

Annex 1

SUMMARY 1.A. SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (Sheet 1 of 3)

Inventory 2020
Submission 2022 v6
FINLAND

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | Net CO ₂ emissions/removals | CH ₄ | N ₂ O | HFCs ⁽¹⁾ | PFCs ⁽¹⁾ | Unspecified mix of HFCs and PFCs ⁽¹⁾ | SF ₆ | NF ₃ | NO _x | CO | NMVOC | SO ₂ |
|---|--|---------------------------------|------------------|---------------------|---------------------|---|-----------------|-----------------|-----------------|----------|-------|-----------------|
| | (kt) | (kt CO ₂ equivalent) | | | (kt) | | | | | | | |
| Total national emissions and removals | 17504.84 | 206.70 | 22.63 | 975.87 | 1.72 | NO | 0.00 | NO | 98.18 | 315.91 | 84.41 | 23.17 |
| 1. Energy | 33509.96 | 10.26 | 1.75 | | | | | | 94.61 | 311.16 | 37.87 | 15.17 |
| A. Fuel combustion Reference approach(2) | 33514.01 | | | | | | | | | | | |
| Sectoral approach(2) | 33433.62 | 9.40 | 1.75 | | | | | | 94.56 | 311.14 | 31.21 | 15.16 |
| 1. Energy industries | 12867.90 | 1.17 | 0.78 | | | | | | 20.49 | 21.44 | 1.14 | 7.58 |
| 2. Manufacturing industries and construction | 6079.17 | 0.82 | 0.47 | | | | | | 28.17 | 35.23 | 1.65 | 3.99 |
| 3. Transport | 10345.40 | 0.49 | 0.29 | | | | | | 30.93 | 52.84 | 6.19 | 0.11 |
| 4. Other sectors | 3201.53 | 6.80 | 0.20 | | | | | | 12.96 | 200.40 | 22.09 | 3.13 |
| 5. Other | 939.62 | 0.12 | 0.02 | | | | | | 2.00 | 1.23 | 0.16 | 0.36 |
| B. Fugitive emissions from fuels | 76.34 | 0.87 | 0.00 | | | | | | 0.05 | 0.02 | 6.65 | 0.01 |
| 1. Solid fuels | NO | NO | NO | | | | | | NO | NO | NO | NO |
| 2. Oil and natural gas and other emissions from energy production | 76.34 | 0.87 | 0.00 | | | | | | 0.05 | 0.02 | 6.65 | 0.01 |
| C. CO ₂ Transport and storage | NO,IE,NA | | | | | | | | | | | |
| 2. Industrial processes and product use | 3883.45 | 0.05 | 0.82 | 975.87 | 1.72 | NO | 0.00 | NO | 1.36 | 0.19 | 30.77 | 8.00 |
| A. Mineral industry | 946.52 | | | | | | | | 0.06 | NO | NO | 0.00 |
| B. Chemical industry | 1049.67 | 0.05 | 0.76 | NO | NO | NO | NO | NO | 0.79 | NO | 2.16 | 4.12 |
| C. Metal industry | 1756.77 | 0.00 | NO | | | | | NO | 0.37 | 0.17 | 0.28 | 2.80 |
| D. Non-energy products from fuels and solvent use | 130.50 | 0.01 | 0.00 | | | | | | 0.13 | 0.03 | 24.00 | 0.13 |
| E. Electronic industry | | | | NO,IE | NO,IE | NO | NO,IE | NO | | | | |
| F. Product uses as substitutes for ODS | | | | 971.44 | 0.78 | | | | | | | |
| G. Other product manufacture and use | | | 0.05 | | NO,IE | | 0.00 | | | | | |
| H. Other ⁽³⁾ | NO | NO | NO | 4.43 | 0.93 | | 0.00 | | 0.00 | NO | 4.33 | 0.95 |
| 3. Agriculture | 202.52 | 101.03 | 12.88 | | | | | | 2.15 | 2.35 | 15.67 | NO |
| A. Enteric fermentation | | 83.14 | | | | | | | | | | |
| B. Manure management | | 17.82 | 0.91 | | | | | | | | 12.37 | |
| C. Rice cultivation | | NO | | | | | | | | | NO,NA | |
| D. Agricultural soils | | NE,NO | 11.97 | | | | | | 2.09 | NE | 3.19 | |
| E. Prescribed burning of savannas | | NO | NO | | | | | | NO | NO | NO | |
| F. Field burning of agricultural residues | | 0.07 | 0.00 | | | | | | 0.06 | 2.35 | 0.11 | |
| G. Liming | 200.96 | | | | | | | | | | | |
| H. Urea application | 1.56 | | | | | | | | | | | |
| I. Other carbon-containing fertilizers | NA | | | | | | | | | | | |
| J. Other | NO | NO | NO | | | | | | NO | NO | NO | NO |
| 4. Land use, land-use change and forestry⁽⁴⁾ | -20091.08 | 30.63 | 6.79 | | | | | | 0.06 | 2.21 | NE | NE |
| A. Forest land ⁽⁴⁾ | -30351.27 | 27.76 | 6.36 | | | | | | 0.06 | 2.19 | NE | |
| B. Cropland ⁽⁴⁾ | 8042.35 | IE,NA | 0.02 | | | | | | NE,IE | NE,IE | NE | |
| C. Grassland ⁽⁴⁾ | 767.41 | 0.00 | 0.00 | | | | | | 0.00 | 0.02 | NE | |
| D. Wetlands ⁽⁴⁾ | 2034.79 | 2.86 | 0.33 | | | | | | NE,NA | NE,NA | NE | |
| E. Settlements ⁽⁴⁾ | 712.38 | NE,NA | 0.07 | | | | | | NE,NA | NE,NA | NE | |
| F. Other land ⁽⁴⁾ | NO,NA | NA | NA | | | | | | NA | NA | NE | |
| G. Harvested wood products | -1296.74 | | | | | | | | | | | |
| H. Other ⁽⁴⁾ | NA | NA | NA | | | | | | NA | NA | NE | NE |
| 5. Waste | NO,NE,IE | 64.73 | 0.40 | | | | | | NO,NE,IE | NO,NE,IE | 0.10 | NO,NE,IE |
| A. Solid waste disposal ⁽⁵⁾ | NO | 55.40 | | | | | | | NO | NO | 0.07 | |
| B. Biological treatment of solid waste ⁽⁵⁾ | | 2.86 | 0.15 | | | | | | NO | NO | NO | |
| C. Incineration and open burning of waste ⁽⁵⁾ | NO,NE,IE | NO,NE,IE | NO,NE,IE | | | | | | NE,IE | NE,IE | NE,IE | NE,IE |
| D. Wastewater treatment and discharge | | 6.47 | 0.25 | | | | | | NO | NO | 0.03 | |
| E. Other ⁽⁵⁾ | NO | NO | NO | | | | | | NO | NO | NO | NO |
| 6. Other (please specify)⁽⁶⁾ | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| Memo items:⁽⁷⁾ | | | | | | | | | | | | |
| International bunkers | 1848.98 | 0.09 | 0.05 | | | | | | 21.36 | 3.19 | 0.83 | 0.85 |
| Aviation | 869.13 | 0.00 | 0.02 | | | | | | 4.22 | 0.82 | 0.09 | 0.23 |
| Navigation | 979.85 | 0.08 | 0.02 | | | | | | 17.14 | 2.37 | 0.74 | 0.62 |
| Multilateral operations | NO | NO | NO | | | | | | NO | NO | NO | NO |
| CO₂ emissions from biomass | 39632.96 | | | | | | | | | | | |
| CO₂ captured | 101.51 | | | | | | | | | | | |
| Long-term storage of C in waste disposal sites | 54646.56 | | | | | | | | | | | |
| Indirect N₂O | | | 0.46 | | | | | | | | | |
| Indirect CO₂ | 65.95 | | | | | | | | | | | |

⁽¹⁾ The emissions of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), unspecified mix of HFCs and PFCs and other fluorinated gases are to be expressed as carbon dioxide (CO₂) equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in table 2(II) of this common reporting format.

⁽²⁾ For verification purposes, Parties are requested to report the results of their calculations using the Reference approach and to explain any differences with the Sectoral approach in the documentation box to table 1.A(c). For estimating national total emissions, the results from the Sectoral approach should be used.

⁽³⁾ 2.H. Other includes pulp and paper and food and beverages industry.

⁽⁴⁾ For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

⁽⁵⁾ CO₂ from categories solid waste disposal on land and waste incineration should only be included if it stems from non-biogenic or inorganic waste streams. Only emissions from waste incineration without energy recovery are to be reported in the waste sector, whereas emissions from incineration with energy recovery are to be reported in the energy sector.

⁽⁶⁾ If reporting any country-specific category under sector "6. Other", detailed explanations should be provided in Chapter 8: Other (CRF sector 6) of the national inventory report (NIR).

⁽⁷⁾ Parties are asked to report emissions from international aviation and international navigation and multilateral operations, as well as CO₂ emissions from biomass and CO₂ captured, under Memo Items. These emissions should not be included in the national total emissions from the energy sector. Amounts of biomass used as fuel are included in the national energy consumption but the corresponding CO₂ emissions are not included in the national total as it is assumed that the biomass is produced in a sustainable manner. If the biomass is harvested at an unsustainable rate, net CO₂ emissions are accounted for as a loss of biomass stocks in the Land Use, Land-use Change and Forestry sector.

SUMMARY 2 SUMMARY REPORT FOR CO₂ EQUIVALENT EMISSIONS

(Sheet 1 of 1)

Inventory 2020

Submission 2022 v6

FINLAND

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | CO ₂ ⁽¹⁾ | CH ₄ | N ₂ O | HFCs | PFCs | SF ₆ | Unspecifie d mix of HFCs and PFCs | NF ₃ | Total |
|---|---------------------------------|-----------------|------------------|--------|-------|-----------------|--|-----------------|-----------|
| | CO ₂ equivalent (kt) | | | | | | | | |
| Total (net emissions)⁽¹⁾ | 17504.84 | 5167.55 | 6744.06 | 975.87 | 1.72 | 19.13 | NO | NO | 30413.18 |
| 1. Energy | 33509.96 | 256.60 | 522.94 | | | | | | 34289.50 |
| A. Fuel combustion (sectoral approach) | 33433.62 | 234.91 | 522.28 | | | | | | 34190.82 |
| 1. Energy industries | 12867.90 | 29.33 | 232.53 | | | | | | 13129.76 |
| 2. Manufacturing industries and construction | 6079.17 | 20.44 | 138.62 | | | | | | 6238.23 |
| 3. Transport | 10345.40 | 12.15 | 85.88 | | | | | | 10443.43 |
| 4. Other sectors | 3201.53 | 170.11 | 58.59 | | | | | | 3430.23 |
| 5. Other | 939.62 | 2.89 | 6.66 | | | | | | 949.17 |
| B. Fugitive emissions from fuels | 76.34 | 21.69 | 0.66 | | | | | | 98.68 |
| 1. Solid fuels | NO | NO | NO | | | | | | NO |
| 2. Oil and natural gas | 76.34 | 21.69 | 0.66 | | | | | | 98.68 |
| C. CO ₂ transport and storage | NO,IE,NA | | | | | | | | NO,IE,NA |
| 2. Industrial processes and product use | 3883.45 | 1.25 | 243.05 | 975.87 | 1.72 | 19.13 | NO | NO | 5124.48 |
| A. Mineral industry | 946.52 | | | | | | | | 946.52 |
| B. Chemical industry | 1049.67 | 1.13 | 226.53 | NO | NO | NO | NO | NO | 1277.33 |
| C. Metal industry | 1756.77 | 0.00 | NO | | | NO | | | 1756.77 |
| D. Non-energy products from fuels and solvent use | 130.50 | 0.13 | 0.76 | | | | | | 131.39 |
| E. Electronic Industry | | | | NO,IE | NO,IE | NO,IE | NO | NO | NO,IE |
| F. Product uses as ODS substitutes | | | | 971.44 | 0.78 | | | | 972.22 |
| G. Other product manufacture and use | | | 15.76 | | NO,IE | 13.96 | | | 29.72 |
| H. Other | NO | NO | NO | 4.43 | 0.93 | 5.17 | | | 10.54 |
| 3. Agriculture | 202.52 | 2525.80 | 3837.63 | | | | | | 6565.95 |
| A. Enteric fermentation | | 2078.48 | | | | | | | 2078.48 |
| B. Manure management | | 445.60 | 270.27 | | | | | | 715.87 |
| C. Rice cultivation | | NO | | | | | | | NO |
| D. Agricultural soils | | NE,NO | 3566.83 | | | | | | 3566.83 |
| E. Prescribed burning of savannas | | NO | NO | | | | | | NO |
| F. Field burning of agricultural residues | | 1.72 | 0.53 | | | | | | 2.25 |
| G. Liming | 200.96 | | | | | | | | 200.96 |
| H. Urea application | 1.56 | | | | | | | | 1.56 |
| I. Other carbon-containing fertilizers | NA | | | | | | | | NA |
| J. Other | NO | NO | NO | | | | | | NO |
| 4. Land use, land-use change and forestry⁽¹⁾ | -20091.08 | 765.67 | 2022.30 | | | | | | -17303.12 |
| A. Forest land | -30351.27 | 694.03 | 1894.22 | | | | | | -27763.02 |
| B. Cropland | 8042.35 | IE,NA | 7.21 | | | | | | 8049.56 |
| C. Grassland | 767.41 | 0.02 | 0.65 | | | | | | 768.08 |
| D. Wetlands | 2034.79 | 71.62 | 98.22 | | | | | | 2204.63 |
| E. Settlements | 712.38 | NE,NA | 20.26 | | | | | | 732.65 |
| F. Other land | NO,NA | NA | NA | | | | | | NO,NA |
| G. Harvested wood products | -1296.74 | | | | | | | | -1296.74 |
| H. Other | NA | NA | NA | | | | | | NA |
| 5. Waste | NO,NE,IE | 1618.22 | 118.14 | | | | | | 1736.37 |
| A. Solid waste disposal | NO | 1385.01 | | | | | | | 1385.01 |
| B. Biological treatment of solid waste | | 71.56 | 43.35 | | | | | | 114.92 |
| C. Incineration and open burning of waste | NO,NE,IE | NO,NE,IE | NO,NE,IE | | | | | | NO,NE,IE |
| D. Waste water treatment and discharge | | 161.65 | 74.79 | | | | | | 236.43 |
| E. Other | NO | NO | NO | | | | | | NO |
| 6. Other (as specified in summary I.A) | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| Memo items:⁽²⁾ | | | | | | | | | |
| International bunkers | 1848.98 | 2.19 | 13.93 | | | | | | 1865.09 |
| Aviation | 869.13 | 0.11 | 7.08 | | | | | | 876.32 |
| Navigation | 979.85 | 2.07 | 6.85 | | | | | | 988.78 |
| Multilateral operations | NO | NO | NO | | | | | | NO |
| CO₂ emissions from biomass | 39632.96 | | | | | | | | 39632.96 |
| CO₂ captured | 101.51 | | | | | | | | 101.51 |
| Long-term storage of C in waste disposal sites | 54646.56 | | | | | | | | 54646.56 |
| Indirect N₂O | | | 137.29 | | | | | | |
| Indirect CO₂⁽³⁾ | 65.95 | | | | | | | | |
| Total CO₂ equivalent emissions without land use, land-use change and forestry | | | | | | | | | 47716.30 |
| Total CO₂ equivalent emissions with land use, land-use change and forestry | | | | | | | | | 30413.18 |
| Total CO₂ equivalent emissions, including indirect CO₂, without land use, land-use change and forestry | | | | | | | | | 47782.25 |
| Total CO₂ equivalent emissions, including indirect CO₂, with land use, land-use change and forestry | | | | | | | | | 30479.13 |

⁽¹⁾ For carbon dioxide (CO₂) from land use, land-use change and forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always

⁽²⁾ See footnote 7 to table Summary 1.A.

⁽³⁾ In accordance with the UNFCCC Annex I inventory reporting guidelines, for Parties that decide to report indirect CO₂, the national totals shall be provided with and without indirect

TABLE 10 EMISSION TRENDS

GHG CO₂ eq emissions

(Sheet 1 of 6)

