a role it played only marginally in earlier decades. Summarising the combined sector-region picture, total deposition in the High Arctic has been consistently led by residential combustion and industrial processes with Europe and East Asia as principal source regions throughout 1990-2010, shifting by 2020 toward residential combustion, industrial processes, and industrial combustion with Europe and the Arctic region as leading contributors. In the Low Arctic, the transition is more dramatic, moving from natural sources and residential combustion with European and Eastern

European/North Asian origins in 1990-2000, to natural and secondary sources overwhelmingly dominating by 2020 with the Arctic region itself as the primary source region.

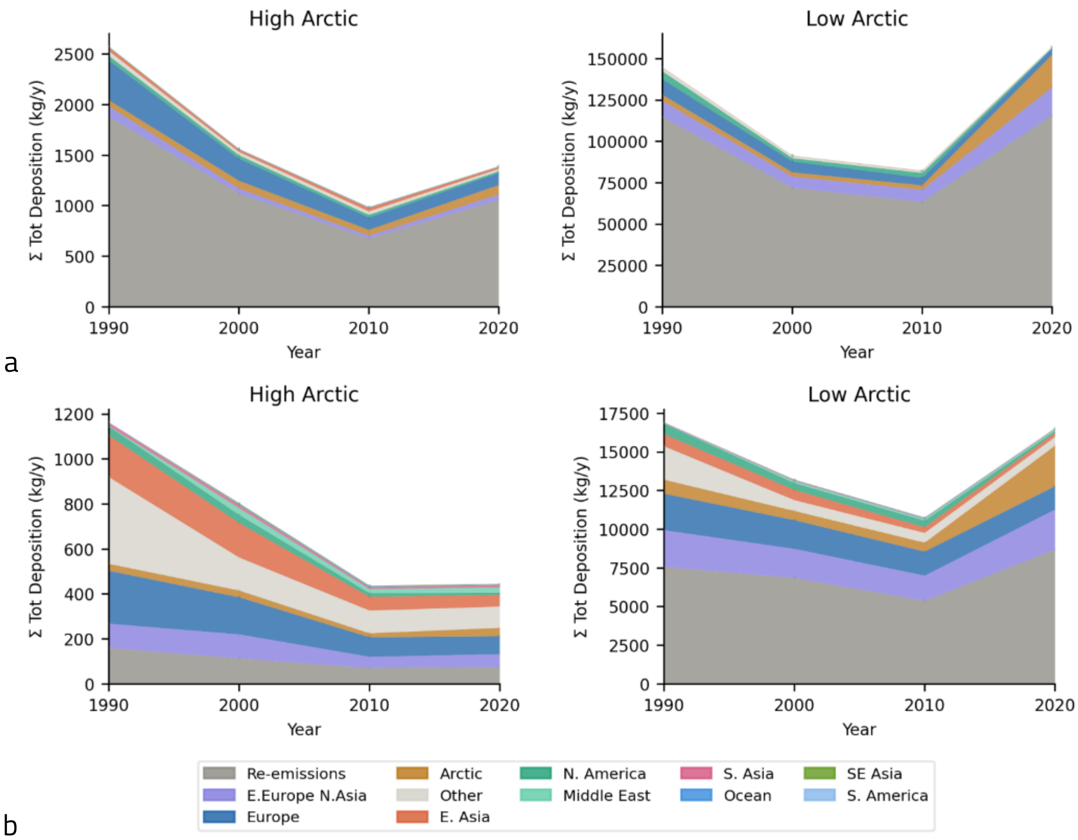


Fig. 4.5. *Regional contributions to the total deposition of the sum of LMW PAHs (a), and HMW PAHs (b) in the High Arctic and the Low Arctic for 1990, 2000, 2010, and 2020.*

Taken together, these results document a fundamental reorganisation of Arctic PAH contamination over the 1990-2020 period (Fig. 4.6). The historic pattern of long-range transport from industrialised mid-latitude regions – most prominently Europe and East Asia – has given way to a system increasingly driven by natural and re-emission processes originating within the Arctic itself. This transition, amplified by climate-driven changes in wildfire regimes and the volatilisation of legacy reservoirs, has important implications for future Arctic pollution projections and for the scope of emission control strategies: a growing fraction of Arctic PAH burden is now tied to processes that lie beyond the reach of conventional regulatory frameworks, underscoring the need to integrate climate feedbacks explicitly into both modelling approaches and Arctic environmental governance.

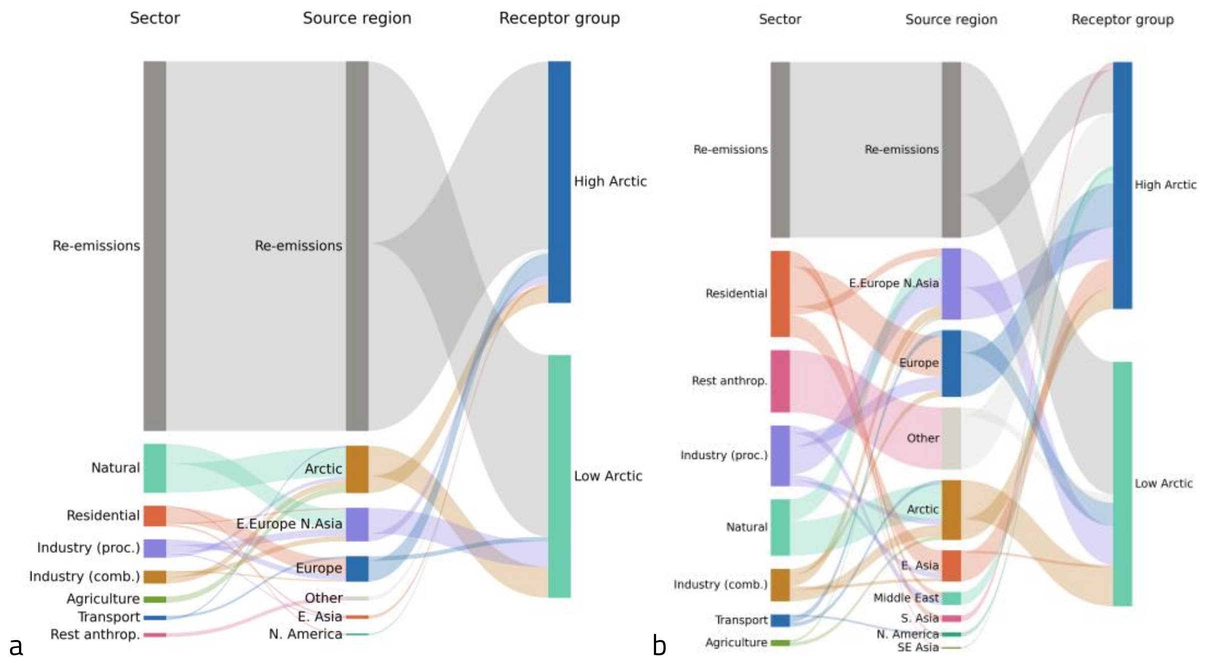


Fig. 4.6. *Combined sector-region contributions to the total deposition of the sum of LMW PAHs (a) and HMW PAHs (b) in 2020 for the High Arctic and the Low Arctic.*

4.2. Reactive mercury in the free troposphere

Reactive mercury (RM) in the atmosphere comprises gaseous oxidized mercury (GOM) and particulate-bound mercury (PBM). It reflects the chemistry of atmospheric Hg and plays an important role in Hg deposition, serving as a sink of atmospheric Hg. The elevated production rates of RM by oxidation of gaseous elemental mercury (GEM) are known to occur in the upper troposphere and lower stratosphere, based on aircraft Hg measurements (Lyman and Jaffe, 2012). However, up to date, ground-based measurements of RM have not been able to unambiguously observe the upper-tropospheric or stratospheric influence. It is particularly important for correct simulation of Hg atmospheric cycle and its effect on the ground-level pollution.

To address this, MSC-E developed an advanced statistical approach that combined time series decomposition and back trajectories of air masses obtained using Hybrid Single-Particle Lagrangian Integrated Trajectory (HYSPLIT). An observation site at Mauna Loa (Hawaii, USA) was chosen for the case study due to its high elevation and uniquely elevated RM observation values (Figure 4.7). Moreover, RM measurements are very limited in Europe and the chosen site is the only available high-elevation long-term RM monitoring site. The Mauna Loa Observatory is located on the north side of the Mauna Loa Volcano at an elevation of 3399 m above sea level (m asl); however, the volcano was inactive during the investigated period (2011-2022) and any influence of volcanic activity on Hg concentrations at the station during the period is negligible.

Atmospheric Hg fractions (GEM, GOM, and PBM), ozone, and specific humidity time series at Mauna Loa (Figure 4.7; Annex D, Figure D.1) were decomposed using the empirical mode decomposition

(EEMD) combined with the Hilbert-Huang transform (HHT) (Huang and Wu, 2008; Wu and Huang, 2009). Notably, the bias-corrected GOM concentrations were obtained using the correction approach described in (Travnikov et al., 2025; Section 4.4). The EEMD approach separated each signal into intrinsic mode functions (IMFs) representing oscillations at different time scales. The IMFs were used to identify statistically significant cycles and infer their potential environmental origins. Each IMF was then further examined using HHT to obtain time-frequency spectra. This combined approach, previously applied to geophysical and environmental signals, followed the procedures described by Gačnik et al. (2026).

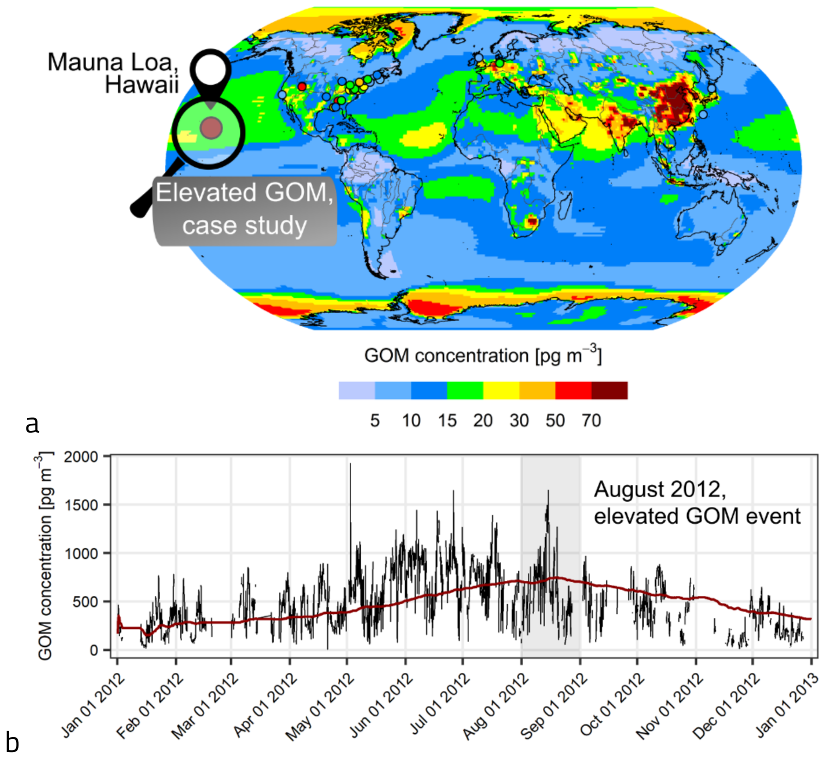


Fig. 4.7. *(a) Global distribution of GOM concentrations averaged over the period 2010–2020. Circles show GOM observations using the same colour scale. (b) Temporal variation of daily GOM concentrations at Mauna Loa, Hawaii (USA), in 2012. The shaded area shows the period in August 2012 examined in detail, when persistently elevated GOM concentrations were observed. The dark red line indicates the 3-month moving average of GOM concentrations.*

During August 2012, Mauna Loa experienced prolonged elevated GOM concentrations (Fig. 4.7), with median values of 220 (130-310) pg m^{-3} for original data and 570 (390-790) pg m^{-3} for corrected data (Fig. 4.8b). About 30% of August 2012 GOM values exceeded the 90th percentile of the full 2011-2022 dataset. Elevated GOM coincided with ozone enhancement and specific humidity depletion, especially in the multi-day and multi-week cycles (Fig. 4.8a), indicating ozone-rich and dry upper-tropospheric air influence. HYSPLIT back trajectories supported this interpretation: 24% of August 2012 trajectories reached the upper troposphere, compared with 10% in August 2019, when GOM was low (Figure 4.8b).

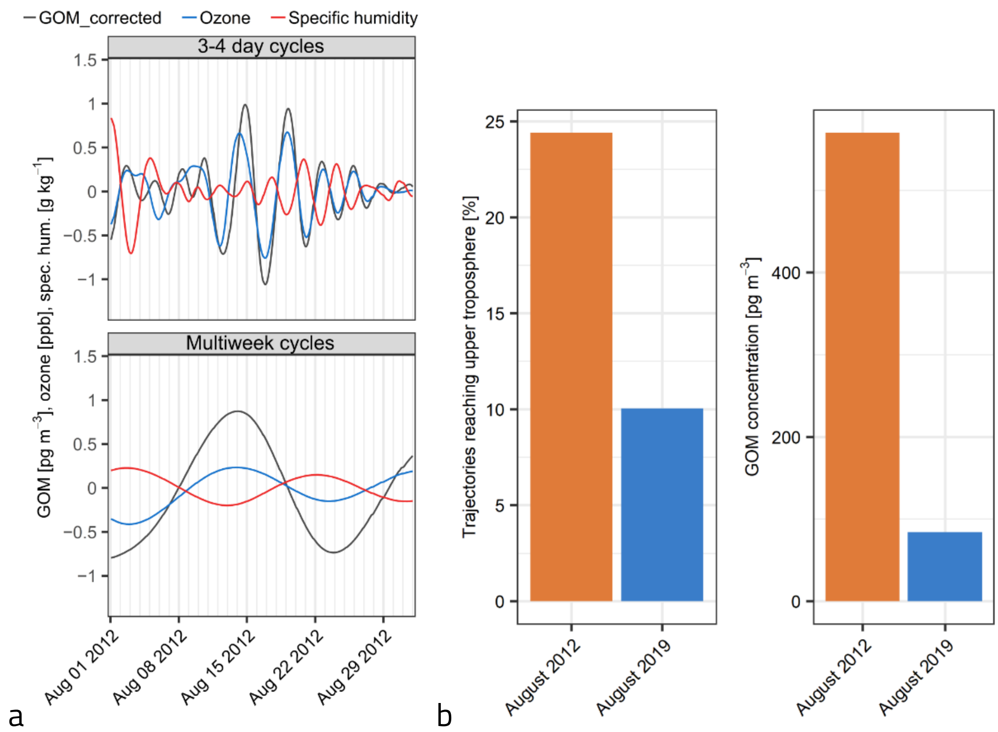


Fig. 4.8. *(a) Concurrent enhancement of ozone and depletion of specific humidity (signatures of upper-tropospheric and stratospheric air) associated with elevated GOM concentrations at Mauna Loa during August 2012. Shown are the cyclic components obtained using a time-series decomposition approach. (b) Percentage of HYSPLIT air-mass back trajectories reaching the upper troposphere during August 2012 (high GOM concentrations) and August 2019 (low GOM concentrations).*

For the whole investigated period (2011-2022), the EEMD of the corrected GOM time series revealed 10 statistically significant oscillations, ranging from weekly scales (4-12 days; IMFs 5-7), to seasonal scales (23-77 days; IMFs 8-10), and annual to multiannual scales (~1-5.3 years; IMFs 11-14) (Table D1). Daily and diurnal oscillations (IMFs 1-4) were insignificant (Table D1), indicating that GOM at Mauna Loa is not primarily driven by local boundary-layer processes, but by larger-scale atmospheric transport. The residual showed a decreasing GOM trend of 0.08 pg m^{-3} yr^{-1}, consistent with declining anthropogenic emissions and international controls following the Minamata Convention. Multiannual variability may reflect long-term circulation patterns, such as ENSO-related influences previously reported for GEM at high-altitude sites by Nguyen et al. (2022).

Cross-correlations between oscillations of Hg fractions, ozone, and specific humidity further supported upper-tropospheric influence (Fig. 4.9; Annex D, Figure D.2). Although the strongest correlations occurred in multiannual IMFs 13-14, the synoptic IMFs 5-9 were most relevant to transport events. These IMFs showed a 1:1 diagonal correlation pattern, with GOM (Fig. 4.9) and PBM positively correlated with ozone and negatively with humidity, while GEM showed the opposite behavior (Annex D, Figure D.2). Such patterns are consistent with previous evidence of long-range Hg transport from the upper troposphere (Weiss-Penzias et al., 2009). Together, the oscillation timescales and correlation structure indicate that episodic downward transport of upper-tropospheric air is the main driver of RM concentrations at Mauna Loa, and possibly also in other highly-elevated regions.

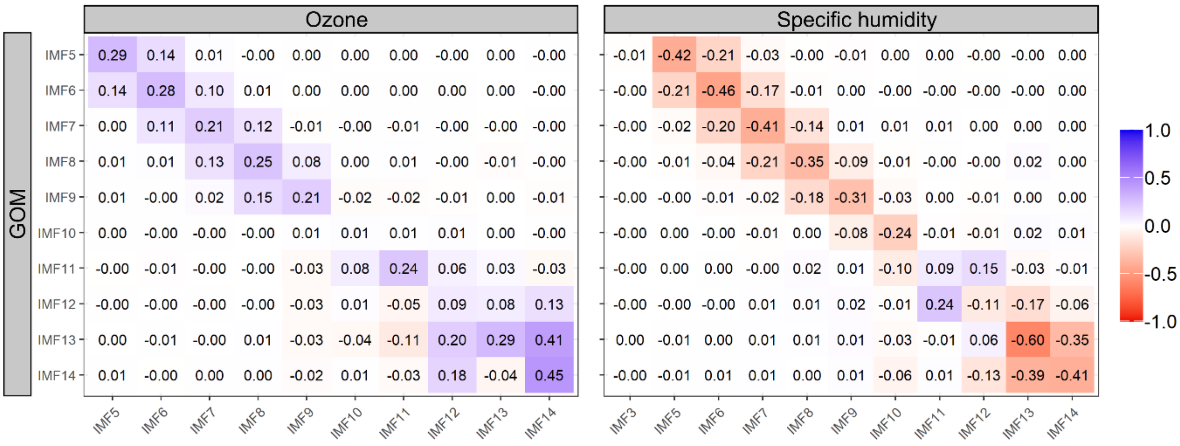


Fig. 4.9. *Matrices of cross-correlation between oscillations (IMFs) of GOM and ozone/specific humidity.*

In summary, high-altitude areas and regions characterized by deep convective mixing can be affected by upper-tropospheric and stratospheric air masses, where Hg is readily oxidized, enhancing its deposition through surface uptake and precipitation scavenging. This, in turn, can lead to increased Hg loads in terrestrial and aquatic ecosystems. However, the analysis of the observed effects for the EMEP region is complicated due to the lack of RM measurements in the region. In addition, advanced statistical analyses decomposing cyclic components of long-term observations revealed a general decline in atmospheric Hg concentrations at remote sites, reflecting the potential long-term effects of emission reduction measures introduced under international treaties such as the Air Convention and the Minamata Convention on Mercury.

4.3. Country-scale study of PAH pollution: Refining emissions data

A detailed atmospheric modelling assessment of PAH pollution at the country scale is being conducted by MSC-E as part of a pilot study initiated for Slovenia and the Western Balkan countries. High-resolution modelling requires a spatially detailed representation of anthropogenic emission sources. The current stage of the work therefore focuses on the development and compilation of a high-resolution emission inventory, which will serve as a key input for subsequent simulations. This section summarises the methodological approach used to construct the inventory, the data sources and spatial allocation procedures applied, and the main results obtained to date. The methodological example presented in this section focuses on B(a)P, but the same approach can also be applied to the compilation of emissions of other PAHs.

The analysis began with the identification and assessment of suitable existing emission inventories, followed by an evaluation of the key emission sectors relevant to the study region. Several existing inventories cover the pilot study region, which includes Slovenia and parts of Croatia, Italy, Austria, and Hungary. At the regional scale, emissions of four PAHs – B(a)P, B(b)F, B(k)F, and IP – are represented at a spatial resolution of 0.1°×0.1° in the official EMEP emission dataset, which is based on national submissions from countries that are Parties to the CLRTAP (Ullrich et al., 2025). The most recent global emission inventories available at 0.1°×0.1° resolution include long-term emission estimates for 30 PAHs covering the period 1960-2021, published by Dai et al. (2025); emission data for 16 PAHs covering the period 1960-2008, published by Shen et al. (2013); and EDGAR version 8.1 UPOPs, which provides emission data for four PAHs for the period 1970–2024 (Muntean et al., 2026).

Long-term changes in prepared by CEIP sector-specific B(a)P emissions in Slovenia are presented in Fig. 4.10a. Total B(a)P emissions in Slovenia in 2024 were approximately half the level reported in 1990. This reduction is largely explained by decreases in emissions from stationary residential combustion and industrial sources (Fig. 4.10b). These two sectors also make the largest contributions to total B(a)P emissions in Slovenia and were therefore identified as the key emission sectors considered in this study. The contribution of other sectors to the relative change in total emissions is negligible because their absolute contributions are very small compared with those of the key sectors.

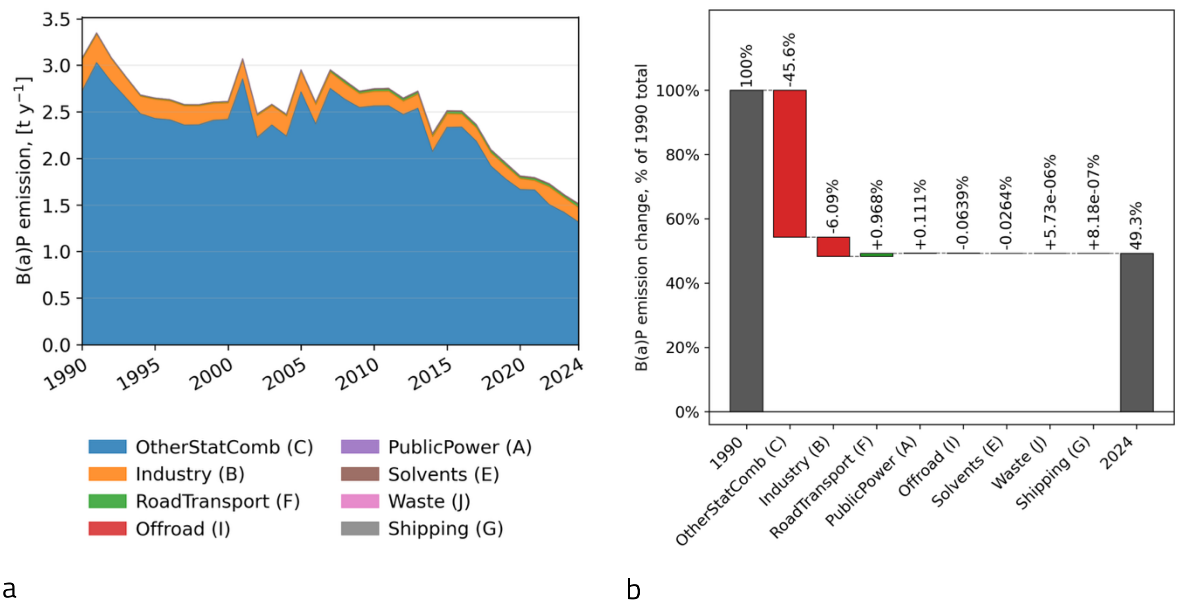


Fig 4.10. *Long-term changes in sector-specific B(a)P emissions in Slovenia (a), and sectoral contributions to the change in total B(a)P emissions between 1990 and 2023, expressed as percentages of total emissions in 1990 (b), based on gridded emissions prepared by CEIP from officially reported emissions for use in EMEP modelling.*

To obtain emission data at a higher spatial resolution of 0.02°×0.02°, the original 0.1°×0.1° gridded emissions prepared by CEIP from officially reported emissions for Slovenia and neighbouring countries were refined using a top-down spatial disaggregation approach. Emissions were spatially disaggregated using proxy data with appropriate spatial distributions. Different proxies were applied to different emission sectors and countries.

The disaggregation of the key B(a)P emission sectors is demonstrated in Figure 4.11. The spatial allocation of residential emissions in Slovenia was based on the coordinates of dwellings obtained from the Slovenian national cadastre (GURS, 2026), combined with information on building heights in urban areas from the Urban Atlas Building Block Height 2021 dataset (CLMS, 2026). The basic proxy was calculated from the number of dwellings in each 0.02°×0.02° grid cell, and building-height information was incorporated as a grid-cell-level correction factor. This this correction was made for urban areas and based on the assumption that high-rise buildings are more likely to be connected to district heating systems, to use more efficient heating systems than individual boilers or stoves, or to rely on electricity for heating and cooking. Emissions associated with incomplete biomass combustion are therefore expected to be less prevalent in these areas. For the parts of Croatia, Italy, Hungary, and Austria emissions from residential combustion were redistributed using population density as the primary proxy, with the proxy weights adjusted for building height using the same cell-level correction approach. (Figs. 4.11a, b). Population data were obtained from the LandScan mosaic dataset (Adams et al., 2025).

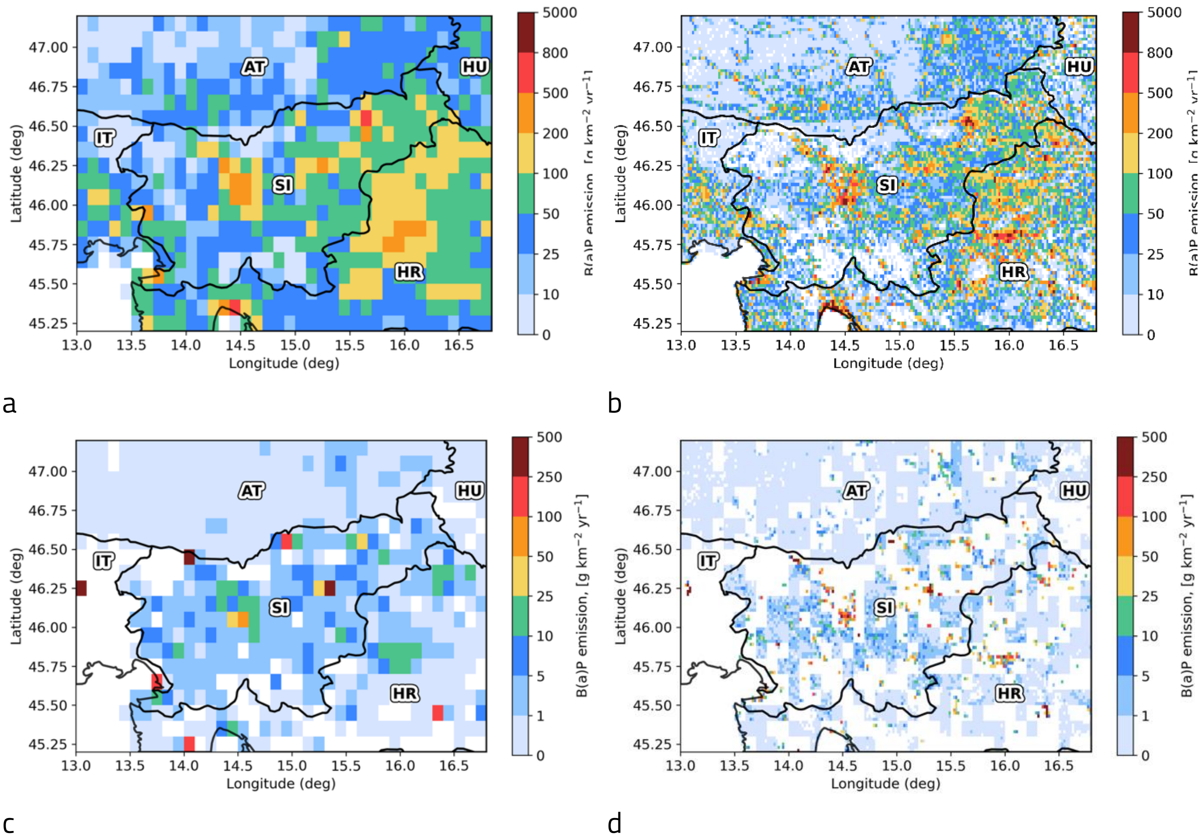


Fig. 4.11. *Spatial distribution of gridded B(a)P emissions from residential combustion (a, b) and industrial sources (c, d) in 2024 in the original EMEP 0.1°×0.1° emission dataset (a, c) and after redistribution to a 0.02°×0.02° grid (b, d). The codes indicate the countries covered by the study domain: Slovenia (SI), Austria (AT), Italy (IT), Hungary (HU), and Croatia (HR).*

Emissions from the industrial sector were spatially redistributed according to the proportion of industrial land cover within each 0.02°×0.02° grid cell (Figs 4.11c, d). These proportions were derived from the CORINE Land Cover dataset (EEA, 2020). This allowed the redistribution of all major emission sources, including grid cells containing point-source emissions with fluxes greater than 10 g km^{-2} yr^{-1}. However, some areas with small diffuse industrial emissions could not be redistributed because of inconsistencies between the emission and land-cover datasets. Diffuse emissions in such cells were redistributed using population density as the proxy. For other sectors for which suitable sector-specific proxies were unavailable, land-cover or population-density data were used as alternative proxies. Road transport emissions were spatially redistributed using road length as the allocation proxy. Road-length data were obtained from the European vector dataset of the Global Roads Inventory Project, version 4 (GRIP4), downloaded from the PBL Data Portal (Meijer et al., 2018).

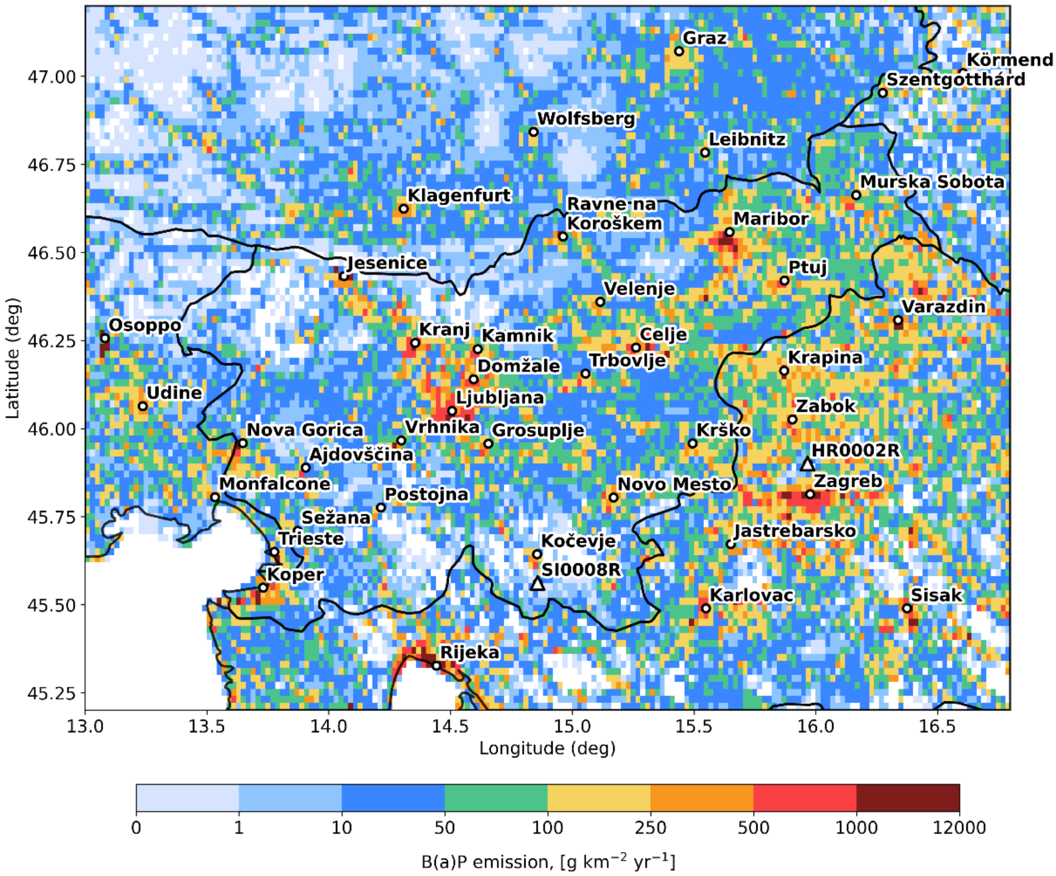


Fig 4.12. *Spatial distribution of B(a)P emissions in Slovenia and neighbouring areas in 2024 at a spatial resolution of 0.02°×0.02°, obtained by redistributing the EMEP 0.1°×0.1° gridded emissions (CEIP, 2026; Chapter 1).*

The resulting 2024 B(a)P emission field at a 0.02°×0.02° resolution for Slovenia and the neighbouring regions is presented in Fig. 4.12. The highest emission fluxes, exceeding 3000 g km^{2} yr^{-1}, were obtained for areas near Jesenice and Ravne na Koroškem in Slovenia, Potpićan in Croatia, and Osoppo in Italy. These high fluxes are primarily explained by emissions from the industrial sector. Elevated fluxes were also observed near densely populated cities, including Ljubljana, Maribor, Zagreb, and Rijeka, as well as in the Slovenian Adriatic coastal area near Koper.

Areas with no allocated emissions largely correspond to the sparsely populated Julian Alps and the extensively forested Dinaric karst regions of Notranjska and Kočevsko.

Overall, the developed inventory, which is based on publicly available datasets, captures the main spatial contrasts in B(a)P emissions across the study region while maintaining consistency with officially reported emissions at a coarser resolution. It therefore provides a suitable basis for pilot high-resolution atmospheric modelling. The inventory will be further improved in collaboration with national environmental authorities by refining the spatial allocation methods and developing more representative and temporally consistent proxies for all emission sectors.

The next stages of the pilot study will include finalising the preparation of the emission inventory and other required model input data, performing high-resolution atmospheric modelling simulations, evaluating the modelling results against a variety of observations, including EMEP observations and measurement data from mosses, analysing spatial patterns of PAH pollution, and conducting source attribution analysis of PAH levels using source-receptor modelling.

4.4. Pilot simulations of PFOS atmospheric pollution

There is growing awareness of the dispersion and accumulation of contaminants of emerging concern (CECs) across different environmental compartments (DeWitt et al., 2026). Both EMEP (ECE/EB.AIR/158/Add.1) and the Baltic Marine Environment Protection Commission (HELCOM) (HELCOM, 2021) considered the monitoring and assessment of atmospheric pollution by CECs to be of high interest. This motivated the development modelling approaches and the performance of pilot simulations for selected CECs within MSC-E to estimate the perspectives for further research.

Epidemiological and toxicological studies indicate that exposure to per- and polyfluoroalkyl substances (PFASs) is associated with a range of adverse human health effects. These include various types of cancer, metabolic alterations such as fatty liver disease and increased cholesterol levels, immune dysfunction, and more (DeWitt et al., 2026). Perfluorooctane sulfonate (PFOS), a member of the PFAS family, has been identified by HELCOM as a CEC indicator for pollution monitoring (HELCOM, 2018). Production of perfluorooctane sulfonyl fluoride (POSF), the main precursor of PFOS, began in 1949 and expanded rapidly after 1970. Following the voluntary phase-out by major manufacturers, POSF production declined substantially after 2000 (Paul et al., 2009). Despite these measures, historical emissions, contaminated environmental reservoirs, and ongoing releases from legacy products remain the dominant sources sustaining the widespread environmental presence of PFOS. PFOS, its salts, and POSF were listed in Annex B of the Stockholm Convention in 2009 due to their persistence, bioaccumulation potential, toxicity, and long-range transport potential (UNEP, 2009).

The reliability of multimedia simulations strongly depends on the physicochemical parameters that govern environmental partitioning and transport. Therefore, as part of the preparatory work for

PFOS simulations, a comprehensive inventory of PFOS physicochemical properties was compiled for all main environmental compartments. Nevertheless, significant gaps in knowledge of PFOS properties and emission estimates introduce considerable uncertainties into the simulation results presented below.

The present study focuses mostly on atmospheric loads of PFOS to aquatic and terrestrial environments. Therefore, only atmospheric emissions were considered in the modelling, while direct releases to oceans, freshwater bodies, and terrestrial waters were not taken into account at this stage. Although this approach may underestimate PFOS accumulation in aquatic environments and, consequently, re-emissions to the atmosphere, this effect is expected to be minor in comparison with that of direct anthropogenic emissions.

Because of the exceptional environmental persistence of PFOS, its historical accumulation in main environmental compartments continues to significantly influence current contamination levels. Therefore, long-term historical emissions must be considered when simulating the atmospheric transport and environmental fate of PFOS. To establish an operational assessment of PFOS within the GLEMOS modeling framework, long-term simulations of its global dispersion and accumulation in the atmosphere, soil, vegetation, and ocean waters should be performed.

To assess intercontinental transport and the contribution of global PFOS emission sources to pollution levels in different regions of the world, a long-term simulation covering the period 1950-2020 was carried out using the GLEMOS model with a spatial resolution of 3°×3°. A global scale POPE PFAS emission inventory (v3.1.2) was used in the study (Simon and Bieser, 2026; Simon et al., 2026). This simulation was conducted to evaluate the distribution and accumulation of PFOS in environmental media and to provide initial and boundary conditions for subsequent, more detailed regional simulations. The long-term evolution of global net mass fluxes of PFOS inter-media exchange, as well as emissions and degradation, is presented in Fig. 4.13.

Global PFOS emissions increased steadily from the early 1950s, reaching approximately 54 t yr^{-1} in 1995. Following the voluntary phase-out by major manufacturers in North America, Europe, and Japan in the early 2000s, emissions declined temporarily before increasing again after 2006 due to a shift of major production to Asia (mainly China), followed by increased emissions in the region, with global emissions reaching approximately 98 t yr^{-1} by 2020 (Simon et al., 2026). Throughout the simulation period, negative net exchange fluxes indicate that PFOS was transferred from the atmosphere to soil, ocean water, and vegetation, demonstrating that these environmental compartments acted as long-term sinks for atmospheric PFOS.

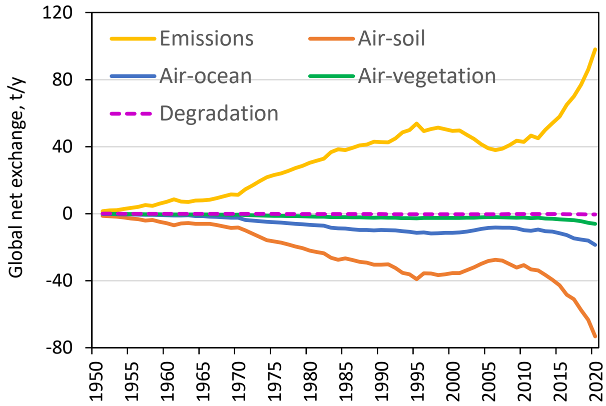


Fig. 4.13. *Long-term changes in PFOS mass fluxes between the atmosphere and other environmental media (positive values indicate fluxes from media to the atmosphere, negative values indicate fluxes in the opposite direction).*

Among the three exchange pathways, atmosphere-to-soil deposition represented the dominant transfer process, with the net flux increasing in magnitude from nearly zero in the 1950s to approximately -73 t yr^{-1} by 2020, indicating that soils acted as the principal long-term sink for atmospheric PFOS through both dry and wet deposition. Net transfer from the atmosphere to the ocean stabilized at approximately -19 t yr^{-1} during the later simulation period, whereas the net atmosphere-to-vegetation flux remained comparatively smaller, reaching approximately -6.5 t yr^{-1} by the end of the simulation. In contrast, degradation remained negligible throughout the simulation period, reflecting the exceptional environmental persistence of PFOS.

Figure 4.14 shows the spatial distribution of global annual mean PFOS concentrations in air, soil, ocean water, and vegetation for 2020. The highest atmospheric concentrations (above 10 pg m^{-3}) are observed over East Asia (particularly eastern China), South Asia (India), Europe, and eastern North America, corresponding to regions with historically intensive PFOS production and use, as well as high population density and industrial activity. In contrast, substantially lower concentrations are estimated throughout the Southern Hemisphere and over remote oceanic regions. In South America, Africa, and Oceania (Australia and New Zealand), annual mean atmospheric PFOS concentrations generally range from 0.1 to 1 pg m^{-3}. In Europe, higher concentrations are observed over Central and Western Europe, ranging from 3 to 20 pg m^{-3}, with distinct hotspots across Germany, northern France, northern Italy, the southern United Kingdom and parts of Central Europe. Atmospheric concentrations decrease gradually to 0.1-3 pg m^{-3} toward Northern Europe, the Iberian Peninsula, and the Mediterranean region. The very few available PFOS measurements in Northern Europe show a decreasing trend until 2018, from 1.4 pg m^{-3} to 0.4 pg m^{-3}, followed by relatively stable concentrations in more recent years (see Chapter 2). Over remote oceanic regions, including the Pacific, Atlantic, Indian, and Southern Oceans, atmospheric PFOS concentrations are generally below 0.1 pg m^{-3}.

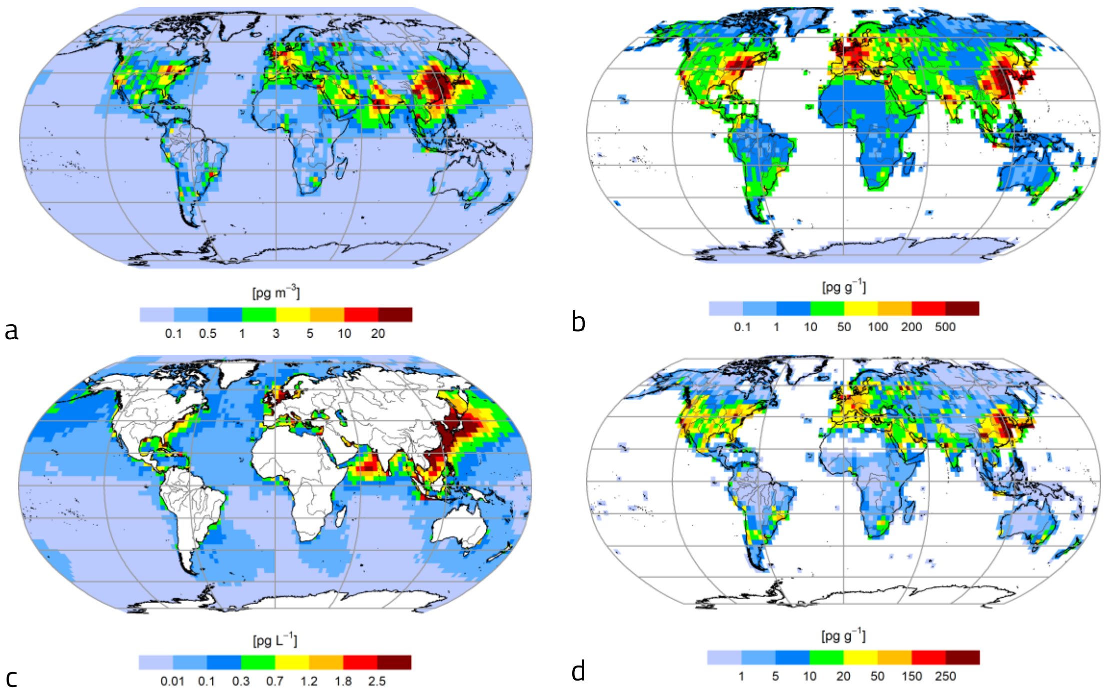


Fig. 4.14. *Spatial distribution of PFOS annual mean concentrations in air (a), soil (b), ocean water (c), and vegetation (d) in 2020.*

Similar spatial patterns are simulated for the other environmental compartments. In soil, ocean water, and vegetation, the highest PFOS concentrations are estimated in the Northern Hemisphere, particularly over eastern North America, Europe, and East and South Asia, while substantially lower concentrations are estimated across the Southern Hemisphere. Higher atmospheric concentrations are observed mainly in areas around the main emission sources, resulting in local pollution hotspots (Fig. 4.14). This spatial pattern indicates that direct atmospheric transport of PFOS is relatively limited and deposition occurs primarily near source areas, consistent with its low volatility.

5. Cooperation

MSC-E maintains scientific cooperation with a range of international and national organisations, supporting the further development of the Centre's research and assessment methods and the exchange of scientific knowledge generated under the Convention. This cooperation involves the EMEP Task Forces, the International Cooperative Programmes of the Working Group on Effects (WGE), the Minamata Convention on Mercury, the Baltic Marine Environment Protection Commission (HELCOM), the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR), the Arctic Monitoring and Assessment Programme (AMAP), and other international organisations.

5.1. Task Force on Measurements and Modelling

MSC-E, in collaboration with the Department of Environmental Sciences at the Jožef Stefan Institute (JSI), hosted the 27th annual meeting of the Task Force on Measurements and Modelling (TFMM) under the EMEP programme, which took place in Bled, Slovenia, on 28-29 April 2026. Key topics of the meeting included updates from EMEP Centres, aerosol chemical speciation (including secondary aerosols, condensables, and CECs), the contribution of VOCs to ozone pollution in Europe, source apportionment modelling applications, and the role of natural emissions in the long-range transport of air pollution.

The MSC-E team actively contributed to the meeting by presenting progress in the Centre's ongoing activities and engaging in discussions on current research topics and future priorities. MSC-E also presented an overview of its research and model development work, highlighting several areas: the multi-model study of mercury pollution (MCHgMAP), the downscaling of PAH pollution assessments for Slovenia, the use of moss biomonitoring for model evaluation, the impact of wildfires on dioxin pollution, and trends in marine pollution in the Baltic Sea and the North-East Atlantic Ocean. In addition, an MSC-E expert presented an ongoing study on source attribution modelling of PAH pollution in the Arctic.

5.2. Task Force on Hemispheric Transport of Air Pollution

MSC-E continues its active collaboration with the Task Force on Hemispheric Transport of Air Pollution (TF HTAP). The Centre participates in a number of ongoing cooperative activities initiated under TF HTAP, including the Multi-Compartment Mercury Modelling and Analysis Project (MCHgMAP), the multi-model, multi-pollutant study of the impacts of wildfires and biomass burning emissions (HTAP-Fires), and the study of environmental pollution by per- and polyfluoroalkyl substances (HTAP-PFAS). In addition, MSC-E participated in the annual TF HTAP meeting, contributing to discussions on current research topics and future plans.

The annual TF HTAP meeting took place in Hamburg, Germany, on 8-9 April 2026. At the meeting, MSC-E organised and chaired a session on the Multi-Compartment Mercury Modelling and Analysis Project (MCHgMAP), which supports the effectiveness evaluation of both the Air Convention and the Minamata Convention on Mercury. The session focused on the results of the first phase of the project. MSC-E provided an overview of the project, its key findings, and future plans, and presented an analysis of reactive mercury in the atmosphere based on corrected observational data and model ensemble simulations.

The Centre also contributed to discussions on the HTAP-Fires activity. An MSC-E representative presented an analysis of available emission inventories of dioxins and furans (PCDD/Fs), along with initial global simulations and plans for further work. MSC-E also participated in a session on the newly launched HTAP-PFAS initiative, contributing to discussions on available data, modelling approaches, and the development of a future simulation programme, as well as to round-table discussions on potential policy and research applications.

5.3. Minamata Convention on Mercury

The Multi-Compartment Mercury Modelling and Analysis Project (MCHgMAP) is an international research initiative established within TF HTAP in cooperation with the Minamata Convention on Mercury. The project applies a multi-model approach to assess and attribute spatial patterns and long-term changes in Hg pollution. It integrates atmospheric, ocean, terrestrial, and global mercury budget models and strengthens interactions among the emission inventory, monitoring, and modelling communities, with the aim of improving the scientific basis for global policy assessment (Fig. 5.1). The design and programme of the multi-model experiments are described in detail in (Dastoor et al., 2024).

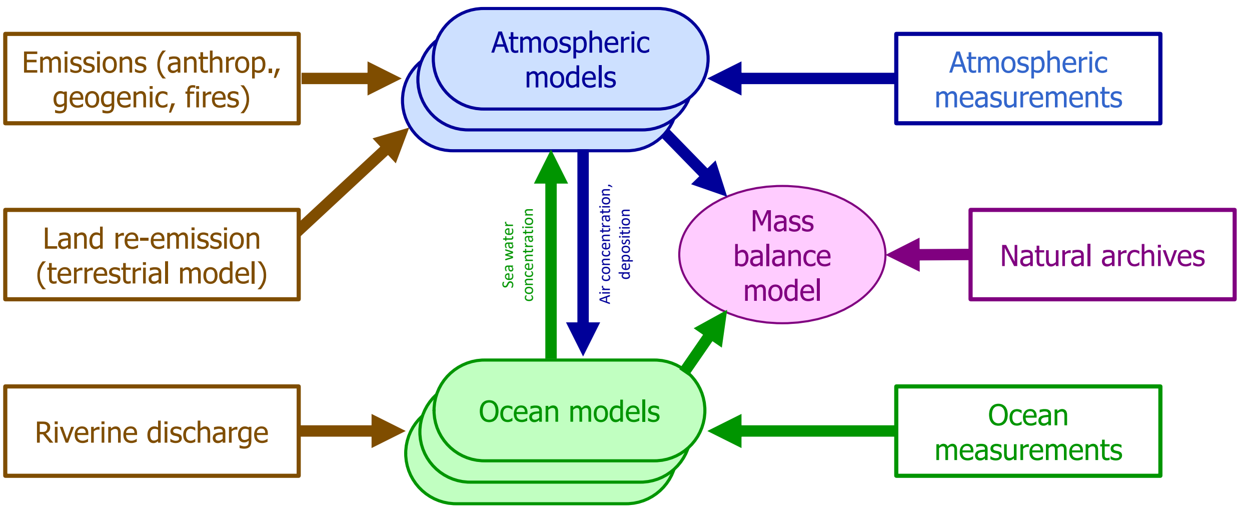


Fig. 5.1. *Schematic representation of the MCHgMAP modelling framework*

MSC-E contributes to MCHgMAP through its active involvement in the development, coordination, and assessment of the project's atmospheric modelling activities. The Centre has played a role in establishing the overall framework for model simulations and their analysis, developing the multi-model experimental design, and defining requirements for model outputs. MSC-E is also involved in evaluating the simulation results and preparing their presentation and reporting.

Results from the first phase of the project were included in the Scientific Report of the Open-Ended Scientific Group (OESG), prepared to support the first effectiveness evaluation of the Minamata Convention on Mercury. The main atmospheric findings include the global distribution of Hg levels and their evaluation against observations, analysis of seasonal variations in Hg concentrations, and attribution of observed trends to natural and anthropogenic drivers. The ocean-related work covers the spatial patterns and temporal variability of ocean Hg, its sensitivity to natural and anthropogenic factors, and evaluation of secondary Hg emissions from the ocean. In addition, the multimedia analysis includes reconstruction of the global Hg mass budget and assessment of temporal changes in Hg re-emissions.

As part of the analysis, multi-model ensemble MCHgMAP simulations were used to explore the sensitivity of Hg air concentrations and deposition to emission sources, meteorological parameters, and surface characteristics. Correlation analysis across the IPCC reference regions (Iturbide et al., 2020) showed that Hg^0 concentrations are most strongly associated with anthropogenic emissions, with weaker positive correlations with other terrestrial emissions and re-emissions (Fig. 5.2). Oxidised Hg concentrations generally show weak correlations, except for a positive association with anthropogenic emissions. Dry deposition is strongly correlated with vegetation cover (LAI) and several emission sources, while showing negative correlations with wind speed and Br concentrations. Wet deposition is primarily associated with precipitation and air temperature and is negatively correlated with snow and sea-ice cover.

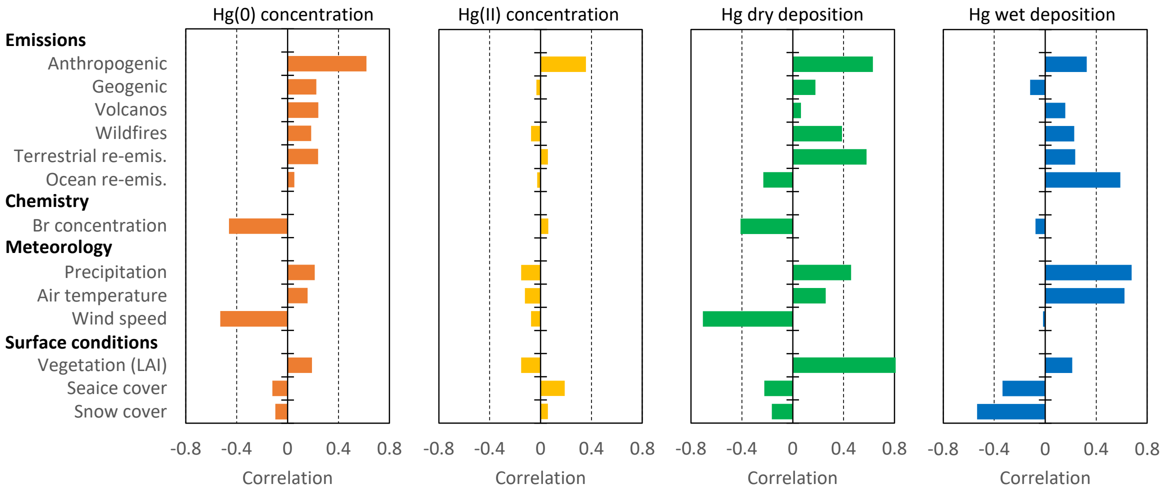


Fig. 5.2. *Correlation of Hg concentrations and deposition across IPCC regions with emissions and environmental factors*

Overall, the multi-model assessment identified the following key findings on Hg pollution at the global scale:

- Hg concentrations are elevated over industrial and artisanal mining regions, while Hg deposition is highest in the northern mid-latitudes and tropical forests.
- Hg levels are declining in the Northern Hemisphere (NH) due to reductions in anthropogenic emissions, while trends in the Southern Hemisphere (SH) remain uncertain and are affected by artisanal gold mining emissions.
- Environmental drivers have minor effects on Hg concentration trends but modest effects on Hg deposition.
- Ocean Hg concentrations are highest in the Northern Hemisphere, upwelling regions, and polar areas, coinciding with regions of high productivity.
- Ocean Hg levels are largely stable, with natural variability (e.g., ENSO) driving short-term changes.
- Global Hg cycling is dominated by legacy re-emissions from soils and oceans (~70%), while current anthropogenic emissions contribute ~25%.
- Further emission reductions are possible under stronger policy implementation, but uncertainties remain high, particularly for artisanal mining and waste sectors.

The MCHgMAP project activities will continue in coordination with TF HTAP, with the next phase focusing on an in-depth analysis of the processes driving Hg cycling (atmosphere-ocean and atmosphere-vegetation exchange, atmospheric chemistry) and simulations of prehistorical and future scenarios.

5.4. ICP-Vegetation

MSC-E participated in the 39th Task Force Meeting of the International Cooperative Programme on Effects of Air Pollution on Natural Vegetation and Crops (ICP-Vegetation) of the Working Group on Effects (WGE), held in Rome, Italy, from 17 to 19 February 2026. An MSC-E representative presented the Centre's ongoing work on species-specific source attribution of PAHs across European countries, combining atmospheric modelling with moss biomonitoring. The results demonstrated how moss survey data can serve as a robust, independent dataset for validating chemical transport model source attribution of PAHs. The presentation reinforced the value of continued cooperation between EMEP/MSC-E and WGE/ICP-Vegetation, and the meeting agreed on a joint work plan to use metals in moss data to support deposition modelling, as well as to compare emission trends with those observed in moss data.

The ongoing partnership between MSC-E and ICP-Vegetation contributes to a better understanding of heavy metal and POP pollution across the region. By combining modelling and biomonitoring data, these joint efforts can improve pollution assessments, particularly in areas with limited air monitoring coverage, such as Eastern Europe and the Western Balkans.

5.5. Arctic Monitoring and Assessment Programme

MSC-E re-established its collaboration with the Arctic Monitoring and Assessment Programme (AMAP), contributing a multi-decadal analysis of the Arctic atmospheric PAH burden and source attribution as part of the ongoing AMAP POP/CEAC Temporal Trend Assessment. Covering the period 1990–2021, the study was based on simulations of the 16 EPA priority PAHs using the GLEMOS multimedia chemical transport model and is intended to complement ongoing work on the PAC assessment of temporal trends in atmospheric and biota measurements. A short description of the simulation results is presented in Section 4.1. These results provide novel, policy-relevant insights into the evolving sources of Arctic PAH contamination and underscore the need for Arctic governance frameworks to account for climate-driven secondary pollution alongside traditional controls on transboundary emissions.

5.6. Marine Conventions

MSC-E collaborates with the Baltic Marine Environment Protection Commission (HELCOM) and the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) on the assessment of marine environment pollution by heavy metals and POPs. This work is carried out under a long-term contract between the EMEP Centres and HELCOM and a bilateral contract between MSC-E and OSPAR, respectively. As part of these agreements, atmospheric deposition of Pb, Cu, HCB, and PCDD/Fs to the Baltic Sea, and of Pb and Cu to the North-East Atlantic, was estimated for the period 1990–2023. Updated data on emissions, modelled deposition fields, and source apportionment are presented in the Joint Report of the EMEP Centres for HELCOM (HELCOM, 2025) and the EMEP/MSC-E Technical Report 1/2026 for OSPAR (Travnikov et al., 2026).

Atmospheric deposition of Pb, Cu, HCB, and PCDD/Fs to the Baltic Sea was calculated for the period 1990-2023 using the GLEMOS model (v2.3.0). According to the model calculations, annual total atmospheric deposition of Pb, Cu, HCB, and PCDD/Fs to the entire Baltic Sea basin decreased by 91%, 29%, 95%, and 54%, respectively, between 1990 and 2023 (Fig. 5.3). The rates of decline in Pb, HCB, and PCDD/F deposition were higher during the early part of the assessment period (1990-1997) than during the later period (1998-2023). Cu deposition decreased sharply in the early 1990s, after which the decline slowed considerably and deposition remained relatively stable.

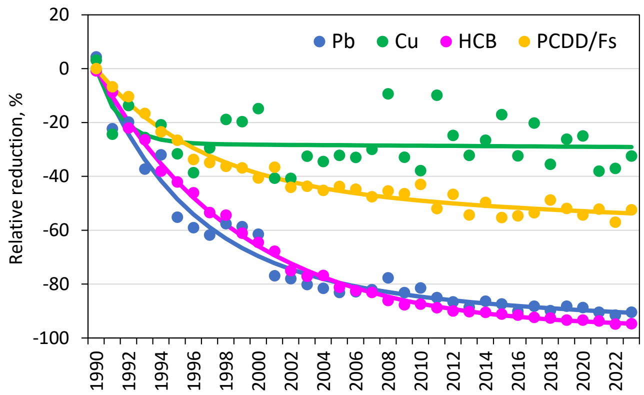
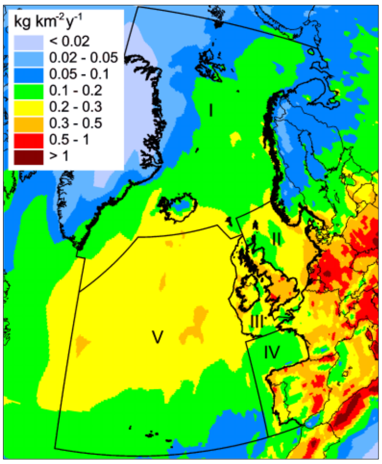


Fig. 5.3. *Relative reduction of Pb, Cu, HCB, and PCDD/Fs deposition to the Baltic Sea over the period 1990-2023.*

Figure 5.4 shows the spatial distribution of annual total Pb and Cu deposition fluxes over the North-East Atlantic within the OSPAR maritime area in 2023. The highest Pb deposition fluxes occurred in the Greater North Sea, close to major European emission sources, exceeding 0.2 kg km^{-2} y^{-1}. The lowest deposition levels, below 0.05 kg km^{-2} y^{-1}, were observed at high latitudes in the Arctic Waters. Somewhat elevated deposition was also predicted in the Wider Atlantic due to high precipitation amounts. The highest Cu deposition fluxes, exceeding 0.5 kg kg km^{-2} y^{-1}, were estimated over the south-eastern part of the Greater North Sea. Somewhat lower levels were estimated in the Celtic Seas (0.1-0.5 kg km^{-2} y^{-1}), while the lowest deposition occurred in the northernmost part of the Arctic Waters (below 0.01 kg km^{-2} y^{-1}).



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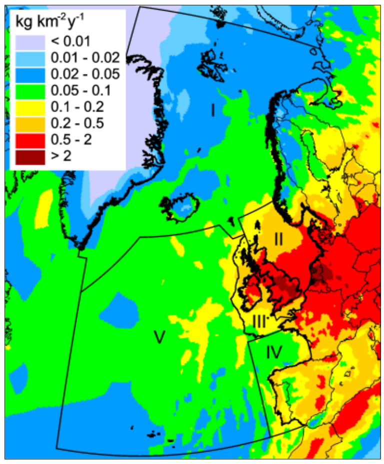

b

Fig. 5.4. *Spatial distribution of annual mean Pb (a) and Cu (b) deposition over the OSPAR maritime area in 2023.*

Model simulations show that atmospheric Pb deposition to the OSPAR regions declined substantially between 1990 and 2023. The largest reduction occurred in the Greater North Sea (90%) (Fig. 5.5a), while the smallest decline was estimated for the Wider Atlantic (68%). In all regions, the decrease in deposition was uneven, with higher rates of decline during the first half of the period, followed by a slowdown towards the end of the assessment period.

In contrast, no substantial long-term changes were estimated for total Cu deposition to the OSPAR regions. The most pronounced decline was also estimated for the Greater North Sea, where deposition decreased by 38% over the period (Fig. 5.5b), while deposition in the Wider Atlantic showed a slight increase of 7%. Overall, Cu deposition in all OSPAR regions exhibited substantial interannual variability, which obscured the long-term trends.

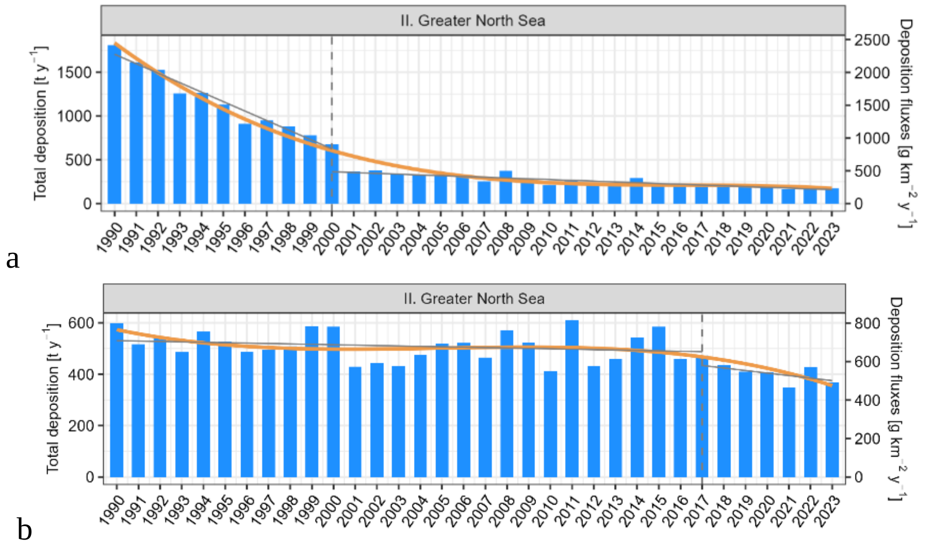

Fig. 5.5. *Time series of total annual atmospheric deposition of Pb (a) and Cu (b) to the Greater North Sea (OSPAR region II) for the period 1990-2023.*

Lead deposition in the OSPAR regions was dominated by the B_Industry sector, which accounted for 41–48% of total deposition across the regions in 2023 (Fig. 5.6a). The F_RoadTransport sector was the second-largest contributor, accounting for 16-35%. Other sectors, including A_PublicPower (4-17%) and H_Aviation (6-19%), made smaller but regionally variable contributions. Cu deposition was largely driven by the F_RoadTransport sector, which accounted for 60-65% of total deposition across the regions (Fig. 5.6b). The E_Solvents sector was the second-largest contributor, with shares ranging from 16% to 30%. A further notable contribution came from the I_Offroad sector, which accounted for 5-13% of total deposition.

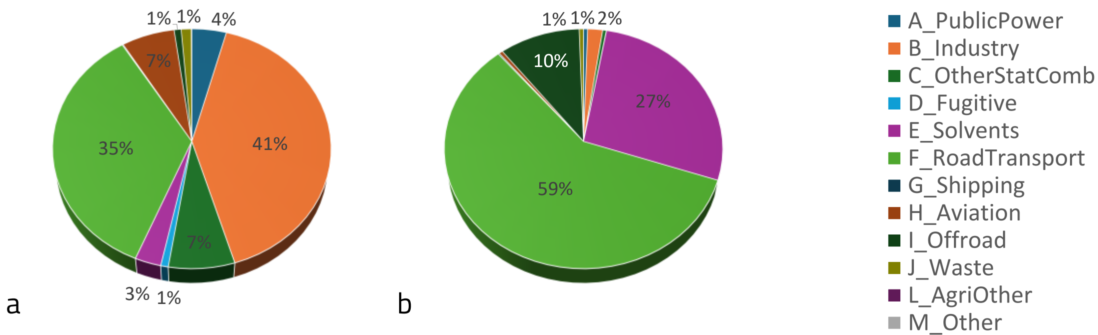

Fig. 5.6. *Relative contributions of emission sectors to annual total anthropogenic deposition of Pb (a) and Cu (b) to the Greater North Sea (OSPAR region II) in 2023.*

6. Future directions

Future research and development activities at MSC-E, in accordance with the revised mandate (ECE/EB.AIR/144/Add.1) and the biennial 2026-2027 workplan for the implementation of the Convention (ECE/EB.AIR/158/Add.1), will include:

- Further development of the GLEMOS model, focusing on key physical and chemical processes governing the dispersion of heavy metals and POPs in the atmosphere and other environmental media, and distribution of the updated GLEMOS code through an open-source repository.
- Study of the potential influence of heterogeneous Hg processes and high-dust pollution events on atmospheric Hg chemistry and pollution levels [1.1.11].
- Revision and re-evaluation of modelling approaches for gas–particle partitioning and chemical degradation of POPs in the atmosphere [1.1.12].
- Continued assessment of PAH pollution at the country scale as part of a pilot study for Slovenia and the Western Balkan countries, in cooperation with TFMM [1.1.10].
- Collaboration with TF HTAP on the assessment and attribution of Hg pollution trends as part of the MCHgMAP project [1.1.60], contribution to the multi-pollutant, multi-effects wildfire study (HTAP-Fire) [1.1.61], and participation in research activities on multi-compartment modelling of PFAS (HTAP-PFAS) [1.1.63].
- Continued collaboration with ICP-Vegetation on integrated analyses of temporal trends and spatial changes in heavy metal and POP pollution, using both model simulations and moss measurements [1.1.21].
- Cooperation with the marine conventions (HELCOM and OSPAR) to assess heavy metal and POP pollution in the Baltic Sea and North-East Atlantic through multilateral or bilateral agreements.

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Annex A.1. Reporting of priority heavy metals and POPs in EMEP East region

Table A1. *Reporting of main heavy metals (Pb, Cd, Hg) in EMEP-East region since 2015.*

	Reporting of main heavy metals (Pb, Cd, Hg)											
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**
Armenia	2008 - 2013 (only Pb, only a few sectors)	2014		2016	2017		2019	2020	2021	2022	2016-2023	2016-2024
Azerbaijan	1990 - 2013 (only Hg, only a few sectors)	1990-2014 (Pb, Cd: 1995-2014)	1990 - 2015 (Pb, Cd: 1995-2015)	1990 - 2016 (Pb, Cd: 1995-2016)	1995-2017 (Hg: 1990-2017)					1990-2022		1990-2024
Belarus	2013			2014-2016	2017	2018	2019	2020	2020, 2021	2022	2010-2023	2005-2024
Georgia	2007 - 2013 (no Hg)	2007-2014 (Cd, Hg: 2013-2014)	2007 - 2015	2007-2016	2007-2017		1990-2019	1990-2020	1990-2021	1990-2022	1990-2023	1990-2024
Kazakhstan		2013-2014	1990, 2000, 2005, 2010 - 2015	1990 - 2016		1990 - 2018	1990-2019	1990-2020	1990-2021	1990-2022	1990-2023	1990-2024
Kyrgyzstan		2014 (only Hg)	2015 (only Hg)		2017	2018				1990-2022		
Republic of Moldova	2013	1990-2014 (no emissions calculated for the waste sector)	1990 - 2015			1990 - 2017	1990-2019				1990-2023	
Russian Federation												
Ukraine	2013	2014	2015	2016		2016, 2017, 2018	2019	2020	1990-2021	1990-2022	1990-2023	1990-2024
Türkiye					1990 - 2017 *(just for very few IPPU categories)*	1990 - 2018 *(just for very few IPPU categories)*	1990-2019	1990-2020	1990-2021	1990-2022	1990-2023	1990-2024

Table A2. *Reporting of POPs (PCDD/Fs, PAHs, HCB, PCBs) in EMEP East region since 2015.*

	Reporting of POPs (PCDD/Fs, PAHs, HCB, PCBs)											
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**
Armenia		2014		2016 (only PCDD/Fs)	2017 (no HCB, no PCBs)		2019	2020	2021	2022	2016-2023	2016 - 2024
Azerbaijan	1995-2013	1995-2014 (no HCB, no PCBs)	1995-2015	1995-2016	1995 -2017 (HCB, PCBs no data for 2000)					1990-2022		1990 - 2024
Belarus	2013			2014-2016	2017	2018	2019	2020	2020, 2021	2022	2010-2023	2005 - 2024
Georgia	2007-2013 (no HCB)	2007-2014 (PCDD/Fs) 2013-2014 (PAHs, HCB, PCBs)	2007-2015	2007-2016 (HCB only 2013-2016)	2007-2017		1990-2019	1990-2020	1990-2021	1990-2022	1990-2023	1990 - 2024
Kazakhstan		2013-2014	1990, 2000, 2005, 2010-2015	1990-2016		1990 -2018	1990-2019	1990-2020	1990-2021	1990-2022	1990-2023	1990 - 2024
Kyrgyzstan					2017	2018				1990-2022		
Republic of Moldova	2013	1990-2014 (no emissions calculated for the waste sector)	1990-2015			1990-2017	1990-2019				1990-2023	
Russian Federation												
Ukraine	2013 (no PCDD/Fs)				2017	2017, 2018	2019	2020	1990-2021	1990-2022	1990-2023	1990-2024
Türkiye												

Annex A.2. Significant changes (over ±15 %) between national totals used in models in year 2026 and national totals used in models in 2025

Data values represent the 'total national totals'. The column 'data sources' in the table below indicates the following four cases:

- "reported": both 2023 and 2024 data are reported by country.
- "gapfilled": both 2023 and 2024 data are gap-filled by expert estimates
- "new gapfilled": 2023 data was reported by country and 2024 data had to be gap-filled by expert estimates (because it was not reported by country)
- "new reported": 2023 data was gap-filled, 2024 data is as reported by country

The indicator "new" in column "% change" indicates that the value has been either reported or gap-filled for the first time.

