**Full list of layers:**

* Atmospheric deposition:

Map\_01 Nutrient-N emissions to surface water from atmospheric deposition per River Basin District Subunit (kg/ha)

Map\_02 Cadmium emissions to surface water from atmospheric deposition per River Basin District Subunit (kg/ha )

Map\_03 Lead emissions to surface water from atmospheric deposition per River Basin District Subunit (kg/ha)

Map\_04 Mercury emissions to surface water from atmospheric deposition per River Basin District Subunit (kg/ha)

* Agriculture

Map\_05 Nutrient-P emissions to surface water from agriculture per River Basin District Subunit (kg/ha)

Map\_06 Nutrient-N emissions to surface water from agriculture per River Basin District Subunit (kg/ha)

* Transport

Map\_07 Cadmium emissions to surface water from road transport per River Basin District Subunit (kg/ha)

Map\_08 Lead emissions to surface water from road transport per River Basin District Subunit (kg/ha)

Map\_09 Nickel emissions to surface water from road transport per River Basin District Subunit (kg/ha)

Map\_10 Anthracene emissions to surface water from road transport per River Basin District Subunit (kg/ha)

Map\_11 Fluoranthene emissions to surface water from road transport per River Basin District Subunit (kg/ha)

Map\_12 Copper emissions to surface water from road transport per River Basin District Subunit (kg/ha)

Map\_13 Zinc emissions to surface water from road transport per River Basin District Subunit (kg/ha)

* UWWTPs not in E-PRTR

Map\_14 TOC emissions to surface water from UWWTPs not in E-PRTR per River Basin District Subunit (kg/ha)

Map\_15 Nutrient-P emissions to surface water from UWWTPs not in E-PRTR per River Basin District Subunit (kg/ha)

Map\_16 Nutrient-N emissions to surface water from UWWTPs not in E-PRTR per River Basin District Subunit (kg/ha)

Map\_17 Cadmium emissions to surface water from UWWTPs not in E-PRTR per River Basin District Subunit (kg/ha)

Map\_18 Lead emissions to surface water from UWWTPs not in E-PRTR per River Basin District Subunit (kg/ha)

Map\_19 Mercury emissions to surface water from UWWTPs not in E-PRTR per River Basin District Subunit (kg/ha)

Map\_20 Nickel emissions to surface water from UWWTPs not in E-PRTR per River Basin District Subunit (kg/ha)

Map\_21 Anthracene emissions to surface water from UWWTPs not in E-PRTR per River Basin District Subunit (kg/ha)

Map\_22 Fluoranthene emissions to surface water from UWWTPs not in E-PRTR per River Basin District Subunit (kg/ha)

Map\_23 Copper emissions to surface water from UWWTPs not in E-PRTR per River Basin District Subunit (kg/ha)

Map\_24 Zinc emissions to surface water from UWWTPs not in E-PRTR per River Basin District Subunit (kg/ha)

* Un-connected households

Map\_25 TOC emissions to surface water from un-connected households per River Basin District Subunit (kg/ha)

Map\_26 Nutrient-P emissions to surface water from un-connected households per River Basin District Subunit (kg/ha)

Map\_27 Nutrient-N emissions to surface water from un-connected households per River Basin District Subunit (kg/ha)

Map\_28 Cadmium emissions to surface water from un-connected households per River Basin District Subunit (kg/ha)

Map\_29 Lead emissions to surface water from un-connected households per River Basin District Subunit (kg/ha)

Map\_30 Mercury emissions to surface water from un-connected households per River Basin District Subunit (kg/ha)

Map\_31 Nickel emissions to surface water from un-connected households per River Basin District Subunit (kg/ha)

Map\_32 Anthracene emissions to surface water from un-connected households per River Basin District Subunit (kg/ha)

Map\_33 Fluoranthene emissions to surface water from un-connected households per River Basin District Subunit (kg/ha)

Map\_34 Copper emissions to surface water from un-connected households per River Basin District Subunit (kg/ha)

Map\_35 Zinc emissions to surface water from un-connected households per River Basin District Subunit (kg/ha)

* Inland navigation

Map\_36 TOC emissions to surface water from inland navigation per River Basin District Subunit (kg/ha)

Map\_37 Nutrient-P emissions to surface water from inland navigation per River Basin District Subunit (kg/ha)

Map\_38 Nutrient-N emissions to surface water from inland navigation per River Basin District Subunit (kg/ha)

Map\_39 Anthracene emissions to surface water from inland navigation per River Basin District Subunit (kg/ha)

Map\_40 Fluoranthene emissions to surface water from inland navigation per River Basin District Subunit (kg/ha)

**Full overview of all layers:**

1. **Atmospheric deposition**

* Map\_01 Nutrient-N emissions from atmospheric deposition (kg/ha surface water RBDSU)

The map shows Nutrient-N emissions to surface water from atmospheric deposition per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of Nutrient-N are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_02 Cadmium emissions from atmospheric deposition (kg/ha surface water RBDSU)

The map shows cadmium emissions to surface water from atmospheric deposition per River Basin District Subunit (RBDSU) level for the reference year 2009, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of cadmium are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_03 Lead emissions from atmospheric deposition (kg/ha surface water RBDSU)

The map shows lead emissions to surface water from atmospheric deposition per River Basin District Subunit (RBDSU) level for the reference year 2009, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of lead are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_04 Mercury emissions from atmospheric deposition (kg/ha surface water RBDSU)

The map shows mercury emissions to surface water from atmospheric deposition per River Basin District Subunit (RBDSU) level for the reference year 2009, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of mercury are expressed in load to surface water (kg/ha) per RBDSU.