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | Base year ⁽¹⁾ | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|--------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | (kt CO ₂ eq) | | | | | | | | | | | | | | | |
| Total (net emissions)⁽²⁾ | 57574.51 | 57574.51 | 42613.04 | 47070.89 | 49271.75 | 61608.75 | 58439.40 | 57322.86 | 60715.37 | 58235.52 | 56860.41 | 55082.15 | 58860.57 | 60035.81 | 66798.11 | 61995.83 |
| 1. Energy | 53442.15 | 53442.15 | 52115.25 | 51508.25 | 53447.21 | 58781.02 | 55274.94 | 61028.91 | 59448.90 | 56133.59 | 55514.28 | 53709.68 | 59154.01 | 61753.88 | 69369.55 | 65481.66 |
| A. Fuel combustion (sectoral approach) | 53318.59 | 53318.59 | 51963.04 | 51331.85 | 53205.79 | 58621.03 | 55106.94 | 60869.15 | 59263.35 | 55985.29 | 55391.88 | 53588.03 | 59022.73 | 61627.69 | 69243.13 | 65363.37 |
| 1. Energy industries | 18969.25 | 18969.25 | 18787.99 | 18607.58 | 21353.52 | 26343.19 | 24031.16 | 29781.90 | 27397.20 | 24148.96 | 23601.80 | 22141.40 | 27575.76 | 30393.22 | 37470.55 | 33405.88 |
| 2. Manufacturing industries and construction | 13374.91 | 13374.91 | 12867.07 | 12351.73 | 12438.40 | 12773.87 | 12168.39 | 12031.56 | 12309.70 | 11943.50 | 11904.01 | 11934.04 | 11487.97 | 11177.27 | 11569.03 | 11645.01 |
| 3. Transport | 12095.17 | 12095.17 | 11724.94 | 11637.32 | 11174.09 | 11521.49 | 11318.31 | 11312.46 | 11864.81 | 11985.78 | 12191.61 | 12078.40 | 12185.37 | 12367.02 | 12554.59 | 12897.29 |
| 4. Other sectors | 7740.51 | 7740.51 | 7577.89 | 7669.09 | 7255.74 | 6743.81 | 6258.49 | 6357.45 | 6366.29 | 6462.58 | 6375.94 | 6016.72 | 6255.23 | 6210.36 | 6116.54 | 6017.99 |
| 5. Other | 1138.74 | 1138.74 | 1005.15 | 1066.12 | 984.04 | 1238.67 | 1330.58 | 1385.78 | 1325.35 | 1444.46 | 1318.52 | 1417.47 | 1518.40 | 1479.83 | 1532.41 | 1397.20 |
| B. Fugitive emissions from fuels | 123.56 | 123.56 | 152.21 | 176.41 | 241.42 | 159.99 | 168.00 | 159.76 | 185.55 | 148.30 | 122.40 | 121.65 | 131.28 | 126.19 | 126.42 | 118.29 |
| 1. Solid fuels | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| 2. Oil and natural gas and other emissions from energy production | 123.56 | 123.56 | 152.21 | 176.41 | 241.42 | 159.99 | 168.00 | 159.76 | 185.55 | 148.30 | 122.40 | 121.65 | 131.28 | 126.19 | 126.42 | 118.29 |
| C. CO₂ transport and storage | NO,NA | NO,NA | NA,NO | NA,NO | NO,IE,NA |
| 2. Industrial Processes | 5397.60 | 5397.60 | 4993.89 | 4704.42 | 4734.26 | 5009.54 | 5063.70 | 5308.80 | 5613.44 | 5645.17 | 5807.93 | 5988.41 | 6056.49 | 6095.18 | 6441.06 | 6795.54 |
| A. Mineral industry | 1218.22 | 1218.22 | 1050.07 | 952.06 | 857.51 | 898.40 | 873.72 | 913.96 | 943.13 | 955.98 | 1030.01 | 1080.45 | 1084.49 | 1084.31 | 1127.58 | 1189.36 |
| B. Chemical industry | 1866.46 | 1866.46 | 1676.77 | 1493.00 | 1499.83 | 1621.12 | 1673.44 | 1674.61 | 1653.55 | 1574.32 | 1547.14 | 1581.36 | 1520.23 | 1592.77 | 1663.07 | 1766.90 |
| C. Metal industry | 1976.07 | 1976.07 | 1987.05 | 1991.26 | 2113.32 | 2121.91 | 2076.30 | 2198.67 | 2414.58 | 2419.66 | 2448.48 | 2389.23 | 2440.13 | 2318.35 | 2480.87 | 2576.16 |
| D. Non-energy products from fuels and solvent use | 219.66 | 219.66 | 175.06 | 177.58 | 178.72 | 197.60 | 187.31 | 167.61 | 152.16 | 147.60 | 141.58 | 137.87 | 144.11 | 143.48 | 118.13 | 111.01 |
| E. Electronic industry | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NE,NO,IE | NO,IE |
| F. Product uses as ODS substitutes | 0.01 | 0.01 | 0.02 | 0.04 | 0.25 | 81.69 | 150.92 | 234.69 | 334.60 | 443.69 | 538.92 | 717.57 | 788.18 | 882.14 | 978.28 | 1082.39 |
| G. Other product manufacture and use | 109.48 | 109.48 | 97.01 | 82.65 | 78.49 | 81.18 | 91.13 | 85.73 | 81.96 | 79.25 | 79.30 | 62.21 | 59.12 | 55.19 | 51.44 | 50.58 |
| H. Other | 7.70 | 7.70 | 7.91 | 7.83 | 6.14 | 7.63 | 10.88 | 33.54 | 33.46 | 24.68 | 22.50 | 19.73 | 20.24 | 18.95 | 21.69 | 19.13 |
| 3. Agriculture | 7506.86 | 7506.86 | 7095.97 | 6562.53 | 6848.55 | 6888.92 | 6697.81 | 6797.03 | 6898.61 | 6687.49 | 6622.19 | 6614.85 | 6594.35 | 6640.85 | 6515.16 | 6496.66 |
| A. Enteric fermentation | 2420.59 | 2420.59 | 2332.71 | 2252.21 | 2273.07 | 2278.66 | 2145.53 | 2187.33 | 2134.90 | 2098.69 | 2108.79 | 2089.97 | 2116.41 | 2092.97 | 2074.66 | |
| B. Manure management | 651.05 | 651.05 | 617.07 | 613.61 | 624.57 | 646.19 | 644.31 | 664.30 | 694.00 | 675.22 | 663.50 | 661.34 | 668.88 | 684.96 | 703.37 | 705.98 |
| C. Rice cultivation | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| D. Agricultural soils | 3783.81 | 3783.81 | 3684.96 | 3394.20 | 3474.01 | 3487.26 | 3494.34 | 3497.27 | 3521.90 | 3422.26 | 3403.87 | 3490.27 | 3412.51 | 3390.81 | 3412.84 | 3436.00 |
| E. Prescribed burning of savannas | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| F. Field burning of agricultural residues | 4.02 | 4.02 | 3.67 | 3.03 | 3.77 | 3.62 | 3.35 | 3.66 | 3.60 | 2.70 | 2.52 | 3.60 | 3.14 | 3.25 | 3.04 | 3.00 |
| G. Liming | 642.01 | 642.01 | 455.16 | 296.88 | 472.14 | 472.49 | 409.67 | 477.26 | 490.96 | 451.61 | 452.82 | 350.01 | 418.92 | 446.22 | 301.90 | 275.91 |
| H. Urea application | 5.39 | 5.39 | 2.40 | 2.60 | 0.99 | 0.69 | 0.60 | 0.58 | 0.83 | 0.80 | 0.79 | 0.85 | 0.93 | 1.00 | 1.05 | 1.11 |
| I. Other carbon-containing fertilizers | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| J. Other | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| 4. Land use, land-use change and forestry⁽³⁾ | -13441.26 | -13441.26 | -26316.08 | -20440.90 | -20489.45 | -13738.00 | -13193.06 | -20302.86 | -15609.71 | -14397.06 | -15148.44 | -15047.94 | -16601.98 | -17858.40 | -18731.66 | -19827.76 |
| A. Forest land | -19203.92 | -19203.92 | -33664.45 | -27566.78 | -25567.12 | -17702.93 | -17539.83 | -26459.00 | -19991.35 | -18547.65 | -20069.15 | -19810.95 | -23921.01 | -24730.32 | -25276.88 | -26436.73 |
| B. Cropland | 5395.68 | 5395.68 | 5122.30 | 5116.89 | 5419.79 | 5647.30 | 5645.92 | 6571.64 | 7276.75 | 7158.02 | 7289.32 | 7436.03 | 7189.19 | 7100.69 | 7363.08 | 7615.50 |
| C. Grassland | 1019.72 | 1019.72 | 999.49 | 965.52 | 955.11 | 926.37 | 906.42 | 881.82 | 888.03 | 860.89 | 848.75 | 838.68 | 855.88 | 835.40 | 830.83 | 883.11 |
| D. Wetlands | 1450.56 | 1450.56 | 1429.94 | 1616.00 | 1562.52 | 1777.46 | 1647.28 | 1699.11 | 1775.21 | 1582.05 | 1990.03 | 1796.06 | 2008.12 | 2044.09 | 1962.63 | 1885.26 |
| E. Settlements | 846.68 | 846.68 | 883.05 | 922.04 | 985.38 | 1042.03 | 1050.04 | 1117.51 | 1221.64 | 1274.84 | 1275.44 | 1297.33 | 1467.84 | 1440.05 | 1484.56 | 1623.94 |
| F. Other land | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA |
| G. Harvested wood products | -2951.60 | -2951.60 | -1087.97 | -1496.07 | -3846.57 | -5429.62 | -4904.21 | -4115.24 | -6781.32 | -6726.55 | -6484.23 | -6606.56 | -4203.54 | -4549.95 | -5097.62 | -5400.65 |
| H. Other | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 5. Waste | 4669.16 | 4669.16 | 4724.01 | 4736.60 | 4731.18 | 4667.27 | 4596.02 | 4490.98 | 4364.13 | 4166.32 | 4064.46 | 3817.15 | 3657.70 | 3404.29 | 3204.00 | 3049.73 |
| A. Solid waste disposal | 4327.75 | 4327.75 | 4384.59 | 4400.82 | 4391.98 | 4326.01 | 4245.11 | 4133.90 | 4015.74 | 3816.88 | 3713.44 | 3463.44 | 3303.25 | 3047.68 | 2839.96 | 2678.79 |
| B. Biological treatment of solid waste | 44.10 | 44.10 | 49.52 | 55.56 | 59.79 | 64.01 | 72.98 | 82.38 | 88.14 | 93.22 | 97.91 | 102.95 | 107.96 | 112.05 | 116.52 | |
| C. Incineration and open burning of waste | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE |
| D. Waste water treatment and discharge | 297.30 | 297.30 | 289.90 | 280.21 | 279.41 | 277.25 | 277.92 | 265.31 | 261.31 | 257.79 | 255.80 | 251.50 | 248.66 | 251.99 | 254.42 | |
| E. Other | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | |
| 6. Other (as specified in summary 1.A) | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | |
| Memo items: | | | | | | | | | | | | | | | | |
| International bunkers | 2865.77 | 2865.77 | 2718.49 | 3071.51 | 2535.64 | 2189.13 | 1973.33 | 2178.76 | 2315.62 | 2705.25 | 2890.69 | 3139.02 | 2949.77 | 3175.36 | 3196.74 | 2956.31 |
| Aviation | 1016.07 | 1016.07 | 956.13 | 845.24 | 794.30 | 836.26 | 904.44 | 968.22 | 1005.94 | 1030.67 | 1103.18 | 1072.15 | 1099.06 | 1086.52 | 1122.81 | 1292.89 |
| Navigation | 1849.70 | 1849.70 | 1762.36 | 2226.27 | 1741.34 | 1352.87 | 1068.90 | 1210.55 | 1309.68 | 1674.58 | 1787.51 | 2066.86 | 1850.72 | 2088.84 | 2073.93 | 1663.42 |
| Multilateral operations | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | |
| CO₂ emissions from biomass | 18306.86 | 18306.86 | 17982.73 | 17676.41 | 20981.71 | 21773.40 | 22206.28 | 22368.06 | 25388.93 | 26184.30 | 27544.04 | 27918.78 | 27238.97 | 29325.13 | 30112.74 | 31687.89 |
| CO₂ captured | NO | NO | NO,NA | NO,NA | 0.86 | 20.07 | 54.15 | 73.54 | 106.08 | 127.95 | 156.47 | 183.44 | 175.68 | 176.47 | 186.21 | 212.73 |
| Long-term storage of C in waste disposal sites | 37785.27 | 37785.27 | 39123.77 | 40334.09 | 41438.78 | 42456.86 | 43405.85 | 44279.05 | 45103.92 | 45860.11 | 46554.49 | 47266.63 | 47943.58 | 48569.52 | 49175.57 | 49760.89 |
| Indirect N₂O | 421.61 | 421.61 | 410.34 | 400.01 | 405.80 | 406.51 | 375.80 | 382.50 | 374.69 | 354.72 | 348.14 | 332.12 | 336.75 | 331.83 | 343.43 | 324.09 |
| Indirect CO₂⁽³⁾ | 166.34 | 166.34 | 155.75 | 149.69 | 143.32 | 142.74 | 133.48 | 119.37 | 118.25 | 115.07 | 110.57 | 108.29 | 107.95 | 98.27 | 98.11 | 95.22 |
| Total CO₂ equivalent emissions without land use, land-use change and forestry | 71015.77 | 71015.77 | 68929.12 | 67511. | | | | | | | | | | | | |

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | Change from base to latest reported year |
|---|-------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------|--|
| | (kt CO ₂ eq) | | | | | | | | | | | | | | | | % |
| | | | | | | | | | | | | | | | | | |
| Total (net emissions)⁽²⁾ | 49355.98 | 55285.03 | 62659.70 | 51512.97 | 34496.08 | 53891.83 | 45868.80 | 37700.56 | 44389.11 | 37686.07 | 36209.25 | 40212.49 | 38775.65 | 48732.29 | 39145.10 | 30413.18 | -47.18 |
| 1. Energy | 53743.15 | 64816.83 | 62843.62 | 54501.77 | 52626.35 | 60230.38 | 52784.34 | 47495.42 | 48106.83 | 44257.70 | 40601.59 | 43345.94 | 40910.31 | 42071.54 | 38922.22 | 34289.50 | -35.84 |
| A. Fuel combustion (sectoral approach) | 53599.71 | 64695.79 | 62705.40 | 54349.08 | 52498.92 | 60088.22 | 52656.60 | 47352.12 | 47987.36 | 44140.92 | 40455.29 | 43207.71 | 40731.93 | 41950.57 | 38830.20 | 34190.82 | -35.87 |
| 1. Energy industries | 22150.12 | 33016.35 | 31034.45 | 24514.99 | 25600.17 | 30954.39 | 24943.96 | 20853.12 | 22171.88 | 20953.12 | 17780.26 | 19,159.55 | 17,514.59 | 18,676.85 | 16,248.84 | 13,129.76 | -30.78 |
| 2. Manufacturing industries and construction | 11365.94 | 11630.36 | 11468.81 | 10921.89 | 8732.00 | 10042.19 | 9640.52 | 8424.06 | 8393.77 | 7067.92 | 6754.81 | 6,821.02 | 6,663.57 | 6,807.39 | 6,591.16 | 6,238.23 | -53.36 |
| 3. Transport | 12876.49 | 13039.33 | 13394.58 | 12751.32 | 12179.38 | 12674.31 | 12496.86 | 12188.59 | 11966.24 | 10844.11 | 10852.51 | 12,064.25 | 11,462.51 | 11,658.34 | 11,249.40 | 10,443.43 | -13.66 |
| 4. Other sectors | 5705.08 | 5596.00 | 5458.85 | 4966.46 | 4882.45 | 5209.48 | 4539.46 | 4824.55 | 4429.47 | 4313.12 | 4075.56 | 4,191.19 | 4,045.54 | 3,865.38 | 3,775.95 | 3,430.23 | -55.68 |
| 5. Other | 1502.08 | 1413.74 | 1348.71 | 1194.43 | 1104.92 | 1207.84 | 1035.80 | 1061.81 | 1025.98 | 962.65 | 992.15 | 971.70 | 1,045.72 | 942.61 | 964.86 | 949.17 | -16.65 |
| B. Fugitive emissions from fuels | 143.44 | 121.04 | 138.22 | 152.68 | 127.43 | 142.16 | 127.74 | 143.30 | 119.47 | 116.78 | 146.30 | 138.23 | 178.38 | 120.98 | 92.03 | 98.68 | -20.13 |
| 1. Solid fuels | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | 0.00 |
| 2. Oil and natural gas and other emissions from energy production | 143.44 | 121.04 | 138.22 | 152.68 | 127.43 | 142.16 | 127.74 | 143.30 | 119.47 | 116.78 | 146.30 | 138.23 | 178.38 | 120.98 | 92.03 | 98.68 | -20.13 |
| C. CO ₂ transport and storage | NO,IE,NA | NO,IE,NA | NO,IE,NA | NO,IE,NA | NO,IE,NA | NO,IE,NA | NO,IE,NA | NO,IE,NA | NO,IE,NA | NO,IE,NA | NO,IE,NA | NO,IE,NA | NO,IE,NA | NO,IE,NA | NO,IE,NA | NO,IE,NA | 0.00 |
| 2. Industrial Processes | 6765.15 | 7001.22 | 7456.58 | 7696.77 | 6041.15 | 6159.40 | 6102.37 | 5931.68 | 5798.54 | 5556.26 | 5703.80 | 5911.62 | 5736.57 | 5736.57 | 5394.61 | 5124.48 | -5.06 |
| A. Mineral industry | 1176.13 | 1270.12 | 1294.88 | 1227.14 | 909.18 | 1167.01 | 1256.53 | 1120.15 | 1061.36 | 1032.18 | 966.05 | 1,083.92 | 1,134.50 | 1,060.57 | 971.54 | 946.52 | -22.30 |
| B. Chemical industry | 1849.75 | 1756.34 | 2126.81 | 2337.81 | 1590.91 | 1018.72 | 950.03 | 995.96 | 1120.83 | 973.54 | 1161.63 | 1,249.17 | 1,370.27 | 1,310.92 | 1,343.87 | 1,277.33 | -31.56 |
| C. Metal industry | 2403.84 | 2472.70 | 2494.91 | 2553.51 | 1968.86 | 2438.85 | 2383.28 | 2290.91 | 2094.75 | 2070.08 | 2150.41 | 2,196.61 | 1,928.17 | 2,096.30 | 1,874.97 | 1,756.77 | -11.10 |
| D. Non-energy products from fuels and solvent use | 103.15 | 114.55 | 131.46 | 126.84 | 131.33 | 115.17 | 112.96 | 116.93 | 126.73 | 114.98 | 139.42 | 145.58 | 141.48 | 159.11 | 155.03 | 131.39 | -40.19 |
| E. Electronic industry | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | 0.00 |
| F. Product uses as ODS substitutes | 1160.06 | 1313.89 | 1347.07 | 1379.28 | 1382.20 | 1360.94 | 1341.02 | 1350.12 | 1331.12 | 1297.75 | 1235.15 | 1,177.06 | 1,107.42 | 1,061.94 | 1,008.43 | 972.22 | 9208858.27 |
| G. Other product manufacture and use | 57.04 | 51.26 | 49.25 | 47.07 | 38.72 | 42.29 | 41.23 | 40.19 | 37.48 | 37.85 | 34.93 | 35.95 | 38.16 | 35.73 | 31.47 | 29.72 | -72.86 |
| H. Other | 15.18 | 22.35 | 12.21 | 25.13 | 19.94 | 16.42 | 17.32 | 17.42 | 26.28 | 29.87 | 16.20 | 23.33 | 16.85 | 11.99 | 9.30 | 10.54 | 36.93 |
| 3. Agriculture | 6529.05 | 6501.57 | 6480.63 | 6604.88 | 6566.88 | 6650.75 | 6473.62 | 6445.56 | 6526.04 | 6573.31 | 6573.72 | 6655.41 | 6550.95 | 6497.09 | 6624.45 | 6565.95 | -12.53 |
| A. Enteric fermentation | 2057.71 | 2063.59 | 2045.28 | 2030.94 | 2050.62 | 2094.62 | 2070.60 | 2051.60 | 2055.11 | 2087.64 | 2115.10 | 2,104.27 | 2,095.62 | 2,078.21 | 2,070.33 | 2,078.48 | -14.13 |
| B. Manure management | 724.09 | 720.92 | 726.56 | 707.21 | 734.14 | 746.58 | 727.75 | 738.35 | 732.85 | 747.45 | 756.79 | 755.88 | 741.18 | 736.11 | 732.07 | 715.87 | 9.96 |
| C. Rice cultivation | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | 0.00 |
| D. Agricultural soils | 3453.31 | 3392.42 | 3428.66 | 3537.37 | 3439.68 | 3528.70 | 3470.98 | 3450.19 | 3429.85 | 3511.68 | 3517.54 | 3,524.56 | 3,513.22 | 3,469.21 | 3,619.22 | 3,566.83 | -5.73 |
| E. Prescribed burning of savannas | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | 0.00 |
| F. Field burning of agricultural residues | 2.95 | 2.63 | 2.88 | 2.80 | 2.72 | 1.85 | 2.17 | 2.13 | 2.87 | 2.62 | 2.44 | 2.34 | 2.45 | 1.80 | 2.65 | 2.25 | -43.96 |
| G. Liming | 289.86 | 320.64 | 275.46 | 325.01 | 338.26 | 277.41 | 199.54 | 201.61 | 304.38 | 222.21 | 179.75 | 265.58 | 196.65 | 210.28 | 198.03 | 200.96 | -68.70 |
| H. Urea application | 1.14 | 1.38 | 1.78 | 1.54 | 1.45 | 1.58 | 2.58 | 1.68 | 0.98 | 1.71 | 2.11 | 2.79 | 1.83 | 1.48 | 2.15 | 1.56 | -71.07 |
| I. Other carbon-containing fertilizers | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.00 |
| J. Other | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | 0.00 |
| 4. Land use, land-use change and forestry⁽²⁾ | -20493.52 | -25921.89 | -16906.02 | -19953.54 | -33298.52 | -21710.64 | -21966.83 | -24589.54 | -18335.19 | -20860.31 | -18761.62 | -17655.65 | -16280.42 | -7392.83 | -13589.55 | -17303.12 | 28.73 |
| A. Forest land | -30667.65 | -33592.69 | -23138.05 | -30463.29 | -47161.71 | -31969.10 | -32096.70 | -35160.86 | -28046.82 | -29699.88 | -27428.63 | -25,758.50 | -23,310.14 | -14,555.16 | -21,886.72 | -27,763.02 | 44.57 |
| B. Cropland | 7492.71 | 7616.46 | 7237.58 | 7547.23 | 7430.86 | 7617.34 | 7522.41 | 7736.53 | 7441.46 | 7409.94 | 7377.52 | 7,891.11 | 7,618.92 | 7,813.71 | 7,910.35 | 8,049.56 | 49.19 |
| C. Grassland | 911.26 | 920.47 | 917.75 | 907.59 | 858.00 | 820.88 | 764.22 | 761.47 | 761.05 | 745.52 | 759.23 | 765.97 | 763.48 | 769.13 | 780.92 | 768.08 | -24.68 |
| D. Wetlands | 2104.77 | 2373.17 | 2061.63 | 2206.89 | 2333.47 | 2324.54 | 2253.62 | 2113.26 | 2327.77 | 2206.50 | 2145.25 | 2,161.63 | 2,161.82 | 2,291.98 | 2,198.24 | 2,204.63 | 51.98 |
| E. Settlements | 1634.73 | 1521.76 | 1622.96 | 1631.69 | 1593.35 | 1689.18 | 1758.55 | 1632.82 | 1546.46 | 1502.53 | 1292.02 | 1,100.19 | 981.18 | 867.09 | 786.42 | 732.65 | -13.47 |
| F. Other land | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | 0.00 |
| G. Harvested wood products | -1971.20 | -4762.91 | -5609.74 | -1785.25 | 1645.65 | -2195.41 | -2170.92 | -1674.81 | -2367.20 | -3027.00 | -2909.11 | -3,818.13 | -4,497.73 | -4,581.51 | -3,380.64 | -1,296.74 | -56.07 |
| H. Other | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.00 |
| 5. Waste | 2812.15 | 2887.30 | 2784.89 | 2662.89 | 2560.23 | 2561.95 | 2475.30 | 2417.44 | 2292.89 | 2159.10 | 2091.76 | 1955.17 | 1857.96 | 1819.92 | 1793.38 | 1736.37 | -62.81 |
| A. Solid waste disposal | 2430.51 | 2501.54 | 2385.94 | 2273.21 | 2180.73 | 2168.93 | 2076.47 | 2035.58 | 1915.52 | 1784.02 | 1730.66 | 1,607.46 | 1,508.95 | 1,467.24 | 1,425.68 | 1,385.01 | -68.00 |
| B. Biological treatment of solid waste | 130.60 | 134.65 | 147.00 | 138.00 | 138.47 | 143.63 | 145.98 | 127.30 | 129.74 | 128.53 | 112.85 | 101.02 | 103.93 | 109.24 | 127.91 | 114.92 | 160.57 |
| C. Incineration and open burning of waste | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | 0.00 |
| D. Waste water treatment and discharge | 251.04 | 251.11 | 251.95 | 251.68 | 241.03 | 249.39 | 252.84 | 254.56 | 247.64 | 246.56 | 248.24 | 246.70 | 245.08 | 243.44 | 239.79 | 236.43 | -20.47 |
| E. Other | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | 0.00 |
| 6. Other (as specified in summary 1.A) | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | 0.00 |
| Memo items: | | | | | | | | | | | | | | | | | |
| International bunkers | 2930.24 | 3251.01 | 3141.12 | 3094.65 | 2371.07 | 2328.46 | 2588.65 | 2255.62 | 2337.24 | 2208.32 | 2906.22 | 2878.00 | 3219.19 | 3428.71 | 3650.17 | 1865.09 | -34.92 |
| Aviation | 1300.90 | 1446.49 | 1669.31 | 1806.91 | 1583.12 | 1667.22 | 1972.84 | 1904.19 | 1965.37 | 1936.65 | 1979.32 | 1,983.90 | 2,114.79 | 2,408.03 | 2,595.43 | 876.32 | -13.75 |
| Navigation | 1629.34 | 1804.53 | 1471.81 | 1287.75 | 787.95 | 661.24 | 615.81 | 351.43 | 371.87 | 271.67 | 926.90 | 894.09 | 1,104.40 | 1,020.68 | 1,054.74 | 988.78 | -46.54 |
| Multilateral operations | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | 0.00 |
| CO₂ emissions from biomass | 30010.40 | 32929.69 | 31883.67 | 32420.79 | 29358.97 | 34664.11 | 34316.21 | 36004.20 | 37054.64 | 38014.13 | 37209.27 | 38,464.35 | 40,417.95 | 41,593.16 | 42,271.70 | 39,632.96 | 116.49 |
| CO₂ captured | 183.55 | 211.96 | 234.04 | 213.52 | 185.06 | 197.80 | 180.14 | 147.21 | 145.59 | 149.72 | 138.45 | 133.42 | 139.09 | 138.45 | 124.28 | 101.51 | 100.00 |
| Long-term storage of C in waste disposal sites | 50358.07 | 50989.94 | 51587.80 | 52125.20 | 52579.06 | 53039.63 | | | | | | | | | | | |

TABLE 10 EMISSION TRENDS

CO₂

(Sheet 2 of 6)