Component	CC	Data sources	Unit	2024 value	2023 value	% change	Value change
B(a)P	AT	reported	t	2.325	1.693	37%	0.632
B(a)P	AZ	New reported	t	0.702	0.474	48%	0.228
B(a)P	BG	gapfilled	t	2.314	3.046	-24%	-0.732
B(a)P	CY	reported	t	0.162	0.113	43%	0.049
B(a)P	CZ	reported	t	12.588	14.814	-15%	-2.226
B(a)P	IT	gapfilled	t	14.812	18.101	-18%	-3.289
B(a)P	LI	reported	t	0.004	0.002	98%	0.002
B(a)P	MC	reported	t	0.000	0.000	-20%	0.000
B(a)P	ME	reported	t	0.092	0.844	-89%	-0.752
B(a)P	MT	reported	t	0.010	0.012	-21%	-0.003
B(a)P	RS	gapfilled	t	8.814	10.795	-18%	-1.981
B(a)P	SE	gapfilled	t	1.784	2.127	-16%	-0.343
B(b)F	AT	reported	t	2.429	1.902	28%	0.526
B(b)F	AZ	New reported	t	0.748	0.493	52%	0.256
B(b)F	BG	gapfilled	t	2.293	2.969	-23%	-0.677
B(b)F	CY	reported	t	0.540	0.316	71%	0.225
B(b)F	CZ	reported	t	8.284	9.762	-15%	-1.478
B(b)F	IT	gapfilled	t	17.231	21.115	-18%	-3.884
B(b)F	LI	reported	t	0.004	0.002	82%	0.002
B(b)F	MC	reported	t	0.000	0.000	-19%	0.000
B(b)F	ME	reported	t	0.151	0.787	-81%	-0.636
B(b)F	MT	reported	t	0.013	0.018	-29%	-0.005
B(b)F	RS	gapfilled	t	8.557	11.323	-24%	-2.766
B(b)F	SE	gapfilled	t	1.893	2.260	-16%	-0.366
B(k)F	AT	reported	t	0.988	0.782	26%	0.206
B(k)F	AZ	New reported	t	0.660	0.427	55%	0.233
B(k)F	BG	gapfilled	t	1.004	1.288	-22%	-0.285
B(k)F	CY	reported	t	0.168	0.133	26%	0.035
B(k)F	IT	gapfilled	t	8.103	9.923	-18%	-1.819
B(k)F	KZ	reported	t	69.999	82.715	-15%	-12.716

Component	CC	Data sources	Unit	2024 value	2023 value	% change	Value change
B(k)F	LI	reported	t	0.002	0.003	-25%	-0.001
B(k)F	MC	reported	t	0.000	0.000	-18%	0.000
B(k)F	ME	reported	t	0.053	0.302	-82%	-0.249
B(k)F	MT	reported	t	0.009	0.013	-33%	-0.004
B(k)F	RS	gapfilled	t	3.454	4.597	-25%	-1.143
B(k)F	SE	gapfilled	t	0.669	0.853	-22%	-0.184
Cd	FR	reported	t	3.062	2.402	27%	0.660
Cd	CY	reported	t	0.066	0.033	103%	0.034
Cd	ES	reported	t	5.251	6.211	-15%	-0.960
Cd	KZ	reported	t	7.290	8.773	-17%	-1.483
Cd	LI	reported	t	0.001	0.004	-64%	-0.002
Cd	LT	reported	t	0.128	0.195	-34%	-0.067
Cd	MC	reported	t	0.005	0.000	4228%	0.005
Cd	MK	reported	t	0.265	0.230	16%	0.036
Cd	NL	reported	t	0.582	0.474	23%	0.108
Cd	RS	reported	t	4.061	2.651	53%	1.410
Cd	SK	reported	t	0.503	0.434	16%	0.069
Cd	TR	gapfilled	t	5.318	7.310	-27%	-1.993
Cd	UA	reported	t	5.646	2.687	110%	2.960
PCDD/F	AT	reported	g I-TEQ	35.632	30.240	18%	5.392
PCDD/F	BE	reported	g I-TEQ	59.456	28.317	110%	31.139
PCDD/F	CY	reported	g I-TEQ	0.719	0.487	48%	0.232
PCDD/F	ES	reported	g I-TEQ	168.414	419.053	-60%	-250.639
PCDD/F	GR	reported	g I-TEQ	21.664	25.508	-15%	-3.844
PCDD/F	HU	reported	g I-TEQ	42.724	35.393	21%	7.331
PCDD/F	KZ	reported	g I-TEQ	176.209	353.824	-50%	-177.615
PCDD/F	MC	reported	g I-TEQ	0.020	0.017	23%	0.004
PCDD/F	NL	reported	g I-TEQ	29.691	42.925	-31%	-13.234
PCDD/F	SE	reported	g I-TEQ	8.074	16.360	-51%	-8.287
HCB	BE	reported	kg	2.689	5.409	-50%	-2.720
HCB	CY	reported	kg	0.018	0.010	91%	0.009
HCB	CZ	reported	kg	4.968	6.258	-21%	-1.291
HCB	FI	reported	kg	22.753	16.240	40%	6.513
HCB	HU	reported	kg	1.485	1.249	19%	0.235
HCB	LI	reported	kg	0.001	0.001	30%	0.000
HCB	LU	reported	kg	0.712	0.366	94%	0.346
HCB	MK	reported	kg	0.047	0.096	-52%	-0.050
HCB	PT	reported	kg	1.298	0.755	72%	0.543
HCB	SK	reported	kg	1.514	11.353	-87%	-9.839
Hg	CZ	reported	t	1.581	2.371	-33%	-0.791
Hg	FI	reported	t	0.393	0.493	-20%	-0.100
Hg	LI	reported	t	0.001	0.001	58%	0.000
Hg	LT	reported	t	0.287	0.189	52%	0.098
Hg	MC	reported	t	0.000	0.001	-57%	0.000
Hg	RS	reported	t	1.253	1.553	-19%	-0.300
Hg	UA	reported	t	5.684	2.919	95%	2.765
IP	AT	reported	t	1.371	0.983	39%	0.388
IP	AZ	New reported	t	0.168	0.106	60%	0.063
IP	BG	gapfilled	t	1.390	1.821	-24%	-0.431

Component	CC	Data sources	Unit	2024 value	2023 value	% change	Value change
IP	CY	reported	t	0.126	0.097	31%	0.030
IP	GR	reported	t	2.090	2.536	-18%	-0.446
IP	IT	gapfilled	t	9.203	12.000	-23%	-2.797
IP	KZ	reported	t	22.078	26.108	-15%	-4.030
IP	LI	reported	t	0.002	0.003	-29%	-0.001
IP	LT	reported	t	0.937	1.131	-17%	-0.194
IP	MC	reported	t	0.000	0.000	-17%	0.000
IP	ME	reported	t	0.039	0.494	-92%	-0.455
IP	MT	reported	t	0.005	0.006	-19%	-0.001
IP	RS	gapfilled	t	5.175	6.177	-16%	-1.002
IP	SE	gapfilled	t	0.984	1.206	-18%	-0.223
PAH	AT	gapfilled	t	7.113	5.361	33%	1.752
PAH	AZ	gapfilled	t	2.278	1.499	52%	0.779
PAH	BG	gapfilled	t	7.000	9.125	-23%	-2.124
PAH	CY	reported	t	0.997	0.659	51%	0.338
PAH	IT	gapfilled	t	49.349	61.139	-19%	-11.789
PAH	LI	reported	t	0.012	0.010	19%	0.002
PAH	MC	reported	t	0.000	0.001	-18%	0.000
PAH	ME	reported	t	0.335	2.427	-86%	-2.092
PAH	MT	new gapfilled	t	0.036	0.050	-27%	-0.013
PAH	RS	gapfilled	t	25.999	32.892	-21%	-6.893
PAH	SE	gapfilled	t	5.330	6.446	-17%	-1.116
Pb	AT	reported	t	23.873	13.762	73%	10.111
Pb	CY	reported	t	1.388	1.084	28%	0.304
Pb	DE	reported	t	175.183	151.076	16%	24.108
Pb	ES	reported	t	92.353	112.083	-18%	-19.730
Pb	IE	reported	t	8.182	7.098	15%	1.083
Pb	IT	reported	t	157.860	203.193	-22%	-45.333
Pb	MC	reported	t	0.008	0.006	23%	0.001
Pb	SI	reported	t	6.162	5.138	20%	1.024
Pb	UA	new gapfilled	t	220 192	73.511	299435%	220 119
PCB	AZ	New reported	kg	0.039	0.032	25%	0.008
PCB	BE	reported	kg	2.556	3.752	-32%	-1.196
PCB	CZ	reported	kg	0.869	0.720	21%	0.149
PCB	ES	reported	kg	89.793	308.043	-71%	-218.250
PCB	HR	reported	kg	2.033	3.006	-32%	-0.973
PCB	HU	reported	kg	2.901	4.800	-40%	-1.899
PCB	KZ	reported	kg	65.414	78.888	-17%	-13.474
PCB	LT	reported	kg	0.573	0.433	33%	0.141
PCB	MK	reported	kg	240.287	358.565	-33%	-118.278
PCB	MT	reported	kg	0.002	0.001	63%	0.001
PCB	SK	reported	kg	20.095	33.722	-40%	-13.627
PCB	UA	reported	kg	4 534.168	187.765	2315%	4 346.403

Annex A.3. Overview of heavy metals and POPs gap-filling in 2026

Table A3. *Gap filling of heavy metals (Cd Hg, Pb) for the year 2024*

	Cd	Hg	Pb
Albania	exp.	exp.	exp.
Armenia	R	R	R
Aral Lake	-	-	-
Asian Areas	exp.	exp.	exp.
Austria	R	R	R
Atlantic Ocean	-	-	-
Azerbaijan	exp.	exp.	exp.
Bosnia and Herzegovina	exp.	exp.	exp.
Baltic Sea	-	-	-
Belgium	R	R	R
Bulgaria	R	R	R
Black Sea	-	-	-
Belarus	R	R	R
Caspian Sea	-	-	-
Switzerland	R	R	R
Cyprus	R	R	R
Czechia	R	R	R
Germany	R	R	R
Denmark	R	R	R
Estonia	R	R	R
Spain	R	R	R
Finland	R	R	R
France	R	R	R
United Kingdom	R	R	R
Georgia	R	R	R
Greece	R	R	R
Croatia	R	R	R
Hungary	R	R	R
Ireland	R	R	R
Iceland	R	R	R
Italy	R	R	R
Kyrgyzstan	exp.	exp.	exp.
Kazakhstan	R	R	R

	Cd	Hg	Pb
Liechtenstein	R	R	R
Lithuania	R	R	R
Luxembourg	R	R	R
Latvia	R	R	R
Monaco	R	R	R
Republic of Moldova	exp.	exp.	exp.
Montenegro	R	R	R
Mediterranean Sea	-	-	-
North Macedonia	R	R	R
Malta	R	R	R
Netherlands	R	R	R
Norway	R	R	R
North Africa	exp.	exp.	exp.
North Sea	-	-	-
Poland	R	R	R
Portugal	R	R	R
Romania	R	R	R
Serbia	R	R	R
Russian Federation	exp.	exp.	exp.
Russian Federation in the extended EMEP domain	exp.	exp.	exp.
Sweden	R	R	R
Slovenia	R	R	R
Slovakia	R	R	R
Tajikistan	exp.	exp.	exp.
Turkmenistan	exp.	exp.	exp.
Türkiye	R+exp.	R+exp.	R+exp.
Ukraine	R	R	R+exp.
Uzbekistan	exp.	exp.	exp.

Table A4. *Gap filling of persistent organic pollutants (POPs) for the year 2023*

	B(a)P	B(b)F	B(k)F	PCDD/F	HCB	IP	PAH	PCB
Albania	exp.	exp.	exp.	exp.	exp.	exp.	exp.	exp.
Armenia	R	R	R	R	R	R	sum	R
Aral Lake	-	-	-	-	-	-	-	-
Asian Areas	-	-	-	-	-	-	-	-
Austria	R	R	R	R	R	R	sum	R
Atlantic Ocean	-	-	-	-	-	-	-	-
Azerbaijan	exp.	exp.	exp.	exp.	exp.	exp.	exp.	-
Bosnia and Herzegovina	exp.	exp.	exp.	exp.	exp.	exp.	exp.	-
Baltic Sea	-	-	-	-	-	-	-	-
Belgium	R	R	R	R	R	R	sum	R
Bulgaria	R+exp.	R+exp.	R+exp.	R	R	R+exp.	R+exp.	R
Black Sea	-	-	-	-	-	-	-	-
Belarus	R	R	R	R	R	R	R	R
Caspian Sea	-	-	-	-	-	-	-	-
Switzerland	R	R	R	R	R	R	R	R
Cyprus	R	R	R	R	R	R	R	R
Czechia	R	R	R	R	R	R	sum	R
Germany	R+exp.	R+exp.	R+exp.	R	R	R+exp.	R+exp.	R
Denmark	R	R	R	R	R	R	R	R
Estonia	R	R	R	R	R	R	sum	R
Spain	R+exp.	R+exp.	R+exp.	R	R	R+exp.	R+exp.	R
Finland	R	R	R	R	R	R	R	R
France	R	R	R	R	R	R	R	R
United Kingdom	R	R	R	R	R	R	R	R
Georgia	R	R	R	R	R	R	sum	R
Greece	R	R	R	R	R	R	sum	R
Croatia	R	R	R	R	R	R	sum	R
Hungary	R	R	R	R	R	R	sum	R
Ireland	R	R	R	R	R	R	R	R
Iceland	R	R	R	R	R	R	sum	R
Italy	R+exp.	R+exp.	R+exp.	R	R	R+exp.	sum	R
Kyrgyzstan	R	R	R	R	R	R	R	R
Kazakhstan	R	R	R	R	R	R	sum	R
Liechtenstein	R	R	R	R	R	R	R	R
Lithuania	R	R	R	R	R	R	sum	R
Luxembourg	R	R	R	R	R	R	R	R
Latvia	R	R	R	R	R	R	sum	R
Monaco	R	R	R	R	R	R	R	R
Republic of Moldova	R	R	R	R	R	R	sum	R
Montenegro	R	R	R	R	R	R	R	R
Mediterranean Sea	-	-	-	-	-	-	-	-

	B(a)P	B(b)F	B(k)F	PCDD/F	HCB	IP	PAH	PCB
North Macedonia	R	R	R	R	R	R	sum	R
Malta	R	R	R	R	R	R	R	R
Netherlands	R	R	R	R	R	R	sum	R
Norway	R	R	R	R	R	R	sum	R
North Africa	-	-	-	-	-	-	-	-
North Sea	-	-	-	-	-	-	-	-
Poland	R+exp.	R+exp.	R+exp.	R	R	R+exp.	sum	R
Portugal	R+exp.	R+exp.	R+exp.	R	R	R+exp.	sum	R
Romania	R+exp.	R+exp.	R+exp.	R	R	R+exp.	sum	R
Serbia	R+exp.	R+exp.	R+exp.	R	R	R+exp.	sum	R
Russian Federation	exp.	exp.	exp.	exp.	exp.	exp.	exp.	-
Russian Federation in the extended EMEP domain	exp.	exp.	exp.	exp.	exp.	exp.	exp.	-
Sweden	R+exp.	R+exp.	R+exp.	R	R+exp.	R+exp.	sum	R
Slovenia	R+exp.	R+exp.	R+exp.	R	R	R+exp.	sum	R
Slovakia	R+exp.	R+exp.	R+exp.	R	R	R+exp.	sum	R
Tajikistan	exp.	exp.	exp.	exp.	exp.	exp.	exp.	-
Turkmenistan	exp.	exp.	exp.	exp.	exp.	exp.	exp.	-
Türkiye	exp.	exp.	exp.	exp.	exp.	exp.	exp.	-
Ukraine	exp.	exp.	exp.	exp.	exp.	exp.	exp.	R
Uzbekistan	exp.	exp.	exp.	exp.	exp.	exp.	exp.	-

R	*Reported/new reported*
sum	*Sum of sectors/components*
R+exp.	*Reported data plus expert estimates (e.g., PAH split)*
exp.	*Expert estimates*

Annex B. Source-receptor matrices of heavy metal and PAHs transboundary transport in 2024

Table B1. *List of country codes used in the tables for source-receptor matrices.*

Code	Country	Code	Country	Code	Country
AL	Albania	GB	United Kingdom	MK	North Macedonia
AM	Armenia	GE	Georgia	MT	Malta
AT	Austria	GR	Greece	NL	Netherlands
AZ	Azerbaijan	HR	Croatia	NO	Norway
BA	Bosnia and Herzegovina	HU	Hungary	PL	Poland
BE	Belgium	IE	Ireland	PT	Portugal
BG	Bulgaria	IS	Iceland	RO	Romania
BY	Belarus	IT	Italy	RS	Serbia
CH	Switzerland	KY	Kyrgyzstan	RU	Russia
CY	Cyprus	KZ	Kazakhstan	SE	Sweden
CZ	Czech Republic	LI	Liechtenstein	SI	Slovenia
DE	Germany	LT	Lithuania	SK	Slovakia
DK	Denmark	LU	Luxembourg	TJ	Tajikistan
EE	Estonia	LV	Latvia	TM	Turkmenistan
ES	Spain	MC	Monaco	TR	Türkiye
FI	Finland	MD	Moldova	UA	Ukraine
FR	France	ME	Montenegro	UZ	Uzbekistan

Table B2. *Source-receptor matrix of Pb deposition to EMEP countries in 2023, kg/year. Columns and rows represent sources and receptors, respectively.*

Code	AL	AM	AT	AZ	BA	BE	BG	BY	CH	CY	CZ	DE	DK	EE	ES	FI	FR	GB	GE	GR	HR	HU	IE	IS	IT	KY
AL	2.27E+02	1.21E-01	1.51E+01	5.81E-02	1.17E+02	9.46E-01	5.04E+01	5.64E-01	3.74E+00	2.85E-01	7.75E+00	1.92E+01	3.48E-01	4.95E-02	1.02E+02	1.35E-01	4.17E+01	4.72E+00	3.49E-01	2.00E+02	2.51E+01	1.34E+01	3.48E-01	9.52E-03	8.81E+02	7.30E-03
AM	1.58E-01	2.73E+02	1.15E+00	2.34E+01	2.33E+00	1.92E-01	3.21E+00	5.87E-01	4.18E-01	3.38E+00	9.32E-01	3.74E+00	1.78E-01	7.13E-02	7.04E+00	2.23E-01	2.60E+00	1.15E+00	2.82E+02	5.14E+00	4.88E-01	6.23E-01	5.75E-02	4.00E-03	1.84E+01	1.35E-01
AT	2.11E+00	1.21E-01	7.00E+03	7.36E-02	2.93E+02	3.20E+01	2.66E+01	3.33E+00	4.14E+02	7.53E-02	6.20E+02	3.31E+03	1.52E+01	7.37E-01	3.06E+02	2.49E+00	5.95E+02	1.15E+02	5.27E-01	7.84E+00	3.16E+02	2.88E+02	3.54E+00	8.77E-02	2.64E+03	1.31E-02
AZ	2.18E-01	6.59E+01	2.69E+00	1.12E+02	4.17E+00	4.24E-01	5.28E+00	1.70E+00	8.25E-01	3.31E+00	2.27E+00	8.19E+00	5.13E-01	2.26E-01	9.45E+00	6.36E-01	4.25E+00	2.65E+00	1.87E+02	6.15E+00	8.93E-01	1.68E+00	1.30E-01	9.30E-03	2.42E+01	1.57E+00
BA	1.75E+01	1.25E-01	2.35E+02	7.61E-02	1.14E+04	6.27E+00	6.83E+01	2.79E+00	1.76E+01	1.29E-01	1.66E+02	2.25E+02	3.06E+00	1.91E-01	2.52E+02	5.63E-01	1.53E+02	3.10E+01	4.99E-01	4.35E+01	5.96E+02	2.52E+02	1.21E+00	2.30E-02	2.19E+03	1.33E-02
BE	2.57E-01	1.16E-02	3.67E+01	7.66E-03	1.52E+01	3.19E+03	2.61E+00	1.96E+00	3.81E+01	4.71E-03	2.55E+01	1.65E+03	2.46E+01	5.76E-01	1.83E+02	1.08E+00	2.29E+03	1.12E+03	5.54E-02	1.11E+00	4.56E+00	5.42E+00	2.40E+01	1.80E-01	8.28E+01	2.57E-03
BG	1.95E+01	1.71E+00	9.34E+01	9.84E-01	3.25E+02	4.01E+00	4.33E+03	1.75E+01	1.28E+01	1.52E+00	5.51E+01	1.26E+02	3.73E+00	1.15E+00	1.31E+02	2.67E+00	7.20E+01	2.56E+01	8.16E+00	2.69E+02	5.05E+01	1.24E+02	1.15E+00	3.04E-02	6.70E+02	3.71E-01
BY	4.86E+00	1.21E+00	2.72E+02	8.48E-01	3.14E+02	7.91E+01	1.52E+02	2.81E+03	5.48E+01	8.46E-01	3.77E+02	1.58E+03	1.47E+02	4.01E+01	1.68E+02	5.81E+01	3.11E+02	3.77E+02	6.78E+00	3.79E+01	8.11E+01	2.28E+02	1.30E+01	2.56E-01	5.89E+02	3.40E-01
CH	3.47E-01	1.46E-02	1.13E+02	7.90E-03	2.26E+01	2.76E+01	1.78E+00	4.10E-01	1.59E+03	2.36E-02	2.76E+01	8.90E+02	2.11E+00	1.64E-01	2.79E+02	8.50E-01	1.03E+03	9.20E+01	4.72E-02	1.52E+00	1.35E+01	6.07E+00	3.38E+00	4.82E-02	1.76E+03	1.17E-03
CY	1.81E-01	4.49E-02	1.02E+00	1.30E-02	3.44E+00	5.68E-02	4.34E+00	1.16E-01	2.64E-01	1.01E+02	4.21E-01	1.46E+00	4.93E-02	1.50E-02	3.72E+00	4.03E-02	1.86E+00	3.42E-01	9.96E-02	1.07E+01	6.82E-01	4.45E-01	2.32E-02	6.74E-04	2.55E+01	1.94E-03
CZ	1.44E+00	1.78E-01	1.59E+03	9.47E-02	2.85E+02	8.41E+01	2.67E+01	9.83E+00	1.90E+02	9.88E-02	6.41E+03	5.11E+03	4.56E+01	2.46E+00	2.08E+02	5.78E+00	6.57E+02	2.39E+02	8.53E-01	6.10E+00	1.62E+02	3.79E+02	6.78E+00	1.16E-01	7.14E+02	2.95E-02
DE	2.19E+00	3.04E-01	1.86E+03	2.34E-01	2.24E+02	2.88E+03	3.52E+01	3.26E+01	1.44E+03	1.43E-01	2.21E+03	7.89E+04	5.26E+02	1.20E+01	1.18E+03	2.41E+01	8.22E+03	5.01E+03	1.46E+00	1.05E+01	1.05E+02	2.00E+02	1.26E+02	1.08E+00	1.56E+03	8.04E-02
DK	1.52E-01	2.55E-02	4.15E+01	1.95E-02	1.33E+01	1.93E+02	1.96E+00	7.30E+00	2.30E+01	1.17E-02	7.38E+01	2.15E+03	1.85E+03	3.15E+00	9.67E+01	5.05E+00	4.07E+02	1.11E+03	1.11E-01	4.93E-01	5.63E+00	1.20E+01	3.97E+01	4.43E-01	5.96E+01	8.97E-03
EE	4.16E-01	1.12E-01	4.51E+01	7.22E-02	3.24E+01	2.86E+01	5.09E+00	5.55E+01	1.02E+01	1.03E-01	6.64E+01	4.69E+02	8.04E+01	9.30E+02	2.88E+01	2.23E+02	6.78E+01	1.85E+02	5.04E-01	2.53E+00	1.02E+01	2.37E+01	6.86E+00	1.68E-01	5.43E+01	2.97E-02
ES	1.08E+00	3.65E-02	3.23E+01	2.31E-02	3.95E+01	5.78E+01	1.00E+01	2.56E+00	2.88E+01	2.28E-02	1.90E+01	2.88E+02	1.14E+01	3.71E-01	3.15E+04	8.89E-01	1.50E+03	7.42E+02	1.48E-01	1.00E+01	1.50E+01	8.93E+00	7.01E+01	7.78E-01	1.34E+03	1.04E-02
FI	8.22E-01	4.02E-01	1.24E+02	2.79E-01	1.10E+02	8.28E+01	1.50E+01	1.32E+02	3.15E+01	2.31E-01	2.00E+02	1.38E+03	2.21E+02	5.42E+02	1.34E+02	4.56E+03	2.34E+02	5.33E+02	1.71E+00	4.45E+00	3.20E+01	6.57E+01	1.95E+01	1.12E+00	1.81E+02	4.63E-01
FR	4.04E+00	1.61E-01	2.14E+02	9.99E-02	1.65E+02	1.35E+03	2.10E+01	1.25E+01	7.49E+02	1.05E-01	1.52E+02	4.94E+03	1.10E+02	2.92E+00	8.79E+03	6.93E+00	3.62E+04	5.45E+03	6.39E-01	2.57E+01	7.57E+01	4.17E+01	2.39E+02	1.59E+00	4.36E+03	2.53E-02
GB	5.37E-01	1.13E-01	9.85E+01	9.35E-02	3.64E+01	5.76E+02	6.93E+00	1.60E+01	5.36E+01	3.12E-02	1.27E+02	2.28E+03	2.40E+02	6.19E+00	7.51E+02	9.58E+00	2.19E+03	3.31E+04	4.06E-01	2.73E+00	1.27E+01	3.30E+01	9.50E+02	4.90E+00	1.97E+02	2.66E-02
GE	5.78E-01	4.95E+01	1.45E+01	1.34E+01	2.99E+01	7.87E-01	3.18E+01	3.65E+00	3.33E+00	4.68E+00	4.62E+00	2.20E+01	9.26E-01	4.06E-01	1.44E+01	1.05E+00	9.56E+00	5.08E+00	7.40E+02	1.32E+01	6.88E+00	6.51E+00	2.39E-01	9.98E-03	6.32E+01	5.58E-01
GR	4.20E+01	1.06E+00	4.45E+01	4.89E-01	2.09E+02	2.61E+00	5.07E+02	4.65E+00	9.41E+00	4.32E+00	2.51E+01	5.85E+01	1.64E+00	3.55E-01	1.99E+02	9.05E-01	8.71E+01	1.54E+01	3.11E+00	2.57E+03	4.13E+01	4.38E+01	1.06E+00	2.50E-02	1.68E+03	1.29E-01
HR	9.39E+00	9.53E-02	4.45E+02	5.66E-02	2.22E+03	6.38E+00	4.51E+01	2.44E+00	2.38E+01	9.41E-02	1.72E+02	2.43E+02	3.06E+00	2.62E-01	2.71E+02	7.39E-01	1.95E+02	3.48E+01	4.26E-01	2.21E+01	1.80E+03	2.95E+02	1.19E+00	2.33E-02	2.55E+03	1.14E-02
HU	1.00E+01	3.32E-01	9.10E+02	1.72E-01	1.21E+03	1.02E+01	1.47E+02	9.13E+00	4.02E+01	1.36E-01	4.14E+02	4.57E+02	6.29E+00	7.75E-01	1.85E+02	2.21E+00	1.66E+02	5.12E+01	1.33E+00	4.55E+01	4.15E+02	3.11E+03	1.47E+00	2.91E-02	1.18E+03	2.87E-02
IE	9.93E-02	1.51E-02	1.55E+01	1.50E-02	5.92E+00	4.43E+01	1.47E+00	2.42E+00	4.92E+00	3.55E-03	2.07E+01	2.24E+02	2.25E+01	5.92E-01	1.74E+02	9.20E-01	2.52E+02	1.69E+03	6.41E-02	5.54E-01	2.11E+00	6.88E+00	1.92E+03	1.61E+00	2.76E+01	4.75E-03
IS	3.91E-02	1.35E-02	2.00E+00	1.69E-02	1.99E+00	5.01E+00	7.58E-01	8.17E-01	9.88E-01	4.83E-03	2.71E+00	2.24E+01	5.56E+00	8.26E-01	1.63E+01	3.30E+00	2.72E+01	1.46E+02	6.50E-02	2.49E-01	4.56E-01	1.36E+00	1.55E+01	1.49E+02	9.54E+00	4.83E-02
IT	3.37E+01	3.41E-01	8.08E+02	1.33E-01	1.54E+03	3.70E+01	8.12E+01	4.13E+00	3.58E+02	9.54E-01	1.56E+02	7.60E+02	8.62E+00	6.32E-01	1.99E+03	2.40E+00	2.24E+03	2.12E+02	9.14E-01	1.31E+02	7.37E+02	1.55E+02	9.85E+00	1.66E-01	4.55E+04	1.96E-02
KY	2.29E-01	8.12E+00	3.28E+00	3.62E+00	5.29E+00	5.08E-01	3.54E+00	1.39E+00	1.73E+00	2.00E+00	2.16E+00	9.71E+00	4.17E-01	2.31E-01	1.43E+01	9.30E-01	7.31E+00	3.19E+00	1.52E+01	4.68E+00	1.23E+00	1.62E+00	1.53E-01	1.35E-02	3.16E+01	1.07E+03
KZ	6.25E+00	7.91E+01	1.47E+02	5.03E+01	1.85E+02	2.35E+01	1.32E+02	1.11E+02	5.02E+01	1.29E+01	1.26E+02	4.94E+02	2.83E+01	2.36E+01	2.85E+02	6.70E+01	2.25E+02	1.31E+02	1.99E+02	8.37E+01	4.56E+01	9.41E+01	5.84E+00	5.24E-01	8.00E+02	1.06E+03
LI	1.07E-03	6.37E-05	2.36E+00	3.49E-05	8.47E-02	1.34E-01	5.13E-03	1.70E-03	1.05E+01	1.33E-04	2.64E-01	8.24E+00	1.15E-02	1.14E-03	1.10E+00	6.88E-03	3.37E+00	4.64E-01	2.04E-04	5.06E-03	4.82E-02	3.26E-02	1.56E-02	2.50E-04	5.72E+00	6.41E-06
LT	8.86E-01	1.84E-01	1.07E+02	1.47E-01	8.24E+01	5.58E+01	1.64E+01	2.32E+02	2.24E+01	9.26E-02	1.61E+02	9.49E+02	1.62E+02	2.71E+01	4.84E+01	4.12E+01	1.49E+02	3.11E+02	1.13E+00	5.59E+00	2.55E+01	6.63E+01	1.07E+01	1.53E-01	1.36E+02	3.26E-02
LU	2.56E-02	1.20E-03	5.57E+00	8.17E-04	1.24E+00	6.97E+01	2.20E-01	1.17E-01	7.01E+00	5.52E-04	4.02E+00	1.93E+02	1.18E+00	3.40E-02	1.77E+01	8.83E-02	2.13E+02	3.60E+01	5.36E-03	1.35E-01	4.32E-01	3.70E-01	9.97E-01	8.16E-03	1.14E+01	2.08E-04
LV	8.24E-01	1.74E-01	8.02E+01	1.24E-01	6.07E+01	5.47E+01	1.43E+01	1.58E+02	1.76E+01	1.21E-01	1.26E+02	8.25E+02	1.57E+02	1.09E+02	4.30E+01	8.11E+01	1.27E+02	3.07E+02	9.53E-01	5.68E+00	1.79E+01	4.73E+01	1.06E+01	2.06E-01	1.02E+02	3.44E-02
MC	4.27E-04	5.04E-06	6.94E-03	2.73E-06	1.27E-02	1.71E-03	1.71E-03	1.47E-04	1.28E-02	7.79E-06	1.90E-03	1.66E-02	2.98E-04	2.04E-05	1.07E-01	7.66E-05	5.94E-01	8.44E-03	1.63E-05	2.39E-03	6.66E-03	2.74E-03	4.63E-04	4.90E-06	6.95E-01	2.46E-07
MD	1.23E+00	7.78E-01	1.93E+01	4.07E-01	5.28E+01	1.07E+00	9.24E+01	1.67E+01	3.17E+00	5.61E-01	1.19E+01	3.20E+01	2.06E+00	7.02E-01	2.75E+01	1.73E+00	1.60E+01	5.78E+00	3.97E+00	1.79E+01	1.03E+01	1.98E+01	2.39E-01	7.89E-03	1.11E+02	9.81E-02
ME	1.65E+01	3.99E-02	1.79E+01	2.12E-02	4.12E+02	7.62E-01	2.27E+01	3.55E-01	3.10E+00	5.54E-02	1.08E+01	2.05E+01	3.15E-01	2.51E-02	7.65E+01	8.45E-02	3.18E+01	3.42E+00	1.27E-01	2.36E+01	3.41E+01	2.08E+01	2.06E-01	4.98E-03	6.30E+02	2.91E-03
MK	5.66E+01	1.38E-01	1.48E+01	7.01E-02	6.53E+01	7.03E-01	1.56E+02	8.23E-01	2.43E+00	1.70E-01	9.45E+00	1.86E+01	3.79E-01	7.44E-02	4.82E+01	1.89E-01	1.97E+01	3.64E+00	4.73E-01	3.70E+02	1.24E+01	1.88E+01	2.05E-01	5.52E-03	2.96E+02	2.81E-02
MT	2.06E-02	3.95E-05	5.42E-02	3.15E-05	2.97E-01	8.93E-03	7.15E-02	1.30E-03	2.05E-02	6.97E-05	2.05E-02	1.10E-01	3.04E-03	1.20E-04	7.06E-01	4.25E-04	3.85E-01	3.76E-02	1.97E-04	1.34E-01	5.54E-02	2.31E-02	1.98E-03	3.53E-05	7.11E+00	3.05E-06
NL	2.84E-01	1.51E-02	3.95E+01	1.19E-02	1.87E+01	1.47E+03	3.62E+00	3.16E+00	2.14E+01	5.24E-03	4.68E+01	2.70E+03	3.94E+01	7.32E-01	1.38E+02	1.36E+00	1.20E+03	1.85E+03	6.33E-02	1.22E+00	4.87E+00	1.19E+01	3.49E+01	3.57E-01	5.09E+01	3.59E-03
NO	4.24E-01	2.42E-01	1.26E+02	1.41E-01	6.22E+01	2.96E+02	1.47E+01	2.99E+01	4.70E+01	9.51E-02	2.17E+02	2.73E+03	7.16E+02	2.28E+01	1.99E+02	1.20E+02	6.56E+02	2.72E+03	9.18E-01	2.37E+00	2.26E+01	5.61E+01	1.09E+02	6.47E+00	1.68E+02	2.21E-01
PL	5.44E+00	8.25E-01	1.39E+03	5.60E-01	8.38E+02	4.65E+02	9.12E+01	2.45E+02	2.42E+02	3.82E-01	4.23E+03	1.21E+04	4.61E+02	2.28E+01	4.50E+02	6.11E+01	1.40E+03	1.79E+03	4.75E+00	2.75E+01	3.27E+02	8.86E+02	5.73E+01	4.64E-01	1.41E+03	1.88E-01
PT	5.68E-02	4.27E-03	3.05E+00	3.33E-03	2.35E+00	6.14E+00	4.87E-01	3.85E-01	2.24E+00	2.00E-03	2.59E+00	3.44E+01	1.28E+00	4.10E-02	1.06E+03	1.00E-01	7.12E+01	6.75E+01	1.66E-02	4.03E-01	7.69E-01	7.75E-01	8.85E+00	1.82E-01	3.41E+01	1.75E-03
RO	2.02E+01	2.63E+00	4.65E+02	1.50E+00	1.06E+03	1.31E+01	1.07E+03	4.60E+01	5.76E+01	1.47E+00	1.92E+02	5.03E+02	1.22E+01	3.14E+00	3.17E+02	7.78E+00	2.35E+02	7.69E+01	1.46E+01	1.87E+02	2.13E+02	8.28E+02	2.82E+00	7.19E-02	1.57E+03	2.66E-01
RS	3.06E+01	4.61E-01	1.89E+02	2.37E-01	1.49E+03	6.53E+00	4.90E+02	5.49E+00	1.63E+01	2.02E-01	1.46E+02	2.27E+02	2.93E+00	3.52E-01	1.55E+02	8.70E-01	1.00E+02	3.13E+01	1.81E+00	1.51E+02	1.74E+02	4.55E+02	1.18E+00	2.28E-02	1.03E+03	7.77E-02
RU	3.18E+01	1.26E+02	1.22E+03	9.16E+01	1.30E+03	3.85E+02	1.09E+03	2.26E+03	3.17E+02	2.94E+01	1.31E+03	6.61E+03	7.26E+02	1.06E+03	1.28E+03	2.63E+03	1.57E+03	2.24E+03	5.02E+02	4.23E+02	3.33E+02	7.61E+02	8.81E+01	6.00E+00	3.57E+03	3.27E+02
SE	9.95E-01	3.54E-01	2.75E+02	1.82E-01	1.50E+02	3.91E+02	3.23E+01	1.01E+02	9.53E+01	1.59E-01	4.69E+02	5.67E+03	2.18E+03	1.53E+02	2.77E+02	8.09E+02	9.20E+02	2.64E+03	1.54E+00	5.61E+00	5.29E+01	1.26E+02	9.19E+01	2.65E+00	3.10E+02	2.85E-01
SI	1.56E+00	2.95E-02	6.67E+02	1.83E-02	1.93E+02	2.95E+00	1.07E+01	6.30E-01	1.52E+01	2.68E-02	6.28E+01	1.42E+02	9.25E-01	1.15E-01	9.72E+01	4.30E-01	9.04E+01	1.55E+01	1.41E-01	4.38E+00	4.86E+02	7.21E+01	4.83E-01	9.02E-03	1.22E+03	3.36E-03
SK	4.03E+00	1.83E-01	6.01E+02	9.61E-02	5.10E+02	1.46E+01	4.34E+01	8.92E+00	5.07E+01	1.03E-01	7.70E+02	6.25E+02	7.87E+00	6.98E-01	1.40E+02	2.05E+00	1.85E+02	6.35E+01	7.65E-01	1.67E+01	1.63E+02	8.63E+02	2.09E+00	2.47E-02	6.88E+02	1.81E-02
TJ	1.10E-01	3.82E+00	1.39E+00	1.89E+00	2.25E+00	1.76E-01	1.72E+00	5.49E-01	7.13E-01	1.17E+00	8.52E-01	3.66E+00	1.79E-01	9.49E-02	6.15E+00	3.53E-01	2.92E+00	1.25E+00	7.21E+00	2.48E+00	5.18E-01	6.97E-01	5.86E-02	5.44E-03	1.43E+01	2.46E+01
TM	2.90E-01	1.25E+01	5.35E+00	1.06E+01	6.96E+00	6.94E-01	6.28E+00	3.19E+00	1.77E+00	2.15E+00	4.35E+00	1.55E+01	6.01E-01	4.66E-01	1.34E+01	1.19E+00	7.65E+00	3.16E+00	3.03E+01	5.15E+00	1.65E+00	3.11E+00	1.58E-01	1.59E-02	3.58E+01	1.28E+01
TR	1.49E+01	2.09E+02	1.10E+02	2.27E+01	2.69E+02	1.19E+01	8.94E+02	5.12E+01	2.51E+01	2.24E+02	6.97E+01	2.43E+02	1.42E+01	4.37E+00	4.19E+02	1.13E+01	1.75E+02	7.01E+01	2.44E+02	8.98E+02	5.93E+01	7.40E+01	3.34E+00	1.20E-01	1.91E+03	1.12E+00
UA	1.89E+01	9.07E+00	7.08E+02	6.17E+00	1.05E+03	7.59E+01	7.98E+02	6.36E+02	1.25E+02	8.11E+00	7.20E+02	1.96E+03	9.82E+01	2.03E+01	5.25E+02	4.15E+01	5.79E+02	3.46E+02	5.02E+01	2.56E+02	2.54E+02	7.79E+02	1.22E+01	2.64E-01	2.20E+03	1.89E+00
UZ	3.55E-01	1.41E+01	6.32E+00	8.13E+00	9.51E+00	8.41E-01	7.15E+00	5.21E+00	2.22E+00	2.36E+00	4.66E+00	1.80E+01	1.13E+00	8.62E-01	1.67E+01	2.23E+00	9.63E+00	5.70E+00	3.12E+01	6.44E+00	2.18E+00	3.57E+00	2.94E-01	2.88E-02	4.33E+01	8.83E+01

Table B2. *(continued)*

Code	KZ	LI	LT	LU	LV	MC	MD	ME	MK	MT	NL	NO	PL	PT	RO	RS	RU	SE	SI	SK	TJ	TM	TR	UA	UZ
AL	1.54E+00	1.77E-02	8.75E-02	1.94E-01	7.44E-02	1.36E-02	7.21E-01	1.04E+01	2.83E+02	2.86E+00	2.01E-01	7.25E-02	4.13E+01	1.28E+01	3.35E+01	1.96E+02	3.19E+01	1.06E-01	6.41E+00	6.80E+00	4.46E-02	1.37E+00	4.14E+01	1.17E+02	1.20E+00
AM	1.87E+01	1.93E-03	1.13E-01	3.53E-02	1.03E-01	8.28E-04	2.29E-01	4.24E-02	1.47E+00	1.20E-01	4.61E-02	6.41E-02	1.24E+01	1.77E+00	4.19E+00	2.89E+00	3.44E+01	1.13E-01	3.52E-01	5.54E-01	1.78E+00	6.49E+01	2.30E+02	7.38E+01	3.68E+01
AT	6.04E+00	4.55E+00	1.88E+00	9.28E+00	1.52E+00	1.27E-01	9.28E-01	1.61E+00	1.21E+01	1.08E+00	7.31E+00	1.59E+00	1.31E+03	5.26E+01	6.81E+01	2.22E+02	4.13E+01	2.79E+00	8.85E+02	2.74E+02	1.15E-01	2.12E+00	1.20E+01	1.44E+02	2.18E+00
AZ	9.74E+01	3.98E-03	3.59E-01	6.65E-02	3.28E-01	1.30E-03	6.41E-01	6.80E-02	2.11E+00	1.32E-01	1.16E-01	1.90E-01	3.19E+01	2.33E+00	1.04E+01	5.78E+00	1.51E+02	3.37E-01	6.83E-01	1.45E+00	2.43E+01	3.15E+02	2.11E+02	2.13E+02	2.27E+02
BA	4.74E+00	9.08E-02	8.01E-01	1.45E+00	5.30E-01	6.64E-02	2.03E+00	3.83E+01	5.94E+01	4.13E+00	1.65E+00	5.62E-01	6.98E+02	3.42E+01	1.44E+02	1.17E+03	5.03E+01	6.50E-01	6.55E+01	1.17E+02	9.68E-02	1.94E+00	2.43E+01	2.27E+02	1.80E+00
BE	9.60E-01	1.61E-01	1.42E+00	1.08E+02	1.19E+00	1.05E-02	3.23E-01	1.48E-01	2.16E+00	5.35E-02	1.58E+02	1.87E+00	1.37E+02	2.91E+01	6.84E+00	1.15E+01	9.23E+00	2.58E+00	4.57E+00	5.11E+00	2.00E-02	2.37E-01	1.12E+00	2.61E+01	2.80E-01
BG	4.19E+01	6.88E-02	2.22E+00	8.00E-01	1.87E+00	2.71E-02	3.28E+01	6.65E+00	3.12E+02	2.89E+00	1.03E+00	8.08E-01	5.59E+02	1.96E+01	1.49E+03	1.43E+03	9.51E+02	1.38E+00	2.40E+01	6.42E+01	1.82E+00	2.87E+01	9.43E+02	3.47E+03	2.85E+01
BY	6.52E+01	3.63E-01	4.08E+02	9.74E+00	1.93E+02	4.34E-02	5.05E+01	4.01E+00	4.31E+01	8.01E-01	2.59E+01	1.50E+01	8.67E+03	2.66E+01	5.60E+02	4.28E+02	1.19E+03	4.75E+01	5.62E+01	2.24E+02	2.29E+00	2.50E+01	2.84E+02	5.03E+03	3.29E+01
CH	5.92E-01	9.86E+00	2.94E-01	8.98E+00	2.86E-01	1.18E-01	7.60E-02	1.73E-01	1.93E+00	4.45E-01	4.29E+00	2.77E-01	8.26E+01	4.42E+01	3.24E+00	8.18E+00	4.26E+00	9.49E-01	1.18E+01	4.15E+00	7.08E-03	2.58E-01	1.75E+00	1.01E+01	2.77E-01
CY	3.27E-01	1.41E-03	1.99E-02	1.16E-02	1.83E-02	6.56E-04	1.46E-01	6.99E-02	1.74E+00	1.89E-01	1.38E-02	1.96E-02	3.03E+00	3.04E-01	3.40E+00	3.85E+00	7.32E+00	2.82E-02	3.79E-01	2.77E-01	2.15E-02	3.33E-01	1.16E+02	1.96E+01	2.34E-01
CZ	1.06E+01	1.30E+00	5.45E+00	2.64E+01	4.51E+00	4.32E-02	1.20E+00	1.66E+00	1.11E+01	5.75E-01	1.69E+01	4.37E+00	4.80E+03	3.24E+01	8.60E+01	2.52E+02	6.98E+01	9.63E+00	1.59E+02	5.55E+02	2.29E-01	3.26E+00	2.11E+01	2.08E+02	3.72E+00
DE	2.41E+01	9.25E+00	2.59E+01	6.72E+02	2.37E+01	1.25E-01	3.18E+00	1.54E+00	1.56E+01	1.15E+00	8.79E+02	2.82E+01	5.76E+03	1.85E+02	1.06E+02	2.12E+02	1.83E+02	4.73E+01	1.18E+02	2.03E+02	6.73E-01	6.78E+00	2.80E+01	4.66E+02	9.12E+00
DK	1.37E+00	1.20E-01	1.19E+01	1.25E+01	1.11E+01	4.26E-03	4.29E-01	1.28E-01	8.75E-01	1.11E-01	8.27E+01	1.71E+01	6.49E+02	1.92E+01	8.65E+00	1.70E+01	2.04E+01	3.59E+01	5.31E+00	1.24E+01	9.41E-02	4.27E-01	2.86E+00	3.94E+01	6.85E-01
EE	5.36E+00	6.32E-02	7.89E+01	2.14E+00	2.94E+02	3.99E-03	1.17E+00	3.32E-01	3.27E+00	9.69E-02	1.15E+01	1.20E+01	1.18E+03	4.74E+00	2.13E+01	3.47E+01	1.50E+02	6.85E+01	8.35E+00	2.79E+01	1.77E-01	2.22E+00	1.18E+01	1.56E+02	3.41E+00
ES	2.81E+00	1.08E-01	1.48E+00	5.59E+00	1.20E+00	1.26E-01	6.54E-01	5.02E-01	6.21E+00	2.48E+00	1.20E+01	2.28E+00	1.48E+02	4.93E+03	1.57E+01	2.46E+01	1.40E+01	1.73E+00	1.42E+01	7.18E+00	7.42E-02	7.17E-01	1.37E+01	3.98E+01	9.44E-01
FI	3.37E+01	1.77E-01	1.32E+02	8.20E+00	2.83E+02	1.41E-02	3.85E+00	8.79E-01	6.87E+00	2.28E-01	3.17E+01	8.60E+01	3.20E+03	2.32E+01	6.72E+01	1.08E+02	1.41E+03	5.77E+02	2.43E+01	7.12E+01	2.71E+00	1.07E+01	3.13E+01	6.00E+02	2.06E+01
FR	1.36E+01	1.30E+00	7.82E+00	2.60E+02	6.26E+00	1.41E+00	1.98E+00	1.49E+00	2.06E+01	4.54E+00	1.74E+02	8.98E+00	8.95E+02	9.41E+02	4.74E+01	7.32E+01	8.11E+01	1.29E+01	6.49E+01	3.48E+01	1.53E-01	3.09E+00	2.19E+01	2.01E+02	3.56E+00
GB	8.87E+00	2.27E-01	1.66E+01	2.79E+01	1.78E+01	2.26E-02	1.35E+00	3.32E-01	3.93E+00	1.48E-01	1.61E+02	2.42E+01	1.07E+03	1.85E+02	3.60E+01	4.98E+01	6.58E+01	2.09E+01	1.27E+01	3.35E+01	2.39E-01	2.33E+00	4.76E+00	1.41E+02	2.90E+00
GE	3.21E+01	2.20E-02	8.70E-01	1.38E-01	6.74E-01	2.64E-03	2.29E+00	3.91E-01	6.51E+00	2.79E-01	2.09E-01	2.49E-01	6.27E+01	2.61E+00	4.50E+01	4.64E+01	1.89E+02	5.08E-01	5.60E+00	3.62E+00	7.23E+00	6.94E+01	5.75E+02	5.66E+02	6.66E+01
GR	1.44E+01	4.54E-02	6.63E-01	4.68E-01	5.53E-01	2.83E-02	7.56E+00	4.68E+00	4.99E+02	1.13E+01	6.57E-01	3.62E-01	2.07E+02	2.30E+01	2.36E+02	4.11E+02	3.11E+02	5.93E-01	1.51E+01	2.44E+01	7.57E-01	1.24E+01	1.01E+03	9.05E+02	1.23E+01
HR	3.88E+00	1.33E-01	1.02E+00	1.36E+00	7.41E-01	8.60E-02	1.31E+00	8.21E+00	2.77E+01	3.80E+00	1.57E+00	4.52E-01	7.76E+02	2.69E+01	1.09E+02	6.24E+02	3.44E+01	6.49E-01	3.52E+02	1.20E+02	9.43E-02	1.24E+00	1.70E+01	1.52E+02	1.24E+00
HU	9.38E+00	2.43E-01	3.22E+00	2.36E+00	2.17E+00	5.59E-02	5.03E+00	1.11E+01	8.93E+01	2.10E+00	2.45E+00	8.16E-01	2.86E+03	2.45E+01	5.93E+02	1.87E+03	1.25E+02	1.65E+00	2.00E+02	1.02E+03	2.63E-01	5.44E+00	4.33E+01	6.75E+02	4.72E+00
IE	1.32E+00	2.30E-02	1.72E+00	2.96E+00	1.78E+00	3.25E-03	2.58E-01	5.98E-02	6.48E-01	3.71E-02	1.09E+01	1.88E+00	1.81E+02	5.89E+01	7.42E+00	1.30E+01	1.11E+01	1.97E+00	2.21E+00	6.45E+00	4.69E-02	2.67E-01	8.29E-01	2.27E+01	3.84E-01
IS	1.02E+00	3.47E-03	8.43E-01	2.85E-01	1.14E+00	1.29E-03	1.11E-01	2.47E-02	2.95E-01	2.45E-02	1.17E+00	6.12E+00	5.07E+01	4.53E+00	2.75E+00	2.68E+00	9.51E+00	3.27E+00	3.99E-01	1.68E+00	2.46E-01	1.65E-01	1.53E+00	1.01E+01	9.92E-01
IT	6.44E+00	1.90E+00	1.66E+00	7.49E+00	1.40E+00	1.46E+00	2.59E+00	1.65E+01	1.15E+02	3.51E+01	7.70E+00	1.55E+00	6.70E+02	2.87E+02	1.16E+02	4.43E+02	5.19E+01	2.55E+00	5.84E+02	8.55E+01	1.29E-01	3.63E+00	1.01E+02	2.13E+02	3.57E+00
KY	1.48E+03	7.66E-03	3.46E-01	8.38E-02	3.33E-01	2.39E-03	3.14E-01	7.96E-02	2.26E+00	1.11E-01	1.19E-01	2.94E-01	2.69E+01	3.09E+00	6.02E+00	6.13E+00	1.09E+02	4.59E-01	9.90E-01	1.24E+00	6.66E+03	5.12E+02	1.16E+02	1.04E+02	2.65E+04
KZ	4.03E+04	2.47E-01	2.57E+01	3.71E+00	3.01E+01	5.68E-02	3.11E+01	2.80E+00	5.16E+01	1.96E+00	6.28E+00	1.47E+01	1.83E+03	4.09E+01	3.98E+02	2.12E+02	1.40E+04	3.24E+01	3.43E+01	8.47E+01	8.51E+03	5.03E+03	1.32E+03	8.74E+03	3.65E+04
LI	2.60E-03	5.71E-01	1.62E-03	4.36E-02	1.75E-03	4.04E-04	2.50E-04	5.90E-04	5.10E-03	1.18E-03	2.53E-02	1.42E-03	6.30E-01	1.83E-01	1.18E-02	3.26E-02	2.11E-02	7.08E-03	4.86E-02	2.65E-02	3.95E-05	9.92E-04	7.92E-03	3.86E-02	1.16E-03
LT	1.20E+01	1.40E-01	1.13E+03	4.89E+00	2.27E+02	9.49E-03	5.56E+00	8.46E-01	7.90E+00	1.75E-01	2.09E+01	8.98E+00	3.69E+03	7.07E+00	7.20E+01	8.79E+01	1.64E+02	3.86E+01	2.00E+01	7.85E+01	2.40E-01	4.54E+00	2.27E+01	4.72E+02	5.91E+00
LU	1.13E-01	2.38E-02	5.97E-02	1.40E+02	5.22E-02	1.43E-03	2.03E-02	1.15E-02	1.98E-01	7.59E-03	3.98E+00	8.29E-02	1.65E+01	2.35E+00	4.24E-01	6.43E-01	8.09E-01	1.61E-01	4.87E-01	5.39E-01	1.59E-03	2.88E-02	1.09E-01	2.13E+00	3.06E-02
LV	9.63E+00	1.08E-01	3.58E+02	4.02E+00	1.53E+03	7.15E-03	3.48E+00	6.62E-01	7.20E+00	1.74E-01	2.02E+01	1.40E+01	2.53E+03	6.05E+00	5.43E+01	6.77E+01	1.77E+02	7.08E+01	1.39E+01	5.62E+01	2.30E-01	3.47E+00	2.27E+01	3.39E+02	5.22E+00
MC	1.90E-04	3.31E-05	5.11E-05	2.45E-04	4.36E-05	5.03E-03	5.70E-05	1.33E-04	1.94E-03	7.98E-04	2.87E-04	7.81E-05	1.19E-02	2.18E-02	2.15E-03	4.80E-03	1.28E-03	9.01E-05	5.66E-03	1.35E-03	2.91E-06	1.04E-04	1.86E-03	4.91E-03	1.04E-04
MD	2.89E+01	1.73E-02	2.32E+00	2.06E-01	1.45E+00	5.50E-03	1.94E+02	7.53E-01	1.31E+01	4.01E-01	3.03E-01	4.84E-01	2.20E+02	3.34E+00	4.19E+02	7.42E+01	3.81E+02	1.01E+00	5.73E+00	1.19E+01	6.39E-01	1.45E+01	2.35E+02	2.25E+03	1.72E+01
ME	8.11E-01	1.51E-02	6.85E-02	1.72E-01	4.87E-02	1.22E-02	3.81E-01	7.13E+01	3.36E+01	1.68E+00	1.71E-01	6.45E-02	4.44E+01	9.52E+00	2.60E+01	2.45E+02	1.36E+01	1.03E-01	6.62E+00	9.15E+00	1.66E-02	6.66E-01	8.31E+00	6.35E+01	5.65E-01
MK	2.44E+00	1.24E-02	1.22E-01	1.45E-01	1.12E-01	7.36E-03	1.24E+00	2.01E+00	1.64E+03	1.22E+00	1.69E-01	7.45E-02	6.80E+01	8.80E+00	5.99E+01	3.40E+02	5.59E+01	1.20E-01	4.99E+00	9.95E+00	1.27E-01	1.85E+00	6.72E+01	1.97E+02	1.96E+00
MT	5.18E-04	9.02E-05	3.55E-04	1.42E-03	2.16E-04	6.66E-05	2.02E-03	8.41E-03	6.64E-02	1.52E+00	1.98E-03	4.07E-04	1.41E-01	5.03E-02	5.96E-02	1.21E-01	1.88E-02	6.83E-04	2.49E-02	1.38E-02	2.79E-05	1.33E-03	9.33E-02	8.87E-02	6.55E-04
NL	8.77E-01	9.55E-02	2.50E+00	2.73E+01	2.06E+00	5.05E-03	5.83E-01	1.92E-01	2.23E+00	6.31E-02	7.75E+02	4.70E+00	2.74E+02	2.66E+01	1.34E+01	2.32E+01	1.28E+01	3.06E+00	4.63E+00	1.06E+01	3.38E-02	2.47E-01	1.26E+00	4.25E+01	3.15E-01
NO	1.40E+01	2.36E-01	3.24E+01	1.81E+01	3.68E+01	1.64E-02	3.16E+00	5.22E-01	4.00E+00	2.16E-01	1.18E+02	1.69E+03	2.27E+03	3.63E+01	5.87E+01	8.47E+01	3.95E+02	2.58E+02	1.99E+01	5.66E+01	1.27E+00	3.91E+00	2.69E+01	4.37E+02	8.25E+00
PL	5.13E+01	1.57E+00	1.24E+02	5.94E+01	6.65E+01	9.09E-02	2.11E+01	6.33E+00	4.65E+01	1.54E+00	1.45E+02	2.59E+01	9.28E+04	7.82E+01	4.80E+02	8.33E+02	6.74E+02	8.23E+01	2.64E+02	1.33E+03	1.77E+00	1.89E+01	9.07E+01	2.69E+03	2.47E+01
PT	4.71E-01	9.63E-03	1.85E-01	5.73E-01	1.28E-01	2.66E-03	3.05E-02	3.04E-02	3.56E-01	9.60E-02	1.21E+00	2.43E-01	1.97E+01	7.52E+03	9.66E-01	1.87E+00	2.08E+00	1.82E-01	6.93E-01	7.61E-01	1.12E-02	1.02E-01	6.03E-01	4.34E+00	1.38E-01
RO	8.02E+01	3.50E-01	7.05E+00	2.88E+00	5.80E+00	7.90E-02	1.30E+02	1.50E+01	2.28E+02	3.45E+00	3.18E+00	2.33E+00	2.10E+03	3.77E+01	8.92E+03	2.54E+03	1.21E+03	4.34E+00	1.16E+02	3.16E+02	1.86E+00	4.84E+01	1.07E+03	6.04E+03	5.00E+01
RS	1.00E+01	9.30E-02	1.05E+00	1.46E+00	7.73E-01	3.78E-02	7.00E+00	5.02E+01	7.26E+02	2.31E+00	1.70E+00	4.59E-01	8.81E+02	2.11E+01	5.73E+02	7.53E+03	1.66E+02	6.98E-01	4.02E+01	1.83E+02	3.75E-01	7.38E+00	1.03E+02	7.50E+02	6.82E+00
RU	3.19E+04	1.86E+00	6.39E+02	3.77E+01	1.02E+03	2.49E-01	1.92E+02	1.79E+01	3.12E+02	8.04E+00	1.31E+02	2.59E+02	2.06E+04	1.84E+02	2.59E+03	1.66E+03	1.41E+05	8.30E+02	2.59E+02	7.18E+02	2.50E+03	3.78E+03	5.44E+03	5.99E+04	1.11E+04
SE	2.04E+01	5.85E-01	1.43E+02	3.15E+01	2.28E+02	2.50E-02	7.84E+00	1.07E+00	9.41E+00	4.56E-01	1.57E+02	4.17E+02	6.17E+03	4.33E+01	1.33E+02	1.82E+02	6.32E+02	2.13E+03	4.36E+01	1.27E+02	1.73E+00	4.32E+00	4.48E+01	8.21E+02	9.79E+00
SI	1.47E+00	8.98E-02	3.71E-01	6.66E-01	3.22E-01	4.52E-02	3.07E-01	9.97E-01	6.42E+00	8.73E-01	6.20E-01	1.29E-01	2.43E+02	1.30E+01	2.55E+01	1.13E+02	1.00E+01	2.69E-01	1.19E+03	3.41E+01	3.06E-02	3.57E-01	4.03E+00	4.10E+01	3.70E-01
SK	6.26E+00	3.29E-01	2.85E+00	3.69E+00	1.98E+00	3.77E-02	2.38E+00	4.61E+00	3.20E+01	8.30E-01	3.35E+00	8.46E-01	5.82E+03	2.10E+01	1.99E+02	5.99E+02	6.83E+01	1.86E+00	1.01E+02	2.16E+03	1.84E-01	4.60E+00	2.09E+01	3.39E+02	4.25E+00
TJ	2.14E+02	3.21E-03	1.35E-01	2.90E-02	1.34E-01	1.10E-03	1.45E-01	3.55E-02	1.10E+00	5.28E-02	4.32E-02	1.13E-01	1.08E+01	1.22E+00	2.88E+00	2.63E+00	5.52E+01	1.81E-01	4.18E-01	5.39E-01	1.45E+04	4.40E+02	5.84E+01	5.01E+01	6.79E+03
TM	5.51E+02	8.61E-03	7.67E-01	1.16E-01	7.90E-01	2.31E-03	9.20E-01	1.13E-01	2.91E+00	1.45E-01	1.82E-01	3.35E-01	4.95E+01	2.16E+00	1.45E+01	8.69E+00	2.72E+02	6.07E-01	1.31E+00	2.54E+00	1.15E+03	5.18E+03	1.42E+02	2.62E+02	4.95E+03
TR	1.55E+02	1.35E-01	9.35E+00	1.92E+00	7.43E+00	5.27E-02	5.20E+01	4.73E+00	1.30E+02	1.67E+01	3.03E+00	3.48E+00	9.59E+02	6.77E+01	8.23E+02	4.43E+02	2.92E+03	6.49E+00	3.74E+01	5.40E+01	1.41E+01	2.98E+02	3.07E+04	8.70E+03	2.02E+02
UA	3.34E+02	7.81E-01	7.91E+01	1.30E+01	5.60E+01	1.27E-01	3.10E+02	1.22E+01	1.83E+02	5.25E+00	2.10E+01	1.40E+01	1.36E+04	5.85E+01	2.78E+03	1.35E+03	9.96E+03	3.33E+01	1.70E+02	6.79E+02	1.34E+01	2.18E+02	2.65E+03	7.43E+04	2.53E+02
UZ	1.26E+03	1.10E-02	1.25E+00	1.34E-01	1.32E+00	2.94E-03	1.32E+00	1.43E-01	3.49E+00	1.69E-01	2.38E-01	5.83E-01	6.59E+01	3.03E+00	1.82E+01	1.14E+01	4.53E+02	1.14E+00	1.77E+00	2.98E+00	6.76E+03	1.77E+03	1.74E+02	4.55E+02	2.99E+04

Table B3. *Source-receptor matrix of Cd deposition to EMEP countries in 2024, kg/year. Columns and rows represent sources and receptors, respectively.*

Code	AL	AM	AT	AZ	BA	BE	BG	BY	CH	CY	CZ	DE	DK	EE	ES	FI	FR	GB	GE	GR	HR	HU	IE	IS	IT	KY
AL	6.39E+01	2.20E-03	5.33E-01	1.01E-02	3.54E+00	7.31E-02	4.50E+00	9.03E-02	2.25E-01	7.27E-03	3.85E-01	1.26E+00	2.55E-02	8.88E-03	1.04E+01	1.13E-02	1.15E+00	1.18E-01	1.80E-02	9.78E+00	1.17E+00	1.20E+00	4.73E-03	6.23E-04	2.19E+01	1.56E-03
AM	3.55E-02	1.12E+01	5.01E-02	5.50E+00	1.15E-01	9.62E-03	4.67E-01	4.50E-02	2.92E-02	8.61E-02	3.51E-02	1.80E-01	5.92E-03	4.92E-03	4.39E-01	5.36E-03	7.11E-02	2.93E-02	6.02E+00	4.21E-01	4.86E-02	5.64E-02	7.29E-04	3.46E-04	4.30E-01	3.65E-03
AT	3.36E-01	2.24E-03	2.13E+02	9.75E-03	6.13E+00	2.31E+00	1.95E+00	5.59E-01	2.22E+01	5.27E-03	3.63E+01	1.71E+02	6.16E-01	1.13E-01	2.11E+01	2.13E-01	1.51E+01	3.40E+00	1.18E-02	4.83E-01	1.71E+01	1.79E+01	9.35E-02	8.74E-03	6.67E+01	3.91E-03
AZ	4.50E-02	3.10E+00	8.28E-02	3.09E+01	1.96E-01	2.02E-02	7.85E-01	1.27E-01	4.08E-02	7.35E-02	7.11E-02	3.70E-01	1.76E-02	1.57E-02	6.49E-01	2.02E-02	1.10E-01	7.31E-02	6.57E+00	5.02E-01	8.03E-02	9.98E-02	1.27E-03	8.08E-04	5.89E-01	4.64E-02
BA	6.36E+00	5.55E-03	1.07E+01	2.24E-02	4.94E+02	3.50E-01	6.87E+00	4.53E-01	1.03E+00	9.26E-03	9.46E+00	1.08E+01	1.98E-01	8.21E-02	2.07E+01	1.42E-01	4.19E+00	6.48E-01	3.24E-02	2.78E+00	5.26E+01	2.74E+01	2.09E-02	2.38E-03	6.04E+01	8.30E-03
BE	3.21E-03	3.40E-04	4.48E-01	1.45E-03	4.54E-02	1.93E+02	5.54E-02	1.32E-01	1.14E+00	8.98E-05	7.22E-01	8.12E+01	1.02E+00	7.86E-02	1.17E+01	1.11E-01	5.95E+01	4.30E+01	1.13E-03	1.15E-02	7.75E-02	1.92E-01	6.48E-01	3.36E-02	8.40E-01	9.14E-04
BG	5.05E+00	8.08E-02	4.66E+00	1.71E-01	1.67E+01	3.01E-01	6.61E+02	1.68E+00	9.49E-01	1.10E-01	3.77E+00	8.66E+00	2.40E-01	1.60E-01	1.51E+01	2.03E-01	2.64E+00	6.87E-01	5.26E-01	6.45E+01	5.48E+00	1.40E+01	2.10E-02	4.74E-03	2.24E+01	5.44E-02
BY	9.13E-01	5.58E-02	1.56E+01	2.44E-01	1.37E+01	5.13E+00	1.95E+01	2.67E+02	3.97E+00	9.85E-03	3.06E+01	9.85E+01	7.57E+00	6.56E+00	1.53E+01	3.86E+00	1.00E+01	1.51E+01	3.29E-01	6.03E+00	9.09E+00	2.60E+01	4.01E-01	6.38E-02	1.84E+01	8.85E-02
CH	2.70E-02	2.71E-04	3.45E+00	9.08E-04	2.38E-01	1.45E+00	1.04E-01	6.50E-02	8.44E+01	4.38E-04	1.21E+00	5.23E+01	1.51E-01	1.07E-02	1.90E+01	2.12E-02	2.88E+01	2.18E+00	1.11E-03	5.80E-02	5.41E-01	2.74E-01	6.13E-02	5.31E-03	4.40E+01	4.50E-04
CY	7.38E-02	1.86E-03	3.34E-02	2.24E-03	1.12E-01	6.74E-03	5.88E-01	1.24E-02	2.38E-02	1.40E+00	2.04E-02	8.91E-02	2.43E-03	6.78E-04	3.32E-01	8.03E-04	7.19E-02	1.64E-02	4.30E-03	1.28E+00	6.04E-02	4.12E-02	5.66E-04	7.16E-05	8.55E-01	2.75E-04
CZ	3.27E-01	2.40E-03	5.65E+01	1.35E-02	8.98E+00	6.16E+00	1.54E+00	1.19E+00	9.81E+00	3.10E-03	3.39E+02	2.94E+02	1.60E+00	3.69E-01	1.47E+01	6.03E-01	1.74E+01	8.77E+00	1.12E-02	3.51E-01	1.15E+01	2.30E+01	2.36E-01	1.95E-02	1.64E+01	5.62E-03
DE	1.28E-01	5.86E-03	4.60E+01	3.52E-02	2.40E+00	2.08E+02	1.40E+00	4.59E+00	7.17E+01	2.41E-03	8.30E+01	4.15E+03	2.64E+01	1.66E+00	8.31E+01	2.05E+00	2.17E+02	2.23E+02	2.29E-02	3.37E-01	3.48E+00	9.17E+00	4.52E+00	2.41E-01	2.92E+01	1.74E-02
DK	3.99E-03	6.51E-04	1.43E+00	3.50E-03	3.01E-01	1.16E+01	3.94E-02	5.92E-01	1.13E+00	1.07E-04	3.34E+00	1.18E+02	9.22E+01	5.12E-01	6.03E+00	6.66E-01	9.91E+00	4.26E+01	1.93E-03	1.21E-02	3.56E-01	8.62E-01	8.85E-01	8.39E-02	7.22E-01	1.31E-03
EE	4.23E-02	3.54E-03	1.72E+00	1.04E-02	1.08E+00	2.00E+00	6.35E-01	5.62E+00	5.17E-01	7.38E-04	3.74E+00	2.56E+01	3.48E+00	1.12E+02	2.88E+00	1.35E+01	2.47E+00	6.89E+00	2.30E-02	1.69E-01	8.03E-01	1.89E+00	1.86E-01	3.52E-02	1.55E+00	3.82E-03
ES	2.51E-01	2.35E-03	2.02E+00	5.58E-03	2.21E+00	9.98E+00	5.67E-01	1.64E-01	1.54E+00	2.28E-03	2.30E+00	4.51E+01	1.37E+00	3.92E-02	1.94E+03	3.98E-02	4.97E+01	2.25E+01	1.45E-02	4.09E-01	2.51E+00	1.46E+00	7.85E-01	6.50E-02	2.86E+01	2.90E-03
FI	9.87E-02	3.56E-02	3.98E+00	9.16E-02	2.85E+00	5.19E+00	2.28E+00	1.04E+01	1.23E+00	3.32E-03	8.42E+00	5.76E+01	9.24E+00	4.51E+01	8.19E+00	3.57E+02	6.12E+00	1.76E+01	1.13E-01	5.09E-01	2.08E+00	5.07E+00	3.90E-01	2.49E-01	4.15E+00	6.24E-02
FR	2.20E-01	4.03E-03	9.98E+00	1.39E-02	2.47E+00	9.20E+01	9.41E-01	1.04E+00	4.20E+01	3.33E-03	1.37E+01	3.87E+02	5.53E+00	3.37E-01	5.28E+02	5.10E-01	9.06E+02	1.34E+02	1.73E-02	4.53E-01	3.56E+00	2.92E+00	4.26E+00	1.86E-01	6.62E+01	8.95E-03
GB	4.27E-03	2.09E-03	9.21E-01	8.75E-03	1.20E-01	2.81E+01	4.43E-02	5.31E-01	1.31E+00	2.86E-04	1.46E+00	7.88E+01	5.79E+00	4.05E-01	3.52E+01	6.34E-01	4.99E+01	1.44E+03	5.55E-03	2.44E-02	1.59E-01	2.92E-01	2.71E+01	8.25E-01	1.23E+00	2.52E-03
GE	3.78E-01	3.04E+00	4.97E-01	2.26E+00	1.58E+00	5.60E-02	5.36E+00	2.18E-01	2.12E-01	1.24E-01	2.85E-01	1.14E+00	4.94E-02	2.86E-02	1.52E+00	4.33E-02	4.77E-01	1.75E-01	4.19E+01	2.97E+00	6.72E-01	6.02E-01	6.06E-03	2.06E-03	3.52E+00	1.26E-02
GR	8.92E+00	3.75E-02	1.48E+00	1.59E-01	6.85E+00	2.26E-01	6.55E+01	5.28E-01	6.29E-01	1.02E-01	1.10E+00	3.82E+00	9.72E-02	5.43E-02	2.02E+01	6.63E-02	2.85E+00	4.35E-01	2.88E-01	2.77E+02	2.45E+00	3.42E+00	1.60E-02	2.43E-03	3.82E+01	3.97E-02
HR	3.21E+00	3.52E-03	2.11E+01	1.39E-02	9.14E+01	4.98E-01	5.00E+00	3.76E-01	1.40E+00	6.62E-03	1.15E+01	1.47E+01	2.28E-01	6.39E-02	3.14E+01	1.10E-01	6.68E+00	7.04E-01	2.02E-02	1.61E+00	1.85E+02	3.75E+01	2.08E-02	2.58E-03	8.35E+01	6.07E-03
HU	4.79E+00	4.15E-03	5.63E+01	1.95E-02	7.16E+01	8.41E-01	2.28E+01	1.08E+00	3.20E+00	4.98E-03	2.71E+01	3.53E+01	5.15E-01	1.17E-01	2.38E+01	1.63E-01	6.67E+00	1.41E+00	2.28E-02	5.04E+00	5.94E+01	3.39E+02	4.07E-02	5.34E-03	5.51E+01	6.00E-03
IE	1.33E-03	4.11E-04	1.83E-01	3.11E-03	2.10E-02	4.15E+00	8.23E-03	1.65E-01	4.62E-01	8.08E-05	3.18E-01	1.81E+01	4.48E-01	6.54E-02	7.06E+00	9.86E-02	6.37E+00	6.00E+01	1.36E-03	7.54E-03	3.09E-02	2.83E-02	5.03E+01	2.78E-01	5.83E-01	3.22E-04
IS	1.63E-03	3.73E-04	7.21E-02	1.05E-03	3.72E-02	4.95E-01	1.67E-02	7.63E-02	5.00E-02	6.57E-05	1.40E-01	3.98E+00	3.86E-01	8.86E-02	2.30E+00	2.13E-01	7.92E-01	7.11E+00	1.03E-03	6.64E-03	5.13E-02	5.43E-02	5.16E-01	2.53E+01	2.15E-01	1.15E-03
IT	9.00E+00	1.15E-02	2.49E+01	5.19E-02	5.02E+01	1.86E+00	7.74E+00	5.74E-01	2.07E+01	1.39E-02	1.07E+01	4.69E+01	4.47E-01	1.08E-01	1.46E+02	2.06E-01	5.59E+01	2.98E+00	6.87E-02	7.22E+00	4.52E+01	1.45E+01	1.26E-01	1.06E-02	1.14E+03	1.44E-02
KY	5.49E-02	2.47E-01	9.53E-02	9.49E-01	1.92E-01	2.12E-02	4.75E-01	6.25E-02	7.96E-02	4.69E-02	6.92E-02	3.99E-01	1.10E-02	1.22E-02	1.14E+00	1.96E-02	1.85E-01	6.32E-02	4.81E-01	4.19E-01	9.00E-02	9.05E-02	2.34E-03	1.57E-03	8.50E-01	4.56E+01
KZ	1.43E+00	5.68E+00	4.86E+00	2.13E+01	7.99E+00	1.04E+00	3.28E+01	6.14E+00	1.89E+00	3.99E-01	5.48E+00	1.83E+01	1.54E+00	1.22E+00	1.52E+01	1.75E+00	4.24E+00	3.94E+00	1.24E+01	1.23E+01	4.31E+00	8.11E+00	1.42E-01	9.72E-02	1.91E+01	5.25E+01
LI	8.40E-05	1.43E-06	4.55E-02	4.96E-06	8.97E-04	8.16E-03	4.43E-04	3.13E-04	5.81E-01	1.65E-06	5.55E-03	3.77E-01	7.81E-04	7.36E-05	7.61E-02	1.58E-04	9.24E-02	1.13E-02	5.90E-06	2.13E-04	2.10E-03	1.28E-03	2.71E-04	2.90E-05	1.63E-01	2.45E-06
LT	1.72E-01	5.39E-03	5.00E+00	3.31E-02	2.62E+00	4.43E+00	2.71E+00	4.03E+01	1.38E+00	1.35E-03	1.12E+01	5.99E+01	7.34E+00	3.77E+00	5.98E+00	2.27E+00	5.48E+00	1.41E+01	2.73E-02	4.59E-01	2.11E+00	5.57E+00	3.20E-01	3.44E-02	3.65E+00	7.57E-03
LU	3.30E-04	2.47E-05	5.66E-02	1.11E-04	4.85E-03	5.29E+00	4.55E-03	1.28E-02	2.18E-01	9.12E-06	1.03E-01	1.05E+01	7.16E-02	5.74E-03	1.33E+00	8.17E-03	5.38E+00	1.24E+00	8.74E-05	1.18E-03	6.87E-03	2.03E-02	2.87E-02	1.52E-03	1.33E-01	7.06E-05
LV	1.02E-01	5.73E-03	3.41E+00	2.13E-02	1.82E+00	3.85E+00	1.63E+00	1.68E+01	9.97E-01	1.65E-03	8.01E+00	4.93E+01	6.81E+00	1.68E+01	5.66E+00	5.54E+00	4.66E+00	1.24E+01	3.40E-02	3.37E-01	1.44E+00	3.74E+00	3.09E-01	4.46E-02	2.56E+00	6.70E-03
MC	3.74E-05	1.26E-07	4.77E-04	3.39E-07	3.08E-04	7.33E-05	1.07E-04	1.53E-05	6.66E-04	3.05E-07	2.59E-04	1.75E-03	1.34E-05	4.19E-06	6.58E-03	8.35E-06	1.19E-02	9.17E-05	9.41E-07	5.30E-05	4.67E-04	1.98E-04	5.12E-06	2.52E-07	1.52E-02	1.62E-07
MD	4.11E-01	4.05E-02	1.03E+00	1.04E-01	2.34E+00	9.89E-02	1.64E+01	1.26E+00	2.34E-01	8.59E-03	8.74E-01	2.52E+00	1.06E-01	9.79E-02	2.90E+00	1.09E-01	6.22E-01	2.92E-01	1.75E-01	3.71E+00	1.01E+00	2.26E+00	7.82E-03	2.11E-03	3.80E+00	2.45E-02
ME	1.06E+01	1.14E-03	7.24E-01	5.98E-03	1.40E+01	6.19E-02	1.79E+00	7.02E-02	2.16E-01	2.73E-03	6.21E-01	1.34E+00	2.87E-02	7.31E-03	6.54E+00	1.32E-02	9.54E-01	8.78E-02	7.57E-03	1.72E+00	2.05E+00	1.97E+00	3.54E-03	5.50E-04	1.79E+01	8.34E-04
MK	1.06E+01	3.39E-03	7.78E-01	1.54E-02	3.04E+00	5.15E-02	1.23E+01	1.23E-01	1.92E-01	9.56E-03	5.69E-01	1.35E+00	2.65E-02	1.22E-02	4.39E+00	1.69E-02	6.48E-01	8.88E-02	2.86E-02	2.21E+01	1.03E+00	2.21E+00	3.25E-03	5.59E-04	8.43E+00	3.05E-03
MT	7.36E-03	1.02E-05	2.58E-03	3.42E-05	1.36E-02	8.06E-04	6.81E-03	3.36E-04	1.29E-03	3.32E-06	2.71E-03	7.55E-03	9.83E-05	4.31E-05	4.99E-02	5.42E-05	1.00E-02	1.33E-03	4.18E-05	1.47E-02	5.94E-03	3.82E-03	6.87E-05	2.87E-06	1.67E-01	2.03E-05
NL	2.76E-03	5.28E-04	6.77E-01	2.90E-03	7.02E-02	1.12E+02	2.64E-02	1.78E-01	9.91E-01	1.06E-04	1.09E+00	1.32E+02	1.46E+00	7.13E-02	9.81E+00	1.02E-01	3.48E+01	8.44E+01	1.77E-03	1.01E-02	1.16E-01	2.66E-01	1.21E+00	6.11E-02	6.95E-01	9.38E-04
NO	3.26E-02	1.59E-02	3.01E+00	4.58E-02	9.45E-01	1.59E+01	4.63E-01	2.93E+00	1.80E+00	1.93E-03	7.37E+00	1.23E+02	2.45E+01	3.16E+00	1.21E+01	8.65E+00	1.66E+01	7.91E+01	4.48E-02	1.66E-01	8.19E-01	2.27E+00	1.97E+00	1.11E+00	2.33E+00	4.11E-02
PL	1.79E+00	1.66E-02	6.43E+01	1.03E-01	3.45E+01	2.75E+01	1.40E+01	4.44E+01	1.41E+01	1.38E-02	2.55E+02	6.64E+02	2.22E+01	4.39E+00	3.76E+01	4.69E+00	3.91E+01	6.31E+01	8.91E-02	2.79E+00	2.78E+01	7.87E+01	1.62E+00	1.20E-01	3.91E+01	4.60E-02
PT	1.17E-02	3.97E-04	9.93E-02	7.77E-04	8.92E-02	1.23E+00	2.75E-02	1.40E-02	1.18E-01	1.68E-04	1.53E-01	5.53E+00	1.27E-01	3.25E-03	7.10E+01	2.36E-03	3.10E+00	3.73E+00	1.37E-03	2.15E-02	9.22E-02	5.15E-02	1.03E-01	1.08E-02	1.03E+00	4.33E-04
RO	6.99E+00	1.97E-01	2.67E+01	3.03E-01	6.40E+01	1.15E+00	1.57E+02	5.27E+00	4.16E+00	7.80E-02	1.47E+01	3.85E+01	8.57E-01	5.22E-01	3.17E+01	5.96E-01	8.51E+00	2.75E+00	8.94E-01	2.57E+01	3.01E+01	9.51E+01	8.53E-02	1.40E-02	6.25E+01	1.15E-01
RS	1.53E+01	1.92E-02	1.17E+01	6.15E-02	7.84E+01	5.08E-01	5.92E+01	9.24E-01	1.35E+00	1.46E-02	9.82E+00	1.50E+01	3.28E-01	1.38E-01	1.63E+01	2.08E-01	3.62E+00	9.88E-01	1.23E-01	1.67E+01	2.27E+01	5.42E+01	3.06E-02	3.47E-03	3.96E+01	2.38E-02
RU	7.91E+00	9.75E+00	4.66E+01	3.90E+01	5.83E+01	2.05E+01	1.85E+02	1.83E+02	1.47E+01	1.00E+00	6.72E+01	2.93E+02	3.16E+01	1.12E+02	1.12E+02	1.35E+02	4.29E+01	7.05E+01	3.67E+01	6.95E+01	3.33E+01	7.42E+01	1.99E+00	1.66E+00	1.11E+02	2.25E+01
SE	1.29E-01	2.34E-02	7.07E+00	8.71E-02	3.87E+00	2.17E+01	1.67E+00	1.09E+01	3.27E+00	2.76E-03	1.77E+01	2.48E+02	9.11E+01	1.90E+01	1.95E+01	5.89E+01	2.16E+01	8.80E+01	1.01E-01	4.69E-01	2.89E+00	6.76E+00	1.94E+00	5.05E-01	4.88E+00	3.97E-02
SI	3.11E-01	8.39E-04	2.22E+01	4.09E-03	4.62E+00	2.28E-01	1.06E+00	1.55E-01	9.93E-01	1.79E-03	3.89E+00	8.81E+00	1.01E-01	2.24E-02	1.13E+01	4.06E-02	3.10E+00	2.90E-01	4.66E-03	2.85E-01	4.15E+01	7.72E+00	6.73E-03	1.17E-03	4.01E+01	1.61E-03
SK	1.29E+00	2.45E-03	4.10E+01	1.36E-02	2.79E+01	1.02E+00	6.78E+00	9.99E-01	3.25E+00	2.68E-03	5.25E+01	4.22E+01	5.86E-01	1.40E-01	1.08E+01	2.23E-01	5.31E+00	1.86E+00	1.19E-02	1.23E+00	1.95E+01	9.57E+01	5.36E-02	6.37E-03	2.37E+01	3.43E-03
TJ	3.13E-02	1.38E-01	5.18E-02	5.59E-01	9.96E-02	1.20E-02	2.66E-01	3.74E-02	4.51E-02	2.27E-02	3.90E-02	2.25E-01	5.73E-03	6.31E-03	6.23E-01	1.00E-02	1.04E-01	3.48E-02	2.46E-01	2.15E-01	4.79E-02	4.76E-02	1.27E-03	7.31E-04	4.55E-01	1.45E+00
TM	5.44E-02	5.10E-01	1.08E-01	2.80E+00	2.11E-01	2.20E-02	8.15E-01	1.11E-01	6.31E-02	4.41E-02	8.73E-02	3.98E-01	1.90E-02	3.27E-02	8.04E-01	4.07E-02	1.47E-01	7.81E-02	9.79E-01	4.18E-01	1.06E-01	1.35E-01	2.43E-03	1.45E-03	6.76E-01	5.50E-01
TR	5.01E+00	5.37E+00	4.16E+00	4.15E+00	1.05E+01	6.32E-01	1.44E+02	3.76E+00	1.66E+00	5.71E+00	3.05E+00	1.17E+01	6.92E-01	3.71E-01	3.79E+01	4.06E-01	5.39E+00	1.69E+00	6.86E+00	1.16E+02	4.89E+00	7.03E+00	5.72E-02	1.39E-02	4.98E+01	1.40E-01
UA	4.92E+00	6.02E-01	3.59E+01	2.87E+00	5.15E+01	4.00E+00	1.37E+02	4.85E+01	6.68E+00	1.99E-01	4.49E+01	1.02E+02	4.88E+00	2.97E+00	4.11E+01	2.65E+00	1.42E+01	1.09E+01	3.44E+00	3.95E+01	2.84E+01	1.00E+02	3.13E-01	6.26E-02	6.86E+01	3.97E-01
UZ	8.74E-02	6.52E-01	2.14E-01	2.84E+00	3.15E-01	8.38E-02	1.51E+00	2.67E-01	9.85E-02	5.76E-02	2.73E-01	1.14E+00	6.45E-02	4.69E-02	1.40E+00	6.22E-02	2.58E-01	3.12E-01	1.23E+00	6.27E-01	1.68E-01	3.13E-01	1.00E-02	2.74E-03	1.07E+00	4.76E+00