1. **Agriculture**

* Map\_05 Nutrient-P emissions from agriculture (kg/ha surface water RBDSU)

The map shows Nutrient-P emissions to surface water from agriculture per River Basin District Subunit (RBDSU) level for the reference year 2005, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of Nutrient-P are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_06 Nutrient-N emissions from agriculture (kg/ha surface water RBDSU)

The map shows Nutrient-N emissions to surface water from agriculture per River Basin District Subunit (RBDSU) level for the reference year 2005, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of Nutrient-N are expressed in load to surface water (kg/ha) per RBDSU.

1. **Transport**

* Map\_07 Cadmium emissions from road transport (kg/ha surface water RBDSU)

The map shows the cadmium emissions to surface water from road transport per RBDSU for the year 2005, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of cadmium are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_08 Lead emissions from road transport (kg/ha surface water RBDSU)

The map shows the lead emissions to surface water from road transport per RBDSU for the year 2005, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of lead are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_09 Nickel emissions from road transport (kg/ha surface water RBDSU)

The map shows the nickel emissions to surface water from road transport per RBDSU for the year 2005, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of nickel are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_10 Anthracene emissions from road transport (kg/ha surface water RBDSU)

The map shows the anthracene emissions to surface water from road transport per RBDSU for the year 2005, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of anthracene are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_11 Fluoranthene emissions from road transport (kg/ha surface water RBDSU)

The map shows the fluoranthene emissions to surface water from road transport per RBDSU for the year 2005, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of fluoranthene are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_12 Copper emissions from road transport (kg/ha surface water RBDSU)

The map shows the copper emissions to surface water from road transport per RBDSU for the year 2005, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of copper are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_13 Zinc emissions from road transport (kg/ha surface water RBDSU)

The map shows the zinc emissions to surface water from road transport per RBDSU for the year 2005, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of zinc are expressed in load to surface water (kg/ha) per RBDSU.

1. **UWWTPs not in E-PRTR**

* Map\_14 TOC emissions from UWWTPs not in E-PRTR (kg/ha surface water RBDSU)

The map shows TOC emissions to surface water from UWWTPs per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of TOC are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_15 Nutrient-P emissions from UWWTPs not in E-PRTR (kg/ha surface water RBDSU)

The map shows Nutrient-P emissions to surface water from UWWTPs per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of Nutrient-P are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_16 Nutrient-N emissions from UWWTPs not in E-PRTR (kg/ha surface water RBDSU)

The map shows Nutrient-N emissions to surface water from UWWTPs per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of Nutrient-N are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_17 Cadmium emissions from UWWTPs not in E-PRTR (kg/ha surface water RBDSU)

The map shows cadmium emissions to surface water from UWWTPs per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of cadmium are expressed in load to surface water (kg/ha ) per RBDSU.

* Map\_18 Lead emissions from UWWTPs not in E-PRTR (kg/ha surface water RBDSU)

The map shows lead emissions to surface water from UWWTPs per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of lead are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_19 Mercury emissions from UWWTPs not in E-PRTR (kg/ha surface water RBDSU)

The map shows mercury emissions to surface water from UWWTPs per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of mercury are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_20 Nickel emissions from UWWTPs not in E-PRTR (kg/ha surface water RBDSU)

The map shows nickel emissions to surface water from UWWTPs per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of nickel are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_21 Anthracene emissions from UWWTPs not in E-PRTR (kg/ha surface water RBDSU)

The map shows anthracene emissions to surface water from UWWTPs countries per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of anthracene are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_22 Fluoranthene emissions from UWWTPs not in E-PRTR (kg/ha surface water RBDSU)

The map shows fluoranthene emissions to surface water from UWWTPs countries per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of fluoranthene are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_23 Copper emissions from UWWTPs not in E-PRTR (kg/ha surface water RBDSU)

The map shows copper emissions to surface water from UWWTPs per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of copper are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_24 Zinc emissions from UWWTPs not in E-PRTR (kg/ha surface water RBDSU)

The map shows zinc emissions to surface water from UWWTPs per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of zinc are expressed in load to surface water (kg/ha) per RBDSU.

1. **Un-connected households**

* Map\_25 TOC emissions from un-connected households (kg/ha surface water RBDSU)

The map shows TOC emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of TOC are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_26 Nutrient-P emissions from un-connected households (kg/ha surface water RBDSU)

The map shows nutrient-P emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of nutrient-P are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_27 Nutrient-N emissions from un-connected households (kg/ha surface water RBDSU)

The map shows nutrient-N emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of nutrient-N are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_28 Cadmium emissions from un-connected households (kg/ha surface water RBDSU)

The map shows cadmium emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of cadmium are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_29 Lead emissions from un-connected households (kg/ha surface water RBDSU)

The map shows lead emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of lead are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_30 Mercury emissions from un-connected households (kg/ha surface water RBDSU)

The map shows mercury emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of mercury are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_31 Nickel emissions from un-connected households (kg/ha surface water RBDSU)

The map shows nickel emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of nickel are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_32 Anthracene emissions from un-connected households (kg/ha surface water RBDSU)

The map shows anthracene emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of anthracene are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_33 Fluoranthene emissions from un-connected households (kg/ha surface water RBDSU)

The map shows fluoranthene emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of fluoranthene are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_34 Copper emissions from un-connected households (kg/ha surface water RBDSU)

The map shows copper emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of copper are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_35 Zinc emissions from un-connected households (kg/ha surface water RBDSU)

The map shows zinc emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of zinc are expressed in load to surface water (kg/ha) per RBDSU.