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | Base year ⁽¹⁾ | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|--------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | (kt) | | | | | | | | | | | | | | | |
| 1. Energy | 52584.73 | 52584.73 | 51230.84 | 50610.24 | 52504.63 | 57806.18 | 54306.99 | 60013.26 | 58436.80 | 55128.78 | 54547.58 | 52784.64 | 58150.46 | 60743.02 | 68318.40 | 64460.62 |
| A. Fuel combustion (sectoral approach) | 52473.23 | 52473.23 | 51127.38 | 50500.39 | 52347.74 | 57739.75 | 54232.40 | 59948.50 | 58333.58 | 55064.84 | 54492.43 | 52726.16 | 58097.51 | 60681.51 | 68262.38 | 64405.59 |
| 1. Energy industries | 18843.01 | 18843.01 | 18651.29 | 18460.42 | 21185.15 | 26149.66 | 23833.72 | 29548.82 | 27165.10 | 23917.16 | 23378.08 | 21924.67 | 27306.91 | 30081.30 | 37117.91 | 33074.21 |
| 2. Manufacturing industries and construction | 13192.36 | 13192.36 | 12696.96 | 12194.18 | 12262.27 | 12591.98 | 11989.02 | 11849.42 | 12110.28 | 11750.11 | 11704.88 | 11732.69 | 11294.12 | 10993.62 | 11383.89 | 11452.51 |
| 3. Transport | 11821.46 | 11821.46 | 11454.17 | 11371.83 | 10916.49 | 11272.09 | 11076.35 | 11077.53 | 11638.06 | 11771.32 | 11988.70 | 11890.46 | 12066.78 | 12201.27 | 12401.36 | 12754.26 |
| 4. Other sectors | 7489.95 | 7489.95 | 7330.36 | 7418.44 | 7009.54 | 6499.63 | 6016.13 | 6100.91 | 6107.96 | 6196.16 | 6115.64 | 5774.79 | 5985.97 | 5939.85 | 5841.74 | 5741.51 |
| 5. Other | 1126.45 | 1126.45 | 994.59 | 1055.52 | 974.29 | 1226.39 | 1317.18 | 1371.82 | 1312.18 | 1430.09 | 1305.13 | 1403.55 | 1503.72 | 1465.47 | 1517.48 | 1383.09 |
| B. Fugitive emissions from fuels | 111.49 | 111.49 | 103.46 | 109.84 | 156.89 | 66.43 | 74.60 | 64.76 | 103.22 | 63.94 | 55.15 | 58.48 | 52.96 | 61.50 | 56.02 | 55.04 |
| 1. Solid fuels | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| 2. Oil and natural gas and other emissions from energy production | 111.49 | 111.49 | 103.46 | 109.84 | 156.89 | 66.43 | 74.60 | 64.76 | 103.22 | 63.94 | 55.15 | 58.48 | 52.96 | 61.50 | 56.02 | 55.04 |
| C. CO ₂ transport and storage | NO,NA | NO,NA | NA,NO | NA,NO | NO,IE,NA |
| 2. Industrial processes | 3682.21 | 3682.21 | 3500.36 | 3355.35 | 3335.61 | 3453.30 | 3398.25 | 3541.97 | 3767.58 | 3770.28 | 3865.72 | 3874.43 | 3943.42 | 3850.74 | 4032.98 | 4201.46 |
| A. Mineral industry | 1218.22 | 1218.22 | 1050.07 | 952.06 | 857.51 | 898.40 | 873.72 | 913.96 | 943.13 | 955.98 | 1030.01 | 1080.45 | 1084.49 | 1084.31 | 1127.58 | 1189.36 |
| B. Chemical industry | 270.23 | 270.23 | 289.75 | 236.06 | 187.65 | 237.13 | 262.62 | 263.23 | 259.06 | 248.36 | 246.91 | 268.12 | 275.97 | 305.84 | 307.38 | 325.82 |
| C. Metal industry | 1976.06 | 1976.06 | 1987.05 | 1991.26 | 2113.32 | 2121.91 | 2076.29 | 2198.67 | 2414.58 | 2419.66 | 2448.48 | 2389.22 | 2440.13 | 2318.34 | 2480.87 | 2576.16 |
| D. Non-energy products from fuels and solvent use | 217.69 | 217.69 | 173.49 | 175.98 | 177.13 | 195.86 | 185.62 | 166.10 | 150.81 | 146.29 | 140.32 | 136.64 | 142.84 | 142.24 | 117.16 | 110.12 |
| E. Electronic industry | | | | | | | | | | | | | | | | |
| F. Product uses as ODS substitutes | | | | | | | | | | | | | | | | |
| G. Other product manufacture and use | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| H. Other | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| 3. Agriculture | 647.40 | 647.40 | 457.56 | 299.47 | 473.13 | 473.18 | 410.27 | 477.83 | 491.79 | 452.41 | 453.60 | 350.85 | 419.85 | 447.22 | 302.95 | 277.02 |
| A. Enteric fermentation | | | | | | | | | | | | | | | | |
| B. Manure management | | | | | | | | | | | | | | | | |
| C. Rice cultivation | | | | | | | | | | | | | | | | |
| D. Agricultural soils | | | | | | | | | | | | | | | | |
| E. Prescribed burning of savannas | | | | | | | | | | | | | | | | |
| F. Field burning of agricultural residues | | | | | | | | | | | | | | | | |
| G. Liming | 642.01 | 642.01 | 455.16 | 296.88 | 472.14 | 472.49 | 409.67 | 477.26 | 490.96 | 451.61 | 452.82 | 350.01 | 418.92 | 446.22 | 301.90 | 275.91 |
| H. Urea application | 5.39 | 5.39 | 2.40 | 2.60 | 0.99 | 0.69 | 0.60 | 0.58 | 0.83 | 0.80 | 0.79 | 0.85 | 0.93 | 1.00 | 1.05 | 1.11 |
| I. Other carbon-containing fertilizers | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| J. Other | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| 4. Land use, land-use change and forestry⁽²⁾ | -17105.00 | -17105.00 | -29960.28 | -24067.01 | -24097.31 | -17341.72 | -16780.55 | -23878.07 | -19176.45 | -17949.16 | -18673.32 | -18543.75 | -20073.04 | -21295.23 | -22133.40 | -23195.08 |
| A. Forest land | -22730.92 | -22730.92 | -37170.72 | -31052.27 | -29031.83 | -21160.68 | -20977.67 | -29881.42 | -23401.94 | -21941.11 | -23431.75 | -23142.00 | -27224.01 | -27997.94 | -28507.80 | -29630.69 |
| B. Cropland | 5389.04 | 5389.04 | 5116.04 | 5110.90 | 5414.01 | 5641.69 | 5640.44 | 6566.24 | 7271.36 | 7152.54 | 7283.69 | 7430.16 | 7182.96 | 7094.04 | 7356.04 | 7608.20 |
| C. Grassland | 1019.08 | 1019.08 | 998.85 | 964.86 | 954.44 | 925.68 | 905.73 | 881.13 | 887.28 | 860.27 | 847.99 | 838.00 | 855.17 | 834.64 | 829.96 | 882.27 |
| D. Wetlands | 1334.64 | 1334.64 | 1312.39 | 1495.45 | 1439.47 | 1651.39 | 1517.65 | 1566.52 | 1639.65 | 1444.27 | 1849.25 | 1653.62 | 1863.45 | 1899.13 | 1817.24 | 1738.55 |
| E. Settlements | 834.76 | 834.76 | 871.13 | 910.12 | 973.16 | 1029.81 | 1037.52 | 1104.69 | 1208.52 | 1261.43 | 1261.73 | 1283.03 | 1452.94 | 1424.85 | 1468.77 | 1607.25 |
| F. Other land | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA |
| G. Harvested wood products | -2951.60 | -2951.60 | -1087.97 | -1496.07 | -3846.57 | -5429.62 | -4904.21 | -4115.24 | -6781.32 | -6726.55 | -6484.23 | -6606.56 | -4203.54 | -4549.95 | -5097.62 | -5400.65 |
| H. Other | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 5. Waste | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE |
| A. Solid waste disposal | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| B. Biological treatment of solid waste | | | | | | | | | | | | | | | | |
| C. Incineration and open burning of waste | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE |
| D. Waste water treatment and discharge | | | | | | | | | | | | | | | | |
| E. Other | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| 6. Other (as specified in summary 1.A) | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| Memo items: | | | | | | | | | | | | | | | | |
| International bunkers | 2839.72 | 2839.72 | 2693.75 | 3043.24 | 2512.50 | 2169.38 | 1955.73 | 2159.25 | 2294.79 | 2680.68 | 2863.84 | 3110.16 | 2922.80 | 3146.74 | 3167.94 | 2931.02 |
| Aviation | 1007.73 | 1007.73 | 948.28 | 838.29 | 787.76 | 829.37 | 896.99 | 960.24 | 997.65 | 1022.15 | 1094.07 | 1063.28 | 1089.98 | 1077.56 | 1113.56 | 1282.23 |
| Navigation | 1832.00 | 1832.00 | 1745.48 | 2204.95 | 1724.74 | 1340.01 | 1058.74 | 1199.00 | 1297.14 | 1658.53 | 1769.77 | 2046.88 | 1832.82 | 2069.18 | 2054.38 | 1648.79 |
| Multilateral operations | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| CO ₂ emissions from biomass | 18306.86 | 18306.86 | 17982.73 | 17676.41 | 20981.71 | 21773.40 | 22206.28 | 22368.06 | 25388.93 | 26184.30 | 27544.04 | 27918.78 | 27238.97 | 29325.13 | 30112.74 | 31687.89 |
| CO ₂ captured | NO | NO | NO,NA | NO,NA | 0.86 | 20.07 | 54.15 | 73.54 | 106.08 | 127.95 | 156.47 | 183.44 | 175.68 | 176.47 | 186.21 | 212.73 |
| Long-term storage of C in waste disposal sites | 37785.27 | 37785.27 | 39123.77 | 40334.09 | 41438.78 | 42456.86 | 43405.85 | 44279.05 | 45103.92 | 45860.11 | 46554.49 | 47266.63 | 47943.58 | 48569.52 | 49175.57 | 49760.89 |
| Indirect N₂O | | | | | | | | | | | | | | | | |
| Indirect CO ₂ ⁽³⁾ | 166.34 | 166.34 | 155.75 | 149.69 | 143.32 | 142.74 | 133.48 | 119.37 | 118.25 | 115.07 | 110.57 | 108.29 | 107.95 | 98.27 | 98.11 | 95.22 |
| Total CO₂ equivalent emissions without land use, land-use change and forestry | 56914.34 | 56914.34 | 55188.76 | 54265.06 | 56313.37 | 61732.67 | 58115.52 | 64033.06 | 62696.17 | 59351.46 | 58866.90 | 57009.92 | 62513.74 | 65040.97 | 72654.32 | 68939.11 |
| Total CO₂ equivalent emissions with land use, land-use change and forestry | 39809.33 | 39809.33 | 25228.48 | 30198.05 | 32216.05 | 44390.95 | 41334.97 | 40154.98 | 43519.72 | 41402.31 | 40193.58 | 38466.17 | 42440.70 | 43745.74 | 50520.93 | 45744.04 |
| Total CO₂ equivalent emissions, including indirect CO₂, without land use, land-use change and forestry | 57080.68 | 57080.68 | 55344.51 | 54414.74 | 56456.69 | 61875.41 | 58248.99 | 64152.42 | 62814.42 | 59466.54 | 58977.47 | 57118.21 | 62621.69 | 65139.24 | 72752.44 | 69034.33 |
| Total CO₂ equivalent emissions, including indirect CO₂, with land use, land-use change and forestry | 39975.68 | 39975.68 | 25384.23 | 30347.74 | 32359.38 | 44533.69 | 41468.45 | 40274.35 | 43637.97 | 41517.38 | 40304.15 | 38574.46 | 42548.65 | 43844.01 | 50619.04 | 45839.26 |

Note: All footnotes for this table are given at the end of the table on sheet 6.

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | Change from base to latest reported year |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------|--|
| | (kt) | | | | | | | | | | | | | | | | % |
| 1. Energy | 52788.93 | 63820.57 | 61861.04 | 53570.00 | 51730.77 | 59225.38 | 51863.98 | 46580.50 | 47208.17 | 43388.13 | 39761.14 | 42458.66 | 40040.31 | 41172.70 | 38043.49 | 33509.96 | -36.27 |
| A. Fuel combustion (sectoral approach) | 52718.51 | 63762.35 | 61780.13 | 53472.87 | 51656.05 | 59128.97 | 51776.18 | 46478.69 | 47129.02 | 43304.40 | 39652.62 | 42354.55 | 39893.72 | 41081.92 | 37978.35 | 33433.62 | -36.28 |
| 1. Energy industries | 21878.94 | 32667.32 | 30689.53 | 24193.79 | 25292.10 | 30576.34 | 24595.57 | 20531.92 | 21849.11 | 20652.79 | 17505.54 | 18,867.86 | 17,234.26 | 18,365.95 | 15,948.60 | 12,867.90 | -31.71 |
| 2. Manufacturing industries and construction | 11186.18 | 11456.79 | 11301.67 | 10762.17 | 8597.45 | 9890.89 | 9490.85 | 8273.99 | 8241.51 | 6916.10 | 6594.96 | 6,648.62 | 6,490.54 | 6,628.49 | 6,415.02 | 6,079.17 | -53.92 |
| 3. Transport | 12742.69 | 12913.82 | 13274.43 | 12641.42 | 12075.66 | 12570.63 | 12395.50 | 12091.16 | 11869.19 | 10746.37 | 10754.99 | 11,965.99 | 11,364.48 | 11,558.71 | 11,149.29 | 10,345.40 | -12.49 |
| 4. Other sectors | 5423.54 | 5324.34 | 5179.12 | 4692.68 | 4596.57 | 4894.81 | 4268.82 | 4530.51 | 4153.32 | 4035.79 | 3814.39 | 3,909.66 | 3,768.88 | 3,595.76 | 3,510.15 | 3,201.53 | -57.26 |
| 5. Other | 1487.15 | 1400.08 | 1335.38 | 1182.81 | 1094.28 | 1196.29 | 1025.44 | 1051.11 | 1015.89 | 953.36 | 982.74 | 962.42 | 1,035.55 | 933.02 | 955.28 | 939.62 | -16.59 |
| B. Fugitive emissions from fuels | 70.42 | 58.22 | 80.91 | 97.13 | 74.71 | 96.41 | 87.79 | 101.81 | 79.15 | 83.73 | 108.52 | 104.11 | 146.59 | 90.79 | 65.14 | 76.34 | -31.53 |
| 1. Solid fuels | NO | NO | NO | NO | NO | 0.00 |
| 2. Oil and natural gas and other emissions from energy production | 70.42 | 58.22 | 80.91 | 97.13 | 74.71 | 96.41 | 87.79 | 101.81 | 79.15 | 83.73 | 108.52 | 104.11 | 146.59 | 90.79 | 65.14 | 76.34 | -31.53 |
| C. CO ₂ transport and storage | NO,IE,NA | NO,IE,NA | NO,IE,NA | NO,IE,NA | NO,IE,NA | 0.00 |
| 2. Industrial processes | 3967.39 | 4228.10 | 4621.55 | 4724.44 | 3834.59 | 4576.39 | 4571.08 | 4361.89 | 4190.22 | 3983.78 | 4156.10 | 4454.84 | 4339.00 | 4412.00 | 4138.17 | 3883.45 | -5.47 |
| A. Mineral industry | 1176.13 | 1270.12 | 1294.88 | 1227.14 | 909.18 | 1167.01 | 1256.53 | 1120.15 | 1061.36 | 1032.18 | 966.05 | 1,083.92 | 1,134.50 | 1,060.57 | 971.54 | 946.52 | -22.30 |
| B. Chemical industry | 285.08 | 371.63 | 701.34 | 817.90 | 826.22 | 856.19 | 819.13 | 834.78 | 908.34 | 767.36 | 901.25 | 1,029.78 | 1,135.87 | 1,097.17 | 1,137.74 | 1,049.67 | 288.43 |
| C. Metal industry | 2403.84 | 2472.70 | 2494.91 | 2553.51 | 1968.86 | 2438.84 | 2383.27 | 2290.91 | 2094.75 | 2070.08 | 2150.41 | 2,196.61 | 1,928.17 | 2,096.30 | 1,874.96 | 1,756.77 | -11.10 |
| D. Non-energy products from fuels and solvent use | 102.34 | 113.66 | 130.43 | 125.89 | 130.33 | 114.35 | 112.13 | 116.05 | 125.76 | 114.17 | 138.39 | 144.52 | 140.46 | 157.97 | 153.93 | 130.50 | -40.05 |
| E. Electronic industry | | | | | | | | | | | | | | | | | |
| F. Product uses as ODS substitutes | | | | | | | | | | | | | | | | | |
| G. Other product manufacture and use | NO | NO | NO | NO | NO | |
| H. Other | NO | NO | NO | NO | NO | 0.00 |
| 3. Agriculture | 291.00 | 322.02 | 277.24 | 326.56 | 339.72 | 278.99 | 202.12 | 203.29 | 305.36 | 223.92 | 181.86 | 268.37 | 198.49 | 211.76 | 200.18 | 202.52 | -68.72 |
| A. Enteric fermentation | | | | | | | | | | | | | | | | | |
| B. Manure management | | | | | | | | | | | | | | | | | |
| C. Rice cultivation | | | | | | | | | | | | | | | | | |
| D. Agricultural soils | | | | | | | | | | | | | | | | | |
| E. Prescribed burning of savannas | | | | | | | | | | | | | | | | | |
| F. Field burning of agricultural residues | | | | | | | | | | | | | | | | | |
| G. Liming | 289.86 | 320.64 | 275.46 | 325.01 | 338.26 | 277.41 | 199.54 | 201.61 | 304.38 | 222.21 | 179.75 | 265.58 | 196.65 | 210.28 | 198.03 | 200.96 | -68.70 |
| H. Urea application | 1.14 | 1.38 | 1.78 | 1.54 | 1.45 | 1.58 | 2.58 | 1.68 | 0.98 | 1.71 | 2.11 | 2.79 | 1.83 | 1.48 | 2.15 | 1.56 | -71.07 |
| I. Other carbon-containing fertilizers | NA | NA | NA | NA | NA | 0.00 |
| J. Other | NO | NO | NO | NO | NO | 0.00 |
| 4. Land use, land-use change and forestry ⁽⁴⁾ | -23827.01 | -29228.77 | -20178.38 | -23174.43 | -36445.38 | -24789.67 | -24978.84 | -27548.37 | -21248.54 | -23726.95 | -21578.50 | -20427.96 | -19063.33 | -10178.78 | -16375.28 | -20091.08 | 17.46 |
| A. Forest land | -33825.34 | -36721.24 | -26228.47 | -33498.06 | -50117.90 | -34852.98 | -34911.03 | -37919.61 | -30758.32 | -32363.12 | -30041.19 | -28,326.62 | -25,889.67 | -17,138.46 | -24,470.34 | -30,351.27 | 33.52 |
| B. Cropland | 7485.29 | 7609.01 | 7230.28 | 7540.05 | 7423.62 | 7609.74 | 7514.48 | 7728.36 | 7433.11 | 7401.48 | 7369.03 | 7,882.65 | 7,610.64 | 7,805.69 | 7,902.70 | 8,042.35 | 49.24 |
| C. Grassland | 910.40 | 919.59 | 916.82 | 906.67 | 857.02 | 819.91 | 763.27 | 760.58 | 760.15 | 744.61 | 758.43 | 765.20 | 762.70 | 768.39 | 780.20 | 767.41 | -24.70 |
| D. Wetlands | 1956.40 | 2223.18 | 1908.54 | 2049.85 | 2172.84 | 2160.46 | 2087.96 | 1946.05 | 2159.32 | 2036.91 | 1974.97 | 1,991.11 | 1,991.61 | 2,121.48 | 2,027.25 | 2,034.79 | 52.46 |
| E. Settlements | 1617.45 | 1503.59 | 1604.19 | 1612.32 | 1573.39 | 1668.61 | 1737.39 | 1611.06 | 1524.40 | 1480.18 | 1269.37 | 1,077.84 | 959.13 | 845.63 | 765.56 | 712.38 | -14.66 |
| F. Other land | NO,NA | NO,NA | NO,NA | NO,NA | NO,NA | 0.00 |
| G. Harvested wood products | -1971.20 | -4762.91 | -5609.74 | -1785.25 | 1645.65 | -2195.41 | -2170.92 | -1674.81 | -2367.20 | -3027.00 | -2909.11 | -3,818.13 | -4,497.73 | -4,581.51 | -3,380.64 | -1,296.74 | -56.07 |
| H. Other | NA | NA | NA | NA | NA | 0.00 |
| 5. Waste | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | 0.00 |
| A. Solid waste disposal | NO | NO | NO | NO | NO | 0.00 |
| B. Biological treatment of solid waste | | | | | | | | | | | | | | | | | |
| C. Incineration and open burning of waste | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | 0.00 |
| D. Waste water treatment and discharge | | | | | | | | | | | | | | | | | |
| E. Other | NO | NO | NO | NO | NO | 0.00 |
| 6. Other (as specified in summary I.A) | NO | NO | NO | NO | NO | 0.00 |
| Memo items: | | | | | | | | | | | | | | | | | |
| International bunkers | 2904.33 | 3222.45 | 3113.74 | 3068.06 | 2350.84 | 2308.67 | 2566.82 | 2236.80 | 2317.71 | 2189.95 | 2881.63 | 2853.66 | 3191.80 | 3399.73 | 3619.36 | 1848.98 | -34.89 |
| Aviation | 1290.19 | 1434.60 | 1655.60 | 1792.08 | 1570.10 | 1653.51 | 1956.64 | 1888.55 | 1949.24 | 1920.76 | 1963.08 | 1,967.62 | 2,097.42 | 2,388.26 | 2,574.14 | 869.13 | -13.75 |
| Navigation | 1614.15 | 1787.86 | 1458.13 | 1275.98 | 780.74 | 655.16 | 610.18 | 348.25 | 368.47 | 269.19 | 918.55 | 886.04 | 1,094.37 | 1,011.47 | 1,045.22 | 979.85 | -46.51 |
| Multilateral operations | NO | NO | NO | NO | NO | 0.00 |
| CO ₂ emissions from biomass | 30010.40 | 32929.69 | 31883.67 | 32420.79 | 29358.97 | 34664.11 | 34316.21 | 36004.20 | 37054.64 | 38014.13 | 37209.27 | 38,464.35 | 40,417.95 | 41,593.16 | 42,271.70 | 39,632.96 | 116.49 |
| CO ₂ captured | | 211.96 | 234.04 | 213.52 | 185.06 | 197.80 | 180.14 | 147.21 | 145.59 | 149.72 | 139.09 | 138.45 | 133.42 | 134.99 | 124.28 | 101.51 | 100.00 |
| Long-term storage of C in waste disposal sites | 50358.07 | 50989.94 | 51587.80 | 52125.20 | 52579.06 | 53039.63 | 53469.66 | 53841.76 | 54128.68 | 54328.91 | 54482.33 | 54,533.66 | 54,561.75 | 54,595.03 | 54,623.27 | 54,646.56 | 44.62 |
| Indirect N₂O | | | | | | | | | | | | | | | | | |
| Indirect CO₂ ⁽⁵⁾ | 88.10 | 88.91 | 88.60 | 79.61 | 71.19 | 69.88 | 67.66 | 62.02 | 59.74 | 56.19 | 54.94 | 55.30 | 53.38 | 53.62 | 53.37 | 65.95 | -60.35 |
| Total CO₂ equivalent emissions without land use, land-use change and forestry | 57047.32 | 68370.69 | 66759.84 | 58621.00 | 55905.07 | 64080.76 | 56637.17 | 51145.69 | 51703.75 | 47595.83 | 44099.10 | 47181.86 | 44577.80 | 45796.46 | 42381.84 | 37595.93 | -33.94 |
| Total CO₂ equivalent emissions with land use, land-use change and forestry | 33220.31 | 39141.92 | 46581.46 | 35446.57 | 19459.69 | 39291.09 | 31658.33 | 23597.32 | 30455.22 | 23868.88 | 22520.59 | 26753.90 | 25514.46 | 35617.68 | 26006.56 | 17504.84 | -56.03 |
| Total CO₂ equivalent emissions, including indirect CO₂, without land use, land-use change and forestry | 57135.42 | 68459.60 | 66848.43 | 58700.61 | 55976.26 | 64150.63 | 56704.83 | 51207.71 | 51763.49 | 47652.02 | 44154.03 | 47237.16 | 44631.17 | 45850.08 | 42435.21 | 37661.88 | -34.02 |
| Total CO₂ equivalent emissions, including indirect CO₂, with land use, land-use change and forestry | 33308.41 | 39230.82 | 46670.05 | 35526.18 | 19530.88 | 39360.97 | 31725.98 | 23659.34 | 30514.95 | 23925.07 | 22575.53 | 26809.20 | 25567.84 | 35617.30 | 26059.93 | 17570.80 | -56.05 |