Table B3 *(continued)*

Code	KZ	LI	LT	LU	LV	MC	MD	ME	MK	MT	NL	NO	PL	PT	RO	RS	RU	SE	SI	SK	TJ	TM	TR	UA	UZ
AL	8.64E-02	4.96E-04	2.48E-03	4.71E-03	9.24E-03	9.60E-03	1.53E-01	4.95E+00	8.15E+00	2.79E-02	2.20E-02	9.83E-03	1.50E+00	6.34E-01	2.51E+00	3.10E+01	5.11E+00	6.82E-03	4.77E-01	3.19E-01	2.43E-03	4.30E-03	2.27E+00	2.56E+00	1.51E-02
AM	1.18E+00	5.87E-05	3.04E-03	7.91E-04	1.34E-02	6.43E-04	5.15E-02	1.00E-02	5.09E-02	1.11E-03	4.70E-03	7.92E-03	4.25E-01	8.37E-02	3.41E-01	3.34E-01	5.05E+00	6.89E-03	2.45E-02	2.34E-02	1.06E-01	2.15E-01	1.64E+01	1.51E+00	4.89E-01
AT	3.68E-01	1.44E-01	5.51E-02	2.40E-01	2.02E-01	8.27E-02	2.20E-01	3.84E-01	4.81E-01	1.02E-02	8.51E-01	2.02E-01	5.00E+01	2.46E+00	5.72E+00	3.05E+01	6.40E+00	1.83E-01	6.54E+01	1.31E+01	6.72E-03	7.04E-03	7.31E-01	3.59E+00	2.87E-02
AZ	6.03E+00	1.17E-04	9.90E-03	1.51E-03	4.60E-02	9.93E-04	1.48E-01	1.50E-02	7.32E-02	1.24E-03	1.17E-02	2.38E-02	1.12E+00	1.13E-01	8.81E-01	6.68E-01	2.44E+01	2.07E-02	4.74E-02	6.29E-02	1.46E+00	1.14E+00	1.38E+01	4.54E+00	3.53E+00
BA	2.94E-01	2.62E-03	2.33E-02	3.52E-02	7.14E-02	4.81E-02	4.87E-01	9.15E+00	2.26E+00	4.01E-02	1.82E-01	8.10E-02	2.59E+01	1.60E+00	1.35E+01	1.77E+02	8.00E+00	4.52E-02	5.05E+00	5.96E+00	5.26E-03	6.41E-03	1.42E+00	5.41E+00	2.39E-02
BE	6.22E-02	4.85E-03	4.28E-02	2.86E+00	1.84E-01	7.20E-03	7.24E-02	3.65E-02	9.20E-02	5.18E-04	2.14E+01	2.37E-01	5.17E+00	1.53E+00	5.41E-01	1.55E+00	1.32E+00	1.92E-01	3.31E-01	2.26E-01	1.20E-03	7.92E-04	6.75E-02	7.10E-01	3.86E-03
BG	2.51E+00	2.07E-03	6.68E-02	2.10E-02	2.67E-01	2.02E-02	7.96E+00	1.79E+00	1.30E+01	2.87E-02	1.15E-01	1.02E-01	2.06E+01	9.53E-01	1.36E+02	1.79E+02	1.69E+02	8.70E-02	1.94E+00	3.08E+00	1.04E-01	9.60E-02	5.90E+01	8.34E+01	4.02E-01
BY	4.04E+00	9.73E-03	1.36E+01	2.31E-01	3.30E+01	2.98E-02	1.24E+01	9.08E-01	1.70E+00	7.80E-03	2.98E+00	2.06E+00	3.81E+02	1.40E+00	5.32E+01	5.22E+01	1.86E+02	3.46E+00	4.42E+00	1.02E+01	1.48E-01	8.61E-02	1.66E+01	1.82E+02	4.80E-01
CH	3.60E-02	3.46E-01	8.61E-03	2.25E-01	3.75E-02	7.62E-02	1.64E-02	4.19E-02	6.81E-02	4.03E-03	4.91E-01	3.35E-02	2.85E+00	2.16E+00	2.58E-01	1.07E+00	6.17E-01	5.85E-02	8.16E-01	1.86E-01	3.99E-04	7.92E-04	9.55E-02	2.49E-01	3.20E-03
CY	1.98E-02	3.84E-05	6.20E-04	2.82E-04	2.60E-03	4.86E-04	3.46E-02	1.86E-02	6.80E-02	2.13E-03	1.54E-03	2.30E-03	1.13E-01	1.79E-02	3.03E-01	4.33E-01	1.25E+00	1.66E-03	2.91E-02	1.28E-02	1.24E-03	1.15E-03	7.56E+00	4.74E-01	3.51E-03
CZ	6.54E-01	3.80E-02	1.73E-01	7.01E-01	6.64E-01	2.80E-02	2.76E-01	3.69E-01	4.65E-01	5.46E-03	2.00E+00	5.53E-01	2.10E+02	1.63E+00	7.10E+00	3.43E+01	1.12E+01	6.54E-01	1.21E+01	2.70E+01	1.49E-02	1.13E-02	1.24E+00	5.31E+00	5.27E-02
DE	1.47E+00	2.98E-01	8.31E-01	1.77E+01	3.63E+00	8.28E-02	7.01E-01	3.23E-01	5.77E-01	1.04E-02	1.18E+02	3.62E+00	2.25E+02	9.82E+00	7.84E+00	2.51E+01	2.74E+01	3.42E+00	8.09E+00	9.16E+00	4.02E-02	2.21E-02	1.54E+00	1.15E+01	1.22E-01
DK	7.82E-02	3.35E-03	4.10E-01	3.30E-01	1.77E+00	2.79E-03	9.53E-02	2.84E-02	3.79E-02	9.91E-04	1.00E+01	2.26E+00	2.49E+01	1.07E+00	7.46E-01	1.97E+00	2.85E+00	2.80E+00	3.78E-01	5.77E-01	5.47E-03	1.38E-03	1.56E-01	1.04E+00	9.90E-03
EE	3.38E-01	1.73E-03	3.01E+00	5.37E-02	4.75E+01	2.74E-03	2.78E-01	7.60E-02	1.30E-01	1.04E-03	1.32E+00	1.68E+00	4.81E+01	2.91E-01	2.00E+00	4.23E+00	1.99E+01	4.94E+00	6.63E-01	1.33E+00	1.32E-02	7.31E-03	6.65E-01	3.96E+00	4.68E-02
ES	1.65E-01	2.99E-03	4.36E-02	1.39E-01	1.64E-01	7.68E-02	1.38E-01	1.27E-01	1.95E-01	2.36E-02	1.36E+00	3.11E-01	5.05E+00	2.74E+02	1.22E+00	2.79E+00	1.93E+00	1.15E-01	1.02E+00	2.89E-01	4.18E-03	2.26E-03	7.07E-01	1.06E+00	1.24E-02
FI	2.20E+00	4.99E-03	4.49E+00	2.02E-01	4.30E+01	9.58E-03	9.32E-01	1.85E-01	2.66E-01	2.23E-03	3.50E+00	1.14E+01	1.23E+02	1.32E+00	5.96E+00	1.30E+01	2.33E+02	4.17E+01	1.74E+00	3.23E+00	2.05E-01	3.62E-02	1.77E+00	1.61E+01	3.24E-01
FR	7.84E-01	3.93E-02	2.23E-01	7.12E+00	8.82E-01	8.53E-01	4.35E-01	3.87E-01	7.31E-01	4.21E-02	2.19E+01	1.17E+00	3.21E+01	4.92E+01	3.68E+00	9.36E+00	1.09E+01	9.08E-01	4.71E+00	1.50E+00	9.15E-03	9.52E-03	1.26E+00	5.39E+00	4.35E-02
GB	5.13E-01	6.61E-03	5.10E-01	7.23E-01	2.43E+00	1.53E-02	3.04E-01	6.80E-02	1.39E-01	1.47E-03	1.96E+01	2.95E+00	3.89E+01	1.02E+01	2.60E+00	5.75E+00	8.72E+00	1.44E+00	8.28E-01	1.42E+00	1.35E-02	7.26E-03	2.67E-01	3.69E+00	3.83E-02
GE	1.89E+00	6.02E-04	2.53E-02	3.72E-03	1.09E-01	1.91E-03	5.60E-01	8.77E-02	2.57E-01	2.73E-03	2.32E-02	3.25E-02	2.31E+00	1.39E-01	4.67E+00	5.50E+00	2.52E+01	3.28E-02	4.33E-01	1.73E-01	3.94E-01	2.33E-01	3.80E+01	1.10E+01	9.57E-01
GR	8.50E-01	1.32E-03	2.09E-02	1.19E-02	8.47E-02	2.00E-02	1.87E+00	1.46E+00	1.91E+01	1.14E-01	7.37E-02	4.75E-02	7.72E+00	1.18E+00	2.09E+01	5.07E+01	5.74E+01	3.92E-02	1.12E+00	1.12E+00	4.27E-02	4.06E-02	6.13E+01	2.29E+01	1.67E-01
HR	2.35E-01	3.91E-03	3.06E-02	3.40E-02	1.03E-01	6.15E-02	3.20E-01	2.47E+00	1.13E+00	3.62E-02	1.75E-01	6.36E-02	2.99E+01	1.29E+00	1.04E+01	1.08E+02	5.59E+00	4.52E-02	3.23E+01	6.16E+00	5.31E-03	4.25E-03	1.03E+00	3.64E+00	1.77E-02
HU	5.40E-01	7.48E-03	9.28E-02	6.25E-02	2.86E-01	3.93E-02	1.16E+00	2.69E+00	3.70E+00	2.03E-02	2.87E-01	1.09E-01	1.06E+02	1.19E+00	5.55E+01	2.66E+02	1.92E+01	1.11E-01	1.87E+01	4.72E+01	1.53E-02	1.78E-02	2.51E+00	1.42E+01	6.38E-02
IE	8.18E-02	6.45E-04	5.34E-02	7.43E-02	2.41E-01	2.06E-03	6.11E-02	1.21E-02	2.32E-02	3.66E-04	1.25E+00	2.23E-01	6.51E+00	3.26E+00	5.54E-01	1.46E+00	1.50E+00	1.34E-01	1.41E-01	2.70E-01	2.50E-03	8.68E-04	4.70E-02	6.79E-01	5.48E-03
IS	5.70E-02	9.73E-05	2.70E-02	6.62E-03	1.74E-01	9.38E-04	2.87E-02	5.56E-03	1.23E-02	2.45E-04	1.28E-01	7.29E-01	1.93E+00	2.48E-01	2.51E-01	3.27E-01	1.51E+00	2.12E-01	3.06E-02	7.81E-02	1.40E-02	5.71E-04	8.59E-02	2.87E-01	1.58E-02
IT	3.64E-01	5.64E-02	4.49E-02	1.78E-01	1.70E-01	8.91E-01	5.71E-01	4.86E+00	4.00E+00	3.47E-01	8.17E-01	2.08E-01	2.32E+01	1.34E+01	9.67E+00	5.80E+01	7.90E+00	1.60E-01	4.23E+01	3.72E+00	6.96E-03	1.10E-02	5.65E+00	5.16E+00	4.15E-02
KY	9.11E+01	2.31E-04	8.89E-03	1.94E-03	4.11E-02	1.98E-03	6.87E-02	1.85E-02	8.49E-02	1.11E-03	1.25E-02	3.46E-02	9.01E-01	1.56E-01	4.87E-01	7.07E-01	1.52E+01	2.57E-02	7.58E-02	5.24E-02	4.16E+02	1.83E+00	7.09E+00	2.08E+00	4.46E+02
KZ	3.04E+03	7.57E-03	8.24E-01	9.88E-02	4.96E+00	4.19E-02	7.57E+00	6.33E-01	1.95E+00	1.88E-02	7.33E-01	1.91E+00	6.70E+01	2.31E+00	3.76E+01	2.61E+01	2.36E+03	2.12E+00	2.71E+00	3.86E+00	5.48E+02	1.85E+01	7.85E+01	2.11E+02	6.53E+02
LI	1.64E-04	2.03E-02	4.82E-05	1.14E-03	2.29E-04	2.60E-04	5.68E-05	1.38E-04	1.79E-04	1.04E-05	2.90E-03	1.75E-04	2.13E-02	8.90E-03	1.01E-03	4.46E-03	3.03E-03	4.16E-04	3.58E-03	1.24E-03	2.14E-06	3.16E-06	4.10E-04	9.56E-04	1.40E-05
LT	7.55E-01	3.84E-03	3.58E+01	1.14E-01	3.51E+01	6.39E-03	1.34E+00	1.90E-01	3.27E-01	1.75E-03	2.41E+00	1.23E+00	1.68E+02	3.88E-01	6.91E+00	1.09E+01	2.24E+01	2.86E+00	1.56E+00	3.69E+00	1.48E-02	1.45E-02	1.26E+00	1.36E+01	7.71E-02
LU	6.81E-03	7.47E-04	1.95E-03	2.97E+00	8.81E-03	9.75E-04	4.58E-03	2.89E-03	8.04E-03	7.34E-05	5.34E-01	1.09E-02	5.87E-01	1.31E-01	3.26E-02	8.57E-02	1.16E-01	1.21E-02	3.29E-02	2.35E-02	9.95E-05	9.12E-05	6.66E-03	5.83E-02	3.88E-04
LV	6.04E-01	2.92E-03	1.34E+01	9.73E-02	2.27E+02	4.81E-03	8.41E-01	1.50E-01	2.90E-01	1.83E-03	2.39E+00	1.95E+00	1.09E+02	3.44E-01	5.01E+00	8.18E+00	2.48E+01	5.29E+00	1.07E+00	2.66E+00	1.54E-02	1.14E-02	1.27E+00	9.89E+00	7.08E-02
MC	1.13E-05	8.98E-07	1.30E-06	5.42E-06	4.96E-06	2.39E-03	1.36E-05	3.80E-05	6.51E-05	7.39E-06	2.81E-05	1.04E-05	4.00E-04	9.88E-04	1.69E-04	6.06E-04	1.85E-04	5.41E-06	3.90E-04	5.37E-05	1.92E-07	2.98E-07	1.14E-04	1.36E-04	1.15E-06
MD	1.77E+00	5.18E-04	7.20E-02	5.35E-03	2.25E-01	4.09E-03	6.07E+01	1.71E-01	4.80E-01	3.71E-03	3.49E-02	6.07E-02	8.79E+00	1.72E-01	4.26E+01	9.33E+00	6.55E+01	6.55E-02	4.49E-01	5.84E-01	4.14E-02	4.83E-02	1.42E+01	7.78E+01	2.28E-01
ME	4.95E-02	4.25E-04	2.18E-03	4.02E-03	6.62E-03	8.78E-03	8.81E-02	2.71E+01	1.31E+00	1.70E-02	1.84E-02	9.31E-03	1.65E+00	4.61E-01	2.28E+00	3.58E+01	2.21E+00	6.72E-03	4.96E-01	4.41E-01	9.91E-04	2.22E-03	4.71E-01	1.49E+00	7.37E-03
MK	1.42E-01	3.69E-04	3.68E-03	3.55E-03	1.46E-02	5.23E-03	2.68E-01	6.88E-01	5.48E+01	1.17E-02	1.90E-02	9.83E-03	2.55E+00	4.09E-01	4.71E+00	4.59E+01	9.16E+00	7.71E-03	3.67E-01	4.75E-01	7.57E-03	5.95E-03	3.81E+00	4.36E+00	2.69E-02
MT	2.94E-05	2.43E-06	1.04E-05	3.75E-05	3.35E-05	4.70E-05	4.75E-04	2.85E-03	2.40E-03	2.43E-02	2.38E-04	6.01E-05	4.97E-03	2.76E-03	5.24E-03	1.54E-02	3.16E-03	4.68E-05	2.13E-03	6.27E-04	1.66E-06	3.86E-06	5.48E-03	2.47E-03	8.82E-06
NL	5.27E-02	2.90E-03	7.00E-02	7.59E-01	2.71E-01	3.57E-03	1.22E-01	3.93E-02	8.56E-02	5.97E-04	1.14E+02	5.91E-01	9.73E+00	1.51E+00	9.39E-01	2.67E+00	1.76E+00	2.28E-01	3.17E-01	4.49E-01	1.95E-03	7.77E-04	6.58E-02	1.06E+00	4.40E-03
NO	8.52E-01	6.67E-03	1.03E+00	4.52E-01	5.38E+00	1.09E-02	7.58E-01	1.05E-01	1.69E-01	2.08E-03	1.35E+01	2.53E+02	8.25E+01	1.99E+00	5.13E+00	1.00E+01	6.76E+01	1.83E+01	1.34E+00	2.56E+00	8.89E-02	1.30E-02	1.64E+00	1.20E+01	1.32E-01
PL	3.10E+00	4.27E-02	4.24E+00	1.45E+00	1.07E+01	5.93E-02	5.21E+00	1.40E+00	1.95E+00	1.52E-02	1.76E+01	3.36E+00	4.21E+03	4.22E+00	4.39E+01	1.10E+02	1.08E+02	5.97E+00	2.03E+01	7.29E+01	1.10E-01	6.42E-02	5.23E+00	6.34E+01	3.41E-01
PT	2.83E-02	2.62E-04	5.36E-03	1.39E-02	1.64E-02	1.66E-03	7.00E-03	7.11E-03	1.16E-02	8.47E-04	1.35E-01	2.92E-02	6.99E-01	4.23E+02	7.78E-02	2.16E-01	2.91E-01	1.17E-02	5.04E-02	3.19E-02	6.24E-04	3.39E-04	3.25E-02	1.09E-01	1.90E-03
RO	4.73E+00	1.08E-02	2.17E-01	7.95E-02	8.42E-01	6.16E-02	3.71E+01	3.64E+00	8.94E+00	3.30E-02	3.73E-01	3.10E-01	7.89E+01	1.90E+00	9.08E+02	3.50E+02	2.04E+02	2.88E-01	1.03E+01	1.56E+01	1.09E-01	1.59E-01	6.64E+01	1.61E+02	6.53E-01
RS	6.05E-01	2.82E-03	3.26E-02	3.69E-02	1.12E-01	2.84E-02	1.69E+00	1.30E+01	2.93E+01	2.26E-02	1.97E-01	6.37E-02	3.39E+01	1.01E+00	6.17E+01	1.10E+03	2.71E+01	4.86E-02	3.43E+00	9.22E+00	2.19E-02	2.46E-02	6.19E+00	1.76E+01	9.33E-02
RU	2.36E+03	5.30E-02	2.16E+01	9.40E-01	1.76E+02	1.84E-01	4.64E+01	4.04E+00	1.22E+01	7.90E-02	1.50E+01	3.30E+01	7.98E+02	1.08E+01	2.48E+02	2.06E+02	2.40E+04	5.59E+01	2.04E+01	3.34E+01	1.72E+02	1.37E+01	3.27E+02	1.45E+03	1.97E+02
SE	1.19E+00	1.61E-02	4.87E+00	7.99E-01	3.43E+01	1.64E-02	1.87E+00	2.21E-01	4.05E-01	4.42E-03	1.84E+01	5.85E+01	2.42E+02	2.42E+00	1.18E+01	2.23E+01	1.02E+02	1.82E+02	3.10E+00	5.87E+00	1.21E-01	1.44E-02	2.66E+00	2.30E+01	1.59E-01
SI	8.95E-02	2.66E-03	1.12E-02	1.62E-02	4.19E-02	3.07E-02	7.18E-02	2.68E-01	2.64E-01	8.28E-03	6.89E-02	1.79E-02	9.38E+00	6.11E-01	2.25E+00	1.58E+01	1.63E+00	1.75E-02	1.01E+02	1.67E+00	1.78E-03	1.20E-03	2.53E-01	1.01E+00	5.29E-03
SK	3.74E-01	9.79E-03	8.91E-02	9.85E-02	2.78E-01	2.61E-02	5.71E-01	1.11E+00	1.35E+00	8.17E-03	4.04E-01	1.12E-01	2.36E+02	1.05E+00	1.89E+01	8.52E+01	1.08E+01	1.26E-01	8.40E+00	1.18E+02	1.17E-02	1.54E-02	1.25E+00	7.04E+00	5.75E-02
TJ	1.37E+01	1.06E-04	3.58E-03	7.40E-04	1.66E-02	1.03E-03	3.30E-02	9.34E-03	4.49E-02	5.76E-04	4.78E-03	1.37E-02	3.78E-01	6.90E-02	2.43E-01	3.29E-01	8.24E+00	1.05E-02	3.56E-02	2.37E-02	1.22E+03	1.67E+00	3.75E+00	1.06E+00	1.30E+02
TM	3.56E+01	2.64E-04	2.46E-02	2.96E-03	1.37E-01	1.95E-03	2.27E-01	2.76E-02	1.14E-01	1.48E-03	2.18E-02	4.52E-02	1.88E+00	1.25E-01	1.34E+00	1.08E+00	4.53E+01	4.13E-02	1.02E-01	1.19E-01	8.91E+01	2.13E+01	8.86E+00	6.47E+00	8.90E+01
TR	8.92E+00	3.76E-03	2.86E-01	4.71E-02	1.13E+00	3.85E-02	1.29E+01	1.23E+00	5.05E+00	1.67E-01	3.42E-01	4.48E-01	3.65E+01	3.43E+00	7.68E+01	5.32E+01	4.84E+02	4.19E-01	2.90E+00	2.49E+00	8.36E-01	9.58E-01	2.18E+03	2.15E+02	2.79E+00
UA	2.10E+01	2.26E-02	2.57E+00	3.33E-01	9.01E+00	9.16E-02	8.47E+01	2.81E+00	6.96E+00	5.02E-02	2.49E+00	1.83E+00	5.47E+02	3.18E+00	2.78E+02	1.73E+02	1.83E+03	2.27E+00	1.39E+01	3.36E+01	9.17E-01	7.72E-01	1.59E+02	1.99E+03	3.73E+00
UZ	8.02E+01	3.37E-04	3.97E-02	3.41E-03	2.16E-01	2.48E-03	3.19E-01	3.41E-02	1.37E-01	1.73E-03	2.69E-02	7.81E-02	2.43E+00	1.69E-01	1.66E+00	1.38E+00	7.66E+01	7.59E-02	1.38E-01	1.34E-01	4.49E+02	6.97E+00	1.06E+01	1.06E+01	5.68E+02

Table B4. *Source-receptor matrix of Hg deposition to EMEP countries in 2024, kg/year. Columns and rows represent sources and receptors, respectively.*

Code	AL	AM	AT	AZ	BA	BE	BG	BY	CH	CY	CZ	DE	DK	EE	ES	FI	FR	GB	GE	GR	HR	HU	IE	IS	IT	KY
AL	3.77E+00	3.73E-03	4.00E-01	2.91E-02	1.43E+00	5.09E-02	1.51E+00	2.10E-02	2.51E-01	4.68E-03	5.21E-01	7.79E-01	1.51E-02	6.82E-03	1.57E+00	8.30E-03	7.54E-01	3.40E-01	1.50E-02	4.00E+00	5.23E-01	6.01E-01	2.54E-02	9.54E-04	1.27E+01	2.16E-04
AM	6.66E-03	3.23E+00	6.19E-02	4.80E+00	6.67E-02	1.73E-02	1.30E-01	2.88E-02	5.99E-02	2.52E-02	9.74E-02	2.38E-01	1.01E-02	1.34E-02	2.56E-01	1.63E-02	1.19E-01	1.27E-01	4.61E+00	2.11E-01	2.51E-02	6.04E-02	8.03E-03	4.06E-04	5.51E-01	3.22E-03
AT	6.74E-02	2.71E-03	8.86E+01	2.91E-02	2.99E+00	7.57E-01	5.55E-01	7.42E-02	1.39E+01	1.67E-03	1.89E+01	3.89E+01	1.94E-01	7.16E-02	4.19E+00	5.18E-02	6.96E+00	3.09E+00	1.67E-02	3.80E-01	3.31E+00	6.38E+00	1.35E-01	5.16E-03	3.46E+01	3.65E-04
AZ	1.01E-02	9.67E-01	1.42E-01	2.45E+01	1.26E-01	3.67E-02	2.15E-01	7.79E-02	1.28E-01	2.84E-02	2.32E-01	5.33E-01	2.68E-02	3.94E-02	4.26E-01	4.67E-02	2.23E-01	2.75E-01	4.10E+00	2.96E-01	4.59E-02	1.46E-01	1.70E-02	1.01E-03	8.91E-01	2.26E-02
BA	4.86E-01	3.02E-03	4.35E+00	2.89E-02	8.45E+01	1.98E-01	1.34E+00	4.92E-02	8.85E-01	2.26E-03	6.12E+00	4.95E+00	5.73E-02	1.41E-02	3.50E+00	1.83E-02	2.25E+00	1.22E+00	1.63E-02	1.32E+00	7.00E+00	7.69E+00	7.10E-02	2.18E-03	2.74E+01	2.77E-04
BE	6.03E-03	3.11E-04	5.14E-01	3.53E-03	1.53E-01	5.10E+01	6.86E-02	1.90E-02	1.16E+00	9.37E-05	1.13E+00	2.29E+01	2.05E-01	1.96E-02	2.23E+00	1.82E-02	1.82E+01	1.37E+01	2.00E-03	4.14E-02	7.80E-02	1.49E-01	3.51E-01	6.97E-03	1.35E+00	7.37E-05
BG	3.33E-01	2.92E-02	1.79E+00	2.62E-01	3.46E+00	1.82E-01	7.17E+01	3.59E-01	7.02E-01	2.04E-02	2.71E+00	3.75E+00	1.10E-01	1.05E-01	2.26E+00	1.05E-01	1.40E+00	1.24E+00	2.06E-01	9.34E+00	8.07E-01	3.93E+00	7.14E-02	3.44E-03	1.03E+01	5.66E-03
BY	1.34E-01	1.97E-02	3.95E+00	1.92E-01	3.66E+00	1.30E+00	2.77E+00	4.68E+01	2.01E+00	7.95E-03	1.34E+01	3.08E+01	1.85E+00	2.40E+00	2.83E+00	1.39E+00	3.45E+00	7.75E+00	1.55E-01	1.35E+00	1.12E+00	6.51E+00	3.12E-01	1.81E-02	9.79E+00	6.26E-03
CH	1.43E-02	7.02E-04	1.15E+00	6.75E-03	3.25E-01	4.91E-01	7.50E-02	1.69E-02	4.65E+01	6.67E-04	1.26E+00	9.19E+00	5.26E-02	1.89E-02	3.76E+00	1.74E-02	1.01E+01	2.13E+00	4.11E-03	1.11E-01	3.36E-01	2.37E-01	1.09E-01	3.31E-03	2.09E+01	5.41E-05
CY	6.15E-03	1.17E-03	3.12E-02	6.26E-03	6.47E-02	3.58E-03	1.23E-01	3.99E-03	2.50E-02	4.69E-01	2.85E-02	5.63E-02	1.95E-03	1.31E-03	1.08E-01	1.62E-03	5.39E-02	2.77E-02	4.72E-03	2.97E-01	2.38E-02	2.22E-02	2.66E-03	1.09E-04	5.60E-01	8.40E-05
CZ	4.53E-02	3.81E-03	1.93E+01	3.87E-02	2.62E+00	1.35E+00	5.80E-01	1.47E-01	5.41E+00	1.74E-03	1.85E+02	7.60E+01	4.79E-01	1.40E-01	2.61E+00	9.86E-02	6.08E+00	4.17E+00	2.60E-02	2.94E-01	1.34E+00	7.71E+00	1.61E-01	6.26E-03	8.74E+00	7.31E-04
DE	5.77E-02	7.26E-03	2.04E+01	8.01E-02	2.15E+00	3.95E+01	7.77E-01	4.02E-01	3.68E+01	2.68E-03	7.85E+01	9.73E+02	5.04E+00	5.00E-01	1.46E+01	3.57E-01	6.56E+01	6.84E+01	5.04E-02	3.85E-01	1.24E+00	4.13E+00	2.15E+00	5.19E-02	2.06E+01	1.66E-03
DK	3.89E-03	6.29E-04	5.25E-01	6.61E-03	1.32E-01	2.53E+00	3.99E-02	8.73E-02	6.45E-01	2.35E-04	3.05E+00	2.85E+01	1.90E+01	1.81E-01	1.02E+00	9.94E-02	3.05E+00	1.70E+01	3.23E-03	1.98E-02	6.39E-02	2.23E-01	6.30E-01	2.10E-02	8.18E-01	2.42E-04
EE	1.07E-02	2.43E-03	5.75E-01	2.30E-02	3.23E-01	4.93E-01	1.13E-01	9.24E-01	3.50E-01	1.09E-03	2.50E+00	9.33E+00	1.18E+00	2.57E+01	5.37E-01	2.59E+00	8.58E-01	3.28E+00	1.90E-02	7.73E-02	1.08E-01	5.31E-01	1.30E-01	1.05E-02	8.73E-01	6.83E-04
ES	4.23E-02	2.07E-03	9.16E-01	2.15E-02	8.13E-01	1.35E+00	3.29E-01	5.02E-02	1.65E+00	6.24E-04	1.50E+00	7.38E+00	2.83E-01	3.22E-02	3.45E+02	5.44E-02	1.75E+01	1.62E+01	1.23E-02	4.71E-01	5.61E-01	5.53E-01	1.95E+00	4.25E-02	1.98E+01	6.87E-04
FI	4.50E-02	1.33E-02	2.37E+00	1.33E-01	1.24E+00	2.82E+00	7.62E-01	2.51E+00	1.65E+00	5.46E-03	9.31E+00	3.92E+01	5.23E+00	2.19E+01	2.48E+00	8.23E+01	4.51E+00	1.69E+01	8.92E-02	3.00E-01	4.94E-01	2.02E+00	6.97E-01	8.73E-02	4.52E+00	9.42E-03
FR	1.30E-01	5.63E-03	3.43E+00	6.36E-02	2.26E+00	2.24E+01	9.08E-01	1.85E-01	2.21E+01	2.40E-03	7.65E+00	6.90E+01	1.28E+00	1.61E-01	1.01E+02	1.97E-01	3.44E+02	7.89E+01	3.34E-02	1.71E+00	1.93E+00	1.93E+00	4.86E+00	8.57E-02	6.84E+01	1.27E-03
GB	1.98E-02	2.56E-03	1.31E+00	3.35E-02	5.31E-01	6.88E+00	2.72E-01	1.71E-01	1.81E+00	5.55E-04	4.46E+00	2.76E+01	2.28E+00	2.48E-01	8.61E+00	1.69E-01	1.86E+01	4.80E+02	1.47E-02	1.69E-01	2.73E-01	9.05E-01	1.55E+01	1.55E-01	4.17E+00	8.01E-04
GE	1.70E-02	6.42E-01	3.48E-01	3.42E+00	3.72E-01	4.58E-02	8.83E-01	9.98E-02	2.01E-01	4.24E-02	4.10E-01	8.04E-01	3.23E-02	3.96E-02	5.53E-01	4.38E-02	3.07E-01	3.32E-01	1.67E+01	5.82E-01	1.25E-01	3.11E-01	2.09E-02	1.19E-03	1.47E+00	6.51E-03
GR	8.71E-01	2.06E-02	1.21E+00	1.67E-01	2.89E+00	1.57E-01	1.27E+01	1.58E-01	7.24E-01	2.94E-02	1.65E+00	2.59E+00	6.67E-02	4.98E-02	3.50E+00	5.61E-02	1.82E+00	1.11E+00	9.64E-02	7.79E+01	9.87E-01	1.88E+00	8.00E-02	3.28E-03	2.58E+01	2.52E-03
HR	2.60E-01	1.99E-03	7.60E+00	1.94E-02	1.90E+01	1.90E-01	7.16E-01	4.03E-02	1.00E+00	1.40E-03	6.53E+00	5.02E+00	5.24E-02	1.59E-02	3.32E+00	1.79E-02	2.38E+00	1.17E+00	1.11E-02	6.75E-01	2.10E+01	9.18E+00	6.57E-02	1.99E-03	3.19E+01	2.50E-04
HU	2.19E-01	5.76E-03	1.51E+01	5.36E-02	1.18E+01	3.16E-01	2.55E+00	1.39E-01	1.71E+00	1.79E-03	1.44E+01	1.02E+01	1.23E-01	5.13E-02	2.77E+00	4.75E-02	2.37E+00	1.63E+00	3.24E-02	1.04E+00	4.43E+00	7.55E+01	7.64E-02	2.77E-03	1.62E+01	7.71E-04
IE	3.24E-03	3.68E-04	1.79E-01	4.50E-03	7.61E-02	4.76E-01	4.76E-02	2.22E-02	1.69E-01	8.91E-05	6.44E-01	2.96E+00	1.81E-01	2.60E-02	1.57E+00	2.37E-02	1.95E+00	2.17E+01	2.16E-03	3.29E-02	2.84E-02	1.38E-01	2.54E+01	4.29E-02	4.66E-01	1.39E-04
IS	2.02E-03	5.42E-04	6.58E-02	6.59E-03	3.58E-02	8.11E-02	3.43E-02	2.12E-02	7.00E-02	2.56E-04	1.78E-01	7.26E-01	1.58E-01	5.98E-02	3.06E-01	1.20E-01	2.91E-01	2.32E+00	3.32E-03	2.53E-02	1.32E-02	5.27E-02	2.66E-01	1.72E+00	2.64E-01	2.12E-03
IT	9.00E-01	7.99E-03	1.25E+01	6.70E-02	1.61E+01	9.66E-01	2.13E+00	1.21E-01	1.42E+01	1.41E-02	6.95E+00	1.41E+01	2.04E-01	6.13E-02	2.51E+01	7.27E-02	2.34E+01	6.40E+00	3.94E-02	5.50E+00	1.47E+01	5.06E+00	4.27E-01	1.27E-02	6.27E+02	6.33E-04
KY	1.51E-02	1.37E-01	2.57E-01	1.16E+00	2.22E-01	6.54E-02	2.74E-01	1.03E-01	2.80E-01	2.30E-02	3.95E-01	9.29E-01	3.64E-02	6.55E-02	8.01E-01	7.96E-02	4.33E-01	4.56E-01	4.80E-01	3.63E-01	8.79E-02	2.28E-01	2.73E-02	2.33E-03	1.66E+00	1.13E+01
KZ	2.42E-01	1.39E+00	5.62E+00	1.43E+01	4.32E+00	1.51E+00	5.47E+00	3.42E+00	4.85E+00	1.53E-01	1.17E+01	2.61E+01	1.27E+00	2.64E+00	1.06E+01	3.00E+00	7.31E+00	1.13E+01	6.09E+00	5.30E+00	1.54E+00	6.02E+00	6.33E-01	7.84E-02	2.35E+01	1.70E+01
LI	4.61E-05	2.99E-06	1.66E-02	2.95E-05	1.25E-03	2.44E-03	2.51E-04	9.84E-05	3.64E-01	2.40E-06	1.17E-02	8.35E-02	3.40E-04	1.59E-04	1.51E-02	1.29E-04	3.50E-02	1.06E-02	1.99E-05	3.59E-04	1.18E-03	1.09E-03	5.23E-04	1.48E-05	7.54E-02	2.49E-07
LT	2.19E-02	3.71E-03	1.41E+00	4.01E-02	7.70E-01	7.11E-01	3.45E-01	3.84E+00	7.44E-01	1.00E-03	5.81E+00	1.65E+01	1.72E+00	1.28E+00	8.06E-01	8.01E-01	1.34E+00	4.72E+00	3.10E-02	1.90E-01	2.54E-01	1.58E+00	1.84E-01	9.50E-03	1.99E+00	6.91E-04
LU	5.76E-04	3.21E-05	5.93E-02	3.62E-04	1.28E-02	9.90E-01	6.41E-03	1.48E-03	1.78E-01	9.53E-06	1.25E-01	1.99E+00	8.77E-03	1.41E-03	2.55E-01	1.43E-03	1.81E+00	5.06E-01	2.05E-04	4.25E-03	7.90E-03	1.27E-02	1.88E-02	4.00E-04	1.70E-01	6.18E-06
LV	1.95E-02	3.57E-03	1.00E+00	3.55E-02	5.79E-01	7.11E-01	2.81E-01	2.73E+00	5.79E-01	1.19E-03	4.43E+00	1.45E+01	1.82E+00	4.31E+00	7.18E-01	1.39E+00	1.23E+00	4.96E+00	2.95E-02	1.72E-01	1.88E-01	1.05E+00	1.94E-01	1.19E-02	1.57E+00	7.36E-04
MC	1.33E-05	2.33E-07	1.37E-04	2.10E-06	1.74E-04	4.03E-05	7.72E-05	5.77E-06	3.82E-04	2.32E-07	1.17E-04	2.78E-04	8.04E-06	2.47E-06	1.36E-03	2.76E-06	4.54E-03	2.72E-04	1.38E-06	1.71E-04	1.59E-04	1.09E-04	1.53E-05	3.40E-07	9.33E-03	2.55E-08
MD	3.12E-02	1.22E-02	4.22E-01	9.28E-02	6.19E-01	6.21E-02	1.62E+00	3.73E-01	1.98E-01	4.90E-03	7.86E-01	1.41E+00	6.33E-02	5.73E-02	5.17E-01	5.53E-02	3.39E-01	3.93E-01	9.13E-02	7.54E-01	1.73E-01	8.91E-01	2.04E-02	1.31E-03	1.84E+00	1.64E-03
ME	6.72E-01	1.40E-03	3.81E-01	1.19E-02	4.76E+00	3.35E-02	6.39E-01	1.12E-02	1.91E-01	1.27E-03	5.16E-01	6.25E-01	1.01E-02	3.43E-03	1.02E+00	4.53E-03	5.24E-01	2.23E-01	6.20E-03	8.45E-01	5.02E-01	6.91E-01	1.60E-02	5.45E-04	8.57E+00	8.73E-05
MK	8.77E-01	3.55E-03	3.44E-01	2.93E-02	8.47E-01	4.08E-02	3.91E+00	2.69E-02	1.71E-01	2.60E-03	5.41E-01	7.29E-01	1.51E-02	9.02E-03	7.63E-01	9.80E-03	4.08E-01	2.55E-01	1.65E-02	5.05E+00	2.63E-01	7.07E-01	1.57E-02	6.49E-04	4.52E+00	3.07E-04
MT	6.44E-04	2.55E-06	2.23E-03	2.87E-05	6.27E-03	4.70E-04	2.28E-03	5.65E-05	1.74E-03	9.18E-07	1.92E-03	4.01E-03	1.22E-04	2.88E-05	1.48E-02	3.60E-05	8.95E-03	2.86E-03	1.57E-05	7.00E-03	2.60E-03	1.36E-03	2.76E-04	1.01E-05	1.75E-01	5.90E-07
NL	4.94E-03	3.36E-04	5.01E-01	3.86E-03	1.48E-01	2.35E+01	6.09E-02	2.49E-02	5.90E-01	9.07E-05	1.70E+00	3.42E+01	4.03E-01	2.45E-02	1.44E+00	2.20E-02	8.43E+00	2.29E+01	2.04E-03	3.04E-02	5.84E-02	2.00E-01	4.66E-01	1.09E-02	7.95E-01	9.58E-05
NO	2.34E-02	7.98E-03	2.27E+00	7.08E-02	7.52E-01	4.84E+00	4.97E-01	5.79E-01	2.20E+00	3.64E-03	1.07E+01	5.10E+01	1.04E+01	1.63E+00	3.54E+00	4.36E+00	7.40E+00	5.36E+01	3.80E-02	2.07E-01	3.50E-01	1.55E+00	2.34E+00	2.43E-01	4.35E+00	7.25E-03
PL	1.59E-01	1.80E-02	1.59E+01	1.66E-01	6.85E+00	5.94E+00	2.61E+00	3.79E+00	6.71E+00	6.37E-03	1.34E+02	2.52E+02	4.91E+00	1.20E+00	6.22E+00	1.05E+00	1.16E+01	2.70E+01	1.37E-01	1.33E+00	2.66E+00	1.93E+01	1.01E+00	3.50E-02	1.76E+01	3.29E-03
PT	2.17E-03	2.40E-04	6.97E-02	2.60E-03	4.14E-02	1.51E-01	2.10E-02	6.53E-03	1.23E-01	7.03E-05	1.93E-01	9.06E-01	3.36E-02	4.21E-03	1.20E+01	9.56E-03	8.97E-01	1.84E+00	1.33E-03	2.39E-02	2.20E-02	3.86E-02	2.78E-01	7.21E-03	5.46E-01	1.27E-04
RO	4.46E-01	4.55E-02	7.41E+00	4.03E-01	1.07E+01	4.96E-01	1.85E+01	9.72E-01	2.16E+00	1.86E-02	8.91E+00	1.20E+01	3.26E-01	2.42E-01	5.07E+00	2.37E-01	3.51E+00	3.00E+00	3.55E-01	5.81E+00	2.80E+00	2.43E+01	1.56E-01	7.69E-03	2.16E+01	5.80E-03
RS	8.23E-01	8.72E-03	3.27E+00	8.22E-02	1.41E+01	2.13E-01	9.60E+00	1.03E-01	7.78E-01	2.96E-03	5.43E+00	5.31E+00	7.72E-02	3.26E-02	2.32E+00	3.57E-02	1.60E+00	1.22E+00	4.94E-02	3.33E+00	2.24E+00	1.30E+01	6.54E-02	2.28E-03	1.29E+01	1.28E-03
RU	9.05E-01	1.97E+00	2.76E+01	2.35E+01	1.84E+01	1.12E+01	2.61E+01	4.10E+01	1.91E+01	3.27E-01	7.15E+01	1.87E+02	1.45E+01	5.51E+01	3.31E+01	5.76E+01	3.21E+01	7.91E+01	1.36E+01	1.92E+01	6.50E+00	2.85E+01	3.96E+00	4.60E-01	7.81E+01	5.47E+00
SE	4.37E-02	1.08E-02	4.29E+00	9.57E-02	1.64E+00	6.11E+00	9.61E-01	1.74E+00	3.45E+00	5.07E-03	1.92E+01	8.91E+01	2.46E+01	8.52E+00	4.35E+00	2.14E+01	9.02E+00	4.62E+01	5.50E-02	3.40E-01	6.90E-01	3.29E+00	1.72E+00	1.59E-01	6.39E+00	6.77E-03
SI	4.67E-02	6.05E-04	6.89E+00	6.23E-03	1.74E+00	9.18E-02	1.66E-01	1.40E-02	5.83E-01	3.89E-04	2.24E+00	2.34E+00	1.87E-02	7.73E-03	1.17E+00	7.94E-03	1.03E+00	4.88E-01	3.49E-03	1.63E-01	5.32E+00	1.92E+00	2.46E-02	7.47E-04	1.64E+01	7.81E-05
SK	1.01E-01	3.86E-03	8.51E+00	3.62E-02	4.91E+00	3.33E-01	1.07E+00	1.26E-01	1.78E+00	1.34E-03	2.46E+01	1.17E+01	1.21E-01	4.33E-02	1.85E+00	3.57E-02	2.08E+00	1.47E+00	2.14E-02	5.64E-01	1.66E+00	2.35E+01	6.55E-02	2.20E-03	9.12E+00	4.82E-04
TJ	8.10E-03	8.09E-02	1.22E-01	6.90E-01	1.10E-01	2.84E-02	1.43E-01	4.38E-02	1.36E-01	1.40E-02	1.76E-01	4.01E-01	1.59E-02	2.73E-02	3.88E-01	3.31E-02	2.05E-01	2.04E-01	2.86E-01	2.00E-01	4.31E-02	1.07E-01	1.27E-02	1.04E-03	8.21E-01	2.88E-01
TM	2.18E-02	3.14E-01	4.82E-01	3.87E+00	3.81E-01	1.21E-01	5.10E-01	2.79E-01	4.27E-01	3.63E-02	9.25E-01	1.95E+00	9.89E-02	1.68E-01	1.05E+00	2.01E-01	6.62E-01	9.38E-01	1.22E+00	5.30E-01	1.43E-01	5.12E-01	5.44E-02	5.22E-03	2.21E+00	3.47E-01
TR	3.97E-01	2.69E+00	3.10E+00	7.17E+00	4.39E+00	5.81E-01	1.94E+01	1.53E+00	2.36E+00	1.51E+00	4.42E+00	9.19E+00	4.10E-01	4.96E-01	1.02E+01	5.44E-01	4.89E+00	4.31E+00	6.90E+00	2.06E+01	1.63E+00	3.25E+00	2.89E-01	1.43E-02	3.48E+01	3.14E-02
UA	4.47E-01	1.36E-01	1.03E+01	1.27E+00	1.10E+01	1.64E+00	1.62E+01	1.29E+01	4.50E+00	7.51E-02	2.75E+01	4.24E+01	1.64E+00	1.68E+00	9.17E+00	1.39E+00	7.21E+00	9.76E+00	1.12E+00	1.05E+01	3.32E+00	2.36E+01	4.54E-01	2.62E-02	3.22E+01	4.93E-02
UZ	2.50E-02	2.65E-01	4.93E-01	2.63E+00	4.13E-01	1.26E-01	5.32E-01	3.04E-01	4.50E-01	3.48E-02	9.01E-01	1.97E+00	1.06E-01	1.99E-01	1.12E+00	2.39E-01	6.97E-01	1.00E+00	1.02E+00	5.88E-01	1.51E-01	5.03E-01	5.89E-02	6.50E-03	2.45E+00	1.20E+00

Table B4 *(continued)*

Code	KZ	LI	LT	LU	LV	MC	MD	ME	MK	MT	NL	NO	PL	PT	RO	RS	RU	SE	SI	SK	TJ	TM	TR	UA	UZ
AL	1.07E-01	1.78E-04	1.24E-02	2.94E-02	2.14E-03	2.48E-04	2.54E-02	5.05E-01	4.82E+00	4.25E-03	2.78E-02	8.16E-03	9.18E-01	1.71E-01	1.86E+00	4.84E+00	1.94E+00	1.25E-02	1.92E-01	3.06E-01	1.38E-03	7.63E-03	2.18E+00	1.90E+00	1.07E-02
AM	8.00E-01	4.62E-05	1.65E-02	7.75E-03	3.87E-03	3.43E-05	1.35E-02	1.04E-02	6.41E-02	2.04E-04	1.08E-02	9.18E-03	3.32E-01	4.18E-02	4.35E-01	1.64E-01	4.80E+00	1.55E-02	2.26E-02	4.08E-02	2.88E-02	1.92E-01	1.43E+01	1.65E+00	1.81E-01
AT	2.47E-01	3.25E-02	9.32E-02	6.83E-01	2.19E-02	1.20E-03	3.02E-02	1.63E-01	3.22E-01	1.62E-03	3.72E-01	5.84E-02	1.28E+01	5.99E-01	3.17E+00	6.65E+00	2.95E+00	9.70E-02	1.47E+01	6.14E+00	2.88E-03	1.13E-02	9.56E-01	2.41E+00	1.91E-02
AZ	3.72E+00	1.00E-04	4.74E-02	1.57E-02	1.09E-02	6.09E-05	3.52E-02	1.86E-02	1.02E-01	3.21E-04	2.35E-02	2.62E-02	8.52E-01	6.82E-02	9.85E-01	3.24E-01	1.69E+01	4.38E-02	4.51E-02	9.90E-02	3.14E-01	9.15E-01	1.55E+01	4.86E+00	1.12E+00
BA	1.79E-01	7.25E-04	3.51E-02	1.31E-01	6.00E-03	8.76E-04	4.51E-02	2.79E+00	1.16E+00	4.95E-03	1.12E-01	2.85E-02	6.41E+00	4.32E-01	5.27E+00	2.42E+01	2.76E+00	3.76E-02	1.23E+00	3.46E+00	2.44E-03	9.39E-03	1.37E+00	2.82E+00	1.40E-02
BE	4.14E-02	9.72E-04	3.16E-02	5.10E+00	7.62E-03	1.50E-04	6.69E-03	1.25E-02	4.03E-02	1.00E-04	5.40E+00	5.01E-02	1.40E+00	3.34E-01	3.03E-01	2.85E-01	5.90E-01	6.72E-02	9.25E-02	1.21E-01	7.72E-04	1.23E-03	1.11E-01	3.93E-01	2.57E-03
BG	1.38E+00	5.87E-04	1.80E-01	1.01E-01	3.30E-02	4.57E-04	7.77E-01	5.79E-01	5.80E+00	4.41E-03	1.11E-01	6.82E-02	8.35E+00	3.09E-01	5.66E+01	2.66E+01	2.69E+01	1.15E-01	5.28E-01	2.05E+00	3.46E-02	9.04E-02	3.77E+01	3.16E+01	1.77E-01
BY	1.85E+00	2.11E-03	1.44E+01	5.10E-01	1.67E+00	5.89E-04	1.08E+00	4.77E-01	9.42E-01	1.66E-03	1.09E+00	6.03E-01	1.13E+02	4.33E-01	2.22E+01	1.07E+01	8.48E+01	1.76E+00	1.11E+00	5.30E+00	6.79E-02	7.99E-02	1.41E+01	6.59E+01	2.24E-01
CH	4.91E-02	7.63E-02	2.26E-02	4.35E-01	5.61E-03	1.08E-03	5.09E-03	2.45E-02	7.02E-02	6.30E-04	1.90E-01	1.76E-02	1.20E+00	5.07E-01	3.07E-01	4.40E-01	6.59E-01	3.14E-02	2.84E-01	1.51E-01	4.41E-04	2.66E-03	2.57E-01	4.33E-01	4.14E-03
CY	2.29E-02	2.08E-05	2.29E-03	1.89E-03	4.64E-04	2.16E-05	5.79E-03	9.58E-03	5.10E-02	4.47E-04	2.16E-03	1.59E-03	6.36E-02	1.28E-02	2.38E-01	1.18E-01	3.39E-01	2.23E-03	1.39E-02	1.32E-02	7.21E-04	1.77E-03	7.50E+00	2.79E-01	2.86E-03
CZ	3.87E-01	6.58E-03	2.19E-01	1.32E+00	4.77E-02	4.01E-04	4.27E-02	1.56E-01	2.79E-01	8.53E-04	7.22E-01	1.11E-01	5.51E+01	3.80E-01	3.71E+00	6.96E+00	4.10E+00	2.64E-01	2.08E+00	1.32E+01	5.82E-03	1.65E-02	1.45E+00	3.36E+00	3.17E-02
DE	8.81E-01	5.39E-02	7.49E-01	2.88E+01	1.79E-01	1.39E-03	7.50E-02	1.46E-01	3.41E-01	1.64E-03	3.10E+01	7.19E-01	6.80E+01	2.10E+00	4.31E+00	5.25E+00	1.13E+01	1.42E+00	1.93E+00	3.93E+00	1.49E-02	3.46E-02	2.29E+00	7.14E+00	7.09E-02
DK	6.00E-02	5.88E-04	3.81E-01	4.56E-01	1.02E-01	6.13E-05	8.66E-03	1.07E-02	2.14E-02	1.57E-04	2.89E+00	4.52E-01	8.22E+00	1.85E-01	3.34E-01	3.33E-01	1.63E+00	2.15E+00	8.29E-02	2.22E-01	2.14E-03	2.33E-03	2.24E-01	6.38E-01	6.43E-03
EE	2.00E-01	3.61E-04	3.01E+00	1.35E-01	2.31E+00	5.83E-05	2.76E-02	3.52E-02	6.80E-02	2.02E-04	4.74E-01	3.79E-01	1.49E+01	9.15E-02	9.00E-01	8.47E-01	1.58E+01	2.11E+00	1.27E-01	5.24E-01	5.37E-03	8.01E-03	1.27E+00	2.63E+00	2.02E-02
ES	1.86E-01	9.23E-04	6.90E-02	4.51E-01	1.45E-02	2.11E-03	2.04E-02	8.78E-02	2.35E-01	3.09E-03	6.99E-01	1.58E-01	2.97E+00	4.47E+01	1.19E+00	1.18E+00	1.74E+00	1.57E-01	5.56E-01	3.61E-01	4.92E-03	7.69E-03	1.06E+00	1.08E+00	1.77E-02
FI	1.77E+00	1.52E-03	5.93E+00	7.64E-01	2.66E+00	3.26E-04	1.60E-01	1.09E-01	2.58E-01	8.31E-04	2.53E+00	3.74E+00	4.71E+01	4.37E-01	4.66E+00	3.14E+00	8.61E+01	1.82E+01	5.35E-01	1.81E+00	8.83E-02	5.46E-02	5.23E+00	1.39E+01	1.81E-01
FR	6.90E-01	7.25E-03	2.46E-01	1.38E+01	5.33E-02	1.82E-02	7.65E-02	1.92E-01	6.91E-01	7.49E-03	6.25E+00	4.04E-01	1.25E+01	1.02E+01	3.68E+00	3.30E+00	7.34E+00	5.46E-01	1.71E+00	1.34E+00	9.17E-03	2.24E-02	3.02E+00	4.59E+00	4.31E-02
GB	3.55E-01	1.37E-03	4.53E-01	1.01E+00	1.12E-01	4.60E-04	4.26E-02	4.77E-02	1.44E-01	3.22E-04	4.73E+00	8.73E-01	1.09E+01	1.78E+00	1.86E+00	1.43E+00	4.66E+00	8.29E-01	3.14E-01	7.33E-01	6.64E-03	1.10E-02	6.55E-01	2.45E+00	2.36E-02
GE	1.17E+00	1.94E-04	5.85E-02	2.23E-02	1.26E-02	8.36E-05	1.24E-01	4.50E-02	2.06E-01	6.88E-04	2.91E-02	2.58E-02	1.31E+00	7.86E-02	3.38E+00	1.26E+00	1.86E+01	4.25E-02	1.26E-01	1.89E-01	6.85E-02	2.16E-01	5.91E+01	6.82E+00	3.05E-01
GR	7.37E-01	5.65E-04	8.46E-02	8.56E-02	1.55E-02	5.84E-04	2.40E-01	4.87E-01	9.80E+00	1.98E-02	9.26E-02	4.19E-02	4.08E+00	3.68E-01	1.35E+01	1.06E+01	1.30E+01	6.69E-02	4.97E-01	1.02E+00	1.82E-02	4.70E-02	4.62E+01	1.24E+01	8.60E-02
HR	1.45E-01	9.39E-04	3.61E-02	1.25E-01	6.92E-03	9.60E-04	3.19E-02	4.99E-01	5.46E-01	4.46E-03	1.07E-01	2.38E-02	6.99E+00	3.51E-01	3.96E+00	1.73E+01	1.79E+00	3.23E-02	5.40E+00	3.54E+00	2.23E-03	6.03E-03	9.11E-01	1.81E+00	1.04E-02
HU	3.73E-01	1.78E-03	1.16E-01	2.17E-01	1.96E-02	6.61E-04	1.27E-01	1.05E+00	1.52E+00	2.83E-03	1.89E-01	4.70E-02	2.59E+01	3.43E-01	2.26E+01	4.30E+01	5.72E+00	7.94E-02	3.63E+00	2.58E+01	6.06E-03	2.20E-02	2.23E+00	6.67E+00	3.69E-02
IE	5.47E-02	1.24E-04	3.81E-02	1.08E-01	9.39E-03	6.03E-05	7.85E-03	7.73E-03	2.20E-02	7.66E-05	3.02E-01	7.84E-02	1.57E+00	5.24E-01	3.65E-01	2.59E-01	7.85E-01	7.36E-02	3.66E-02	1.16E-01	1.19E-03	1.27E-03	1.07E-01	3.88E-01	3.29E-03
IS	8.70E-02	5.40E-05	4.26E-02	1.44E-02	1.34E-02	2.72E-05	5.38E-03	4.22E-03	1.27E-02	7.74E-05	6.33E-02	2.68E-01	8.43E-01	1.03E-01	2.23E-01	9.71E-02	8.48E-01	1.87E-01	1.47E-02	4.87E-02	1.04E-02	1.31E-03	2.38E-01	2.70E-01	1.70E-02
IT	3.56E-01	1.43E-02	1.04E-01	5.89E-01	2.17E-02	1.37E-02	8.68E-02	1.19E+00	2.56E+00	5.06E-02	4.71E-01	9.85E-02	8.36E+00	3.02E+00	6.06E+00	1.21E+01	4.67E+00	1.46E-01	1.34E+01	2.70E+00	5.92E-03	2.29E-02	6.45E+00	4.58E+00	3.50E-02
KY	5.00E+01	2.15E-04	6.88E-02	3.01E-02	1.72E-02	1.27E-04	3.14E-02	2.87E-02	1.50E-01	4.18E-04	3.94E-02	4.33E-02	1.28E+00	1.27E-01	1.10E+00	5.18E-01	2.09E+01	7.20E-02	8.90E-02	1.57E-01	1.03E+02	1.80E+00	1.24E+01	4.53E+00	1.92E+02
KZ	1.78E+03	3.94E-03	2.32E+00	6.07E-01	6.14E-01	1.78E-03	9.88E-01	5.48E-01	2.55E+00	5.56E-03	1.02E+00	1.69E+00	4.36E+01	1.54E+00	2.91E+01	1.12E+01	1.30E+03	2.60E+00	1.60E+00	4.38E+00	1.63E+02	1.71E+01	1.20E+02	1.81E+02	3.43E+02
LI	2.21E-04	4.57E-03	1.51E-04	2.30E-03	4.27E-05	3.75E-06	2.03E-05	9.51E-05	2.14E-04	1.77E-06	1.09E-03	9.34E-05	8.20E-03	2.12E-03	1.28E-03	1.88E-03	3.62E-03	2.06E-04	1.19E-03	7.94E-04	2.09E-06	1.31E-05	9.40E-04	2.08E-03	2.13E-05
LT	3.49E-01	7.80E-04	2.86E+01	2.22E-01	1.94E+00	1.16E-04	1.12E-01	8.65E-02	1.69E-01	3.19E-04	7.33E-01	3.04E-01	4.57E+01	1.25E-01	2.74E+00	2.18E+00	1.73E+01	1.44E+00	3.03E-01	1.58E+00	6.33E-03	1.54E-02	1.27E+00	7.14E+00	3.48E-02
LU	4.51E-03	1.22E-04	1.88E-03	5.22E+00	4.29E-04	1.82E-05	5.80E-04	1.05E-03	3.83E-03	1.20E-05	1.42E-01	2.51E-03	1.48E-01	3.38E-02	2.60E-02	2.22E-02	5.66E-02	3.76E-03	9.50E-03	1.25E-02	6.29E-05	1.23E-04	1.21E-02	3.86E-02	2.28E-04
LV	2.94E-01	5.61E-04	1.23E+01	2.03E-01	1.12E+01	9.62E-05	7.49E-02	6.84E-02	1.45E-01	3.27E-04	7.08E-01	4.44E-01	3.04E+01	1.10E-01	2.14E+00	1.58E+00	1.76E+01	2.23E+00	2.15E-01	1.06E+00	6.63E-03	1.25E-02	1.52E+00	5.35E+00	3.04E-02
MC	1.26E-05	2.17E-07	4.23E-06	1.81E-05	8.11E-07	5.40E-05	4.16E-06	1.50E-05	6.60E-05	9.36E-07	1.84E-05	4.20E-06	2.39E-04	1.97E-04	1.96E-04	2.10E-04	1.54E-04	5.33E-06	1.31E-04	5.98E-05	3.40E-07	6.75E-07	3.64E-04	1.63E-04	1.42E-06
MD	6.74E-01	1.56E-04	1.77E-01	3.00E-02	2.57E-02	9.24E-05	5.88E+00	8.65E-02	3.42E-01	5.41E-04	4.36E-02	3.55E-02	4.83E+00	6.90E-02	1.61E+01	1.97E+00	1.10E+01	7.55E-02	1.41E-01	5.10E-01	1.20E-02	3.20E-02	1.25E+01	2.49E+01	7.30E-02
ME	5.22E-02	1.40E-04	7.13E-03	2.02E-02	1.19E-03	1.95E-04	1.31E-02	3.49E+00	7.64E-01	2.65E-03	1.87E-02	5.37E-03	7.45E-01	1.16E-01	1.23E+00	5.36E+00	9.12E-01	8.54E-03	1.63E-01	3.09E-01	6.05E-04	3.93E-03	6.50E-01	9.86E-01	5.08E-03
MK	1.33E-01	1.34E-04	1.47E-02	2.30E-02	2.69E-03	1.38E-04	3.81E-02	1.62E-01	2.14E+01	1.68E-03	2.35E-02	8.12E-03	1.18E+00	1.02E-01	2.81E+00	6.68E+00	2.54E+00	1.29E-02	1.36E-01	3.67E-01	2.00E-03	8.64E-03	3.05E+00	2.55E+00	1.33E-02
MT	1.28E-04	1.03E-06	3.88E-05	2.11E-04	7.83E-06	2.38E-06	7.54E-05	8.98E-04	1.82E-03	9.02E-03	2.44E-04	6.49E-05	2.99E-03	1.52E-03	4.41E-03	4.34E-03	2.00E-03	8.70E-05	1.46E-03	7.46E-04	5.06E-06	1.24E-05	6.53E-03	2.49E-03	2.17E-05
NL	4.13E-02	5.44E-04	4.52E-02	1.00E+00	1.11E-02	7.91E-05	7.40E-03	1.18E-02	2.92E-02	9.02E-05	3.13E+01	1.26E-01	2.31E+00	2.49E-01	3.26E-01	3.32E-01	6.83E-01	1.06E-01	7.74E-02	1.68E-01	1.04E-03	1.26E-03	1.06E-01	4.26E-01	3.00E-03
NO	7.87E-01	1.85E-03	1.48E+00	9.27E-01	4.03E-01	3.90E-04	9.56E-02	6.75E-02	1.75E-01	6.26E-04	4.71E+00	3.35E+01	3.41E+01	5.96E-01	3.54E+00	2.37E+00	2.13E+01	1.25E+01	4.50E-01	1.41E+00	6.07E-02	2.19E-02	3.74E+00	8.41E+00	1.03E-01
PL	1.60E+00	7.43E-03	4.14E+00	2.45E+00	6.69E-01	9.19E-04	5.62E-01	5.99E-01	1.22E+00	2.63E-03	5.11E+00	7.23E-01	9.69E+02	1.03E+00	2.20E+01	2.12E+01	3.57E+01	2.81E+00	3.30E+00	2.98E+01	3.39E-02	7.69E-02	7.03E+00	3.44E+01	1.63E-01
PT	2.80E-02	6.30E-05	7.95E-03	4.90E-02	1.69E-03	5.84E-05	1.60E-03	4.42E-03	1.35E-02	1.50E-04	7.77E-02	2.61E-02	3.67E-01	5.83E+01	8.53E-02	7.65E-02	2.49E-01	2.42E-02	2.20E-02	3.20E-02	7.31E-04	9.56E-04	8.74E-02	1.15E-01	2.32E-03
RO	2.44E+00	2.03E-03	5.32E-01	2.90E-01	8.48E-02	1.08E-03	3.55E+00	1.62E+00	4.56E+00	4.78E-03	3.09E-01	1.68E-01	3.18E+01	6.81E-01	3.85E+02	5.42E+01	4.31E+01	3.03E-01	2.12E+00	9.76E+00	4.20E-02	1.46E-01	4.49E+01	6.21E+01	2.84E-01
RS	4.36E-01	6.89E-04	6.04E-02	1.36E-01	1.09E-02	5.43E-04	1.63E-01	4.09E+00	1.16E+01	2.88E-03	1.31E-01	3.94E-02	9.54E+00	3.00E-01	2.11E+01	1.47E+02	7.18E+00	5.65E-02	8.16E-01	4.90E+00	7.61E-03	3.06E-02	4.56E+00	8.13E+00	4.87E-02
RU	1.17E+03	1.71E-02	3.25E+01	3.64E+00	1.09E+01	5.61E-03	4.88E+00	2.27E+00	9.07E+00	1.94E-02	8.97E+00	1.45E+01	3.24E+02	5.03E+00	1.34E+02	5.10E+01	1.11E+04	3.11E+01	6.97E+00	2.27E+01	4.71E+01	1.20E+01	4.30E+02	8.45E+02	9.50E+01
SE	1.19E+00	3.36E-03	5.90E+00	1.39E+00	2.21E+00	4.65E-04	1.88E-01	1.37E-01	3.33E-01	1.07E-03	6.15E+00	1.03E+01	8.47E+01	6.44E-01	6.84E+00	4.97E+00	3.93E+01	7.45E+01	8.78E-01	3.00E+00	5.47E-02	3.07E-02	4.36E+00	1.39E+01	1.16E-01
SI	5.38E-02	5.92E-04	1.56E-02	6.13E-02	3.21E-03	4.23E-04	7.90E-03	7.24E-02	1.35E-01	1.12E-03	4.64E-02	7.99E-03	2.46E+00	1.47E-01	9.49E-01	2.88E+00	5.76E-01	1.24E-02	2.08E+01	9.87E-01	6.97E-04	1.86E-03	2.49E-01	5.40E-01	3.28E-03
SK	2.84E-01	2.03E-03	1.08E-01	2.47E-01	1.87E-02	4.14E-04	7.56E-02	4.29E-01	6.85E-01	1.29E-03	2.02E-01	3.69E-02	4.50E+01	2.66E-01	8.92E+00	1.60E+01	4.06E+00	7.45E-02	1.62E+00	6.31E+01	4.51E-03	1.82E-02	1.30E+00	4.24E+00	3.10E-02
TJ	8.33E+00	1.03E-04	2.90E-02	1.30E-02	7.19E-03	6.44E-05	1.58E-02	1.49E-02	8.29E-02	2.32E-04	1.70E-02	1.94E-02	5.50E-01	5.98E-02	5.37E-01	2.54E-01	9.60E+00	3.15E-02	4.34E-02	7.23E-02	2.59E+02	1.50E+00	7.14E+00	2.14E+00	5.51E+01
TM	4.12E+01	3.28E-04	1.75E-01	5.02E-02	4.37E-02	1.71E-04	9.32E-02	5.01E-02	2.45E-01	6.46E-04	7.84E-02	1.25E-01	3.23E+00	1.53E-01	2.59E+00	9.80E-01	7.06E+01	1.94E-01	1.52E-01	3.69E-01	3.15E+01	2.61E+01	1.77E+01	1.53E+01	5.93E+01
TR	7.71E+00	1.86E-03	8.50E-01	2.76E-01	1.78E-01	1.54E-03	1.97E+00	6.31E-01	3.87E+00	2.65E-02	3.66E-01	3.11E-01	1.67E+01	1.33E+00	4.68E+01	1.18E+01	1.42E+02	5.57E-01	1.23E+00	2.13E+00	2.53E-01	1.05E+00	2.45E+03	9.80E+01	1.31E+00
UA	1.06E+01	4.42E-03	4.59E+00	7.95E-01	7.64E-01	1.74E-03	9.23E+00	1.40E+00	4.67E+00	8.63E-03	1.20E+00	7.84E-01	1.78E+02	1.23E+00	1.18E+02	3.43E+01	3.49E+02	1.74E+00	3.08E+00	1.85E+01	4.01E-01	5.21E-01	1.63E+02	1.01E+03	1.46E+00
UZ	6.88E+01	3.50E-04	1.93E-01	5.18E-02	4.84E-02	1.90E-04	9.14E-02	5.82E-02	2.73E-01	7.08E-04	8.19E-02	1.40E-01	3.22E+00	1.65E-01	2.72E+00	1.02E+00	8.13E+01	2.13E-01	1.58E-01	3.59E-01	1.31E+02	6.86E+00	1.79E+01	1.63E+01	2.65E+02

Table B5. *Source-receptor matrix of B(a)P deposition to EMEP countries in 2024, kg/year. Columns and rows represent sources and receptors, respectively.*