1. **Inland navigation**

* Map\_36 TOC emissions from inland navigation (kg/ha surface water RBDSU)

The map shows TOC emissions to surface water from inland navigation per River Basin District Subunit (RBDSU) level for the reference year 2011, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of TOC are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_37 Nutrient-P emissions from inland navigation (kg/ha surface water RBDSU)

The map shows copper emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of copper are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_38 Nutrient-N emissions from inland navigation (kg/ha surface water RBDSU)

The map shows nutrient-N emissions to surface water from inland navigation per River Basin District Subunit (RBDSU) level for the reference year 2011, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of nutrient-N are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_39 Anthracene emissions from inland navigation (kg/ha surface water RBDSU)

The map shows anthracene emissions to surface water from inland navigation per River Basin District Subunit (RBDSU) level for the reference year 2011, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of anthracene are expressed in load to surface water (kg/ha) per RBDSU.

* Map\_40 Fluoranthene emissions from inland navigation (kg/ha surface water RBDSU)

The map shows fluoranthene emissions to surface water from inland navigation per River Basin District Subunit (RBDSU) level for the reference year 2011, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of fluoranthene are expressed in load to surface water (kg/ha) per RBDSU.

**Full overview of the layers with additional information about**

1. **Atmospheric deposition:**

Map\_01 Nutrient-N emissions from atmospheric deposition (kg/ha )

For each map some back-ground information should be provided. The structure of that back-ground information is the same for all the maps and will be restructured in the following bullet points:

1. **General information**

The map shows Nutrient-N emissions to surface water from atmospheric deposition per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of Nutrient-N are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

The emissions per River Basin District Subunit area were calculated using following steps:

For this study, the EMEP 50km x 50km grids where intersected with the River Basin

District Subunits (RBDSUs) using different GIS functionalities. Based on the available input data from EMEP, for each RBDSU, the total flux was calculated.

Calculation of the surface water area shares per RBDSU, where the surface is divided in a surface of water and not water (paved and unpaved) areas. The spatial data required for this purpose are described in section “spatial allocation”.

Calculation of the emission fluxes to the surface water per RBDSU based on the total

EMEP fluxes per RBDSU (step 1) and the percentage of water surface (step 2) in the specific RBDSU.

Emission per RBDSU = Flux\_RBDSU x Share\_surface\_water\_RBDSU

1. **Source data**

Diffuse emissions of Nutrient-N to surface water from atmospheric deposition were spatially allocated to the RBDSU level based on the gridded data on atmospheric deposition available from the Precipitation Chemistry Database of the Co-operative Programme for the Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe ([EMEP](http://www.emep.int/)) and CORINE Land Cover data. The diffuse Nutrient-N emissions were allocated to the RBDSU spatial level using GIS overlaying and visualization techniques. The used data are based on the EMEP Unified model revision 1.7, 50 km grid.

The data used is described and available on the [EMEP (MSC-W modelled air concentrations and depositions)](http://webdab.emep.int/Unified_Model_Results/) website.

Emissions data

Nutrient-N emissions to surface water from atmospheric deposition for the year 2010 are based on gridded data sets available from the Precipitation Chemistry Database of the Co-operative Programme for the Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe ([EMEP](http://www.emep.int/)).

The methodology applied and data used is described on the [EMEP (MSC-W modelled air concentrations and depositions)](http://webdab.emep.int/Unified_Model_Results/) website.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) ([CLC2006](file:///E:\01_Projekte\08_E_PRTR_Water_diffuse\07_Map_descriptions_Water_Diffus_\05_UWWTP_Deposition\00_Example_Map_Description_EPRTR_AIR_Diffuse\shipping\51eb60177a093293c7751a0006117203), [CLC2000](file:///E:\01_Projekte\08_E_PRTR_Water_diffuse\07_Map_descriptions_Water_Diffus_\05_UWWTP_Deposition\00_Example_Map_Description_EPRTR_AIR_Diffuse\shipping\4d6428fbdb7f3041963b1fb365a5fbdb) and [CLCCH1990 for Switzerland](http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung/corine_land_cover.parsys.0003.downloadList.34866.DownloadFile.tmp/clcbn85.zip)) are merged in order to cover all EU27 and EFTA4 countries and to calculate the surface water areas by RBDSU.

Map\_02 Cadmium emissions from atmospheric deposition (kg/ha)

1. **General information**

The map shows cadmium emissions to surface water from atmospheric deposition per River Basin District Subunit (RBDSU) level for the reference year 2009, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of cadmium are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

The emissions per River Basin District Subunit area were calculated using following steps:

For this study, the EMEP 50km x 50km grids where intersected with the River Basin

District Subunits (RBDSUs) using different GIS functionalities. Based on the available input data from EMEP, for each RBDSU, the total flux was calculated.