TABLE 10 EMISSION TRENDS

CH₄

(Sheet 3 of 6)

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | Base year ⁽¹⁾ | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|--|--------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | (kt) | | | | | | | | | | | | | | | |
| I. Energy | 12.65 | 12.65 | 13.86 | 14.48 | 15.06 | 15.43 | 15.39 | 15.85 | 15.31 | 15.38 | 14.26 | 13.26 | 14.71 | 14.20 | 14.58 | 14.17 |
| A. Fuel combustion (sectoral approach) | 12.21 | 12.21 | 11.96 | 11.86 | 11.75 | 11.72 | 11.68 | 12.08 | 12.06 | 12.03 | 11.59 | 10.76 | 11.60 | 11.64 | 11.79 | 11.66 |
| 1. Energy industries | 0.39 | 0.39 | 0.41 | 0.43 | 0.48 | 0.58 | 0.62 | 0.73 | 0.77 | 0.78 | 0.76 | 0.74 | 0.92 | 1.15 | 1.33 | 1.23 |
| 2. Manufacturing industries and construction | 0.63 | 0.63 | 0.61 | 0.59 | 0.68 | 0.70 | 0.72 | 0.70 | 0.74 | 0.71 | 0.72 | 0.74 | 0.70 | 0.68 | 0.70 | 0.71 |
| 3. Transport | 4.50 | 4.50 | 4.29 | 4.14 | 3.95 | 3.70 | 3.50 | 3.36 | 3.20 | 2.92 | 2.66 | 2.37 | 2.19 | 1.96 | 1.72 | 1.59 |
| 4. Other sectors | 6.53 | 6.53 | 6.52 | 6.59 | 6.55 | 6.62 | 6.69 | 7.14 | 7.21 | 7.46 | 7.29 | 6.76 | 7.64 | 7.70 | 7.88 | 7.97 |
| 5. Other | 0.15 | 0.15 | 0.12 | 0.11 | 0.10 | 0.13 | 0.15 | 0.16 | 0.15 | 0.17 | 0.15 | 0.16 | 0.16 | 0.16 | 0.17 | 0.17 |
| B. Fugitive emissions from fuels | 0.44 | 0.44 | 1.91 | 2.62 | 3.32 | 3.71 | 3.70 | 3.77 | 3.25 | 3.35 | 2.67 | 2.50 | 3.11 | 2.56 | 2.79 | 2.51 |
| 1. Solid fuels | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| 2. Oil and natural gas and other emissions from | 0.44 | 0.44 | 1.91 | 2.62 | 3.32 | 3.71 | 3.70 | 3.77 | 3.25 | 3.35 | 2.67 | 2.50 | 3.11 | 2.56 | 2.79 | 2.51 |
| C. CO ₂ transport and storage | | | | | | | | | | | | | | | | |
| 2. Industrial processes | 0.20 | 0.20 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.28 | 0.14 | 0.23 | 0.11 | 0.13 | 0.17 | 0.12 | 0.11 |
| A. Mineral industry | | | | | | | | | | | | | | | | |
| B. Chemical industry | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.28 | 0.13 | 0.23 | 0.10 | 0.12 | 0.17 | 0.11 | 0.10 |
| C. Metal industry | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| D. Non-energy products from fuels and solvent use | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| E. Electronic industry | | | | | | | | | | | | | | | | |
| F. Product uses as ODS substitutes | | | | | | | | | | | | | | | | |
| G. Other product manufacture and use | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| H. Other | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| 3. Agriculture | 111.66 | 111.66 | 107.55 | 104.40 | 105.67 | 106.65 | 101.58 | 102.50 | 104.71 | 102.11 | 100.43 | 100.85 | 100.48 | 102.05 | 101.80 | 101.28 |
| A. Enteric fermentation | 96.82 | 96.82 | 93.31 | 90.09 | 90.92 | 91.15 | 85.82 | 86.16 | 87.49 | 85.40 | 83.95 | 84.35 | 83.60 | 84.58 | 83.72 | 82.99 |
| B. Manure management | 14.72 | 14.72 | 14.13 | 14.22 | 14.63 | 15.39 | 15.66 | 16.23 | 17.11 | 16.63 | 16.40 | 16.38 | 16.78 | 17.37 | 17.99 | 18.21 |
| C. Rice cultivation | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| D. Agricultural soils | NE,NO | NE,NO | NE,NO | NE,NO | NE,NO | NE,NO | NE,NO | NE,NO | NE,NO | NE,NO | NE,NO | NE,NO | NE,NO | NE,NO | NE,NO | NE,NO |
| E. Prescribed burning of savannas | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| F. Field burning of agricultural residues | 0.12 | 0.12 | 0.11 | 0.09 | 0.12 | 0.11 | 0.10 | 0.11 | 0.11 | 0.08 | 0.08 | 0.11 | 0.10 | 0.10 | 0.09 | 0.09 |
| G. Liming | | | | | | | | | | | | | | | | |
| H. Urea application | | | | | | | | | | | | | | | | |
| I. Other carbon-containing fertilizers | | | | | | | | | | | | | | | | |
| J. Other | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| 4. Land use, land-use change and forestry | 61.27 | 61.27 | 60.57 | 59.98 | 59.29 | 58.69 | 58.03 | 57.37 | 56.73 | 56.03 | 54.97 | 53.83 | 52.76 | 51.62 | 50.45 | 49.30 |
| A. Forest land | 59.42 | 59.42 | 58.68 | 58.04 | 57.29 | 56.63 | 55.91 | 55.19 | 54.50 | 53.74 | 52.64 | 51.46 | 50.35 | 49.20 | 48.01 | 46.81 |
| B. Cropland | IE,NA | IE,NA | IE,NA | IE,NA | IE,NA | IE,NA | IE,NA | IE,NA | IE,NA | IE,NA | IE,NA | IE,NA | IE,NA | IE,NA | IE,NA | IE,NA |
| C. Grassland | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| D. Wetlands | 1.85 | 1.85 | 1.89 | 1.95 | 2.00 | 2.06 | 2.11 | 2.17 | 2.23 | 2.28 | 2.33 | 2.37 | 2.41 | 2.42 | 2.44 | 2.49 |
| E. Settlements | NE,NA | NE,NA | NE,NA | NE,NA | NE,NA | NE,NA | NE,NA | NE,NA | NE,NA | NE,NA | NE,NA | NE,NA | NE,NA | NE,NA | NE,NA | NE,NA |
| F. Other land | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| G. Harvested wood products | | | | | | | | | | | | | | | | |
| H. Other | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 5. Waste | 182.98 | 182.98 | 185.16 | 185.71 | 185.48 | 182.94 | 179.86 | 175.57 | 170.59 | 162.60 | 158.45 | 148.44 | 142.03 | 131.91 | 123.68 | 117.31 |
| A. Solid waste disposal | 173.11 | 173.11 | 175.38 | 176.03 | 175.68 | 173.04 | 169.80 | 165.36 | 160.63 | 152.68 | 148.54 | 138.54 | 132.13 | 121.91 | 113.60 | 107.15 |
| B. Biological treatment of solid waste | 1.03 | 1.03 | 1.16 | 1.30 | 1.40 | 1.49 | 1.70 | 1.93 | 1.95 | 2.06 | 2.18 | 2.29 | 2.41 | 2.54 | 2.63 | 2.73 |
| C. Incineration and open burning of waste | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE |
| D. Waste water treatment and discharge | 8.84 | 8.84 | 8.62 | 8.38 | 8.40 | 8.40 | 8.35 | 8.28 | 8.01 | 7.86 | 7.73 | 7.61 | 7.48 | 7.46 | 7.45 | 7.42 |
| E. Other | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| 6. Other (as specified in summary 1.A) | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| Total CH₄ emissions without CH₄ from LULUCF | 307.49 | 307.49 | 306.76 | 304.79 | 306.41 | 305.22 | 297.03 | 294.12 | 290.89 | 280.23 | 273.36 | 262.65 | 257.35 | 248.34 | 240.18 | 232.87 |
| Total CH₄ emissions with CH₄ from LULUCF | 368.76 | 368.76 | 367.33 | 364.77 | 365.69 | 363.90 | 355.06 | 351.48 | 347.63 | 336.25 | 328.33 | 316.48 | 310.11 | 299.96 | 290.63 | 282.16 |
| Memo items: | | | | | | | | | | | | | | | | |
| International bunkers | 0.14 | 0.14 | 0.14 | 0.17 | 0.13 | 0.10 | 0.08 | 0.09 | 0.10 | 0.13 | 0.14 | 0.16 | 0.15 | 0.16 | 0.16 | 0.13 |
| Aviation | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Navigation | 0.14 | 0.14 | 0.13 | 0.16 | 0.13 | 0.10 | 0.07 | 0.09 | 0.09 | 0.12 | 0.14 | 0.15 | 0.14 | 0.16 | 0.16 | 0.12 |
| Multilateral operations | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| CO₂ emissions from biomass | | | | | | | | | | | | | | | | |
| CO₂ captured | | | | | | | | | | | | | | | | |
| Long-term storage of C in waste disposal sites | | | | | | | | | | | | | | | | |
| Indirect N₂O | | | | | | | | | | | | | | | | |
| Indirect CO₂ (2) | | | | | | | | | | | | | | | | |

Note: All footnotes for this table are given at the end of the table on sheet 6.

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | Change from base to latest reported year |
|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|
| | (kt) | | | | | | | | | | | | | | | | % |
| 1. Energy | 14.43 | 13.81 | 13.70 | 13.28 | 13.31 | 14.16 | 12.52 | 13.19 | 12.58 | 12.38 | 11.96 | 12.54 | 12.34 | 12.18 | 11.87 | 10.26 | -18.84 |
| A. Fuel combustion (sectoral approach) | 11.54 | 11.32 | 11.44 | 11.10 | 11.24 | 12.37 | 10.96 | 11.58 | 11.02 | 11.09 | 10.50 | 11.22 | 11.13 | 11.01 | 10.82 | 9.40 | -23.05 |
| 1. Energy industries | 1.01 | 1.19 | 1.09 | 1.06 | 1.01 | 1.17 | 1.07 | 1.03 | 1.04 | 1.04 | 0.95 | 1.08 | 1.12 | 1.24 | 1.22 | 1.17 | 198.94 |
| 2. Manufacturing industries and construction | 0.66 | 0.71 | 0.70 | 0.67 | 0.58 | 0.74 | 0.83 | 0.82 | 0.84 | 0.88 | 0.87 | 0.87 | 0.89 | 0.89 | 0.85 | 0.82 | 28.76 |
| 3. Transport | 1.48 | 1.36 | 1.27 | 1.07 | 0.97 | 0.91 | 0.82 | 0.74 | 0.71 | 0.68 | 0.65 | 0.60 | 0.56 | 0.53 | 0.50 | 0.49 | -89.21 |
| 4. Other sectors | 8.22 | 7.91 | 8.23 | 8.16 | 8.56 | 9.42 | 8.12 | 8.84 | 8.32 | 8.39 | 7.93 | 8.57 | 8.44 | 8.24 | 8.13 | 6.80 | 4.17 |
| 5. Other | 0.17 | 0.15 | 0.15 | 0.13 | 0.12 | 0.13 | 0.13 | 0.13 | 0.12 | 0.11 | 0.11 | 0.10 | 0.12 | 0.12 | 0.11 | 0.12 | -21.50 |
| B. Fugitive emissions from fuels | 2.89 | 2.49 | 2.26 | 2.18 | 2.08 | 1.79 | 1.56 | 1.61 | 1.57 | 1.28 | 1.46 | 1.32 | 1.21 | 1.17 | 1.05 | 0.87 | 99.33 |
| 1. Solid fuels | NO | 0.00 |
| 2. Oil and natural gas and other emissions from | 2.89 | 2.49 | 2.26 | 2.18 | 2.08 | 1.79 | 1.56 | 1.61 | 1.57 | 1.28 | 1.46 | 1.32 | 1.21 | 1.17 | 1.05 | 0.87 | 99.33 |
| C. CO ₂ transport and storage | | | | | | | | | | | | | | | | | |
| 2. Industrial processes | 0.10 | 0.09 | 0.16 | 0.10 | 0.10 | 0.10 | 0.05 | 0.06 | 0.06 | 0.05 | 0.08 | 0.05 | 0.15 | 0.10 | 0.04 | 0.05 | -74.31 |
| A. Mineral industry | | | | | | | | | | | | | | | | | |
| B. Chemical industry | 0.10 | 0.09 | 0.16 | 0.10 | 0.10 | 0.10 | 0.05 | 0.05 | 0.06 | 0.05 | 0.07 | 0.04 | 0.15 | 0.10 | 0.04 | 0.05 | -75.54 |
| C. Metal industry | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 56.42 |
| D. Non-energy products from fuels and solvent use | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | -54.77 |
| E. Electronic industry | | | | | | | | | | | | | | | | | |
| F. Product uses as ODS substitutes | | | | | | | | | | | | | | | | | |
| G. Other product manufacture and use | NO | 0.00 |
| H. Other | NO | 0.00 |
| 3. Agriculture | 101.25 | 101.30 | 100.69 | 99.41 | 100.67 | 102.54 | 100.87 | 100.24 | 100.34 | 102.00 | 103.33 | 102.94 | 102.21 | 101.37 | 101.02 | 101.03 | -9.52 |
| A. Enteric fermentation | 82.31 | 82.54 | 81.81 | 81.24 | 82.02 | 83.78 | 82.82 | 82.06 | 82.20 | 83.51 | 84.60 | 84.17 | 83.82 | 83.13 | 82.81 | 83.14 | -14.13 |
| B. Manure management | 18.86 | 18.67 | 18.79 | 18.09 | 18.56 | 18.70 | 17.98 | 18.11 | 18.04 | 18.41 | 18.65 | 18.69 | 18.32 | 18.18 | 18.13 | 17.82 | 21.10 |
| C. Rice cultivation | NO | 0.00 |
| D. Agricultural soils | NE,NO | 0.00 |
| E. Prescribed burning of savannas | NO | 0.00 |
| F. Field burning of agricultural residues | 0.09 | 0.08 | 0.09 | 0.09 | 0.08 | 0.06 | 0.07 | 0.07 | 0.09 | 0.08 | 0.07 | 0.07 | 0.07 | 0.06 | 0.08 | 0.07 | -43.96 |
| G. Liming | | | | | | | | | | | | | | | | | |
| H. Urea application | | | | | | | | | | | | | | | | | |
| I. Other carbon-containing fertilizers | | | | | | | | | | | | | | | | | |
| J. Other | NO | 0.00 |
| 4. Land use, land-use change and forestry | 48.19 | 47.07 | 45.92 | 43.63 | 41.32 | 39.01 | 36.71 | 35.46 | 34.26 | 33.06 | 31.84 | 30.60 | 30.59 | 30.61 | 30.61 | 30.63 | -50.01 |
| A. Forest land | 45.66 | 44.52 | 43.32 | 40.96 | 38.59 | 36.22 | 33.90 | 32.64 | 31.42 | 30.20 | 28.95 | 27.72 | 27.72 | 27.73 | 27.70 | 27.76 | -53.28 |
| B. Cropland | IE,NA | 0.00 |
| C. Grassland | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -68.02 |
| D. Wetlands | 2.52 | 2.55 | 2.60 | 2.67 | 2.73 | 2.78 | 2.80 | 2.82 | 2.84 | 2.85 | 2.89 | 2.88 | 2.87 | 2.88 | 2.90 | 2.86 | 55.13 |
| E. Settlements | NE,NA | 0.00 |
| F. Other land | NA | 0.00 |
| G. Harvested wood products | | | | | | | | | | | | | | | | | |
| H. Other | NA | 0.00 |
| 5. Waste | 107.54 | 110.49 | 106.15 | 101.33 | 97.40 | 97.21 | 93.69 | 91.56 | 86.70 | 81.37 | 78.91 | 73.62 | 69.73 | 68.11 | 66.78 | 64.73 | -64.62 |
| A. Solid waste disposal | 97.22 | 100.06 | 95.44 | 90.93 | 87.23 | 86.76 | 83.06 | 81.42 | 76.62 | 71.36 | 69.23 | 64.30 | 60.36 | 58.69 | 57.03 | 55.40 | -68.00 |
| B. Biological treatment of solid waste | 3.06 | 3.17 | 3.47 | 3.26 | 3.28 | 3.42 | 3.49 | 3.06 | 3.12 | 3.10 | 2.76 | 2.50 | 2.59 | 2.71 | 3.14 | 2.86 | 177.91 |
| C. Incineration and open burning of waste | NO,NE,IE | 0.00 |
| D. Waste water treatment and discharge | 7.25 | 7.26 | 7.24 | 7.14 | 6.89 | 7.03 | 7.14 | 7.08 | 6.96 | 6.91 | 6.93 | 6.82 | 6.79 | 6.71 | 6.61 | 6.47 | -26.85 |
| E. Other | NO | 0.00 |
| 6. Other (as specified in summary I.A) | NO | 0.00 |
| Total CH₄ emissions without CH₄ from LULUCF | 223.32 | 225.69 | 220.70 | 214.12 | 211.48 | 214.00 | 207.13 | 205.04 | 199.69 | 195.80 | 194.28 | 189.15 | 184.44 | 181.76 | 179.71 | 176.08 | -42.74 |
| Total CH₄ emissions with CH₄ from LULUCF | 271.51 | 272.76 | 266.62 | 257.75 | 252.81 | 253.01 | 243.84 | 240.50 | 233.95 | 228.85 | 226.12 | 219.75 | 215.03 | 212.37 | 210.32 | 206.70 | -43.95 |
| Memo items: | | | | | | | | | | | | | | | | | |
| International bunkers | 0.13 | 0.15 | 0.12 | 0.11 | 0.07 | 0.06 | 0.06 | 0.04 | 0.04 | 0.03 | 0.09 | 0.09 | 0.11 | 0.10 | 0.10 | 0.09 | -38.05 |
| Aviation | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | -18.18 |
| Navigation | 0.12 | 0.14 | 0.11 | 0.10 | 0.06 | 0.05 | 0.05 | 0.03 | 0.03 | 0.02 | 0.08 | 0.08 | 0.10 | 0.09 | 0.09 | 0.08 | -38.86 |
| Multilateral operations | NO | 0.00 |
| CO₂ emissions from biomass | | | | | | | | | | | | | | | | | |
| CO₂ captured | | | | | | | | | | | | | | | | | |
| Long-term storage of C in waste disposal sites | | | | | | | | | | | | | | | | | |
| Indirect N₂O | | | | | | | | | | | | | | | | | |
| Indirect CO₂ ⁽³⁾ | | | | | | | | | | | | | | | | | |

TABLE 10 EMISSION TRENDS

N₂O

(Sheet 4 of 6)