Code	AL	AM	AT	AZ	BA	BE	BG	BY	CH	CY	CZ	DE	DK	EE	ES	FI	FR	GB	GE	GR	HR	HU	IE	IS	IT	KY
AL	1.57E+01	2.06E-08	8.34E-03	1.88E-09	2.27E-01	9.88E-05	2.37E-01	1.07E-03	1.79E-04	2.52E-06	7.31E-02	5.69E-03	4.25E-05	6.38E-07	4.15E-03	2.19E-06	7.35E-03	9.12E-05	1.42E-05	6.78E+00	1.34E-01	4.16E-01	1.28E-05	7.51E-08	1.76E+00	4.17E-12
AM	9.23E-08	1.39E+02	1.66E-05	1.22E+00	1.48E-05	2.97E-06	5.04E-04	2.33E-04	4.03E-07	6.34E-05	2.29E-04	6.77E-05	1.65E-06	2.19E-06	4.29E-07	2.56E-06	3.16E-06	2.33E-05	8.30E+00	3.75E-05	9.32E-06	1.34E-04	6.62E-06	1.11E-09	1.65E-05	2.30E-07
AT	4.53E-04	6.96E-07	6.16E+02	2.16E-07	6.04E-01	1.04E-01	2.49E-03	7.02E-02	6.32E+00	2.29E-08	1.40E+02	1.08E+02	2.00E-02	3.57E-04	3.77E-02	8.52E-04	1.16E+00	5.30E-02	3.49E-05	8.69E-04	9.42E+00	3.69E+01	2.86E-03	4.85E-06	3.41E+01	6.74E-15
AZ	1.33E-07	9.88E+00	4.42E-05	6.31E+01	3.02E-05	7.37E-06	8.40E-04	4.50E-04	8.56E-07	5.45E-05	5.80E-04	1.73E-04	3.71E-06	6.38E-06	3.37E-07	9.41E-06	7.08E-06	6.03E-05	1.25E+01	5.50E-05	1.98E-05	3.19E-04	1.71E-05	3.50E-09	1.17E-05	5.68E-06
BA	1.27E-01	1.90E-07	1.78E+00	6.82E-08	6.82E+02	5.18E-03	5.49E-02	2.82E-02	2.66E-03	1.83E-07	8.09E+00	4.52E-01	3.79E-03	3.73E-05	1.00E-02	1.41E-04	2.39E-02	3.18E-03	1.38E-05	9.28E-02	1.17E+02	1.93E+01	2.72E-04	5.28E-07	5.43E+00	5.85E-13
BE	3.83E-08	3.70E-10	2.04E-02	1.01E-10	4.78E-05	5.16E+02	9.26E-06	6.68E-03	1.09E-01	1.55E-09	1.29E-01	3.63E+01	1.70E-01	9.49E-04	4.96E-01	1.61E-04	9.93E+01	6.33E+00	2.04E-07	5.89E-07	1.78E-04	1.07E-03	1.55E-01	6.94E-05	1.87E-02	1.10E-14
BG	1.90E-02	1.06E-05	9.01E-02	1.16E-06	4.67E-01	7.32E-04	5.98E+02	6.42E-02	9.70E-04	2.03E-04	4.34E-01	7.12E-02	3.26E-04	2.82E-05	1.11E-03	3.90E-05	3.67E-03	5.10E-04	5.06E-03	2.03E+01	3.40E-01	1.74E+00	4.74E-05	7.05E-08	7.85E-02	2.08E-10
BY	3.06E-04	8.19E-06	2.34E-01	1.91E-05	7.33E-02	1.93E-01	2.83E-02	2.94E+03	1.03E-02	2.20E-07	1.01E+01	5.80E+00	7.62E-01	9.01E-01	1.10E-02	6.09E-01	1.64E-01	3.70E-01	3.42E-04	1.70E-03	9.21E-02	1.90E+00	4.22E-02	5.23E-05	2.23E-02	2.64E-09
CH	1.26E-05	2.01E-09	5.83E+00	2.99E-10	8.01E-04	1.25E-01	3.48E-06	2.66E-03	1.55E+02	1.03E-09	6.72E-01	3.47E+01	1.93E-03	5.87E-05	1.26E-01	7.38E-05	3.11E+01	1.26E-01	2.43E-07	7.85E-05	1.03E-02	1.16E-02	1.31E-02	1.44E-05	3.54E+01	4.74E-16
CY	8.08E-07	3.42E-06	3.98E-06	4.36E-07	1.35E-05	7.95E-07	5.84E-04	1.10E-05	6.93E-07	3.55E+01	3.91E-05	1.33E-05	1.63E-07	2.43E-08	2.09E-06	3.42E-08	9.72E-06	5.17E-07	1.13E-06	1.10E-02	1.89E-05	3.16E-05	4.52E-08	1.21E-10	2.66E-04	4.95E-12
CZ	5.85E-04	1.19E-06	5.80E+01	8.60E-07	7.58E-01	5.37E-01	4.84E-03	4.04E-01	7.89E-01	3.11E-08	3.70E+03	1.96E+02	1.14E-01	2.65E-03	5.22E-02	4.70E-03	2.59E+00	2.13E-01	5.55E-05	1.10E-03	2.64E+00	2.13E+01	1.00E-02	7.95E-06	6.36E-01	1.24E-14
DE	4.26E-05	9.25E-08	6.30E+01	3.84E-08	3.99E-02	9.06E+01	4.23E-04	3.39E-01	4.20E+01	2.55E-08	3.19E+02	6.30E+03	1.24E+01	3.31E-02	1.16E+00	1.66E-02	1.44E+02	1.85E+01	1.01E-05	8.27E-05	1.38E-01	7.95E-01	7.45E-01	4.29E-04	6.58E+00	9.49E-14
DK	1.02E-06	8.57E-11	3.52E-02	7.88E-09	5.37E-04	1.69E+00	1.49E-05	1.53E-01	1.74E-02	1.22E-10	1.01E+00	4.34E+01	3.24E+02	2.10E-02	7.34E-02	1.17E-02	1.36E+00	5.43E+00	7.28E-09	2.48E-06	1.69E-03	2.12E-02	5.30E-01	1.12E-03	3.21E-03	3.05E-13
EE	5.66E-06	2.59E-09	2.05E-02	2.43E-08	2.32E-03	7.36E-02	1.58E-04	3.25E+00	2.68E-03	2.31E-10	6.52E-01	1.35E+00	4.72E-01	3.10E+02	3.85E-03	1.93E+01	5.99E-02	1.30E-01	2.36E-07	1.46E-05	5.13E-03	5.04E-02	9.17E-03	9.26E-05	9.47E-04	1.85E-11
ES	1.08E-06	2.92E-10	1.43E-03	3.44E-11	3.93E-04	6.96E-02	2.61E-06	8.45E-04	7.54E-03	1.33E-09	8.76E-03	1.28E-01	1.13E-02	3.51E-05	3.05E+03	4.94E-06	2.11E+01	5.78E-01	3.92E-08	8.59E-07	2.72E-03	4.08E-04	4.18E-01	6.97E-04	2.33E-01	1.68E-14
FI	3.72E-06	1.09E-07	2.39E-02	6.75E-08	2.44E-03	1.25E-01	1.90E-04	1.82E+00	4.48E-03	9.53E-10	7.93E-01	1.64E+00	7.00E-01	3.25E+01	3.79E-02	2.92E+03	1.53E-01	3.27E-01	6.88E-06	1.31E-05	7.00E-03	4.55E-02	4.13E-02	2.48E-03	1.91E-03	1.81E-07
FR	9.38E-05	1.98E-08	3.16E-01	3.29E-09	2.05E-02	6.91E+01	8.94E-05	4.38E-02	3.09E+01	1.18E-08	1.54E+00	1.06E+02	4.30E-01	2.79E-03	7.87E+01	4.05E-04	3.97E+03	2.07E+01	3.01E-06	4.09E-04	2.01E-01	2.76E-02	2.36E+00	1.08E-03	2.80E+01	1.97E-13
GB	2.59E-08	1.48E-11	3.14E-03	5.86E-10	6.26E-05	4.00E+00	1.95E-06	4.54E-03	3.55E-03	1.50E-10	8.49E-02	2.19E+00	7.11E-01	2.12E-03	2.54E+00	1.77E-03	2.57E+01	2.00E+03	3.98E-09	1.25E-07	1.98E-04	2.25E-03	1.04E+02	1.42E-02	1.48E-03	5.60E-13
GE	8.39E-06	4.92E+00	1.56E-03	6.93E-01	1.37E-03	2.02E-04	6.41E-02	8.06E-03	2.94E-05	1.11E-04	1.57E-02	5.04E-03	1.25E-04	6.10E-05	4.21E-06	6.91E-05	1.87E-04	1.12E-03	2.95E+02	4.60E-03	9.06E-04	1.16E-02	2.85E-04	2.67E-08	3.35E-04	4.51E-06
GR	8.07E-01	2.01E-06	8.53E-03	2.30E-07	7.59E-02	1.28E-04	2.19E+01	7.54E-03	3.47E-04	1.29E-03	6.07E-02	6.82E-03	5.15E-05	2.59E-06	1.20E-02	4.39E-06	1.56E-02	1.57E-04	1.17E-03	1.02E+03	6.44E-02	3.03E-01	3.45E-05	6.96E-08	1.54E+00	4.84E-11
HR	4.57E-02	5.06E-07	9.42E+00	1.48E-07	1.12E+02	7.33E-03	2.54E-02	3.68E-02	9.89E-03	7.61E-08	1.28E+01	9.42E-01	3.98E-03	9.93E-05	2.29E-02	3.21E-04	7.05E-02	4.66E-03	2.80E-05	3.88E-02	8.86E+02	6.17E+01	3.82E-04	8.55E-07	1.28E+01	9.10E-14
HU	1.36E-02	2.92E-06	3.61E+01	3.24E-06	1.23E+01	2.13E-02	1.31E-01	1.93E-01	4.59E-02	1.24E-07	3.96E+01	3.04E+00	9.57E-03	3.57E-04	9.09E-03	1.05E-03	9.50E-02	1.23E-02	1.27E-04	4.39E-02	8.30E+01	1.50E+03	8.02E-04	1.23E-06	1.16E+00	7.52E-14
IE	4.29E-10	1.65E-13	1.71E-04	9.63E-13	1.94E-06	3.06E-02	1.42E-08	2.23E-05	6.58E-05	3.96E-12	4.63E-03	8.22E-02	1.23E-02	1.58E-05	2.66E-01	6.88E-05	7.51E-01	2.30E+01	1.17E-11	2.58E-09	6.62E-06	6.29E-05	1.00E+03	7.92E-03	4.76E-05	6.01E-14
IS	3.72E-10	8.45E-13	3.56E-05	7.05E-11	7.14E-07	4.05E-03	4.14E-08	1.01E-04	7.82E-05	1.00E-13	1.05E-03	1.85E-02	1.02E-02	1.27E-04	1.29E-03	5.21E-04	8.01E-03	8.66E-02	2.13E-11	6.22E-09	2.86E-06	1.92E-05	1.66E-01	4.41E+00	1.90E-05	5.00E-12
IT	2.03E-01	9.47E-08	2.32E+01	1.31E-08	4.71E+00	6.18E-02	1.59E-02	8.21E-03	8.33E+00	7.77E-07	3.08E+00	7.98E+00	3.05E-03	1.37E-05	8.34E-01	5.59E-05	1.01E+01	6.46E-02	1.03E-05	5.76E-01	2.28E+01	1.68E+00	1.24E-02	1.06E-05	3.62E+03	3.33E-13
KY	9.85E-10	3.04E-04	1.14E-06	2.01E-04	2.86E-07	5.67E-07	4.37E-06	2.96E-06	2.33E-08	1.86E-08	3.36E-05	1.65E-05	4.77E-07	1.24E-07	1.06E-07	2.55E-07	5.05E-07	4.02E-06	9.81E-05	1.99E-07	2.16E-07	7.78E-06	1.01E-06	1.91E-09	6.91E-07	9.43E+02
KZ	1.70E-06	1.42E-02	2.57E-03	2.05E-01	3.55E-04	9.75E-04	8.46E-03	1.53E-01	7.66E-05	7.41E-06	5.44E-02	2.08E-02	1.71E-03	3.28E-03	1.88E-05	3.90E-03	1.11E-03	2.06E-03	3.62E-02	8.16E-04	7.26E-04	2.23E-02	2.91E-04	5.54E-06	2.31E-04	2.27E+02
LI	4.62E-08	3.12E-12	1.36E-01	4.22E-13	4.83E-06	3.86E-04	1.03E-08	6.35E-06	5.05E-01	3.27E-12	6.48E-03	1.70E-01	2.73E-06	1.62E-07	3.16E-04	5.02E-07	1.20E-02	3.70E-04	4.22E-10	3.17E-07	3.95E-05	1.27E-04	2.57E-05	4.97E-08	5.86E-02	1.92E-18
LT	4.40E-05	3.81E-08	1.08E-01	2.80E-07	1.38E-02	2.54E-01	1.04E-03	1.03E+02	8.24E-03	5.62E-09	3.63E+00	5.81E+00	2.09E+00	8.25E-01	8.15E-03	6.99E-01	1.78E-01	4.69E-01	3.87E-06	3.56E-04	2.82E-02	4.09E-01	4.20E-02	4.49E-05	3.95E-03	3.32E-12
LU	4.19E-09	8.54E-11	5.04E-03	1.66E-11	5.13E-06	8.49E+00	1.06E-06	9.26E-04	3.48E-02	1.72E-10	2.55E-02	8.63E+00	8.68E-03	7.74E-05	3.83E-02	1.23E-05	1.14E+01	1.08E-01	2.96E-08	7.66E-08	3.14E-05	1.69E-04	4.54E-03	2.89E-06	4.59E-03	6.53E-16
LV	1.80E-05	1.12E-08	5.96E-02	1.79E-07	6.35E-03	2.49E-01	5.91E-04	3.11E+01	6.52E-03	1.49E-09	1.98E+00	4.22E+00	1.45E+00	1.60E+01	7.32E-03	2.74E+00	1.73E-01	3.58E-01	1.17E-06	1.14E-04	1.37E-02	1.63E-01	2.08E-02	7.25E-05	2.31E-03	2.09E-11
MC	1.43E-08	2.65E-13	8.61E-06	1.71E-14	9.30E-07	3.24E-06	3.07E-09	2.00E-08	6.91E-05	5.62E-14	9.86E-06	1.69E-04	8.01E-08	2.15E-10	7.22E-05	5.40E-10	4.25E-02	2.48E-06	2.29E-11	4.29E-08	1.19E-05	9.02E-07	6.08E-07	3.95E-10	3.02E-02	2.06E-20
MD	1.62E-04	6.03E-05	3.16E-02	6.21E-05	1.72E-02	1.14E-03	4.03E-01	4.84E-01	5.20E-04	9.68E-06	2.41E-01	6.01E-02	1.96E-03	5.92E-04	1.75E-04	6.97E-04	2.00E-03	1.55E-03	2.67E-03	1.12E-02	1.56E-02	3.33E-01	1.94E-04	3.03E-07	9.19E-03	5.51E-10
ME	1.42E+00	6.62E-09	2.36E-02	2.23E-09	7.32E+00	2.09E-04	6.31E-02	2.24E-03	1.47E-04	1.16E-07	2.03E-01	1.46E-02	7.79E-05	1.67E-06	2.35E-03	5.60E-06	2.87E-03	1.38E-04	3.59E-06	1.42E-01	1.21E+00	9.49E-01	2.72E-05	5.42E-08	1.52E+00	1.43E-12
MK	1.66E+00	6.24E-08	1.09E-02	4.45E-09	1.13E-01	1.03E-04	6.47E+00	8.25E-04	1.15E-04	7.34E-06	8.49E-02	8.74E-03	4.10E-05	3.75E-07	7.49E-04	1.19E-06	1.27E-03	6.68E-05	4.27E-05	1.43E+01	7.59E-02	4.75E-01	4.91E-06	2.13E-08	1.96E-01	1.23E-11
MT	1.03E-05	2.05E-12	3.32E-05	3.00E-13	1.48E-04	8.16E-06	1.71E-06	2.26E-07	9.62E-06	5.70E-10	6.48E-05	8.89E-05	2.13E-07	3.18E-10	1.56E-04	1.63E-09	2.42E-04	2.74E-06	1.45E-09	5.03E-05	2.82E-04	5.07E-05	4.46E-07	9.62E-10	2.84E-02	1.98E-17
NL	1.14E-07	8.47E-11	1.16E-02	2.07E-10	1.71E-04	1.40E+02	5.60E-06	5.12E-03	2.53E-02	6.70E-10	1.68E-01	9.22E+01	5.36E-01	1.49E-03	3.45E-01	2.72E-04	2.33E+01	1.43E+01	4.82E-08	4.19E-07	3.65E-04	2.81E-03	2.89E-01	1.30E-04	3.58E-03	2.23E-14
NO	6.30E-07	2.18E-07	8.64E-03	8.60E-08	7.42E-04	1.23E+00	2.01E-05	3.72E-02	4.54E-03	1.76E-09	2.38E-01	5.07E+00	7.67E+00	9.24E-02	1.71E-01	5.06E+00	1.26E+00	9.49E+00	1.37E-05	9.69E-06	1.58E-03	1.16E-02	1.03E+00	2.69E-02	1.10E-03	8.79E-09
PL	2.23E-03	1.08E-05	9.38E+00	7.57E-06	1.17E+00	2.74E+00	2.45E-02	8.35E+01	3.08E-01	3.70E-07	8.42E+02	2.29E+02	6.46E+00	1.38E-01	8.92E-02	1.99E-01	2.76E+00	3.48E+00	4.78E-04	7.13E-03	2.53E+00	4.16E+01	2.99E-01	2.19E-04	3.26E-01	6.14E-13
PT	8.50E-09	1.01E-13	2.86E-06	7.04E-14	1.46E-06	3.03E-04	2.89E-08	1.62E-05	8.52E-06	1.27E-11	1.15E-04	5.29E-04	2.22E-04	1.88E-07	4.11E+01	4.87E-07	1.40E-02	1.19E-02	7.48E-11	7.16E-09	6.91E-06	3.28E-06	4.03E-02	1.79E-04	5.10E-04	9.46E-15
RO	1.93E-02	9.51E-05	1.95E+00	5.68E-05	4.38E+00	8.78E-03	4.62E+01	6.16E-01	2.35E-02	6.63E-05	4.74E+00	1.27E+00	7.46E-03	5.40E-04	3.89E-03	8.82E-04	4.61E-02	7.27E-03	6.14E-03	4.11E-01	4.60E+00	9.15E+01	7.64E-04	1.46E-06	4.49E-01	5.45E-10
RS	1.01E+00	4.69E-07	7.63E-01	3.89E-07	4.41E+01	4.02E-03	1.56E+01	4.56E-02	4.17E-03	1.42E-06	4.53E+00	3.79E-01	1.10E-03	4.67E-05	3.54E-03	1.31E-04	1.60E-02	2.34E-03	5.69E-05	1.74E+00	3.17E+01	5.15E+01	1.66E-04	2.59E-07	7.32E-01	2.93E-11
RU	3.09E-04	1.72E-01	1.57E-01	1.28E+00	3.02E-02	3.26E-01	4.41E-01	2.92E+02	1.04E-02	3.96E-04	4.96E+00	6.38E+00	1.70E+00	5.22E+01	2.86E-02	1.46E+02	2.69E-01	6.23E-01	7.98E+00	8.20E-02	4.57E-02	8.26E-01	6.85E-02	2.68E-03	2.27E-02	2.88E-01
SE	3.21E-06	1.04E-08	7.39E-02	4.47E-08	3.89E-03	1.89E+00	1.20E-04	7.27E-01	3.28E-02	1.72E-10	2.41E+00	3.70E+01	7.85E+01	1.89E+00	1.41E-01	3.84E+01	1.60E+00	5.83E+00	6.47E-07	2.65E-05	1.13E-02	8.12E-02	5.62E-01	1.05E-02	9.10E-03	6.37E-11
SI	7.27E-04	2.14E-07	3.48E+01	4.52E-08	8.44E-01	2.96E-03	7.96E-04	7.97E-03	1.17E-02	9.08E-09	3.13E+00	8.96E-01	5.48E-04	2.04E-05	7.79E-03	5.33E-05	3.42E-02	1.87E-03	1.12E-05	1.14E-03	1.05E+02	5.41E+00	1.18E-04	3.00E-07	1.79E+01	2.35E-15
SK	3.33E-03	4.33E-06	1.69E+01	4.23E-06	1.90E+00	4.39E-02	2.79E-02	4.32E-01	6.51E-02	5.66E-08	1.96E+02	5.46E+00	1.94E-02	4.98E-04	7.62E-03	1.45E-03	1.85E-01	2.68E-02	1.72E-04	9.75E-03	3.46E+00	1.75E+02	1.67E-03	2.38E-06	2.89E-01	5.14E-14
TJ	1.71E-10	8.74E-05	8.29E-08	8.28E-05	3.48E-08	2.39E-08	9.48E-07	4.09E-07	3.46E-09	1.11E-08	1.66E-06	6.62E-07	2.02E-08	1.04E-08	1.43E-08	2.16E-08	3.38E-08	2.41E-07	3.82E-05	4.62E-08	2.55E-08	5.96E-07	6.68E-08	1.33E-10	2.38E-07	1.85E+01
TM	1.91E-08	2.49E-02	3.79E-05	2.25E-01	7.06E-06	1.09E-05	2.53E-04	1.31E-03	1.50E-06	1.09E-05	6.61E-04	3.02E-04	1.62E-05	2.85E-05	2.04E-07	4.94E-05	1.36E-05	3.64E-05	1.46E-02	3.74E-05	8.45E-06	2.31E-04	7.82E-06	2.18E-08	3.62E-06	4.20E-03
TR	9.90E-04	1.20E+01	1.01E-02	6.58E-02	1.63E-02	3.65E-04	1.40E+01	1.17E-01	1.87E-04	5.14E-01	6.31E-02	1.73E-02	5.14E-04	3.33E-04	1.63E-03	4.14E-04	1.80E-03	7.07E-04	5.37E+00	1.37E+01	1.66E-02	1.15E-01	1.36E-04	1.49E-07	3.98E-02	1.01E-06
UA	2.51E-03	6.23E-04	1.52E+00	1.62E-03	9.40E-01	1.80E-01	1.17E+00	1.14E+02	3.04E-02	1.37E-04	2.69E+01	6.49E+00	2.25E-01	6.98E-02	9.17E-03	7.06E-02	2.20E-01	2.52E-01	8.85E-02	1.58E-01	1.14E+00	4.69E+01	2.66E-02	2.64E-05	1.99E-01	3.01E-05
UZ	2.35E-08	7.95E-03	7.71E-05	2.85E-02	1.12E-05	2.71E-05	3.00E-04	2.33E-03	2.84E-06	2.68E-06	1.53E-03	7.01E-04	4.50E-05	4.91E-05	3.09E-07	7.23E-05	2.90E-05	7.59E-05	5.18E-03	2.92E-05	1.59E-05	4.98E-04	1.38E-05	3.69E-08	5.41E-06	9.68E+01

Table B5 *(continued)*

Code	KZ	LI	LT	LU	LV	MC	MD	ME	MK	MT	NL	NO	PL	PT	RO	RS	RU	SE	SI	SK	TJ	TM	TR	UA	UZ
AL	7.18E-08	1.09E-06	6.07E-05	1.37E-05	8.41E-06	3.80E-07	8.78E-03	4.43E+00	1.86E+01	6.62E-04	7.42E-05	1.44E-06	2.77E-01	4.13E-05	5.43E-01	8.25E+01	1.20E-03	2.92E-05	1.95E-03	1.60E-01	7.29E-13	6.21E-10	2.07E-01	5.03E-02	7.74E-11
AM	1.77E-03	3.49E-09	1.73E-05	2.28E-07	8.77E-06	7.72E-11	1.51E-03	2.26E-07	6.14E-06	3.05E-09	4.88E-06	7.32E-08	1.41E-03	7.72E-08	3.23E-03	1.72E-04	1.18E-01	1.04E-06	2.09E-06	2.43E-04	1.44E-08	1.63E-04	1.69E+01	3.37E-02	1.10E-05
AT	3.59E-05	1.81E-01	1.34E-02	3.41E-02	2.83E-03	3.18E-06	8.18E-03	1.25E-03	1.74E-03	2.48E-05	6.00E-02	3.85E-04	2.65E+01	2.21E-03	1.55E-01	4.62E-01	2.38E-02	8.15E-03	5.46E+01	3.46E+01	4.73E-14	8.78E-08	1.28E-03	3.25E-01	7.06E-09
AZ	4.75E-01	8.34E-09	2.73E-05	6.11E-07	1.81E-05	4.97E-11	1.60E-03	4.60E-07	7.96E-06	4.19E-09	1.16E-05	2.26E-07	2.56E-03	7.67E-08	4.75E-03	3.33E-04	1.88E+01	2.96E-06	4.73E-06	5.88E-04	6.77E-07	7.85E-02	1.96E+00	8.85E-02	2.69E-03
BA	8.44E-06	2.24E-05	5.43E-03	9.90E-04	9.73E-04	1.77E-06	2.20E-02	2.19E+00	1.11E-01	2.99E-04	3.74E-03	1.96E-04	1.10E+01	3.31E-04	1.61E+00	5.76E+01	6.48E-03	1.22E-03	7.33E-01	6.29E+00	2.60E-14	2.47E-08	1.81E-02	4.14E-01	1.61E-09
BE	1.63E-07	3.09E-04	9.00E-03	1.07E+01	7.37E-03	3.46E-07	7.07E-04	1.47E-07	6.12E-07	3.21E-08	3.61E+01	2.93E-03	4.00E-01	3.04E-02	9.32E-04	8.84E-05	7.40E-03	2.99E-02	2.73E-04	4.54E-03	5.01E-16	1.06E-10	7.69E-05	1.26E-02	2.36E-11
BG	8.64E-05	8.19E-06	1.19E-03	1.63E-04	2.36E-04	7.47E-08	5.38E+00	1.94E-02	6.60E+00	1.08E-04	6.08E-04	1.85E-05	1.39E+00	2.69E-05	1.59E+02	5.34E+01	4.44E-01	1.93E-04	1.99E-02	6.92E-01	2.50E-11	5.44E-07	3.48E+01	5.67E+00	8.41E-08
BY	1.83E-03	9.20E-05	7.33E+01	1.34E-02	2.33E+01	4.87E-08	2.90E+00	9.98E-04	5.84E-03	4.27E-07	2.38E-01	2.21E-02	5.99E+02	7.14E-04	3.96E+00	2.88E-01	7.13E+01	6.26E-01	3.05E-02	5.00E+00	4.25E-11	4.39E-06	5.12E-02	1.47E+03	3.22E-07
CH	1.64E-07	8.00E-01	1.35E-03	5.43E-02	5.73E-04	1.50E-05	2.08E-04	4.98E-06	1.44E-05	6.72E-06	4.85E-02	1.51E-04	6.71E-01	6.41E-03	4.51E-04	6.25E-04	1.84E-03	6.19E-04	1.08E-02	1.96E-02	2.80E-16	1.90E-10	2.44E-05	6.12E-03	2.82E-11
CY	1.16E-07	3.73E-09	3.40E-07	1.59E-07	1.13E-07	2.93E-10	9.46E-04	1.13E-06	1.42E-05	2.44E-06	5.17E-07	1.40E-08	5.35E-04	3.65E-08	1.87E-03	5.21E-05	2.74E-04	4.28E-08	2.07E-06	4.18E-05	6.03E-14	3.37E-09	4.10E+00	1.87E-03	2.58E-10
CZ	6.99E-05	7.99E-03	1.03E-01	2.36E-01	2.72E-02	5.64E-07	1.70E-02	2.47E-03	4.67E-03	3.64E-06	2.62E-01	2.15E-03	5.62E+02	3.47E-03	3.01E-01	1.08E+00	1.39E-01	5.23E-02	1.51E+00	1.25E+02	9.66E-14	2.75E-07	1.72E-03	9.06E-01	1.46E-08
DE	1.02E-05	3.32E-01	4.04E-01	3.23E+01	2.65E-01	6.12E-06	1.47E-02	1.59E-04	2.15E-04	2.41E-06	1.26E+02	1.03E-01	2.31E+02	8.14E-02	4.34E-02	6.53E-02	5.39E-01	1.05E+00	1.60E-01	2.08E+00	2.99E-14	1.33E-08	1.37E-03	4.54E-01	1.74E-09
DK	1.09E-07	9.30E-05	3.76E-01	6.22E-02	2.08E-01	1.61E-08	2.39E-03	3.09E-06	1.21E-05	4.61E-09	3.80E+00	7.07E-01	1.13E+01	8.61E-03	6.87E-03	1.94E-03	3.72E-01	5.75E+00	1.08E-03	7.92E-02	4.11E-14	8.62E-11	6.30E-06	7.03E-02	1.55E-11
EE	1.05E-05	2.26E-05	7.69E+00	3.05E-03	5.62E+01	3.29E-09	1.08E-02	2.02E-05	9.48E-05	1.28E-08	1.06E-01	6.39E-02	1.81E+01	5.49E-04	3.66E-02	8.46E-03	2.71E+01	2.72E+00	2.17E-03	1.91E-01	3.19E-12	1.05E-08	2.67E-04	7.69E-01	2.87E-09
ES	2.73E-08	1.33E-05	9.97E-04	3.88E-03	5.31E-04	1.34E-05	1.41E-04	3.48E-06	1.48E-06	1.99E-05	3.79E-02	1.19E-03	5.79E-02	9.07E+01	2.32E-04	4.59E-05	1.22E-03	3.56E-03	1.35E-03	8.68E-04	8.89E-16	2.63E-11	1.82E-05	2.19E-03	4.29E-12
FI	8.59E-05	3.22E-05	3.04E+00	5.34E-03	9.24E+00	1.22E-08	1.33E-02	1.42E-05	5.65E-05	1.02E-08	1.77E-01	1.36E+00	1.83E+01	1.30E-02	2.93E-02	6.65E-03	1.08E+02	2.22E+01	3.24E-03	1.74E-01	1.06E-08	3.90E-08	6.10E-04	5.72E-01	3.43E-08
FR	2.06E-06	6.99E-03	3.92E-02	1.75E+01	2.44E-02	1.76E-02	4.14E-03	1.15E-04	1.16E-04	5.40E-05	6.75E+00	1.70E-02	3.49E+00	1.24E+00	6.81E-03	6.74E-03	3.90E-02	8.60E-02	1.03E-01	5.44E-02	6.23E-15	2.15E-09	5.27E-04	8.93E-02	3.34E-10
GB	1.04E-08	1.05E-05	9.39E-03	3.49E-02	7.61E-03	6.83E-08	4.82E-04	1.76E-07	3.47E-07	4.53E-09	3.25E+00	1.75E-01	6.17E-01	4.51E-01	1.10E-03	1.39E-04	1.29E-02	1.52E-01	1.54E-04	6.89E-03	3.89E-14	1.08E-11	3.72E-06	7.98E-03	1.96E-12
GE	9.47E-03	3.01E-07	4.81E-04	1.58E-05	2.28E-04	9.28E-10	9.37E-02	2.45E-05	3.85E-04	1.81E-07	2.94E-04	2.06E-06	9.02E-02	6.23E-07	2.80E-01	2.08E-02	2.42E+01	4.48E-05	2.00E-04	1.65E-02	2.48E-08	4.43E-05	2.20E+01	1.66E+00	6.90E-06
GR	1.80E-05	2.03E-06	1.19E-04	2.30E-05	2.36E-05	4.18E-07	3.74E-01	1.31E-02	1.90E+01	5.05E-03	1.01E-04	3.03E-06	2.27E-01	6.01E-05	3.10E+00	7.98E+00	1.15E-01	3.17E-05	2.29E-03	1.22E-01	2.56E-11	1.38E-07	9.55E+01	7.42E-01	2.66E-08
HR	2.43E-05	8.84E-05	7.30E-03	1.63E-03	1.42E-03	7.02E-06	1.38E-02	6.00E-01	3.54E-02	2.32E-04	5.17E-03	1.95E-04	1.54E+01	5.96E-04	1.21E+00	3.54E+01	1.06E-02	1.44E-03	7.46E+01	7.57E+00	3.28E-14	5.92E-08	7.11E-03	3.46E-01	4.67E-09
HU	1.52E-04	4.44E-04	1.94E-02	5.02E-03	3.46E-03	1.18E-06	1.15E-01	5.72E-02	1.94E-01	2.53E-05	1.48E-02	3.70E-04	6.49E+01	4.13E-04	7.65E+01	7.45E+01	3.26E-02	4.70E-03	1.67E+01	2.63E+02	1.58E-13	8.91E-07	1.28E-02	8.16E+00	3.52E-08
IE	1.11E-10	2.39E-07	8.61E-05	7.18E-04	4.45E-05	3.02E-09	1.71E-07	4.26E-09	9.24E-10	2.27E-11	5.21E-02	5.28E-03	1.39E-02	1.08E-01	1.32E-06	3.74E-06	1.52E-04	1.38E-03	7.27E-06	1.83E-04	3.26E-15	3.64E-14	6.04E-08	6.02E-06	1.62E-14
IS	1.75E-08	1.71E-07	3.74E-04	1.15E-04	3.22E-04	4.33E-11	5.61E-07	1.88E-09	2.07E-08	2.82E-12	4.57E-03	3.02E-02	8.12E-03	1.61E-03	3.22E-06	2.27E-06	6.43E-04	6.36E-03	1.51E-06	8.61E-05	4.01E-13	1.61E-12	2.43E-09	5.25E-05	1.80E-12
IT	4.39E-06	3.41E-02	1.99E-03	1.71E-02	3.87E-04	5.99E-03	5.59E-03	2.09E-01	2.30E-01	1.43E-01	3.12E-02	2.26E-04	3.72E+00	4.96E-03	1.77E-01	1.93E+00	3.70E-03	6.75E-04	2.33E+01	7.96E-01	9.84E-14	7.12E-09	3.39E-02	9.57E-02	8.30E-10
KY	2.13E+02	2.09E-10	2.36E-07	3.83E-08	2.16E-07	5.04E-12	2.23E-05	4.07E-09	3.91E-08	1.81E-10	9.01E-07	8.62E-09	2.69E-04	3.65E-08	4.82E-05	2.58E-06	2.10E-03	8.24E-08	5.74E-08	2.48E-05	5.93E+01	2.54E-02	4.73E-04	2.38E-04	4.18E+01
KZ	1.21E+04	6.23E-07	1.18E-02	8.54E-05	8.40E-03	1.29E-09	1.51E-01	5.74E-06	5.48E-05	9.59E-08	9.24E-04	2.08E-04	6.06E-01	1.89E-05	1.87E-01	3.95E-03	3.03E+02	1.95E-03	2.34E-04	3.88E-02	6.10E+00	3.08E+00	1.75E-01	1.94E+01	7.15E+01
LI	2.67E-10	4.89E-02	2.81E-06	1.61E-04	1.10E-06	2.54E-08	5.61E-07	1.29E-08	5.15E-08	1.58E-08	1.05E-04	6.24E-07	4.43E-03	2.15E-05	2.68E-06	6.16E-06	5.30E-06	1.78E-06	4.96E-05	1.91E-04	6.76E-19	2.80E-13	4.86E-08	1.70E-05	4.49E-14
LT	3.95E-05	7.19E-05	6.04E+02	1.09E-02	4.12E+01	5.26E-09	8.20E-02	1.32E-04	8.44E-04	1.47E-07	3.60E-01	3.28E-02	2.52E+02	6.75E-04	2.80E-01	5.68E-02	5.28E+01	1.53E+00	1.23E-02	1.37E+00	7.16E-13	2.36E-08	1.38E-03	6.25E+00	1.14E-08
LU	2.30E-08	7.82E-05	1.25E-03	2.22E+01	8.40E-04	7.11E-08	8.47E-05	1.15E-08	5.76E-08	7.07E-09	2.52E-01	7.65E-05	5.63E-02	2.28E-03	1.12E-04	9.28E-06	1.00E-03	2.19E-03	6.74E-05	7.39E-04	4.20E-17	1.62E-11	9.03E-06	1.62E-03	3.44E-12
LV	3.37E-05	5.59E-05	9.69E+01	9.73E-03	7.35E+02	4.44E-09	4.04E-02	5.74E-05	3.37E-04	6.85E-08	3.34E-01	6.90E-02	7.43E+01	7.56E-04	1.25E-01	2.44E-02	1.99E+01	3.26E+00	6.06E-03	6.07E-01	2.13E-12	2.84E-08	1.03E-03	3.09E+00	9.83E-09
MC	1.27E-11	1.38E-07	2.44E-09	1.09E-06	7.57E-10	1.98E-04	8.63E-09	1.52E-08	1.41E-08	5.08E-09	2.72E-06	3.24E-09	1.82E-05	4.51E-07	1.20E-07	3.90E-07	1.03E-08	8.26E-09	9.98E-06	1.04E-06	4.39E-20	1.45E-14	3.42E-09	1.91E-07	2.29E-15
MD	4.09E-03	5.15E-06	2.69E-02	1.66E-04	4.32E-03	1.95E-08	6.43E+02	3.63E-04	3.20E-03	1.38E-06	1.27E-03	9.75E-05	3.41E+00	1.06E-05	1.12E+02	7.89E-02	9.53E-01	1.45E-03	3.80E-03	3.69E-01	3.10E-12	1.93E-05	9.05E-01	5.41E+01	1.18E-06
ME	1.77E-07	1.05E-06	1.78E-04	3.34E-05	2.17E-05	1.77E-07	6.55E-03	1.92E+01	5.22E-01	2.41E-04	1.59E-04	2.40E-06	6.06E-01	5.32E-05	5.00E-01	3.27E+01	3.85E-04	4.94E-05	5.31E-03	3.75E-01	2.82E-14	7.20E-10	1.05E-02	7.27E-02	4.38E-11
MK	1.93E-07	9.12E-07	3.32E-05	1.89E-05	5.17E-06	8.36E-08	1.85E-02	2.50E-02	1.92E+02	1.33E-04	9.98E-05	1.49E-06	2.85E-01	1.10E-05	1.04E+00	7.66E+01	4.30E-03	2.81E-05	2.64E-03	1.82E-01	6.65E-13	1.88E-09	2.71E-01	5.95E-02	2.52E-10
MT	1.18E-11	4.41E-08	8.82E-08	1.90E-06	1.75E-08	4.74E-09	3.07E-07	1.49E-05	2.19E-05	5.23E-02	3.73E-06	2.91E-08	9.83E-05	3.39E-07	8.22E-06	1.51E-04	1.74E-07	3.52E-08	4.56E-05	2.58E-05	9.25E-17	1.28E-13	4.38E-06	4.31E-06	2.27E-14
NL	5.91E-08	9.37E-05	6.96E-03	7.82E-01	7.18E-03	7.18E-08	4.83E-04	5.74E-07	1.46E-06	1.22E-08	3.99E+02	3.02E-02	6.97E-01	2.47E-02	1.00E-03	3.01E-04	8.79E-03	6.14E-02	3.52E-04	8.56E-03	2.57E-15	5.27E-11	2.54E-05	7.68E-03	1.10E-11
NO	4.10E-05	2.24E-05	6.92E-02	2.72E-02	8.52E-02	4.19E-09	9.46E-04	2.71E-06	6.87E-06	8.78E-09	1.78E+00	3.50E+02	2.60E+00	3.71E-02	3.31E-03	1.20E-03	4.71E+00	1.34E+01	6.94E-04	3.61E-02	4.95E-10	1.74E-08	4.45E-04	3.59E-02	1.82E-09
PL	7.72E-04	2.79E-03	1.58E+01	2.60E-01	1.70E+00	3.53E-07	6.95E-01	8.40E-03	3.58E-02	5.36E-06	3.71E+00	8.29E-02	2.28E+04	6.54E-03	9.60E+00	3.44E+00	6.89E+01	2.37E+00	1.16E+00	3.36E+02	1.37E-12	2.47E-06	1.52E-02	6.69E+01	1.62E-07
PT	7.05E-11	1.69E-08	2.04E-05	1.32E-05	6.40E-06	1.88E-08	3.00E-06	2.94E-08	1.89E-08	3.23E-08	1.99E-04	5.15E-05	1.49E-03	1.21E+03	5.97E-06	3.64E-07	3.75E-05	8.54E-05	1.25E-06	1.07E-05	4.68E-16	4.97E-14	1.59E-07	4.31E-05	1.14E-14
RO	4.74E-03	2.28E-04	2.71E-02	2.32E-03	5.27E-03	6.49E-07	1.09E+02	4.63E-02	6.19E-01	5.38E-05	7.27E-03	3.80E-04	2.66E+01	1.55E-04	4.11E+03	1.03E+02	1.01E+00	4.17E-03	5.38E-01	1.37E+01	8.75E-12	1.85E-05	9.92E+00	6.94E+01	1.09E-06
RS	2.04E-05	3.64E-05	2.74E-03	7.85E-04	4.43E-04	5.79E-07	1.66E-01	3.25E+00	5.19E+01	1.63E-04	3.10E-03	2.75E-05	1.35E+01	1.71E-04	7.01E+01	2.09E+03	9.70E-03	7.55E-04	2.31E-01	9.87E+00	3.25E-13	1.11E-07	2.73E-01	1.61E+00	4.36E-09
RU	8.60E+02	9.19E-05	3.46E+01	1.44E-02	5.60E+01	7.99E-08	3.90E+00	5.35E-04	6.73E-03	4.08E-06	4.48E-01	1.04E+00	2.72E+02	7.55E-03	5.59E+00	2.16E-01	4.16E+04	3.76E+00	1.67E-02	2.08E+00	3.47E-02	1.10E-01	1.34E+01	1.03E+03	1.11E-01
SE	6.45E-06	2.02E-04	2.25E+00	7.23E-02	3.83E+00	4.26E-08	1.73E-02	1.23E-05	5.09E-05	3.10E-08	3.41E+00	1.80E+01	5.03E+01	2.58E-02	4.30E-02	8.91E-03	3.34E+00	8.22E+02	6.03E-03	2.81E-01	8.32E-12	3.48E-09	7.87E-05	5.21E-01	3.64E-10
SI	1.04E-05	1.16E-04	1.08E-03	8.13E-04	1.88E-04	2.67E-06	2.57E-03	1.21E-03	6.17E-04	4.51E-05	2.10E-03	1.89E-05	2.94E+00	3.07E-04	5.97E-02	2.10E-01	2.58E-03	1.64E-04	3.37E+02	7.46E-01	1.35E-14	2.12E-08	4.78E-04	7.24E-02	2.03E-09
SK	2.41E-04	6.46E-04	4.46E-02	1.39E-02	7.67E-03	2.39E-07	9.11E-02	1.30E-02	4.68E-02	5.24E-06	3.03E-02	7.16E-04	5.47E+02	4.17E-04	8.02E+00	5.83E+00	7.21E-02	7.94E-03	1.10E+00	1.23E+03	2.66E-13	1.23E-06	3.98E-03	9.73E+00	5.10E-08
TJ	3.92E+00	2.71E-11	2.70E-08	1.79E-09	2.03E-08	1.07E-12	2.80E-06	4.99E-10	1.16E-08	6.40E-11	3.92E-08	7.39E-10	1.07E-05	5.83E-09	6.83E-06	3.93E-07	5.78E-04	5.41E-09	6.54E-09	1.42E-06	7.04E+02	6.14E-01	1.39E-04	6.17E-05	2.49E+01
TM	5.35E+00	1.19E-08	1.07E-04	9.31E-07	6.99E-05	1.25E-11	1.66E-03	6.57E-08	9.84E-07	4.82E-09	1.31E-05	8.00E-07	7.40E-03	1.19E-07	2.47E-03	8.89E-05	8.81E-01	1.25E-05	2.74E-06	4.52E-04	2.04E+00	2.53E+02	4.83E-02	1.58E-01	3.93E+01
TR	2.88E-03	1.35E-06	5.84E-03	5.38E-05	1.58E-03	5.69E-08	3.90E+00	3.85E-04	5.34E-02	3.83E-04	3.90E-04	3.38E-05	7.31E-01	2.30E-05	1.16E+01	5.05E-01	5.37E+00	3.47E-04	2.11E-03	7.57E-02	5.55E-09	3.69E-05	1.08E+04	1.46E+01	1.93E-06
UA	2.43E-01	2.84E-04	1.94E+00	1.97E-02	4.90E-01	3.37E-07	1.75E+02	1.10E-02	5.12E-02	1.54E-05	1.92E-01	6.07E-03	6.67E+02	5.67E-04	1.95E+02	3.84E+00	3.68E+02	1.20E-01	2.72E-01	6.28E+01	6.18E-08	5.92E-04	1.28E+01	1.69E+04	1.24E-04
UZ	1.97E+02	2.29E-08	2.08E-04	2.19E-06	1.18E-04	1.81E-11	3.59E-03	8.38E-08	1.05E-06	4.50E-09	3.21E-05	1.54E-06	1.77E-02	1.32E-07	4.66E-03	1.29E-04	8.00E-01	2.63E-05	5.26E-06	1.00E-03	8.57E+01	6.62E+01	1.86E-02	3.09E-01	4.77E+02

Table B6. *Source-receptor matrix of B(b)F deposition to EMEP countries in 2024, kg/year. Columns and rows represent sources and receptors, respectively.*

Code	AL	AM	AT	AZ	BA	BE	BG	BY	CH	CY	CZ	DE	DK	EE	ES	FI	FR	GB	GE	GR	HR	HU	IE	IS	IT	KY
AL	4.03E+01	2.76E-05	1.05E-01	8.15E-06	1.52E+00	5.84E-03	1.03E+00	4.19E-02	6.60E-03	3.12E-03	4.49E-01	1.93E-01	2.05E-03	1.81E-04	1.74E-01	3.10E-04	1.35E-01	6.25E-03	7.04E-04	1.28E+01	7.84E-01	1.77E+00	1.37E-03	2.04E-06	7.38E+00	1.74E-06
AM	8.67E-05	1.41E+02	7.23E-04	2.94E+00	2.63E-03	1.55E-04	1.58E-02	2.50E-02	7.16E-05	9.53E-03	3.53E-03	3.71E-03	2.57E-04	3.62E-04	1.53E-04	4.81E-04	3.74E-04	3.69E-04	1.71E+01	6.29E-03	1.63E-03	4.60E-03	2.01E-04	3.18E-07	2.71E-03	3.62E-04
AT	2.52E-02	1.81E-04	6.22E+02	5.94E-05	5.56E+00	7.46E-01	1.03E-01	9.80E-01	1.19E+01	8.75E-05	1.31E+02	2.57E+02	1.24E-01	1.54E-02	5.66E-01	2.84E-02	7.20E+00	4.10E-01	3.17E-03	6.12E-02	2.50E+01	5.81E+01	5.31E-02	6.22E-05	8.45E+01	3.87E-08
AZ	1.36E-04	1.48E+01	2.22E-03	9.80E+01	5.84E-03	4.40E-04	2.97E-02	6.71E-02	1.86E-04	9.49E-03	1.01E-02	1.07E-02	6.39E-04	9.91E-04	2.22E-04	1.40E-03	8.97E-04	1.21E-03	2.03E+01	9.37E-03	3.78E-03	1.19E-02	7.39E-04	9.88E-07	4.39E-03	3.89E-03
BA	8.24E-01	8.78E-05	5.71E+00	3.98E-05	9.44E+02	1.02E-01	7.13E-01	7.64E-01	6.14E-02	4.73E-04	1.86E+01	5.54E+00	5.57E-02	3.13E-03	3.92E-01	6.00E-03	4.79E-01	7.01E-02	1.50E-03	9.54E-01	1.41E+02	4.69E+01	1.24E-02	1.62E-05	2.26E+01	5.94E-07
BE	1.33E-04	2.73E-06	2.88E-01	2.63E-06	2.04E-02	4.92E+02	1.41E-03	1.76E-01	7.00E-01	4.91E-06	8.93E-01	8.12E+01	5.83E-01	1.69E-02	2.65E+00	1.04E-02	1.50E+02	1.15E+01	9.14E-05	4.00E-04	2.32E-02	6.46E-02	7.42E-01	3.75E-04	5.65E-01	4.09E-08
BG	3.74E-01	1.34E-03	1.09E+00	8.49E-04	4.79E+00	3.40E-02	6.13E+02	1.90E+00	4.39E-02	2.30E-02	3.16E+00	2.13E+00	1.48E-02	2.50E-03	1.10E-01	3.33E-03	2.07E-01	3.11E-02	8.86E-02	3.81E+01	2.67E+00	1.10E+01	7.68E-03	5.04E-06	1.73E+00	3.10E-05
BY	2.51E-02	2.15E-03	3.31E+00	3.59E-03	2.26E+00	2.14E+00	8.73E-01	6.03E+03	2.84E-01	3.26E-04	3.66E+01	5.27E+01	3.58E+00	3.56E+00	2.48E-01	2.66E+00	2.82E+00	2.35E+00	3.00E-02	1.79E-01	2.37E+00	1.81E+01	3.97E-01	5.05E-04	1.80E+00	3.22E-05
CH	2.06E-03	2.03E-06	6.90E+00	9.09E-07	8.75E-02	6.10E-01	1.37E-03	4.88E-02	1.56E+02	3.85E-05	1.95E+00	7.30E+01	2.06E-02	2.97E-03	1.05E+00	7.24E-03	5.01E+01	4.48E-01	6.66E-05	1.25E-02	2.69E-01	1.96E-01	8.02E-02	8.47E-05	8.05E+01	1.02E-08
CY	3.02E-04	7.91E-04	1.24E-03	1.96E-04	3.42E-03	3.78E-04	2.53E-02	7.37E-03	1.69E-04	1.15E+02	5.87E-03	7.09E-03	1.18E-04	3.98E-05	1.04E-03	3.83E-05	2.29E-03	2.95E-04	3.25E-04	1.44E-01	3.23E-03	6.60E-03	5.32E-05	5.71E-08	2.08E-02	3.81E-07
CZ	2.04E-02	3.72E-04	8.93E+01	1.63E-04	6.25E+00	2.52E+00	1.59E-01	4.18E+00	3.54E+00	6.35E-05	2.27E+03	4.32E+02	4.69E-01	5.48E-02	6.55E-01	8.06E-02	1.27E+01	1.23E+00	4.72E-03	6.48E-02	1.22E+01	6.37E+01	1.52E-01	9.06E-05	7.43E+00	7.26E-08
DE	8.71E-03	1.03E-04	9.20E+01	2.20E-04	1.48E+00	1.74E+02	5.63E-02	5.70E+00	7.03E+01	9.32E-05	3.42E+02	9.21E+03	2.26E+01	3.58E-01	9.40E+00	3.07E-01	3.15E+02	4.56E+01	2.73E-03	2.12E-02	2.16E+00	8.68E+00	4.25E+00	2.43E-03	3.13E+01	5.78E-07
DK	4.28E-04	2.61E-06	3.73E-01	4.23E-05	5.24E-02	5.37E+00	4.14E-03	2.38E+00	1.94E-01	1.52E-06	3.88E+00	1.03E+02	3.13E+02	1.75E-01	7.78E-01	1.30E-01	6.49E+00	1.03E+01	2.71E-05	1.08E-03	6.32E-02	4.12E-01	2.09E+00	5.21E-03	1.30E-01	8.70E-07
EE	1.27E-03	1.72E-05	4.51E-01	5.04E-05	1.70E-01	6.44E-01	1.90E-02	2.56E+01	6.54E-02	6.60E-06	4.18E+00	1.23E+01	2.05E+00	2.68E+02	9.86E-02	2.62E+01	8.13E-01	7.93E-01	1.89E-04	6.52E-03	2.19E-01	1.20E+00	1.07E-01	4.42E-04	1.34E-01	8.01E-06
ES	6.79E-04	3.70E-06	8.69E-02	8.79E-07	6.58E-02	6.14E-01	2.47E-03	1.16E-01	1.31E-01	1.49E-05	3.10E-01	2.81E+00	1.34E-01	3.10E-03	3.92E+03	1.52E-03	4.61E+01	2.53E+00	1.32E-04	2.33E-03	1.42E-01	6.26E-02	2.02E+00	4.29E-03	3.95E+00	3.32E-07
FI	1.74E-03	9.27E-05	7.03E-01	1.72E-04	2.62E-01	1.31E+00	3.62E-02	2.71E+01	1.31E-01	1.50E-05	7.73E+00	2.16E+01	4.08E+00	5.93E+01	5.59E-01	2.48E+03	1.96E+00	1.84E+00	9.13E-04	9.26E-03	3.37E-01	1.56E+00	3.45E-01	8.03E-03	2.54E-01	5.65E-04
FR	8.39E-03	4.57E-05	2.49E+00	1.45E-05	5.64E-01	1.06E+02	1.47E-02	1.12E+00	4.41E+01	8.95E-05	7.69E+00	2.69E+02	2.05E+00	6.32E-02	2.16E+02	5.27E-02	4.77E+03	4.16E+01	1.47E-03	4.73E-02	1.81E+00	8.46E-01	9.22E+00	5.07E-03	8.55E+01	5.06E-07
GB	9.02E-05	1.65E-06	1.59E-01	2.85E-05	2.78E-02	1.41E+01	1.88E-03	3.90E-01	1.15E-01	1.10E-06	1.25E+00	2.05E+01	3.18E+00	6.12E-02	1.27E+01	4.92E-02	6.57E+01	1.70E+03	1.99E-05	2.09E-04	3.39E-02	2.03E-01	2.17E+02	6.93E-02	2.07E-01	1.46E-06
GE	3.01E-03	7.91E+00	6.78E-02	1.54E+00	1.77E-01	8.37E-03	8.07E-01	5.31E-01	4.92E-03	2.00E-02	1.83E-01	2.26E-01	4.21E-03	5.82E-03	1.90E-03	7.01E-03	1.61E-02	1.93E-02	2.94E+02	2.12E-01	1.16E-01	2.97E-01	1.06E-02	2.35E-06	7.42E-02	3.74E-03
GR	2.49E+00	6.24E-04	2.26E-01	3.71E-04	1.33E+00	1.43E-02	3.54E+01	4.91E-01	1.46E-02	1.00E-01	8.50E-01	5.00E-01	8.27E-03	9.05E-04	3.64E-01	1.44E-03	2.93E-01	1.54E-02	2.70E-02	1.21E+03	8.50E-01	3.00E+00	4.60E-03	4.02E-06	9.16E+00	1.13E-05
HR	3.49E-01	1.54E-04	2.02E+01	6.11E-05	1.91E+02	1.14E-01	3.97E-01	8.16E-01	1.51E-01	2.77E-04	2.42E+01	8.53E+00	5.03E-02	5.18E-03	7.04E-01	9.38E-03	9.76E-01	7.97E-02	2.73E-03	4.19E-01	7.78E+02	9.60E+01	1.34E-02	1.84E-05	5.09E+01	1.61E-07
HU	2.21E-01	7.19E-04	5.55E+01	5.81E-04	4.65E+01	2.31E-01	1.41E+00	2.42E+00	4.22E-01	1.78E-04	5.93E+01	1.93E+01	8.24E-02	1.24E-02	3.21E-01	2.17E-02	1.21E+00	1.49E-01	7.20E-03	7.56E-01	1.14E+02	1.54E+03	2.32E-02	2.08E-05	1.29E+01	1.36E-07
IE	3.79E-06	1.25E-07	1.86E-02	1.86E-06	1.99E-03	4.68E-01	6.63E-05	2.96E-02	7.74E-03	4.72E-08	1.57E-01	1.60E+00	1.59E-01	1.80E-03	2.73E+00	2.69E-03	4.91E+00	3.16E+01	1.40E-06	7.46E-06	3.05E-03	1.61E-02	1.61E+03	3.71E-02	1.99E-02	2.99E-07
IS	6.92E-06	3.61E-07	5.18E-03	6.44E-06	1.19E-03	6.46E-02	2.23E-04	4.30E-02	3.66E-03	1.33E-07	5.28E-02	4.42E-01	1.12E-01	9.85E-03	7.04E-02	3.28E-02	2.01E-01	5.25E-01	2.49E-06	4.85E-05	1.53E-03	1.00E-02	1.05E+00	1.39E+01	3.58E-03	4.34E-06
IT	1.18E+00	9.08E-05	3.67E+01	2.52E-05	2.80E+01	5.11E-01	3.32E-01	4.11E-01	1.44E+01	2.04E-03	1.09E+01	3.80E+01	7.79E-02	3.72E-03	8.83E+00	9.70E-03	3.04E+01	4.56E-01	2.14E-03	3.65E+00	6.52E+01	1.12E+01	1.07E-01	1.03E-04	4.65E+03	3.79E-07
KY	9.88E-06	2.25E-02	4.51E-04	1.92E-02	8.66E-04	2.46E-04	1.69E-03	2.58E-03	5.95E-05	1.58E-04	3.36E-03	5.00E-03	1.11E-04	8.29E-05	1.40E-04	1.47E-04	4.24E-04	7.68E-04	1.35E-02	3.87E-04	5.97E-04	1.84E-03	4.73E-04	4.25E-07	1.25E-03	1.42E+03
KZ	3.09E-03	6.48E-01	2.62E-01	2.05E+00	1.78E-01	9.12E-02	6.54E-01	6.61E+00	2.31E-02	8.09E-03	1.52E+00	1.92E+00	8.88E-02	1.72E-01	1.37E-02	1.87E-01	1.76E-01	1.27E-01	1.04E+00	1.90E-01	2.05E-01	1.37E+00	3.57E-02	1.35E-04	1.70E-01	4.22E+02
LI	7.78E-06	4.17E-09	1.48E-01	3.80E-09	3.92E-04	2.46E-03	4.45E-06	1.46E-04	5.80E-01	1.61E-07	1.75E-02	4.65E-01	6.40E-05	1.51E-05	2.88E-03	4.41E-05	5.16E-02	1.71E-03	1.18E-07	5.33E-05	1.08E-03	1.74E-03	2.36E-04	3.59E-07	2.38E-01	4.64E-11
LT	4.76E-03	5.25E-05	1.40E+00	3.15E-04	5.89E-01	1.70E+00	7.19E-02	3.13E+02	1.53E-01	1.93E-05	1.40E+01	3.61E+01	5.74E+00	2.55E+00	1.45E-01	2.21E+00	2.03E+00	2.15E+00	1.12E-03	3.59E-02	7.50E-01	4.83E+00	2.89E-01	3.73E-04	3.84E-01	2.23E-06
LU	1.23E-05	3.65E-07	5.23E-02	3.18E-07	1.87E-03	1.07E+01	1.40E-04	1.93E-02	1.69E-01	5.00E-07	1.41E-01	1.61E+01	2.98E-02	1.34E-03	2.47E-01	9.50E-04	1.62E+01	2.94E-01	1.19E-05	5.19E-05	2.93E-03	6.37E-03	3.21E-02	1.70E-05	9.81E-02	2.38E-09
LV	3.00E-03	4.10E-05	1.01E+00	1.84E-04	3.70E-01	1.67E+00	5.34E-02	1.26E+02	1.35E-01	1.73E-05	9.88E+00	2.98E+01	4.96E+00	2.16E+01	1.64E-01	6.16E+00	1.89E+00	1.89E+00	7.97E-04	2.27E-02	4.82E-01	2.88E+00	2.01E-01	4.91E-04	2.76E-01	4.98E-06
MC	1.54E-06	6.00E-10	7.93E-05	1.36E-10	3.94E-05	2.07E-05	7.34E-07	2.56E-06	2.38E-04	5.77E-09	8.98E-05	9.41E-04	1.23E-06	9.00E-08	6.58E-04	2.25E-07	4.48E-02	1.21E-05	1.61E-08	6.20E-06	1.29E-04	3.82E-05	3.58E-06	2.35E-09	4.59E-02	1.16E-12
MD	7.78E-03	5.03E-03	2.22E-01	2.75E-03	3.35E-01	1.91E-02	1.69E+00	4.78E+00	1.29E-02	2.51E-03	8.59E-01	8.09E-01	2.54E-02	9.34E-03	1.63E-02	1.16E-02	5.60E-02	1.80E-02	4.86E-02	2.51E-01	2.45E-01	1.67E+00	3.42E-03	5.37E-06	2.63E-01	1.76E-05
ME	3.07E+00	8.58E-06	1.91E-01	3.11E-06	1.58E+01	6.82E-03	4.45E-01	7.85E-02	5.53E-03	3.63E-04	8.50E-01	3.09E-01	1.85E-03	2.44E-04	1.04E-01	3.91E-04	6.34E-02	5.16E-03	2.55E-04	9.40E-01	2.51E+00	3.26E+00	1.10E-03	1.54E-06	5.93E+00	6.93E-07
MK	5.63E+00	3.44E-05	1.32E-01	1.29E-05	1.00E+00	5.49E-03	9.24E+00	3.83E-02	5.30E-03	2.16E-03	5.39E-01	2.59E-01	2.04E-03	1.94E-04	4.50E-02	3.93E-04	4.39E-02	4.54E-03	1.74E-03	2.68E+01	5.03E-01	2.40E+00	9.49E-04	7.63E-07	1.37E+00	4.50E-06
MT	2.06E-04	4.56E-09	6.46E-04	2.70E-09	2.87E-03	2.53E-04	1.04E-04	7.56E-05	1.69E-04	3.05E-07	1.31E-03	3.61E-03	3.04E-05	1.04E-06	2.87E-03	2.65E-06	3.65E-03	1.17E-04	4.80E-07	1.32E-03	3.21E-03	1.13E-03	2.12E-05	3.45E-08	8.76E-02	2.06E-11
NL	2.59E-04	1.48E-06	1.98E-01	7.77E-06	4.10E-02	1.60E+02	1.74E-03	1.91E-01	2.45E-01	2.82E-06	1.12E+00	1.66E+02	1.32E+00	2.03E-02	2.08E+00	1.07E-02	5.03E+01	2.27E+01	3.44E-05	5.16E-04	3.26E-02	1.45E-01	1.18E+00	6.63E-04	1.71E-01	7.67E-08
NO	7.27E-04	4.90E-05	3.50E-01	6.94E-05	1.21E-01	6.80E+00	1.37E-02	2.04E+00	1.53E-01	1.10E-05	3.42E+00	4.04E+01	2.16E+01	9.96E-01	1.76E+00	1.08E+01	9.58E+00	2.07E+01	6.96E-04	5.85E-03	1.16E-01	6.87E-01	4.29E+00	1.20E-01	1.22E-01	8.47E-05
PL	7.57E-02	2.04E-03	3.72E+01	1.71E-03	1.33E+01	1.44E+01	5.83E-01	2.67E+02	2.73E+00	3.64E-04	8.33E+02	6.66E+02	1.63E+01	9.64E-01	1.25E+00	1.53E+00	2.14E+01	1.33E+01	2.69E-02	2.62E-01	1.89E+01	1.39E+02	2.10E+00	1.36E-03	9.45E+00	2.03E-06
PT	1.64E-05	3.52E-08	1.60E-03	5.96E-08	1.45E-03	2.55E-02	8.64E-05	4.30E-03	3.40E-03	7.72E-07	1.24E-02	1.07E-01	4.24E-03	5.47E-05	7.25E+01	1.25E-04	3.55E-01	1.55E-01	1.35E-06	3.61E-05	2.51E-03	9.65E-04	3.23E-01	1.46E-03	4.38E-02	1.58E-07
RO	3.77E-01	9.22E-03	1.08E+01	4.37E-03	2.85E+01	1.92E-01	7.43E+01	8.68E+00	4.73E-01	1.53E-02	1.72E+01	1.65E+01	1.33E-01	1.97E-02	3.30E-01	3.07E-02	1.20E+00	1.71E-01	1.40E-01	4.89E+00	2.22E+01	1.79E+02	3.17E-02	3.81E-05	9.26E+00	2.87E-05
RS	3.03E+00	2.79E-04	3.87E+00	1.42E-04	9.69E+01	9.43E-02	2.96E+01	9.97E-01	8.98E-02	9.77E-04	1.35E+01	5.30E+00	2.08E-02	4.06E-03	2.29E-01	6.44E-03	4.31E-01	6.86E-02	4.51E-03	8.18E+00	4.37E+01	9.97E+01	1.39E-02	9.08E-06	6.66E+00	9.70E-06
RU	5.75E-02	1.50E+00	5.33E+00	5.54E+00	3.18E+00	5.22E+00	7.85E+00	1.27E+03	5.65E-01	7.88E-02	4.35E+01	9.30E+01	1.02E+01	1.07E+02	1.18E+00	2.44E+02	6.90E+00	6.03E+00	1.89E+01	3.50E+00	3.56E+00	2.23E+01	9.31E-01	1.55E-02	3.24E+00	1.26E+01
SE	1.81E-03	3.63E-05	1.30E+00	2.14E-04	3.10E-01	1.01E+01	4.50E-02	1.44E+01	5.59E-01	7.89E-06	1.41E+01	1.70E+02	1.28E+02	9.05E+00	2.01E+00	7.69E+01	1.28E+01	1.70E+01	3.55E-04	1.84E-02	4.19E-01	2.02E+00	2.87E+00	3.58E-02	5.17E-01	5.60E-05
SI	2.12E-02	5.80E-05	4.31E+01	1.70E-05	4.81E+00	3.49E-02	4.21E-02	1.62E-01	1.20E-01	4.26E-05	6.34E+00	5.43E+00	7.15E-03	1.56E-03	2.49E-01	2.64E-03	4.70E-01	2.31E-02	1.07E-03	3.30E-02	1.13E+02	1.28E+01	3.32E-03	5.24E-06	4.28E+01	1.41E-08
SK	7.44E-02	7.16E-04	2.88E+01	4.98E-04	1.26E+01	3.72E-01	4.53E-01	4.07E+00	5.79E-01	5.82E-05	1.76E+02	2.96E+01	1.42E-01	1.39E-02	1.76E-01	2.48E-02	1.80E+00	2.76E-01	6.44E-03	2.53E-01	1.46E+01	2.67E+02	4.03E-02	3.19E-05	5.45E+00	8.39E-08
TJ	1.88E-06	8.97E-03	5.23E-05	1.04E-02	1.20E-04	1.66E-05	4.98E-04	1.12E-03	1.13E-05	9.60E-05	2.46E-04	3.56E-04	1.09E-05	1.57E-05	3.14E-05	2.51E-05	4.28E-05	4.24E-05	5.95E-03	1.14E-04	7.99E-05	2.61E-04	2.51E-05	3.99E-08	2.59E-04	2.79E+01
TM	9.22E-05	4.30E-01	5.54E-03	1.50E+00	5.14E-03	1.86E-03	2.86E-02	2.10E-01	4.97E-04	4.64E-03	3.02E-02	4.33E-02	2.25E-03	3.59E-03	4.08E-04	5.73E-03	3.58E-03	2.69E-03	3.59E-01	8.51E-03	4.41E-03	2.60E-02	9.89E-04	2.50E-06	4.83E-03	2.48E-01
TR	6.60E-02	2.35E+01	4.61E-01	4.31E-01	9.36E-01	5.54E-02	3.07E+01	6.10E+00	2.44E-02	7.54E+00	1.76E+00	1.81E+00	5.59E-02	3.01E-02	1.77E-01	3.55E-02	2.11E-01	6.39E-02	9.32E+00	3.44E+01	7.32E-01	3.17E+00	1.42E-02	2.18E-05	1.56E+00	9.98E-04
UA	1.08E-01	4.43E-02	1.12E+01	6.33E-02	1.17E+01	2.00E+00	9.43E+00	4.40E+02	6.76E-01	2.30E-02	7.26E+01	6.06E+01	1.70E+00	6.82E-01	3.99E-01	7.39E-01	3.96E+00	1.97E+00	8.81E-01	3.23E+00	1.16E+01	1.33E+02	3.55E-01	3.45E-04	8.23E+00	5.10E-03
UZ	1.07E-04	2.29E-01	9.23E-03	3.94E-01	8.40E-03	3.66E-03	3.57E-02	2.48E-01	8.12E-04	2.20E-03	5.58E-02	7.89E-02	3.50E-03	5.01E-03	4.71E-04	6.43E-03	5.98E-03	6.48E-03	1.98E-01	7.26E-03	7.31E-03	4.42E-02	2.68E-03	4.49E-06	5.88E-03	1.47E+02