Calculation of the surface water area shares per RBDSU, where the surface is divided in a surface of water and not water (paved and unpaved) areas. The spatial data required for this purpose are described in section “spatial allocation”.

Calculation of the emission fluxes to the surface water per RBDSU based on the total

EMEP fluxes per RBDSU (step 1) and the percentage of water surface (step 2) in the specific RBDSU.

Emission per RBDSU = Flux\_RBDSU x Share\_surface\_water\_RBDSU

1. **Source data**

Diffuse emissions of cadmium to surface water from atmospheric deposition were spatially allocated to the RBDSU level based on the gridded data on atmospheric deposition available from the Precipitation Chemistry Database of the Co-operative Programme for the Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe ([EMEP](http://www.emep.int/)) and CORINE Land Cover data. The diffuse cadmium emissions were allocated to the RBDSU spatial level using GIS overlaying and visualization techniques. The used data are based on the EMEP Unified model revision 1.7, 50 km grid and available from the [Meteorological Synthesizing Centre – East (MCS-E)](http://www.msceast.org/), one of the international research Centres of [EMEP](http://www.emep.int/).

Cadmium emissions to surface water from atmospheric deposition for the year 2009 are based on gridded data sets available [Meteorological Synthesizing Centre – East (MCS-E)](http://www.msceast.org/), one of the international research Centres of the Precipitation Chemistry Database of the Co-operative Programme for the Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe ([EMEP](http://www.emep.int/)).

The methodology applied and data used was made available by the [[Meteorological Synthesizing Centre – East (MCS-E)](http://www.msceast.org/)](http://webdab.emep.int/Unified_Model_Results/) website.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) ([CLC2006](../../05_UWWTP_Deposition/00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/51eb60177a093293c7751a0006117203), [CLC2000](../../05_UWWTP_Deposition/00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/4d6428fbdb7f3041963b1fb365a5fbdb) and [CLCCH1990 for Switzerland](http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung/corine_land_cover.parsys.0003.downloadList.34866.DownloadFile.tmp/clcbn85.zip)) are merged in order to cover all EU27 and EFTA4 countries and to calculate the surface water areas by RBDSU.

Map\_03 Lead emissions from atmospheric deposition (kg/ha)

1. **General information**

The map shows lead emissions to surface water from atmospheric deposition per River Basin District Subunit (RBDSU) level for the reference year 2009, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of lead are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

The emissions per River Basin District Subunit area were calculated using following steps:

For this study, the EMEP 50km x 50km grids where intersected with the River Basin

District Subunits (RBDSUs) using different GIS functionalities. Based on the available input data from EMEP, for each RBDSU, the total flux was calculated.

Calculation of the surface water area shares per RBDSU, where the surface is divided in a surface of water and not water (paved and unpaved) areas. The spatial data required for this purpose are described in section “spatial allocation”.

Calculation of the emission fluxes to the surface water per RBDSU based on the total

EMEP fluxes per RBDSU (step 1) and the percentage of water surface (step 2) in the specific RBDSU.

Emission per RBDSU = Flux\_RBDSU x Share\_surface\_water\_RBDSU

1. **Source data**

Diffuse emissions of cadmium to surface water from atmospheric deposition were spatially allocated to the RBDSU level based on the gridded data on atmospheric deposition available from the Precipitation Chemistry Database of the Co-operative Programme for the Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe ([EMEP](http://www.emep.int/)) and CORINE Land Cover data. The diffuse cadmium emissions were allocated to the RBDSU spatial level using GIS overlaying and visualization techniques. The used data are based on the EMEP Unified model revision 1.7, 50 km grid and available from the [Meteorological Synthesizing Centre – East (MCS-E)](http://www.msceast.org/), one of the international research Centres of [EMEP](http://www.emep.int/).

Emissions data

Lead emissions to surface water from atmospheric deposition for the year 2009 are based on gridded data sets available from the [Meteorological Synthesizing Centre – East (MCS-E)](http://www.msceast.org/), one of the international research Centres of the Precipitation Chemistry Database of the Co-operative Programme for the Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe ([EMEP](http://www.emep.int/)).

The methodology applied and data used was made available by the [[Meteorological Synthesizing Centre – East (MCS-E)](http://www.msceast.org/)](http://webdab.emep.int/Unified_Model_Results/) website.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) ([CLC2006](../../05_UWWTP_Deposition/00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/51eb60177a093293c7751a0006117203), [CLC2000](../../05_UWWTP_Deposition/00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/4d6428fbdb7f3041963b1fb365a5fbdb) and [CLCCH1990 for Switzerland](http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung/corine_land_cover.parsys.0003.downloadList.34866.DownloadFile.tmp/clcbn85.zip)) are merged in order to cover all EU27 and EFTA4 countries and to calculate the surface water areas by RBDSU.

Map\_04 Mercury emissions from atmospheric deposition (kg/ha):

1. **General information**

The map shows mercury emissions to surface water from atmospheric deposition per River Basin District Subunit (RBDSU) level for the reference year 2009, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of mercury are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

The emissions per River Basin District Subunit area were calculated using following steps:

For this study, the EMEP 50km x 50km grids where intersected with the River Basin

District Subunits (RBDSUs) using different GIS functionalities. Based on the available input data from EMEP, for each RBDSU, the total flux was calculated.