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | Base year ⁽¹⁾ | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|--------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | (kt) | | | | | | | | | | | | | | | |
| 1. Energy | 1.82 | 1.82 | 1.80 | 1.80 | 1.90 | 1.98 | 1.96 | 2.08 | 2.11 | 2.08 | 2.05 | 1.99 | 2.13 | 2.20 | 2.30 | 2.24 |
| A. Fuel combustion (sectoral approach) | 1.81 | 1.81 | 1.80 | 1.79 | 1.89 | 1.97 | 1.95 | 2.08 | 2.11 | 2.08 | 2.05 | 1.99 | 2.13 | 2.20 | 2.30 | 2.24 |
| 1. Energy industries | 0.39 | 0.39 | 0.42 | 0.46 | 0.52 | 0.60 | 0.61 | 0.72 | 0.71 | 0.71 | 0.69 | 0.67 | 0.83 | 0.95 | 1.07 | 1.01 |
| 2. Manufacturing industries and construction | 0.56 | 0.56 | 0.52 | 0.48 | 0.53 | 0.55 | 0.54 | 0.55 | 0.61 | 0.59 | 0.61 | 0.61 | 0.59 | 0.56 | 0.56 | 0.59 |
| 3. Transport | 0.54 | 0.54 | 0.55 | 0.54 | 0.53 | 0.53 | 0.52 | 0.51 | 0.49 | 0.47 | 0.46 | 0.43 | 0.42 | 0.39 | 0.37 | 0.35 |
| 4. Other sectors | 0.29 | 0.29 | 0.28 | 0.29 | 0.28 | 0.26 | 0.25 | 0.26 | 0.26 | 0.27 | 0.26 | 0.24 | 0.26 | 0.26 | 0.26 | 0.26 |
| 5. Other | 0.03 | 0.03 | 0.03 | 0.03 | 0.02 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.04 | 0.03 | 0.04 |
| B. Fugitive emissions from fuels | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1. Solid fuels | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| 2. Oil and natural gas and other emissions | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| C. CO ₂ transport and storage | | | | | | | | | | | | | | | | |
| 2. Industrial processes | 5.56 | 5.56 | 4.86 | 4.42 | 4.61 | 4.85 | 4.94 | 4.94 | 4.88 | 4.66 | 4.56 | 4.59 | 4.34 | 4.47 | 4.69 | 4.97 |
| A. Mineral industry | | | | | | | | | | | | | | | | |
| B. Chemical industry | 5.34 | 5.34 | 4.64 | 4.20 | 4.39 | 4.63 | 4.72 | 4.72 | 4.66 | 4.44 | 4.34 | 4.40 | 4.17 | 4.30 | 4.54 | 4.83 |
| C. Metal industry | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| D. Non-energy products from fuels and solvent use | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| E. Electronic industry | | | | | | | | | | | | | | | | |
| F. Product uses as ODS substitutes | | | | | | | | | | | | | | | | |
| G. Other product manufacture and use | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.18 | 0.17 | 0.16 | 0.15 | 0.14 |
| H. Other | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| 3. Agriculture | 13.65 | 13.65 | 13.25 | 12.26 | 12.53 | 12.58 | 12.58 | 12.61 | 12.71 | 12.36 | 12.27 | 12.56 | 12.29 | 12.22 | 12.31 | 12.37 |
| A. Enteric fermentation | | | | | | | | | | | | | | | | |
| B. Manure management | 0.95 | 0.95 | 0.89 | 0.87 | 0.87 | 0.88 | 0.85 | 0.87 | 0.89 | 0.87 | 0.85 | 0.84 | 0.84 | 0.84 | 0.85 | 0.84 |
| C. Rice cultivation | | | | | | | | | | | | | | | | |
| D. Agricultural soils | 12.70 | 12.70 | 12.37 | 11.39 | 11.66 | 11.70 | 11.73 | 11.74 | 11.82 | 11.48 | 11.42 | 11.71 | 11.45 | 11.38 | 11.45 | 11.53 |
| E. Prescribed burning of savannas | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| F. Field burning of agricultural residues | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| G. Liming | | | | | | | | | | | | | | | | |
| H. Urea application | | | | | | | | | | | | | | | | |
| I. Other carbon containing fertilizers | | | | | | | | | | | | | | | | |
| J. Other | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| 4. Land use, land-use change and forestry | 7.15 | 7.15 | 7.15 | 7.14 | 7.13 | 7.17 | 7.17 | 7.18 | 7.21 | 7.22 | 7.22 | 7.22 | 7.22 | 7.20 | 7.18 | 7.16 |
| A. Forest land | 6.85 | 6.85 | 6.84 | 6.83 | 6.82 | 6.85 | 6.85 | 6.85 | 6.87 | 6.88 | 6.87 | 6.86 | 6.86 | 6.84 | 6.81 | 6.79 |
| B. Cropland | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
| C. Grassland | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| D. Wetlands | 0.23 | 0.23 | 0.24 | 0.24 | 0.25 | 0.25 | 0.26 | 0.26 | 0.27 | 0.27 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| E. Settlements | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.06 |
| F. Other land | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| G. Harvested wood products | | | | | | | | | | | | | | | | |
| H. Other | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| I. Other | 0.32 | 0.32 | 0.32 | 0.31 | 0.32 | 0.31 | 0.33 | 0.34 | 0.33 | 0.34 | 0.35 | 0.36 | 0.36 | 0.36 | 0.38 | 0.39 |
| 5. Waste | 0.06 | 0.06 | 0.07 | 0.08 | 0.08 | 0.09 | 0.10 | 0.11 | 0.12 | 0.12 | 0.13 | 0.14 | 0.14 | 0.15 | 0.16 | 0.16 |
| A. Solid waste disposal | 0.06 | 0.06 | 0.07 | 0.08 | 0.08 | 0.09 | 0.10 | 0.11 | 0.12 | 0.12 | 0.13 | 0.14 | 0.14 | 0.15 | 0.16 | 0.16 |
| B. Biological treatment of solid waste | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE |
| C. Incineration and open burning of waste | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE | NO,NE,IE |
| D. Waste water treatment and discharge | 0.26 | 0.26 | 0.25 | 0.24 | 0.23 | 0.23 | 0.23 | 0.23 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.21 | 0.22 | 0.23 |
| E. Other | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| 6. Other (as specified in summary 1.A) | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| Total direct N₂O emissions without N₂O from LULUCF | 21.35 | 21.35 | 20.24 | 18.80 | 19.35 | 19.72 | 19.81 | 19.97 | 20.04 | 19.44 | 19.23 | 19.49 | 19.13 | 19.25 | 19.67 | 19.98 |
| Total direct N₂O emissions with N₂O from LULUCF | 28.50 | 28.50 | 27.39 | 25.93 | 26.49 | 26.89 | 26.98 | 27.15 | 27.25 | 26.66 | 26.45 | 26.71 | 26.35 | 26.45 | 26.86 | 27.14 |
| Memo items: | | | | | | | | | | | | | | | | |
| International bunkers | 0.08 | 0.08 | 0.07 | 0.08 | 0.07 | 0.06 | 0.05 | 0.06 | 0.06 | 0.07 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.07 |
| Aviation | 0.03 | 0.03 | 0.03 | 0.02 | 0.02 | 0.02 | 0.02 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.04 |
| Navigation | 0.05 | 0.05 | 0.05 | 0.06 | 0.05 | 0.04 | 0.03 | 0.03 | 0.03 | 0.04 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.04 |
| Multilateral operations | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| CO₂ emissions from biomass | | | | | | | | | | | | | | | | |
| CO₂ captured | | | | | | | | | | | | | | | | |
| Long-term storage of C in waste disposal sites | | | | | | | | | | | | | | | | |
| Indirect N₂O | 1.41 | 1.41 | 1.38 | 1.34 | 1.36 | 1.36 | 1.26 | 1.28 | 1.26 | 1.19 | 1.17 | 1.11 | 1.13 | 1.11 | 1.15 | 1.09 |
| Indirect CO₂⁽²⁾ | | | | | | | | | | | | | | | | |

Note: All footnotes for this table are given at the end of the table on sheet 6.

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | Change from base to latest reported year |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|
| | (kt) | | | | | | | | | | | | | | | | % |
| Energy | 1.99 | 2.18 | 2.15 | 2.01 | 1.89 | 2.18 | 2.04 | 1.96 | 1.96 | 1.88 | 1.82 | 1.93 | 1.88 | 1.99 | 1.95 | 1.75 | -3.39 |
| A. Fuel combustion (sectoral approach) | 1.99 | 2.18 | 2.15 | 2.01 | 1.89 | 2.18 | 2.03 | 1.96 | 1.96 | 1.88 | 1.81 | 1.92 | 1.88 | 1.99 | 1.95 | 1.75 | -3.30 |
| 1. Energy industries | 0.83 | 1.07 | 1.07 | 0.99 | 0.95 | 1.17 | 1.08 | 0.99 | 1.00 | 0.92 | 0.84 | 0.89 | 0.85 | 0.94 | 0.91 | 0.78 | 99.72 |
| 2. Manufacturing industries and construction | 0.55 | 0.52 | 0.50 | 0.48 | 0.40 | 0.45 | 0.43 | 0.43 | 0.44 | 0.44 | 0.46 | 0.51 | 0.51 | 0.53 | 0.52 | 0.47 | -16.84 |
| 3. Transport | 0.33 | 0.31 | 0.30 | 0.28 | 0.27 | 0.27 | 0.27 | 0.26 | 0.27 | 0.27 | 0.27 | 0.28 | 0.28 | 0.29 | 0.29 | 0.29 | -46.69 |
| 4. Other sectors | 0.25 | 0.25 | 0.25 | 0.23 | 0.24 | 0.27 | 0.23 | 0.24 | 0.23 | 0.23 | 0.21 | 0.23 | 0.22 | 0.21 | 0.21 | 0.20 | -32.86 |
| 5. Other | 0.04 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | -22.63 |
| B. Fugitive emissions from fuels | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | -44.65 |
| 1. Solid fuels | NO | 0.00 |
| 2. Oil and natural gas and other emissions from | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | -44.65 |
| C. CO₂ transport and storage | | | | | | | | | | | | | | | | | |
| Industrial processes | 5.41 | 4.79 | 4.91 | 5.22 | 2.66 | 6.65 | 6.54 | 6.64 | 6.80 | 6.78 | 6.95 | 6.82 | 6.86 | 6.79 | 6.75 | 6.82 | -85.34 |
| A. Mineral industry | | | | | | | | | | | | | | | | | |
| B. Chemical industry | 5.24 | 4.64 | 4.77 | 5.09 | 2.56 | 6.54 | 6.44 | 6.54 | 6.71 | 6.69 | 6.87 | 6.73 | 6.77 | 6.71 | 6.69 | 6.76 | -85.77 |
| C. Metal industry | NO | 0.00 |
| D. Non-energy products from fuels and solvent use | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -54.79 |
| E. Electronic industry | | | | | | | | | | | | | | | | | |
| F. Product uses as ODS substitutes | | | | | | | | | | | | | | | | | |
| G. Other product manufacture and use | 0.16 | 0.14 | 0.13 | 0.13 | 0.10 | 0.11 | 0.10 | 0.10 | 0.09 | 0.09 | 0.08 | 0.08 | 0.09 | 0.08 | 0.06 | 0.05 | -75.56 |
| H. Other | NO | 0.00 |
| Agriculture | 12.44 | 12.24 | 12.37 | 12.73 | 12.45 | 12.78 | 12.58 | 12.54 | 12.46 | 12.75 | 12.78 | 12.80 | 12.74 | 12.59 | 13.08 | 12.88 | -5.66 |
| A. Enteric fermentation | | | | | | | | | | | | | | | | | |
| B. Manure management | 0.85 | 0.85 | 0.86 | 0.86 | 0.91 | 0.94 | 0.93 | 0.96 | 0.95 | 0.96 | 0.97 | 0.97 | 0.95 | 0.94 | 0.94 | 0.91 | -4.53 |
| C. Rice cultivation | | | | | | | | | | | | | | | | | |
| D. Agricultural soils | 11.59 | 11.38 | 11.51 | 11.87 | 11.54 | 11.84 | 11.65 | 11.58 | 11.51 | 11.78 | 11.80 | 11.83 | 11.79 | 11.64 | 12.15 | 11.97 | -5.73 |
| E. Prescribed burning of savannas | NO | 0.00 |
| F. Field burning of agricultural residues | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -43.96 |
| G. Liming | | | | | | | | | | | | | | | | | |
| H. Urea application | | | | | | | | | | | | | | | | | |
| I. Other carbon containing fertilizers | | | | | | | | | | | | | | | | | |
| J. Other | NO | 0.00 |
| Land use, land-use change and forestry | 7.14 | 7.15 | 7.13 | 7.15 | 7.09 | 7.06 | 7.03 | 6.95 | 6.90 | 6.85 | 6.78 | 6.74 | 6.77 | 6.78 | 6.78 | 6.79 | -5.14 |
| A. Forest land | 6.77 | 6.76 | 6.74 | 6.75 | 6.68 | 6.64 | 6.60 | 6.52 | 6.46 | 6.40 | 6.34 | 6.29 | 6.33 | 6.34 | 6.35 | 6.36 | -7.21 |
| B. Cropland | 0.02 | 0.03 | 0.02 | 0.02 | 0.02 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.02 | 8.52 |
| C. Grassland | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 12.09 |
| D. Wetlands | 0.29 | 0.29 | 0.30 | 0.30 | 0.31 | 0.32 | 0.32 | 0.32 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 40.81 |
| E. Settlements | 0.06 | 0.06 | 0.06 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.08 | 0.08 | 0.08 | 0.07 | 0.07 | 0.07 | 0.07 | 70.00 |
| F. Other land | NA | 0.00 |
| G. Harvested wood products | | | | | | | | | | | | | | | | | |
| H. Other | NA | 0.00 |
| Waste | 0.42 | 0.42 | 0.44 | 0.43 | 0.42 | 0.44 | 0.45 | 0.43 | 0.42 | 0.42 | 0.40 | 0.38 | 0.38 | 0.39 | 0.42 | 0.40 | 24.78 |
| A. Solid waste disposal | | | | | | | | | | | | | | | | | |
| B. Biological treatment of solid waste | 0.18 | 0.19 | 0.20 | 0.19 | 0.19 | 0.20 | 0.20 | 0.17 | 0.17 | 0.17 | 0.15 | 0.13 | 0.13 | 0.14 | 0.17 | 0.15 | 136.24 |
| C. Incineration and open burning of waste | NO,NE,IE | 0.00 |
| D. Waste water treatment and discharge | 0.23 | 0.23 | 0.24 | 0.25 | 0.23 | 0.25 | 0.25 | 0.26 | 0.25 | 0.25 | 0.25 | 0.26 | 0.25 | 0.25 | 0.25 | 0.25 | -2.02 |
| E. Other | NO | 0.00 |
| Other (as specified in summary 1.A) | NO | 0.00 |
| War direct N₂O emissions without N₂O from LULUCF | 20.25 | 19.63 | 19.87 | 20.40 | 17.42 | 16.05 | 15.61 | 15.57 | 15.64 | 15.83 | 15.95 | 15.93 | 15.87 | 15.76 | 16.20 | 15.84 | -25.78 |
| Total direct N₂O emissions with N₂O from LULUCF | 27.40 | 26.78 | 26.99 | 27.55 | 24.51 | 23.11 | 22.64 | 22.53 | 22.54 | 22.68 | 22.73 | 22.66 | 22.65 | 22.55 | 22.98 | 22.63 | -20.60 |
| Items: | | | | | | | | | | | | | | | | | |
| International bunkers | 0.08 | 0.08 | 0.08 | 0.08 | 0.06 | 0.06 | 0.07 | 0.06 | 0.06 | 0.06 | 0.08 | 0.07 | 0.08 | 0.09 | 0.09 | 0.05 | -38.14 |
| Aviation | 0.04 | 0.04 | 0.05 | 0.05 | 0.04 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.06 | 0.07 | 0.07 | 0.02 | -13.73 |
| Maritime aviation | 0.04 | 0.04 | 0.04 | 0.03 | 0.02 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 | 0.02 | 0.02 | 0.02 | -52.14 |
| Bilateral operations | NO | 0.00 |
| CO₂ emissions from biomass | | | | | | | | | | | | | | | | | |
| CO₂ captured | | | | | | | | | | | | | | | | | |
| Long-term storage of C in waste disposal sites | | | | | | | | | | | | | | | | | |
| Indirect N₂O | 0.95 | 1.03 | 0.97 | 0.89 | 0.81 | 0.85 | 0.77 | 0.73 | 0.72 | 0.68 | 0.62 | 0.60 | 0.58 | 0.56 | 0.53 | 0.46 | -67.44 |
| Indirect CO₂ (3) | | | | | | | | | | | | | | | | | |

TABLE 10 EMISSION TRENDS
HFCs, PFCs, SF₆ and NF₃
 (Sheet 5 of 6)

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | Base year ⁽¹⁾ | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|--|--------------------------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| | (kt) | | | | | | | | | | | | | | | |
| Emissions of HFCs and PFCs - (kt CO₂ equivalent) | 0.23 | 0.23 | 0.27 | 0.33 | 0.58 | 82.07 | 151.35 | 235.19 | 335.30 | 444.36 | 545.32 | 718.67 | 790.27 | 883.86 | 982.21 | 1085.58 |
| Emissions of HFCs - (kt CO₂ equivalent) | 0.02 | 0.02 | 0.03 | 0.05 | 0.20 | 81.24 | 149.81 | 233.44 | 333.48 | 442.45 | 540.28 | 715.47 | 786.49 | 880.92 | 978.99 | 1082.62 |
| HFC-23 | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| HFC-32 | NO | NO | NO | NO | NO | NO | NO | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| HFC-41 | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| HFC-43-10mcc | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| HFC-125 | NO | NO | NO | NO | NO | 0.01 | 0.01 | 0.02 | 0.03 | 0.03 | 0.04 | 0.05 | 0.06 | 0.07 | 0.08 | 0.08 |
| HFC-134 | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| HFC-134a | NO | NO | NO | NO | 0.00 | 0.01 | 0.02 | 0.03 | 0.06 | 0.10 | 0.12 | 0.19 | 0.15 | 0.16 | 0.23 | 0.26 |
| HFC-143 | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| HFC-143a | NO | NO | NO | NO | NO | 0.01 | 0.02 | 0.02 | 0.03 | 0.04 | 0.05 | 0.06 | 0.07 | 0.08 | 0.08 | 0.09 |
| HFC-152 | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| HFC-152a | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.02 | 0.03 | 0.03 | 0.02 | 0.03 | 0.00 | 0.00 | 0.04 | 0.03 |
| HFC-161 | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| HFC-227ea | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE |
| HFC-236cb | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| HFC-236ea | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| HFC-236fa | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| HFC-245ca | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| HFC-245fa | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| HFC-365mfc | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE |
| Unspecified mix of HFCs ⁽⁴⁾ - (kt CO ₂ equivalent) | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 | 0.02 | 0.02 | 0.02 | 0.15 | 0.04 | 2.69 | 0.27 | 66.61 | 75.57 | 2.65 | 2.43 |
| Emissions of PFCs - (kt CO₂ equivalent) | 0.21 | 0.21 | 0.24 | 0.28 | 0.38 | 0.83 | 1.54 | 1.75 | 1.82 | 1.91 | 5.04 | 3.21 | 3.78 | 2.94 | 3.21 | 2.96 |
| CF ₄ | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE |
| C ₂ F ₆ | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE |
| C ₃ F ₈ | NO,IE | NO,IE | NO,IE | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| C ₄ F ₁₀ | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| e-C ₄ F ₈ | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE |
| C ₃ F ₁₂ | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| C ₂ F ₁₄ | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| C ₁₀ F ₁₈ | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| e-C ₃ F ₆ | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| Unspecified mix of PFCs ⁽⁴⁾ - (kt CO ₂ equivalent) | 0.21 | 0.21 | 0.24 | 0.27 | 0.31 | 0.36 | 0.42 | 0.48 | 0.55 | 0.63 | 3.71 | 0.84 | 0.96 | 0.96 | 1.27 | 0.77 |
| Unspecified mix of HFCs and PFCs - (kt CO₂ equivalent) | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| Emissions of SF₆ - (kt CO₂ equivalent) | 52.48 | 52.48 | 40.16 | 25.67 | 19.75 | 23.86 | 36.98 | 54.16 | 50.11 | 38.62 | 30.76 | 26.06 | 25.53 | 25.34 | 25.57 | 23.84 |
| SF ₆ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Emissions of NF₃ - (kt CO₂ equivalent) | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO,NE | NO |
| NF ₃ | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO,NE | NO |

Note: All footnotes for this table are given at the end of the table on sheet 6.