Table B6 *(continued)*

Code	KZ	LI	LT	LU	LV	MC	MD	ME	MK	MT	NL	NO	PL	PT	RO	RS	RU	SE	SI	SK	TJ	TM	TR	UA	UZ
AL	3.58E-04	3.55E-05	3.10E-03	7.52E-04	8.78E-04	6.59E-06	9.99E-02	6.94E+00	2.44E+01	5.71E-03	3.96E-03	2.14E-04	1.94E+00	3.77E-03	2.37E+00	1.01E+02	9.94E-02	1.21E-03	4.11E-02	8.49E-01	2.99E-08	7.68E-06	2.59E+00	1.14E+00	1.52E-06
AM	1.02E-01	4.77E-07	2.17E-03	1.49E-05	1.15E-03	1.53E-08	2.80E-02	8.69E-05	1.50E-03	2.88E-06	1.50E-04	3.12E-05	6.96E-02	1.38E-05	9.17E-02	1.46E-02	1.07E+00	2.40E-04	5.22E-04	5.70E-03	4.71E-05	2.48E-02	4.00E+01	9.32E-01	3.12E-03
AT	1.46E-02	2.18E-01	1.83E-01	2.40E-01	6.32E-02	7.18E-05	1.41E-01	3.45E-02	7.25E-02	1.01E-03	3.94E-01	1.27E-02	7.70E+01	4.04E-02	2.07E+00	4.51E+00	4.13E-01	5.88E-02	7.72E+01	5.81E+01	3.73E-08	1.86E-04	1.23E-01	4.93E+00	4.53E-05
AZ	6.83E+00	1.36E-06	5.03E-03	4.45E-05	2.92E-03	2.10E-08	5.43E-02	1.69E-04	2.39E-03	3.92E-06	4.33E-04	1.01E-04	1.49E-01	1.89E-05	1.76E-01	2.93E-02	3.30E+01	6.77E-04	1.26E-03	1.46E-02	8.78E-04	1.29E+00	1.31E+01	2.52E+00	1.05E-01
BA	5.45E-03	4.12E-04	9.92E-02	1.99E-02	2.37E-02	2.52E-05	4.13E-01	4.79E+00	9.99E-01	3.55E-03	6.48E-02	1.10E-02	4.74E+01	1.26E-02	9.70E+00	1.09E+02	1.80E-01	1.89E-02	2.30E+00	1.94E+01	3.05E-08	8.80E-05	8.21E-01	6.60E+00	1.83E-05
BE	7.39E-04	2.48E-03	7.49E-02	1.60E+01	6.41E-02	8.60E-06	1.73E-02	2.21E-04	6.66E-04	8.01E-06	3.75E+01	4.71E-02	3.04E+00	1.97E-01	4.50E-02	2.63E-02	8.89E-02	1.30E-01	1.88E-02	1.11E-01	6.76E-09	6.12E-06	8.16E-03	3.72E-01	1.74E-06
BG	5.59E-02	3.07E-04	5.00E-02	7.04E-03	1.42E-02	4.26E-06	1.67E+01	2.23E-01	1.35E+01	2.83E-03	2.59E-02	1.98E-03	1.59E+01	5.08E-03	2.84E+02	1.17E+02	6.72E+00	8.19E-03	3.92E-01	5.52E+00	9.47E-07	1.77E-03	1.09E+02	7.36E+01	3.96E-04
BY	5.94E-01	2.31E-03	1.35E+02	2.00E-01	3.98E+01	6.67E-06	2.02E+01	4.56E-02	1.98E-01	5.91E-05	1.91E+00	3.10E-01	1.36E+03	2.49E-02	3.69E+01	5.92E+00	1.99E+02	2.52E+00	9.05E-01	2.69E+01	6.05E-06	3.74E-03	3.85E+00	3.25E+03	9.23E-04
CH	3.15E-04	7.42E-01	1.53E-02	2.52E-01	8.73E-03	1.57E-04	6.56E-03	1.31E-03	2.93E-03	3.16E-04	2.18E-01	2.37E-03	3.91E+00	5.05E-02	2.47E-02	5.18E-02	2.94E-02	1.20E-02	1.78E-01	2.11E-01	2.04E-09	2.23E-06	7.81E-03	1.72E-01	6.40E-07
CY	6.80E-04	9.17E-07	3.30E-04	7.03E-05	1.34E-04	5.32E-08	3.77E-02	2.16E-04	2.54E-03	1.21E-04	2.24E-04	1.77E-05	5.91E-02	3.52E-05	1.01E-01	1.35E-02	4.31E-02	4.61E-05	6.37E-04	5.94E-03	1.08E-07	2.28E-05	1.80E+01	2.76E-01	6.26E-06
CZ	2.51E-02	2.98E-02	8.36E-01	9.81E-01	2.84E-01	2.01E-05	2.05E-01	4.12E-02	1.14E-01	2.73E-04	1.15E+00	4.62E-02	7.71E+02	5.30E-02	3.50E+00	8.43E+00	1.18E+00	2.57E-01	6.89E+00	1.81E+02	9.83E-08	4.38E-04	1.19E-01	9.56E+00	9.37E-05
DE	2.25E-02	4.87E-01	2.48E+00	5.73E+01	1.62E+00	1.12E-04	3.23E-01	1.30E-02	2.98E-02	2.68E-04	1.74E+02	9.38E-01	4.97E+02	7.46E-01	1.46E+00	1.85E+00	3.55E+00	3.27E+00	1.84E+00	1.51E+01	3.16E-07	1.67E-04	1.49E-01	1.07E+01	4.56E-05
DK	1.15E-03	1.04E-03	1.82E+00	3.14E-01	1.09E+00	1.13E-06	7.24E-02	7.89E-04	2.55E-03	4.90E-06	8.27E+00	2.57E+00	4.27E+01	1.04E-01	2.39E-01	1.30E-01	1.62E+00	8.85E+00	3.27E-02	7.79E-01	2.67E-07	3.91E-06	2.27E-03	1.94E+00	1.54E-06
EE	1.01E-02	4.68E-04	2.09E+01	4.06E-02	8.15E+01	6.39E-07	2.46E-01	2.42E-03	9.06E-03	8.44E-06	7.02E-01	4.97E-01	9.18E+01	1.59E-02	9.39E-01	3.74E-01	6.23E+01	6.63E+00	9.92E-02	2.28E+00	1.93E-06	8.14E-05	9.13E-02	1.31E+01	3.11E-05
ES	6.25E-04	3.84E-04	4.52E-02	5.01E-02	2.49E-02	1.41E-04	2.71E-02	1.39E-03	1.72E-03	1.35E-03	3.33E-01	3.04E-02	1.96E+00	1.62E+02	6.84E-02	3.50E-02	5.15E-02	5.40E-02	7.06E-02	7.85E-02	3.93E-08	4.78E-06	1.74E-02	4.09E-01	1.47E-06
FI	5.58E-02	9.02E-04	1.54E+01	8.95E-02	3.00E+01	1.57E-06	4.98E-01	3.31E-03	1.24E-02	1.43E-05	1.45E+00	5.99E+00	1.37E+02	1.38E-01	1.41E+00	5.17E-01	2.63E+02	4.63E+01	1.59E-01	3.26E+00	6.34E-05	3.93E-04	1.72E-01	1.82E+01	3.03E-04
FR	7.23E-03	2.72E-02	3.97E-01	2.81E+01	2.65E-01	2.39E-02	1.51E-01	7.54E-03	1.32E-02	1.95E-03	1.55E+01	2.23E-01	2.65E+01	6.61E+00	4.59E-01	3.68E-01	5.28E-01	5.23E-01	1.01E+00	1.12E+00	6.75E-08	6.03E-05	1.11E-01	3.36E+00	1.70E-05
GB	8.03E-04	4.65E-04	2.71E-01	3.49E-01	2.03E-01	4.45E-06	4.24E-02	2.76E-04	5.16E-04	3.51E-06	1.02E+01	1.62E+00	1.02E+01	2.46E+00	1.21E-01	5.08E-02	3.19E-01	8.64E-01	2.26E-02	3.42E-01	2.51E-07	2.73E-06	1.36E-03	6.87E-01	1.22E-06
GE	7.30E-01	3.96E-05	3.66E-02	9.20E-04	1.87E-02	1.96E-07	8.67E-01	4.54E-03	4.51E-02	3.02E-05	7.50E-03	3.44E-04	1.58E+00	1.25E-04	3.64E+00	8.93E-01	5.67E+01	2.89E-03	3.86E-02	2.37E-01	2.25E-04	2.56E-02	6.21E+01	2.16E+01	5.87E-03
GR	2.07E-02	8.34E-05	1.64E-02	2.17E-03	4.93E-03	8.69E-06	2.38E+00	1.53E-01	3.51E+01	3.29E-02	1.10E-02	9.34E-04	4.59E+00	8.16E-03	1.75E+01	3.02E+01	2.85E+00	4.69E-03	8.48E-02	1.55E+00	1.27E-06	9.03E-04	2.19E+02	1.96E+01	2.18E-04
HR	1.13E-02	1.07E-03	1.24E-01	2.53E-02	3.43E-02	7.07E-05	2.62E-01	1.33E+00	4.16E-01	3.73E-03	6.84E-02	9.03E-03	5.70E+01	1.74E-02	7.59E+00	6.65E+01	2.69E-01	1.98E-02	8.22E+01	2.29E+01	3.26E-08	1.58E-04	4.34E-01	5.79E+00	3.53E-05
HU	3.93E-02	3.24E-03	2.63E-01	5.37E-02	7.32E-02	3.08E-05	1.07E+00	4.81E-01	1.58E+00	9.44E-04	1.41E-01	1.24E-02	1.79E+02	1.31E-02	1.22E+02	1.48E+02	7.35E-01	4.39E-02	2.87E+01	3.80E+02	1.67E-07	1.05E-03	6.87E-01	3.65E+01	1.66E-04
IE	7.08E-05	3.44E-05	1.43E-02	2.23E-02	7.60E-03	4.55E-07	8.54E-04	1.57E-05	1.55E-05	2.28E-07	3.82E-01	6.99E-02	1.02E+00	8.64E-01	3.55E-03	3.90E-03	2.53E-02	3.14E-02	2.64E-03	3.02E-02	4.74E-08	2.40E-07	6.52E-05	2.76E-02	1.61E-07
IS	1.06E-03	9.72E-06	2.32E-02	3.84E-03	1.91E-02	3.52E-08	1.10E-03	1.47E-05	8.58E-05	9.60E-08	5.22E-02	3.60E-01	5.25E-01	2.77E-02	4.97E-03	3.18E-03	3.69E-02	8.66E-02	7.66E-04	2.13E-02	6.06E-07	1.16E-06	1.07E-04	4.99E-02	2.12E-06
IT	6.45E-03	6.86E-02	6.39E-02	1.30E-01	1.81E-02	1.03E-02	2.23E-01	1.03E+00	1.29E+00	3.35E-01	2.61E-01	9.55E-03	2.96E+01	1.24E-01	3.06E+00	1.42E+01	1.93E-01	2.63E-02	4.51E+01	6.02E+00	2.17E-08	7.08E-05	1.27E+00	4.10E+00	1.76E-05
KY	2.32E+02	4.08E-07	2.09E-04	2.28E-05	1.56E-04	8.17E-09	3.14E-03	2.03E-05	1.37E-04	2.33E-07	2.52E-04	1.50E-05	2.94E-02	1.66E-05	1.07E-02	3.03E-03	1.97E-01	4.92E-05	2.00E-04	3.06E-03	7.15E+01	9.77E-01	1.14E-01	6.46E-02	1.36E+02
KZ	2.54E+04	1.58E-04	4.79E-01	1.02E-02	3.49E-01	8.23E-07	3.73E+00	5.83E-03	4.11E-02	3.28E-05	6.82E-02	1.82E-02	1.74E+01	2.03E-03	7.45E+00	8.56E-01	9.77E+02	9.19E-02	7.35E-02	1.51E+00	2.49E+01	4.16E+01	1.21E+01	2.32E+02	2.65E+02
LI	8.02E-07	4.40E-02	5.65E-05	1.07E-03	3.58E-05	4.64E-07	2.11E-05	3.77E-06	9.69E-06	6.20E-07	8.22E-04	1.20E-05	2.68E-02	1.75E-04	1.25E-04	2.98E-04	1.32E-04	5.93E-05	8.45E-04	1.72E-03	1.01E-11	4.16E-09	2.47E-05	5.99E-04	1.31E-09
LT	2.95E-02	1.15E-03	6.43E+02	1.18E-01	5.63E+01	1.20E-06	1.27E+00	8.53E-03	3.87E-02	3.26E-05	1.79E+00	3.03E-01	5.71E+02	1.91E-02	4.04E+00	1.37E+00	7.99E+01	3.70E+00	3.40E-01	8.74E+00	9.91E-07	1.16E-04	2.44E-01	6.43E+01	4.67E-05
LU	8.92E-05	4.86E-04	8.18E-03	2.59E+01	5.90E-03	1.37E-06	1.99E-03	1.45E-05	4.39E-05	1.37E-06	5.14E-01	1.67E-03	3.52E-01	1.57E-02	4.76E-03	1.67E-03	9.66E-03	8.63E-03	3.19E-03	1.32E-02	4.24E-10	6.82E-07	8.05E-04	4.33E-02	1.92E-07
LV	2.52E-02	9.72E-04	1.48E+02	1.05E-01	6.88E+02	1.01E-06	7.58E-01	5.43E-03	2.39E-02	2.22E-05	1.71E+00	5.49E-01	2.72E+02	2.36E-02	2.51E+00	8.49E-01	5.03E+01	7.45E+00	2.19E-01	5.49E+00	1.55E-06	1.58E-04	2.28E-01	3.97E+01	5.93E-05
MC	5.66E-08	6.40E-07	2.98E-07	5.89E-06	1.57E-07	2.21E-04	1.04E-06	1.13E-06	1.81E-06	2.85E-07	1.34E-05	5.26E-08	3.08E-04	1.13E-05	1.36E-05	2.81E-05	1.71E-06	4.18E-07	9.69E-05	3.08E-05	2.57E-13	4.93E-10	3.42E-06	2.56E-05	1.33E-10
MD	3.35E-01	9.75E-05	2.20E-01	3.00E-03	5.09E-02	1.01E-06	6.23E+02	8.72E-03	7.59E-02	8.33E-05	1.72E-02	3.10E-03	1.66E+01	5.36E-04	1.39E+02	1.10E+00	8.29E+00	1.73E-02	7.56E-02	1.57E+00	1.17E-06	5.94E-03	1.02E+01	2.06E+02	1.16E-03
ME	3.17E-04	3.35E-05	6.19E-03	1.10E-03	1.32E-03	3.24E-06	8.98E-02	3.02E+01	1.73E+00	2.28E-03	4.57E-03	2.85E-04	3.40E+00	2.73E-03	2.35E+00	5.00E+01	3.24E-02	1.14E-03	6.51E-02	1.50E+00	1.17E-08	6.52E-06	3.34E-01	1.18E+00	1.32E-06
MK	7.75E-04	3.34E-05	2.57E-03	8.79E-04	8.01E-04	2.27E-06	1.62E-01	1.42E-01	2.07E+02	1.73E-03	4.43E-03	2.34E-04	2.44E+00	1.41E-03	4.22E+00	9.96E+01	2.15E-01	1.43E-03	4.70E-02	1.15E+00	6.77E-08	1.90E-05	3.47E+00	1.57E+00	3.92E-06
MT	1.07E-07	8.00E-07	1.58E-05	4.71E-05	4.29E-06	6.35E-08	6.47E-05	2.51E-04	3.46E-04	7.08E-02	1.32E-04	2.14E-06	4.82E-03	3.71E-05	5.25E-04	2.96E-03	3.39E-05	9.07E-06	6.72E-04	6.96E-04	6.21E-12	7.53E-09	3.74E-04	9.55E-04	1.78E-09
NL	5.11E-04	1.06E-03	7.53E-02	1.92E+00	6.62E-02	2.76E-06	1.28E-02	4.79E-04	1.39E-03	5.82E-06	3.30E+02	2.50E-01	4.95E+00	1.96E-01	5.43E-02	6.15E-02	1.02E-01	2.12E-01	1.89E-02	2.18E-01	1.86E-08	3.91E-06	3.77E-03	2.78E-01	1.08E-06
NO	2.79E-02	8.47E-04	1.10E+00	2.95E-01	1.06E+00	1.14E-06	1.46E-01	1.18E-03	5.12E-03	9.11E-06	7.38E+00	8.60E+02	3.71E+01	3.29E-01	4.84E-01	2.12E-01	1.15E+01	3.00E+01	5.30E-02	1.28E+00	1.22E-05	7.77E-05	3.56E-02	3.65E+00	5.34E-05
PL	2.05E-01	2.10E-02	3.40E+01	1.67E+00	6.90E+00	2.61E-05	6.40E+00	1.54E-01	5.54E-01	5.42E-04	1.41E+01	9.05E-01	2.44E+04	1.21E-01	4.69E+01	2.79E+01	9.40E+01	6.59E+00	8.81E+00	4.77E+02	1.61E-06	2.87E-03	8.53E-01	3.43E+02	6.18E-04
PT	1.44E-05	1.10E-05	1.49E-03	2.16E-03	6.27E-04	8.81E-07	1.12E-03	4.19E-05	4.80E-05	1.57E-05	1.34E-02	1.70E-03	7.43E-02	1.29E+03	2.57E-03	8.59E-04	2.20E-03	1.84E-03	8.44E-04	1.19E-03	1.76E-08	6.28E-08	6.44E-04	1.32E-02	6.62E-08
RO	5.21E-01	3.61E-03	4.30E-01	4.52E-02	1.23E-01	2.68E-05	1.71E+02	5.40E-01	4.63E+00	1.84E-03	1.34E-01	1.75E-02	1.23E+02	1.05E-02	4.26E+03	2.20E+02	1.30E+01	7.25E-02	4.76E+00	4.87E+01	1.98E-06	8.89E-03	8.14E+01	3.31E+02	1.70E-03
RS	1.14E-02	6.28E-04	7.54E-02	1.79E-02	2.21E-02	1.55E-05	1.94E+00	6.75E+00	7.03E+01	2.22E-03	6.50E-02	2.73E-03	5.77E+01	9.45E-03	1.34E+02	2.11E+03	5.07E-01	1.38E-02	1.50E+00	3.19E+01	1.95E-07	2.59E-04	6.10E+00	1.74E+01	4.47E-05
RU	6.51E+03	4.31E-03	1.07E+02	3.68E-01	1.36E+02	1.53E-05	4.10E+01	7.87E-02	5.99E-01	8.70E-04	5.08E+00	5.53E+00	1.01E+03	2.30E-01	8.54E+01	1.19E+01	5.48E+04	1.88E+01	1.38E+00	3.07E+01	1.76E+00	7.32E+00	1.68E+02	4.42E+03	7.89E+00
SE	2.19E-02	3.53E-03	1.24E+01	6.00E-01	1.60E+01	4.47E-06	6.81E-01	2.71E-03	1.49E-02	2.62E-05	1.29E+01	6.49E+01	2.37E+02	2.97E-01	1.83E+00	5.74E-01	2.38E+01	8.90E+02	2.22E-01	4.06E+00	1.18E-05	6.28E-05	7.22E-02	1.77E+01	4.65E-05
SI	4.62E-03	9.12E-04	2.23E-02	9.45E-03	7.12E-03	3.99E-05	4.58E-02	2.56E-02	3.07E-02	1.21E-03	2.07E-02	8.28E-04	1.20E+01	6.82E-03	8.21E-01	2.23E+00	8.14E-02	3.11E-03	3.07E+02	3.80E+00	1.06E-08	5.68E-05	5.51E-02	1.34E+00	1.41E-05
SK	4.11E-02	4.66E-03	3.88E-01	1.01E-01	9.80E-02	1.32E-05	6.84E-01	1.58E-01	5.33E-01	3.11E-04	2.31E-01	1.64E-02	7.81E+02	1.13E-02	2.82E+01	3.06E+01	8.64E-01	5.90E-02	5.06E+00	1.27E+03	1.67E-07	1.04E-03	2.11E-01	4.03E+01	1.80E-04
TJ	2.61E+01	6.97E-08	7.24E-05	1.51E-06	4.29E-05	1.70E-09	1.43E-03	2.77E-06	3.32E-05	1.09E-07	1.58E-05	2.08E-06	2.82E-03	4.47E-06	4.05E-03	5.94E-04	7.25E-02	7.59E-06	2.68E-05	2.80E-04	6.32E+02	5.95E+00	4.54E-02	3.38E-02	7.87E+01
TM	6.64E+01	3.62E-06	1.56E-02	1.81E-04	1.04E-02	2.34E-08	1.01E-01	1.19E-04	1.40E-03	3.41E-06	1.63E-03	2.75E-04	4.01E-01	3.66E-05	2.34E-01	2.78E-02	1.01E+01	1.94E-03	1.60E-03	2.94E-02	1.21E+01	5.02E+02	2.09E+00	5.91E+00	1.20E+02
TR	8.19E-01	1.65E-04	3.17E-01	8.59E-03	1.13E-01	5.05E-06	2.36E+01	2.96E-02	9.55E-01	8.66E-03	4.31E-02	7.92E-03	2.27E+01	7.97E-03	6.96E+01	8.73E+00	4.85E+01	3.38E-02	1.73E-01	2.28E+00	1.27E-04	2.17E-02	1.56E+04	2.17E+02	4.39E-03
UA	1.06E+01	5.23E-03	1.11E+01	2.69E-01	3.52E+00	2.73E-05	3.15E+02	2.58E-01	9.83E-01	1.08E-03	1.53E+00	1.53E-01	1.48E+03	2.46E-02	4.39E+02	3.35E+01	7.84E+02	9.07E-01	3.75E+00	1.41E+02	1.10E-04	1.34E-01	1.16E+02	2.84E+04	3.47E-02
UZ	8.45E+02	6.00E-06	1.94E-02	3.59E-04	1.23E-02	2.55E-08	1.47E-01	1.84E-04	1.59E-03	2.51E-06	3.20E-03	4.86E-04	6.71E-01	4.98E-05	3.37E-01	4.08E-02	1.19E+01	2.89E-03	2.62E-03	5.19E-02	1.04E+02	1.79E+02	1.39E+00	8.15E+00	1.12E+03

Table B7. *Source-receptor matrix of B(k)F deposition to EMEP countries in 2024, kg/year. Columns and rows represent sources and receptors, respectively.*

Code	AL	AM	AT	AZ	BA	BE	BG	BY	CH	CY	CZ	DE	DK	EE	ES	FI	FR	GB	GE	GR	HR	HU	IE	IS	IT	KY
AL	9.46E+00	3.64E-06	3.20E-02	4.25E-06	4.03E-01	1.38E-03	3.34E-01	1.01E-02	1.97E-03	8.04E-05	2.60E-01	5.84E-02	7.76E-04	4.86E-05	1.31E-02	9.60E-05	3.19E-02	1.71E-03	2.56E-04	4.32E+00	2.22E-01	7.52E-01	2.36E-04	1.13E-06	2.06E+00	4.44E-07
AM	6.58E-06	6.20E+01	1.46E-04	9.23E-01	3.92E-04	4.13E-05	5.47E-03	6.60E-03	1.43E-05	9.06E-04	1.81E-03	1.09E-03	1.17E-04	2.02E-04	1.12E-05	3.07E-04	9.07E-05	1.82E-04	4.98E+00	1.21E-03	2.18E-04	1.79E-03	6.87E-05	4.90E-07	3.63E-04	6.55E-05
AT	2.52E-03	6.73E-05	2.94E+02	3.96E-05	1.29E+00	2.09E-01	1.47E-02	2.10E-01	6.45E+00	6.81E-06	8.51E+01	1.07E+02	3.41E-02	3.87E-03	9.54E-02	8.76E-03	2.79E+00	1.75E-01	1.18E-03	7.15E-03	7.26E+00	2.47E+01	1.67E-02	7.92E-05	3.00E+01	1.54E-08
AZ	1.06E-05	5.73E+00	3.94E-04	6.60E+01	7.47E-04	9.85E-05	8.70E-03	1.47E-02	3.44E-05	9.96E-04	4.28E-03	2.64E-03	2.42E-04	4.79E-04	1.66E-05	8.78E-04	2.07E-04	5.11E-04	7.16E+00	1.90E-03	4.40E-04	3.55E-03	2.20E-04	1.57E-06	5.44E-04	7.82E-04
BA	1.45E-01	2.91E-05	1.86E+00	2.83E-05	3.73E+02	2.88E-02	1.83E-01	1.79E-01	2.22E-02	1.58E-05	1.07E+01	1.80E+00	2.50E-02	1.13E-03	3.33E-02	2.87E-03	1.36E-01	2.97E-02	5.04E-04	2.47E-01	5.86E+01	1.96E+01	4.16E-03	2.15E-05	6.98E+00	1.42E-07
BE	4.83E-06	1.02E-06	6.67E-02	1.34E-06	2.29E-03	2.62E+02	4.52E-04	3.90E-02	2.93E-01	6.08E-07	4.40E-01	3.56E+01	2.76E-01	8.98E-03	6.38E-01	5.99E-03	9.08E+01	5.64E+00	3.91E-05	5.26E-05	3.20E-03	1.46E-02	2.35E-01	3.29E-04	8.45E-02	4.59E-08
BG	4.50E-02	2.50E-04	3.23E-01	5.18E-04	1.39E+00	8.58E-03	2.96E+02	4.35E-01	1.72E-02	2.62E-03	1.66E+00	6.41E-01	6.38E-03	7.74E-04	1.19E-02	1.23E-03	6.30E-02	1.14E-02	2.42E-02	1.33E+01	8.52E-01	4.05E+00	1.65E-03	6.23E-06	3.89E-01	7.97E-06
BY	2.92E-03	5.69E-04	9.97E-01	2.21E-03	6.15E-01	6.51E-01	2.20E-01	1.87E+03	1.12E-01	2.29E-05	2.03E+01	1.83E+01	1.60E+00	1.50E+00	5.85E-02	1.45E+00	1.11E+00	1.02E+00	7.21E-03	2.28E-02	6.66E-01	7.02E+00	1.28E-01	7.33E-04	4.21E-01	9.62E-06
CH	1.43E-04	7.68E-07	2.98E+00	3.81E-07	1.33E-02	1.74E-01	2.51E-04	1.15E-02	1.11E+02	4.73E-07	1.11E+00	3.19E+01	7.22E-03	9.95E-04	1.78E-01	2.43E-03	2.78E+01	2.12E-01	2.98E-05	1.27E-03	5.07E-02	7.54E-02	3.10E-02	1.11E-04	2.99E+01	6.24E-09
CY	1.11E-05	5.45E-05	1.68E-04	2.17E-05	3.42E-04	6.41E-05	4.50E-03	8.85E-04	2.60E-05	3.92E+01	1.90E-03	1.35E-03	3.29E-05	1.01E-05	3.86E-05	1.13E-05	3.38E-04	7.82E-05	4.23E-05	1.71E-02	3.42E-04	1.27E-03	9.91E-06	3.93E-08	1.70E-03	7.78E-08
CZ	2.43E-03	1.39E-04	3.56E+01	1.33E-04	1.83E+00	7.64E-01	2.71E-02	9.43E-01	1.69E+00	7.23E-06	1.75E+03	1.86E+02	1.85E-01	1.60E-02	1.24E-01	2.94E-02	5.52E+00	5.47E-01	1.80E-03	8.86E-03	3.80E+00	2.73E+01	4.44E-02	1.01E-04	2.03E+00	3.05E-08
DE	5.39E-04	4.03E-05	3.76E+01	1.05E-04	2.44E-01	6.53E+01	1.08E-02	1.30E+00	4.14E+01	9.14E-06	2.21E+02	4.81E+03	1.17E+01	1.79E-01	1.98E+00	1.47E-01	1.61E+02	2.20E+01	1.12E-03	2.20E-03	4.36E-01	2.69E+00	1.34E+00	2.30E-03	9.42E+00	4.35E-07
DK	4.43E-05	5.63E-07	1.08E-01	2.39E-05	1.21E-02	1.89E+00	1.09E-03	5.78E-01	7.97E-02	7.20E-08	2.11E+00	4.57E+01	2.08E+02	9.75E-02	1.60E-01	8.69E-02	2.96E+00	5.26E+00	6.99E-06	1.62E-04	1.51E-02	1.45E-01	7.19E-01	3.06E-03	2.64E-02	5.21E-07
EE	1.20E-04	3.94E-06	1.23E-01	2.21E-05	4.17E-02	2.04E-01	4.17E-03	5.69E+00	2.44E-02	9.33E-08	2.15E+00	4.28E+00	9.30E-01	2.14E+02	2.10E-02	1.83E+01	3.28E-01	3.60E-01	5.05E-05	1.06E-03	5.42E-02	4.33E-01	3.67E-02	6.33E-04	2.58E-02	3.45E-06
ES	4.03E-05	9.09E-07	1.87E-02	3.96E-07	1.04E-02	1.74E-01	7.06E-04	2.32E-02	4.72E-02	1.72E-06	1.44E-01	8.60E-01	5.77E-02	1.72E-03	1.61E+03	1.06E-03	1.97E+01	8.25E-01	4.04E-05	1.49E-04	2.66E-02	1.92E-02	4.65E-01	2.19E-03	8.05E-01	1.55E-07
FI	1.64E-04	2.52E-05	1.91E-01	7.26E-05	5.72E-02	4.27E-01	7.87E-03	5.88E+00	4.93E-02	2.90E-07	4.03E+00	7.34E+00	1.82E+00	3.54E+01	1.22E-01	2.09E+03	8.11E-01	8.95E-01	2.70E-04	1.39E-03	7.69E-02	5.48E-01	1.45E-01	1.02E-02	4.45E-02	2.10E-04
FR	7.25E-04	1.80E-05	7.70E-01	9.35E-06	1.24E-01	4.38E+01	5.11E-03	2.83E-01	2.69E+01	8.22E-06	4.58E+00	1.19E+02	1.05E+00	3.49E-02	5.53E+01	3.03E-02	3.03E+03	1.86E+01	6.48E-04	6.42E-03	4.86E-01	3.05E-01	2.76E+00	4.14E-03	2.96E+01	5.18E-07
GB	5.75E-06	3.89E-07	3.35E-02	1.31E-05	5.42E-03	4.98E+00	6.50E-04	8.69E-02	2.71E-02	1.68E-07	5.93E-01	7.16E+00	1.68E+00	3.43E-02	2.85E+00	3.67E-02	3.13E+01	1.12E+03	5.82E-06	4.68E-05	6.77E-03	6.50E-02	8.34E+01	3.56E-02	2.56E-02	1.35E-06
GE	2.63E-04	3.01E+00	1.31E-02	4.67E-01	2.77E-02	2.16E-03	2.41E-01	1.27E-01	1.06E-03	1.83E-03	8.49E-02	6.06E-02	2.00E-03	2.99E-03	1.62E-04	4.17E-03	4.41E-03	8.56E-03	1.24E+02	5.06E-02	1.66E-02	8.94E-02	3.07E-03	4.02E-06	1.06E-02	8.77E-04
GR	5.39E-01	9.44E-05	5.82E-02	2.35E-04	3.22E-01	2.91E-03	1.41E+01	1.04E-01	4.25E-03	7.53E-03	4.05E-01	1.30E-01	3.08E-03	2.93E-04	3.30E-02	5.76E-04	6.72E-02	4.17E-03	7.94E-03	6.70E+02	2.27E-01	1.07E+00	6.89E-04	3.41E-06	2.09E+00	2.72E-06
HR	5.78E-02	5.86E-05	7.20E+00	4.65E-05	7.17E+01	3.31E-02	8.68E-02	1.94E-01	5.71E-02	1.19E-05	1.47E+01	2.84E+00	2.32E-02	1.54E-03	6.78E-02	3.76E-03	2.73E-01	3.53E-02	1.04E-03	9.33E-02	3.60E+02	4.42E+01	4.70E-03	2.51E-05	1.66E+01	3.95E-08
HU	2.97E-02	2.60E-04	2.23E+01	5.40E-04	1.42E+01	6.95E-02	3.29E-01	5.61E-01	1.88E-01	1.82E-05	3.70E+01	7.06E+00	3.72E-02	3.67E-03	4.16E-02	7.74E-03	4.38E-01	6.89E-02	2.46E-03	1.46E-01	4.47E+01	7.46E+02	7.89E-03	2.83E-05	3.42E+00	3.55E-08
IE	2.76E-07	1.96E-08	3.78E-03	6.44E-07	3.97E-04	1.21E-01	1.22E-05	5.36E-03	1.76E-03	7.25E-09	7.08E-02	5.87E-01	7.18E-02	1.11E-03	4.13E-01	2.41E-03	1.55E+00	1.56E+01	2.13E-07	1.32E-06	5.29E-04	3.82E-03	7.39E+02	2.05E-02	2.80E-03	2.95E-07
IS	4.76E-07	1.00E-07	1.52E-03	2.79E-06	2.92E-04	2.31E-02	3.44E-05	1.01E-02	1.57E-03	1.88E-09	3.06E-02	1.75E-01	6.33E-02	5.86E-03	1.02E-02	2.84E-02	8.72E-02	2.44E-01	3.99E-07	5.73E-06	4.33E-04	3.30E-03	4.10E-01	8.22E+00	1.06E-03	2.80E-06
IT	2.07E-01	2.58E-05	1.39E+01	1.31E-05	7.96E+00	1.36E-01	8.64E-02	9.24E-02	7.85E+00	3.87E-05	6.03E+00	1.25E+01	2.88E-02	1.21E-03	1.08E+00	3.92E-03	1.13E+01	1.67E-01	7.38E-04	7.72E-01	2.20E+01	4.21E+00	2.88E-02	1.00E-04	2.26E+03	8.17E-08
KY	7.16E-07	3.98E-03	6.45E-05	9.54E-03	9.25E-05	4.13E-05	3.02E-04	4.95E-04	1.22E-05	1.03E-05	1.15E-03	1.04E-03	3.99E-05	4.01E-05	1.90E-05	9.79E-05	9.54E-05	2.49E-04	2.70E-03	7.08E-05	6.73E-05	4.20E-04	1.07E-04	4.82E-07	3.08E-04	5.58E+02
KZ	2.81E-04	1.43E-01	6.44E-02	1.37E+00	3.47E-02	2.52E-02	1.89E-01	1.54E+00	7.20E-03	6.47E-04	7.54E-01	5.96E-01	4.08E-02	8.80E-02	2.02E-03	1.20E-01	5.89E-02	5.53E-02	2.54E-01	4.34E-02	4.24E-02	4.45E-01	1.25E-02	2.22E-04	3.05E-02	1.71E+02
LI	5.22E-07	1.17E-09	6.73E-02	1.09E-09	8.28E-05	6.85E-04	7.91E-07	2.98E-05	4.04E-01	1.29E-09	9.58E-03	1.79E-01	1.49E-05	4.24E-06	5.40E-04	1.35E-05	2.13E-02	8.36E-04	4.77E-08	4.95E-06	2.32E-04	6.72E-04	8.77E-05	4.93E-07	8.35E-02	2.61E-11
LT	5.07E-04	9.89E-06	4.13E-01	1.66E-04	1.56E-01	5.53E-01	1.37E-02	8.43E+01	6.13E-02	1.02E-06	7.69E+00	1.34E+01	2.79E+00	1.22E+00	3.33E-02	1.34E+00	8.81E-01	9.87E-01	2.30E-04	6.33E-03	2.05E-01	1.85E+00	9.85E-02	4.64E-04	8.14E-02	9.32E-07
LU	3.97E-07	1.38E-07	1.30E-02	1.51E-07	1.73E-04	4.65E+00	4.75E-05	4.40E-03	7.39E-02	6.09E-08	7.30E-02	7.55E+00	1.29E-02	6.43E-04	5.27E-02	4.80E-04	9.79E+00	1.30E-01	5.07E-06	5.98E-06	4.47E-04	1.66E-03	8.74E-03	1.65E-05	1.70E-02	2.67E-09
LV	3.08E-04	8.00E-06	2.86E-01	9.31E-05	9.40E-02	5.56E-01	1.16E-02	3.16E+01	5.25E-02	5.13E-07	5.22E+00	1.09E+01	2.28E+00	1.32E+01	3.57E-02	3.79E+00	8.25E-01	8.72E-01	1.37E-04	3.91E-03	1.24E-01	1.06E+00	6.64E-02	6.07E-04	5.53E-02	2.18E-06
MC	1.42E-07	1.95E-10	2.52E-05	6.37E-11	7.52E-06	6.17E-06	1.70E-07	5.52E-07	1.11E-04	7.85E-11	5.08E-05	3.38E-04	5.22E-07	2.83E-08	9.18E-05	7.77E-08	2.99E-02	5.20E-06	6.11E-09	7.29E-07	3.42E-05	1.25E-05	1.35E-06	2.80E-09	2.16E-02	4.97E-13
MD	7.98E-04	1.33E-03	7.88E-02	1.69E-03	8.83E-02	6.17E-03	6.01E-01	1.16E+00	5.59E-03	2.57E-04	5.47E-01	3.05E-01	1.20E-02	4.10E-03	1.62E-03	6.35E-03	2.13E-02	9.60E-03	1.35E-02	4.67E-02	7.04E-02	7.43E-01	1.30E-03	9.34E-06	6.20E-02	4.90E-06
ME	8.86E-01	2.00E-06	6.01E-02	2.33E-06	5.50E+00	1.81E-03	1.39E-01	1.89E-02	1.83E-03	7.80E-06	5.00E-01	9.83E-02	7.43E-04	8.43E-05	6.77E-03	1.57E-04	1.43E-02	1.86E-03	8.63E-05	2.35E-01	8.91E-01	1.37E+00	2.77E-04	1.21E-06	1.70E+00	1.85E-07
MK	1.08E+00	6.19E-06	4.08E-02	8.65E-06	2.94E-01	1.37E-03	3.88E+00	8.78E-03	1.93E-03	1.32E-04	2.99E-01	8.02E-02	8.72E-04	4.86E-05	3.95E-03	1.16E-04	1.15E-02	1.55E-03	5.61E-04	9.51E+00	1.63E-01	9.54E-01	2.01E-04	6.98E-07	3.30E-01	1.05E-06
MT	2.80E-05	9.29E-10	1.31E-04	1.62E-09	6.31E-04	4.86E-05	2.19E-05	1.12E-05	5.25E-05	4.81E-08	4.96E-04	8.43E-04	7.64E-06	3.04E-07	2.99E-04	9.90E-07	8.92E-04	2.38E-05	1.07E-07	2.09E-04	7.83E-04	3.12E-04	2.05E-06	2.39E-08	2.88E-02	3.03E-12
NL	9.27E-06	5.73E-07	4.57E-02	3.63E-06	5.29E-03	7.63E+01	4.36E-04	4.32E-02	1.01E-01	3.28E-07	5.25E-01	8.29E+01	7.21E-01	1.34E-02	4.94E-01	7.77E-03	2.77E+01	1.23E+01	1.56E-05	4.85E-05	4.98E-03	3.35E-02	4.06E-01	5.12E-04	2.49E-02	9.46E-08
NO	4.52E-05	1.21E-05	7.96E-02	4.01E-05	1.68E-02	2.28E+00	2.19E-03	4.17E-01	5.41E-02	3.42E-07	1.53E+00	1.33E+01	1.00E+01	4.97E-01	3.72E-01	7.34E+00	4.23E+00	9.59E+00	1.89E-04	8.08E-04	2.07E-02	1.95E-01	1.56E+00	8.71E-02	1.85E-02	3.77E-05
PL	9.85E-03	7.08E-04	1.27E+01	1.14E-03	3.93E+00	4.41E+00	1.23E-01	6.97E+01	1.18E+00	3.75E-05	5.49E+02	2.67E+02	8.02E+00	4.44E-01	2.58E-01	8.38E-01	8.66E+00	5.90E+00	9.63E-03	4.62E-02	5.85E+00	6.02E+01	6.54E-01	1.72E-03	2.41E+00	6.94E-07
PT	5.49E-07	6.30E-09	2.27E-04	9.40E-09	1.17E-04	4.62E-03	2.18E-05	5.63E-04	6.17E-04	6.54E-08	3.41E-03	1.97E-02	1.34E-03	2.38E-05	2.25E+01	6.45E-05	8.67E-02	3.02E-02	3.60E-07	4.73E-06	2.57E-04	2.17E-04	5.04E-02	5.84E-04	6.35E-03	6.55E-08
RO	4.69E-02	2.25E-03	3.42E+00	2.71E-03	8.67E+00	5.15E-02	3.00E+01	1.93E+00	1.87E-01	1.66E-03	9.58E+00	5.46E+00	5.73E-02	7.42E-03	3.19E-02	1.45E-02	4.06E-01	7.14E-02	3.66E-02	1.17E+00	7.22E+00	7.57E+01	9.00E-03	5.45E-05	2.16E+00	7.78E-06
RS	6.97E-01	7.41E-05	1.21E+00	1.16E-04	3.27E+01	2.45E-02	1.11E+01	2.24E-01	3.62E-02	5.96E-05	7.56E+00	1.67E+00	7.35E-03	1.31E-03	2.03E-02	2.26E-03	1.31E-01	2.56E-02	1.19E-03	2.47E+00	1.81E+01	4.15E+01	3.46E-03	8.76E-06	1.67E+00	2.22E-06
RU	6.61E-03	4.12E-01	1.48E+00	2.37E+00	8.06E-01	1.65E+00	2.50E+00	3.17E+02	2.09E-01	7.20E-03	2.28E+01	3.19E+01	4.65E+00	5.65E+01	2.61E-01	1.56E+02	2.83E+00	2.76E+00	6.48E+00	9.55E-01	9.17E-01	8.05E+00	3.60E-01	1.66E-02	7.34E-01	3.98E+00
SE	1.46E-04	7.92E-06	3.02E-01	9.97E-05	5.35E-02	3.19E+00	9.90E-03	3.06E+00	2.05E-01	2.21E-07	6.79E+00	6.17E+01	6.58E+01	4.72E+00	3.93E-01	4.98E+01	5.23E+00	7.94E+00	8.57E-05	3.20E-03	8.13E-02	5.99E-01	1.05E+00	3.36E-02	8.52E-02	2.70E-05
SI	2.69E-03	2.29E-05	1.85E+01	1.18E-05	1.27E+00	9.46E-03	5.95E-03	3.52E-02	4.68E-02	2.86E-06	3.49E+00	1.79E+00	2.04E-03	3.21E-04	2.99E-02	7.15E-04	1.32E-01	9.77E-03	4.21E-04	4.98E-03	4.66E+01	5.50E+00	1.10E-03	6.68E-06	1.68E+01	4.11E-09
SK	1.01E-02	2.47E-04	1.16E+01	4.56E-04	3.87E+00	1.10E-01	9.88E-02	9.51E-01	2.48E-01	7.22E-06	1.17E+02	1.07E+01	6.22E-02	4.79E-03	2.89E-02	9.91E-03	6.94E-01	1.21E-01	2.19E-03	4.48E-02	4.63E+00	1.23E+02	1.22E-02	3.97E-05	1.42E+00	2.32E-08
TJ	1.30E-07	1.74E-03	8.31E-06	5.69E-03	1.30E-05	3.18E-06	1.17E-04	2.42E-04	2.71E-06	5.70E-06	9.11E-05	7.81E-05	4.06E-06	7.85E-06	3.12E-06	1.68E-05	1.02E-05	1.53E-05	1.35E-03	1.95E-05	9.84E-06	7.17E-05	6.03E-06	5.00E-08	5.93E-05	1.11E+01
TM	8.72E-06	1.16E-01	1.78E-03	1.14E+00	1.11E-03	6.71E-04	8.30E-03	5.17E-02	2.20E-04	4.25E-04	1.95E-02	1.83E-02	1.26E-03	2.02E-03	5.88E-05	4.25E-03	1.73E-03	1.34E-03	9.77E-02	2.40E-03	1.04E-03	1.05E-02	3.09E-04	4.37E-06	9.99E-04	6.04E-02
TR	5.85E-03	6.74E+00	1.21E-01	9.92E-02	2.28E-01	1.51E-02	1.20E+01	1.36E+00	7.71E-03	1.03E+00	8.94E-01	5.55E-01	2.49E-02	1.35E-02	1.20E-02	1.88E-02	5.37E-02	2.74E-02	2.63E+00	1.08E+01	1.79E-01	1.13E+00	4.48E-03	2.98E-05	2.74E-01	2.49E-04
UA	1.22E-02	1.17E-02	3.45E+00	4.11E-02	3.34E+00	5.74E-01	3.10E+00	1.09E+02	2.60E-01	2.18E-03	4.17E+01	2.08E+01	7.78E-01	2.83E-01	6.04E-02	3.84E-01	1.45E+00	8.44E-01	2.50E-01	7.62E-01	3.32E+00	5.57E+01	1.09E-01	5.41E-04	1.99E+00	1.72E-03
UZ	9.57E-06	5.33E-02	2.26E-03	2.64E-01	1.42E-03	1.01E-03	9.93E-03	5.84E-02	2.67E-04	1.72E-04	2.92E-02	2.62E-02	1.83E-03	2.68E-03	6.07E-05	4.67E-03	2.19E-03	2.61E-03	4.77E-02	2.00E-03	1.36E-03	1.46E-02	7.06E-04	7.19E-06	1.10E-03	5.50E+01

Table B7 (continued)

Code	KZ	LI	LT	LU	LV	MC	MD	ME	MK	MT	NL	NO	PL	PT	RO	RS	RU	SE	SI	SK	TJ	TM	TR	UA	UZ
AL	8.74E-05	1.09E-05	1.05E-03	2.03E-04	2.14E-04	2.34E-06	4.14E-02	2.63E+00	9.74E+00	1.75E-03	1.30E-03	6.01E-05	8.22E-01	2.90E-04	9.25E-01	4.19E+01	4.46E-02	3.19E-04	1.03E-02	5.00E-01	1.46E-08	4.39E-06	4.97E-01	3.25E-01	7.95E-07
AM	2.59E-02	1.02E-07	9.51E-04	4.11E-06	4.04E-04	3.33E-09	1.28E-02	9.08E-06	3.07E-04	5.97E-07	5.77E-05	1.06E-05	3.00E-02	1.48E-06	3.60E-02	3.41E-03	3.70E-01	6.91E-05	6.18E-05	3.20E-03	1.29E-05	4.53E-03	1.47E+01	2.83E-01	9.43E-04
AT	3.74E-03	1.27E-01	5.58E-02	7.89E-02	1.21E-02	2.27E-05	4.87E-02	5.57E-03	1.08E-02	2.11E-04	1.45E-01	3.54E-03	3.11E+01	6.50E-03	4.79E-01	1.03E+00	1.56E-01	8.74E-03	2.99E+01	3.65E+01	1.79E-08	9.14E-05	3.66E-02	1.24E+00	2.61E-05
AZ	1.97E+00	2.55E-07	1.77E-03	1.08E-05	8.45E-04	4.30E-09	2.03E-02	1.67E-05	4.79E-04	8.49E-07	1.39E-04	2.74E-05	5.21E-02	2.21E-06	5.64E-02	5.43E-03	1.59E+01	1.65E-04	1.35E-04	6.84E-03	2.86E-04	4.69E-01	3.59E+00	7.40E-01	3.80E-02
BA	1.31E-03	1.49E-04	3.66E-02	6.33E-03	6.45E-03	9.61E-06	1.72E-01	1.70E+00	2.39E-01	1.06E-03	2.29E-02	3.57E-03	1.92E+01	1.47E-03	3.32E+00	3.87E+01	7.38E-02	4.58E-03	7.01E-01	1.11E+01	1.07E-08	4.36E-05	2.22E-01	1.86E+00	9.81E-06
BE	2.05E-04	1.00E-03	3.25E-02	9.67E+00	2.14E-02	2.55E-06	7.43E-03	1.61E-05	7.47E-05	7.44E-07	2.12E+01	1.12E-02	1.09E+00	3.76E-02	1.48E-02	3.75E-03	3.86E-02	3.86E-02	2.71E-03	3.98E-02	9.23E-09	3.12E-06	2.75E-03	1.07E-01	1.15E-06
BG	1.08E-02	1.18E-04	1.86E-02	2.01E-03	3.63E-03	1.27E-06	6.59E+00	5.06E-02	4.76E+00	7.46E-04	8.46E-03	6.53E-04	5.80E+00	6.08E-04	1.16E+02	4.21E+01	2.84E+00	2.16E-03	1.11E-01	2.78E+00	4.02E-07	6.28E-04	3.36E+01	2.05E+01	1.38E-04
BY	1.20E-01	9.41E-04	5.81E+01	6.98E-02	1.33E+01	1.91E-06	7.32E+00	9.20E-03	4.04E-02	1.25E-05	7.21E-01	8.78E-02	5.84E+02	4.39E-03	1.14E+01	1.60E+00	9.16E+01	7.22E-01	2.55E-01	1.44E+01	2.82E-06	1.89E-03	6.03E-01	1.25E+03	4.88E-04
CH	8.56E-05	5.44E-01	5.78E-03	8.73E-02	2.35E-03	5.94E-05	2.77E-03	1.23E-04	2.96E-04	4.51E-05	7.72E-02	8.61E-04	1.59E+00	8.63E-03	8.06E-03	1.08E-02	1.18E-02	2.33E-03	4.24E-02	1.18E-01	1.74E-09	1.18E-06	1.58E-03	4.92E-02	4.12E-07
CY	1.03E-04	1.39E-07	6.38E-05	1.38E-05	2.14E-05	1.07E-08	9.06E-03	1.33E-05	2.38E-04	1.36E-05	5.05E-05	4.71E-06	1.58E-02	1.17E-06	2.09E-02	1.85E-03	1.12E-02	6.69E-06	6.49E-05	1.88E-03	3.45E-08	4.01E-06	4.28E+00	5.04E-02	1.35E-06
CZ	6.87E-03	1.42E-02	2.90E-01	3.78E-01	6.46E-02	6.49E-06	7.30E-02	8.70E-03	2.07E-02	5.81E-05	4.42E-01	1.27E-02	3.57E+02	8.63E-03	8.65E-01	2.44E+00	4.72E-01	5.04E-02	2.10E+00	1.13E+02	4.30E-08	2.34E-04	3.46E-02	2.34E+00	5.52E-05
DE	5.69E-03	2.94E-01	1.06E+00	2.94E+01	5.32E-01	3.99E-05	1.28E-01	1.57E-03	3.45E-03	3.95E-05	8.87E+01	2.81E-01	2.03E+02	1.34E-01	3.61E-01	3.45E-01	1.59E+00	9.59E-01	3.67E-01	6.52E+00	1.77E-07	8.57E-05	4.69E-02	2.81E+00	2.97E-05
DK	3.86E-04	4.74E-04	7.95E-01	1.14E-01	3.72E-01	3.26E-07	3.02E-02	1.28E-04	4.62E-04	6.75E-07	3.87E+00	8.66E-01	1.66E+01	1.57E-02	8.04E-02	3.14E-02	7.59E-01	3.03E+00	7.47E-03	3.94E-01	1.77E-07	2.20E-06	5.28E-04	5.94E-01	1.31E-06
EE	2.84E-03	1.76E-04	8.93E+00	1.30E-02	2.97E+01	1.64E-07	8.23E-02	4.06E-04	1.54E-03	1.35E-06	2.87E-01	1.44E-01	3.54E+01	2.90E-03	2.66E-01	9.46E-02	3.15E+01	1.99E+00	2.39E-02	1.15E+00	1.23E-06	4.21E-05	1.61E-02	3.46E+00	1.98E-05
ES	1.38E-04	1.29E-04	1.71E-02	1.64E-02	7.16E-03	5.47E-05	9.96E-03	1.19E-04	1.84E-04	6.90E-05	1.19E-01	9.35E-03	6.62E-01	4.77E+01	2.13E-02	5.12E-03	2.05E-02	1.50E-02	1.27E-02	3.67E-02	2.97E-08	1.69E-06	4.72E-03	1.04E-01	7.22E-07
FI	2.05E-02	3.32E-04	6.33E+00	2.85E-02	9.72E+00	3.72E-07	1.72E-01	5.32E-04	2.09E-03	2.14E-06	6.11E-01	2.00E+00	5.24E+01	3.19E-02	3.95E-01	1.19E-01	1.26E+02	1.50E+01	3.58E-02	1.62E+00	3.95E-05	1.71E-04	3.00E-02	4.81E+00	2.44E-04
FR	2.18E-03	1.36E-02	1.83E-01	1.68E+01	9.24E-02	2.25E-02	7.02E-02	1.13E-03	2.41E-03	1.95E-04	7.03E+00	6.26E-02	1.11E+01	1.12E+00	1.68E-01	9.07E-02	2.52E-01	1.69E-01	2.72E-01	5.63E-01	8.51E-08	3.24E-05	3.77E-02	1.05E+00	1.15E-05
GB	3.16E-04	1.08E-04	1.05E-01	9.91E-02	5.98E-02	8.60E-07	1.83E-02	3.44E-05	9.32E-05	2.39E-07	4.65E+00	5.00E-01	3.74E+00	4.99E-01	4.44E-02	9.91E-03	1.40E-01	2.74E-01	4.35E-03	1.57E-01	3.26E-07	1.50E-06	5.30E-04	2.03E-01	1.62E-06
GE	1.90E-01	8.38E-06	1.45E-02	2.50E-04	6.05E-03	4.95E-08	3.62E-01	5.71E-04	7.39E-03	6.99E-06	2.79E-03	1.24E-04	6.15E-01	1.40E-05	1.21E+00	1.75E-01	2.35E+01	8.19E-04	4.97E-03	1.17E-01	8.38E-05	6.67E-03	2.12E+01	6.82E+00	2.53E-03
GR	4.84E-03	2.54E-05	5.24E-03	5.07E-04	1.13E-03	2.98E-06	8.26E-01	2.92E-02	1.34E+01	1.00E-02	3.10E-03	2.59E-04	1.59E+00	5.24E-04	6.28E+00	9.67E+00	1.21E+00	1.07E-03	2.01E-02	7.66E-01	6.28E-07	3.19E-04	7.16E+01	5.28E+00	7.51E-05
HR	3.10E-03	4.04E-04	4.54E-02	8.41E-03	8.54E-03	3.00E-05	1.07E-01	4.63E-01	9.14E-02	9.75E-04	2.59E-02	3.34E-03	2.42E+01	2.23E-03	2.48E+00	2.42E+01	1.15E-01	4.37E-03	3.53E+01	1.33E+01	1.47E-08	8.41E-05	1.19E-01	1.66E+00	2.14E-05
HU	9.95E-03	1.42E-03	8.57E-02	1.84E-02	1.59E-02	1.05E-05	3.64E-01	1.14E-01	3.80E-01	2.22E-04	5.50E-02	4.35E-03	7.12E+01	2.21E-03	4.74E+01	5.47E+01	2.81E-01	8.64E-03	1.08E+01	2.18E+02	7.17E-08	5.99E-04	1.74E-01	8.15E+00	9.13E-05
IE	4.00E-05	7.94E-06	4.34E-03	6.19E-03	1.81E-03	9.99E-08	2.33E-04	2.15E-06	2.10E-06	5.32E-09	1.68E-01	2.41E-02	3.17E-01	1.53E-01	7.87E-04	6.84E-04	8.89E-03	8.15E-03	4.74E-04	1.04E-02	6.90E-08	1.17E-07	2.14E-05	5.38E-03	2.79E-07
IS	1.19E-03	8.78E-06	1.06E-02	1.34E-03	6.54E-03	1.23E-08	3.16E-04	2.06E-06	1.30E-05	9.02E-09	2.59E-02	1.34E-01	2.17E-01	2.62E-03	1.11E-03	6.93E-04	2.34E-02	3.05E-02	2.23E-04	1.06E-02	6.47E-07	1.20E-06	1.09E-05	1.35E-02	2.78E-06
IT	1.56E-03	3.36E-02	2.25E-02	3.96E-02	4.47E-03	7.93E-03	9.16E-02	2.60E-01	3.17E-01	1.46E-01	8.91E-02	2.98E-03	1.20E+01	1.11E-02	1.01E+00	3.85E+00	7.39E-02	5.67E-03	1.60E+01	3.27E+00	1.02E-08	3.26E-05	2.37E-01	1.11E+00	9.68E-06
KY	2.18E+02	6.88E-08	6.24E-05	3.94E-06	4.06E-05	3.83E-09	9.23E-04	1.78E-06	1.84E-05	7.49E-08	6.17E-05	5.76E-06	8.15E-03	3.94E-06	2.35E-03	3.74E-04	6.43E-02	1.28E-05	2.00E-05	1.10E-03	4.47E+01	3.45E-01	1.55E-02	1.61E-02	7.90E+01
KZ	1.48E+04	5.48E-05	1.85E-01	3.16E-03	1.09E-01	1.95E-07	1.23E+00	9.93E-04	7.56E-03	8.98E-06	2.49E-02	6.31E-03	6.44E+00	3.77E-04	2.13E+00	1.89E-01	4.56E+02	2.74E-02	1.50E-02	7.32E-01	1.36E+01	1.89E+01	2.84E+00	7.61E+01	1.82E+02
LI	1.42E-07	3.28E-02	1.71E-05	3.61E-04	7.65E-06	1.55E-07	7.93E-06	3.49E-07	9.48E-07	1.14E-07	2.54E-04	4.16E-06	1.05E-02	3.35E-05	4.06E-05	7.94E-05	4.57E-05	8.83E-06	2.07E-04	9.69E-04	8.45E-12	1.88E-09	3.33E-06	1.42E-04	6.33E-10
LT	5.53E-03	4.60E-04	3.25E+02	4.16E-02	2.07E+01	3.02E-07	4.12E-01	1.55E-03	6.83E-03	7.51E-06	7.45E-01	8.56E-02	2.51E+02	3.47E-03	1.16E+00	3.59E-01	4.33E+01	1.10E+00	9.20E-02	4.67E+00	5.71E-07	4.16E-05	3.36E-02	1.69E+01	1.67E-05
LU	2.38E-05	2.06E-04	3.60E-03	1.88E+01	1.92E-03	4.85E-07	8.31E-04	9.64E-07	5.45E-06	1.20E-07	2.06E-01	3.65E-04	1.31E-01	2.85E-03	1.62E-03	2.75E-04	4.16E-03	2.42E-03	5.12E-04	5.22E-03	5.35E-10	3.49E-07	2.82E-04	1.23E-02	1.25E-07
LV	5.71E-03	3.79E-04	6.73E+01	3.65E-02	2.93E+02	2.55E-07	2.53E-01	9.43E-04	4.26E-03	4.71E-06	7.23E-01	1.50E-01	1.10E+02	4.28E-03	7.24E-01	2.19E-01	2.45E+01	2.15E+00	5.57E-02	2.81E+00	1.00E-06	7.13E-05	3.79E-02	1.04E+01	2.90E-05
MC	1.39E-08	3.30E-07	8.73E-08	2.20E-06	3.45E-08	2.38E-04	4.03E-07	1.73E-07	2.90E-07	2.50E-08	5.44E-06	2.18E-08	1.26E-04	7.43E-07	4.43E-06	5.95E-06	6.50E-07	8.87E-08	2.90E-05	1.64E-05	1.58E-13	2.32E-10	6.34E-07	7.09E-06	7.75E-11
MD	6.60E-02	4.25E-05	9.87E-02	1.16E-03	1.64E-02	3.42E-07	3.04E+02	1.82E-03	1.58E-02	1.59E-05	7.25E-03	9.66E-04	7.30E+00	8.88E-05	6.13E+01	3.12E-01	3.25E+00	5.36E-03	2.20E-02	9.85E-01	3.59E-07	2.25E-03	2.41E+00	5.80E+01	4.44E-04
ME	7.75E-05	1.13E-05	2.26E-03	3.23E-04	3.56E-04	1.00E-06	3.97E-02	1.23E+01	4.84E-01	7.30E-04	1.62E-03	7.80E-05	1.44E+00	2.48E-04	9.04E-01	1.89E+01	1.49E-02	2.86E-04	1.86E-02	8.78E-01	4.84E-09	3.22E-06	7.46E-02	3.42E-01	6.60E-07
MK	1.92E-04	1.27E-05	8.25E-04	2.50E-04	1.84E-04	6.67E-07	5.75E-02	3.40E-02	9.03E+01	4.74E-04	1.50E-03	6.97E-05	9.55E-01	1.35E-04	1.53E+00	3.90E+01	9.42E-02	4.04E-04	1.40E-02	6.25E-01	2.74E-08	1.02E-05	6.94E-01	4.25E-01	1.98E-06
MT	1.99E-08	2.41E-07	3.85E-06	1.19E-05	8.06E-07	2.87E-08	1.87E-05	4.85E-05	7.34E-05	4.80E-02	3.27E-05	6.27E-07	1.30E-03	1.59E-06	1.27E-04	6.50E-04	9.81E-06	1.42E-06	1.37E-04	2.88E-04	2.19E-12	2.13E-09	5.35E-05	1.92E-04	4.78E-10
NL	1.56E-04	4.50E-04	3.47E-02	8.39E-01	2.62E-02	7.60E-07	6.17E-03	3.74E-05	1.32E-04	6.36E-07	2.16E+02	6.68E-02	1.74E+00	3.66E-02	1.60E-02	8.49E-03	4.78E-02	7.21E-02	3.08E-03	7.61E-02	2.60E-08	2.41E-06	1.31E-03	8.72E-02	9.37E-07
NO	2.06E-02	2.92E-04	4.02E-01	9.70E-02	2.95E-01	1.94E-07	4.73E-02	1.24E-04	6.26E-04	1.57E-06	3.07E+00	3.33E+02	1.22E+01	6.51E-02	1.18E-01	3.19E-02	5.54E+00	8.45E+00	9.45E-03	5.44E-01	8.60E-06	4.36E-05	9.39E-03	9.10E-01	4.50E-05
PL	5.05E-02	9.33E-03	1.40E+01	6.07E-01	2.10E+00	8.22E-06	2.19E+00	3.39E-02	1.24E-01	1.30E-04	5.64E+00	2.86E-01	1.27E+04	1.94E-02	1.53E+01	8.56E+00	4.96E+01	1.92E+00	2.72E+00	2.84E+02	5.87E-07	1.44E-03	1.95E-01	8.44E+01	3.49E-04
PT	4.17E-06	2.14E-06	4.03E-04	4.27E-04	1.35E-04	3.30E-07	3.14E-04	1.97E-06	3.05E-06	4.39E-07	3.18E-03	3.92E-04	1.69E-02	5.15E+02	6.38E-04	7.04E-05	6.21E-04	3.76E-04	7.47E-05	4.20E-04	1.20E-08	1.89E-08	1.52E-04	2.49E-03	4.57E-08
RO	9.73E-02	1.40E-03	1.58E-01	1.47E-02	3.21E-02	8.38E-06	7.31E+01	1.24E-01	1.20E+00	4.80E-04	4.64E-02	5.46E-03	4.71E+01	1.48E-03	1.87E+03	8.07E+01	4.66E+00	1.97E-02	1.38E+00	2.61E+01	6.32E-07	3.43E-03	2.16E+01	8.30E+01	6.49E-04
RS	2.80E-03	2.51E-04	2.52E-02	5.20E-03	5.44E-03	4.81E-06	7.06E-01	2.40E+00	2.68E+01	7.54E-04	2.21E-02	6.86E-04	2.24E+01	1.26E-03	5.14E+01	9.34E+02	1.97E-01	2.85E-03	4.48E-01	1.69E+01	6.72E-08	1.42E-04	1.49E+00	4.50E+00	2.39E-05
RU	3.77E+03	1.64E-03	4.29E+01	1.22E-01	4.27E+01	4.64E-06	1.52E+01	1.60E-02	1.32E-01	1.55E-04	2.07E+00	1.76E+00	4.09E+02	5.11E-02	2.78E+01	3.11E+00	3.15E+04	5.29E+00	3.52E-01	1.58E+01	9.30E-01	3.00E+00	4.57E+01	1.53E+03	4.77E+00
SE	1.38E-02	1.29E-03	4.95E+00	1.88E-01	4.98E+00	1.09E-06	2.51E-01	3.43E-04	2.44E-03	4.87E-06	5.32E+00	1.99E+01	8.75E+01	5.32E-02	5.41E-01	1.09E-01	1.04E+01	3.48E+02	4.08E-02	1.72E+00	7.92E-06	3.45E-05	1.59E-02	4.81E+00	4.11E-05
SI	1.28E-03	3.50E-04	6.47E-03	2.98E-03	1.22E-03	1.58E-05	1.72E-02	4.45E-03	4.47E-03	3.02E-04	7.74E-03	3.04E-04	4.87E+00	1.10E-03	2.22E-01	5.22E-01	3.32E-02	4.70E-04	1.45E+02	1.80E+00	5.17E-09	2.95E-05	1.68E-02	3.65E-01	8.74E-06
SK	1.02E-02	2.02E-03	1.36E-01	3.68E-02	2.38E-02	4.15E-06	2.43E-01	3.67E-02	1.26E-01	7.21E-05	8.73E-02	5.35E-03	3.54E+02	1.72E-03	9.61E+00	9.71E+00	3.37E-01	1.41E-02	1.57E+00	8.23E+02	6.96E-08	5.55E-04	5.08E-02	9.43E+00	9.32E-05
TJ	6.21E+00	1.35E-08	2.55E-05	2.81E-07	1.20E-05	5.96E-10	4.73E-04	2.18E-07	4.79E-06	3.76E-08	4.39E-06	7.28E-07	9.29E-04	8.84E-07	1.17E-03	9.69E-05	2.53E-02	1.88E-06	3.05E-06	1.10E-04	4.51E+02	1.77E+00	6.41E-03	8.52E-03	4.37E+01
TM	1.93E+01	1.52E-06	6.33E-03	7.58E-05	3.33E-03	6.76E-09	3.77E-02	1.80E-05	2.81E-04	9.08E-07	7.74E-04	1.03E-04	1.88E-01	7.39E-06	7.51E-02	6.22E-03	4.67E+00	6.10E-04	3.75E-04	1.80E-02	5.61E+00	4.95E+02	4.83E-01	2.05E+00	8.08E+01
TR	2.06E-01	5.25E-05	1.18E-01	2.62E-03	3.24E-02	1.70E-06	9.25E+00	4.94E-03	2.05E-01	1.64E-03	1.60E-02	2.75E-03	8.83E+00	4.83E-04	2.69E+01	2.46E+00	1.94E+01	8.79E-03	3.90E-02	1.19E+00	6.02E-05	5.67E-03	5.99E+03	6.54E+01	2.00E-03
UA	2.47E+00	2.08E-03	4.18E+00	9.23E-02	9.90E-01	8.67E-06	1.41E+02	5.70E-02	2.14E-01	1.99E-04	5.71E-01	4.68E-02	6.44E+02	3.62E-03	1.68E+02	9.89E+00	3.95E+02	2.60E-01	1.03E+00	8.11E+01	5.78E-05	5.08E-02	3.00E+01	1.17E+04	1.39E-02
UZ	2.27E+02	1.87E-06	7.70E-03	1.12E-04	3.88E-03	7.23E-09	4.98E-02	2.45E-05	2.98E-04	6.56E-07	1.18E-03	2.00E-04	2.74E-01	9.40E-06	1.00E-01	8.01E-03	5.04E+00	9.03E-04	4.75E-04	2.62E-02	6.86E+01	1.02E+02	2.91E-01	2.66E+00	7.47E+02

Table B8. *Source-receptor matrix of IP deposition to EMEP countries in 2024, kg/year. Columns and rows represent sources and receptors, respectively.*

Code	AL	AM	AT	AZ	BA	BE	BG	BY	CH	CY	CZ	DE	DK	EE	ES	FI	FR	GB	GE	GR	HR	HU	IE	IS	IT	KY
AL	4.20E+00	9.59E-06	4.87E-02	1.24E-06	7.54E-01	2.62E-03	5.38E-01	1.09E-02	3.37E-03	5.18E-04	2.87E-01	1.11E-01	9.69E-04	1.18E-04	5.43E-02	2.29E-04	6.79E-02	5.69E-03	3.00E-04	5.46E+00	3.33E-01	8.11E-01	4.92E-04	5.51E-08	3.21E+00	2.51E-07
AM	1.10E-05	4.74E+01	2.76E-04	1.21E+00	1.02E-03	7.12E-05	6.62E-03	5.57E-03	2.59E-05	1.62E-03	1.97E-03	1.96E-03	1.29E-04	2.44E-04	2.91E-05	4.06E-04	1.62E-04	2.32E-04	5.93E+00	1.92E-03	5.80E-04	1.76E-03	4.02E-05	4.01E-08	6.68E-04	1.12E-04
AT	4.71E-03	8.87E-05	2.47E+02	8.28E-06	3.11E+00	3.83E-01	6.15E-02	2.95E-01	5.72E+00	1.31E-05	8.56E+01	1.49E+02	7.95E-02	1.13E-02	1.87E-01	2.53E-02	4.21E+00	4.26E-01	1.84E-03	2.83E-02	1.30E+01	2.35E+01	2.12E-02	4.96E-06	3.70E+01	1.01E-08
AZ	2.09E-05	5.40E+00	1.20E-03	1.69E+01	3.29E-03	2.73E-04	1.50E-02	1.75E-02	1.08E-04	1.68E-03	7.50E-03	7.65E-03	3.52E-04	7.77E-04	5.31E-05	1.41E-03	5.79E-04	1.04E-03	6.65E+00	3.15E-03	1.96E-03	5.85E-03	2.18E-04	1.30E-07	1.41E-03	1.12E-03
BA	1.41E-01	4.13E-05	3.10E+00	5.49E-06	4.66E+02	6.02E-02	4.22E-01	2.31E-01	3.54E-02	7.51E-05	1.42E+01	3.91E+00	3.55E-02	2.58E-03	1.18E-01	5.28E-03	2.70E-01	7.94E-02	8.21E-04	4.28E-01	6.52E+01	2.34E+01	5.38E-03	1.27E-06	9.82E+00	7.66E-08
BE	2.55E-05	1.23E-06	1.58E-01	3.61E-07	1.35E-02	1.61E+02	8.68E-04	5.28E-02	3.71E-01	5.90E-07	6.14E-01	4.59E+01	3.18E-01	1.54E-02	9.00E-01	8.11E-03	7.02E+01	9.63E+00	5.01E-05	1.62E-04	1.40E-02	3.59E-02	2.47E-01	2.93E-05	3.15E-01	8.79E-09
BG	5.82E-02	5.26E-04	5.63E-01	1.18E-04	2.80E+00	1.87E-02	2.48E+02	5.24E-01	2.43E-02	4.17E-03	2.36E+00	1.43E+00	8.05E-03	1.80E-03	3.44E-02	2.92E-03	1.18E-01	3.22E-02	4.65E-02	1.38E+01	1.40E+00	5.42E+00	3.04E-03	4.19E-07	7.27E-01	4.65E-06
BY	5.11E-03	8.29E-04	1.92E+00	4.71E-04	1.46E+00	1.25E+00	4.80E-01	1.33E+03	1.77E-01	6.01E-05	2.83E+01	3.75E+01	2.02E+00	2.49E+00	8.77E-02	2.34E+00	1.94E+00	2.52E+00	1.29E-02	6.77E-02	1.41E+00	9.33E+00	1.63E-01	5.40E-05	8.84E-01	6.13E-06
CH	2.85E-04	9.07E-07	3.06E+00	1.27E-07	4.78E-02	3.10E-01	7.44E-04	1.41E-02	5.78E+01	5.55E-06	1.43E+00	4.00E+01	1.27E-02	2.28E-03	3.47E-01	6.34E-03	2.28E+01	4.45E-01	3.54E-05	4.71E-03	1.45E-01	1.07E-01	2.74E-02	7.77E-06	3.58E+01	2.87E-09
CY	2.72E-05	2.09E-04	4.48E-04	2.45E-05	1.30E-03	1.42E-04	1.13E-02	1.70E-03	6.47E-05	1.90E+01	2.92E-03	3.39E-03	5.12E-05	2.25E-05	2.51E-04	3.02E-05	8.18E-04	2.15E-04	1.02E-04	3.30E-02	1.05E-03	2.16E-03	1.40E-05	4.00E-09	4.76E-03	8.09E-08
CZ	3.87E-03	1.72E-04	4.28E+01	2.16E-05	3.66E+00	1.33E+00	8.45E-02	1.24E+00	2.00E+00	9.16E-06	1.27E+03	2.58E+02	2.81E-01	4.36E-02	2.19E-01	7.04E-02	7.74E+00	1.35E+00	2.62E-03	2.83E-02	6.80E+00	2.99E+01	6.05E-02	7.05E-06	3.82E+00	1.66E-08
DE	1.39E-03	4.76E-05	3.92E+01	2.56E-05	8.27E-01	7.81E+01	3.20E-02	1.60E+00	3.19E+01	1.19E-05	2.13E+02	4.41E+03	1.08E+01	2.85E-01	3.19E+00	2.43E-01	1.66E+02	4.03E+01	1.48E-03	8.10E-03	1.16E+00	4.15E+00	1.49E+00	1.72E-04	1.53E+01	1.53E-07
DK	8.70E-05	9.03E-07	2.09E-01	3.84E-06	3.27E-02	2.63E+00	2.18E-03	6.31E-01	1.16E-01	2.24E-07	2.74E+00	5.67E+01	1.15E+02	1.23E-01	2.61E-01	9.27E-02	3.77E+00	7.34E+00	1.04E-05	5.18E-04	3.61E-02	2.01E-01	6.44E-01	4.37E-04	7.31E-02	2.27E-07
EE	2.74E-04	6.94E-06	2.77E-01	6.96E-06	1.15E-01	3.58E-01	1.12E-02	7.71E+00	4.37E-02	1.78E-06	3.39E+00	8.77E+00	1.18E+00	2.12E+02	3.66E-02	2.03E+01	5.39E-01	7.55E-01	8.65E-05	2.85E-03	1.37E-01	6.55E-01	4.04E-02	3.87E-05	6.82E-02	2.53E-06
ES	8.40E-05	1.53E-06	4.17E-02	1.40E-07	3.46E-02	2.65E-01	1.05E-03	2.48E-02	5.86E-02	1.22E-06	1.90E-01	1.53E+00	5.75E-02	1.82E-03	1.19E+03	5.28E-04	1.95E+01	1.95E+00	5.94E-05	3.39E-04	6.99E-02	2.76E-02	4.02E-01	1.63E-04	1.61E+00	3.07E-08
FI	3.68E-04	3.81E-05	4.35E-01	2.33E-05	1.73E-01	7.41E-01	2.14E-02	8.56E+00	8.82E-02	2.52E-06	6.30E+00	1.58E+01	2.49E+00	5.04E+01	1.80E-01	1.74E+03	1.30E+00	1.76E+00	4.13E-04	3.76E-03	2.12E-01	8.60E-01	1.13E-01	6.35E-04	1.33E-01	1.58E-04
FR	1.21E-03	1.97E-05	1.26E+00	2.06E-06	3.50E-01	3.75E+01	7.60E-03	2.96E-01	1.78E+01	1.06E-05	5.00E+00	1.44E+02	1.05E+00	5.00E-02	7.18E+01	3.99E-02	1.80E+03	3.22E+01	7.30E-04	1.48E-02	1.01E+00	4.24E-01	2.28E+00	2.64E-04	4.08E+01	6.29E-08
GB	1.65E-05	5.27E-07	8.40E-02	2.73E-06	1.58E-02	6.19E+00	9.66E-04	9.33E-02	6.26E-02	1.10E-07	8.06E-01	1.15E+01	1.44E+00	4.31E-02	3.67E+00	3.35E-02	3.17E+01	1.04E+03	7.47E-06	7.61E-05	1.87E-02	9.82E-02	6.50E+01	5.95E-03	1.08E-01	1.92E-07
GE	5.54E-04	2.85E+00	3.84E-02	5.14E-01	1.08E-01	5.46E-03	4.34E-01	1.23E-01	3.22E-03	3.57E-03	1.40E-01	1.68E-01	2.40E-03	3.91E-03	4.63E-04	6.11E-03	1.20E-02	1.81E-02	1.05E+02	7.83E-02	6.41E-02	1.53E-01	3.35E-03	3.08E-07	2.74E-02	8.62E-04
GR	3.51E-01	2.25E-04	1.03E-01	4.76E-05	7.08E-01	6.65E-03	1.63E+01	1.27E-01	6.80E-03	1.42E-02	5.55E-01	2.90E-01	3.93E-03	5.88E-04	1.09E-01	1.11E-03	1.35E-01	1.33E-02	1.37E-02	2.99E+02	3.81E-01	1.38E+00	1.40E-03	2.07E-07	3.35E+00	2.07E-06
HR	5.77E-02	7.04E-05	1.01E+01	8.04E-06	9.12E+01	6.01E-02	2.20E-01	2.33E-01	8.13E-02	4.26E-05	1.72E+01	5.52E+00	3.04E-02	3.79E-03	2.35E-01	7.61E-03	5.33E-01	8.30E-02	1.46E-03	1.89E-01	3.08E+02	3.99E+01	5.32E-03	1.16E-06	2.17E+01	2.22E-08
HU	4.50E-02	3.36E-04	2.43E+01	7.86E-05	2.44E+01	1.15E-01	7.73E-01	6.76E-01	2.17E-01	2.88E-05	3.98E+01	1.16E+01	4.82E-02	9.12E-03	1.12E-01	1.77E-02	6.86E-01	1.45E-01	3.96E-03	3.72E-01	4.98E+01	5.56E+02	8.44E-03	1.31E-06	5.91E+00	2.07E-08
IE	6.32E-07	3.20E-08	8.73E-03	1.64E-07	1.11E-03	2.00E-01	3.27E-05	5.92E-03	3.57E-03	1.93E-09	8.99E-02	7.80E-01	6.18E-02	7.71E-04	6.01E-01	9.34E-04	2.11E+00	2.27E+01	3.66E-07	1.75E-06	1.61E-03	7.53E-03	4.06E+02	3.19E-03	9.06E-03	2.18E-08
IS	9.86E-07	1.10E-07	2.47E-03	5.04E-07	6.19E-04	2.92E-02	9.66E-05	1.05E-02	2.06E-03	1.55E-08	3.35E-02	2.67E-01	5.41E-02	7.20E-03	1.52E-02	2.07E-02	8.84E-02	3.20E-01	8.41E-07	1.72E-05	7.54E-04	4.29E-03	2.09E-01	3.09E+00	1.75E-03	6.22E-07
IT	1.61E-01	3.62E-05	1.76E+01	3.32E-06	1.54E+01	2.55E-01	1.87E-01	1.06E-01	6.25E+00	2.95E-04	7.77E+00	2.56E+01	4.08E-02	2.95E-03	2.70E+00	8.53E-03	1.39E+01	4.38E-01	1.01E-03	1.44E+00	3.11E+01	5.16E+00	3.33E-02	7.46E-06	1.70E+03	5.64E-08
KY	1.70E-06	1.06E-02	2.74E-04	3.99E-03	5.34E-04	1.79E-04	8.84E-04	7.94E-04	3.51E-05	2.78E-05	2.60E-03	3.89E-03	7.12E-05	7.15E-05	3.62E-05	1.60E-04	3.21E-04	7.92E-04	6.98E-03	1.31E-04	3.37E-04	1.01E-03	1.68E-04	6.42E-08	4.36E-04	3.38E+02
KZ	5.37E-04	3.11E-01	1.57E-01	2.59E-01	1.25E-01	5.58E-02	3.61E-01	1.73E+00	1.48E-02	1.48E-03	1.18E+00	1.41E+00	5.05E-02	1.09E-01	3.55E-03	1.59E-01	1.22E-01	1.34E-01	5.82E-01	6.19E-02	1.30E-01	7.45E-01	1.25E-02	7.59E-06	6.91E-02	1.00E+02
LI	1.10E-06	1.77E-09	6.43E-02	5.31E-10	2.41E-04	1.29E-03	2.55E-06	4.39E-05	2.41E-01	2.42E-08	1.36E-02	2.87E-01	4.53E-05	1.19E-05	9.79E-04	4.14E-05	3.02E-02	1.70E-03	6.37E-08	1.98E-05	6.20E-04	1.01E-03	8.76E-05	3.01E-08	1.15E-01	1.44E-11
LT	9.90E-04	1.84E-05	8.18E-01	3.89E-05	3.81E-01	9.13E-01	4.21E-02	7.70E+01	9.54E-02	3.90E-06	1.07E+01	2.38E+01	2.75E+00	1.88E+00	5.23E-02	1.84E+00	1.28E+00	2.03E+00	4.89E-04	1.56E-02	4.47E-01	2.50E+00	1.09E-01	3.62E-05	1.90E-01	5.89E-07
LU	1.82E-06	1.72E-07	2.79E-02	4.49E-08	1.18E-03	3.69E+00	8.94E-05	5.86E-03	9.14E-02	5.94E-08	9.45E-02	8.68E+00	1.81E-02	1.26E-03	8.93E-02	7.74E-04	7.42E+00	2.92E-01	6.54E-06	1.86E-05	1.64E-03	3.35E-03	1.15E-02	1.51E-06	5.45E-02	4.58E-10
LV	6.37E-04	1.53E-05	6.05E-01	2.46E-05	2.46E-01	8.92E-01	3.12E-02	3.50E+01	8.68E-02	4.34E-06	7.81E+00	2.03E+01	2.68E+00	1.66E+01	6.02E-02	5.14E+00	1.19E+00	1.77E+00	3.76E-04	9.89E-03	2.94E-01	1.54E+00	7.70E-02	4.50E-05	1.38E-01	1.54E-06
MC	2.14E-07	2.21E-10	4.15E-05	1.64E-11	2.26E-05	1.12E-05	3.76E-07	6.41E-07	1.22E-04	5.55E-10	6.58E-05	6.41E-04	7.28E-07	7.72E-08	2.33E-04	2.12E-07	1.49E-02	1.23E-05	7.04E-09	1.84E-06	6.94E-05	1.83E-05	1.14E-06	1.61E-10	1.82E-02	3.84E-13
MD	1.41E-03	2.30E-03	9.20E-02	3.86E-04	1.84E-01	9.59E-03	7.54E-01	1.21E+00	6.25E-03	4.75E-04	5.00E-01	4.66E-01	1.21E-02	6.66E-03	4.80E-03	9.65E-03	3.08E-02	1.59E-02	2.59E-02	7.35E-02	1.17E-01	6.21E-01	1.11E-03	5.04E-07	1.16E-01	2.02E-06
ME	4.88E-01	3.65E-06	1.04E-01	4.24E-07	8.40E+00	3.79E-03	2.47E-01	2.25E-02	3.11E-03	5.91E-05	6.39E-01	2.14E-01	1.09E-03	1.91E-04	3.12E-02	3.26E-04	3.27E-02	5.38E-03	1.22E-04	4.50E-01	1.20E+00	1.67E+00	4.00E-04	7.27E-08	2.71E+00	9.15E-08
MK	7.46E-01	1.26E-05	6.26E-02	1.79E-06	5.71E-01	2.79E-03	4.13E+00	1.03E-02	2.54E-03	3.53E-04	3.71E-01	1.61E-01	1.01E-03	1.29E-04	1.32E-02	3.10E-04	2.14E-02	4.38E-03	9.68E-04	9.90E+00	2.45E-01	1.13E+00	3.42E-04	4.02E-08	5.66E-01	7.29E-07
MT	3.48E-05	1.95E-09	3.74E-04	3.78E-10	1.93E-03	1.45E-04	6.41E-05	2.22E-05	1.04E-04	5.87E-08	1.03E-03	2.66E-03	1.88E-05	9.75E-07	1.18E-03	2.58E-06	2.03E-03	1.44E-04	2.55E-07	4.46E-04	1.81E-03	5.95E-04	8.53E-06	3.53E-09	3.97E-02	4.64E-12
NL	5.55E-05	5.03E-07	9.91E-02	8.66E-07	2.72E-02	5.95E+01	1.05E-03	5.20E-02	1.23E-01	3.36E-07	7.30E-01	8.14E+01	5.99E-01	1.44E-02	6.82E-01	7.56E-03	2.56E+01	1.74E+01	1.60E-05	2.44E-04	1.96E-02	7.60E-02	3.87E-01	4.62E-05	9.11E-02	1.45E-08
NO	1.44E-04	1.86E-05	1.93E-01	8.95E-06	7.42E-02	3.41E+00	8.08E-03	5.53E-01	9.09E-02	1.13E-06	2.39E+00	2.68E+01	1.14E+01	6.70E-01	5.15E-01	8.18E+00	5.62E+00	1.62E+01	2.82E-04	2.45E-03	6.47E-02	3.39E-01	1.23E+00	1.02E-02	6.73E-02	2.26E-05
PL	1.49E-02	8.84E-04	2.04E+01	2.19E-04	7.96E+00	8.18E+00	3.07E-01	6.61E+01	1.68E+00	5.34E-05	5.46E+02	4.20E+02	8.37E+00	6.93E-01	4.34E-01	1.14E+00	1.42E+01	1.36E+01	1.40E-02	1.18E-01	1.06E+01	6.56E+01	8.06E-01	1.20E-04	4.76E+00	5.40E-07
PT	2.08E-06	7.82E-09	6.26E-04	5.06E-09	7.94E-04	8.10E-03	2.61E-05	7.10E-04	1.39E-03	4.28E-08	5.75E-03	4.43E-02	1.36E-03	2.11E-05	2.58E+01	1.85E-05	1.39E-01	9.39E-02	3.52E-07	6.68E-06	1.28E-03	3.22E-04	5.56E-02	3.95E-05	1.98E-02	9.94E-09
RO	6.86E-02	4.19E-03	5.80E+00	6.20E-04	1.70E+01	1.10E-01	3.20E+01	2.43E+00	2.78E-01	2.61E-03	1.27E+01	1.12E+01	7.66E-02	1.57E-02	1.05E-01	2.74E-02	7.25E-01	1.91E-01	7.53E-02	1.98E+00	1.23E+01	8.18E+01	1.23E-02	3.40E-06	4.26E+00	3.56E-06
RS	5.09E-01	1.12E-04	2.05E+00	1.87E-05	4.91E+01	5.29E-02	1.41E+01	2.93E-01	4.97E-02	1.58E-04	9.97E+00	3.60E+00	1.32E-02	3.17E-03	6.84E-02	5.32E-03	2.49E-01	7.32E-02	2.30E-03	3.35E+00	1.96E+01	4.44E+01	5.55E-03	5.89E-07	3.01E+00	1.52E-06
RU	1.07E-02	6.84E-01	3.20E+00	1.36E+00	2.15E+00	2.95E+00	4.45E+00	3.40E+02	3.58E-01	1.41E-02	3.51E+01	6.70E+01	6.05E+00	8.80E+01	3.65E-01	2.18E+02	4.47E+00	6.05E+00	9.44E+00	1.18E+00	2.19E+00	1.21E+01	3.31E-01	8.68E-04	1.49E+00	4.85E+00
SE	3.62E-04	1.42E-05	7.78E-01	2.41E-05	1.93E-01	5.66E+00	2.68E-02	4.15E+00	3.58E-01	1.32E-06	1.05E+01	1.15E+02	6.47E+01	7.02E+00	6.65E-01	6.16E+01	8.24E+00	1.47E+01	1.60E-04	7.99E-03	2.45E-01	1.04E+00	9.42E-01	2.97E-03	2.95E-01	1.54E-05
SI	4.33E-03	2.71E-05	1.88E+01	2.34E-06	2.73E+00	1.71E-02	2.50E-02	4.71E-02	6.44E-02	6.68E-06	4.65E+00	3.51E+00	4.24E-03	1.07E-03	8.86E-02	2.17E-03	2.57E-01	2.31E-02	5.89E-04	1.72E-02	4.98E+01	5.42E+00	1.22E-03	3.03E-07	1.71E+01	3.59E-09
SK	1.53E-02	3.26E-04	1.34E+01	6.39E-05	7.72E+00	2.15E-01	2.56E-01	1.18E+00	3.44E-01	8.89E-06	1.19E+02	2.05E+01	8.61E-02	1.14E-02	6.07E-02	2.17E-02	1.19E+00	3.16E-01	3.46E-03	1.24E-01	8.17E+00	1.15E+02	1.66E-02	2.97E-06	2.74E+00	1.48E-08
TJ	3.03E-07	4.08E-03	3.21E-05	1.91E-03	7.91E-05	1.12E-05	2.43E-04	2.92E-04	5.79E-06	1.86E-05	1.98E-04	2.72E-04	6.08E-06	1.27E-05	8.32E-06	2.82E-05	2.73E-05	4.33E-05	2.82E-03	3.57E-05	4.70E-05	1.37E-04	9.22E-06	4.55E-09	8.42E-05	6.52E+00
TM	1.32E-05	2.08E-01	2.27E-03	1.64E-01	2.81E-03	7.95E-04	1.41E-02	4.27E-02	2.28E-04	7.37E-04	1.63E-02	2.14E-02	8.06E-04	2.03E-03	9.40E-05	4.07E-03	1.74E-03	2.24E-03	1.78E-01	2.52E-03	2.06E-03	9.98E-03	3.53E-04	1.84E-07	1.64E-03	5.36E-02
TR	1.01E-02	1.00E+01	2.43E-01	2.08E-01	6.01E-01	2.94E-02	1.50E+01	1.58E+00	1.37E-02	1.27E+00	1.26E+00	1.20E+00	3.07E-02	2.12E-02	5.22E-02	3.15E-02	1.13E-01	6.18E-02	4.60E+00	1.16E+01	4.01E-01	1.55E+00	5.03E-03	2.04E-06	6.10E-01	2.28E-04
UA	2.13E-02	1.83E-02	6.31E+00	7.41E-03	7.78E+00	1.22E+00	4.73E+00	1.11E+02	4.21E-01	4.43E-03	5.43E+01	4.31E+01	9.69E-01	4.95E-01	1.30E-01	6.62E-01	2.74E+00	2.19E+00	4.35E-01	1.09E+00	7.06E+00	6.43E+01	1.42E-01	3.32E-05	4.14E+00	6.67E-04
UZ	1.75E-05	1.17E-01	4.61E-03	5.75E-02	5.20E-03	2.05E-03	1.85E-02	5.56E-02	4.53E-04	3.93E-04	3.66E-02	4.94E-02	1.61E-03	2.92E-03	1.03E-04	4.90E-03	3.77E-03	6.40E-03	1.08E-01	2.24E-03	4.01E-03	2.00E-02	9.96E-04	4.26E-07	2.12E-03	3.28E+01