Calculation of the surface water area shares per RBDSU, where the surface is divided in a surface of water and not water (paved and unpaved) areas. The spatial data required for this purpose are described in section “spatial allocation”.

Calculation of the emission fluxes to the surface water per RBDSU based on the total

EMEP fluxes per RBDSU (step 1) and the percentage of water surface (step 2) in the specific RBDSU.

Emission per RBDSU = Flux\_RBDSU x Share\_surface\_water\_RBDSU

1. **Source data**

Diffuse emissions of cadmium to surface water from atmospheric deposition were spatially allocated to the RBDSU level based on the gridded data on atmospheric deposition available from the Precipitation Chemistry Database of the Co-operative Programme for the Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe ([EMEP](http://www.emep.int/)) and CORINE Land Cover data. The diffuse cadmium emissions were allocated to the RBDSU spatial level using GIS overlaying and visualization techniques. The used data are based on the EMEP Unified model revision 1.7, 50 km grid and available from the [Meteorological Synthesizing Centre – East (MCS-E)](http://www.msceast.org/), one of the international research Centres of [EMEP](http://www.emep.int/).

Emissions data

Mercury emissions to surface water from atmospheric deposition for the year 2009 are based on gridded data sets available from the [Meteorological Synthesizing Centre – East (MCS-E)](http://www.msceast.org/), one of the international research Centres of the Precipitation Chemistry Database of the Co-operative Programme for the Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe ([EMEP](http://www.emep.int/)).

The methodology applied and data used was made available by the [[Meteorological Synthesizing Centre – East (MCS-E)](http://www.msceast.org/)](http://webdab.emep.int/Unified_Model_Results/) website.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) ([CLC2006](../../05_UWWTP_Deposition/00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/51eb60177a093293c7751a0006117203), [CLC2000](../../05_UWWTP_Deposition/00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/4d6428fbdb7f3041963b1fb365a5fbdb) and [CLCCH1990 for Switzerland](http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung/corine_land_cover.parsys.0003.downloadList.34866.DownloadFile.tmp/clcbn85.zip)) are merged in order to cover all EU27 and EFTA4 countries and to calculate the surface water areas by RBDSU.

1. **Agriculture**

Map\_05 Nutrient-P emissions from agriculture (kg/ha surface water RBDSU):

1. **General information**

The map shows Nutrient-P emissions to surface water from agriculture per River Basin District Subunit (RBDSU) level for the reference year 2005, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of Nutrient-P are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

The nutrient emissions are calculated by the JRC’s GREEN model. The GREEN

(Geospatial Regression Equation for European Nutrient losses) is based on a simplified conceptual approach distinguishing the different pathways in which nutrients reach surface waters. According to this approach, diffuse sources, including fertiliser applications (both mineral and organic forms), scattered dwelling, atmospheric deposition, are first reduced in the soil matrix and then once in the stream they undergo further reduction due to in-stream retention processes, while point sources, which include waste water treatment plants, industrial effluents and runoff from paved areas, reach directly the streams and are thus reduced only by the stream retention process.

In the model, the driver behind the nutrient losses is the annual precipitation and the retention in water is linked to the river length.

In this project only the Nutrient emissions of agricultural sources are used: the fertilizer applications. The application of mineral fertiliser and manure varies considerably across

European regions according to the production system, crop types, climatic conditions and soil characteristics. A reasonable estimation of fertiliser application at European level should consider these spatial variations.

The methodology applied and data used is described by Fayçal Bouraoui, Bruna Grizzetti and Alberto Aloe in [Nutrient discharge from rivers to seas for year 2000](http://publications.jrc.ec.europa.eu/repository/bitstream/111111111/8130/1/eur_fatescenario_baseline.pdf) (JRC Scientific and Technical Reports). Further information can be found in [FATE](http://fate.jrc.ec.europa.eu/rational/home) website.

1. **Source data**

Nutrient-P emissions to surface water from agriculture for the year 2005 are based on data sets calculated by the JRC and described in [Nutrient discharge from rivers to seas for year 2000](http://publications.jrc.ec.europa.eu/repository/bitstream/111111111/8130/1/eur_fatescenario_baseline.pdf) (JRC Scientific and Technical Reports) and on CORINE land use data.

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) (CLC2000, CLC2006 and CLCCH1990 for Switzerland) are merged in order to cover all EU27 and EFTA4 countries.

Map\_06 Nutrient-N emissions from agriculture (kg/ha)

1. **General information**

The map shows Nutrient-N emissions to surface water from agriculture per River Basin District Subunit (RBDSU) level for the reference year 2005, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of Nutrient-N are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

The nutrient emissions are calculated by the JRC’s GREEN model. The GREEN

(Geospatial Regression Equation for European Nutrient losses) is based on a simplified conceptual approach distinguishing the different pathways in which nutrients reach surface waters. According to this approach, diffuse sources, including fertiliser applications (both mineral and organic forms), scattered dwelling, atmospheric deposition, are first reduced in the soil matrix and then once in the stream they undergo further reduction due to in-stream retention processes, while point sources, which include waste water treatment plants, industrial effluents and runoff from paved areas, reach directly the streams and are thus reduced only by the stream retention process.