Inventory 2020
 Submission 2022 v6
 FINLAND

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | Change from base to latest reported year |
|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|--|
| | (kt) | | | | | | | | | | | | | | | | % |
| Emissions of HFCs and PFCs - (kt CO₂ equivalent) | 1161.86 | 1316.95 | 1349.17 | 1386.83 | 1385.11 | 1365.80 | 1345.03 | 1355.14 | 1336.72 | 1304.23 | 1240.65 | 1182.29 | 1112.19 | 1066.84 | 1013.24 | 977.59 | 428657.84 |
| Emissions of HFCs - (kt CO₂ equivalent) | 1158.20 | 1313.00 | 1346.14 | 1384.07 | 1381.91 | 1363.18 | 1342.06 | 1351.43 | 1332.24 | 1300.21 | 1239.19 | 1180.82 | 1110.57 | 1065.13 | 1011.33 | 975.87 | 4658371.96 |
| HFC-23 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 |
| HFC-32 | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.03 | 0.03 | 0.04 | 100.00 |
| HFC-41 | NO | NO | 0.00 |
| HFC-43-10mcc | NO | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | 0.00 |
| HFC-125 | 0.09 | 0.10 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.10 | 0.10 | 100.00 |
| HFC-134 | NO | NO | 0.00 |
| HFC-134a | 0.28 | 0.31 | 0.32 | 0.34 | 0.34 | 0.32 | 0.30 | 0.30 | 0.30 | 0.28 | 0.25 | 0.23 | 0.22 | 0.19 | 0.18 | 0.17 | 100.00 |
| HFC-143 | NO | NO | 0.00 |
| HFC-143a | 0.10 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.10 | 0.10 | 0.09 | 0.09 | 0.08 | 0.08 | 100.00 |
| HFC-152 | NO | NO | 0.00 |
| HFC-152a | 0.03 | 0.04 | 0.04 | 0.03 | 0.01 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 22604.47 |
| HFC-161 | NO | NO | 0.00 |
| HFC-227ea | NO,IE | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 |
| HFC-236cb | NO | NO | 0.00 |
| HFC-236ea | NO | NO | 0.00 |
| HFC-236fa | NO | NO | 0.00 |
| HFC-245ca | NO | NO | 0.00 |
| HFC-245fa | NO | NO | NO,IE | NO,IE | NO,IE | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 |
| HFC-365mfc | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 |
| Unspecified mix of HFCs ⁽⁴⁾ - (kt CO ₂ equivalent) | 0.63 | 1.76 | 2.54 | 8.68 | 3.04 | 10.54 | 10.48 | 12.42 | 7.22 | 6.79 | 5.06 | 4.59 | 3.96 | 3.98 | 3.69 | 4.43 | 42565.00 |
| Emissions of PFCs - (kt CO₂ equivalent) | 3.66 | 3.96 | 3.03 | 2.75 | 3.20 | 2.62 | 2.97 | 3.71 | 4.48 | 4.03 | 1.46 | 1.48 | 1.61 | 1.71 | 1.90 | 1.72 | 729.42 |
| CF ₄ | NO,IE | NO,IE | 0.00 |
| C ₂ F ₆ | NO,IE | NO,IE | NO,IE | NO,IE | NO,IE | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 |
| C ₃ F ₈ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 |
| C ₄ F ₁₀ | NO | NO | 0.00 |
| e-C ₄ F ₈ | NO,IE | NO,IE | 0.00 |
| C ₃ F ₁₂ | NO | NO | 0.00 |
| C ₂ F ₁₄ | NO | NO | 0.00 |
| C ₁₀ F ₁₈ | NO | NO | 0.00 |
| e-C ₃ F ₆ | NO | NO | 0.00 |
| Unspecified mix of PFCs ⁽⁴⁾ - (kt CO ₂ equivalent) | 1.17 | 1.31 | 0.65 | 0.61 | 1.32 | 0.94 | 1.46 | 1.85 | 2.91 | 2.73 | 0.43 | | | | | | |

TABLE 10 EMISSION TRENDS SUMMARY
(Sheet 6 of 6)

| GREENHOUSE GAS EMISSIONS | Base year ⁽¹⁾ | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | CO ₂ equivalent (kt) | | | | | | | | | | | | | | | |
| CO ₂ emissions without net CO ₂ from LULUCF | 56914.34 | 56914.34 | 55188.76 | 54265.06 | 56313.37 | 61732.67 | 58115.52 | 64033.06 | 62696.17 | 59351.46 | 58866.90 | 57009.92 | 62513.74 | 65040.97 | 72654.32 | 68939.11 |
| CO ₂ emissions with net CO ₂ from LULUCF | 39809.33 | 39809.33 | 25228.48 | 30198.05 | 32216.05 | 44390.95 | 41334.97 | 40154.98 | 43519.72 | 41402.31 | 40193.58 | 38466.17 | 42440.70 | 43745.74 | 50520.93 | 45744.04 |
| CH ₄ emissions without CH ₄ from LULUCF | 7687.13 | 7687.13 | 7669.11 | 7619.71 | 7660.18 | 7630.42 | 7425.68 | 7352.88 | 7272.35 | 7005.66 | 6834.10 | 6566.27 | 6433.66 | 6208.46 | 6004.62 | 5821.63 |
| CH ₄ emissions with CH ₄ from LULUCF | 9218.93 | 9218.93 | 9183.37 | 9119.31 | 9142.34 | 9097.62 | 8876.41 | 8787.03 | 8690.64 | 8406.32 | 8208.35 | 7911.99 | 7752.75 | 7498.92 | 7265.81 | 7054.05 |
| N ₂ O emissions without N ₂ O from LULUCF | 6361.59 | 6361.59 | 6030.81 | 5601.03 | 5767.32 | 5877.73 | 5902.93 | 5950.43 | 5971.14 | 5792.47 | 5731.79 | 5809.16 | 5699.36 | 5735.59 | 5863.05 | 5953.43 |
| N ₂ O emissions with N ₂ O from LULUCF | 8493.53 | 8493.53 | 8160.76 | 7727.53 | 7893.02 | 8014.25 | 8039.69 | 8091.50 | 8119.60 | 7943.91 | 7882.41 | 7959.25 | 7851.33 | 7881.95 | 8003.60 | 8088.32 |
| HFCs | 0.02 | 0.02 | 0.03 | 0.05 | 0.20 | 81.24 | 149.81 | 233.44 | 333.48 | 442.45 | 540.28 | 715.47 | 786.49 | 880.92 | 978.99 | 1082.62 |
| PFCs | 0.21 | 0.21 | 0.24 | 0.28 | 0.38 | 0.83 | 1.54 | 1.75 | 1.82 | 1.91 | 5.04 | 3.21 | 3.78 | 2.94 | 3.21 | 2.96 |
| Unspecified mix of HFCs and PFCs | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| SF ₆ | 52.48 | 52.48 | 40.16 | 25.67 | 19.75 | 23.86 | 36.98 | 54.16 | 50.11 | 38.62 | 30.76 | 26.06 | 25.53 | 25.34 | 25.57 | 23.84 |
| NF ₃ | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| Total (without LULUCF) | 71015.77 | 71015.77 | 68929.12 | 67511.80 | 69761.20 | 75346.75 | 71632.46 | 77625.72 | 76325.08 | 72632.58 | 72008.86 | 70130.08 | 75462.55 | 77894.21 | 85529.77 | 81823.59 |
| Total (with LULUCF) | 57574.51 | 57574.51 | 42613.04 | 47070.89 | 49271.75 | 61608.75 | 58439.40 | 57322.86 | 60715.37 | 58235.52 | 56860.41 | 55082.15 | 58860.57 | 60035.81 | 66798.11 | 61995.83 |
| Total (without LULUCF, with indirect) | 71182.11 | 71182.11 | 69084.87 | 67661.48 | 69904.52 | 75489.50 | 71765.94 | 77745.08 | 76443.33 | 72747.65 | 72119.42 | 70238.38 | 75570.50 | 77992.48 | 85627.88 | 81918.81 |
| Total (with LULUCF, with indirect) | 57740.85 | 57740.85 | 42768.79 | 47220.58 | 49415.07 | 61751.50 | 58572.88 | 57442.23 | 60833.62 | 58350.59 | 56970.98 | 55190.44 | 58968.52 | 60134.08 | 66896.22 | 62091.05 |

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | Base year ⁽¹⁾ | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|--|---------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | CO ₂ equivalent (kt) | | | | | | | | | | | | | | | |
| 1. Energy | 53442.15 | 53442.15 | 52115.25 | 51508.25 | 53447.21 | 58781.02 | 55274.94 | 61028.91 | 59448.90 | 56133.59 | 55514.28 | 53709.68 | 59154.01 | 61753.88 | 69369.55 | 65481.66 |
| 2. Industrial processes and product use | 5397.60 | 5397.60 | 4993.89 | 4704.42 | 4734.26 | 5009.54 | 5063.70 | 5308.80 | 5613.44 | 5645.17 | 5807.93 | 5988.41 | 6056.49 | 6095.18 | 6441.06 | 6795.54 |
| 3. Agriculture | 7506.86 | 7506.86 | 7095.97 | 6562.53 | 6848.55 | 6888.92 | 6697.81 | 6797.03 | 6898.61 | 6687.49 | 6622.19 | 6614.85 | 6640.85 | 6640.85 | 6515.16 | 6496.66 |
| 4. Land use, land-use change and forestry ⁽⁵⁾ | -13441.26 | -13441.26 | -26316.08 | -20440.90 | -20489.45 | -13738.00 | -13193.06 | -20302.86 | -15609.71 | -14397.06 | -15148.44 | -15049.94 | -16601.98 | -17858.40 | -18731.66 | -19827.76 |
| 5. Waste | 4669.16 | 4669.16 | 4724.01 | 4736.60 | 4731.18 | 4667.27 | 4596.02 | 4490.98 | 4364.13 | 4166.32 | 4064.46 | 3817.15 | 3657.70 | 3404.29 | 3200.00 | 3049.73 |
| 6. Other | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO |
| Total (including LULUCF)⁽⁵⁾ | 57574.51 | 57574.51 | 42613.04 | 47070.89 | 49271.75 | 61608.75 | 58439.40 | 57322.86 | 60715.37 | 58235.52 | 56860.41 | 55082.15 | 58860.57 | 60035.81 | 66798.11 | 61995.83 |

⁽¹⁾ The column "Base year" should be filled in only by those Parties with economies in transition that use a base year different from 1990 in accordance with the relevant decisions of the COP. For these Parties, this different base year is used to calculate the fill in net emissions/removals as reported in table Summary I.A. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).
⁽²⁾ In accordance with the UNFCCC reporting guidelines, for Parties that decide to report indirect CO₂ the national totals shall be provided with and without indirect CO₂.
⁽³⁾ In accordance with the UNFCCC reporting guidelines, HFC and PFC emissions should be reported for each relevant chemical. However, if it is not possible to report values for each chemical (i.e. mixtures, confidential data, lack of disaggregation), this row includes net CO₂, CH₄ and N₂O from LULUCF.
⁽⁴⁾ Includes net CO₂, CH₄ and N₂O from LULUCF.

Inventory 2020
Submission 2022 v6
FINLAND

| GREENHOUSE GAS EMISSIONS | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | Change from base to latest reported year |
|---|---------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|
| | CO ₂ equivalent (kt) | | | | | | | | | | | | | | | | |
| | (%) | | | | | | | | | | | | | | | | |
| CO ₂ emissions without net CO ₂ from LULUCF | 57047.32 | 68370.69 | 66759.84 | 58621.00 | 55905.07 | 64080.76 | 56637.17 | 51145.69 | 51703.75 | 47595.83 | 44099.10 | 47181.86 | 44577.80 | 45796.46 | 42381.84 | 37595.93 | -33.94 |
| CO ₂ emissions with net CO ₂ from LULUCF | 33220.31 | 39141.92 | 46581.46 | 35446.57 | 19459.69 | 39291.09 | 31658.33 | 23597.32 | 30455.22 | 23868.88 | 22520.59 | 26753.90 | 25514.46 | 35617.68 | 26006.56 | 17504.84 | -56.03 |
| CH ₄ emissions without CH ₄ from LULUCF | 5583.07 | 5642.24 | 5517.38 | 5353.01 | 5287.11 | 5350.01 | 5178.33 | 5126.06 | 4992.14 | 4894.91 | 4857.05 | 4728.64 | 4611.02 | 4543.92 | 4492.79 | 4401.88 | -42.74 |
| CH ₄ emissions with CH ₄ from LULUCF | 6787.71 | 6819.00 | 6665.41 | 6443.86 | 6320.23 | 6325.21 | 6096.01 | 6012.52 | 5848.64 | 5721.31 | 5653.03 | 5493.74 | 5375.85 | 5309.28 | 5257.92 | 5167.55 | -43.95 |
| N ₂ O emissions without N ₂ O from LULUCF | 6035.07 | 5849.47 | 5920.16 | 6078.81 | 5190.60 | 4784.12 | 4651.43 | 4641.06 | 4661.00 | 4717.15 | 4752.52 | 4745.85 | 4730.62 | 4697.87 | 4828.58 | 4721.77 | -25.78 |
| N ₂ O emissions with N ₂ O from LULUCF | 8163.92 | 7979.60 | 8044.49 | 8209.06 | 7304.34 | 6887.95 | 6745.76 | 6713.42 | 6717.84 | 6757.39 | 6773.41 | 6753.06 | 6748.71 | 6718.46 | 6849.18 | 6744.06 | -20.60 |
| HFCs | 1158.20 | 1313.00 | 1346.14 | 1384.07 | 1381.91 | 1363.18 | 1342.06 | 1351.43 | 1332.24 | 1300.21 | 1239.19 | 1180.82 | 1110.57 | 1065.13 | 1011.33 | 975.87 | 4658371.96 |
| PFCs | 3.66 | 3.96 | 3.03 | 2.75 | 3.20 | 2.62 | 2.97 | 3.71 | 4.48 | 4.03 | 1.46 | 1.48 | 1.61 | 1.71 | 1.90 | 1.72 | 729.42 |
| Unspecified mix of HFCs and PFCs | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | 0.00 |
| SF ₆ | 22.19 | 27.56 | 19.17 | 26.66 | 26.71 | 21.79 | 23.67 | 22.16 | 30.70 | 34.25 | 21.56 | 29.50 | 24.44 | 20.03 | 18.21 | 19.13 | -63.55 |
| NF ₃ | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | 0.00 |
| Total (without LULUCF) | 69849.50 | 81206.92 | 79565.73 | 71466.31 | 67794.61 | 75602.47 | 67835.63 | 62290.10 | 62724.31 | 58546.37 | 54970.87 | 57868.14 | 55056.07 | 56125.12 | 52734.65 | 47716.30 | -32.81 |
| Total (with LULUCF) | 49355.98 | 55285.03 | 62659.70 | 51512.97 | 34496.08 | 53891.83 | 45868.80 | 37700.56 | 44389.11 | 37686.07 | 36209.25 | 40212.49 | 38775.65 | 48732.29 | 39145.10 | 30413.18 | -47.18 |
| Total (without LULUCF, with indirect) | 69937.60 | 81295.83 | 79654.33 | 71545.92 | 67865.80 | 75672.35 | 67903.29 | 62352.12 | 62784.05 | 58602.57 | 55025.81 | 57923.44 | 55109.45 | 56178.74 | 52788.02 | 47782.25 | -32.87 |
| Total (with LULUCF, with indirect) | 49444.08 | 55373.94 | 62748.30 | 51592.58 | 34567.27 | 53961.71 | 45936.45 | 37762.58 | 44448.85 | 37742.26 | 36264.19 | 40267.79 | 38829.03 | 48785.91 | 39198.47 | 30479.13 | -47.21 |

| GREENHOUSE GAS SOURCE AND SINK CATEGORIES | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | Change from base to latest reported year |
|--|---------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|-----------|-----------|--|
| | CO ₂ equivalent (kt) | | | | | | | | | | | | | | | | |
| | (%) | | | | | | | | | | | | | | | | |
| 1. Energy | 53743.15 | 64816.83 | 62843.62 | 54501.77 | 52626.35 | 60230.38 | 52784.34 | 47495.42 | 48106.83 | 44257.70 | 40601.59 | 43345.94 | 40910.31 | 42071.54 | 38922.22 | 34289.50 | -35.84 |
| 2. Industrial processes and product use | 6765.15 | 7001.22 | 7456.58 | 7696.77 | 6041.15 | 6159.40 | 6102.37 | 5931.68 | 5798.54 | 5556.26 | 5703.80 | 5911.62 | 5736.85 | 5736.57 | 5394.61 | 5124.48 | -5.06 |
| 3. Agriculture | 6529.05 | 6501.57 | 6480.63 | 6604.88 | 6566.88 | 6650.75 | 6473.62 | 6445.56 | 6526.04 | 6573.31 | 6573.72 | 6655.41 | 6550.95 | 6497.09 | 6624.45 | 6565.95 | -12.53 |
| 4. Land use, land-use change and forestry ⁽⁵⁾ | -20493.52 | -25921.89 | -16906.02 | -19953.34 | -33298.52 | -21710.64 | -21966.83 | -24589.54 | -18335.19 | -20860.31 | -18761.62 | -17655.65 | -16280.42 | -7392.83 | -13589.55 | -17303.12 | 28.73 |
| 5. Waste | 2812.15 | 2887.30 | 2784.89 | 2662.89 | 2560.23 | 2561.95 | 2475.30 | 2417.44 | 2292.89 | 2159.10 | 2091.76 | 1955.17 | 1857.96 | 1819.92 | 1793.38 | 1736.37 | -62.81 |
| 6. Other | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | NO | 0.00 |
| Total (including LULUCF)⁽⁵⁾ | 49355.98 | 55285.03 | 62659.70 | 51512.97 | 34496.08 | 53891.83 | 45868.80 | 37700.56 | 44389.11 | 37686.07 | 36209.25 | 40212.49 | 38775.65 | 48732.29 | 39145.10 | 30413.18 | -47.18 |

Documentation box:

Parties should provide detailed explanations on emissions trends in chapter 2: Trends in Greenhouse Gas Emissions and, as appropriate, in the corresponding Chapters 3 - 8 of the national inventory report (NIR). Use this documentation box to provide references to relevant documentation box to provide explanations if potential emissions are reported.

Documentation box

1.A.3.b: CO₂, CH₄ and N₂O emissions and fuel consumption of all fuels in erf categories 1A3bii-1A3biv are included in 1A3bi.
1.A.3.e: CO₂, CH₄ and N₂O emissions and fuel consumption from category 1A3e is reported in 1A5a due to confidentiality.
1.A.5.b: CO₂, CH₄ and N₂O emissions and fuel consumption of all fuels from category 1A5b is reported in 1A5a due to confidentiality.
1.A.B: IE explanations: NGL incl. in crude oil, other kerosene incl. in jet kerosene, lubricants incl. in other oil, petroleum coke incl. in other oil, refinery feedstock incl. in crude oil, anthracite incl. in bituminous coal, LNG imports and stock change in Natural Gas. Production in Other Fossil Fuels=Waste equals to total waste combustion in order to get actual apparent consumption.
1.AC: For further details on discrepancies more than 2% between RA and SA see NIR Chapter 3.2.1
1.AD: Empty cells in row "Reported under" should be NA and missing due to CRF Reporter programming. LPG and other oil are used mainly for plastics production.
1.AD Liquefied Petroleum Gas: LPG used for plastics production
1.AD Other Oil: Other oil used mainly for plastics production
1.B.2: Subsector 1.B.2d includes CO₂ emissions from distribution in town gas in 1990 to 1993. NMVOC emissions from gasoline evaporation from road transport (1.B.2d) can be seen in Table 15.2.
2. Confidentiality data of F gases is reported as IE due to aggregation problems if notation key C is used.
CRF tables are not fully consistent with the NIR tables concerning method and emission factor information of F gases. CRF Reporter is programmed in a way that method

Annex 2

CTF Tables for financial, technological
and capacity-building support

7(2019), 7(2020), 7(a)_2019, 7(a)_2020, 7(b)_2019,
7(b)_2020, 8 and 9

Provision of public financial support: summary information in 2019^a

| Allocation channels | Year | | | | | | | | | |
|---|------------------------------|---------------------------------|--------------|----------------------------|--------------------|------------------------------|---------------------------------|--------------|----------------------------|--------------------|
| | European euro - EUR | | | | | USD ^b | | | | |
| | Core/ general ^{c,1} | Climate-specific ^{d,2} | | | | Core/ general ^{c,1} | Climate-specific ^{d,2} | | | |
| | | Mitigation | Adaptation | Cross-cutting ^e | Other ^f | | Mitigation | Adaptation | Cross-cutting ^e | Other ^f |
| Total contributions through multilateral channels: | 236,475,496.00 | 46,957,400.00 | | 64,767,716.00 | | 264,721,250.30 | 52,566,214.00 | | 72,503,877.50 | |
| Multilateral climate change funds ^g | 80,337,000.00 | 46,957,400.00 | | 28,550,000.00 | | 89,932,832.00 | 52,566,214.00 | | 31,960,147.00 | |
| Other multilateral climate change funds ^h | 53,400,000.00 | 46,000,000.00 | | 6,400,000.00 | | 59,778,349.00 | 51,494,458.00 | | 7,164,446.00 | |
| Multilateral financial institutions, including regional development banks | 93,737,307.00 | | | 20,947,538.00 | | 104,933,735.00 | | | 23,449,610.00 | |
| Specialized United Nations bodies | 62,401,189.00 | | | 15,270,178.00 | | 69,854,683.30 | | | 17,094,120.50 | |
| Total contributions through bilateral, regional and other channels | | 10,466,544.00 | 1,932,239.00 | 22,113,688.00 | | | 11,716,716.00 | 2,163,034.00 | 24,755,050.00 | |
| Total | 236,475,496.00 | 57,423,944.00 | 1,932,239.00 | 86,881,404.00 | | 264,721,250.30 | 64,282,930.00 | 2,163,034.00 | 97,258,927.50 | |

Note: Explanation of numerical footnotes is provided in the documentation box after tables 7, 7(a) and 7(b).

Abbreviation: USD = United States dollars.

^a Parties should fill in a separate table for each year, namely 2015 and 2016, where 2018 is the reporting year.

^b Parties should provide an explanation of the methodology used for currency exchange for the information provided in tables 7, 7(a) and 7(b) in the documentation box.

^c This refers to support to multilateral institutions that Parties cannot specify as being climate-specific.

^d Parties should explain in their biennial reports how they define funds as being climate-specific.

^e This refers to funding for activities that are cross-cutting across mitigation and adaptation.

^f Please specify.

^g Multilateral climate change funds listed in paragraph 17(a) of the “UNFCCC biennial reporting guidelines for developed country Parties” in decision 2/CP.17.

^h Other multilateral climate change funds as referred in paragraph 17(b) of the “UNFCCC biennial reporting guidelines for developed country Parties” in decision 2/CP.17.

Custom Footnotes**Documentation Box:**

| |
|--|
| 1: Core/general |
| Overall/unearmarked support to a given organization |
| 2: Climate-specific |
| Share of Finnish core/general funding that is directed to mitigation and/or adaptation (= the share Finland reports as climate finance) |
| 3: Status |
| Finland reports only disbursed amounts of climate finance |
| 4: Funding source |
| Finland's climate finance is part of its official development assistance (ODA) flows, as defined by OECD/DAC. |
| 5: Financial instrument |
| Finland reports financial instrument as defined by OECD/DAC. |
| 6: Type of support |
| Mitigation and Adaptation based on OECD Rio markers, cross-cutting when support covers both mitigation and adaptation. |
| 7: Sector |
| As defined by OECD/DAC. |
| Each Party shall provide an indication of what new and additional financial resources they have provided, and clarify how they have determined that such resources are new and additional. Please provide this information in relation to table 7(a) and (b). |
| In 2020 Finland's public climate finance to developing countries totaled EUR 131 million, which compared to 147 million in 2019, 47 million in 2018, 119 million in 2017 and 43 million in 2016 continues on a growing track. Climate finance is part of Finland's official ODA budget. The total ODA budget was EUR 1122 million in 2020, EUR 1010 million in 2019 and EUR 833 million in 2018. Out of the total ODA, the share of climate finance was 6% in 2018, 15% in 2019, and 12% in 2020. Even though there was a slight drop in 2020, climate finance is on a growing trajectory. Furthermore, when taking into account the planned figures until 2025, the current government has been able to grow climate finance 80% compared to the previous government (2015-2018). |

Table 7

Provision of public financial support: summary information in 2020^a

| Allocation channels | Year | | | | | | | | | |
|---|------------------------------|----------------------------------|----------------------------|--------------------|------------|------------------------------|----------------------------------|----------------------------|--------------------|--|
| | European euro - EUR | | | | | USD ^b | | | | |
| | Core/general ^{c, 1} | Climate-specific ^{d, 2} | | | | Core/general ^{c, 1} | Climate-specific ^{d, 2} | | | |
| Mitigation | | Adaptation | Cross-cutting ^e | Other ^f | Mitigation | | Adaptation | Cross-cutting ^e | Other ^f | |
| Total contributions through multilateral channels: | 186,194,338.00 | 900,000.00 | 7,300,000.00 | 84,164,149.00 | | 212,187,276.00 | 1,025,641.00 | 8,319,087.00 | 95,913,557.50 | |
| Multilateral climate change funds ^g | 51,050,000.00 | | 7,000,000.00 | 37,498,000.00 | | 58,176,636.00 | | 7,977,207.00 | 42,732,762.00 | |
| Other multilateral climate change funds ^h | 8,900,000.00 | | | 8,900,000.00 | | 10,142,450.00 | | | 10,142,450.00 | |
| Multilateral financial institutions, including regional development banks | 113,006,046.00 | 900,000.00 | | 41,224,734.00 | | 128,781,817.00 | 1,025,641.00 | | 46,979,753.00 | |
| Specialized United Nations bodies | 22,138,292.00 | | 300,000.00 | 5,441,415.00 | | 25,228,823.00 | | 341,880.00 | 6,201,042.50 | |
| Total contributions through bilateral, regional and other channels | | 26,990,313.00 | 4,000,476.00 | 9,358,605.00 | | | 30,758,192.00 | 4,558,947.00 | 10,665,078.00 | |
| Total | 186,194,338.00 | 27,890,313.00 | 11,300,476.00 | 93,522,754.00 | | 212,187,276.00 | 31,783,833.00 | 12,878,034.00 | 106,578,635.50 | |

Note: Explanation of numerical footnotes is provided in the documentation box after tables 7, 7(a) and 7(b).