Table B8 *(continued)*

Code	KZ	LI	LT	LU	LV	MC	MD	ME	MK	MT	NL	NO	PL	PT	RO	RS	RU	SE	SI	SK	TJ	TM	TR	UA	UZ
AL	6.15E-05	1.87E-05	1.09E-03	2.79E-04	3.89E-04	4.24E-06	4.97E-02	1.19E+00	9.74E+00	1.76E-03	1.74E-03	6.19E-05	7.06E-01	1.57E-03	1.25E+00	4.47E+01	4.76E-02	5.21E-04	2.09E-02	3.88E-01	4.85E-09	7.01E-07	1.37E+00	3.34E-01	3.39E-07
AM	2.25E-02	1.93E-07	7.65E-04	5.25E-06	5.20E-04	5.03E-09	1.11E-02	1.45E-05	4.94E-04	6.28E-07	6.42E-05	1.05E-05	2.19E-02	2.66E-06	3.85E-02	5.64E-03	6.75E-01	1.20E-04	1.91E-04	2.27E-03	1.50E-05	1.87E-03	1.98E+01	3.23E-01	6.76E-04
AT	3.38E-03	9.76E-02	7.50E-02	9.70E-02	3.24E-02	5.08E-05	6.98E-02	9.73E-03	3.73E-02	3.55E-04	2.08E-01	3.61E-03	3.22E+01	1.95E-02	1.15E+00	2.61E+00	2.67E-01	3.11E-02	3.65E+01	1.97E+01	7.97E-09	1.70E-05	7.28E-02	1.80E+00	1.02E-05
AZ	1.22E+00	8.52E-07	2.16E-03	2.16E-05	1.63E-03	9.16E-09	2.57E-02	3.79E-05	9.27E-04	9.61E-07	2.52E-04	3.37E-05	5.63E-02	4.33E-06	8.87E-02	1.46E-02	1.59E+01	3.59E-04	6.84E-04	7.17E-03	2.28E-04	8.56E-02	7.45E+00	8.72E-01	1.61E-02
BA	1.34E-03	2.40E-04	4.38E-02	9.12E-03	1.33E-02	1.69E-05	2.23E-01	1.09E+00	5.56E-01	1.10E-03	3.86E-02	4.49E-03	2.00E+01	5.32E-03	5.57E+00	5.45E+01	1.15E-01	1.12E-02	1.29E+00	9.78E+00	5.19E-09	7.73E-06	4.59E-01	2.27E+00	4.14E-06
BE	1.78E-04	1.29E-03	3.27E-02	4.92E+00	3.76E-02	8.04E-06	9.65E-03	6.94E-05	3.47E-04	2.35E-06	1.38E+01	1.27E-02	1.28E+00	9.76E-02	2.83E-02	1.74E-02	5.81E-02	6.87E-02	1.17E-02	5.97E-02	1.45E-09	6.43E-07	4.57E-03	1.45E-01	3.97E-07
BG	1.19E-02	1.73E-04	1.76E-02	3.06E-03	6.76E-03	2.34E-06	8.03E+00	5.42E-02	5.04E+00	7.88E-04	1.49E-02	6.72E-04	6.50E+00	2.14E-03	1.30E+02	5.75E+01	3.89E+00	4.07E-03	2.11E-01	2.76E+00	2.26E-07	2.15E-04	6.00E+01	2.43E+01	1.16E-04
BY	1.30E-01	1.42E-03	4.88E+01	9.48E-02	1.85E+01	4.86E-06	9.80E+00	1.36E-02	1.06E-01	1.69E-05	1.10E+00	1.08E-01	5.21E+02	1.25E-02	2.09E+01	3.45E+00	1.12E+02	1.29E+00	5.62E-01	1.41E+01	1.60E-06	2.93E-04	2.17E+00	1.06E+03	1.70E-04
CH	6.86E-05	2.85E-01	6.43E-03	9.84E-02	4.65E-03	1.25E-04	3.57E-03	2.95E-04	1.40E-03	1.06E-04	1.17E-01	5.37E-04	1.61E+00	2.52E-02	1.51E-02	2.97E-02	1.83E-02	6.92E-03	1.11E-01	1.12E-01	5.49E-10	2.13E-07	3.76E-03	6.47E-02	1.36E-07
CY	1.17E-04	3.56E-07	9.78E-05	2.15E-05	5.31E-05	2.50E-08	1.54E-02	2.71E-05	7.18E-04	1.63E-05	8.55E-05	4.11E-06	1.59E-02	9.40E-06	4.31E-02	4.97E-03	2.33E-02	1.95E-05	2.37E-04	1.95E-03	2.41E-08	1.88E-06	8.09E+00	7.82E-02	1.04E-06
CZ	5.49E-03	1.69E-02	3.55E-01	4.11E-01	1.58E-01	1.56E-05	1.01E-01	1.12E-02	5.43E-02	8.89E-05	6.25E-01	1.47E-02	2.78E+02	2.63E-02	1.90E+00	4.54E+00	7.68E-01	1.35E-01	4.02E+00	7.60E+01	2.02E-08	3.67E-05	6.75E-02	3.39E+00	2.01E-05
DE	5.09E-03	2.09E-01	9.99E-01	1.93E+01	8.56E-01	9.17E-05	1.66E-01	3.46E-03	1.36E-02	8.02E-05	7.14E+01	2.81E-01	1.83E+02	3.75E-01	8.42E-01	1.03E+00	2.13E+00	1.53E+00	1.02E+00	6.79E+00	7.47E-08	1.59E-05	8.09E-02	3.92E+00	9.92E-06
DK	2.28E-04	6.91E-04	6.97E-01	1.30E-01	5.42E-01	1.07E-06	3.54E-02	2.43E-04	1.34E-03	1.51E-06	3.60E+00	6.50E-01	1.56E+01	4.88E-02	1.31E-01	7.25E-02	8.86E-01	3.33E+00	1.95E-02	3.81E-01	6.20E-08	2.57E-07	1.02E-03	6.69E-01	2.27E-07
EE	1.94E-03	3.07E-04	9.15E+00	1.97E-02	4.34E+01	5.41E-07	1.28E-01	6.78E-04	5.00E-03	2.52E-06	3.74E-01	1.78E-01	3.89E+01	7.70E-03	5.76E-01	2.28E-01	3.60E+01	3.20E+00	6.55E-02	1.28E+00	6.49E-07	5.87E-06	5.62E-02	5.10E+00	4.73E-06
ES	1.22E-04	1.75E-04	1.40E-02	1.69E-02	1.00E-02	8.85E-05	1.13E-02	2.55E-04	6.83E-04	2.01E-04	1.43E-01	7.61E-03	6.37E-01	7.28E+01	3.22E-02	1.63E-02	2.47E-02	2.09E-02	3.79E-02	3.43E-02	4.21E-09	4.07E-07	7.01E-03	1.20E-01	2.67E-07
FI	8.99E-03	5.98E-04	6.81E+00	4.40E-02	1.74E+01	1.23E-06	2.76E-01	9.10E-04	6.75E-03	4.26E-06	7.78E-01	2.20E+00	5.91E+01	5.97E-02	8.85E-01	3.19E-01	1.58E+02	2.33E+01	1.07E-01	1.85E+00	2.04E-05	2.96E-05	9.95E-02	7.27E+00	5.66E-05
FR	1.51E-03	1.27E-02	1.55E-01	7.62E+00	1.35E-01	1.28E-02	7.31E-02	1.86E-03	6.63E-03	4.06E-04	6.93E+00	6.53E-02	9.98E+00	3.18E+00	2.55E-01	2.11E-01	3.11E-01	2.53E-01	5.87E-01	5.30E-01	1.05E-08	5.50E-06	5.58E-02	1.16E+00	3.46E-06
GB	1.47E-04	2.45E-04	8.87E-02	1.27E-01	8.94E-02	4.40E-06	2.04E-02	7.17E-05	2.19E-04	1.10E-06	4.08E+00	3.96E-01	3.60E+00	1.11E+00	6.41E-02	2.80E-02	1.59E-01	3.54E-01	1.35E-02	1.65E-01	3.74E-08	1.53E-07	5.95E-04	2.17E-01	1.31E-07
GE	1.77E-01	2.64E-05	1.33E-02	4.75E-04	8.60E-03	1.09E-07	3.87E-01	1.16E-03	2.03E-02	7.52E-06	4.50E-03	1.14E-04	5.77E-01	3.15E-05	1.85E+00	4.96E-01	3.11E+01	1.51E-03	2.21E-02	1.18E-01	6.45E-05	2.09E-03	3.60E+01	7.05E+00	1.22E-03
GR	4.44E-03	3.93E-05	5.42E-03	8.28E-04	2.13E-03	5.02E-06	1.14E+00	2.94E-02	1.21E+01	8.26E-03	5.16E-03	2.79E-04	1.67E+00	3.74E-03	8.97E+00	1.46E+01	1.62E+00	2.08E-03	4.06E-02	7.15E-01	3.46E-07	1.22E-04	9.56E+01	6.41E+00	6.91E-05
HR	2.61E-03	5.84E-04	4.97E-02	1.04E-02	1.75E-02	5.28E-05	1.33E-01	2.84E-01	2.18E-01	1.25E-03	3.51E-02	3.33E-03	2.26E+01	7.93E-03	4.01E+00	3.09E+01	1.68E-01	1.07E-02	3.70E+01	1.02E+01	6.22E-09	1.35E-05	2.34E-01	1.94E+00	7.63E-06
HU	9.17E-03	1.68E-03	1.04E-01	2.07E-02	3.88E-02	2.28E-05	4.98E-01	1.39E-01	8.39E-01	3.08E-04	6.94E-02	3.92E-03	6.92E+01	6.47E-03	5.43E+01	6.76E+01	4.64E-01	2.39E-02	1.33E+01	1.44E+02	3.26E-08	8.84E-05	4.18E-01	8.37E+00	3.67E-05
IE	1.09E-05	1.51E-05	3.71E-03	7.31E-03	2.54E-03	3.61E-07	3.14E-04	3.82E-06	5.32E-06	4.43E-08	1.50E-01	1.15E-02	3.19E-01	2.86E-01	1.68E-03	2.15E-03	1.05E-02	9.77E-03	1.44E-03	1.34E-02	4.13E-09	8.95E-09	1.14E-05	7.15E-03	8.95E-09
IS	8.55E-05	1.01E-05	8.35E-03	1.46E-03	8.94E-03	2.11E-08	4.82E-04	3.48E-06	3.25E-05	1.54E-08	2.33E-02	7.74E-02	1.83E-01	4.63E-03	2.35E-03	1.47E-03	1.47E-02	3.83E-02	4.13E-04	9.51E-03	9.91E-08	8.57E-08	3.58E-05	1.63E-02	2.33E-07
IT	1.35E-03	3.39E-02	2.39E-02	5.08E-02	8.89E-03	5.87E-03	1.03E-01	2.02E-01	6.14E-01	9.03E-02	1.31E-01	2.83E-03	1.12E+01	4.95E-02	1.62E+00	7.67E+00	1.09E-01	1.34E-02	2.23E+01	2.72E+00	4.31E-09	5.74E-06	5.99E-01	1.27E+00	3.49E-06
KY	1.16E+02	2.61E-07	9.84E-05	1.26E-05	9.49E-05	5.31E-09	1.61E-03	4.94E-06	5.52E-05	5.67E-08	1.68E-04	5.98E-06	1.22E-02	6.34E-06	5.79E-03	1.67E-03	1.18E-01	3.17E-05	1.21E-04	1.57E-03	2.01E+01	1.52E-01	7.12E-02	2.54E-02	2.59E+01
KZ	3.70E+03	1.14E-04	1.97E-01	4.93E-03	1.80E-01	4.03E-07	1.88E+00	2.38E-03	1.75E-02	8.13E-06	4.08E-02	5.67E-03	6.96E+00	5.51E-04	4.23E+00	4.93E-01	4.62E+02	4.65E-02	4.94E-02	8.00E-01	6.48E+00	3.68E+00	7.41E+00	7.76E+01	3.87E+01
LI	1.46E-07	1.71E-02	2.32E-05	4.36E-04	1.88E-05	3.45E-07	1.27E-05	9.16E-07	4.82E-06	2.22E-07	4.80E-04	2.69E-06	1.16E-02	8.70E-05	8.00E-05	1.83E-04	8.21E-05	3.80E-05	5.43E-04	9.64E-04	3.06E-12	3.76E-10	1.15E-05	2.25E-04	2.36E-10
LT	5.84E-03	7.10E-04	2.12E+02	5.33E-02	2.50E+01	9.11E-07	6.22E-01	2.34E-03	2.10E-02	1.03E-05	9.21E-01	9.49E-02	2.16E+02	9.54E-03	2.32E+00	7.98E-01	4.39E+01	1.55E+00	2.12E-01	4.57E+00	2.39E-07	8.20E-06	1.39E-01	2.20E+01	6.10E-06
LU	2.10E-05	2.53E-04	3.68E-03	7.24E+00	3.58E-03	1.30E-06	1.14E-03	4.27E-06	2.29E-05	4.23E-07	2.46E-01	4.97E-04	1.47E-01	8.22E-03	3.09E-03	1.14E-03	6.51E-03	4.94E-03	1.90E-03	6.55E-03	9.05E-11	7.31E-08	4.52E-04	1.71E-02	4.51E-08
LV	5.14E-03	6.16E-04	5.88E+01	4.86E-02	3.02E+02	8.16E-07	3.86E-01	1.53E-03	1.32E-02	6.79E-06	8.82E-01	1.86E-01	1.11E+02	1.16E-02	1.50E+00	5.09E-01	2.97E+01	3.34E+00	1.41E-01	3.01E+00	4.43E-07	1.13E-05	1.35E-01	1.49E+01	8.12E-06
MC	9.91E-09	3.09E-07	1.09E-07	2.50E-06	8.30E-08	1.02E-04	4.39E-07	2.68E-07	8.87E-07	5.24E-08	7.22E-06	1.31E-08	1.18E-04	4.78E-06	7.04E-06	1.58E-05	9.14E-07	2.49E-07	5.25E-05	1.45E-05	7.27E-14	3.85E-11	1.41E-06	7.47E-06	2.41E-11
MD	8.86E-02	4.73E-05	7.24E-02	1.17E-03	2.33E-02	6.95E-07	2.07E+02	2.35E-03	3.49E-02	2.10E-05	8.41E-03	8.72E-04	5.41E+00	2.11E-04	5.49E+01	5.57E-01	4.79E+00	7.49E-03	3.64E-02	5.72E-01	2.34E-07	6.25E-04	5.50E+00	5.57E+01	2.76E-04
ME	7.09E-05	1.94E-05	2.53E-03	4.95E-04	6.79E-04	2.10E-06	4.65E-02	5.10E+00	8.31E-01	7.50E-04	2.56E-03	9.83E-05	1.39E+00	1.09E-03	1.31E+00	2.41E+01	1.64E-02	6.01E-04	3.76E-02	7.67E-01	1.81E-09	5.44E-07	1.72E-01	3.81E-01	2.84E-07
MK	1.48E-04	1.65E-05	8.93E-04	3.58E-04	3.60E-04	1.23E-06	8.79E-02	3.23E-02	6.98E+01	5.07E-04	2.30E-03	7.76E-05	9.20E-01	5.48E-04	2.32E+00	4.48E+01	1.20E-01	6.63E-04	2.30E-02	5.39E-01	1.24E-08	2.02E-06	1.81E+00	5.06E-01	1.06E-06
MT	2.89E-08	5.02E-07	6.42E-06	2.19E-05	2.24E-06	5.36E-08	3.48E-05	5.88E-05	1.93E-04	2.10E-02	7.69E-05	6.63E-07	1.97E-03	2.45E-05	3.09E-04	1.81E-03	2.04E-05	5.04E-06	3.96E-04	3.54E-04	2.07E-12	1.15E-09	1.96E-04	3.47E-04	6.51E-10
NL	1.04E-04	5.07E-04	2.76E-02	6.48E-01	3.01E-02	2.51E-06	5.92E-03	1.55E-04	7.33E-04	1.99E-06	1.07E+02	5.50E-02	1.99E+00	9.71E-02	3.15E-02	3.95E-02	5.60E-02	8.57E-02	1.06E-02	1.14E-01	3.68E-09	2.93E-07	1.98E-03	8.63E-02	1.78E-07
NO	3.80E-03	5.17E-04	3.93E-01	1.26E-01	4.91E-01	1.08E-06	7.59E-02	3.57E-04	2.83E-03	2.51E-06	3.47E+00	2.05E+02	1.45E+01	1.27E-01	2.84E-01	1.27E-01	4.88E+00	1.33E+01	3.07E-02	6.40E-01	3.52E-06	6.39E-06	1.76E-02	1.29E+00	9.99E-06
PL	4.53E-02	1.31E-02	1.27E+01	7.55E-01	3.43E+00	1.98E-05	3.09E+00	4.65E-02	2.74E-01	1.75E-04	7.62E+00	3.02E-01	7.44E+03	6.00E-02	2.49E+01	1.50E+01	4.69E+01	2.97E+00	5.21E+00	2.21E+02	3.87E-07	2.33E-04	4.99E-01	1.00E+02	1.26E-04
PT	1.39E-06	4.22E-06	3.47E-04	5.37E-04	1.81E-04	6.76E-07	3.26E-04	7.21E-06	1.83E-05	2.36E-06	4.17E-03	2.62E-04	1.82E-02	5.25E+02	8.41E-04	3.86E-04	7.52E-04	5.25E-04	4.73E-04	3.68E-04	1.27E-09	3.16E-09	1.65E-04	2.67E-03	4.09E-09
RO	1.38E-01	2.16E-03	1.63E-01	2.01E-02	6.52E-02	1.79E-05	6.92E+01	1.60E-01	2.09E+00	5.44E-04	7.78E-02	6.19E-03	4.89E+01	4.45E-03	1.75E+03	1.06E+02	7.77E+00	3.86E-02	2.79E+00	2.31E+01	4.18E-07	8.81E-04	4.80E+01	9.01E+01	4.10E-04
RS	2.54E-03	3.50E-04	3.18E-02	7.85E-03	1.20E-02	1.01E-05	1.05E+00	1.42E+00	2.52E+01	6.68E-04	3.72E-02	9.57E-04	2.35E+01	4.05E-03	6.37E+01	8.38E+02	2.96E-01	7.95E-03	8.39E-01	1.53E+01	3.25E-08	2.05E-05	3.73E+00	5.82E+00	9.41E-06
RU	9.69E+02	2.75E-03	4.57E+01	1.76E-01	7.65E+01	1.04E-05	2.07E+01	2.82E-02	2.86E-01	2.28E-04	2.79E+00	1.95E+00	4.07E+02	9.19E-02	4.88E+01	7.01E+00	2.67E+04	1.06E+01	8.88E-01	1.69E+01	6.71E-01	8.70E-01	1.03E+02	1.45E+03	1.86E+00
SE	3.74E-03	2.28E-03	4.64E+00	2.88E-01	8.11E+00	4.19E-06	3.57E-01	8.36E-04	8.21E-03	7.53E-06	6.69E+00	2.17E+01	9.37E+01	1.31E-01	1.08E+00	3.42E-01	1.40E+01	3.50E+02	1.39E-01	2.10E+00	3.11E-06	5.24E-06	4.32E-02	6.56E+00	8.00E-06
SI	1.05E-03	5.08E-04	8.80E-03	3.71E-03	3.57E-03	2.89E-05	2.23E-02	7.53E-03	1.61E-02	4.53E-04	9.76E-03	2.24E-04	4.90E+00	3.34E-03	4.64E-01	1.31E+00	5.21E-02	1.61E-03	1.28E+02	1.69E+00	2.29E-09	5.06E-06	3.00E-02	4.71E-01	3.07E-06
SK	9.33E-03	2.78E-03	1.63E-01	4.65E-02	5.55E-02	1.01E-05	3.38E-01	4.91E-02	2.85E-01	9.88E-05	1.34E-01	5.74E-03	2.88E+02	5.66E-03	1.55E+01	1.73E+01	5.53E-01	3.40E-02	2.96E+00	5.29E+02	3.12E-08	8.47E-05	1.20E-01	1.06E+01	3.86E-05
TJ	3.58E+00	3.94E-08	2.85E-05	8.11E-07	2.29E-05	1.01E-09	7.18E-04	7.08E-07	1.19E-05	2.05E-08	9.94E-06	7.20E-07	1.04E-03	1.55E-06	2.01E-03	3.15E-04	3.97E-02	4.23E-06	1.65E-05	1.46E-04	1.46E+02	5.39E-01	2.74E-02	1.29E-02	1.16E+01
TM	8.55E+00	1.68E-06	5.22E-03	6.26E-05	4.40E-03	1.22E-08	4.24E-02	2.65E-05	5.08E-04	7.50E-07	6.86E-04	6.57E-05	1.10E-01	9.51E-06	1.10E-01	1.35E-02	4.13E+00	6.90E-04	7.77E-04	1.11E-02	2.04E+00	5.49E+01	1.31E+00	1.55E+00	1.41E+01
TR	1.69E-01	9.42E-05	1.17E-01	3.65E-03	5.36E-02	3.23E-06	1.10E+01	7.02E-03	4.11E-01	2.13E-03	2.30E-02	2.51E-03	8.31E+00	3.09E-03	3.49E+01	4.81E+00	2.46E+01	1.70E-02	9.82E-02	1.09E+00	3.42E-05	1.75E-03	6.76E+03	6.74E+01	9.29E-04
UA	1.98E+00	3.31E-03	3.95E+00	1.28E-01	1.70E+00	2.03E-05	1.19E+02	1.02E-01	4.75E-01	2.92E-04	9.02E-01	5.06E-02	5.52E+02	1.15E-02	2.07E+02	1.90E+01	3.74E+02	4.72E-01	2.40E+00	6.80E+01	2.04E-05	1.33E-02	6.23E+01	7.22E+03	7.99E-03
UZ	1.04E+02	3.47E-06	6.79E-03	1.56E-04	5.65E-03	1.35E-08	6.61E-02	4.65E-05	6.29E-04	5.84E-07	1.72E-03	1.31E-04	2.24E-01	1.35E-05	1.70E-01	2.19E-02	5.37E+00	1.29E-03	1.52E-03	2.28E-02	2.23E+01	9.55E+00	9.00E-01	2.32E+00	1.65E+02

Table B9. *Source-receptor matrix of HCB deposition to EMEP countries in 2024, kg/year. Columns and rows represent sources and receptors, respectively.*

Code	AL	AM	AT	AZ	BA	BE	BG	BY	CH	CY	CZ	DE	DK	EE	ES	FI	FR	GB	GE	GR	HR	HU	IE	IS	IT	KY
AL	2.00E-02	2.21E-06	1.64E-02	2.74E-05	2.94E-01	1.87E-03	7.96E-03	2.50E-04	3.68E-04	7.33E-06	6.51E-03	3.12E-03	8.91E-04	6.04E-05	2.23E-03	2.22E-03	6.70E-03	2.31E-02	3.48E-03	9.87E-03	1.38E-03	4.68E-03	9.73E-04	2.46E-05	4.68E-02	1.08E-06
AM	8.54E-06	1.49E-02	1.86E-03	9.82E-03	1.07E-02	3.76E-04	5.69E-04	2.23E-04	7.00E-05	2.75E-05	8.35E-04	5.54E-04	2.71E-04	5.85E-05	4.01E-04	1.67E-03	1.10E-03	5.04E-03	2.42E+00	3.67E-04	6.10E-05	3.27E-04	2.38E-04	8.76E-06	2.47E-03	6.80E-06
AT	8.96E-05	3.54E-06	1.04E+01	4.98E-05	4.82E-01	2.40E-02	3.49E-03	1.14E-03	2.72E-02	4.91E-06	2.31E-01	1.50E-01	7.61E-03	3.60E-04	6.33E-03	1.23E-02	8.12E-02	1.90E-01	6.80E-03	9.46E-04	1.19E-02	5.83E-02	6.48E-03	1.39E-04	5.19E-01	1.73E-06
AZ	1.81E-05	3.80E-03	5.24E-03	6.06E-02	2.67E-02	1.12E-03	1.26E-03	7.36E-04	1.90E-04	3.90E-05	2.52E-03	1.63E-03	8.73E-04	2.08E-04	9.65E-04	6.46E-03	2.97E-03	1.52E-02	2.64E+00	7.04E-04	1.54E-04	9.62E-04	7.38E-04	2.87E-05	5.86E-03	4.63E-05
BA	1.03E-03	3.57E-06	2.09E-01	4.67E-05	4.10E+01	9.50E-03	8.26E-03	8.69E-04	1.51E-03	7.62E-06	7.16E-02	2.01E-02	3.87E-03	2.01E-04	5.42E-03	8.73E-03	2.43E-02	9.92E-02	6.35E-03	2.58E-03	4.79E-02	5.92E-02	3.57E-03	8.53E-05	1.82E-01	2.10E-06
BE	4.11E-06	4.82E-07	1.02E-02	6.21E-06	9.98E-03	5.77E-01	1.91E-04	3.14E-04	1.61E-03	5.14E-07	7.46E-03	5.72E-02	5.86E-03	1.74E-04	3.42E-03	4.33E-03	2.61E-01	5.38E-01	8.93E-04	7.83E-05	9.20E-05	5.08E-04	1.35E-02	1.26E-04	6.80E-03	4.10E-07
BG	5.27E-04	1.79E-05	9.12E-02	2.56E-04	8.84E-01	8.43E-03	8.13E-01	4.44E-03	1.40E-03	2.87E-05	3.57E-02	1.57E-02	5.28E-03	6.11E-04	4.62E-03	2.05E-02	2.06E-02	1.05E-01	3.52E-02	2.67E-02	3.44E-03	2.92E-02	4.30E-03	1.10E-04	5.48E-02	1.33E-05
BY	8.09E-05	1.77E-05	9.90E-02	2.71E-04	3.24E-01	4.08E-02	9.22E-03	1.26E+00	2.02E-03	9.75E-06	1.16E-01	7.35E-02	6.61E-02	1.78E-02	4.31E-03	2.85E-01	4.25E-02	4.70E-01	3.84E-02	1.60E-03	2.02E-03	2.95E-02	1.78E-02	5.06E-04	3.49E-02	2.34E-05
CH	2.07E-05	6.33E-07	1.19E-01	9.36E-06	5.16E-02	1.15E-02	4.92E-04	2.01E-04	1.65E-01	1.07E-06	1.03E-02	4.19E-02	1.54E-03	9.58E-05	4.02E-03	3.67E-03	1.21E-01	8.88E-02	1.29E-03	2.98E-04	6.55E-04	1.21E-03	3.50E-03	6.92E-05	2.09E-01	3.40E-07
CY	6.31E-06	1.46E-06	8.97E-04	1.42E-05	6.45E-03	1.62E-04	5.97E-04	7.44E-05	3.01E-05	9.51E-04	3.90E-04	2.44E-04	1.03E-04	1.32E-05	1.88E-04	4.19E-04	5.63E-04	2.08E-03	2.08E-03	1.22E-03	3.83E-05	1.76E-04	1.12E-04	3.22E-06	1.84E-03	3.50E-07
CZ	5.99E-05	3.70E-06	1.37E+00	5.06E-05	4.65E-01	3.93E-02	4.15E-03	2.09E-03	8.85E-03	4.15E-06	3.10E+00	2.40E-01	1.34E-02	6.21E-04	4.46E-03	2.14E-02	9.25E-02	2.66E-01	6.83E-03	6.65E-04	5.58E-03	8.64E-02	8.31E-03	1.63E-04	6.83E-02	2.40E-06
DE	1.05E-04	9.27E-06	1.59E+00	1.33E-04	4.04E-01	8.02E-01	5.03E-03	7.39E-03	9.34E-02	1.05E-05	9.14E-01	3.93E+00	1.66E-01	3.51E-03	2.44E-02	9.17E-02	9.21E-01	3.15E+00	1.72E-02	1.54E-03	3.87E-03	3.11E-02	8.96E-02	1.12E-03	2.06E-01	7.52E-06
DK	4.43E-06	6.52E-07	1.12E-02	1.18E-05	1.57E-02	4.76E-02	3.01E-04	1.86E-03	6.00E-04	6.08E-07	1.51E-02	6.36E-02	8.23E-01	1.09E-03	1.38E-03	2.14E-02	3.01E-02	5.21E-01	1.18E-03	7.16E-05	1.16E-04	1.37E-03	1.82E-02	3.02E-04	3.11E-03	1.08E-06
EE	1.02E-05	1.29E-06	1.48E-02	2.04E-05	3.57E-02	1.12E-02	6.23E-04	1.05E-02	3.90E-04	7.68E-07	1.68E-02	1.60E-02	2.51E-02	3.56E-01	8.39E-04	3.84E-01	9.42E-03	1.39E-01	2.47E-03	1.59E-04	2.46E-04	2.64E-03	5.41E-03	2.18E-04	4.76E-03	3.94E-06
ES	8.61E-05	2.81E-06	3.60E-02	4.19E-05	1.46E-01	3.17E-02	2.17E-03	1.12E-03	2.27E-03	5.16E-06	1.89E-02	2.19E-02	9.58E-03	3.70E-04	1.21E+00	1.73E-02	2.05E-01	6.35E-01	5.37E-03	1.65E-03	1.33E-03	3.66E-03	6.30E-02	1.10E-03	9.54E-02	2.98E-06
FI	3.29E-05	6.49E-06	4.79E-02	9.94E-05	1.12E-01	3.90E-02	2.03E-03	1.90E-02	1.57E-03	4.26E-06	5.32E-02	5.00E-02	6.82E-02	1.06E-01	3.65E-03	2.62E+01	3.90E-02	5.43E-01	1.07E-02	5.36E-04	7.80E-04	7.76E-03	2.27E-02	1.44E-03	1.72E-02	3.35E-05
FR	1.51E-04	6.79E-06	1.28E-01	9.49E-05	2.91E-01	5.18E-01	3.97E-03	3.24E-03	6.50E-02	7.83E-06	7.90E-02	2.43E-01	3.91E-02	1.61E-03	1.88E-01	5.47E-02	4.82E+00	3.30E+00	1.35E-02	2.64E-03	3.17E-03	9.16E-03	1.75E-01	1.96E-03	3.76E-01	5.98E-06
GB	2.14E-05	2.98E-06	2.28E-02	5.27E-05	5.53E-02	1.97E-01	1.14E-03	3.24E-03	1.42E-03	2.56E-06	2.29E-02	5.74E-02	6.79E-02	1.65E-03	1.48E-02	3.86E-02	2.21E-01	1.22E+01	5.36E-03	3.46E-04	3.55E-04	3.52E-03	6.49E-01	3.04E-03	1.30E-02	3.59E-06
GE	3.51E-05	2.65E-03	1.04E-02	8.61E-03	5.64E-02	1.69E-03	3.66E-03	1.14E-03	3.10E-04	6.15E-05	4.07E-03	2.58E-03	1.17E-03	2.60E-04	1.44E-03	7.63E-03	4.54E-03	2.20E-02	2.35E+01	1.43E-03	3.09E-04	1.78E-03	9.50E-04	3.63E-05	9.74E-03	1.87E-05
GR	2.42E-03	1.28E-05	4.08E-02	1.67E-04	4.27E-01	5.57E-03	7.85E-02	1.76E-03	1.00E-03	5.84E-05	1.71E-02	8.98E-03	3.10E-03	3.12E-04	6.04E-03	1.05E-02	1.84E-02	7.08E-02	2.05E-02	2.15E-01	2.17E-03	1.09E-02	3.14E-03	8.74E-05	9.30E-02	6.82E-06
HR	3.82E-04	2.78E-06	4.15E-01	3.70E-05	8.00E+00	9.07E-03	5.33E-03	7.85E-04	1.75E-03	5.05E-06	7.20E-02	2.07E-02	3.38E-03	1.92E-04	4.69E-03	7.80E-03	2.41E-02	8.82E-02	5.15E-03	1.34E-03	1.89E-01	6.99E-02	3.13E-03	7.43E-05	2.73E-01	1.51E-06
HU	1.77E-04	4.82E-06	1.01E+00	6.62E-05	2.29E+00	1.38E-02	1.10E-02	1.93E-03	2.69E-03	4.59E-06	1.59E-01	3.77E-02	5.98E-03	3.56E-04	3.42E-03	1.42E-02	2.98E-02	1.25E-01	8.76E-03	1.35E-03	3.51E-02	9.48E-01	4.40E-03	9.61E-05	1.00E-01	2.63E-06
IE	6.07E-06	8.66E-07	5.22E-03	1.48E-05	1.33E-02	1.56E-02	2.68E-04	6.79E-04	2.77E-04	7.89E-07	5.25E-03	8.47E-03	7.39E-03	2.49E-04	5.10E-03	7.16E-03	3.56E-02	7.06E-01	1.55E-03	9.92E-05	8.72E-05	7.33E-04	1.87E+00	1.11E-03	3.62E-03	9.02E-07
IS	2.38E-06	5.51E-07	1.53E-03	9.48E-06	6.24E-03	2.07E-03	1.38E-04	2.37E-04	6.54E-05	5.96E-07	1.14E-03	1.37E-03	2.13E-03	2.03E-04	4.10E-04	1.15E-02	3.84E-03	5.69E-02	8.36E-04	5.21E-05	3.84E-05	2.85E-04	4.51E-03	3.21E-02	1.15E-03	2.97E-06
IT	1.17E-03	6.11E-06	6.92E-01	8.52E-05	1.98E+00	2.74E-02	8.56E-03	1.54E-03	3.13E-02	1.82E-05	6.45E-02	5.49E-02	9.10E-03	4.68E-04	4.13E-02	1.91E-02	2.24E-01	3.14E-01	1.15E-02	7.31E-03	2.86E-02	2.62E-02	1.44E-02	3.32E-04	7.42E+00	3.03E-06
KY	2.17E-05	6.79E-05	6.00E-03	6.50E-04	3.19E-02	1.22E-03	1.10E-03	4.61E-04	2.77E-04	2.73E-05	2.43E-03	1.69E-03	6.73E-04	1.51E-04	1.51E-03	4.98E-03	3.95E-03	1.66E-02	6.22E-02	6.74E-04	1.89E-04	8.66E-04	7.49E-04	2.94E-05	8.60E-03	6.45E-02
KZ	3.03E-04	5.43E-04	1.60E-01	8.86E-03	6.67E-01	4.55E-02	2.47E-02	3.13E-02	5.36E-03	1.62E-04	9.30E-02	6.16E-02	3.71E-02	1.44E-02	2.07E-02	4.67E-01	8.99E-02	6.51E-01	6.56E-01	9.25E-03	3.99E-03	3.00E-02	3.11E-02	1.58E-03	1.32E-01	3.85E-02
LI	1.20E-07	4.10E-09	2.35E-03	6.13E-08	3.09E-04	5.63E-05	2.84E-06	1.14E-06	9.48E-04	6.41E-09	6.76E-05	2.60E-04	8.98E-06	5.72E-07	2.11E-05	2.18E-05	3.60E-04	4.56E-04	8.43E-06	1.73E-06	3.97E-06	7.42E-06	1.75E-05	3.72E-07	1.03E-03	1.84E-09
LT	2.22E-05	2.44E-06	3.42E-02	3.99E-05	8.78E-02	2.10E-02	1.25E-03	7.37E-02	7.62E-04	1.39E-06	4.22E-02	3.52E-02	5.50E-02	7.84E-03	1.41E-03	1.48E-01	1.79E-02	2.40E-01	5.03E-03	2.96E-04	6.06E-04	7.91E-03	8.31E-03	2.24E-04	9.60E-03	3.29E-06
LU	5.17E-07	5.73E-08	1.77E-03	7.44E-07	1.34E-03	1.23E-02	1.99E-05	3.01E-05	3.20E-04	6.60E-08	1.21E-03	9.86E-03	3.35E-04	1.41E-05	3.74E-04	4.14E-04	2.54E-02	2.74E-02	1.08E-04	9.73E-06	1.38E-05	6.35E-05	8.60E-04	9.87E-06	1.08E-03	3.98E-08
LV	2.22E-05	2.54E-06	3.45E-02	4.14E-05	8.22E-02	2.28E-02	1.30E-03	4.46E-02	8.26E-04	1.49E-06	4.00E-02	3.58E-02	5.67E-02	4.42E-02	1.58E-03	3.05E-01	1.88E-02	2.66E-01	5.06E-03	3.20E-04	5.73E-04	6.75E-03	9.45E-03	3.13E-04	1.00E-02	4.43E-06
MC	9.27E-09	1.68E-10	4.91E-06	2.60E-09	1.72E-05	9.58E-07	1.78E-07	4.66E-08	7.78E-07	2.41E-10	1.27E-06	1.17E-06	2.84E-07	1.55E-08	1.99E-06	6.23E-07	6.16E-05	1.19E-05	3.49E-07	1.30E-07	2.31E-07	4.48E-07	5.68E-07	1.23E-08	7.04E-05	8.61E-11
MD	1.88E-05	4.64E-06	1.63E-02	6.54E-05	6.60E-02	2.25E-03	6.43E-03	4.05E-03	2.68E-04	3.32E-06	8.90E-03	4.22E-03	2.05E-03	2.84E-04	6.51E-04	9.80E-03	4.01E-03	2.68E-02	9.03E-03	7.32E-04	4.01E-04	5.25E-03	9.99E-04	3.22E-05	7.14E-03	4.39E-06
ME	2.74E-03	1.12E-06	1.89E-02	1.49E-05	1.41E+00	1.57E-03	3.50E-03	1.82E-04	2.78E-04	3.08E-06	7.87E-03	2.90E-03	6.69E-04	4.10E-05	1.41E-03	1.65E-03	4.86E-03	1.85E-02	1.87E-03	1.31E-03	1.94E-03	6.69E-03	7.35E-04	1.57E-05	3.22E-02	5.62E-07
MK	2.91E-03	2.45E-06	1.67E-02	3.25E-05	2.01E-01	1.77E-03	2.99E-02	2.98E-04	3.17E-04	6.01E-06	6.98E-03	3.09E-03	8.81E-04	6.82E-05	1.40E-03	2.50E-03	5.09E-03	2.13E-02	3.98E-03	1.56E-02	7.98E-04	5.99E-03	8.75E-04	2.03E-05	2.00E-02	1.18E-06
MT	3.57E-07	1.54E-09	3.37E-05	2.37E-08	3.86E-04	5.32E-06	3.27E-06	2.99E-07	1.08E-06	3.05E-09	9.51E-06	6.20E-06	1.87E-06	9.07E-08	1.15E-05	3.67E-06	3.39E-05	6.48E-05	2.83E-06	5.08E-06	2.55E-06	3.87E-06	3.68E-06	8.38E-08	1.86E-04	1.08E-09
NL	3.84E-06	5.01E-07	9.63E-03	7.50E-06	1.17E-02	4.72E-01	2.31E-04	4.15E-04	8.30E-04	4.88E-07	9.29E-03	1.02E-01	1.12E-02	2.16E-04	2.31E-03	5.24E-03	1.09E-01	7.47E-01	8.99E-04	6.49E-05	8.62E-05	8.17E-04	1.59E-02	1.46E-04	3.96E-03	5.00E-07
NO	3.73E-05	6.23E-06	4.17E-02	8.66E-05	1.14E-01	9.11E-02	2.44E-03	6.49E-03	1.59E-03	6.29E-06	4.13E-02	6.41E-02	1.65E-01	6.83E-03	6.04E-03	6.14E-01	7.64E-02	1.39E+00	9.84E-03	6.28E-04	7.32E-04	7.36E-03	5.55E-02	3.21E-03	1.78E-02	2.16E-05
PL	1.87E-04	1.49E-05	6.31E-01	2.06E-04	1.15E+00	1.56E-01	1.15E-02	7.75E-02	9.19E-03	1.12E-05	1.68E+00	4.75E-01	1.38E-01	6.58E-03	1.08E-02	2.71E-01	1.60E-01	1.28E+00	2.87E-02	2.05E-03	9.66E-03	1.62E-01	4.11E-02	7.60E-04	1.11E-01	1.20E-05
PT	7.82E-06	4.51E-07	3.91E-03	6.89E-06	1.34E-02	4.09E-03	2.27E-04	1.88E-04	2.40E-04	7.96E-07	2.81E-03	3.26E-03	1.52E-03	5.41E-05	6.05E-02	2.98E-03	1.48E-02	9.75E-02	8.25E-04	1.64E-04	1.10E-04	4.09E-04	1.22E-02	2.49E-04	5.93E-03	5.01E-07
RO	4.89E-04	2.79E-05	3.31E-01	4.02E-04	2.15E+00	2.06E-02	1.39E-01	1.22E-02	3.78E-03	2.21E-05	1.01E-01	4.37E-02	1.43E-02	1.51E-03	8.52E-03	5.33E-02	4.75E-02	2.34E-01	5.76E-02	8.04E-03	1.17E-02	1.62E-01	8.96E-03	2.46E-04	1.30E-01	1.65E-05
RS	2.59E-03	7.98E-06	1.77E-01	1.10E-04	6.17E+00	1.06E-02	7.65E-02	1.44E-03	1.65E-03	1.21E-05	7.01E-02	2.19E-02	4.75E-03	3.41E-04	4.60E-03	1.29E-02	2.46E-02	1.15E-01	1.43E-02	9.40E-03	1.68E-02	1.00E-01	4.47E-03	9.08E-05	8.39E-02	4.85E-06
RU	7.87E-04	1.13E-03	6.49E-01	2.11E-02	2.08E+00	2.81E-01	7.84E-02	4.75E-01	1.88E-02	3.17E-04	5.00E-01	3.69E-01	3.28E-01	3.46E-01	5.67E-02	7.64E+00	3.72E-01	3.88E+00	3.15E+00	2.28E-02	1.34E-02	1.25E-01	1.68E-01	1.02E-02	3.55E-01	5.88E-03
SE	5.30E-05	8.77E-06	8.45E-02	1.30E-04	1.74E-01	1.35E-01	3.52E-03	2.10E-02	3.54E-03	7.14E-06	1.01E-01	1.79E-01	6.17E-01	3.46E-02	8.38E-03	5.27E+00	1.14E-01	1.85E+00	1.51E-02	9.03E-04	1.26E-03	1.37E-02	7.00E-02	3.35E-03	2.90E-02	3.28E-05
SI	4.66E-05	9.82E-07	7.39E-01	1.40E-05	2.82E-01	3.84E-03	1.29E-03	2.93E-04	1.13E-03	1.36E-06	2.36E-02	1.02E-02	1.34E-03	7.62E-05	1.92E-03	2.91E-03	1.14E-02	3.61E-02	1.94E-03	3.19E-04	3.18E-02	1.30E-02	1.26E-03	2.76E-05	2.06E-01	4.51E-07
SK	9.34E-05	3.55E-06	4.83E-01	4.91E-05	7.43E-01	1.27E-02	5.98E-03	2.19E-03	2.51E-03	3.42E-06	3.53E-01	3.81E-02	5.86E-03	3.53E-04	2.47E-03	1.49E-02	2.73E-02	1.16E-01	6.30E-03	8.34E-04	5.84E-03	2.85E-01	3.89E-03	8.40E-05	4.87E-02	2.11E-06
TJ	1.17E-05	4.22E-05	2.91E-03	3.97E-04	1.58E-02	5.79E-04	5.76E-04	2.18E-04	1.33E-04	1.76E-05	1.15E-03	8.02E-04	3.11E-04	6.53E-05	7.71E-04	2.12E-03	1.91E-03	7.86E-03	3.72E-02	3.83E-04	9.44E-05	4.18E-04	3.60E-04	1.33E-05	4.27E-03	1.55E-03
TM	5.17E-05	2.77E-04	2.31E-02	4.79E-03	1.03E-01	5.57E-03	3.99E-03	3.63E-03	8.35E-04	6.29E-05	1.22E-02	7.89E-03	4.10E-03	1.16E-03	3.61E-03	3.71E-02	1.34E-02	7.49E-02	2.96E-01	1.79E-03	6.06E-04	4.29E-03	3.57E-03	1.59E-04	2.22E-02	8.83E-04
TR	5.02E-04	2.66E-03	1.04E-01	7.55E-03	6.62E-01	1.88E-02	8.63E-02	1.66E-02	2.98E-03	2.32E-03	4.92E-02	2.90E-02	1.50E-02	2.67E-03	1.62E-02	7.89E-02	5.04E-02	2.39E-01	1.35E+00	4.73E-02	3.59E-03	2.30E-02	1.04E-02	3.60E-04	1.27E-01	7.46E-05
UA	2.98E-04	7.97E-05	3.35E-01	1.34E-03	1.16E+00	5.68E-02	4.63E-02	1.71E-01	5.47E-03	5.88E-05	2.71E-01	1.12E-01	5.36E-02	9.96E-03	1.15E-02	2.68E-01	8.82E-02	6.62E-01	1.59E-01	8.75E-03	7.41E-03	1.36E-01	2.33E-02	7.28E-04	1.22E-01	1.28E-04
UZ	4.39E-05	1.40E-04	2.03E-02	1.99E-03	9.13E-02	5.17E-03	3.38E-03	3.58E-03	7.24E-04	4.03E-05	1.09E-02	7.19E-03	3.98E-03	1.28E-03	3.08E-03	4.06E-02	1.17E-02	7.13E-02	1.50E-01	1.42E-03	5.33E-04	3.82E-03	3.41E-03	1.62E-04	1.92E-02	7.45E-03

Table B9 *(continued)*

Code	KZ	LI	LT	LU	LV	MC	MD	ME	MK	MT	NL	NO	PL	PT	RO	RS	RU	SE	SI	SK	TJ	TM	TR	UA	UZ
AL	1.16E-03	4.33E-07	8.48E-05	5.71E-04	7.02E-05	2.23E-05	1.47E-04	6.86E-03	4.52E-03	1.48E-04	2.49E-03	2.28E-04	2.43E-03	8.17E-04	6.11E-03	3.79E-02	1.02E-03	6.86E-04	8.56E-04	3.11E-03	2.43E-06	3.13E-05	3.04E-03	1.28E-01	1.15E-05
AM	4.41E-03	8.21E-08	6.28E-05	1.03E-04	5.43E-05	3.11E-06	6.64E-05	3.87E-05	1.41E-05	9.66E-06	5.07E-04	1.06E-04	5.40E-04	1.97E-04	1.18E-03	6.45E-04	1.98E-03	3.02E-04	9.18E-05	3.02E-04	1.79E-05	5.08E-04	1.30E-02	1.05E-01	1.13E-04
AT	3.98E-03	1.55E-04	6.30E-04	1.16E-02	4.71E-04	1.09E-04	2.28E-04	6.74E-04	8.97E-05	8.48E-05	2.81E-02	1.35E-03	2.50E-02	2.72E-03	1.08E-02	2.22E-02	2.30E-03	4.30E-03	6.50E-02	4.37E-02	5.54E-06	6.54E-05	1.81E-03	2.54E-01	2.43E-05
AZ	2.45E-02	2.23E-07	2.02E-04	2.95E-04	1.88E-04	7.57E-06	1.70E-04	8.98E-05	2.99E-05	1.98E-05	1.52E-03	3.79E-04	1.71E-03	4.72E-04	2.92E-03	1.63E-03	1.22E-02	1.08E-03	2.42E-04	9.00E-04	1.43E-04	3.36E-03	1.31E-02	3.34E-01	7.97E-04
BA	3.03E-03	2.01E-06	3.72E-04	3.27E-03	2.62E-04	7.82E-05	3.61E-04	2.24E-02	3.47E-04	2.79E-04	1.28E-02	1.02E-03	1.72E-02	2.08E-03	2.14E-02	1.76E-01	2.11E-03	2.70E-03	8.17E-03	2.96E-02	5.20E-06	5.99E-05	2.63E-03	2.79E-01	2.45E-05
BE	9.64E-04	1.65E-06	2.06E-04	9.28E-02	1.83E-04	1.60E-05	3.35E-05	2.60E-05	4.66E-06	7.43E-06	1.36E-01	8.92E-04	2.47E-03	1.22E-03	6.42E-04	5.35E-04	5.35E-04	2.88E-03	1.90E-04	6.27E-04	1.46E-06	8.74E-06	2.36E-04	3.56E-02	4.46E-06
BG	1.64E-02	1.89E-06	1.04E-03	2.64E-03	7.30E-04	5.05E-05	5.72E-03	3.01E-03	3.18E-03	1.51E-04	1.19E-02	1.57E-03	2.09E-02	1.96E-03	2.24E-01	1.60E-01	1.61E-02	4.60E-03	3.52E-03	1.98E-02	3.05E-05	3.65E-04	3.62E-02	2.52E+00	1.38E-04
BY	3.85E-02	2.93E-06	9.08E-02	8.33E-03	5.14E-02	3.58E-05	6.18E-03	7.40E-04	1.32E-04	5.50E-05	6.80E-02	1.10E-02	2.65E-01	2.32E-03	4.85E-02	2.20E-02	7.64E-02	6.10E-02	3.17E-03	3.92E-02	7.86E-05	5.14E-04	8.82E-03	1.61E+01	2.48E-04
CH	7.17E-04	6.26E-04	1.17E-04	6.41E-03	1.12E-04	9.78E-05	3.72E-05	1.11E-04	1.95E-05	3.23E-05	1.06E-02	3.56E-04	2.18E-03	1.56E-03	1.02E-03	1.61E-03	4.34E-04	1.13E-03	1.13E-03	1.04E-03	8.80E-07	1.25E-05	4.20E-04	3.49E-02	4.55E-06
CY	3.78E-04	3.51E-08	1.98E-05	4.61E-05	1.49E-05	1.58E-06	4.44E-05	2.31E-05	9.78E-06	1.80E-05	2.11E-04	3.39E-05	2.39E-04	7.11E-05	8.68E-04	3.93E-04	3.33E-04	9.40E-05	4.56E-05	1.51E-04	9.73E-07	1.56E-05	1.21E-02	3.48E-02	4.99E-06
CZ	5.36E-03	1.70E-05	1.14E-03	2.42E-02	8.09E-04	4.54E-05	2.43E-04	6.49E-04	8.45E-05	4.85E-05	4.99E-02	2.21E-03	1.31E-01	1.95E-03	1.40E-02	2.78E-02	2.97E-03	8.75E-03	1.21E-02	1.40E-01	7.81E-06	7.55E-05	1.68E-03	3.00E-01	3.14E-05
DE	1.59E-02	2.86E-04	5.41E-03	4.50E-01	4.78E-03	2.00E-04	5.55E-04	8.11E-04	1.23E-04	1.19E-04	1.10E+00	1.36E-02	1.59E-01	1.03E-02	1.62E-02	2.31E-02	1.04E-02	6.85E-02	9.96E-03	3.15E-02	2.87E-05	1.96E-04	4.12E-03	7.23E-01	9.18E-05
DK	1.46E-03	8.75E-07	2.18E-03	5.28E-03	2.30E-03	5.06E-06	8.28E-05	3.82E-05	6.59E-06	4.20E-06	7.51E-02	1.05E-02	1.47E-02	6.88E-04	1.32E-03	1.14E-03	1.86E-03	9.91E-02	2.43E-04	1.72E-03	4.88E-06	1.75E-05	2.86E-04	8.20E-02	1.15E-05
EE	3.16E-03	5.24E-07	1.23E-02	1.58E-03	6.12E-02	5.74E-06	1.83E-04	8.18E-05	1.49E-05	7.58E-06	1.87E-02	6.06E-03	2.20E-02	4.03E-04	2.59E-03	2.11E-03	2.59E-02	5.57E-02	4.24E-04	3.90E-03	1.12E-05	4.01E-05	6.74E-04	2.49E-01	3.04E-05
ES	4.54E-03	2.29E-06	5.76E-04	6.02E-03	4.65E-04	1.98E-04	2.15E-04	4.30E-04	7.97E-05	2.32E-04	3.62E-02	3.63E-03	8.67E-03	3.88E-01	4.88E-03	5.53E-03	2.20E-03	6.79E-03	2.31E-03	3.49E-03	8.23E-06	6.93E-05	2.51E-03	1.74E-01	3.12E-05
FI	2.02E-02	2.10E-06	1.68E-02	6.10E-03	3.60E-02	2.28E-05	5.78E-04	2.61E-04	4.92E-05	2.82E-05	6.31E-02	3.82E-02	5.38E-02	1.89E-03	8.45E-03	6.74E-03	1.14E-01	3.08E-01	1.41E-03	1.04E-02	8.73E-05	2.32E-04	2.25E-03	7.07E-01	2.19E-04
FR	1.28E-02	2.22E-05	1.84E-03	2.41E-01	1.68E-03	2.25E-03	4.48E-04	7.45E-04	1.36E-04	3.40E-04	3.02E-01	8.65E-03	2.62E-02	3.62E-02	1.05E-02	1.18E-02	6.51E-03	2.38E-02	5.95E-03	9.31E-03	1.54E-05	1.44E-04	4.34E-03	4.43E-01	6.52E-05
GB	7.12E-03	1.62E-06	2.65E-03	1.39E-02	2.71E-03	2.33E-05	2.31E-04	1.60E-04	2.68E-05	2.88E-05	1.85E-01	1.51E-02	2.00E-02	1.02E-02	4.43E-03	3.84E-03	4.82E-03	3.36E-02	6.63E-04	4.22E-03	1.39E-05	6.85E-05	1.15E-03	2.33E-01	3.70E-05
GE	1.01E-02	4.23E-07	3.01E-04	4.78E-04	2.46E-04	1.14E-05	5.34E-04	1.85E-04	6.62E-05	3.40E-05	2.31E-03	4.48E-04	2.60E-03	6.94E-04	8.39E-03	3.79E-03	1.47E-02	1.32E-03	4.67E-04	1.60E-03	5.08E-05	9.58E-04	3.19E-02	6.76E-01	2.66E-04
GR	7.45E-03	1.20E-06	4.68E-04	1.63E-03	3.49E-04	5.27E-05	1.49E-03	1.90E-03	6.35E-03	6.69E-04	7.59E-03	9.20E-04	9.14E-03	2.13E-03	4.08E-02	4.31E-02	7.11E-03	2.66E-03	1.97E-03	8.13E-03	1.61E-05	2.14E-04	4.12E-02	9.31E-01	7.58E-05
HR	2.69E-03	2.44E-06	3.90E-04	3.31E-03	2.70E-04	8.31E-05	2.53E-04	3.32E-03	1.76E-04	1.54E-04	1.16E-02	8.06E-04	1.69E-02	1.76E-03	1.66E-02	8.37E-02	1.71E-03	2.28E-03	4.85E-02	2.68E-02	4.14E-06	4.78E-05	1.73E-03	2.15E-01	1.90E-05
HU	5.66E-03	4.25E-06	8.18E-04	5.42E-03	5.64E-04	5.29E-05	6.47E-04	2.45E-03	2.90E-04	6.83E-05	1.88E-02	1.26E-03	5.47E-02	1.53E-03	8.34E-02	1.37E-01	3.34E-03	4.05E-03	3.01E-02	2.53E-01	7.56E-06	1.06E-04	2.44E-03	6.69E-01	3.82E-05
IE	1.88E-03	3.17E-07	4.26E-04	1.97E-03	3.92E-04	6.54E-06	4.71E-05	3.99E-05	7.23E-06	9.50E-06	1.87E-02	1.91E-03	4.30E-03	4.60E-03	9.94E-04	8.29E-04	1.08E-03	4.28E-03	1.66E-04	8.96E-04	3.24E-06	1.93E-05	3.43E-04	5.47E-02	9.46E-06
IS	1.17E-03	6.71E-08	1.70E-04	2.41E-04	2.14E-04	2.48E-06	2.58E-05	1.64E-05	3.18E-06	3.55E-06	2.73E-03	1.54E-03	1.04E-03	3.07E-04	4.35E-04	3.80E-04	6.68E-04	2.39E-03	6.12E-05	3.12E-04	7.39E-06	1.71E-05	2.40E-04	3.07E-02	2.08E-05
IT	5.17E-03	6.26E-05	7.33E-04	1.02E-02	5.69E-04	1.11E-03	5.10E-04	4.45E-03	5.82E-04	2.49E-03	3.29E-02	2.34E-03	1.89E-02	1.24E-02	1.87E-02	4.21E-02	3.33E-03	6.30E-03	4.98E-02	1.85E-02	7.95E-06	1.20E-04	6.41E-03	3.88E-01	4.17E-05
KY	6.88E-02	3.17E-07	1.41E-04	3.27E-04	1.40E-04	1.22E-05	9.86E-05	1.05E-04	3.42E-05	2.44E-05	1.62E-03	3.03E-04	1.36E-03	8.45E-04	2.19E-03	1.73E-03	3.91E-03	8.20E-04	3.08E-04	7.74E-04	5.27E-02	7.15E-03	7.37E-03	1.20E-01	1.01E-01
KZ	1.99E+01	6.52E-06	9.54E-03	1.07E-02	1.06E-02	1.62E-04	4.81E-03	1.89E-03	5.20E-04	2.97E-04	6.45E-02	1.94E-02	6.66E-02	1.10E-02	7.27E-02	4.00E-02	9.62E-01	5.84E-02	6.83E-03	3.02E-02	4.81E-02	6.95E-02	6.29E-02	9.04E+00	1.85E-01
LI	4.50E-06	3.57E-05	6.80E-07	2.96E-05	6.70E-07	5.68E-07	2.20E-07	6.48E-07	1.08E-07	1.74E-07	5.41E-05	2.05E-06	1.29E-05	8.63E-06	6.28E-06	9.84E-06	2.62E-06	6.34E-06	7.46E-06	6.14E-06	4.95E-09	7.86E-08	2.47E-06	2.05E-04	2.68E-08
LT	6.78E-03	1.12E-06	2.69E-01	3.29E-03	6.40E-02	1.05E-05	6.27E-04	1.93E-04	3.23E-05	1.42E-05	3.50E-02	4.94E-03	1.02E-01	7.12E-04	6.85E-03	5.38E-03	1.74E-02	4.41E-02	9.99E-04	1.20E-02	1.12E-05	6.40E-05	1.23E-03	7.78E-01	3.34E-05
LU	1.16E-04	3.03E-07	1.69E-05	8.79E-02	1.45E-05	2.39E-06	3.16E-06	3.08E-06	5.38E-07	1.02E-06	6.43E-03	6.02E-05	2.88E-04	1.22E-04	6.38E-05	6.03E-05	5.49E-05	2.00E-04	2.96E-05	8.08E-05	1.43E-07	1.01E-06	2.76E-05	3.89E-03	4.72E-07
LV	5.95E-03	1.20E-06	8.21E-02	3.37E-03	5.42E-01	1.13E-05	4.71E-04	1.84E-04	3.20E-05	1.49E-05	3.82E-02	8.20E-03	6.25E-02	7.74E-04	5.99E-03	4.90E-03	1.98E-02	7.36E-02	9.79E-04	1.01E-02	1.47E-05	7.24E-05	1.38E-03	6.49E-01	4.21E-05
MC	2.10E-07	5.80E-10	2.18E-08	3.25E-07	1.91E-08	3.39E-06	1.34E-08	4.31E-08	7.57E-09	2.34E-08	1.05E-06	7.15E-08	4.57E-07	5.38E-07	4.36E-07	6.38E-07	1.05E-07	1.93E-07	5.09E-07	3.43E-07	2.02E-10	3.38E-09	1.45E-07	1.06E-05	1.22E-09
MD	5.39E-03	3.82E-07	7.58E-04	6.40E-04	4.09E-04	6.64E-06	7.95E-02	1.57E-04	3.89E-05	1.30E-05	3.39E-03	5.60E-04	9.82E-03	2.91E-04	6.29E-02	5.09E-03	6.12E-03	1.95E-03	5.78E-04	4.77E-03	1.27E-05	1.12E-04	5.38E-03	2.01E+00	4.92E-05
ME	7.80E-04	3.44E-07	6.28E-05	5.05E-04	4.85E-05	1.53E-05	9.90E-05	4.94E-02	2.73E-04	9.27E-05	2.12E-03	1.76E-04	2.39E-03	5.45E-04	4.93E-03	4.37E-02	6.07E-04	5.07E-04	7.91E-04	4.05E-03	1.21E-06	1.77E-05	9.87E-04	8.01E-02	6.38E-06
MK	1.51E-03	3.99E-07	9.37E-05	5.44E-04	7.91E-05	1.55E-05	2.03E-04	1.08E-03	2.99E-02	6.15E-05	2.40E-03	2.33E-04	3.09E-03	5.77E-04	8.62E-03	4.74E-02	1.26E-03	6.83E-04	6.98E-04	3.99E-03	2.60E-06	3.80E-05	3.22E-03	1.57E-01	1.32E-05
MT	9.96E-07	1.19E-09	1.32E-07	1.49E-06	9.69E-08	7.55E-08	1.82E-07	1.43E-06	1.91E-07	8.89E-05	6.66E-06	5.58E-07	3.41E-06	3.28E-06	5.05E-06	8.87E-06	7.58E-07	1.38E-06	2.39E-06	3.01E-06	2.70E-09	3.99E-08	2.47E-06	9.49E-05	1.45E-08
NL	9.94E-04	1.00E-06	2.88E-04	1.93E-02	2.59E-04	8.51E-06	3.82E-05	3.10E-05	4.97E-06	4.59E-06	5.74E-01	1.85E-03	3.53E-03	9.83E-04	8.23E-04	8.09E-04	6.48E-04	4.53E-03	1.93E-04	8.63E-04	1.94E-06	1.04E-05	2.12E-04	4.09E-02	5.46E-06
NO	1.07E-02	2.02E-06	4.70E-03	9.76E-03	5.73E-03	2.53E-05	5.35E-04	2.94E-04	5.58E-05	4.18E-05	1.33E-01	1.23E+00	3.72E-02	3.32E-03	8.78E-03	7.31E-03	1.27E-02	2.40E-01	1.36E-03	8.88E-03	6.66E-05	1.66E-04	2.75E-03	5.51E-01	1.60E-04
PL	3.14E-02	1.54E-05	2.92E-02	3.93E-02	1.45E-02	9.29E-05	2.97E-03	2.06E-03	2.91E-04	1.16E-04	2.59E-01	1.45E-02	3.54E+00	5.41E-03	6.97E-02	7.57E-02	3.11E-02	9.04E-02	1.67E-02	4.57E-01	4.44E-05	3.70E-04	6.23E-03	4.47E+00	1.61E-04
PT	9.32E-04	2.54E-07	8.41E-05	7.68E-04	6.71E-05	9.44E-06	2.75E-05	3.90E-05	7.60E-06	1.90E-05	4.87E-03	6.16E-04	1.39E-03	6.10E-01	5.71E-04	5.63E-04	3.95E-04	1.16E-03	1.82E-04	4.25E-04	1.43E-06	1.09E-05	3.35E-04	2.56E-02	4.90E-06
RO	3.20E-02	5.61E-06	2.97E-03	6.80E-03	1.98E-03	1.05E-04	3.02E-02	4.94E-03	1.13E-03	1.80E-04	2.93E-02	3.68E-03	7.59E-02	3.83E-03	1.88E+00	2.46E-01	2.69E-02	1.17E-02	1.24E-02	8.27E-02	4.94E-05	5.94E-04	2.61E-02	6.40E+00	2.19E-04
RS	6.68E-03	2.28E-06	5.01E-04	3.55E-03	4.00E-04	6.12E-05	1.05E-03	3.41E-02	1.10E-02	1.58E-04	1.47E-02	1.18E-03	2.50E-02	2.04E-03	9.06E-02	1.02E+00	4.93E-03	3.48E-03	5.97E-03	4.69E-02	1.09E-05	1.44E-04	6.04E-03	6.47E-01	5.41E-05
RU	1.83E+01	2.41E-05	1.30E-01	5.31E-02	2.02E-01	4.25E-04	2.27E-02	5.38E-03	1.34E-03	7.11E-04	4.33E-01	1.50E-01	4.92E-01	3.03E-02	2.68E-01	1.32E-01	1.08E+01	6.20E-01	2.35E-02	1.44E-01	1.23E-02	4.17E-02	1.63E-01	5.78E+01	3.40E-02
SE	2.21E-02	5.05E-06	2.17E-02	1.88E-02	3.53E-02	4.18E-05	1.08E-03	4.16E-04	8.17E-05	5.34E-05	2.22E-01	2.44E-01	1.17E-01	4.14E-03	1.53E-02	1.14E-02	3.47E-02	2.43E+00	2.39E-03	1.76E-02	9.97E-05	2.62E-04	3.47E-03	1.16E+00	2.32E-04
SI	1.12E-03	1.61E-06	1.54E-04	1.48E-03	1.11E-04	4.26E-05	7.62E-05	3.31E-04	3.77E-05	3.45E-05	4.72E-03	2.78E-04	5.51E-03	7.50E-04	4.17E-03	1.03E-02	6.50E-04	8.50E-04	1.55E-01	6.69E-03	1.34E-06	1.72E-05	5.26E-04	7.83E-02	6.20E-06
SK	5.08E-03	4.26E-06	8.82E-04	5.46E-03	6.06E-04	3.14E-05	4.49E-04	1.21E-03	1.51E-04	4.25E-05	1.79E-02	1.18E-03	1.34E-01	1.15E-03	3.51E-02	5.22E-02	2.86E-03	4.05E-03	7.91E-03	9.88E-01	6.42E-06	8.43E-05	1.82E-03	6.68E-01	3.15E-05
TJ	1.48E-02	1.51E-07	6.26E-05	1.56E-04	6.07E-05	6.09E-06	4.99E-05	5.34E-05	1.85E-05	1.32E-05	7.70E-04	1.35E-04	6.27E-04	4.28E-04	1.10E-03	8.53E-04	2.01E-03	3.60E-04	1.48E-04	3.71E-04	3.84E-01	1.33E-02	4.57E-03	6.07E-02	4.13E-02
TM	2.13E-01	9.69E-07	1.03E-03	1.43E-03	1.02E-03	2.92E-05	6.64E-04	3.07E-04	8.96E-05	5.38E-05	7.55E-03	1.97E-03	8.21E-03	1.86E-03	1.07E-02	6.22E-03	4.24E-02	5.69E-03	1.03E-03	4.09E-03	2.66E-02	4.96E-01	1.84E-02	1.19E+00	9.64E-02
TR	6.35E-02	3.62E-06	3.82E-03	5.07E-03	2.85E-03	1.33E-04	1.02E-02	2.26E-03	9.29E-04	8.47E-04	2.57E-02	5.12E-03	3.70E-02	6.97E-03	1.56E-01	5.17E-02	7.65E-02	1.50E-02	4.86E-03	2.03E-02	2.24E-04	3.44E-03	3.45E+00	8.40E+00	1.06E-03
UA	1.47E-01	8.43E-06	2.31E-02	1.60E-02	1.46E-02	1.11E-04	7.11E-02	2.64E-03	5.40E-04	2.02E-04	8.76E-02	1.32E-02	3.75E-01	5.58E-03	3.19E-01	8.20E-02	2.91E-01	4.97E-02	1.07E-02	1.70E-01	3.25E-04	2.60E-03	7.28E-02	1.59E+02	1.17E-03
UZ	2.88E-01	8.47E-07	1.03E-03	1.28E-03	1.05E-03	2.48E-05	5.84E-04	2.68E-04	7.58E-05	4.53E-05	7.08E-03	1.99E-03	7.61E-03	1.62E-03	9.22E-03	5.44E-03	4.62E-02	5.79E-03	9.10E-04	3.68E-03	1.13E-01	9.61E-02	1.26E-02	1.07E+00	4.25E-01

Table B10. *Source-receptor matrix of PCB-153 deposition to EMEP countries in 2024, kg/year. Columns and rows represent sources and receptors, respectively.*