In the model, the driver behind the nutrient losses is the annual precipitation and the retention in water is linked to the river length.

In this project only the Nutrient emissions of agricultural sources are used: the fertilizer applications. The application of mineral fertiliser and manure varies considerably across

European regions according to the production system, crop types, climatic conditions and soil characteristics. A reasonable estimation of fertiliser application at European level should consider these spatial variations.

The methodology applied and data used is described by Fayçal Bouraoui, Bruna Grizzetti and Alberto Aloe in [Nutrient discharge from rivers to seas for year 2000](http://publications.jrc.ec.europa.eu/repository/bitstream/111111111/8130/1/eur_fatescenario_baseline.pdf) (JRC Scientific and Technical Reports). For further information please visit the [FATE](http://fate.jrc.ec.europa.eu/rational/home) website.

1. **Source data**

Nutrient-N emissions to surface water from agriculture for the year 2005 are based on data sets calculated by the JRC and described in [Nutrient discharge from rivers to seas for year 2000](http://publications.jrc.ec.europa.eu/repository/bitstream/111111111/8130/1/eur_fatescenario_baseline.pdf) (JRC Scientific and Technical Reports).

1. **Transport**

Map\_07 Cadmium emissions from road transport (kg/ha)

1. **General information**

The map shows the cadmium emissions to surface water from road transport per RBDSU for the year 2005, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of cadmium are expressed in load to surface water (kg/ha surface water) per RBDSU.

1. **Methodology**

Emissions of cadmium to surface water from road transport were spatially allocated to the RBDSU level according to the data modelled by [TREMOVE](http://www.tremove.org/model/index.htm), due to the road network derived from the TRANS-TOOLS model and GISCO data set. The traffic density information was derived also from the TRANS-TOOLS model runs. The split into highway, rural and urban activities have been derived from the [TREMOVE](http://www.tremove.org/model/index.htm) model. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The emissions are calculated separately for various vehicle categories (light and heavy) and road types (urban, rural and highways). Pollutants emitted on urban roads are not incorporated in the calculated emissions to surface water, see the section ‘Activity rates’ for an explanation. Emissions are calculated by multiplying an activity rate (AR), in the case of road traffic the mileages on roads in European Union (EU27) member states, by an emission factor (EF), expressed in emission per AR unit. The calculation method is shown in the formula below:

Es AR \* EF \* pathway

Where:

* Es = Emission of substance (pollutant)s to compartments (soil, surface water and sewers)
* AR = Activity Rate, in this case the traffic performance (distance covered on the EU road network in 106 km)
* EF= Emission Factor (kg/106 km)
* Pathway = Percentage of the emission allocated to compartment x

The emission calculated in this way is referred to as the total emission. A specific proportion of this total emission ends up in surface water: This is defined as the net emission to the surface water.

1. **Source data**

These sources include tyre wear, brake wear and engine oil leaks and cause emissions of heavy metals and polycyclic aromatic hydrocarbons (PAHs).

Map\_08 Lead emissions from road transport (kg/ha)

1. **General information**

The map shows the lead emissions to surface water from road transport per RBDSU for the year 2005, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of lead are expressed in load to surface water (kg/ha) per RBDSU.

**2. Methodology**

Emissions of cadmium to surface water from road transport were spatially allocated to the RBDSU level according to the data modelled by TREMOVE, due to the road network derived from the TRANS-TOOLS model and GISCO data set. The traffic density information was derived also from the TRANS-TOOLS model runs. The split into highway, rural and urban activities have been derived from the TREMOVE model. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The emissions are calculated separately for various vehicle categories (light and heavy) and road types (urban, rural and highways). Pollutants emitted on urban roads are not incorporated in the calculated emissions to surface water, see the section ‘Activity rates’ for an explanation. Emissions are calculated by multiplying an activity rate (AR), in the case of road traffic the mileages on roads in European Union (EU27) member states, by an emission factor (EF), expressed in emission per AR unit. The calculation method is shown in the formula below:

Es AR \* EF \* pathway

Where:

Es = Emission of substance (pollutant) s to compartments (soil, surface water and sewers)

AR = Activity Rate, in this case the traffic performance (distance covered on the EU road network in 106 km)

EF= Emission Factor (kg/106 km)

Pathway = Percentage of the emission allocated to compartment x

The emission calculated in this way is referred to as the total emission. A specific proportion of this total emission ends up in surface water: This is defined as the net emission to the surface water.

**3. Source data**

These sources include tyre wear, brake wear and engine oil leaks and cause emissions of heavy metals and polycyclic aromatic hydrocarbons (PAHs).

Map\_09 Nickel emissions from road transport (kg/ha)

1. **General information**

The map shows the nickel emissions to surface water from road transport per RBDSU for the year 2005, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of nickel are expressed in load to surface water (kg/ha) per RBDSU.