Abbreviation: USD = United States dollars.

- ^a Parties should fill in a separate table for each year, namely 2015 and 2016, where 2018 is the reporting year.
- ^b Parties should provide an explanation of the methodology used for currency exchange for the information provided in tables 7, 7(a) and 7(b) in the documentation box.
- ^c This refers to support to multilateral institutions that Parties cannot specify as being climate-specific.
- ^d Parties should explain in their biennial reports how they define funds as being climate-specific.
- ^e This refers to funding for activities that are cross-cutting across mitigation and adaptation.
- ^f Please specify.
- ^g Multilateral climate change funds listed in paragraph 17(a) of the “UNFCCC biennial reporting guidelines for developed country Parties” in decision 2/CP.17.
- ^h Other multilateral climate change funds as referred in paragraph 17(b) of the “UNFCCC biennial reporting guidelines for developed country Parties” in decision 2/CP.17.

Custom Footnotes

Documentation Box:

| |
|---|
| 1: Core/general |
| Overall/unearmarked support to a given organization |
| 2: Climate-specific |
| Share of Finnish core/general funding that is directed to mitigation and/or adaptation (= the share Finland reports as climate finance) |
| 3: Status |
| Finland reports only disbursed amounts of climate finance |
| 4: Funding source |
| Finland’s climate finance is part of its official development assistance (ODA) flows, as defined by OECD/DAC. |
| 5: Financial instrument |
| Finland reports financial instrument as defined by OECD/DAC. |
| 6: Type of support |
| Mitigation and Adaptation based on OECD Rio markers, cross-cutting when support covers both mitigation and adaptation. |
| 7: Sector |
| As defined by OECD/DAC. |
| Each Party shall provide an indication of what new and additional financial resources they have provided, and clarify how they have determined that such resources are new and additional. Please provide this information in relation to table 7(a) and (b). |
| In 2020 Finland's public climate finance to developing countries totaled EUR 131 million, which compared to 147 million in 2019, 47 million in 2018, 119 million in 2017 and 43 million in 2016 continues on a growing track. Climate finance is part of Finland's official ODA budget. The total ODA budget was EUR 1122 million in 2020, EUR 1010 million in 2019 and EUR 833 million in 2018. Out of the total ODA, the share of climate finance was 6% in 2018, 15 % in 2019, and 12 % in 2020. Even though there was a slight drop in 2020, climate finance is on a growing trajectory. Furthermore, when taking into account the planned figures until 2025, the current government has been able to grow climate finance 80 % compared to the previous government (2015-2018). |

Provision of public financial support: contribution through multilateral channels in 2019^a

| Donor funding | Total amount | | | | Status ^{b,3} | Funding source ^{f,4} | Financial instrument ^{f,5} | Type of support ^{f,6} | Sector ^{c,f,7} |
|---|-----------------------------|----------------|---------------------------------|----------------|-----------------------|-------------------------------|-------------------------------------|--------------------------------|-------------------------|
| | Core/general ^{d,1} | | Climate-specific ^{e,2} | | | | | | |
| | European euro - EUR | USD | European euro - EUR | USD | | | | | |
| Total contributions through multilateral channels (1) | 236,475,496.00 | 264,721,250.30 | 111,725,116.00 | 125,070,091.50 | | | | | |
| Multilateral climate change funds | 80,337,000.00 | 89,932,832.00 | 75,507,400.00 | 84,526,361.00 | | | | | |
| 1. Global Environment Facility | 4,787,000.00 | 5,358,782.00 | 957,400.00 | 1,071,756.00 | Disbursed | Oda | Grant | Mitigation | Cross-cutting |
| 2. Least Developed Countries Fund | | | | | | | | | |
| 3. Special Climate Change Fund | | | | | | | | | |
| 4. Adaptation Fund | | | | | | | | | |
| 5. Green Climate Fund | 22,150,000.00 | 24,795,701.00 | 22,150,000.00 | 24,795,701.00 | Disbursed | Oda | Grant | Cross-cutting | Cross-cutting |
| 6. UNFCCC Trust Fund for Supplementary Activities | | | | | | | | | |
| 7. Other multilateral climate change funds | 53,400,000.00 | 59,778,349.00 | 52,400,000.00 | 58,658,904.00 | | | | | |
| Finland-IFC Blended Finance for Climate Program | 46,000,000.00 | 51,494,458.00 | 46,000,000.00 | 51,494,458.00 | Disbursed | Oda | Equity | Mitigation | Cross-cutting |
| Other multilateral climate change funds (2) | 7,400,000.00 | 8,283,891.00 | 6,400,000.00 | 7,164,446.00 | Disbursed | ODA | Grant | Cross-cutting | Cross-cutting |
| Multilateral financial institutions, including regional development banks | 93,737,307.00 | 104,933,735.00 | 20,947,538.00 | 23,449,610.00 | | | | | |
| 1. World Bank | 62,590,000.00 | 70,066,047.00 | 10,030,400.00 | 11,228,478.00 | Disbursed | Oda | Grant | Cross-cutting | Cross-cutting |
| 2. International Finance Corporation | | | | | | | | | |
| 3. African Development Bank | 28,647,307.00 | 32,069,077.00 | 9,167,138.00 | 10,262,104.00 | Disbursed | Oda | Grant | Cross-cutting | Cross-cutting |
| 4. Asian Development Bank | 2,500,000.00 | 2,798,611.00 | 1,750,000.00 | 1,959,028.00 | Disbursed | Oda | Grant | Cross-cutting | Cross-cutting |
| 5. European Bank for Reconstruction and Development | | | | | | | | | |
| 6. Inter-American Development Bank | | | | | | | | | |
| 7. Other | | | | | | | | | |
| Specialized United Nations bodies | 62,401,189.00 | 69,854,683.30 | 15,270,178.00 | 17,094,120.50 | | | | | |
| 1. United Nations Development Programme | | | | | | | | | |
| 2. United Nations Environment Programme | 1,500,000.00 | 1,679,167.00 | 300,000.00 | 335,833.00 | | | | | |
| Total | 1,500,000.00 | 1,679,167.00 | 300,000.00 | 335,833.00 | Disbursed | Oda | Grant | Cross-cutting | Cross-cutting |
| 3. Other | 60,901,189.00 | 68,175,516.30 | 14,970,178.00 | 16,758,287.50 | | | | | |
| Food and Agricultural Organization | 700,000.00 | 783,611.30 | 560,000.00 | 626,889.10 | Disbursed | Oda | Grant | Cross-cutting | Forestry |
| International Fund for Agricultural Development | 52,000,000.00 | 58,211,127.00 | 13,000,000.00 | 14,552,782.00 | Disbursed | Oda | Other (Grant, Concessional Loan) | Cross-cutting | Agriculture |
| United Nations Children's Fund | 5,300,000.00 | 5,933,057.00 | 630,000.00 | 705,250.20 | Disbursed | Oda | Grant | Cross-cutting | Cross-cutting |
| United Nations International Strategy for Disaster Reduction | 1,000,000.00 | 1,119,445.00 | 100,000.00 | 111,944.50 | Disbursed | Oda | Grant | Cross-cutting | Not Applicable |
| Other multilateral | 1,901,189.00 | 2,128,276.00 | 680,178.00 | 761,421.70 | Disbursed | Oda | Grant | Cross-cutting | Cross-cutting |

Abbreviations: ODA = official development assistance, OOF = other official flows, USD = United States dollars.

^a Parties should fill in a separate table for each year, namely 2015 and 2016, where 2018 is the reporting year.

^b Parties should explain, in their biennial reports, the methodologies used to specify the funds as disbursed and committed. Parties will provide the information for as many status categories as appropriate in the following order of priority: disbursed and committed.

^c Parties may select several applicable sectors. Parties may report sectoral distribution, as applicable, under "Other".

^d This refers to support to multilateral institutions that Parties cannot specify as being climate-specific.

^e Parties should explain in their biennial reports how they define funds as being climate-specific.

^f Please specify.

^g This refers to funding for activities that are cross-cutting across mitigation and adaptation.

Custom Footnotes

(1) Domestic currency is EUR. 1 USD = EUR 0.8933 (2019), 1 USD = EUR 0.8775 (2020)

(2) Other multilateral climate change funds (2019): Includes disbursement of 0.5 million EUR/ 0.5 million EUR climate specific, NEFCO, recipient country Ukraine

(3) Other multilateral climate change funds (2020): Includes disbursement of 0.5 million EUR / 0.5 million EUR climate specific, NEFCO, recipient country Ukraine

(4) European Bank for Reconstruction and Development (2020): Includes disbursement of 1 million EUR / 0.9 million EUR climate specific, ERBD, partly recipient country Ukraine

Provision of public financial support: contribution through multilateral channels in 2020^a

| Donor funding | Total amount | | | | Status ^{b,3} | Funding source ^{f,4} | Financial instrument ^{f,5} | Type of support ^{f,8,6} | Sector ^{c,f,7} |
|---|-----------------------------|----------------|---------------------------------|----------------|-----------------------|-------------------------------|-------------------------------------|----------------------------------|-------------------------|
| | Core/general ^{d,1} | | Climate-specific ^{e,2} | | | | | | |
| | European euro - EUR | USD | European euro - EUR | USD | | | | | |
| Total contributions through multilateral channels | 186,194,338.00 | 212,187,276.00 | 92,364,149.00 | 105,258,285.50 | | | | | |
| Multilateral climate change funds | 51,050,000.00 | 58,176,636.00 | 44,498,000.00 | 50,709,969.00 | | | | | |
| 1. Global Environment Facility | 8,190,000.00 | 9,333,333.00 | 1,638,000.00 | 1,866,666.00 | Disbursed | Oda | Grant | Cross-cutting | Cross-cutting |
| 2. Least Developed Countries Fund | 7,000,000.00 | 7,977,207.00 | 7,000,000.00 | 7,977,207.00 | Disbursed | Oda | Grant | Adaptation | Cross-cutting |
| 3. Special Climate Change Fund | | | | | | | | | |
| 4. Adaptation Fund | | | | | | | | | |
| 5. Green Climate Fund | 26,960,000.00 | 30,723,646.00 | 26,960,000.00 | 30,723,646.00 | Disbursed | Oda | Grant | Cross-cutting | Cross-cutting |
| 6. UNFCCC Trust Fund for Supplementary Activities | | | | | | | | | |
| 7. Other multilateral climate change funds | 8,900,000.00 | 10,142,450.00 | 8,900,000.00 | 10,142,450.00 | | | | | |
| Other multilateral climate change funds (3) | 8,900,000.00 | 10,142,450.00 | 8,900,000.00 | 10,142,450.00 | Disbursed | Oda | Grant | Cross-cutting | Cross-cutting |
| Multilateral financial institutions, including regional development banks | 113,006,046.00 | 128,781,817.00 | 42,124,734.00 | 48,005,394.00 | | | | | |
| 1. World Bank | 57,980,000.00 | 66,074,074.00 | 9,456,800.00 | 10,776,980.00 | Disbursed | Oda | Grant | Cross-cutting | Cross-cutting |
| 2. International Finance Corporation | 740,000.00 | 843,304.00 | 740,000.00 | 843,304.00 | Disbursed | Oda | Grant | Cross-cutting | Cross-cutting |
| 3. African Development Bank | 25,806,046.00 | 29,408,599.00 | 8,297,934.00 | 9,456,335.00 | Disbursed | Oda | Grant | Cross-cutting | Cross-cutting |
| 4. Asian Development Bank | 22,500,000.00 | 25,641,025.00 | 17,750,000.00 | 20,227,920.00 | Disbursed | Oda | Other (Grant, Equity) | Cross-cutting | Cross-cutting |
| 5. European Bank for Reconstruction and Development (4) | 1,000,000.00 | 1,139,601.00 | 900,000.00 | 1,025,641.00 | Disbursed | Oda | Grant | Mitigation | Cross-cutting |
| 6. Inter-American Development Bank | | | | | | | | | |
| 7. Other | 4,980,000.00 | 5,675,214.00 | 4,980,000.00 | 5,675,214.00 | | | | | |
| 7. Other - Total | 4,980,000.00 | 5,675,214.00 | 4,980,000.00 | 5,675,214.00 | Disbursed | Oda | Grant | Cross-cutting | Cross-cutting |
| Specialized United Nations bodies | 22,138,292.00 | 25,228,823.00 | 5,741,415.00 | 6,542,922.50 | | | | | |
| 1. United Nations Development Programme | 1,000,000.00 | 1,139,601.00 | 300,000.00 | 341,880.00 | | | | | |
| Total | 1,000,000.00 | 1,139,601.00 | 300,000.00 | 341,880.00 | Disbursed | Oda | Grant | Adaptation | Cross-cutting |
| 2. United Nations Environment Programme | 5,500,000.00 | 6,267,806.00 | 1,100,000.00 | 1,253,561.00 | | | | | |
| Total | 5,500,000.00 | 6,267,806.00 | 1,100,000.00 | 1,253,561.00 | Disbursed | Oda | Grant | Cross-cutting | Cross-cutting |
| 3. Other | 15,638,292.00 | 17,821,416.00 | 4,341,415.00 | 4,947,481.50 | | | | | |
| Food and Agricultural Organization | 2,350,000.00 | 2,678,063.00 | 1,632,500.00 | 1,860,399.00 | Disbursed | Oda | Grant | Cross-cutting | Forestry |
| International Fund for Agricultural Development | 3,500,000.00 | 3,988,604.00 | 875,000.00 | 997,151.00 | Disbursed | Oda | Grant | Cross-cutting | Agriculture |
| United Nations Children's Fund | 5,800,000.00 | 6,609,687.00 | 980,000.00 | 1,116,809.00 | Disbursed | Oda | Grant | Cross-cutting | Cross-cutting |
| United Nations International Strategy for Disaster Reduction | 2,000,000.00 | 2,279,202.00 | 200,000.00 | 227,920.20 | Disbursed | Oda | Grant | Cross-cutting | Not Applicable |
| Other multilateral | 1,988,292.00 | 2,265,860.00 | 653,915.00 | 745,202.30 | Disbursed | Oda | Grant | Cross-cutting | Cross-cutting |

Abbreviations: ODA = official development assistance, OOF = other official flows, USD = United States dollars.

^a Parties should fill in a separate table for each year, namely 2015 and 2016, where 2018 is the reporting year.

^b Parties should explain, in their biennial reports, the methodologies used to specify the funds as disbursed and committed. Parties will provide the information for as many status categories as appropriate in the following order of priority: disbursed and committed.

^c Parties may select several applicable sectors. Parties may report sectoral distribution, as applicable, under "Other".

^d This refers to support to multilateral institutions that Parties cannot specify as being climate-specific.

^e Parties should explain in their biennial reports how they define funds as being climate-specific.

^f Please specify.

^g This refers to funding for activities that are cross-cutting across mitigation and adaptation.

Custom Footnotes

(1) Domestic currency is EUR. 1 USD = EUR 0.8933 (2019), 1 USD = EUR 0.8775 (2020)

(2) Other multilateral climate change funds (2019): Includes disbursement of 0.5 million EUR / 0.5 million EUR climate specific, NEFCO, recipient country Ukraine

(3) Other multilateral climate change funds (2020): Includes disbursement of 0.5 million EUR / 0.5 million EUR climate specific, NEFCO, recipient country Ukraine

(4) European Bank for Reconstruction and Development (2020): Includes disbursement of 1 million EUR / 0.9 million EUR climate specific, ERBD, partly recipient country Ukraine

Table 7(b)

FIN_BR5_v0.1

Provision of public financial support: contribution through bilateral, regional and other channels in 2019^a

| Recipient country/ region/project/programme ^b | Total amount | | Status ^{c, 3} | Funding source ^{g, 4} | Financial instrument ^{g, 5} | Type of support ^{g, h, 6} | Sector ^{d, g, 7} | Additional information ^e |
|---|----------------------------------|---------------|------------------------|--------------------------------|--------------------------------------|------------------------------------|---------------------------|-------------------------------------|
| | Climate-specific ^{f, 2} | | | | | | | |
| | European euro - EUR | USD | | | | | | |
| Total contributions through bilateral, regional and other channels (1) (2) | 34,512,471.00 | 38,634,800.00 | | | | | | |
| Sierra Leone / ODA equity through Finnfund | 9,889,722.00 | 11,070,997.00 | Disbursed | | Equity | Cross-cutting | Other (capacity Building) | |
| Serbia / ODA equity through Finnfund | 7,904,000.00 | 8,848,091.00 | Disbursed | | Equity | Mitigation | Energy | |
| Nepal / ODA equity through Finnfund | 1,672,740.00 | 1,872,540.00 | Disbursed | | Equity | Cross-cutting | Energy | |
| Asia, regional / Energy and Environment Partnership Programme with the Mekong Region | 1,658,030.00 | 1,856,072.00 | Disbursed | | Grant | Mitigation | Energy | |
| Viet Nam / Uppgrading the Rainfall Storm and Lightening Detection Capabilities of National Hydro-Meteorological Service | 1,456,458.00 | 1,630,424.00 | Disbursed | | Other (Interest Subsidy) | Adaptation | Other (capacity Building) | |
| Tanzania / Forestry and Value Chains Development FORVAC | 987,680.00 | 1,105,653.00 | Disbursed | | Grant | Cross-cutting | Forestry | |
| Africa / Africa, regional / ODA equity through Finnfund | 904,514.00 | 1,012,553.00 | Disbursed | | Equity | Mitigation | Other (capacity Building) | |
| Africa / Africa, regional / ODA equity through Finnfund | 841,324.00 | 941,815.00 | Disbursed | Oda | Equity | Cross-cutting | Forestry | |
| Nepal / Rural Village Water Resources Management Project (III phase) | 767,068.00 | 858,690.00 | Disbursed | | Grant | Cross-cutting | Water And Sanitation | |
| Honduras / HN/Rural Electrification project ESSE-FN-2008 | 475,781.00 | 532,610.00 | Disbursed | | Other (Interest Subsidy) | Adaptation | Energy | |
| Asia, regional / ODA equity through Finnfund | 427,154.00 | 478,175.00 | Disbursed | | Equity | Cross-cutting | Forestry | |
| / Other bilateral climate change related programs | 7,528,000.00 | 8,427,180.00 | Disbursed | Oda | Grant | Cross-cutting | Cross-cutting | |

Abbreviations: ODA = official development assistance, OOF = other official flows; USD = United States dollars.

^a Parties should fill in a separate table for each year, namely 2015 and 2016, where 2018 is the reporting year.

^b Parties should report, to the extent possible, on details contained in this table.

^c Parties should explain, in their biennial reports, the methodologies used to specify the funds as disbursed and committed.

Parties will provide the information for as many status categories as appropriate in the following order of priority: disbursed and committed.

^d Parties may select several applicable sectors. Parties may report sectoral distribution, as applicable, under "Other".

^e Parties should report, as appropriate, on project details and the implementing agency.

^f Parties should explain in their biennial reports how they define funds as being climate-specific.

^g Please specify.

^h This refers to funding for activities that are cross-cutting across mitigation and adaptation.