Code	AL	AM	AT	AZ	BA	BE	BG	BY	CH	CY	CZ	DE	DK	EE	ES	FI	FR	GB	GE	GR	HR	HU	IE	IS	IT	KY
AL	1.25E-01	2.56E-05	1.34E-02	7.53E-06	5.59E-04	7.08E-04	3.15E-03	5.13E-05	1.93E-03	5.72E-04	6.98E-03	6.80E-03	1.22E-04	1.37E-06	2.12E-01	5.69E-05	3.18E-02	2.11E-03	6.71E-04	3.47E-03	7.38E-03	2.68E-04	8.35E-06	1.47E-04	6.99E-01	6.61E-07
AM	4.22E-05	1.03E-01	1.38E-03	5.48E-03	1.40E-05	1.26E-04	2.91E-04	5.86E-05	2.64E-04	3.72E-03	7.73E-04	1.17E-03	3.86E-05	1.76E-06	1.98E-02	7.21E-05	3.03E-03	4.24E-04	1.98E-01	2.13E-04	2.18E-04	1.23E-05	1.69E-06	4.51E-05	1.45E-02	4.08E-06
AT	6.60E-04	3.09E-05	1.35E+01	1.08E-05	9.87E-04	1.78E-02	1.53E-03	5.42E-04	2.12E-01	1.99E-04	4.29E-01	7.67E-01	2.43E-03	2.94E-05	7.44E-01	7.71E-04	4.18E-01	2.87E-02	1.10E-03	4.21E-04	7.22E-02	2.94E-03	6.56E-05	9.46E-04	3.41E+00	8.22E-07
AZ	6.68E-05	2.34E-02	3.20E-03	4.58E-02	2.52E-05	2.97E-04	5.29E-04	1.69E-04	5.41E-04	4.35E-03	1.88E-03	2.74E-03	1.10E-04	6.63E-06	3.40E-02	2.56E-04	5.91E-03	1.11E-03	2.69E-01	3.09E-04	4.07E-04	2.78E-05	4.47E-06	1.35E-04	2.48E-02	4.81E-05
BA	4.27E-03	2.93E-05	1.46E-01	9.50E-06	9.67E-02	3.71E-03	3.70E-03	2.29E-04	7.53E-03	3.04E-04	9.52E-02	5.00E-02	6.50E-04	5.45E-06	4.93E-01	2.35E-04	9.88E-02	9.23E-03	8.11E-04	1.25E-03	2.25E-01	2.80E-03	2.56E-05	3.68E-04	1.93E+00	8.98E-07
BE	4.97E-05	2.91E-06	2.81E-02	1.08E-06	4.04E-05	3.18E+00	1.06E-04	1.14E-04	1.44E-02	1.68E-05	1.29E-02	4.36E-01	2.48E-03	7.86E-06	3.78E-01	2.54E-04	3.74E+00	1.80E-01	1.45E-04	3.99E-05	8.67E-04	3.69E-05	2.12E-04	1.17E-03	7.14E-02	1.76E-07
BG	3.02E-03	2.74E-04	7.20E-02	9.03E-05	9.30E-04	2.56E-03	7.14E-01	1.31E-03	6.02E-03	2.95E-03	4.22E-02	3.36E-02	7.32E-04	1.67E-05	3.25E-01	7.24E-04	6.29E-02	8.14E-03	1.20E-02	1.62E-02	1.35E-02	1.62E-03	2.71E-05	4.77E-04	4.43E-01	9.17E-06
BY	7.40E-04	1.62E-04	1.37E-01	7.43E-05	7.63E-04	2.03E-02	5.96E-03	1.07E+00	1.65E-02	1.04E-03	1.91E-01	2.42E-01	1.73E-02	9.23E-04	4.58E-01	1.57E-02	1.87E-01	6.07E-02	7.41E-03	1.20E-03	1.54E-02	1.60E-03	1.41E-04	2.79E-03	4.56E-01	1.07E-05
CH	1.76E-04	5.99E-06	4.05E-02	1.81E-06	1.18E-04	1.19E-02	1.86E-04	8.53E-05	2.54E+00	9.95E-05	1.25E-02	2.79E-01	5.28E-04	5.27E-06	5.69E-01	1.75E-04	7.84E-01	1.72E-02	1.81E-04	1.50E-04	3.94E-03	6.93E-05	4.45E-05	5.97E-04	2.13E+00	1.21E-07
CY	4.22E-05	1.25E-05	7.57E-04	2.84E-06	1.17E-05	6.29E-05	2.90E-04	1.86E-05	1.28E-04	1.16E-01	3.78E-04	5.77E-04	1.61E-05	3.68E-07	1.09E-02	1.46E-05	2.03E-03	2.00E-04	2.91E-04	5.03E-04	2.03E-04	7.58E-06	8.09E-07	1.84E-05	1.93E-02	1.21E-07
CZ	4.03E-04	3.93E-05	1.60E+00	1.33E-05	8.10E-04	3.00E-02	2.00E-03	1.17E-03	5.89E-02	2.20E-04	9.73E+00	1.17E+00	4.28E-03	4.62E-05	4.71E-01	1.31E-03	4.13E-01	4.32E-02	1.62E-03	3.64E-04	3.35E-02	4.92E-03	8.88E-05	1.16E-03	5.54E-01	1.39E-06
DE	6.76E-04	7.05E-05	1.64E+00	2.81E-05	7.65E-04	8.47E-01	1.89E-03	2.81E-03	9.10E-01	3.86E-04	2.14E+00	3.55E+01	7.76E-02	1.71E-04	2.54E+00	5.11E-03	6.20E+00	7.60E-01	3.02E-03	5.37E-04	2.35E-02	1.71E-03	1.20E-03	8.92E-03	1.55E+00	3.33E-06
DK	3.01E-05	4.49E-06	2.51E-02	2.81E-06	3.01E-05	3.21E-02	1.03E-04	9.37E-04	5.20E-03	2.41E-05	2.95E-02	3.35E-01	6.84E-01	6.57E-05	1.81E-01	1.48E-03	1.96E-01	1.69E-01	1.56E-04	1.86E-05	8.78E-04	7.48E-05	3.43E-04	2.99E-03	3.63E-02	5.38E-07
EE	4.25E-05	1.63E-05	2.00E-02	7.53E-06	5.09E-05	5.39E-03	2.43E-04	4.66E-03	2.29E-03	1.04E-04	2.63E-02	6.06E-02	8.03E-03	6.21E-02	6.93E-02	4.42E-02	3.75E-02	2.34E-02	6.02E-04	7.55E-05	1.43E-03	1.41E-04	5.69E-05	1.36E-03	3.62E-02	1.82E-06
ES	3.77E-04	1.56E-05	3.46E-02	5.87E-06	1.88E-04	2.11E-02	6.94E-04	2.47E-04	1.37E-02	1.42E-04	1.67E-02	7.03E-02	2.46E-03	9.21E-06	1.87E+02	6.90E-04	1.24E+00	1.28E-01	6.12E-04	9.47E-04	4.71E-03	1.25E-04	9.54E-04	9.97E-03	7.64E-01	1.36E-06
FI	1.59E-04	8.29E-05	7.39E-02	3.60E-05	2.17E-04	2.16E-02	9.20E-04	9.03E-03	9.89E-03	4.24E-04	9.03E-02	1.98E-01	2.00E-02	1.76E-02	4.42E-01	6.02E+00	1.77E-01	9.21E-02	2.62E-03	2.64E-04	5.80E-03	4.71E-04	2.60E-04	1.06E-02	1.75E-01	3.09E-05
FR	9.92E-04	4.23E-05	1.83E-01	1.52E-05	5.41E-04	1.30E+00	1.49E-03	8.43E-04	6.37E-01	3.50E-04	9.24E-02	1.58E+00	1.38E-02	5.59E-05	1.96E+01	2.47E-03	6.21E+01	8.70E-01	1.85E-03	1.82E-03	1.63E-02	4.27E-04	2.56E-03	1.69E-02	3.34E+00	2.60E-06
GB	1.17E-04	1.83E-05	5.31E-02	1.01E-05	1.14E-04	1.57E-01	3.41E-04	1.22E-03	1.37E-02	5.90E-05	4.64E-02	3.15E-01	2.69E-02	7.64E-05	1.59E+00	2.18E-03	1.48E+00	1.29E+01	5.88E-04	1.14E-04	2.61E-03	2.15E-04	1.42E-02	2.78E-02	1.29E-01	1.49E-06
GE	1.24E-04	1.81E-02	8.75E-03	3.83E-03	6.61E-05	5.63E-04	1.98E-03	2.98E-04	1.14E-03	6.87E-03	3.80E-03	5.53E-03	1.94E-04	9.34E-06	5.41E-02	3.04E-04	1.06E-02	2.20E-03	4.23E+00	6.70E-04	1.18E-03	7.76E-05	8.84E-06	1.80E-04	5.00E-02	2.25E-05
GR	1.18E-02	1.71E-04	3.93E-02	5.58E-05	7.81E-04	2.17E-03	4.65E-02	5.05E-04	5.51E-03	7.12E-03	2.00E-02	2.19E-02	4.98E-04	8.95E-06	5.66E-01	3.86E-04	8.36E-02	6.72E-03	5.01E-03	2.60E-01	1.16E-02	6.21E-04	2.64E-05	5.51E-04	1.37E+00	5.59E-06
HR	2.24E-03	2.18E-05	2.89E-01	7.42E-06	1.75E-02	4.57E-03	2.40E-03	2.88E-04	1.11E-02	2.63E-04	1.31E-01	6.95E-02	7.94E-04	8.08E-06	5.05E-01	3.29E-04	1.22E-01	1.07E-02	7.17E-04	7.06E-04	1.40E+00	3.91E-03	2.82E-05	4.25E-04	2.11E+00	7.82E-07
HU	1.33E-03	5.57E-05	5.50E-01	1.89E-05	3.71E-03	7.40E-03	6.66E-03	8.50E-04	1.73E-02	2.08E-04	3.53E-01	1.36E-01	1.50E-03	1.69E-05	4.15E-01	6.21E-04	1.34E-01	1.62E-02	1.82E-03	9.98E-04	1.96E-01	8.97E-02	3.91E-05	5.80E-04	8.82E-01	1.55E-06
IE	2.05E-05	3.46E-06	8.52E-03	1.84E-06	1.51E-05	1.03E-02	5.64E-05	1.56E-04	1.46E-03	1.24E-05	7.19E-03	3.24E-02	1.88E-03	6.18E-06	4.03E-01	3.10E-04	1.23E-01	2.42E-01	1.09E-04	2.46E-05	3.48E-04	3.22E-05	4.89E-02	9.85E-03	2.07E-02	2.63E-07
IS	8.93E-06	2.25E-06	2.27E-03	2.00E-06	7.75E-06	1.66E-03	4.25E-05	8.71E-05	4.05E-04	1.20E-05	2.43E-03	6.66E-03	9.33E-04	1.36E-05	5.08E-02	1.08E-03	1.84E-02	1.82E-02	7.44E-05	1.80E-05	1.38E-04	1.46E-05	1.44E-04	8.91E-01	7.15E-03	1.99E-06
IT	9.74E-03	6.84E-05	3.54E-01	2.02E-05	5.22E-03	1.87E-02	4.69E-03	4.37E-04	2.76E-01	2.18E-03	1.00E-01	2.22E-01	2.21E-03	1.70E-05	4.31E+00	7.48E-04	1.50E+00	4.86E-02	1.90E-03	6.04E-03	1.90E-01	1.67E-03	1.65E-04	2.61E-03	7.51E+01	1.78E-06
KY	6.41E-05	1.59E-03	5.39E-03	5.22E-04	3.48E-05	5.17E-04	3.98E-04	1.79E-04	1.16E-03	2.26E-03	3.04E-03	4.89E-03	1.11E-04	7.74E-06	5.57E-02	3.72E-04	1.03E-02	1.55E-03	1.66E-02	2.51E-04	6.23E-04	3.65E-05	5.70E-06	1.87E-04	3.51E-02	1.77E-01
KZ	1.24E-03	1.43E-02	1.56E-01	7.11E-03	7.63E-04	1.65E-02	1.11E-02	9.92E-03	2.53E-02	1.99E-02	1.03E-01	1.50E-01	5.39E-03	6.55E-04	1.03E+00	2.80E-02	2.43E-01	6.09E-02	2.12E-01	4.53E-03	1.43E-02	1.17E-03	2.10E-04	9.46E-03	7.22E-01	8.17E-02
LI	7.88E-07	3.38E-08	4.12E-04	1.03E-08	5.72E-07	6.51E-05	8.51E-07	5.54E-07	1.10E-02	5.16E-07	9.76E-05	1.74E-03	3.36E-06	3.91E-08	2.87E-03	1.15E-06	2.11E-03	9.47E-05	1.05E-06	6.87E-07	1.91E-05	4.33E-07	2.24E-07	3.02E-06	8.37E-03	6.64E-10
LT	1.22E-04	2.54E-05	5.51E-02	1.34E-05	1.58E-04	1.18E-02	7.54E-04	4.60E-02	6.13E-03	1.06E-04	7.95E-02	1.44E-01	2.16E-02	4.46E-04	1.39E-01	8.92E-03	8.57E-02	4.23E-02	1.12E-03	1.58E-04	4.00E-03	4.33E-04	9.06E-05	1.48E-03	9.56E-02	1.57E-06
LU	4.58E-06	3.23E-07	4.94E-03	1.21E-07	3.64E-06	6.06E-02	1.10E-05	8.10E-06	2.87E-03	1.76E-06	1.99E-03	6.59E-02	1.19E-04	6.19E-07	3.73E-02	2.12E-05	5.24E-01	5.94E-03	1.46E-05	4.14E-06	8.80E-05	3.93E-06	1.02E-05	7.16E-05	9.30E-03	1.49E-08
LV	9.48E-05	2.50E-05	4.13E-02	1.26E-05	1.09E-04	1.11E-02	6.26E-04	2.07E-02	4.70E-03	1.22E-04	6.04E-02	1.23E-01	1.75E-02	2.79E-03	1.19E-01	1.96E-02	7.34E-02	3.98E-02	1.06E-03	1.65E-04	2.80E-03	2.97E-04	8.61E-05	1.72E-03	7.24E-02	1.84E-06
MC	7.59E-08	1.37E-09	4.95E-06	4.66E-10	3.55E-08	5.65E-07	8.32E-08	1.10E-08	5.06E-06	2.75E-08	1.51E-06	4.27E-06	5.57E-08	4.27E-10	2.05E-04	2.02E-08	6.50E-04	1.66E-06	3.99E-08	1.10E-07	1.27E-06	2.46E-08	5.95E-09	7.54E-08	6.02E-04	3.73E-11
MD	1.97E-04	1.24E-04	1.70E-02	3.94E-05	1.34E-04	9.05E-04	5.13E-03	1.90E-03	1.54E-03	7.04E-04	1.37E-02	1.15E-02	4.05E-04	1.15E-05	7.60E-02	4.70E-04	1.52E-02	2.60E-03	5.34E-03	8.60E-04	2.18E-03	2.72E-04	7.53E-06	1.78E-04	7.21E-02	2.70E-06
ME	1.03E-02	1.07E-05	1.29E-02	3.29E-06	3.17E-03	5.36E-04	1.49E-03	3.57E-05	1.40E-03	1.31E-04	8.49E-03	5.88E-03	8.83E-05	8.74E-07	1.25E-01	3.76E-05	2.05E-02	1.52E-03	2.76E-04	7.32E-04	9.96E-03	3.67E-04	5.45E-06	7.94E-05	5.05E-01	3.06E-07
MK	1.43E-02	3.03E-05	1.46E-02	9.06E-06	2.87E-04	5.75E-04	1.24E-02	6.42E-05	1.58E-03	3.90E-04	8.08E-03	6.64E-03	1.11E-04	1.51E-06	1.15E-01	6.18E-05	1.91E-02	1.71E-03	8.95E-04	7.52E-03	3.77E-03	3.56E-04	5.68E-06	9.30E-05	2.19E-01	9.16E-07
MT	2.87E-06	1.21E-08	2.92E-05	5.44E-09	9.19E-07	3.57E-06	1.93E-06	6.98E-08	7.56E-06	2.41E-07	1.14E-05	2.35E-05	4.64E-07	3.34E-09	1.52E-03	1.35E-07	2.39E-04	8.79E-06	5.58E-07	4.18E-06	1.51E-05	1.80E-07	3.68E-08	7.08E-07	2.18E-03	7.05E-10
NL	4.40E-05	3.15E-06	2.59E-02	1.41E-06	4.06E-05	4.36E-01	1.08E-04	1.66E-04	6.52E-03	1.46E-05	1.95E-02	8.77E-01	5.51E-03	9.84E-06	2.70E-01	3.50E-04	9.91E-01	2.96E-01	1.38E-04	2.94E-05	9.27E-04	6.69E-05	2.78E-04	1.55E-03	4.24E-02	2.26E-07
NO	1.52E-04	4.11E-05	7.58E-02	1.91E-05	1.89E-04	6.52E-02	8.34E-04	2.43E-03	1.46E-02	1.76E-04	9.09E-02	3.68E-01	6.80E-02	4.19E-04	7.69E-01	1.18E-01	4.56E-01	3.63E-01	1.15E-03	1.63E-04	4.65E-03	4.27E-04	8.79E-04	2.76E-02	1.48E-01	1.25E-05
PL	1.10E-03	1.42E-04	7.34E-01	5.38E-05	1.95E-03	1.02E-01	6.12E-03	4.44E-02	6.79E-02	6.61E-04	4.80E+00	2.32E+00	5.87E-02	3.83E-04	1.06E+00	1.49E-02	7.74E-01	2.41E-01	6.23E-03	1.24E-03	5.83E-02	8.38E-03	4.88E-04	5.49E-03	9.56E-01	5.85E-06
PT	2.05E-05	1.84E-06	3.54E-03	7.66E-07	1.16E-05	2.36E-03	4.29E-05	3.67E-05	1.18E-03	1.63E-05	2.22E-03	9.57E-03	3.56E-04	1.25E-06	3.49E+00	1.37E-04	5.12E-02	1.75E-02	6.36E-05	4.97E-05	2.60E-04	1.05E-05	1.78E-04	2.67E-03	2.72E-02	2.25E-07
RO	3.37E-03	4.88E-04	3.18E-01	1.58E-04	2.95E-03	7.80E-03	1.10E-01	4.53E-03	2.02E-02	2.67E-03	1.52E-01	1.19E-01	2.53E-03	4.67E-05	7.29E-01	1.72E-03	1.67E-01	2.08E-02	2.18E-02	6.22E-03	5.19E-02	9.24E-03	6.31E-05	1.20E-03	1.08E+00	9.95E-06
RS	1.37E-02	9.35E-05	1.41E-01	2.88E-05	8.59E-03	3.91E-03	4.61E-02	3.98E-04	7.92E-03	5.54E-04	1.09E-01	5.60E-02	7.78E-04	9.27E-06	3.81E-01	3.63E-04	8.39E-02	1.03E-02	2.89E-03	4.65E-03	8.02E-02	7.47E-03	2.97E-05	3.95E-04	8.06E-01	2.97E-06
RU	5.39E-03	2.05E-02	8.62E-01	1.16E-02	3.82E-03	1.30E-01	5.89E-02	2.10E-01	1.17E-01	4.22E-02	7.48E-01	1.21E+00	7.80E-02	5.75E-02	4.22E+00	1.35E+00	1.31E+00	4.90E-01	7.27E-01	2.00E-02	7.67E-02	6.79E-03	1.51E-03	6.46E-02	3.01E+00	1.38E-02
SE	2.37E-04	5.95E-05	1.57E-01	2.52E-05	3.33E-04	7.43E-02	1.49E-03	8.29E-03	2.44E-02	2.66E-04	1.98E-01	7.53E-01	3.39E-01	2.46E-03	8.83E-01	7.06E-01	5.15E-01	3.88E-01	1.81E-03	2.62E-04	9.12E-03	8.08E-04	8.94E-04	2.50E-02	2.55E-01	1.71E-05
SI	3.38E-04	7.08E-06	2.27E-01	2.58E-06	5.60E-04	2.04E-03	5.40E-04	9.09E-05	7.39E-03	7.40E-05	4.13E-02	3.62E-02	2.86E-04	3.50E-06	2.05E-01	1.27E-04	6.06E-02	4.40E-03	2.45E-04	1.47E-04	2.17E-01	7.45E-04	1.12E-05	1.63E-04	1.57E+00	2.13E-07
SK	5.83E-04	3.70E-05	3.58E-01	1.26E-05	1.17E-03	6.90E-03	3.11E-03	9.52E-04	1.77E-02	1.70E-04	9.36E-01	1.33E-01	1.36E-03	1.62E-05	2.53E-01	5.66E-04	1.20E-01	1.43E-02	1.22E-03	4.86E-04	3.25E-02	1.55E-02	3.29E-05	4.43E-04	4.19E-01	1.13E-06
TJ	2.88E-05	7.21E-04	2.11E-03	2.46E-04	1.44E-05	1.87E-04	1.74E-04	6.62E-05	4.45E-04	1.21E-03	1.09E-03	1.74E-03	3.88E-05	2.59E-06	2.31E-02	1.25E-04	3.94E-03	5.60E-04	7.35E-03	1.17E-04	2.54E-04	1.41E-05	2.12E-06	6.54E-05	1.47E-02	9.74E-03
TM	1.31E-04	3.89E-03	1.28E-02	2.65E-03	7.57E-05	1.38E-03	1.13E-03	7.64E-04	2.29E-03	5.33E-03	8.54E-03	1.24E-02	3.98E-04	3.58E-05	9.42E-02	1.61E-03	2.26E-02	4.74E-03	4.87E-02	5.35E-04	1.40E-03	1.06E-04	1.67E-05	6.20E-04	7.03E-02	1.21E-03
TR	3.06E-03	4.00E-02	8.94E-02	3.23E-03	9.34E-04	6.90E-03	5.58E-02	4.98E-03	1.36E-02	3.11E-01	5.43E-02	6.76E-02	2.57E-03	1.02E-04	1.13E+00	4.02E-03	1.78E-01	2.37E-02	3.87E-01	3.10E-02	1.56E-02	1.03E-03	8.74E-05	2.06E-03	1.09E+00	4.22E-05
UA	2.70E-03	1.41E-03	3.86E-01	5.84E-04	2.31E-03	2.64E-02	3.86E-02	9.12E-02	3.84E-02	9.65E-03	4.36E-01	3.45E-01	1.29E-02	4.32E-04	1.17E+00	1.33E-02	3.48E-01	7.28E-02	7.12E-02	1.08E-02	4.39E-02	6.52E-03	1.93E-04	4.16E-03	1.32E+00	8.56E-05
UZ	1.39E-04	3.27E-03	1.35E-02	1.51E-03	8.09E-05	1.46E-03	1.17E-03	8.25E-04	2.42E-03	4.96E-03	8.76E-03	1.31E-02	4.49E-04	4.35E-05	1.04E-01	2.02E-03	2.37E-02	5.52E-03	4.07E-02	5.65E-04	1.48E-03	1.07E-04	2.00E-05	7.85E-04	7.41E-02	2.84E-02

Table B10 *(continued)*

Code	KZ	LI	LT	LU	LV	MC	MD	ME	MK	MT	NL	NO	PL	PT	RO	RS	RU	SE	SI	SK	TJ	TM	TR	UA	UZ
AL	9.22E-05	7.06E-06	2.76E-05	1.03E-04	3.47E-06	4.73E-06	3.06E-04	4.18E-02	5.47E-02	4.18E-04	2.41E-05	3.44E-05	5.81E-03	4.36E-04	4.79E-03	1.46E-01	1.25E-03	2.84E-04	8.33E-05	9.83E-03	2.56E-07	8.10E-06	6.57E-04	2.00E-03	7.10E-06
AM	7.20E-04	1.07E-06	2.36E-05	1.56E-05	3.20E-06	3.63E-07	1.23E-04	6.37E-05	2.09E-04	1.84E-05	4.41E-06	1.91E-05	1.26E-03	6.90E-05	9.43E-04	8.21E-04	4.19E-03	1.92E-04	7.74E-06	7.09E-04	2.57E-06	2.01E-04	7.99E-03	1.45E-03	1.23E-04
AT	3.26E-04	2.37E-03	5.58E-04	4.24E-03	7.55E-05	3.24E-05	5.43E-04	1.34E-03	1.18E-03	2.35E-04	5.29E-04	3.08E-04	1.24E-01	2.33E-03	6.37E-03	2.27E-02	2.30E-03	3.79E-03	1.40E-02	3.79E-01	4.60E-07	1.63E-05	2.88E-04	5.30E-03	1.62E-05
AZ	5.73E-03	2.19E-06	7.05E-05	3.51E-05	1.02E-05	6.21E-07	2.86E-04	1.07E-04	3.41E-04	2.96E-05	1.09E-05	6.14E-05	3.23E-03	1.32E-04	2.09E-03	1.49E-03	3.12E-02	6.30E-04	1.46E-05	1.65E-03	3.13E-05	1.31E-03	6.37E-03	3.79E-03	7.74E-04
BA	1.84E-04	3.07E-05	1.53E-04	6.40E-04	1.66E-05	1.53E-05	6.96E-04	5.88E-02	4.09E-03	5.67E-04	1.27E-04	1.45E-04	5.87E-02	1.16E-03	1.23E-02	1.91E-01	1.76E-03	1.23E-03	7.07E-04	1.06E-01	4.21E-07	1.26E-05	3.96E-04	4.89E-03	1.17E-05
BE	4.31E-05	4.76E-05	1.33E-04	9.19E-02	2.00E-05	2.51E-06	6.72E-05	1.02E-04	1.26E-04	1.58E-05	1.09E-02	2.67E-04	9.08E-03	1.88E-03	5.27E-04	9.80E-04	3.42E-04	2.43E-03	3.80E-05	2.90E-03	8.99E-08	1.36E-06	2.94E-05	5.44E-04	1.50E-06
BG	1.46E-03	2.42E-05	4.09E-04	4.12E-04	4.27E-05	8.27E-06	1.35E-02	4.72E-03	3.90E-02	5.24E-04	9.29E-05	2.62E-04	6.07E-02	8.67E-04	3.10E-01	2.55E-01	2.37E-02	2.31E-03	2.94E-04	6.48E-02	3.54E-06	1.13E-04	1.33E-02	5.39E-02	1.03E-04
BY	2.51E-03	6.99E-05	9.67E-02	2.24E-03	6.73E-03	1.08E-05	1.25E-02	1.97E-03	2.66E-03	1.62E-04	9.15E-04	2.19E-03	7.92E-01	1.83E-03	5.42E-02	3.19E-02	1.21E-01	4.59E-02	5.03E-04	1.20E-01	5.43E-06	1.10E-04	2.98E-03	1.95E-01	1.19E-04
CH	4.47E-05	8.73E-03	8.69E-05	3.00E-03	1.48E-05	2.57E-05	5.19E-05	2.80E-04	2.93E-04	1.16E-04	2.38E-04	1.02E-04	7.76E-03	1.76E-03	5.11E-04	1.84E-03	3.78E-04	9.29E-04	1.60E-04	3.74E-03	5.38E-08	3.14E-06	6.94E-05	5.03E-04	3.01E-06
CY	2.34E-05	4.81E-07	6.42E-06	9.18E-06	7.96E-07	2.45E-07	9.60E-05	5.43E-05	1.60E-04	4.88E-05	2.14E-06	6.26E-06	5.48E-04	2.72E-05	8.13E-04	5.72E-04	4.14E-04	4.56E-05	5.12E-06	3.81E-04	8.89E-08	2.34E-06	2.26E-03	5.59E-04	2.00E-06
CZ	4.17E-04	2.93E-04	1.19E-03	8.24E-03	1.40E-04	1.07E-05	7.54E-04	1.09E-03	1.22E-03	1.06E-04	8.62E-04	4.67E-04	8.30E-01	1.61E-03	9.58E-03	2.80E-02	3.24E-03	6.96E-03	1.37E-03	8.93E-01	7.75E-07	2.29E-05	4.08E-04	7.79E-03	2.35E-05
DE	9.37E-04	4.35E-03	3.97E-03	3.29E-01	5.78E-04	3.31E-05	9.70E-04	1.36E-03	1.48E-03	2.63E-04	5.04E-02	4.03E-03	6.98E-01	1.12E-02	8.74E-03	2.11E-02	8.58E-03	5.22E-02	1.16E-03	1.38E-01	2.08E-06	4.34E-05	5.78E-04	1.17E-02	4.77E-05
DK	6.56E-05	2.10E-05	2.41E-03	1.85E-03	3.26E-04	9.38E-07	1.42E-04	6.51E-05	6.86E-05	1.52E-05	2.62E-03	2.78E-03	5.04E-02	1.24E-03	8.37E-04	1.17E-03	1.70E-03	1.06E-01	3.74E-05	6.66E-03	4.32E-07	2.95E-06	3.83E-05	1.44E-03	4.13E-06
EE	2.16E-04	9.54E-06	1.03E-02	3.90E-04	1.06E-02	9.26E-07	3.06E-04	1.10E-04	1.50E-04	1.48E-05	3.21E-04	1.28E-03	7.00E-02	3.87E-04	1.81E-03	1.95E-03	2.04E-02	7.49E-02	5.39E-05	1.27E-02	6.64E-07	1.10E-05	2.16E-04	4.16E-03	1.36E-05
ES	1.77E-04	4.33E-05	2.54E-04	1.77E-03	3.24E-05	4.37E-05	2.56E-04	6.32E-04	7.38E-04	6.33E-04	6.14E-04	9.87E-04	1.86E-02	2.76E-01	2.11E-03	4.35E-03	1.11E-03	4.65E-03	1.87E-04	7.50E-03	5.93E-07	9.03E-06	3.69E-04	1.68E-03	1.04E-05
FI	1.61E-03	4.36E-05	1.40E-02	1.70E-03	5.14E-03	4.98E-06	1.21E-03	4.15E-04	5.34E-04	5.32E-05	1.16E-03	1.44E-02	2.06E-01	2.80E-03	6.63E-03	7.16E-03	7.79E-02	5.21E-01	2.17E-04	3.80E-02	9.90E-06	6.59E-05	8.15E-04	1.46E-02	1.03E-04
FR	6.13E-04	4.98E-04	9.66E-04	2.24E-01	1.46E-04	1.07E-03	7.14E-04	1.41E-03	1.92E-03	9.14E-04	9.08E-03	2.41E-03	7.56E-02	4.83E-02	5.33E-03	1.14E-02	3.61E-03	1.74E-02	6.91E-04	2.88E-02	1.02E-06	2.29E-05	6.99E-04	5.68E-03	2.51E-05
GB	2.86E-04	5.14E-05	2.26E-03	5.08E-03	3.31E-04	4.32E-06	3.55E-04	2.52E-04	3.09E-04	3.45E-05	7.41E-03	4.45E-03	6.99E-02	1.61E-02	2.44E-03	3.60E-03	3.21E-03	2.55E-02	1.01E-04	1.58E-02	9.36E-07	1.16E-05	1.16E-04	3.10E-03	1.41E-05
GE	1.56E-03	4.70E-06	1.13E-04	7.12E-05	1.56E-05	1.13E-06	8.90E-04	2.28E-04	6.93E-04	5.95E-05	2.18E-05	7.33E-05	6.27E-03	1.97E-04	7.04E-03	4.22E-03	4.44E-02	7.05E-04	4.41E-05	4.09E-03	1.40E-05	2.94E-04	1.48E-02	1.02E-02	2.47E-04
GR	6.72E-04	2.08E-05	1.84E-04	3.15E-04	2.16E-05	1.09E-05	3.72E-03	5.27E-03	7.44E-02	2.20E-03	7.64E-05	1.67E-04	2.59E-02	1.17E-03	4.66E-02	8.42E-02	1.08E-02	1.37E-03	2.13E-04	2.66E-02	2.41E-06	6.00E-05	1.63E-02	1.87E-02	5.29E-05
HR	1.66E-04	4.70E-05	2.36E-04	8.38E-04	2.62E-05	2.08E-05	5.52E-04	8.79E-03	2.11E-03	4.64E-04	1.49E-04	1.60E-04	8.34E-02	1.12E-03	1.01E-02	1.01E-01	1.45E-03	1.53E-03	1.08E-02	1.30E-01	3.99E-07	9.59E-06	3.18E-04	4.54E-03	9.44E-06
HU	4.33E-04	7.64E-05	5.65E-04	1.44E-03	5.89E-05	1.43E-05	1.93E-03	4.68E-03	4.33E-03	2.93E-04	2.51E-04	2.67E-04	2.92E-01	1.10E-03	6.01E-02	2.16E-01	3.64E-03	2.90E-03	3.37E-03	1.70E+00	8.49E-07	3.18E-05	6.11E-04	2.57E-02	2.86E-05
IE	5.50E-05	5.99E-06	2.09E-04	5.32E-04	2.67E-05	7.74E-07	5.25E-05	3.99E-05	5.25E-05	1.13E-05	3.79E-04	4.29E-04	1.02E-02	6.26E-03	4.06E-04	5.32E-04	4.97E-04	2.50E-03	1.57E-05	2.55E-03	1.49E-07	2.18E-06	2.20E-05	4.73E-04	2.59E-06
IS	7.39E-05	1.27E-06	1.40E-04	7.31E-05	2.59E-05	3.24E-07	3.47E-05	2.05E-05	2.54E-05	7.40E-06	7.57E-05	9.50E-04	4.88E-03	9.95E-04	2.44E-04	3.18E-04	3.77E-04	3.45E-03	5.04E-06	1.34E-03	7.28E-07	1.23E-06	2.14E-05	2.95E-04	4.93E-06
IT	3.59E-04	9.91E-04	3.74E-04	3.46E-03	4.86E-05	5.61E-04	9.99E-04	1.47E-02	9.42E-03	8.02E-03	5.23E-04	5.40E-04	7.02E-02	9.02E-03	1.26E-02	6.30E-02	2.93E-03	3.99E-03	1.08E-02	7.78E-02	8.18E-07	2.71E-05	1.64E-03	6.97E-03	2.47E-05
KY	2.18E-01	4.84E-06	9.62E-05	6.41E-05	1.43E-05	1.04E-06	2.03E-04	1.15E-04	3.14E-04	2.69E-05	1.79E-05	8.29E-05	4.61E-03	2.46E-04	1.59E-03	1.63E-03	7.83E-03	8.10E-04	2.41E-05	2.07E-03	2.51E-02	2.47E-03	2.59E-03	1.88E-03	1.01E-01
KZ	5.08E+00	1.01E-04	4.53E-03	1.86E-03	7.68E-04	2.04E-05	9.63E-03	2.36E-03	6.14E-03	4.36E-04	6.41E-04	4.61E-03	1.77E-01	4.71E-03	6.28E-02	3.63E-02	9.57E-01	5.24E-02	5.27E-04	7.61E-02	2.23E-02	3.02E-02	2.52E-02	1.24E-01	1.64E-01
LI	2.75E-07	4.88E-04	5.58E-07	1.69E-05	1.03E-07	1.30E-07	2.55E-07	1.25E-06	1.22E-06	3.84E-07	1.46E-06	6.19E-07	5.57E-05	9.38E-06	2.50E-06	9.26E-06	2.42E-06	5.77E-06	8.66E-07	2.45E-05	3.03E-10	1.95E-08	3.29E-07	2.88E-06	1.88E-08
LT	4.04E-04	2.63E-05	5.69E-01	1.03E-03	9.69E-03	2.29E-06	1.28E-03	3.37E-04	4.53E-04	3.08E-05	6.35E-04	1.09E-03	3.09E-01	6.39E-04	6.17E-03	6.31E-03	2.43E-02	4.11E-02	1.47E-04	4.22E-02	8.93E-07	1.93E-05	3.19E-04	1.66E-02	2.18E-05
LU	5.34E-06	8.07E-06	8.86E-06	1.57E-01	1.44E-06	3.42E-07	6.17E-06	9.03E-06	1.17E-05	1.89E-06	2.22E-04	1.53E-05	1.10E-03	1.60E-04	4.95E-05	8.82E-05	3.32E-05	1.66E-04	4.76E-06	3.90E-04	7.89E-09	1.48E-07	3.07E-06	5.66E-05	1.53E-07
LV	3.45E-04	1.95E-05	8.58E-02	8.35E-04	1.20E-01	1.73E-06	8.72E-04	2.40E-04	3.50E-04	2.75E-05	5.96E-04	1.53E-03	1.84E-01	5.83E-04	4.75E-03	4.33E-03	1.97E-02	8.13E-02	1.04E-04	2.87E-02	9.27E-07	1.73E-05	3.42E-04	1.08E-02	2.07E-05
MC	1.18E-08	1.25E-08	9.14E-09	9.25E-08	1.23E-09	9.20E-06	2.21E-08	1.05E-07	1.18E-07	9.22E-08	1.44E-08	1.56E-08	1.29E-06	5.26E-07	2.32E-07	7.11E-07	7.04E-08	1.01E-07	6.57E-08	1.11E-06	2.16E-11	6.07E-10	3.55E-08	1.59E-07	6.03E-10
MD	7.50E-04	6.18E-06	4.86E-04	1.26E-04	3.65E-05	1.47E-06	2.46E-01	4.35E-04	9.78E-04	5.37E-05	3.63E-05	1.14E-04	3.67E-02	2.02E-04	1.47E-01	7.58E-03	1.12E-02	1.45E-03	5.81E-05	1.63E-02	1.15E-06	5.71E-05	3.32E-03	8.62E-02	5.32E-05
ME	5.09E-05	5.26E-06	2.01E-05	8.37E-05	2.30E-06	3.05E-06	1.77E-04	2.35E-01	3.37E-03	2.10E-04	1.83E-05	2.29E-05	5.71E-03	2.78E-04	3.18E-03	1.14E-01	5.68E-04	2.01E-04	7.51E-05	1.22E-02	1.23E-07	4.42E-06	1.65E-04	1.21E-03	3.94E-06
MK	1.24E-04	6.27E-06	3.06E-05	8.84E-05	3.78E-06	2.92E-06	4.76E-04	2.90E-03	3.89E-01	2.07E-04	2.04E-05	3.31E-05	8.52E-03	2.75E-04	7.45E-03	2.07E-01	1.65E-03	2.72E-04	6.92E-05	1.31E-02	3.35E-07	1.07E-05	9.33E-04	2.73E-03	9.67E-06
MT	5.00E-08	2.33E-08	5.42E-08	5.43E-07	6.87E-09	2.13E-08	3.62E-07	4.65E-06	3.07E-06	6.28E-04	1.09E-07	1.29E-07	1.03E-05	2.17E-06	4.39E-06	1.53E-05	8.39E-07	8.07E-07	3.46E-07	8.85E-06	3.49E-10	8.36E-09	7.47E-07	1.85E-06	6.03E-09
NL	4.09E-05	2.56E-05	2.06E-04	7.39E-03	3.16E-05	1.26E-06	8.50E-05	8.83E-05	1.03E-04	1.21E-05	1.07E-01	6.63E-04	1.55E-02	1.61E-03	6.58E-04	1.14E-03	4.63E-04	4.07E-03	3.78E-05	4.59E-03	1.37E-07	1.55E-06	2.66E-05	6.53E-04	1.86E-06
NO	7.04E-04	5.67E-05	3.69E-03	3.64E-03	6.43E-04	4.57E-06	9.72E-04	3.95E-04	4.70E-04	6.18E-05	3.98E-03	6.82E-01	1.45E-01	5.28E-03	5.27E-03	7.51E-03	1.04E-02	4.44E-01	1.59E-04	3.37E-02	4.80E-06	2.69E-05	3.53E-04	9.05E-03	4.58E-05
PL	1.81E-03	3.01E-04	4.41E-02	1.33E-02	1.88E-03	2.08E-05	7.85E-03	3.36E-03	3.91E-03	2.78E-04	4.90E-03	3.56E-03	2.37E+01	4.75E-03	4.87E-02	7.89E-02	4.26E-02	7.91E-02	1.99E-03	1.42E+00	3.69E-06	1.08E-04	1.51E-03	1.34E-01	1.08E-04
PT	2.78E-05	3.96E-06	3.06E-05	1.89E-04	3.65E-06	1.12E-06	2.11E-05	3.66E-05	4.18E-05	2.81E-05	7.47E-05	1.78E-04	2.51E-03	2.01E+00	1.59E-04	2.80E-04	1.64E-04	8.96E-04	9.45E-06	7.71E-04	8.49E-08	1.17E-06	2.71E-05	1.82E-04	1.41E-06
RO	2.97E-03	8.47E-05	1.53E-03	1.34E-03	1.39E-04	2.00E-05	8.78E-02	8.88E-03	1.72E-02	5.24E-04	2.75E-04	6.46E-04	2.61E-01	2.02E-03	2.79E+00	3.70E-01	3.90E-02	6.25E-03	1.11E-03	3.20E-01	4.54E-06	2.19E-04	1.38E-02	1.85E-01	2.01E-04
RS	4.77E-04	3.29E-05	2.16E-04	6.69E-04	2.55E-05	1.09E-05	2.60E-03	8.06E-02	1.34E-01	4.13E-04	1.40E-04	1.78E-04	9.56E-02	9.77E-04	6.70E-02	3.19E+00	5.42E-03	1.68E-03	5.35E-04	1.96E-01	1.20E-06	3.88E-05	1.62E-03	1.36E-02	3.53E-05
RU	1.57E+00	4.84E-04	9.44E-02	1.18E-02	2.14E-02	7.65E-05	5.44E-02	1.10E-02	2.57E-02	1.80E-03	6.17E-03	3.92E-02	1.57E+00	2.04E-02	3.33E-01	1.77E-01	1.96E+01	6.67E-01	2.74E-03	4.77E-01	5.27E-03	1.54E-02	7.99E-02	9.89E-01	3.60E-02
SE	1.09E-03	1.13E-04	1.99E-02	4.71E-03	4.91E-03	6.94E-06	1.91E-03	5.94E-04	8.01E-04	8.68E-05	4.78E-03	7.28E-02	4.04E-01	5.06E-03	1.03E-02	1.30E-02	2.63E-02	1.21E+01	3.35E-04	6.48E-02	6.38E-06	3.57E-05	5.31E-04	1.79E-02	6.09E-05
SI	7.12E-05	3.21E-05	8.62E-05	3.99E-04	1.05E-05	1.21E-05	1.49E-04	6.23E-04	4.61E-04	1.27E-04	6.45E-05	5.32E-05	2.40E-02	4.62E-04	2.21E-03	9.69E-03	4.99E-04	5.27E-04	5.38E-02	3.22E-02	1.19E-07	3.11E-06	8.03E-05	1.40E-03	3.11E-06
SK	3.38E-04	7.83E-05	5.95E-04	1.46E-03	5.87E-05	8.13E-06	1.22E-03	1.94E-03	2.11E-03	1.22E-04	2.28E-04	2.18E-04	6.33E-01	8.11E-04	2.01E-02	5.63E-02	2.69E-03	2.27E-03	8.41E-04	6.57E+00	6.27E-07	2.62E-05	3.78E-04	2.44E-02	2.39E-05
TJ	2.98E-02	1.84E-06	3.14E-05	2.28E-05	4.58E-06	4.37E-07	7.89E-05	4.98E-05	1.47E-04	1.21E-05	6.42E-06	2.87E-05	1.57E-03	1.04E-04	6.40E-04	7.11E-04	3.24E-03	2.80E-04	9.77E-06	7.71E-04	1.01E-01	2.70E-03	1.25E-03	7.26E-04	4.70E-02
TM	7.54E-02	9.16E-06	3.43E-04	1.57E-04	5.25E-05	1.93E-06	8.91E-04	2.47E-04	6.71E-04	5.63E-05	5.12E-05	3.16E-04	1.39E-02	4.11E-04	5.76E-03	3.78E-03	5.06E-02	3.44E-03	5.37E-05	6.40E-03	5.39E-03	1.51E-01	4.85E-03	1.06E-02	8.81E-02
TR	6.90E-03	5.23E-05	1.68E-03	8.83E-04	1.97E-04	2.13E-05	2.52E-02	4.15E-03	1.49E-02	2.57E-03	2.56E-04	1.02E-03	1.02E-01	3.22E-03	1.89E-01	6.20E-02	1.49E-01	9.77E-03	4.81E-04	5.69E-02	2.67E-05	9.82E-04	1.21E+00	1.83E-01	7.17E-04
UA	1.68E-02	1.58E-04	1.54E-02	3.75E-03	1.39E-03	2.85E-05	1.78E-01	6.17E-03	1.28E-02	7.94E-04	1.04E-03	2.85E-03	1.34E+00	3.82E-03	4.56E-01	1.14E-01	5.02E-01	3.76E-02	1.29E-03	5.48E-01	3.04E-05	9.45E-04	3.59E-02	4.17E+00	9.52E-04
UZ	3.08E-01	9.86E-06	3.81E-04	1.63E-04	6.06E-05	2.02E-06	8.61E-04	2.61E-04	7.08E-04	5.91E-05	5.50E-05	3.77E-04	1.46E-02	4.70E-04	5.83E-03	3.97E-03	5.41E-02	4.22E-03	5.73E-05	6.59E-03	3.15E-02	3.14E-02	4.82E-03	1.10E-02	4.13E-01

Table B11. *Source-receptor matrix of PCDD/Fs deposition to EMEP countries in 2024, kg TEQ/year. Columns and rows represent sources and receptors, respectively.*

Code	AL	AM	AT	AZ	BA	BE	BG	BY	CH	CY	CZ	DE	DK	EE	ES	FI	FR	GB	GE	GR	HR	HU	IE	IS	IT	KY
AL	5.28E-04	1.38E-07	1.85E-05	1.06E-07	1.22E-04	1.24E-05	4.01E-05	1.57E-06	4.80E-06	1.80E-07	6.07E-06	1.99E-05	2.16E-06	1.55E-07	7.84E-05	1.87E-07	3.85E-05	1.15E-05	4.92E-07	1.98E-04	3.14E-05	4.55E-05	9.96E-07	3.51E-08	8.02E-04	5.69E-08
AM	1.56E-07	1.79E-03	2.31E-06	1.09E-04	5.02E-06	2.55E-06	5.33E-06	1.42E-06	9.69E-07	5.20E-07	7.74E-07	3.86E-06	7.90E-07	1.54E-07	1.26E-05	1.47E-07	5.73E-06	2.60E-06	2.54E-04	3.64E-06	1.59E-06	2.74E-06	2.55E-07	1.23E-08	3.18E-05	2.03E-07
AT	1.83E-06	1.41E-07	1.62E-02	1.63E-07	2.38E-04	1.55E-04	1.23E-05	1.04E-05	3.82E-04	5.20E-08	3.41E-04	1.69E-03	1.36E-05	1.36E-06	1.88E-04	1.39E-06	3.48E-04	8.38E-05	6.86E-07	6.19E-06	3.13E-04	7.65E-04	4.87E-06	1.87E-07	2.32E-03	5.32E-08
AZ	2.53E-07	1.88E-04	4.95E-06	1.10E-03	9.35E-06	6.12E-06	8.70E-06	4.01E-06	2.08E-06	5.93E-07	1.98E-06	9.68E-06	2.02E-06	5.46E-07	2.58E-05	6.67E-07	1.25E-05	6.44E-06	3.51E-04	5.51E-06	2.79E-06	5.92E-06	5.88E-07	3.78E-08	5.49E-05	2.53E-06
BA	1.81E-05	1.37E-07	2.00E-04	1.26E-07	1.98E-02	4.81E-05	3.48E-05	6.44E-06	1.50E-05	9.46E-08	6.58E-05	1.06E-04	7.14E-06	5.21E-07	1.44E-04	6.72E-07	9.65E-05	3.72E-05	5.33E-07	2.00E-05	1.48E-03	5.46E-04	2.54E-06	8.55E-08	1.62E-03	6.83E-08
BE	9.19E-08	2.17E-08	1.27E-05	2.48E-08	4.60E-06	1.40E-02	8.06E-07	2.59E-06	2.30E-05	5.91E-09	6.14E-06	8.01E-04	2.29E-05	6.23E-07	1.22E-04	5.74E-07	2.11E-03	5.34E-04	1.44E-07	4.62E-07	1.91E-06	3.13E-06	1.09E-05	2.12E-07	6.16E-05	1.78E-08
BG	6.60E-06	1.13E-06	9.14E-05	1.17E-06	2.88E-04	4.71E-05	1.31E-02	3.31E-05	1.54E-05	5.63E-07	3.06E-05	8.74E-05	1.08E-05	1.37E-06	1.36E-04	1.70E-06	8.57E-05	4.23E-05	6.88E-06	4.17E-04	7.37E-05	2.50E-04	3.32E-06	1.24E-07	5.80E-04	5.48E-07
BY	1.22E-06	8.01E-07	1.03E-04	1.11E-06	1.14E-04	2.16E-04	5.39E-05	1.78E-02	2.08E-05	1.24E-07	1.11E-04	4.44E-04	1.62E-04	5.73E-05	1.13E-04	3.48E-05	1.39E-04	2.07E-04	4.42E-06	1.19E-05	4.22E-05	2.36E-04	1.07E-05	6.24E-07	2.73E-04	7.02E-07
CH	4.90E-07	2.49E-08	1.60E-04	2.74E-08	2.05E-05	8.89E-05	1.76E-06	1.25E-06	4.17E-03	2.04E-08	7.80E-06	5.16E-04	3.29E-06	2.79E-07	1.45E-04	3.21E-07	8.97E-04	4.22E-05	1.10E-07	2.23E-06	1.33E-05	8.45E-06	3.02E-06	1.11E-07	2.18E-03	1.30E-08
CY	2.11E-07	1.76E-07	2.02E-06	1.02E-07	4.96E-06	2.01E-06	7.13E-06	8.64E-07	7.21E-07	1.43E-04	6.60E-07	3.14E-06	5.06E-07	6.53E-08	9.94E-06	6.65E-08	5.55E-06	1.98E-06	4.00E-07	1.84E-05	1.76E-06	2.71E-06	1.84E-07	8.17E-09	6.34E-05	1.74E-08
CZ	1.05E-06	1.93E-07	1.85E-03	2.13E-07	2.08E-04	3.16E-04	1.80E-05	2.40E-05	1.04E-04	5.02E-08	5.95E-03	2.50E-03	2.61E-05	2.14E-06	1.30E-04	2.24E-06	3.60E-04	1.23E-04	9.53E-07	4.77E-06	1.43E-04	8.05E-04	6.31E-06	2.12E-07	4.35E-04	7.33E-08
DE	1.90E-06	3.89E-07	2.09E-03	5.01E-07	1.58E-04	9.20E-03	1.72E-05	6.24E-05	1.66E-03	1.04E-07	1.01E-03	6.46E-02	7.03E-04	1.13E-05	7.66E-04	1.05E-05	5.82E-03	2.31E-03	2.22E-06	8.19E-06	7.31E-05	1.92E-04	7.18E-05	1.68E-06	1.39E-03	2.70E-07
DK	7.92E-08	3.07E-08	1.46E-05	5.13E-08	5.70E-06	3.32E-04	1.45E-06	1.88E-05	7.12E-06	6.57E-09	1.56E-05	7.86E-04	8.38E-03	4.75E-06	4.99E-05	3.99E-06	1.41E-04	6.55E-04	1.31E-07	4.24E-07	2.36E-06	1.01E-05	2.29E-05	9.34E-07	2.93E-05	5.77E-08
EE	1.20E-07	6.60E-08	1.63E-05	8.75E-08	1.08E-05	5.92E-05	3.79E-06	1.10E-04	3.63E-06	9.46E-09	1.60E-05	1.14E-04	7.16E-05	1.09E-03	2.22E-05	1.21E-04	3.13E-05	6.79E-05	2.99E-07	1.28E-06	4.56E-06	1.89E-05	3.50E-06	2.86E-07	3.24E-05	2.32E-07
ES	1.65E-06	1.28E-07	4.45E-05	1.57E-07	5.88E-05	2.18E-04	1.14E-05	8.71E-06	3.45E-05	6.61E-08	1.71E-05	2.02E-04	3.10E-05	1.32E-06	8.54E-02	1.96E-06	1.73E-03	4.20E-04	7.49E-07	1.15E-05	2.82E-05	2.65E-05	7.95E-05	2.64E-06	1.71E-03	1.33E-07
FI	4.86E-07	3.98E-07	5.38E-05	5.16E-07	3.80E-05	2.13E-04	1.37E-05	1.85E-04	1.63E-05	6.12E-08	5.13E-05	3.45E-04	1.63E-04	4.53E-04	1.22E-04	4.39E-03	1.42E-04	2.44E-04	1.55E-06	4.37E-06	1.54E-05	5.59E-05	1.52E-05	2.18E-06	1.35E-04	2.11E-06
FR	2.81E-06	2.78E-07	1.62E-04	3.13E-07	1.12E-04	5.94E-03	1.81E-05	2.33E-05	1.23E-03	9.25E-08	6.84E-05	2.83E-03	1.37E-04	4.98E-06	7.19E-03	6.12E-06	6.76E-02	2.75E-03	1.84E-06	1.82E-05	6.71E-05	6.57E-05	1.84E-04	4.08E-06	4.01E-03	2.98E-07
GB	3.82E-07	1.33E-07	2.79E-05	2.28E-07	2.14E-05	1.51E-03	4.79E-06	2.38E-05	2.07E-05	2.89E-08	2.13E-05	6.35E-04	2.66E-04	5.59E-06	7.10E-04	5.51E-06	1.54E-03	4.86E-02	6.18E-07	2.06E-06	7.33E-06	2.21E-05	1.22E-03	8.24E-06	1.26E-04	2.12E-07
GE	4.48E-07	1.06E-04	1.33E-05	5.68E-05	2.43E-05	1.25E-05	4.25E-05	8.69E-06	3.71E-06	8.49E-07	3.82E-06	1.87E-05	3.54E-06	8.09E-07	3.34E-05	6.97E-07	1.94E-05	1.23E-05	4.25E-03	1.32E-05	8.40E-06	1.72E-05	1.14E-06	4.58E-08	9.92E-05	1.16E-06
GR	1.93E-05	1.07E-06	5.54E-05	9.95E-07	1.91E-04	4.56E-05	8.98E-04	1.74E-05	1.54E-05	1.57E-06	1.89E-05	7.26E-05	1.05E-05	9.41E-07	2.47E-04	1.08E-06	1.23E-04	4.37E-05	4.33E-06	8.93E-03	5.76E-05	1.16E-04	3.96E-06	1.56E-07	2.29E-03	4.04E-07
HR	8.83E-06	1.35E-07	5.88E-04	1.27E-07	4.64E-03	5.92E-05	2.56E-05	8.14E-06	2.24E-05	6.78E-08	1.01E-04	1.53E-04	8.70E-06	6.66E-07	1.52E-04	8.18E-07	1.23E-04	4.26E-05	5.99E-07	1.24E-05	8.69E-03	1.14E-03	2.75E-06	1.02E-07	2.26E-03	6.01E-08
HU	3.51E-06	3.34E-07	1.54E-03	3.71E-07	1.27E-03	1.08E-04	6.44E-05	2.14E-05	3.62E-05	6.97E-08	2.95E-04	3.15E-04	1.49E-05	1.34E-06	1.29E-04	1.64E-06	1.42E-04	7.00E-05	1.29E-06	1.32E-05	1.31E-03	1.94E-02	3.97E-06	1.53E-07	8.25E-04	8.76E-08
IE	9.15E-08	3.13E-08	5.25E-06	5.06E-08	4.29E-06	1.05E-04	9.01E-07	3.73E-06	3.43E-06	8.05E-09	4.04E-06	6.91E-05	2.00E-05	6.42E-07	2.28E-04	8.34E-07	1.83E-04	9.12E-04	1.44E-07	5.18E-07	1.47E-06	3.40E-06	6.17E-03	3.56E-06	3.09E-05	4.31E-08
IS	6.59E-08	5.92E-08	4.32E-06	9.48E-08	4.52E-06	2.67E-05	1.41E-06	4.33E-06	1.58E-06	1.11E-08	2.81E-06	2.41E-05	1.41E-05	1.46E-06	2.94E-05	3.24E-06	3.44E-05	7.76E-05	1.84E-07	4.87E-07	1.55E-06	5.19E-06	1.52E-05	1.90E-04	1.94E-05	4.76E-07
IT	3.69E-05	3.09E-07	9.50E-04	3.33E-07	1.26E-03	2.03E-04	5.54E-05	1.28E-05	5.17E-04	2.85E-07	7.64E-05	5.32E-04	2.62E-05	1.59E-06	1.64E-03	2.03E-06	1.78E-03	1.73E-04	1.46E-06	8.86E-05	9.91E-04	2.78E-04	1.47E-05	6.07E-07	1.10E-01	1.45E-07
KY	2.66E-07	6.95E-06	5.97E-06	6.37E-06	1.18E-05	6.47E-06	5.90E-06	2.85E-06	3.16E-06	3.65E-07	1.95E-06	1.10E-05	1.43E-06	4.09E-07	4.07E-05	5.48E-07	1.72E-05	6.49E-06	9.59E-06	4.75E-06	3.20E-06	5.07E-06	6.09E-07	3.87E-08	7.04E-05	9.48E-03
KZ	4.45E-06	5.43E-05	1.77E-04	9.35E-05	2.62E-04	2.89E-04	1.72E-04	2.50E-04	7.00E-05	2.76E-06	8.66E-05	4.48E-04	9.29E-05	5.04E-05	6.50E-04	6.98E-05	4.07E-04	3.30E-04	1.11E-04	7.90E-05	7.66E-05	2.10E-04	2.63E-05	2.71E-06	1.18E-03	4.08E-03
LI	2.46E-09	1.41E-10	3.22E-06	1.58E-10	1.09E-07	4.37E-07	8.69E-09	6.22E-09	1.74E-05	1.13E-10	5.06E-08	2.96E-06	1.81E-08	1.60E-09	6.81E-07	1.77E-09	1.86E-06	2.13E-07	5.71E-10	1.17E-08	6.86E-08	4.60E-08	1.42E-08	5.53E-10	9.40E-06	6.75E-11
LT	2.80E-07	1.17E-07	3.93E-05	1.87E-07	3.02E-05	1.25E-04	6.96E-06	1.15E-03	7.92E-06	1.60E-08	4.48E-05	2.71E-04	2.02E-04	3.10E-05	3.94E-05	2.09E-05	6.71E-05	1.41E-04	6.24E-07	2.13E-06	1.25E-05	6.20E-05	6.29E-06	3.37E-07	7.05E-05	1.12E-07
LU	1.00E-08	2.30E-09	2.03E-06	2.66E-09	5.00E-07	3.75E-04	7.66E-08	2.32E-07	4.58E-06	6.34E-10	9.78E-07	1.27E-04	9.74E-07	4.16E-08	1.23E-05	4.32E-08	2.20E-04	1.57E-05	1.45E-08	5.11E-08	2.36E-07	3.67E-07	5.60E-07	1.38E-08	8.48E-06	1.60E-09
LV	2.19E-07	1.09E-07	3.08E-05	1.64E-07	2.10E-05	1.18E-04	6.81E-06	4.75E-04	6.63E-06	1.46E-08	3.32E-05	2.35E-04	1.62E-04	1.52E-04	3.47E-05	4.48E-05	5.79E-05	1.27E-04	5.67E-07	2.22E-06	8.79E-06	4.03E-05	5.77E-06	3.81E-07	5.68E-05	1.51E-07
MC	2.69E-10	6.84E-12	6.89E-09	7.94E-12	8.37E-09	5.34E-09	1.05E-09	3.05E-10	1.04E-08	5.73E-12	1.24E-09	1.03E-08	5.43E-10	4.13E-11	6.72E-08	5.35E-11	6.71E-07	4.61E-09	3.56E-11	1.38E-09	6.01E-09	3.86E-09	4.37E-10	1.66E-11	9.44E-07	2.55E-12
MD	3.73E-07	3.96E-07	1.95E-05	4.44E-07	3.08E-05	1.66E-05	7.60E-05	4.53E-05	3.57E-06	7.89E-08	1.12E-05	3.14E-05	5.88E-06	9.79E-07	2.61E-05	1.31E-06	1.92E-05	1.53E-05	2.28E-06	8.74E-06	9.21E-06	5.40E-05	9.78E-07	5.51E-08	7.50E-05	1.71E-07
ME	3.08E-05	4.84E-08	1.60E-05	4.03E-08	4.98E-04	7.55E-06	1.79E-05	1.07E-06	2.70E-06	4.85E-08	6.18E-06	1.36E-05	1.13E-06	8.39E-08	3.78E-05	1.04E-07	1.97E-05	6.61E-06	1.67E-07	1.19E-05	3.88E-05	5.42E-05	5.27E-07	1.63E-08	3.89E-04	2.29E-08
MK	3.33E-05	1.72E-07	1.97E-05	1.35E-07	7.64E-05	1.09E-05	2.03E-04	1.66E-06	4.07E-06	1.66E-07	6.58E-06	1.91E-05	1.85E-06	1.47E-07	4.56E-05	1.79E-07	2.59E-05	9.40E-06	6.12E-07	4.26E-04	1.89E-05	6.07E-05	7.65E-07	2.45E-08	2.81E-04	6.04E-08
MT	1.41E-08	1.26E-10	6.54E-08	1.68E-10	2.76E-07	7.19E-08	3.48E-08	3.80E-09	2.65E-08	6.59E-11	1.60E-08	9.58E-08	1.00E-08	4.40E-10	7.51E-07	6.03E-10	4.81E-07	6.26E-08	7.01E-10	8.84E-08	1.08E-07	5.46E-08	6.25E-09	2.61E-10	1.49E-05	6.42E-11
NL	8.26E-08	2.47E-08	1.28E-05	3.25E-08	5.21E-06	5.42E-03	9.68E-07	3.64E-06	1.20E-05	6.03E-09	8.02E-06	1.76E-03	6.15E-05	8.59E-07	1.02E-04	8.27E-07	8.64E-04	1.10E-03	1.44E-07	3.90E-07	1.86E-06	4.61E-06	1.74E-05	3.26E-07	3.73E-05	2.67E-08
NO	5.55E-07	3.88E-07	5.07E-05	4.63E-07	3.97E-05	6.08E-04	1.27E-05	5.13E-05	2.09E-05	7.65E-08	4.10E-05	5.50E-04	6.11E-04	2.90E-05	2.30E-04	7.36E-05	3.52E-04	1.11E-03	1.25E-06	3.92E-06	1.42E-05	5.31E-05	5.82E-05	8.20E-06	1.50E-04	1.81E-06
PL	2.92E-06	7.69E-07	7.79E-04	9.03E-07	4.67E-04	1.06E-03	5.93E-05	1.10E-03	1.02E-04	1.48E-07	3.09E-03	4.38E-03	5.28E-04	2.56E-05	3.24E-04	3.11E-05	5.99E-04	7.52E-04	4.00E-06	1.58E-05	2.30E-04	1.68E-03	3.48E-05	1.16E-06	7.85E-04	3.74E-07
PT	1.11E-07	2.26E-08	4.65E-06	3.04E-08	4.59E-06	3.56E-05	1.04E-06	1.54E-06	3.76E-06	9.72E-09	2.58E-06	3.55E-05	5.36E-06	2.34E-07	2.44E-03	4.61E-07	8.12E-05	7.96E-05	1.11E-07	8.82E-07	1.94E-06	2.64E-06	1.93E-05	9.23E-07	5.98E-05	3.32E-08
RO	8.25E-06	2.03E-06	4.15E-04	2.13E-06	9.30E-04	1.30E-04	1.93E-03	1.01E-04	4.83E-05	5.07E-07	1.13E-04	2.91E-04	3.14E-05	3.71E-06	2.69E-04	4.71E-06	2.16E-04	1.05E-04	1.16E-05	9.83E-05	3.10E-04	2.44E-03	7.41E-06	3.12E-07	1.19E-03	6.07E-07
RS	3.45E-05	4.60E-07	1.98E-04	4.28E-07	2.62E-03	6.07E-05	6.36E-04	9.52E-06	1.93E-05	2.10E-07	7.60E-05	1.29E-04	8.58E-06	9.22E-07	1.41E-04	1.09E-06	1.03E-04	4.72E-05	1.82E-06	1.12E-04	5.51E-04	1.39E-03	3.31E-06	9.80E-08	8.73E-04	1.73E-07
RU	1.27E-05	8.43E-05	7.61E-04	1.82E-04	8.11E-04	1.72E-03	7.21E-04	6.14E-03	2.19E-04	5.94E-06	4.78E-04	2.66E-03	9.04E-04	1.21E-03	1.76E-03	1.66E-03	1.49E-03	1.91E-03	4.82E-04	2.54E-04	2.97E-04	1.05E-03	1.33E-04	1.49E-05	3.25E-03	4.20E-04
SE	7.10E-07	3.58E-07	8.02E-05	4.47E-07	5.18E-05	7.35E-04	1.77E-05	1.50E-04	3.24E-05	6.70E-08	8.39E-05	1.34E-03	2.87E-03	1.31E-04	2.50E-04	3.78E-04	3.90E-04	1.11E-03	1.28E-06	5.20E-06	2.03E-05	7.67E-05	5.41E-05	5.84E-06	2.01E-04	1.59E-06
SI	9.66E-07	3.95E-08	1.03E-03	4.11E-08	1.48E-04	2.09E-05	5.18E-06	2.45E-06	1.35E-05	1.66E-08	2.93E-05	7.32E-05	2.37E-06	2.41E-07	5.72E-05	2.68E-07	5.37E-05	1.45E-05	2.00E-07	2.40E-06	1.20E-03	1.72E-04	8.81E-07	3.51E-08	1.35E-03	1.42E-08
SK	1.45E-06	1.96E-07	6.87E-04	2.00E-07	3.38E-04	7.90E-05	2.94E-05	2.18E-05	2.85E-05	4.33E-08	6.52E-04	2.53E-04	1.19E-05	8.85E-07	6.77E-05	1.09E-06	9.67E-05	5.05E-05	7.70E-07	6.58E-06	1.60E-04	3.25E-03	2.91E-06	1.00E-07	3.30E-04	6.16E-08
TJ	1.39E-07	4.07E-06	2.80E-06	3.69E-06	5.53E-06	2.91E-06	3.07E-06	1.19E-06	1.48E-06	2.34E-07	8.57E-07	4.88E-06	6.18E-07	1.56E-07	2.03E-05	2.00E-07	8.07E-06	2.83E-06	5.26E-06	2.64E-06	1.58E-06	2.41E-06	2.65E-07	1.61E-08	3.54E-05	2.36E-04
TM	7.11E-07	2.49E-05	2.13E-05	5.53E-05	3.61E-05	2.96E-05	2.34E-05	2.01E-05	9.28E-06	9.99E-07	9.14E-06	4.74E-05	8.68E-06	3.02E-06	9.76E-05	3.84E-06	5.45E-05	3.04E-05	4.18E-05	1.40E-05	1.02E-05	2.31E-05	2.57E-06	2.03E-07	1.86E-04	4.97E-05
TR	1.09E-05	2.91E-04	1.61E-04	4.52E-05	3.54E-04	1.62E-04	1.30E-03	1.44E-04	5.11E-05	7.02E-05	6.45E-05	2.62E-04	5.35E-05	1.01E-05	7.06E-04	1.06E-05	3.39E-04	1.59E-04	2.28E-04	6.97E-04	1.08E-04	2.74E-04	1.30E-05	6.56E-07	2.45E-03	3.34E-06
UA	5.21E-06	6.05E-06	4.06E-04	8.97E-06	4.77E-04	3.71E-04	5.03E-04	2.10E-03	6.93E-05	1.14E-06	3.26E-04	7.46E-04	1.49E-04	2.99E-05	4.03E-04	3.24E-05	3.62E-04	3.34E-04	3.87E-05	1.11E-04	1.73E-04	1.66E-03	2.04E-05	1.11E-06	1.16E-03	5.74E-06
UZ	6.75E-07	1.52E-05	2.11E-05	2.09E-05	3.65E-05	3.00E-05	2.17E-05	2.29E-05	9.05E-06	7.62E-07	9.27E-06	4.84E-05	8.88E-06	3.72E-06	9.46E-05	4.99E-06	5.24E-05	3.21E-05	2.51E-05	1.24E-05	9.99E-06	2.33E-05	2.66E-06	2.34E-07	1.76E-04	1.29E-03