Custom Footnotes

(1) Domestic currency is EUR. 1 USD = EUR 0.8933 (2019), 1 USD = EUR 0.8775 (2020)

(2) Domestic currency is EUR. 1 USD = EUR 0.8933 (2019), 1 USD = EUR 0.8775 (2020)

Table 7(b)

FIN_BR5_v0.1

Provision of public financial support: contribution through bilateral, regional and other channels in 2020^a

| Recipient country/ region/project/programme ^b | Total amount | | Status ^{c, 3} | Funding source ^{g, 4} | Financial instrument ^{g, 5} | Type of support ^{g, h, 6} | Sector ^{d, g, 7} | Additional information ^e |
|--|----------------------------------|---------------|------------------------|-----------------------------------|---|---------------------------------------|------------------------------|--|
| | Climate-specific ^{f, 2} | | | | | | | |
| | European euro - EUR | USD | | | | | | |
| Total contributions through bilateral, regional and other channels | 40,349,394.00 | 45,982,217.00 | | | | | | |
| Africa / Africa, regional / Finnfund | 19,289,605.00 | 21,982,456.00 | Disbursed | Oda | Equity | Mitigation | Other (capacity Building) | |
| Africa / Africa, regional / Finnfund | 6,009,967.00 | 6,848,965.00 | Disbursed | Oda | Equity | Mitigation | Forestry | |
| Asia, regional / Finnfund | 1,188,380.00 | 1,354,280.00 | Disbursed | | Equity | Adaptation | Other (capacity Building) | |
| Myanmar / Finnfund | 1,169,864.00 | 1,333,178.00 | Disbursed | | Equity | Adaptation | Other (capacity Building) | |
| India / Finnfund | 1,000,000.00 | 1,139,601.00 | Disbursed | | Equity | Mitigation | Energy/transport | |
| Tanzania / The Ministry of Finance and Economic Affairs of Tanzania | 931,662.00 | 1,061,724.00 | Disbursed | | Grant | Cross-cutting | Forestry | |
| Ethiopia / Recipient Government | 760,000.00 | 866,096.00 | Disbursed | | Grant | Adaptation | Water And Sanitation | |
| Nepal / Other implementers | 716,168.00 | 816,146.00 | Disbursed | | Grant | Cross-cutting | Water And Sanitation | |
| Developing countries, unspecified / Finnfund | 690,741.00 | 787,170.00 | Disbursed | | Equity | Mitigation | Other (capacity Building) | |
| Tanzania / Other implementers | 530,303.00 | 604,334.00 | Disbursed | | Grant | Cross-cutting | Forestry | |
| Africa / Africa, regional / Finnfund | 381,498.00 | 434,756.00 | Disbursed | Oda | Equity | Cross-cutting | Forestry | |
| Zambia / Other implementers | 334,466.00 | 381,157.00 | Disbursed | | Grant | Cross-cutting | Agriculture | |
| Honduras / Other implementers | 326,754.00 | 372,370.00 | Disbursed | | Other (Interest Subsidy) | Adaptation | Energy | |
| Viet Nam / Recipient Government | 279,555.00 | 318,581.00 | Disbursed | | Other (Interest Subsidy) | Adaptation | Other (capacity Building) | |
| Ethiopia / F.a: Towards Resilient Communities | 275,923.00 | 314,442.00 | Disbursed | | Grant | Adaptation | Water And Sanitation | |
| / Other bilateral climate change related programs | 6,464,508.00 | 7,366,961.00 | Disbursed | Oda | Grant | Cross-cutting | Cross-cutting | |

Abbreviations: ODA = official development assistance, OOF = other official flows; USD = United States dollars.

^a Parties should fill in a separate table for each year, namely 2015 and 2016, where 2018 is the reporting year.

^b Parties should report, to the extent possible, on details contained in this table.

^c Parties should explain, in their biennial reports, the methodologies used to specify the funds as disbursed and committed. Parties will provide the information for as many status categories as appropriate in the following order of priority: disbursed and committed.

^d Parties may select several applicable sectors. Parties may report sectoral distribution, as applicable, under "Other".

^e Parties should report, as appropriate, on project details and the implementing agency.

^f Parties should explain in their biennial reports how they define funds as being climate-specific.

^g Please specify.

^h This refers to funding for activities that are cross-cutting across mitigation and adaptation.

Custom Footnotes

(1) Domestic currency is EUR. 1 USD = EUR 0.8933 (2019), 1 USD = EUR 0.8775 (2020)

(2) Domestic currency is EUR. 1 USD = EUR 0.8933 (2019), 1 USD = EUR 0.8775 (2020)

Table 8

Provision of technology development and transfer support^{a,b}

| <i>Recipient country and/or region</i> | <i>Targeted area</i> | <i>Measures and activities related to technology transfer</i> | <i>Sector^c</i> | <i>Source of the funding for technology transfer</i> | <i>Activities undertaken by</i> | <i>Status</i> | <i>Additional information^d</i> |
|---|---------------------------|---|--|--|---------------------------------|---------------|--|
| All regions: LDC, LIC & LMIC countries | Mitigation | Bilateral blended finance trust fund that invests equity and provides concessional loans to private sector climate mitigation projects that would not take place without slightly softer financial terms. Investments are targeted at LDC, LIC & LMIC countries. Technology providers and implementers of the project typically from elsewhere, bringing to these countries technology that is not there yet. | Energy | Public | Private | Implemented | Finland-IFC Blended Finance Climate Program, which channels government funds for equity, mezzanine and loan based investments for private sector renewable energy and energy efficiency projects. Some projects are implementation, while others are still planned. |
| All regions: mainly LDC, LIC & LMIC countries | Mitigation and Adaptation | Finland's national DFI is tasked to target minimum 50% of its annual new investments in climate mitigation and adaptation projects. Investments are mainly targeted at LDC, LIC & LMIC countries. Technology providers and implementers of the project typically from elsewhere, bringing to these countries technology that is not there yet. | Energy, Transport, Agriculture, Other (Forestry) | Public | Private | Implemented | Finnfund's climate investments are government funds used for equity, mezzanine and loan based investments to renewable energy, energy efficiency, forestry, agriculture, and transport sector projects. Activities ongoing, ie. Some projects implemented, others planned. |
| Viet Nam | Adaptation | Upgrade of the weather radar observation network, establishment of lightning detection network, installation and commissioning of the meteorological data visualization and automated forecast production system Smartmet which is an open source software developed by the Finnish Meteorological Institute (FMI). | Other (Meteorology) | Public | Private and Public | Implemented | The technology is provided by the Vaisala corporation, world's leading company for weather observation technology and products. The transfer of technology has been accompanied by comprehensive capacity building by the FMI. |
| ODA countries in Africa and Asia | Adaptation | Installation and/or commissioning of the meteorological data visualization and automated forecast production system SmartMet which is an open source software developed by the Finnish Meteorological Institute (FMI). | Other (Meteorology) | Public | Public | Implemented | The transfer of technology has been a part of the capacity building projects implemented by the FMI. Please see Table 9 as well Section 8.4 for the list of projects. Some projects on-going, some completed |
| ODA countries in Asia and the Pacific | Mitigation and Adaptation | Equity investments to start-ups and growth companies that create new technology and/or transfer new types of technological solutions to ODA recipient countries in Asia and the Pacific. 80% of the investments are done for climate tech (mitigation and adaptation) | Energy | Public | Private | Planned | Originally government funds, used for equity investments for start-up and growth companies through the ADB Ventures Investment Fund 1, in sectors such as renewable energy, energy efficiency, other cleantech and climatetech. |

^a To be reported to the extent possible.^b The tables should include measures and activities since the last national communication or biennial report.^c Parties may report sectoral disaggregation, as appropriate.^d Additional information may include, for example, funding for technology development and transfer provided, a short description of the measure or activity and co-financing arrangements.**Custom Footnotes**

Table 9

Provision of capacity-building support^a

| <i>Recipient country/region</i> | <i>Targeted area</i> | <i>Programme or project title</i> | <i>Description of programme or project^{b,c}</i> |
|---------------------------------|----------------------|---|--|
| Sudan and South Sudan | Adaptation | Promoting Adaptation to Climate Change by Reducing Weather and Climate-Related Losses through Improved Services in Sudan and South Sudan | Institutional cooperation between the Finnish Meteorological Institute (FMI) and Sudan Meteorological Authority (SMA) and South Sudan Meteorological Department (SSMD) |
| Kyrgyzstan | Adaptation | Capacity Building in the Field of Meteorology, Finnish-Kyrgyzstan Meteorology Project | Institutional cooperation between the Finnish Meteorological Institute (FMI) and The Agency on hydrometeorology under the State Committee on Ecology and Climate of the Kyrgyz Republic (Kyrgyzhydromet) |
| Tajikistan | Adaptation | Capacity Building in the Field of Meteorology, Finnish-Tajikistan Meteorology Project | Institutional cooperation between the Finnish Meteorological Institute (FMI) and The Agency on Hydrometeorology of the Committee of Environment Protection under the Government of the Republic of Tajikistan (Tajikhydromet) |
| Nepal | Adaptation | Finnish-Nepalese Project for Improved Capability of the Government of Nepal to Respond to the Increased Risks Related to the Weather-related Natural Disasters Caused by Climate Change | Institutional cooperation between the Finnish Meteorological Institute (FMI) and Department of Meteorology and Hydrology (DHM) in Nepal |
| Viet Nam | Adaptation | Managed Aquifer Recharge to Ensure Sustainable Groundwater Availability and Quality under Ongoing Climate Change and Fast Economic Development in Vietnam | Institutional cooperation between the Geological Survey of Finland (GTK) and The Sub-Institute of HydroMeteorology and Climate Change (SIHYMECC) and the Center for Water Resources Warning and Forecast (CEWAFO) |
| Mozambique | Multiple Areas | Capacity building on novel approaches in sustainable management of forest and wood resources in Mozambique | Institutional cooperation between the Natural Resources Institute Finland (LUKE) and the Agrarian Research Institute of Mozambique (IIAM), Agrarian Research Institute of Mozambique (IIAM) and the Faculty of Agronomy and Forest Engineering of Eduardo Mondlane University (UEM-FAEF) |
| Viet Nam | Adaptation | Promoting the Modernisation of Hydrometeorological Services in Vietnam | Institutional cooperation between the Finnish Meteorological Institute (FMI) and Meteorological and Hydrological Administration of Viet Nam |
| Sudan | Adaptation | Improving the Adaptation to Climate Change by Enhancing Weather and Climate Services in | Institutional cooperation between the Finnish Meteorological Institute (FMI) and the Sudan Meteorological Authority |

^a To be reported to the extent possible.

^b Each Party included in Annex II to the Convention shall provide information, to the extent possible, on how it has provided capacity-building support that responds to the existing and emerging capacity-building needs identified by Parties not included in Annex I to the Convention in the areas of mitigation, adaptation and technology development and

^c Additional information may be provided on, for example, the measure or activity and co-financing arrangements.

Custom Footnotes

Complete list of projects in Chapter 8.4 of Finland's NC8. Please note that the Chapter 8.4. lists projects from 2017 to 2021.

Annex 3

Summary of reporting of the Supplementary information under Article 7, paragraph 2, of the Kyoto Protocol in the NC8

| Information reported under Article 7, paragraph 2 | NC8 section |
|--|-----------------------------|
| National system in accordance with Article 5, paragraph 1 | 3.3 |
| National registry | 3.4 |
| Supplementarity relating to the mechanisms pursuant to Article 6, 12 and 17 | 5.7 |
| Policies and measures in accordance with Article 2 | 4, 7 and 8 |
| Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures | 3.3, 3.4, 4.1 – 4.3 |
| Information under Article 10 | |
| Art 10a | 3.3, 8.2.4 |
| Art 10b | 4.4, 4.5, 6.6 and 6.4 |
| Art 10c | 7.6 |
| Art 10d | 4.9, 8.3, 8.4 |
| Art 10e | 6.7, 8.3, 8.4, 9.3 and 9.4. |
| Financial resources | 7 |

Annex 4

| Recommendation in FCCC/IDR.7/FIN | Finland's Response in NC8 | Where in NC8 |
|--|---|----------------|
| The ERT recommends that Finland provide in its next NC information regarding factors and activities [in the projections of GHG emission] for all sectors, including the assumptions for the forest industry and the renewable energy that it produces, to allow readers to gain a better understanding of the development trend by sector. | Finland has improved the transparency of reporting by providing information on factors and activities in the projections of greenhouse gas emissions for all sectors. | Sections 5.8.2 |

Working Groups

Chapters 4 and 5

| | |
|------------------------------|--|
| Bettina Lemström (Chair) | Ministry of Economic Affairs and Employment |
| Petri Hirvonen (Coordinator) | Ministry of Economic Affairs and Employment |
| Sini Niinistö (Coordinator) | Statistics Finland |
| Lotta Heikkonen | Ministry of Agriculture and Forestry |
| Milja Keskinen | |
| Birgitta Vainio-Mattila | |
| Johanna Vanhatalo | |
| Pia Kotro | Ministry of Economic Affairs and Employment |
| Outi Vilen | |
| Magnus Cederlöf | Ministry of the Environment |
| Antti Irjala | |
| Pekka Kalliomäki | |
| Jyrki Kauppinen | |
| Eeva Nurmi | |
| Hanne Siikavirta | |
| Riikka Siljander | |
| Kai Skoglund | |
| Juha-Pekka Majjala | |
| Olli-Pekka Pietiläinen | |
| Tuomas Laiho | Ministry of Finance |
| Tommi Forsberg | Finnish Environment Institute (SYKE) |
| Mikael Hilden | |
| Tarja Häkkinen | |
| Janne Pesu | |
| Jouko Petäjä | |
| Sara-Tuuli Siiskonen | |
| Torsti Alhava | Finnish Transport and Communications Agency Traficom |
| Katja Lohko-Soner | |
| Lea Gynther | Motiva |
| Ulla Suomi | |
| Heikki Lehtonen | Natural Resources Institute Finland (Luke) |
| Antti Miettinen | |
| Tarja Tuomainen | |

Chapter 6

| | |
|-----------------------------|---|
| Kirsi Mäkinen (Chair) | Ministry of Agriculture and Forestry |
| Sini Niinistö (Coordinator) | Statistics Finland |
| Lauri Ahopelto | Ministry of Agriculture and Forestry |
| Karoliina Pilli-Sihvola | Ministry of Agriculture and Forestry |
| Jaana Avolahti | Ministry of Economic Affairs and Employment |
| Heta-Elena Heiskanen | Ministry of the Environment |
| Antti Irjala | |
| Kaarle Kupiainen | |
| Juha-Pekka Majjala | |
| Saana Ahonen | Ministry for Foreign Affairs |
| Jari Honkanen | Ministry of the Interior |
| Jussi Korhonen | |

| | |
|--|---|
| Saara Jääskeläinen Noomi Saarinen | Ministry of Transport and Communications |
| Jussi Karhunen Johan Munck af Rosenschöld | Finance Finland Finnish Environment Institute (SYKE) |
| Virpi Kollanus Päivi Meriläinen | Finnish Institute for Health and Welfare |
| Sanna Luhtala Heikki Tuomenvirta | Finnish Meteorological Institute (FMI) |
| Markus Melin Pirjo Peltonen-Sainio | Natural Resources Institute Finland (Luke) |
| Marketta Hyvärinen Soile Knuuti | Finnish Transport Infrastructure Agency |

Chapter 7

| | |
|-------------------------------------|------------------------------|
| Saana Ahonen Outi Myatt-Hirvonen | Ministry for Foreign Affairs |
|-------------------------------------|------------------------------|

Chapter 8

| | |
|------------------------------|--|
| Heta-Elena Heiskanen (Chair) | Ministry of the Environment |
| Sini Niinistö (Coordinator) | Statistics Finland |
| Paavo-Petri Ahonen | Ministry of Education and Culture |
| Mikael Hilden | Finnish Environment Institute (SYKE) |
| Kaarle Kupiainen | Ministry of the Environment |
| Sanna Luhtala | Finnish Meteorological Institute (FMI) |
| Juha-Pekka Majjala | Ministry of the Environment |
| Outi Myatt-Hirvonen | Ministry for Foreign Affairs |
| Mikko Peltonen | Ministry of Agriculture and Forestry |
| Marjaana Suorsa | Ministry of Agriculture and Forestry |
| Pilvi Toppinen | Academy of Finland |
| Heikki Tuomenvirta | Finnish Meteorological Institute (FMI) |

Chapter 9

| | |
|----------------------------|---|
| Paavo-Petri Ahonen (Chair) | Ministry of Education and Culture |
| Pia Forsell (Coordinator) | Statistics Finland |
| Kirsi-Maaria Forssell | Motiva |
| Heta-Elena Heiskanen | Ministry of the Environment |
| Katja Hiiska-Keinänen | Finnish Environment Institute (SYKE) |
| Virpi Komulainen | Ministry of the Environment |
| Laura Kotila | Ministry of the Environment |
| Anne Liimatainen | Finnish National Agency for Education |
| Sanna Luhtala | Finnish Meteorological Institute (FMI) |
| Irmeli Mikkonen | Motiva |
| Kirsi Norros | Finnish Environment Institute (SYKE) |
| Heikki Tuomenvirta | Finnish Meteorological Institute (FMI) |
| Tanja Tuulinen | Center for Economic Development, Transport and the Environment |

Members of the working groups contributed also to the chapters outside the focus of their own working group.

Contributors

In addition to members of the Committee for Preparing the Eight National Communication and working groups, following experts participated in the preparation of the national communication:

Alho, Jussi, Academy of Finland
Auranen, Eija, Business Finland
Auvinen, Veli, Ministry of Finance Finland
Carter, Tim, Finnish Environment Institute
Eerikäinen, Matti, Finnish Meteorological Institute
Espo, Juha, Statistics Finland
Forsius, Martin, Finnish Environment Institute
Forström, Laura, Academy of Finland
Fronzek, Stefan, Finnish Environment Institute
Frey, Anna, Finnish Meteorological Institute
Grönfors, Kari, Statistics Finland
Gummerus-Rautiainen, Päivi, Ministry of the Environment
Haakana, Markus, Natural Resources Institute Finland
Hakala, Jasper, Ministry for Foreign Affairs
Hakapää, Jyrki, Academy of Finland
Hassinen, Anu, Ministry for Foreign Affairs
Heiskanen, Anna-Stiina, Finnish Environment Institute
Helama, Samuli, Natural Resources Institute Finland
Helminen, Ville, Finnish Environment Institute
Herronen, Vilma, Statistics Finland
Honkatukia, Outi, Ministry of the Environment
Huttunen, Marika, Ministry of Agriculture and Forestry
Hyvärinen, Antti-Pekka, Finnish Meteorological Institute
Ihantola, Majja, The Finnish Association of Nature and Environment Schools
Jaakkola, Minttu, Nessling Foundation
Jalonen, Pauliina, Association of Finnish Municipalities
Jokinen, Pauli, Finnish Meteorological Institute
Jorri, Eeva-Liisa, Ministry of Agriculture and Forestry
Järvinen, Joel, Ministry of Agriculture and Forestry
Kallasvuo, Meri, Natural Resources Institute Finland
Karjalainen, Heli, Business Finland
Kaukolehto, Marjut, Academy of Finland
Keränen, Inka, Ministry of the Environment
Kokkonen, Matti, Statistics Finland
Koponen, Virpi, Business Finland
Korhonen, Marja-Riitta, Ministry of the Environment
Kuusisto, Tapio, Statistics Finland
Lanki, Timo, Finnish Institute for Health and Welfare (THL),
University of Eastern Finland (UEF)
Lahtinen, Sami, Statistics Finland
Lappalainen, Hanna, Institute for Atmospheric
and Earth System Research (INAR), University of Helsinki
Lehtiniemi, Maiju, Finnish Environment Institute
Lehtonen, Ilari, Finnish Meteorological Institute
Leino, Irene, Ministry for Foreign Affairs
Leskinen, Paula, Academy of Finland
Lindh, Päivi, Statistics Finland
Lohila, Annalea, Finnish Meteorological Institute
Luomaniemi, Virve, Statistics Finland
Lång, Kristiina, Natural Resources Institute Finland
Maljanen, Ville, Statistics Finland
Markkanen, Johanna, VTT Technical Research Centre of Finland
Mero, Petri, Finance Finland
Mikkilä, Ari, Business Finland
Mikkonen, Tuija, Ministry of the Environment

Niemivuo-Lahti, Johanna, Ministry of Agriculture and Forestry
Niininen, Minna, Statistics Finland
Nordberg, Juhana, Statistics Finland
Nummelin, Marjo, Ministry of the Environment
Ojala, Antti, University of Turku
Paananen, Antti, Energy Authority
Parry, Maaria, Helsinki Region Environmental Services Authority
Partala, Anneli, Natural Resources Institute Finland
Peltoniemi, Ismo, Academy of Finland
Perrels, Adriaan, Finnish Meteorological Institute
Petäjä, Tuukka, University of Helsinki
Pirkola, Kaisa, Ministry of Agriculture and Forestry
Pirttioja, Nina, Finnish Environment Institute
Pritsi, Kati, Finnish Environment Institute
Pynnönen, Esa, Ministry of the Environment
Raijas, Meri, Statistics Finland
Rantanen, Mika, Finnish Meteorological Institute
Rapo, Markus, Statistics Finland
Redsven, Mona, Finance Finland
Rehunen, Antti, Finnish Environment Institute
Riuttanen, Laura, Institute for Atmospheric and Earth System Research (INAR),
University of Helsinki
Romakkaniemi, Sami, Finnish Meteorological Institute
Ronkainen, Mika, Statistics Finland
Roos, Jaana, Academy of Finland
Rouhiainen, Virve, Statistics Finland
Ruosteenoja, Kimmo, Finnish Meteorological Institute
Ryynänen, Kaisa, Finnish Meteorological Institute
Saren, Helena, Business Finland
Sevon, Tiina, Statistics Finland
Silfver, Tarja, Natural Resources Institute Finland
Sirviö, Tapani, Ministry of Agriculture and Forestry
Sjöstedt, Tuula, Sitra
Sojamo, Suvi, Finnish Environment Institute
Sorvali, Jaana, Natural Resources Institute Finland
Strahlendorff, Mikko, Finnish Meteorological Institute
Strand, Kari, University of Oulu
Suni, Tanja, Ministry of the Environment
Taajamaa, Laura, Academy of Finland
The Self-Government Body of the Sámi
Tirkkonen, Juhani, Ministry for Foreign Affairs
Torniainen, Tatu, Ministry of Agriculture and Forestry
Tulonen, Eetu, Ministry for Foreign Affairs
Tuomi, Laura, Finnish Meteorological Institute
Törnroos, Tea, Finnish Environment Institute
Uitto, Paula, Energy Authority
Uusikivi, Jari, Finnish Environment Institute
Uutela, Marko, Academy of Finland
Vanholm, Steven, Finnish Association for Nature Conservation
Veijalainen, Noora, Finnish Environment Institute
Vikfors, Sofia, Natural Resources Institute Finland
Virtanen, Katriina, Pirkanmaa Centre for Economic Development,
Transport and the Environment
Virtanen, Tia-Maria, Ministry of Agriculture and Forestry
Voutilainen, Venla, Finance Finland
Weaver, Sally, University of Helsinki, the Finnish Climate Change Panel
Weckström, Jan B., University of Helsinki
Ylikangas, Mikko, Academy of Finland



Ympäristöministeriö
Miljöministeriet
Ministry of the Environment

Ministry of the Environment
PO Box 35,
FI-00023 GOVERNMENT,
FINLAND

Statistics Finland 

Statistics Finland
PO Box 3C,
FI-00022 Statistics Finland,
FINLAND

ISBN 978-952-244-707-4 (pdf)