Table B11 *(continued)*

Code	KZ	LI	LT	LU	LV	MC	MD	ME	MK	MT	NL	NO	PL	PT	RO	RS	RU	SE	SI	SK	TJ	TM	TR	UA	UZ
AL	5.25E-07	1.67E-08	6.45E-07	5.54E-07	4.91E-07	3.21E-08	4.18E-06	4.48E-06	3.16E-04	5.36E-07	4.20E-06	1.07E-06	3.83E-05	5.97E-06	1.10E-04	1.35E-03	4.42E-05	4.03E-07	7.35E-06	1.84E-05	1.02E-07	6.50E-07	3.33E-04	3.25E-05	6.16E-07
AM	4.67E-06	3.35E-09	5.08E-07	1.12E-07	4.46E-07	4.32E-09	2.86E-06	3.14E-08	1.05E-06	3.25E-08	8.69E-07	4.35E-07	9.05E-06	1.48E-06	2.75E-05	6.98E-06	1.23E-04	1.77E-07	9.27E-07	1.79E-06	5.96E-07	1.72E-05	1.92E-03	2.85E-05	6.78E-06
AT	1.25E-06	5.37E-06	5.89E-06	1.23E-05	4.40E-06	1.40E-07	5.67E-06	4.47E-07	3.53E-06	2.20E-07	4.25E-05	6.85E-06	5.39E-04	1.91E-05	1.32E-04	1.28E-04	9.09E-05	2.62E-06	1.36E-03	5.14E-04	1.58E-07	1.14E-06	1.09E-04	6.19E-05	8.87E-07
AZ	8.27E-05	7.20E-09	1.34E-06	2.69E-07	1.28E-06	8.38E-09	5.46E-06	5.62E-08	1.67E-06	4.95E-08	2.21E-06	1.53E-06	2.31E-05	3.05E-06	5.04E-05	1.21E-05	1.14E-03	6.34E-07	1.71E-06	4.18E-06	7.34E-06	2.16E-04	1.28E-03	7.75E-05	7.01E-05
BA	8.65E-07	5.91E-08	2.72E-06	2.59E-06	1.78E-06	9.13E-08	9.68E-06	1.55E-05	1.48E-05	5.93E-07	1.58E-05	3.72E-06	2.73E-04	1.23E-05	3.14E-04	1.57E-03	6.02E-05	1.26E-06	7.30E-05	1.51E-04	1.39E-07	9.52E-07	1.84E-04	6.13E-05	8.58E-07
BE	2.89E-07	6.84E-08	2.01E-06	3.37E-04	2.17E-06	1.39E-08	9.23E-07	1.76E-08	2.26E-07	1.68E-08	1.39E-03	1.03E-05	3.90E-05	1.85E-05	8.01E-06	3.17E-06	2.49E-05	2.23E-06	1.51E-06	2.63E-06	4.45E-08	1.61E-07	1.47E-05	9.52E-06	1.80E-07
BG	7.98E-06	6.07E-08	6.79E-06	2.29E-06	4.26E-06	6.10E-08	2.19E-04	2.09E-06	1.86E-04	4.50E-07	1.60E-05	6.44E-06	2.83E-04	1.37E-05	7.01E-03	2.28E-03	8.22E-04	2.55E-06	2.83E-05	1.06E-04	9.74E-07	8.16E-06	4.05E-03	7.76E-04	6.75E-06
BY	1.48E-05	9.29E-08	1.26E-03	8.02E-06	5.75E-04	3.96E-08	2.08E-04	4.55E-07	6.20E-06	1.25E-07	1.00E-04	4.17E-05	5.88E-03	1.73E-05	7.96E-04	1.42E-04	6.83E-03	3.82E-05	2.53E-05	2.05E-04	1.81E-06	7.56E-06	6.98E-04	1.23E-02	8.44E-06
CH	2.46E-07	2.22E-05	8.68E-07	8.90E-06	8.28E-07	1.43E-07	6.94E-07	6.48E-08	8.06E-07	1.07E-07	1.80E-05	2.38E-06	3.59E-05	1.38E-05	1.06E-05	9.72E-06	1.51E-05	6.41E-07	8.92E-06	4.98E-06	2.77E-08	1.87E-07	2.76E-05	6.70E-06	1.66E-07
CY	3.86E-07	2.53E-09	2.51E-07	9.55E-08	2.06E-07	3.97E-09	2.66E-06	3.01E-08	1.08E-06	1.27E-07	6.88E-07	2.77E-07	6.93E-06	8.59E-07	2.59E-05	6.86E-06	3.08E-05	9.84E-08	8.20E-07	1.54E-06	5.44E-08	5.43E-07	2.75E-03	1.58E-05	3.90E-07
CZ	1.69E-06	5.22E-07	1.26E-05	2.98E-05	8.10E-06	5.18E-08	6.95E-06	4.62E-07	3.75E-06	1.12E-07	7.78E-05	9.94E-06	4.60E-03	1.54E-05	2.00E-04	1.94E-04	1.43E-04	5.10E-06	1.22E-04	1.19E-03	2.15E-07	1.64E-06	1.29E-04	8.81E-05	1.29E-06
DE	4.75E-06	9.70E-06	5.64E-05	1.27E-03	4.90E-05	2.04E-07	1.37E-05	4.69E-07	4.51E-06	2.66E-07	5.41E-03	1.07E-04	3.38E-03	1.12E-04	1.74E-04	1.08E-04	4.98E-04	5.33E-05	7.53E-05	1.73E-04	8.18E-07	3.28E-06	2.38E-04	1.72E-04	3.44E-06
DK	6.23E-07	3.02E-08	3.21E-05	7.57E-06	2.53E-05	5.05E-09	2.61E-06	2.32E-08	2.76E-07	1.36E-08	2.94E-04	1.14E-04	3.97E-04	1.10E-05	1.93E-05	7.08E-06	1.29E-04	1.11E-04	1.79E-06	9.23E-06	1.71E-07	2.77E-07	1.74E-05	2.37E-05	5.51E-07
EE	2.04E-06	1.48E-08	1.76E-04	1.51E-06	9.38E-04	4.84E-09	6.47E-06	4.11E-08	6.10E-07	1.71E-08	3.30E-05	2.41E-05	5.05E-04	4.43E-06	4.23E-05	1.25E-05	2.11E-03	5.89E-05	3.12E-06	1.81E-05	3.90E-07	5.80E-07	5.64E-05	8.64E-05	1.41E-06
ES	1.74E-06	1.08E-07	6.00E-06	8.55E-06	4.80E-06	2.66E-07	7.33E-06	2.63E-07	3.68E-06	6.99E-07	7.37E-05	2.65E-05	1.47E-04	4.61E-03	7.98E-05	3.78E-05	1.07E-04	5.64E-06	1.83E-05	1.78E-05	2.48E-07	1.12E-06	1.68E-04	4.92E-05	1.24E-06
FI	1.62E-05	6.46E-08	1.89E-04	6.16E-06	4.28E-04	2.29E-08	2.28E-05	1.49E-07	2.19E-06	6.50E-08	1.05E-04	1.67E-04	1.18E-03	2.68E-05	1.49E-04	4.12E-05	8.03E-03	3.44E-04	1.09E-05	5.07E-05	3.12E-06	4.12E-06	2.25E-04	2.37E-04	1.10E-05
FR	4.36E-06	8.99E-07	1.65E-05	8.13E-04	1.58E-05	3.32E-06	1.33E-05	4.34E-07	5.59E-06	9.09E-07	9.00E-04	6.41E-05	4.58E-04	4.59E-04	1.47E-04	7.04E-05	2.64E-04	1.73E-05	4.89E-05	4.87E-05	5.08E-07	2.30E-06	2.89E-04	1.14E-04	2.61E-06
GB	2.54E-06	7.63E-08	2.60E-05	2.31E-05	2.27E-05	2.38E-08	7.75E-06	9.27E-08	1.12E-06	6.38E-08	7.79E-04	1.66E-04	3.45E-04	2.25E-04	5.86E-05	1.96E-05	2.31E-04	2.98E-05	5.03E-06	1.90E-05	5.51E-07	1.19E-06	7.65E-05	5.53E-05	1.90E-06
GE	1.35E-05	1.56E-08	2.64E-06	5.46E-07	2.35E-06	1.16E-08	2.65E-05	1.36E-07	4.01E-06	8.30E-08	4.16E-06	1.75E-06	4.64E-05	4.33E-06	2.28E-04	4.31E-05	1.54E-03	7.60E-07	5.01E-06	9.77E-06	3.23E-06	2.24E-05	3.15E-03	2.30E-04	1.89E-05
GR	5.38E-06	5.52E-08	4.54E-06	2.03E-06	3.12E-06	8.69E-08	6.63E-05	1.39E-06	4.69E-04	3.34E-06	1.58E-05	5.54E-06	1.77E-04	1.89E-05	1.05E-03	6.74E-04	5.08E-04	2.08E-06	2.02E-05	5.55E-05	8.16E-07	6.71E-06	6.31E-03	3.64E-04	5.25E-06
HR	9.23E-07	9.18E-08	3.81E-06	3.50E-06	2.43E-06	1.25E-07	8.26E-06	2.66E-06	8.65E-06	4.34E-07	1.89E-05	4.46E-06	4.06E-04	1.23E-05	2.97E-04	1.05E-03	6.73E-05	1.50E-06	1.14E-03	2.06E-04	1.45E-07	1.00E-06	1.49E-04	6.13E-05	8.28E-07
HU	2.49E-06	1.55E-07	8.26E-06	6.58E-06	5.10E-06	8.44E-08	2.45E-05	2.35E-06	1.70E-05	2.26E-07	3.53E-05	7.21E-06	1.44E-03	1.19E-05	2.86E-03	2.27E-03	1.45E-04	3.04E-06	6.30E-04	3.65E-03	2.22E-07	3.59E-06	2.28E-04	1.89E-04	2.28E-06
IE	5.49E-07	1.27E-08	3.03E-06	2.69E-06	2.42E-06	6.04E-09	1.04E-06	1.94E-08	2.54E-07	1.97E-08	4.24E-05	1.89E-05	5.48E-05	1.02E-04	9.95E-06	3.53E-06	3.95E-05	2.99E-06	1.08E-06	3.27E-06	1.01E-07	2.78E-07	2.01E-05	1.04E-05	3.81E-07
IS	4.69E-06	5.35E-09	3.15E-06	6.60E-07	3.28E-06	4.19E-09	1.49E-06	1.91E-08	2.45E-07	1.39E-08	1.24E-05	4.09E-05	4.37E-05	1.31E-05	1.27E-05	5.84E-06	1.01E-04	4.22E-06	9.30E-07	3.71E-06	6.80E-07	6.20E-07	2.93E-05	1.91E-05	2.35E-06
IT	2.34E-06	2.00E-06	6.84E-06	1.27E-05	5.01E-06	2.03E-06	1.88E-05	3.88E-06	3.64E-05	1.29E-05	6.23E-05	1.49E-05	4.02E-04	8.97E-05	3.74E-04	4.23E-04	1.58E-04	4.43E-06	7.86E-04	1.21E-04	3.10E-07	2.53E-06	5.87E-04	1.23E-04	2.01E-06
KY	1.93E-03	1.08E-08	1.03E-06	3.05E-07	9.81E-07	1.28E-08	2.62E-06	6.19E-08	1.62E-06	4.99E-08	2.33E-06	1.30E-06	1.83E-05	5.72E-06	3.19E-05	1.15E-05	2.11E-04	4.97E-07	2.16E-06	3.41E-06	3.71E-03	1.64E-04	5.72E-04	2.62E-05	1.05E-02
KZ	1.03E-01	2.50E-07	8.13E-05	1.18E-05	8.74E-05	2.04E-07	1.75E-04	1.29E-06	2.86E-05	6.97E-07	1.16E-04	1.09E-04	1.07E-03	9.37E-05	1.36E-03	2.79E-04	7.16E-02	4.55E-05	5.28E-05	1.59E-04	2.77E-03	1.98E-03	6.21E-03	2.86E-03	1.98E-02
LI	1.34E-09	1.27E-06	4.48E-09	4.12E-08	4.38E-09	7.47E-10	3.13E-09	3.35E-10	3.93E-09	4.40E-10	8.95E-08	1.34E-08	1.97E-07	6.62E-08	5.25E-08	4.93E-08	7.99E-08	3.54E-09	4.94E-08	2.74E-08	1.55E-10	1.08E-09	1.36E-07	3.07E-08	9.44E-10
LT	2.21E-06	3.28E-08	6.30E-03	3.78E-06	8.02E-04	1.08E-08	2.02E-05	1.06E-07	1.30E-06	3.19E-08	6.96E-05	2.35E-05	2.83E-03	6.38E-06	1.12E-04	3.30E-05	1.70E-03	4.42E-05	8.34E-06	6.41E-05	3.26E-07	1.06E-06	8.94E-05	3.25E-04	1.37E-06
LU	2.98E-08	1.15E-08	1.58E-07	5.09E-04	1.50E-07	2.04E-09	8.18E-08	1.80E-09	2.23E-08	2.03E-09	2.54E-05	5.33E-07	4.48E-06	1.51E-06	7.50E-07	3.08E-07	2.21E-06	1.33E-07	2.04E-07	3.40E-07	4.05E-09	1.71E-08	1.50E-06	1.02E-06	1.71E-08
LV	2.24E-06	2.75E-08	1.20E-03	3.20E-06	9.03E-03	8.52E-09	1.45E-05	7.77E-08	1.10E-06	2.86E-08	6.56E-05	2.99E-05	1.36E-03	6.31E-06	8.64E-05	2.40E-05	1.48E-03	6.79E-05	5.93E-06	3.99E-05	3.90E-07	9.26E-07	9.53E-05	2.16E-04	1.48E-06
MC	6.44E-11	2.71E-11	1.55E-10	3.49E-10	1.34E-10	1.15E-08	4.49E-10	3.37E-11	4.22E-10	8.43E-11	1.59E-09	3.48E-10	8.17E-09	3.84E-09	8.11E-09	5.00E-09	3.84E-09	9.27E-11	5.05E-09	2.08E-09	5.64E-12	5.39E-11	1.47E-08	3.03E-09	4.38E-11
MD	4.27E-06	1.39E-08	7.65E-06	7.25E-07	3.78E-06	1.01E-08	8.13E-03	1.46E-07	2.84E-06	4.46E-08	6.54E-06	2.94E-06	2.02E-04	2.66E-06	2.84E-03	4.65E-05	4.90E-04	1.54E-06	5.32E-06	3.88E-05	3.49E-07	3.16E-06	7.84E-04	2.02E-03	2.63E-06
ME	2.29E-07	9.89E-09	3.91E-07	3.53E-07	2.65E-07	1.65E-08	2.87E-06	3.01E-05	1.75E-05	2.16E-07	2.55E-06	6.24E-07	3.30E-05	3.04E-06	8.27E-05	6.77E-04	1.76E-05	2.16E-07	5.42E-06	1.88E-05	3.85E-08	2.68E-07	8.85E-05	1.73E-05	2.57E-07
MK	6.54E-07	1.52E-08	5.92E-07	5.10E-07	4.43E-07	2.09E-08	5.01E-06	8.04E-07	2.77E-03	2.09E-07	3.63E-06	9.72E-07	4.53E-05	4.11E-06	1.60E-04	1.55E-03	5.14E-05	3.73E-07	6.46E-06	2.46E-05	1.01E-07	8.39E-07	4.06E-04	3.55E-05	7.12E-07
MT	9.66E-10	7.87E-11	2.16E-09	3.75E-09	1.47E-09	2.21E-10	8.68E-09	1.55E-09	1.76E-08	2.48E-06	2.45E-08	5.84E-09	1.16E-07	3.45E-08	1.52E-07	1.42E-07	6.59E-08	1.72E-09	4.02E-08	2.71E-08	1.38E-10	1.43E-09	2.91E-07	4.65E-08	1.07E-09
NL	3.55E-07	4.55E-08	3.13E-06	4.80E-05	3.45E-06	7.82E-09	1.25E-06	1.92E-08	2.26E-07	1.26E-08	1.02E-02	2.91E-05	5.72E-05	1.88E-05	1.05E-05	4.19E-06	3.55E-05	4.80E-06	1.58E-06	3.58E-06	7.70E-08	1.96E-07	1.49E-05	1.09E-05	2.66E-07
NO	1.39E-05	8.00E-08	4.45E-05	1.30E-05	5.22E-05	2.60E-08	1.71E-05	1.67E-07	2.21E-06	8.87E-08	3.65E-04	8.39E-03	6.81E-04	5.74E-05	1.29E-04	4.53E-05	9.83E-04	2.53E-04	9.46E-06	4.28E-05	2.99E-06	3.49E-06	2.15E-04	1.47E-04	1.02E-05
PL	8.70E-06	4.67E-07	3.93E-04	4.49E-05	1.47E-04	1.04E-07	9.40E-05	1.40E-06	1.41E-05	2.88E-07	4.92E-04	7.89E-05	1.46E-01	4.93E-05	1.33E-03	5.67E-04	2.58E-03	8.78E-05	1.54E-04	3.11E-03	1.14E-06	8.03E-06	4.77E-04	1.39E-03	6.72E-06
PT	4.33E-07	1.26E-08	7.98E-07	1.36E-06	6.53E-07	8.93E-09	8.86E-07	1.95E-08	2.82E-07	3.84E-08	1.38E-05	7.15E-06	2.26E-05	2.51E-02	8.24E-06	3.08E-06	2.54E-05	1.28E-06	1.26E-06	2.08E-06	5.63E-08	1.94E-07	2.21E-05	7.25E-06	2.46E-07
RO	1.56E-05	2.07E-07	2.29E-05	6.88E-06	1.29E-05	1.39E-07	2.03E-03	4.22E-06	7.25E-05	5.08E-07	4.25E-05	1.66E-05	1.22E-03	2.79E-05	8.41E-02	3.39E-03	1.39E-03	7.21E-06	1.26E-04	6.16E-04	1.33E-06	1.50E-05	4.05E-03	2.28E-03	1.11E-05
RS	2.59E-06	7.80E-08	3.51E-06	3.12E-06	2.57E-06	7.95E-08	2.96E-05	2.60E-05	9.17E-04	4.43E-07	2.04E-05	4.60E-06	4.32E-04	1.31E-05	2.51E-03	3.31E-02	1.65E-04	1.84E-06	5.82E-05	3.35E-04	3.20E-07	3.18E-06	6.52E-04	1.39E-04	2.46E-06
RU	1.89E-02	8.84E-07	1.36E-03	5.67E-05	2.01E-03	4.95E-07	1.01E-03	3.82E-06	8.66E-05	1.99E-06	7.79E-04	7.69E-04	1.03E-02	3.12E-04	5.98E-03	1.08E-03	1.41E+00	4.64E-04	1.93E-04	7.81E-04	6.88E-04	1.27E-03	2.01E-02	2.84E-02	2.70E-03
SE	1.17E-05	1.32E-07	2.42E-04	1.81E-05	3.64E-04	3.54E-08	3.29E-05	2.09E-07	2.97E-06	1.09E-07	4.48E-04	1.30E-03	2.38E-03	5.39E-05	2.06E-04	5.74E-05	2.04E-03	4.31E-03	1.46E-05	6.93E-05	2.64E-06	3.19E-06	2.14E-04	2.73E-04	9.03E-06
SI	3.05E-07	5.58E-08	1.21E-06	1.37E-06	8.13E-07	6.23E-08	2.00E-06	2.04E-07	1.60E-06	9.88E-08	6.40E-06	1.32E-06	1.15E-04	4.34E-06	5.75E-05	6.06E-05	2.26E-05	4.54E-07	4.12E-03	4.44E-05	4.07E-08	2.92E-07	3.90E-05	1.82E-05	2.20E-07
SK	1.43E-06	1.35E-07	6.92E-06	4.96E-06	3.92E-06	3.63E-08	1.26E-05	8.91E-07	7.56E-06	1.05E-07	2.51E-05	5.08E-06	4.28E-03	7.37E-06	7.08E-04	4.75E-04	9.77E-05	2.21E-06	8.49E-05	8.90E-03	1.62E-07	1.99E-06	1.43E-04	1.40E-04	1.35E-06
TJ	2.17E-04	4.99E-09	4.10E-07	1.38E-07	3.89E-07	6.36E-09	1.31E-06	3.01E-08	8.85E-07	2.64E-08	1.02E-06	5.30E-07	7.66E-06	2.83E-06	1.58E-05	5.88E-06	9.80E-05	1.94E-07	1.03E-06	1.55E-06	2.74E-02	2.16E-04	3.44E-04	1.23E-05	6.63E-03
TM	7.86E-04	3.17E-08	6.73E-06	1.29E-06	6.58E-06	3.24E-08	1.81E-05	1.86E-07	4.61E-06	1.26E-07	1.12E-05	7.96E-06	1.04E-04	1.26E-05	1.57E-04	3.83E-05	2.19E-03	3.29E-06	7.02E-06	1.71E-05	1.58E-03	2.31E-02	1.67E-03	2.73E-04	1.12E-02
TR	6.70E-05	1.83E-07	3.65E-05	7.10E-06	2.80E-05	2.42E-07	5.71E-04	2.23E-06	8.15E-05	3.81E-06	5.90E-05	2.97E-05	8.40E-04	6.63E-05	4.74E-03	6.36E-04	7.90E-03	1.22E-05	5.73E-05	1.69E-04	1.00E-05	1.01E-04	6.95E-01	3.33E-03	7.11E-05
UA	1.32E-04	3.09E-07	2.11E-04	1.66E-05	1.15E-04	1.50E-07	4.55E-03	2.05E-06	3.66E-05	6.49E-07	1.41E-04	6.66E-05	8.17E-03	4.97E-05	9.61E-03	7.26E-04	3.05E-02	3.62E-05	9.67E-05	1.27E-03	9.39E-06	7.51E-05	1.03E-02	1.49E-01	6.84E-05
UZ	3.73E-03	3.15E-08	7.50E-06	1.29E-06	7.49E-06	3.07E-08	1.67E-05	1.86E-07	4.28E-06	1.16E-07	1.17E-05	9.12E-06	1.07E-04	1.25E-05	1.53E-04	3.70E-05	2.50E-03	3.79E-06	6.94E-06	1.74E-05	7.18E-03	3.18E-03	1.29E-03	2.67E-04	6.61E-02

Annex C. Evaluation of modelling results vs. observations

Results of heavy metal and POP modelling were evaluated against observations from the EMEP monitoring network. Observations for Pb, Cd, Hg, B(a)P, B(b)F, B(k)F, IP, HCB, PCB-153 and PCDD/Fs were downloaded from the EBAS database (ebas-data.nilu.no) and pre-processed to perform quality control on the measurement data. The data were filtered for outliers using the standard three-sigma limit approach and checked for temporal coverage during the simulation period. Measurement sites with coverage below six months of the year were not included in the statistical summary[7]. A summary of the statistical parameters from the evaluation is provided in Table C1. By-site evaluations of simulated air concentration and wet deposition for individual pollutants are presented in Tables C2-C18. Measurement sites not included in the statistical summary are marked in grey in the tables. Spatial correlation was not calculated when fewer than three measurement sites were available. Temporal correlation was not calculated for sites with data coverage of less than three months.

Table C1. *Summary of statistical parameters for evaluating modelling results against observations. Notations:* ***N*** *is the number of measurement sites;* $\boldsymbol{R_{corr}}$ *is the Pearson correlation coefficient of spatial variation;* ***Bias*** *is the mean relative bias of annual values, calculated as* $(\overline{M} - \overline{O})/\overline{O}$*;* ***F2*** *is the fraction of annual measurements that agree with the model within a factor of 2.*

Pollutant	Parameter	N	R_{corr}	Bias, %	F2, %
Pb	air concentration	39	0.79	53	74
	wet deposition	42	0.70	-16	74
Cd	air concentration	38	0.73	26	79
	wet deposition	39	0.54	-35	69
Hg	air concentration	15	-0.10	-10	100
	wet deposition	22	0.55	99	50
B(a)P	air concentration	27	0.77	35	63
	wet deposition	20	0.91	-26	85
B(b)F	air concentration	18	0.76	1	67
	wet deposition	13	0.81	-9	85
B(k)F	air concentration	16	0.72	-2	69
	wet deposition	13	0.76	-23	69
IP	air concentration	28	0.62	-6	75
	wet deposition	20	0.83	-42	60
HCB	air concentration	9	0.74	0	100
PCB-153	air concentration	11	0.83	16	100
PCDD/Fs	air concentration	2	-	23	50

[7] The PCDD/F statistical parameters were calculated using data from measurement sites with less than six months of coverage, as no sites had sufficient data for a longer period.

Table C2. *Statistical parameters for evaluating modelled Pb air concentration (ng m^{-3}) against measurements.*

Station name	Code	Longitude	Latitude	Observed	Modelled	Rcorr	Bias,%
Koksijde	BE0014R	2.66	51.12	1.964	4.292	0.76	118.51
Agia Marina Xyliatou / Cyprus Atmospheric Observatory	CY0002R	33.06	35.04	0.003	1.216	0.02	38042.47
Kosetice (NAOK)	CZ0003R	15.08	49.57	1.566	4.043	0.65	158.19
Churanov	CZ0005R	13.60	49.07	0.702	1.443	0.07	105.45
Westerland	DE0001R	8.31	54.93	1.123	2.493	0.35	121.93
Waldhof	DE0002R	10.76	52.80	1.985	3.466	0.08	74.62
Schauinsland	DE0003R	7.91	47.91	0.660	1.673	-0.20	153.30
Neuglobsow	DE0007R	13.03	53.14	2.029	2.517	0.39	24.10
Schmücke	DE0008R	10.77	50.65	1.049	2.254	0.03	114.83
Zingst	DE0009R	12.72	54.44	1.435	2.234	0.09	55.64
Villum Research Station, Station Nord	DK0010G	-16.67	81.60	0.238	0.100	-0.80	-57.87
Risø	DK0012R	12.09	55.69	1.362	4.661	0.31	242.19
Lahemaa	EE0009R	25.90	59.50	0.817	0.654	0.03	-20.02
San Pablo de los Montes	ES0001R	-4.35	39.55	1.114	0.875	0.14	-21.48
Víznar	ES0007R	-3.53	37.24	1.520	1.215	0.03	-20.05
Niembro	ES0008R	-4.85	43.44	1.421	2.041	-0.02	43.57
Campisabalos	ES0009R	-3.14	41.27	0.801	0.835	0.24	4.24
Els Torms	ES0014R	0.73	41.39	1.034	1.409	0.68	36.19
Montseny	ES1778R	2.35	41.77	0.772	2.953	0.51	282.56
Montseny	ES1778R	2.35	41.77	0.718	2.937	0.36	309.00
Montseny	ES1778R	2.35	41.77	0.626	2.874	-0.09	358.92
Pallas (Matorova)	FI0036R	24.24	68.00	0.220	0.193	0.04	-12.34
Hyytiälä	FI0050R	24.28	61.85	0.584	0.273	0.31	-53.25
Kergoff	FR0028R	-2.94	48.26	0.617	1.206	0.12	95.46
Yarner Wood	GB0013R	-3.71	50.60	1.135	1.654	0.77	45.71
Heigham Holmes	GB0017R	1.62	52.72	2.317	4.039	0.79	74.27
Auchencorth Moss	GB0048R	-3.24	55.79	0.856	1.654	0.84	93.17
Chilbolton Observatory	GB1055R	-1.44	51.15	2.330	2.823	0.75	21.15
K-puszta	HU0002R	19.54	46.97	1.779	3.428	0.60	92.74
Storhofdi	IS0091R	-20.29	63.40	0.055	0.607	0.33	1004.11
Monte Martano	IT0019R	12.57	42.81	0.816	1.537	-0.06	88.31
Rucava	LV0010R	21.17	56.16	2.061	1.093	0.20	-46.97
Bilthoven	NL0008R	5.20	52.12	3.546	4.685	0.09	32.11
Birkenes II	NO0002R	8.25	58.39	0.500	0.523	-0.08	4.58
Zeppelin mountain (Ny-Ålesund)	NO0042G	11.89	78.91	0.311	0.242	-0.26	-22.41
Svanvik	NO0047R	30.03	69.45	0.297	0.298	0.18	0.46
Sofienbergparken	NO0073U	10.77	59.92	1.015	1.287	0.54	26.80
Zielonka	PL0009R	17.93	53.66	1.273	2.743	0.53	115.41
Bredkälen	SE0005R	15.33	63.85	0.223	0.160	0.52	-28.60
Råö	SE0014R	11.91	57.39	0.777	1.130	-0.13	45.48
Hallahus	SE0020R	13.15	56.04	0.947	1.572	-0.26	65.92
Norunda Stenen	SE0022R	17.51	60.09	0.527	0.334	0.38	-36.64
Iskrba	SI0008R	14.87	45.57	1.370	1.431	-0.73	4.47
Chopok	SK0002R	19.58	48.93	0.846	1.284	-0.41	51.71
Stará Lesná	SK0004R	20.28	49.15	1.663	2.112	0.40	26.99
Starina	SK0006R	22.27	49.05	1.800	1.674	-0.01	-6.99
Topolniky	SK0007R	17.86	47.96	2.758	4.441	0.09	61.00

Table C3. *Statistical parameters for evaluating modelled Pb wet deposition (g km^{-2}y^{-1}) against measurements.*

Station name	Code	Longitude	Latitude	Observed	Modelled	Rcorr	Bias,%
Koksijde	BE0014R	2.66	51.12	318.815	355.283	-0.22	11.44
Kosetice (NAOK)	CZ0003R	15.08	49.57	1011.800	681.174	0.45	-32.68
Churanov	CZ0005R	13.60	49.07	511.808	326.960	0.76	-36.12
Westerland	DE0001R	8.31	54.93	245.782	535.052	0.04	117.69
Waldhof	DE0002R	10.76	52.80	241.691	514.210	0.73	112.76
Schauinsland	DE0003R	7.91	47.91	426.786	433.213	0.43	1.51
Neuglobsow	DE0007R	13.03	53.14	210.974	366.263	0.19	73.61
Schmücke	DE0008R	10.77	50.65	427.274	444.714	0.29	4.08
Zingst	DE0009R	12.72	54.44	189.478	274.948	0.36	45.11
Anholt	DK0008R	11.52	56.72	301.433	238.604	0.33	-20.84
Risø	DK0012R	12.09	55.69	270.329	315.279	0.02	16.63
Sepstrup Sande	DK0022R	9.42	56.08	437.107	332.242	-0.35	-23.99
Ulborg	DK0031R	8.43	56.29	389.352	405.196	-0.04	4.07
Lahemaa	EE0009R	25.90	59.50	99.609	116.712	0.07	17.17
Vilsandi	EE0011R	21.82	58.38	103.894	209.610	0.07	101.75
San Pablo de los Montes	ES0001R	-4.35	39.55	331.714	121.374	0.99	-63.41
Víznar	ES0007R	-3.53	37.24	968.543	264.326	-0.01	-72.71
Niembro	ES0008R	-4.85	43.44	560.232	283.452	-1.00	-49.40
Niembro	ES0008R	-4.85	43.44	4242.898	192.687	-0.05	-95.46
Campisabalos	ES0009R	-3.14	41.27	1215.560	120.726	0.04	-90.07
Zarra	ES0012R	-1.10	39.08	486.938	263.988	0.90	-45.79
Els Torms	ES0014R	0.73	41.39	322.585	316.114	-0.05	-2.01
Pallas (Matorova)	FI0036R	24.24	68.00	66.481	38.702	-0.02	-41.78
Hyytiälä	FI0050R	24.28	61.85	152.561	80.967	-0.06	-46.93
Hailuoto II	FI0053R	24.69	65.00	117.075	67.513	0.66	-42.33
Hietajärvi	FI0092R	30.72	63.17	151.381	74.525	0.69	-50.77
Kotinen	FI0093R	25.07	61.23	129.673	110.495	0.24	-14.79
Donon	FR0008R	7.13	48.50	632.782	245.110	0.60	-61.26
Revin	FR0009R	4.63	49.90	826.319	384.660	0.26	-53.45
Peyrusse Vieille	FR0013R	0.18	43.62	316.724	124.267	0.51	-60.76
Saint-Nazaire-le-Désert	FR0023R	5.28	44.57	651.592	684.621	0.46	5.07
Verneuil	FR0025R	2.61	46.81	473.661	354.943	0.57	-25.06
Kergoff	FR0028R	-2.94	48.26	192.977	168.861	0.07	-12.50
Porspoder	FR0090R	-4.75	48.52	201.943	238.584	0.69	18.14
Lough Navar	GB0006R	-7.87	54.44	55.352	246.772	0.91	345.83
Yarner Wood	GB0013R	-3.71	50.60	165.701	516.469	0.45	211.69
Heigham Holmes	GB0017R	1.62	52.72	97.700	219.865	0.02	125.04
Auchencorth Moss	GB0048R	-3.24	55.79	24.028	199.923	0.80	732.04
Chilbolton Observatory	GB1055R	-1.44	51.15	62.589	460.219	0.93	635.30
Puntijarka	HR0002R	15.97	45.90	46.307	480.357	-0.02	937.33
Zavizan	HR0004R	14.98	44.82	85.743	727.690	0.17	748.69
K-puszta	HU0002R	19.54	46.97	110.714	99.535	-	-10.10
Storhofdi	IS0091R	-20.29	63.40	248.776	239.776	-0.03	-3.62
Monte Martano	IT0019R	12.57	42.81	1974.246	186.527	0.45	-90.55
Vredepeel	NL0010R	5.85	51.54	710.731	700.863	0.38	-1.39
De Zilk	NL0091R	4.50	52.30	211.068	499.866	0.80	136.83
Birkenes	NO0001R	8.25	58.38	450.895	347.422	0.06	-22.95
Kårvatn	NO0039R	8.88	62.78	129.707	143.136	0.18	10.35
Svanvik	NO0047R	30.03	69.45	113.623	50.310	-0.57	-55.72
Hurdal	NO0056R	11.08	60.37	367.330	219.670	0.11	-40.20
Leba	PL0004R	17.53	54.75	103.755	229.387	0.28	121.09
Diabla Gora	PL0005R	22.07	54.15	620.968	335.365	-0.06	-45.99
Bredkälen	SE0005R	15.33	63.85	135.839	61.105	0.29	-55.02
Råö	SE0014R	11.91	57.39	310.017	343.837	-0.07	10.91
Hallahus	SE0020R	13.15	56.04	289.231	336.817	0.12	16.45
Norunda Stenen	SE0022R	17.51	60.09	168.732	89.194	-0.20	-47.14
Iskrba	SI0008R	14.87	45.57	1116.160	619.424	-0.12	-44.50
Chopok	SK0002R	19.58	48.93	1107.750	405.590	0.02	-63.39
Stará Lesná	SK0004R	20.28	49.15	805.039	474.999	0.50	-41.00
Starina	SK0006R	22.27	49.05	577.447	468.536	-0.26	-18.86

Table C4. *Statistical parameters for evaluating modelled Cd air concentration (ng m^{-3}) against measurements.*

Station name	Code	Longitude	Latitude	Observed	Modelled	Rcorr	Bias,%
Amberd	AM0001R	44.26	40.38	0.037	0.012	-0.28	-68.13
Koksijde	BE0014R	2.66	51.12	0.056	0.150	0.78	169.00
Agia Marina Xyliatou / Cyprus Atmospheric Observatory	CY0002R	33.06	35.04	0.059	0.035	-0.11	-40.90
Kosetice (NAOK)	CZ0003R	15.08	49.57	0.059	0.088	0.69	51.04
Churanov	CZ0005R	13.60	49.07	0.028	0.044	0.08	57.99
Westerland	DE0001R	8.31	54.93	0.037	0.079	0.29	115.42
Waldhof	DE0002R	10.76	52.80	0.066	0.093	0.02	42.17
Schauinsland	DE0003R	7.91	47.91	0.014	0.052	-0.10	266.91
Neuglobsow	DE0007R	13.03	53.14	0.064	0.061	0.20	-4.60
Schmücke	DE0008R	10.77	50.65	0.028	0.064	0.01	125.43
Zingst	DE0009R	12.72	54.44	0.055	0.069	0.14	25.89
Villum Research Station, Station Nord	DK0010G	-16.67	81.60	0.018	0.006	-0.19	-69.24
Risø	DK0012R	12.09	55.69	0.189	0.171	-0.67	-9.49
Lahemaa	EE0009R	25.90	59.50	0.056	0.039	0.09	-31.26
San Pablo de los Montes	ES0001R	-4.35	39.55	0.045	0.037	0.18	-16.90
Víznar	ES0007R	-3.53	37.24	0.058	0.054	-0.01	-7.89
Niembro	ES0008R	-4.85	43.44	0.057	0.052	-0.04	-8.84
Campisabalos	ES0009R	-3.14	41.27	0.032	0.035	0.20	9.36
Els Torms	ES0014R	0.73	41.39	0.046	0.070	-0.06	53.19
Montseny	ES1778R	2.35	41.77	0.039	0.137	-0.10	251.56
Montseny	ES1778R	2.35	41.77	0.037	0.147	0.46	294.86
Montseny	ES1778R	2.35	41.77	0.040	0.139	-0.16	246.41
Virolahti Harju	FI0027R	27.56	60.54	0.039	0.023	-0.12	-41.96
Pallas (Matorova)	FI0036R	24.24	68.00	0.009	0.009	0.15	0.94
Hyytiälä	FI0050R	24.28	61.85	0.030	0.012	0.27	-58.95
Saint-Nazaire-le-Désert	FR0023R	5.28	44.57	0.020	0.024	-0.16	17.54
Kergoff	FR0028R	-2.94	48.26	0.023	0.032	0.33	41.26
Yarner Wood	GB0013R	-3.71	50.60	0.050	0.055	0.03	10.80
Heigham Holmes	GB0017R	1.62	52.72	0.056	0.140	0.96	148.32
Auchencorth Moss	GB0048R	-3.24	55.79	0.034	0.062	-0.20	84.40
Chilbolton Observatory	GB1055R	-1.44	51.15	0.060	0.099	0.52	64.99
K-puszta	HU0002R	19.54	46.97	0.069	0.155	0.35	126.74
Storhofdi	IS0091R	-20.29	63.40	0.005	0.021	-0.11	334.95
Monte Martano	IT0019R	12.57	42.81	0.058	0.046	-0.30	-21.47
Rucava	LV0010R	21.17	56.16	0.046	0.041	0.25	-11.54
Bilthoven	NL0008R	5.20	52.12	0.250	0.265	0.26	5.87
Cabauw Wielsekade	NL0644R	4.92	51.97	0.257	0.531	-0.70	106.73
Birkenes II	NO0002R	8.25	58.39	0.019	0.021	-0.05	9.25
Zeppelin mountain (Ny-Ålesund)	NO0042G	11.89	78.91	0.026	0.008	-0.49	-67.93
Svanvik	NO0047R	30.03	69.45	0.011	0.016	0.19	39.64
Sofienbergparken	NO0073U	10.77	59.92	0.264	0.117	-0.24	-55.83
Zielonka	PL0009R	17.93	53.66	0.046	0.085	0.54	84.20
Bredkälen	SE0005R	15.33	63.85	0.010	0.007	0.32	-32.65
Råö	SE0014R	11.91	57.39	0.028	0.040	0.02	42.49
Hallahus	SE0020R	13.15	56.04	0.031	0.049	-0.16	57.42
Norunda Stenen	SE0022R	17.51	60.09	0.021	0.013	0.51	-35.48
Iskrba	SI0008R	14.87	45.57	0.113	0.089	-0.02	-21.41
Chopok	SK0002R	19.58	48.93	0.021	0.052	-0.05	154.94
Stará Lesná	SK0004R	20.28	49.15	0.070	0.073	0.47	3.64
Starina	SK0006R	22.27	49.05	0.083	0.054	0.46	-35.21
Topolniky	SK0007R	17.86	47.96	0.097	0.124	0.60	27.98

Table C5. *Statistical parameters for evaluating modelled Cd wet deposition (g km^{-2}y^{-1}) against measurements.*

Station name	Code	Longitude	Latitude	Observed	Modelled	Rcorr	Bias,%
Koksijde	BE0014R	2.66	51.12	13.168	13.244	0.35	0.57
Kosetice (NAOK)	CZ0003R	15.08	49.57	19.672	21.729	0.02	10.46
Churanov	CZ0005R	13.60	49.07	12.584	9.464	0.77	-24.79
Westerland	DE0001R	8.31	54.93	8.990	17.238	0.28	91.74
Waldhof	DE0002R	10.76	52.80	9.036	12.675	0.52	40.27
Schauinsland	DE0003R	7.91	47.91	10.651	12.194	0.78	14.49
Neuglobsow	DE0007R	13.03	53.14	7.946	12.264	0.23	54.34
Schmücke	DE0008R	10.77	50.65	13.433	13.810	0.10	2.81
Zingst	DE0009R	12.72	54.44	7.901	9.094	0.44	15.10
Anholt	DK0008R	11.52	56.72	12.146	8.418	0.16	-30.70
Risø	DK0012R	12.09	55.69	21.410	11.203	0.25	-47.67
Sepstrup Sande	DK0022R	9.42	56.08	11.945	12.161	0.14	1.81
Ulborg	DK0031R	8.43	56.29	15.020	14.472	-0.21	-3.65
Lahemaa	EE0009R	25.90	59.50	10.324	5.901	0.27	-42.85
Vilsandi	EE0011R	21.82	58.38	9.969	7.707	0.79	-22.69
Víznar	ES0007R	-3.53	37.24	25.744	12.747	-1.00	-50.49
Niembro	ES0008R	-4.85	43.44	109.824	4.442	0.18	-95.96
Campisabalos	ES0009R	-3.14	41.27	28.246	3.117	0.28	-88.96
Zarra	ES0012R	-1.10	39.08	18.548	12.349	1.00	-33.42
Virolahti Harju	FI0027R	27.56	60.54	12.816	6.424	0.62	-49.87
Pallas (Matorova)	FI0036R	24.24	68.00	3.037	1.995	-0.55	-34.31
Hyytiälä	FI0050R	24.28	61.85	7.159	3.436	-0.21	-52.01
Hailuoto II	FI0053R	24.69	65.00	5.043	2.761	0.68	-45.24
Hietajärvi	FI0092R	30.72	63.17	6.035	3.428	0.73	-43.19
Kotinen	FI0093R	25.07	61.23	6.120	4.492	0.28	-26.60
Donon	FR0008R	7.13	48.50	35.390	7.680	-0.09	-78.30
Revin	FR0009R	4.63	49.90	26.357	9.282	-0.29	-64.78
Peyrusse Vieille	FR0013R	0.18	43.62	10.458	4.273	0.61	-59.14
Saint-Nazaire-le-Désert	FR0023R	5.28	44.57	23.517	17.345	0.64	-26.24
Verneuil	FR0025R	2.61	46.81	30.296	9.881	0.00	-67.38
Kergoff	FR0028R	-2.94	48.26	12.883	5.289	0.09	-58.95
Porspoder	FR0090R	-4.75	48.52	12.796	8.840	0.44	-30.91
Lough Navar	GB0006R	-7.87	54.44	22.777	4.103	1.00	-81.99
Yarner Wood	GB0013R	-3.71	50.60	36.137	9.979	0.83	-72.39
Heigham Holmes	GB0017R	1.62	52.72	6.498	8.220	0.66	26.51
Auchencorth Moss	GB0048R	-3.24	55.79	13.942	2.848	0.92	-79.57
Chilbolton Observatory	GB1055R	-1.44	51.15	23.430	21.831	0.70	-6.83
Puntijarka	HR0002R	15.97	45.90	192.083	19.054	0.08	-90.08
Zavizan	HR0004R	14.98	44.82	227.564	21.189	0.37	-90.69
K-puszta	HU0002R	19.54	46.97	64.663	27.792	0.84	-57.02
Valentia Observatory	IE0001R	-10.24	51.94	81.374	12.981	0.64	-84.05
Storhofdi	IS0091R	-20.29	63.40	16.839	9.353	-0.44	-44.46
Montelibretti	IT0001R	12.64	42.11	43.366	18.991	-0.05	-56.21
Lampedusa	IT0018R	12.63	35.52	18.814	14.047	0.06	-25.34
Vredepeel	NL0010R	5.85	51.54	31.765	23.769	0.32	-25.17
De Zilk	NL0091R	4.50	52.30	7.466	5.030	-	-32.63
Birkenes	NO0001R	8.25	58.38	19.408	12.615	0.59	-35.00
Kårvatn	NO0039R	8.88	62.78	14.028	5.389	0.85	-61.58
Svanvik	NO0047R	30.03	69.45	5.009	2.260	0.24	-54.89
Hurdal	NO0056R	11.08	60.37	19.541	8.989	0.60	-54.00
Leba	PL0004R	17.53	54.75	14.766	7.536	0.14	-48.97
Diabla Gora	PL0005R	22.07	54.15	17.401	9.668	0.00	-44.44
Szymbark	PL0012R	21.12	49.63	19.485	16.597	0.49	-14.82
Bredkälen	SE0005R	15.33	63.85	5.051	2.428	0.52	-51.93
Råö	SE0014R	11.91	57.39	25.972	12.376	-0.65	-52.35
Hallahus	SE0020R	13.15	56.04	11.784	12.016	-0.39	1.97
Norunda Stenen	SE0022R	17.51	60.09	8.117	3.361	0.22	-58.59
Iskrba	SI0008R	14.87	45.57	37.727	20.992	0.28	-44.36
Chopok	SK0002R	19.58	48.93	51.414	10.026	0.26	-80.50
Stará Lesná	SK0004R	20.28	49.15	96.266	12.259	-0.74	-87.27
Starina	SK0006R	22.27	49.05	41.709	15.577	0.90	-62.65
Topolniky	SK0007R	17.86	47.96	40.356	15.447	0.27	-61.72

Table C6. *Statistical parameters for evaluating modelled Hg air concentration (ng m^{-3}) against measurements.*

Stationname	Code	Longitude	Latitude	Observed	Modelled	Rcorr	Bias,%
Waldhof	DE0002R	10.76	52.80	1.578	1.229	0.50	-22.11
Schauinsland	DE0003R	7.91	47.91	1.237	1.208	-0.01	-2.34
Schmücke	DE0008R	10.77	50.65	1.416	1.253	0.03	-11.51
Zingst	DE0009R	12.72	54.44	1.446	1.292	-0.22	-10.60
Lahemaa	EE0009R	25.90	59.50	1.102	1.252	-0.50	13.60
Virolahti III	FI0018R	27.67	60.53	1.163	1.195	1.00	2.80
Virolahti Harju	FI0027R	27.56	60.54	1.164	1.218	-0.03	4.59
Pallas (Matorova)	FI0036R	24.24	68.00	1.323	1.145	0.46	-13.45
Hyytiälä	FI0050R	24.28	61.85	1.243	1.181	-0.20	-4.94
Auchencorth Moss	GB0048R	-3.24	55.79	1.285	1.217	0.42	-5.30
Chilbolton Observatory	GB1055R	-1.44	51.15	1.424	1.277	-0.39	-10.32
Birkenes II	NO0002R	8.25	58.39	1.463	1.224	0.22	-16.30
Zeppelin mountain (Ny-Ålesund)	NO0042G	11.89	78.91	1.526	1.132	0.36	-25.78
Sofienbergparken	NO0073U	10.77	59.92	1.495	1.179	-0.51	-21.12
Diabla Gora	PL0005R	22.07	54.15	1.365	1.194	-0.02	-12.50
Råö	SE0014R	11.91	57.39	1.264	1.262	0.42	-0.20
Iskrba	SI0008R	14.87	45.57	1.406	1.268	0.70	-9.86

Table C7. *Statistical parameters for evaluating modelled Hg wet deposition (g $km^{-2}y^{-1}$) against measurements.*

Station name	Code	Longitude	Latitude	Observed	Modelled	Rcorr	Bias,%
Kosetice (NAOK)	CZ0003R	15.08	49.57	5.558	10.962	0.47	97.23
Westerland	DE0001R	8.31	54.93	4.437	10.657	0.64	140.21
Waldhof	DE0002R	10.76	52.80	3.766	6.498	0.52	72.55
Schauinsland	DE0003R	7.91	47.91	7.666	15.513	0.38	102.37
Schmücke	DE0008R	10.77	50.65	5.351	11.559	0.86	116.00
Zingst	DE0009R	12.72	54.44	3.350	4.967	0.17	48.28
Lahemaa	EE0009R	25.90	59.50	1.884	0.564	-	-70.08
Niembro	ES0008R	-4.85	43.44	31.905	3.256	0.46	-89.80
Virolahti Harju	FI0027R	27.56	60.54	1.433	8.638	-0.49	502.98
Pallas (Matorova)	FI0036R	24.24	68.00	1.238	5.565	-0.24	349.62
Hyytiälä	FI0050R	24.28	61.85	1.852	6.312	-0.16	240.87
Kotinen	FI0093R	25.07	61.23	2.191	7.606	-0.17	247.11
Yarner Wood	GB0013R	-3.71	50.60	5.341	7.996	0.66	49.70
Heigham Holmes	GB0017R	1.62	52.72	2.795	4.388	0.58	56.99
Auchencorth Moss	GB0048R	-3.24	55.79	3.756	5.374	0.40	43.08
Chilbolton Observatory	GB1055R	-1.44	51.15	3.327	8.341	0.86	150.68
De Zilk	NL0091R	4.50	52.30	8.880	6.136	0.60	-30.90
Birkenes	NO0001R	8.25	58.38	6.741	12.669	0.23	87.94
Kårvatn	NO0039R	8.88	62.78	3.542	11.700	0.78	230.36
Hurdal	NO0056R	11.08	60.37	8.045	9.960	0.83	23.80
Diabla Gora	PL0005R	22.07	54.15	3.243	5.644	0.18	74.05
Bredkälen	SE0005R	15.33	63.85	2.242	4.258	0.70	89.95
Råö	SE0014R	11.91	57.39	2.940	8.546	0.52	190.69
Hallahus	SE0020R	13.15	56.04	3.623	8.084	0.54	123.13
Iskrba	SI0008R	14.87	45.57	5.229	15.021	0.33	187.23

Table C8. *Statistical parameters for evaluating modelled BaP air concentration (ng m^{-3}) against measurements.*

Station name	Code	Longitude	Latitude	Observed	Modelled	Rcorr	Bias,%
Houtem	BE0013R	2.58	51.02	0.034	0.109	0.81	218.68
Kosetice (NAOK)	CZ0003R	15.08	49.57	0.199	0.442	0.86	126.83
Westerland	DE0001R	8.31	54.93	0.014	0.032	0.92	143.63
Waldhof	DE0002R	10.76	52.80	0.066	0.079	0.62	24.60
Schauinsland	DE0003R	7.91	47.91	0.004	0.100	-0.35	2723.89
Schmücke	DE0008R	10.77	50.65	0.043	0.099	0.87	152.29
Zingst	DE0009R	12.72	54.44	0.056	0.056	0.70	2.76
Lahemaa	EE0009R	25.90	59.50	0.085	0.045	0.96	-45.02
Els Torms	ES0014R	0.73	41.39	0.100	0.020	-	-77.29
Pallas (Matorova)	FI0036R	24.24	68.00	0.013	0.007	0.93	-50.16
Hyytiälä	FI0050R	24.28	61.85	0.088	0.043	0.90	-49.59
Donon	FR0008R	7.13	48.50	0.042	0.050	0.95	36.60
Revin	FR0009R	4.63	49.90	0.034	0.046	0.70	45.25
Peyrusse Vieille	FR0013R	0.18	43.62	0.035	0.020	0.86	-41.20
Saint-Nazaire-le-Désert	FR0023R	5.28	44.57	0.079	0.011	0.86	-83.18
Verneuil	FR0025R	2.61	46.81	0.043	0.024	0.85	-42.00
Kergoff	FR0028R	-2.94	48.26	0.025	0.035	0.12	39.82
Auchencorth Moss	GB0048R	-3.24	55.79	0.042	0.021	0.30	-48.06
Chilbolton Observatory	GB1055R	-1.44	51.15	0.062	0.047	0.70	-22.11
Puntijarka	HR0002R	15.97	45.90	0.086	0.377	0.42	338.22
Rucava	LV0010R	21.17	56.16	0.106	0.073	0.51	-27.31
De Zilk	NL0091R	4.50	52.30	0.021	0.073	0.84	254.17
Birkenes II	NO0002R	8.25	58.39	0.008	0.009	0.17	14.16
Zeppelin mountain (Ny-Ålesund)	NO0042G	11.89	78.91	0.003	0.00001	1.00	-99.75
Diabla Gora	PL0005R	22.07	54.15	0.302	0.198	0.50	-31.76
Zielonka	PL0009R	17.93	53.66	0.376	0.574	0.57	57.00
Råö	SE0014R	11.91	57.39	0.016	0.029	0.92	84.12
Hallahus	SE0020R	13.15	56.04	0.019	0.068	0.65	269.23
Norunda Stenen	SE0022R	17.51	60.09	0.011	0.020	0.69	93.80
Iskrba	SI0008R	14.87	45.57	0.206	0.138	0.99	-31.31

Table C9. *Statistical parameters for evaluating modelled BaP wet deposition (g km^{-2}y^{-1}) against measurements.*

Station name	Code	Longitude	Latitude	Observed	Modelled	Rcorr	Bias,%
Houtem	BE0013R	2.58	51.02	2.821	1.847	-0.11	-34.52
Kosetice (NAOK)	CZ0003R	15.08	49.57	9.501	30.933	0.96	234.08
Westerland	DE0001R	8.31	54.93	0.592	1.007	-0.26	74.24
Waldhof	DE0002R	10.76	52.80	1.376	1.248	0.71	-3.85
Schauinsland	DE0003R	7.91	47.91	4.555	4.036	0.75	-8.48
Schmücke	DE0008R	10.77	50.65	3.906	2.805	0.56	-22.92
Zingst	DE0009R	12.72	54.44	1.220	1.219	0.22	3.28
San Pablo de los Montes	ES0001R	-4.35	39.55	0.811	0.104	-	-72.23
Víznar	ES0007R	-3.53	37.24	1.061	1.247	-	7.67
Niembro	ES0008R	-4.85	43.44	0.807	2.877	-	246.39
Zarra	ES0012R	-1.10	39.08	0.673	0.225	-	-58.01
Els Torms	ES0014R	0.73	41.39	0.729	0.158	-	-62.81
Pallas (Matorova)	FI0036R	24.24	68.00	0.335	0.339	0.42	1.84
Hyytiälä	FI0050R	24.28	61.85	0.802	1.502	0.89	95.30
Donon	FR0008R	7.13	48.50	2.722	0.722	-0.08	-66.27
Revin	FR0009R	4.63	49.90	2.872	1.299	0.36	-52.38
Peyrusse Vieille	FR0013R	0.18	43.62	0.902	0.525	0.55	-39.54
Saint-Nazaire-le-Désert	FR0023R	5.28	44.57	0.827	0.409	0.57	-38.48
Verneuil	FR0025R	2.61	46.81	1.232	0.624	-0.64	-45.99
Kergoff	FR0028R	-2.94	48.26	1.371	0.542	-0.22	-60.55
Auchencorth Moss	GB0048R	-3.24	55.79	6.588	0.779	1.00	-87.85
Chilbolton Observatory	GB1055R	-1.44	51.15	13.825	1.275	-0.28	-90.41
De Zilk	NL0091R	4.50	52.30	2.577	1.337	-0.35	-47.28
Diabla Gora	PL0005R	22.07	54.15	6.299	4.893	0.49	-19.07
Råö	SE0014R	11.91	57.39	0.613	0.603	-0.35	0.65
Hallahus	SE0020R	13.15	56.04	1.097	1.163	0.89	13.00
Norunda Stenen	SE0022R	17.51	60.09	0.488	0.345	-0.23	-25.64
Iskrba	SI0008R	14.87	45.57	3.391	3.085	0.84	-4.64

Table C10. *Statistical parameters for evaluating modelled BbF air concentration (ng m^{-3}) against measurements.*

Station name	Code	Longitude	Latitude	Observed	Modelled	Rcorr	Bias,%
Kosetice (NAOK)	CZ0003R	15.08	49.57	0.272	0.395	0.84	50.67
Els Torms	ES0014R	0.73	41.39	0.150	0.057	-	-57.82
Pallas (Matorova)	FI0036R	24.24	68.00	0.009	0.014	0.35	65.70
Donon	FR0008R	7.13	48.50	0.056	0.120	0.91	142.22
Revin	FR0009R	4.63	49.90	0.058	0.098	0.73	78.28
Peyrusse Vieille	FR0013R	0.18	43.62	0.052	0.049	0.87	-2.72
Saint-Nazaire-le-Désert	FR0023R	5.28	44.57	0.096	0.030	0.74	-64.35
Verneuil	FR0025R	2.61	46.81	0.083	0.058	0.86	-27.40
Kergoff	FR0028R	-2.94	48.26	0.043	0.074	0.66	71.87
Auchencorth Moss	GB0048R	-3.24	55.79	0.039	0.031	0.81	-18.83
Chilbolton Observatory	GB1055R	-1.44	51.15	0.065	0.058	0.87	-7.26
Rucava	LV0010R	21.17	56.16	0.191	0.200	0.53	8.05
Birkenes II	NO0002R	8.25	58.39	0.025	0.028	0.25	17.28
Zeppelin mountain (Ny-Ålesund)	NO0042G	11.89	78.91	0.003	0.0001	0.35	-98.03
Diabla Gora	PL0005R	22.07	54.15	0.996	0.393	0.79	-59.11
Zielonka	PL0009R	17.93	53.66	0.661	1.009	0.53	55.92
Råö	SE0014R	11.91	57.39	0.026	0.063	0.89	151.99
Hallahus	SE0020R	13.15	56.04	0.040	0.101	0.77	162.88
Norunda Stenen	SE0022R	17.51	60.09	0.018	0.033	0.77	97.77

Table C11. *Statistical parameters for evaluating modelled BbF wet deposition (g km^{-2}y^{-1}) against measurements.*

Station name	Code	Longitude	Latitude	Observed	Modelled	Rcorr	Bias,%
Houtem	BE0013R	2.58	51.02	3.290	3.419	-0.13	4.66
Kosetice (NAOK)	CZ0003R	15.08	49.57	10.538	22.563	0.88	124.78
Víznar	ES0007R	-3.53	37.24	2.035	4.732	-	132.94
Niembro	ES0008R	-4.85	43.44	1.057	9.919	-	802.93
Pallas (Matorova)	FI0036R	24.24	68.00	0.391	0.658	0.58	76.41
Hyytiälä	FI0050R	24.28	61.85	1.865	2.790	0.85	58.66
Donon	FR0008R	7.13	48.50	5.252	2.015	0.61	-53.30
Revin	FR0009R	4.63	49.90	6.621	3.042	0.91	-52.26
Peyrusse Vieille	FR0013R	0.18	43.62	1.743	1.219	0.74	-27.27
Saint-Nazaire-le-Désert	FR0023R	5.28	44.57	1.637	1.261	0.27	-8.95
Verneuil	FR0025R	2.61	46.81	2.458	1.732	-0.32	-25.36
Kergoff	FR0028R	-2.94	48.26	2.069	1.156	0.25	-43.61
Auchencorth Moss	GB0048R	-3.24	55.79	8.626	1.002	0.73	-87.95
Chilbolton Observatory	GB1055R	-1.44	51.15	14.780	2.138	0.43	-84.92
Diabla Gora	PL0005R	22.07	54.15	9.201	11.033	0.74	24.22
Råö	SE0014R	11.91	57.39	1.497	2.680	0.70	85.54
Hallahus	SE0020R	13.15	56.04	2.515	3.732	0.85	59.80
Norunda Stenen	SE0022R	17.51	60.09	1.057	1.283	0.06	29.18

Table C12. *Statistical parameters for evaluating modelled BkF air concentration (ng m^{-3}) against measurements.*

Station name	Code	Longitude	Latitude	Observed	Modelled	Rcorr	Bias,%
Kosetice (NAOK)	CZ0003R	15.08	49.57	0.162	0.250	0.86	58.25
Pallas (Matorova)	FI0036R	24.24	68.00	0.003	0.009	0.35	169.85
Donon	FR0008R	7.13	48.50	0.034	0.060	0.92	97.14
Revin	FR0009R	4.63	49.90	0.032	0.055	0.81	76.05
Peyrusse Vieille	FR0013R	0.18	43.62	0.034	0.023	0.92	-31.61
Saint-Nazaire-le-Désert	FR0023R	5.28	44.57	0.048	0.012	0.79	-71.67
Verneuil	FR0025R	2.61	46.81	0.037	0.028	0.83	-22.24
Kergoff	FR0028R	-2.94	48.26	0.027	0.040	0.12	49.07
Auchencorth Moss	GB0048R	-3.24	55.79	0.028	0.014	0.20	-48.75
Chilbolton Observatory	GB1055R	-1.44	51.15	0.048	0.039	0.64	-17.06
Rucava	LV0010R	21.17	56.16	0.117	0.080	0.50	-29.23
Birkenes II	NO0002R	8.25	58.39	0.009	0.008	0.27	4.89
Zeppelin mountain (Ny-Ålesund)	NO0042G	11.89	78.91	0.002	0.00004	0.92	-98.31
Diabla Gora	PL0005R	22.07	54.15	0.397	0.142	0.86	-63.02
Zielonka	PL0009R	17.93	53.66	0.254	0.394	0.27	59.12
Råö	SE0014R	11.91	57.39	0.009	0.021	0.86	147.86
Hallahus	SE0020R	13.15	56.04	0.015	0.038	0.72	160.35
Norunda Stenen	SE0022R	17.51	60.09	0.006	0.010	0.77	74.78

Table C13. *Statistical parameters for evaluating modelled BkF wet deposition (g km^{-2}y^{-1}) against measurements.*

Station name	Code	Longitude	Latitude	Observed	Modelled	Rcorr	Bias,%
Houtem	BE0013R	2.58	51.02	1.324	1.280	-0.25	-2.89
Kosetice (NAOK)	CZ0003R	15.08	49.57	5.841	12.502	0.99	120.97
Víznar	ES0007R	-3.53	37.24	0.974	1.467	-	49.76
Pallas (Matorova)	FI0036R	24.24	68.00	0.200	0.356	0.46	81.82
Hyytiälä	FI0050R	24.28	61.85	0.918	1.401	0.98	60.57
Donon	FR0008R	7.13	48.50	2.290	0.721	0.66	-61.79
Revin	FR0009R	4.63	49.90	2.678	1.237	0.83	-52.18
Peyrusse Vieille	FR0013R	0.18	43.62	0.874	0.561	0.62	-34.57
Saint-Nazaire-le-Désert	FR0023R	5.28	44.57	1.384	0.436	0.12	-63.80
Verneuil	FR0025R	2.61	46.81	1.097	0.644	-0.49	-38.48
Kergoff	FR0028R	-2.94	48.26	1.148	0.390	0.48	-66.07
Auchencorth Moss	GB0048R	-3.24	55.79	9.516	0.758	0.90	-91.73
Chilbolton Observatory	GB1055R	-1.44	51.15	15.180	0.918	-0.20	-93.64
Diabla Gora	PL0005R	22.07	54.15	3.677	4.183	0.71	17.41
Råö	SE0014R	11.91	57.39	0.593	0.924	0.61	60.91
Hallahus	SE0020R	13.15	56.04	1.021	1.138	0.87	21.51
Norunda Stenen	SE0022R	17.51	60.09	0.451	0.380	-0.13	-9.90

Table C14. *Statistical parameters for evaluating modelled IP air concentration (ng m^{-3}) against measurements.*

Station name	Code	Longitude	Latitude	Observed	Modelled	Rcorr	Bias,%
Houtem	BE0013R	2.58	51.02	0.052	0.123	0.88	135.34
Kosetice (NAOK)	CZ0003R	15.08	49.57	0.225	0.320	0.65	42.34
Westerland	DE0001R	8.31	54.93	0.035	0.058	0.88	65.86
Waldhof	DE0002R	10.76	52.80	0.091	0.129	0.74	42.67
Schauinsland	DE0003R	7.91	47.91	0.009	0.120	0.11	1289.18
Schmücke	DE0008R	10.77	50.65	0.069	0.143	0.94	106.28
Zingst	DE0009R	12.72	54.44	0.075	0.093	0.83	24.93
Lahemaa	EE0009R	25.90	59.50	0.091	0.080	0.87	-11.59
Niembro	ES0008R	-4.85	43.44	0.090	0.047	-	-47.35
Els Torms	ES0014R	0.73	41.39	0.140	0.037	-	-73.17
Pallas (Matorova)	FI0036R	24.24	68.00	0.0109	0.0114	0.89	5.54
Hyytiälä	FI0050R	24.28	61.85	0.068	0.067	0.84	-1.30
Donon	FR0008R	7.13	48.50	0.045	0.075	0.91	69.36
Revin	FR0009R	4.63	49.90	0.040	0.064	0.77	61.61
Peyrusse Vieille	FR0013R	0.18	43.62	0.047	0.035	0.94	-25.04
Saint-Nazaire-le-Désert	FR0023R	5.28	44.57	0.074	0.019	0.69	-73.36
Verneuil	FR0025R	2.61	46.81	0.062	0.038	0.90	-38.87
Kergoff	FR0028R	-2.94	48.26	0.034	0.051	0.69	51.37
Auchencorth Moss	GB0048R	-3.24	55.79	0.029	0.040	0.83	35.66
Chilbolton Observatory	GB1055R	-1.44	51.15	0.050	0.064	0.87	30.18
Puntijarka	HR0002R	15.97	45.90	0.090	0.404	0.49	348.19
Rucava	LV0010R	21.17	56.16	0.182	0.110	0.62	-39.57
De Zilk	NL0091R	4.50	52.30	0.048	0.084	0.93	74.38
Birkenes II	NO0002R	8.25	58.39	0.019	0.010	0.80	-47.12
Zeppelin mountain (Ny-Ålesund)	NO0042G	11.89	78.91	0.003	0.00003	0.71	-98.98
Diabla Gora	PL0005R	22.07	54.15	0.650	0.167	0.84	-74.27
Zielonka	PL0009R	17.93	53.66	0.768	0.382	0.71	-50.23
Råö	SE0014R	11.91	57.39	0.017	0.033	0.86	94.12
Hallahus	SE0020R	13.15	56.04	0.032	0.056	0.72	77.91
Norunda Stenen	SE0022R	17.51	60.09	0.011	0.020	0.72	76.36
Iskrba	SI0008R	14.87	45.57	0.249	0.172	0.96	-31.05

Table C15. *Statistical parameters for evaluating modelled IP wet deposition (g km^{-2}y^{-1}) against measurements.*

Station name	Code	Longitude	Latitude	Observed	Modelled	Rcorr	Bias,%
Houtem	BE0013R	2.58	51.02	1.388	1.873	-0.09	35.11
Kosetice (NAOK)	CZ0003R	15.08	49.57	13.004	22.175	-	70.69
Westerland	DE0001R	8.31	54.93	1.704	1.788	0.11	5.12
Waldhof	DE0002R	10.76	52.80	3.436	2.285	0.88	-33.23
Schauinsland	DE0003R	7.91	47.91	7.188	4.478	0.83	-37.59
Schmücke	DE0008R	10.77	50.65	9.277	4.137	0.65	-55.26
Zingst	DE0009R	12.72	54.44	2.906	2.027	0.75	-29.76
Víznar	ES0007R	-3.53	37.24	2.032	2.331	-	14.96
Niembro	ES0008R	-4.85	43.44	1.277	6.306	-	391.68
Els Torms	ES0014R	0.73	41.39	0.388	0.242	-	-36.13
Pallas (Matorova)	FI0036R	24.24	68.00	0.454	0.508	0.28	12.53
Hyytiälä	FI0050R	24.28	61.85	1.191	1.649	0.91	39.35
Donon	FR0008R	7.13	48.50	5.593	1.159	0.88	-79.06
Revin	FR0009R	4.63	49.90	5.343	1.662	0.88	-68.80
Peyrusse Vieille	FR0013R	0.18	43.62	1.320	0.540	0.66	-58.70
Saint-Nazaire-le-Désert	FR0023R	5.28	44.57	1.326	0.520	0.68	-58.93
Verneuil	FR0025R	2.61	46.81	2.286	0.890	-0.37	-60.74
Kergoff	FR0028R	-2.94	48.26	1.951	0.598	0.32	-69.22
Auchencorth Moss	GB0048R	-3.24	55.79	11.429	0.812	0.71	-92.82
Chilbolton Observatory	GB1055R	-1.44	51.15	19.463	1.959	0.38	-89.89
De Zilk	NL0091R	4.50	52.30	2.071	1.647	0.49	-20.21
Diabla Gora	PL0005R	22.07	54.15	9.222	4.379	0.51	-52.54
Råö	SE0014R	11.91	57.39	1.051	1.373	0.73	30.94
Hallahus	SE0020R	13.15	56.04	1.877	1.700	0.84	-5.48
Norunda Stenen	SE0022R	17.51	60.09	0.760	0.586	-0.05	-22.38
Iskrba	SI0008R	14.87	45.57	4.890	3.883	0.82	-20.50

Table C16. *Statistical parameters for evaluating modelled HCB air concentration (pg m^{-3}) against measurements.*

Station name	Code	Longitude	Latitude	Observed	Modelled	Rcorr	Bias,%
Kosetice (NAOK)	CZ0003R	15.08	49.57	58.744	16.105	0.16	-72.58
Westerland	DE0001R	8.31	54.93	16.976	14.024	-0.67	-17.39
Waldhof	DE0002R	10.76	52.80	14.193	15.863	-0.78	11.77
Schauinsland	DE0003R	7.91	47.91	16.425	14.652	-0.71	-10.80
Schmücke	DE0008R	10.77	50.65	21.314	15.961	-0.74	-25.11
Zingst	DE0009R	12.72	54.44	14.772	15.764	-0.64	6.71
Villum Research Station, Station Nord	DK0010G	-16.67	81.60	39.177	6.709	-0.82	-82.88
Pallas (Matorova)	FI0036R	24.24	68.00	15.199	13.317	-0.93	-12.38
Storhofdi	IS0091R	-20.29	63.40	4.712	8.275	-0.57	75.63
Birkenes II	NO0002R	8.25	58.39	36.012	13.366	-0.75	-62.88
Zeppelin mountain (Ny-Ålesund)	NO0042G	11.89	78.91	49.646	9.066	0.30	-81.74
Råö	SE0014R	11.91	57.39	10.877	15.572	-0.83	43.17
Norunda Stenen	SE0022R	17.51	60.09	14.115	14.551	-0.91	3.09

Table C17. *Statistical parameters for evaluating modelled PCB-153 air concentration (pg m^{-3}) against measurements.*

Station name	Code	Longitude	Latitude	Observed	Modelled	Rcorr	Bias,%
Kosetice (NAOK)	CZ0003R	15.08	49.57	0.790	1.283	0.81	62.39
Westerland	DE0001R	8.31	54.93	1.143	0.657	0.62	-42.55
Waldhof	DE0002R	10.76	52.80	0.913	1.080	0.58	18.28
Schauinsland	DE0003R	7.91	47.91	1.079	1.743	0.75	61.57
Schmücke	DE0008R	10.77	50.65	1.070	1.466	0.71	36.97
Zingst	DE0009R	12.72	54.44	0.651	0.692	0.58	6.33
Pallas (Matorova)	FI0036R	24.24	68.00	0.103	0.157	0.79	53.16
Storhofdi	IS0091R	-20.29	63.40	0.220	0.049	-	-77.60
Birkenes II	NO0002R	8.25	58.39	0.204	0.239	0.70	17.39
Zeppelin mountain (Ny-Ålesund)	NO0042G	11.89	78.91	0.077	0.042	-0.25	-45.78
Råö	SE0014R	11.91	57.39	0.722	0.493	0.84	-31.81
Norunda Stenen	SE0022R	17.51	60.09	0.275	0.305	0.94	10.93

Table C18. *Statistical parameters for evaluating modelled PCDD/Fs air concentration (fg TEQ m^{-3}) against measurements.*

Station name	Code	Longitude	Latitude	Observed	Modelled	Rcorr	Bias,%
Råö	SE0014R	11.91	57.39	0.315	0.695	0.65	120.68
Norunda Stenen	SE0022R	17.51	60.09	0.455	0.249	-0.29	-45.23

Annex D. Statistics for reactive mercury in the free troposphere

Table D.1. *Summary of the empirical mode decomposition (EEMD) statistics and the subsequent amplitude envelope analysis through the Hilbert-Huang transform (HHT) for the Mauna Loa station (Hawaii, USA). Amplitudes are in the following units: ng m^{-3} for GEM, pg m^{-3} for GOM/PBM, ppb for ozone, and g kg^{-1} for specific humidity.*

Variable	IMF	Dominant period [days]	Significant	Mean amplitude	Median amplitude
GEM	IMF1	0.19	FALSE	0.31	8.18
	IMF2	0.96	FALSE	0.31	5.23
	IMF3	0.96	FALSE	0.35	3.37
	IMF4	1.82	FALSE	0.24	2.12
	IMF5	3.58	TRUE	0.28	1.59
	IMF6	6.44	TRUE	0.31	1.53
	IMF7	9.9	TRUE	0.29	1.14
	IMF8	21.1	TRUE	0.27	1.17
	IMF9	45.71	TRUE	0.21	0.56
	IMF10	98.46	TRUE	0.17	0.82
	IMF11	320	TRUE	0.19	0.58
	IMF12	320	TRUE	0.17	0.56
	IMF13	1280	TRUE	0.06	0.52
	IMF14	1920	TRUE	0.08	0.28
GOM	IMF1	0.24	FALSE	0.19	6.41
	IMF2	0.97	FALSE	0.2	1.95
	IMF3	0.97	FALSE	0.24	1.46
	IMF4	1.69	FALSE	0.18	1.03
	IMF5	4.32	TRUE	0.23	1.1
	IMF6	6.44	TRUE	0.26	1.16
	IMF7	10.88	TRUE	0.27	1.16
	IMF8	23.27	TRUE	0.24	1.03
	IMF9	48	TRUE	0.23	0.99
	IMF10	76.8	TRUE	0.24	1.32
	IMF11	320	TRUE	0.41	1.2
	IMF12	320	TRUE	0.22	0.69
	IMF13	1280	TRUE	0.16	0.23
	IMF14	1920	TRUE	0.15	0.67
GOM (corrected)	IMF1	0.24	FALSE	0.18	6.18
	IMF2	0.97	FALSE	0.18	1.96
	IMF3	0.97	FALSE	0.22	1.27
	IMF4	2.06	FALSE	0.17	1.07
	IMF5	3.88	TRUE	0.22	1.09
	IMF6	6.75	TRUE	0.24	1.26
	IMF7	15.55	TRUE	0.26	1.18
	IMF8	23.27	TRUE	0.24	1.11
	IMF9	48	TRUE	0.23	1.06
	IMF10	76.8	TRUE	0.23	1.58
	IMF11	320	TRUE	0.42	1.36
	IMF12	320	TRUE	0.25	1.18
	IMF13	1280	TRUE	0.15	0.31
	IMF14	1920	TRUE	0.13	0.57

Variable	IMF	Dominant period [days]	Significant	Mean amplitude	Median amplitude
PBM	IMF1	0.17	FALSE	0.14	2.46
	IMF2	0.96	FALSE	0.18	3.59
	IMF3	0.96	FALSE	0.19	2.44
	IMF4	1.98	FALSE	0.13	1.16
	IMF5	3.4	FALSE	0.14	1.12
	IMF6	6.18	TRUE	0.18	1.46
	IMF7	15.16	TRUE	0.18	0.88
	IMF8	24.41	TRUE	0.22	1.02
	IMF9	70.24	TRUE	0.28	1.62
	IMF10	77.84	TRUE	0.19	1.00
	IMF11	205.71	TRUE	0.24	0.86
	IMF12	288	TRUE	0.22	0.93
	IMF13	720	TRUE	0.17	0.71
	IMF14	2880	TRUE	0.25	0.90
Ozone	IMF1	0.18	FALSE	0.21	2.42
	IMF2	0.96	FALSE	0.27	3.22
	IMF3	0.96	FALSE	0.29	1.60
	IMF4	2.18	FALSE	0.22	1.28
	IMF5	3.21	TRUE	0.27	1.52
	IMF6	6	TRUE	0.30	1.82
	IMF7	13.15	TRUE	0.30	1.13
	IMF8	23.41	TRUE	0.27	0.82
	IMF9	59.08	TRUE	0.23	0.92
	IMF10	160	TRUE	0.23	0.67
	IMF11	320	TRUE	0.37	0.79
	IMF12	320	TRUE	0.20	0.66
	IMF13	1280	TRUE	0.10	0.18
	IMF14	3840	TRUE	0.07	0.13
Specific humidity	IMF1	0.48	FALSE	0.24	1.73
	IMF2	0.97	FALSE	0.38	1.99
	IMF3	0.97	TRUE	0.42	1.31
	IMF4	1.76	FALSE	0.20	0.85
	IMF5	3.88	TRUE	0.25	0.89
	IMF6	8.33	TRUE	0.29	1.05
	IMF7	14.66	TRUE	0.29	0.95
	IMF8	21.69	TRUE	0.22	0.90
	IMF9	48	TRUE	0.19	1.37
	IMF10	98.46	TRUE	0.20	0.52
	IMF11	320	TRUE	0.25	0.71
	IMF12	426.67	TRUE	0.12	0.24
	IMF13	1280	TRUE	0.11	0.49
	IMF14	1280	TRUE	0.03	0.06

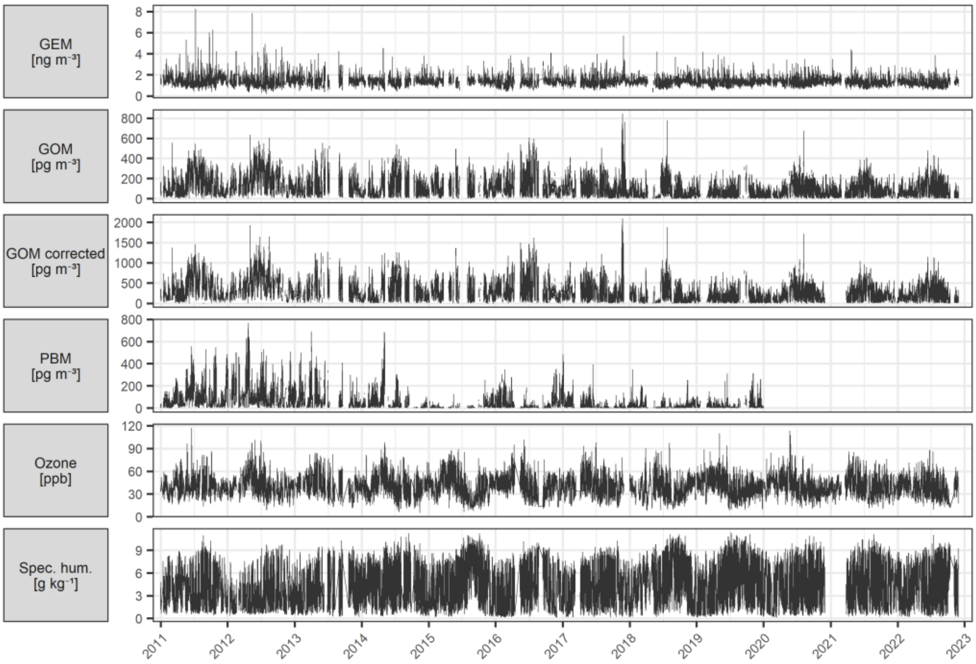

Fig. D.1. *The timeseries of atmospheric Hg fractions, ozone, and specific humidity at Mauna Loa (Hawaii, USA), during 2011–2022.*

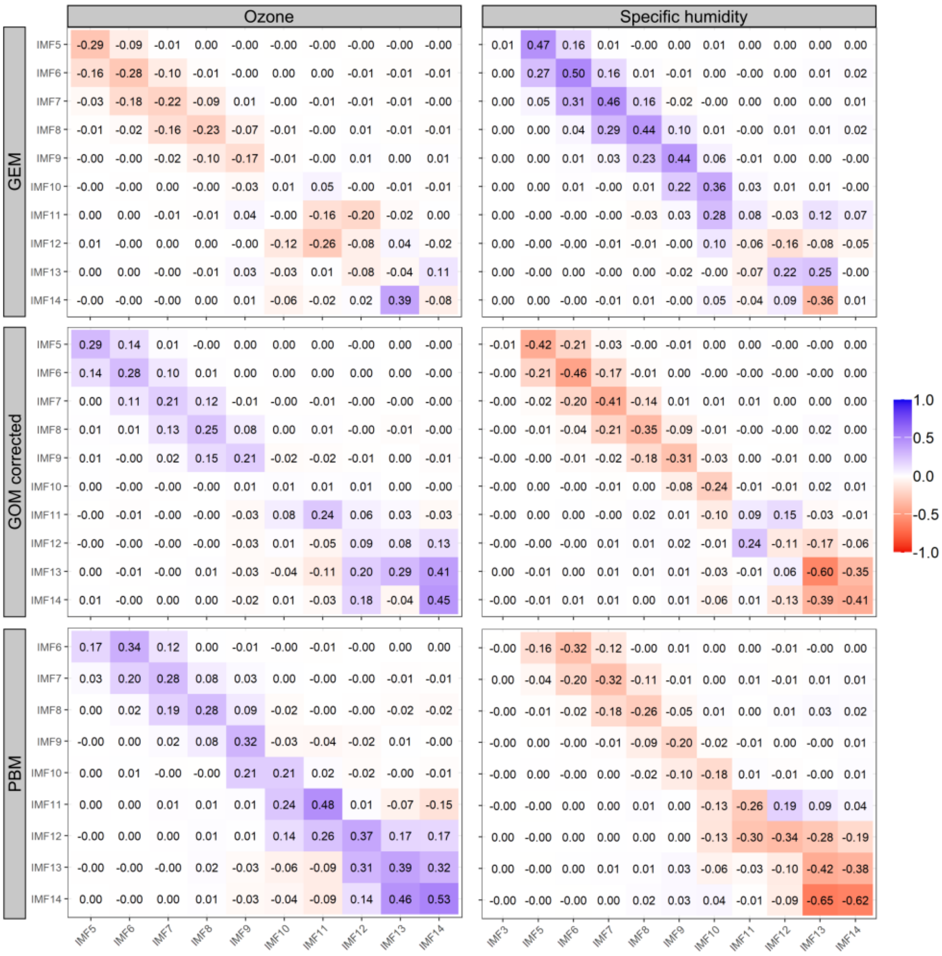

Fig. D.2. *Matrices of cross-correlation between oscillations (IMFs) of atmospheric Hg fractions and ozone/specific humidity at the high-altitude site of Mauna Loa (Hawaii, USA).*

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