**2. Methodology**

Emissions of cadmium to surface water from road transport were spatially allocated to the RBDSU level according to the data modelled by TREMOVE, due to the road network derived from the TRANS-TOOLS model and GISCO data set. The traffic density information was derived also from the TRANS-TOOLS model runs. The split into highway, rural and urban activities have been derived from the TREMOVE model. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The emissions are calculated separately for various vehicle categories (light and heavy) and road types (urban, rural and highways). Pollutants emitted on urban roads are not incorporated in the calculated emissions to surface water, see the section ‘Activity rates’ for an explanation. Emissions are calculated by multiplying an activity rate (AR), in the case of road traffic the mileages on roads in European Union (EU27) member states, by an emission factor (EF), expressed in emission per AR unit. The calculation method is shown in the formula below:

Es AR \* EF \* pathway

Where:

Es = Emission of substance (pollutant) s to compartments (soil, surface water and sewers)

AR = Activity Rate, in this case the traffic performance (distance covered on the EU road network in 106 km)

EF= Emission Factor (kg/106 km)

Pathway = Percentage of the emission allocated to compartment x

The emission calculated in this way is referred to as the total emission. A specific proportion of this total emission ends up in surface water: This is defined as the net emission to the surface water.

**3. Source data**

These sources include tyre wear, brake wear and engine oil leaks and cause emissions of heavy metals and polycyclic aromatic hydrocarbons (PAHs).

Map\_10 Anthracene emissions from road transport (kg/ha)

1. **General information**

The map shows the anthracene emissions to surface water from road transport per RBDSU for the year 2005, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of anthracene are expressed in load to surface water (kg/ha surface water) per RBDSU.

1. **Methodology**

Emissions of anthracene to surface water from road transport were spatially allocated to the RBDSU level according to the data modelled by [TREMOVE](http://www.tremove.org/model/index.htm), due to the road network derived from the TRANS-TOOLS model and GISCO data set. The traffic density information was derived also from the TRANS-TOOLS model runs. The split into highway, rural and urban activities have been derived from the [TREMOVE](http://www.tremove.org/model/index.htm) model. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

RBDSU spatial level using GIS visualization techniques.

The emissions are calculated separately for various vehicle categories (light and heavy) and road types (urban, rural and highways). Pollutants emitted on urban roads are not incorporated in the calculated emissions to surface water, see the section ‘Activity rates’ for an explanation. Emissions are calculated by multiplying an activity rate (AR), in the case of road traffic the mileages on roads in European Union (EU27) member states, by an emission factor (EF), expressed in emission per AR unit. The calculation method is shown in the formula below:

Es AR \* EF \* pathway

Where:

Es = Emission of substance (pollutant) s to compartments (soil, surface water and sewers)

AR = Activity Rate, in this case the traffic performance (distance covered on the EU road network in 106 km)

EF= Emission Factor (kg/106 km)

Pathway = Percentage of the emission allocated to compartment x

The emission calculated in this way is referred to as the total emission. A specific proportion of this total emission ends up in surface water: This is defined as the net emission to the surface water.

1. **Source data**

The emissions are calculated separately for various vehicle categories (light and heavy) and road types (urban, rural and highways). Pollutants emitted on urban roads are not incorporated. Anthracene emission loads to surface water from road transport data are national totals calculated for the NFR09 sources 1 A 3 b i Passenger cars, 1 A 3 b ii Light duty vehicles, 1 A 3 b iii Heavy duty vehicles, 1 A 3 b iv Mopeds & Motorcycles for the year 2005.

The calculated national emission data are based on [TREMOVE](http://www.tremove.org/model/index.htm) activity rates and emission factor data extracted from the [2008 PRTR Netherlands](http://www.emissieregistratie.nl/erpubliek/bumper.nl.aspx). Since the transport sector emissions are not included in the E-PRTR regulation reporting requirements, all emissions released are assumed to be from diffuse sources.

The methodology applied and data used is described in detail in the sector specific factsheet.

Activity data derived using transport models

[TREMOVE](http://www.tremove.org/model/index.htm): road type and pollutant specific split factors

[TRANS-TOOLS](http://energy.jrc.ec.europa.eu/transtools/): road network and traffic density data

Road network

[Eurostat, GISCO](http://epp.eurostat.ec.europa.eu/portal/page/portal/gisco/geodata/reference): Road network from EuroRegional Map v31: Transport (TRANS)

Population data

[JRC Population density disaggregated with Corine land cover 2000 and 2006:](http://www.eea.europa.eu/data-and-maps/data/population-density-disaggregated-with-corine-land-cover-2000-2)  European Population Density Map 2000 and 2006

[EUROSTAT GISCO](http://epp.eurostat.ec.europa.eu/portal/page/portal/gisco/) - Statistical information on population data per commune (LAU2 level) for Switzerland (publicly not available).

[EUROSTAT GISCO](http://epp.eurostat.ec.europa.eu/portal/page/portal/gisco/popups/references/Population%20Distribution%20-%20Demography) - Degree of Urbanization

Map\_11 Fluoranthene emissions from road transport (kg/ha)

1. **General information**

The map shows the fluoranthene emissions to surface water from road transport per RBDSU for the year 2005, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of fluoranthene are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Emissions of fluoranthene to surface water from road transport were spatially allocated to the RBDSU level according to the data modelled by [TREMOVE](http://www.tremove.org/model/index.htm), due to the road network derived from the TRANS-TOOLS model and GISCO data set. The traffic density information was derived also from the TRANS-TOOLS model runs. The split into highway, rural and urban activities have been derived from the [TREMOVE](http://www.tremove.org/model/index.htm) model. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The emissions are calculated separately for various vehicle categories (light and heavy) and road types (urban, rural and highways). Pollutants emitted on urban roads are not incorporated in the calculated emissions to surface water, see the section ‘Activity rates’ for an explanation. Emissions are calculated by multiplying an activity rate (AR), in the case of road traffic the mileages on roads in European Union (EU27) member states, by an emission factor (EF), expressed in emission per AR unit. The calculation method is shown in the formula below:

Es AR \* EF \* pathway

Where:

Es = Emission of substance (pollutant) s to compartments (soil, surface water and sewers)

AR = Activity Rate, in this case the traffic performance (distance covered on the EU road network in 106 km)

EF= Emission Factor (kg/106 km)

Pathway = Percentage of the emission allocated to compartment x

The emission calculated in this way is referred to as the total emission. A specific proportion of this total emission ends up in surface water: This is defined as the net emission to the surface water.

1. **Source data**

The emissions are calculated separately for various vehicle categories (light and heavy) and road types (urban, rural and highways). Pollutants emitted on urban roads are not incorporated. Fluoranthene emission loads to surface water from road transport data are national totals calculated for the NFR09 sources 1 A 3 b i Passenger cars, 1 A 3 b ii Light duty vehicles, 1 A 3 b iii Heavy duty vehicles, 1 A 3 b iv Mopeds & Motorcycles for the year 2005. The calculated national emission data are based on [TREMOVE](http://www.tremove.org/model/index.htm) activity rates and emission factor data extracted from the [2008 PRTR Netherlands](http://www.emissieregistratie.nl/erpubliek/bumper.nl.aspx). Since the transport sector emissions are not included in the E-PRTR regulation reporting requirements, all emissions released are assumed to be from diffuse sources.

The methodology applied and data used is described in detail in the sector specific factsheet.

Activity data derived using transport models

[TREMOVE](http://www.tremove.org/model/index.htm): road type and pollutant specific split factors

[TRANS-TOOLS](http://energy.jrc.ec.europa.eu/transtools/): road network and traffic density data

Road network

[Eurostat, GISCO](http://epp.eurostat.ec.europa.eu/portal/page/portal/gisco/geodata/reference): Road network from EuroRegional Map v31: Transport (TRANS)

Population data

[JRC Population density disaggregated with Corine land cover 2000 and 2006:](http://www.eea.europa.eu/data-and-maps/data/population-density-disaggregated-with-corine-land-cover-2000-2)  European Population Density Map 2000 and 2006

[EUROSTAT GISCO](http://epp.eurostat.ec.europa.eu/portal/page/portal/gisco/) - Statistical information on population data per commune (LAU2 level) for Switzerland (publicly not available).

[EUROSTAT GISCO](http://epp.eurostat.ec.europa.eu/portal/page/portal/gisco/popups/references/Population%20Distribution%20-%20Demography) - Degree of Urbanization

Map\_12 Copper emissions from road transport (kg/ha )

1. **General information**

The map shows the copper emissions to surface water from road transport per RBDSU for the year 2005, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of copper are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Emissions of copper to surface water from road transport were spatially allocated to the RBDSU level according to the data modelled by [TREMOVE](http://www.tremove.org/model/index.htm), due to the road network derived from the TRANS-TOOLS model and GISCO data set. The traffic density information was derived also from the TRANS-TOOLS model runs. The split into highway, rural and urban activities have been derived from the [TREMOVE](http://www.tremove.org/model/index.htm) model. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The emissions are calculated separately for various vehicle categories (light and heavy) and road types (urban, rural and highways). Pollutants emitted on urban roads are not incorporated in the calculated emissions to surface water, see the section ‘Activity rates’ for an explanation. Emissions are calculated by multiplying an activity rate (AR), in the case of road traffic the mileages on roads in European Union (EU27) member states, by an emission factor (EF), expressed in emission per AR unit. The calculation method is shown in the formula below:

Es AR \* EF \* pathway

Where:

Es = Emission of substance (pollutant) s to compartments (soil, surface water and sewers)

AR = Activity Rate, in this case the traffic performance (distance covered on the EU road network in 106 km)

EF= Emission Factor (kg/106 km)

Pathway = Percentage of the emission allocated to compartment x

The emission calculated in this way is referred to as the total emission. A specific proportion of this total emission ends up in surface water: This is defined as the net emission to the surface water.

1. **Source data**

The emissions are calculated separately for various vehicle categories (light and heavy) and road types (urban, rural and highways). Pollutants emitted on urban roads are not incorporated. Copper emission loads to surface water from road transport data are national totals calculated for the NFR09 sources 1 A 3 b i Passenger cars, 1 A 3 b ii Light duty vehicles, 1 A 3 b iii Heavy duty vehicles, 1 A 3 b iv Mopeds & Motorcycles for the year 2005. The calculated national emission data are based on [TREMOVE](http://www.tremove.org/model/index.htm) activity rates and emission factor data extracted from the [2008 PRTR Netherlands](http://www.emissieregistratie.nl/erpubliek/bumper.nl.aspx). Since the transport sector emissions are not included in the E-PRTR regulation reporting requirements, all emissions released are assumed to be from diffuse sources.

The methodology applied and data used is described in detail in the sector specific factsheet.

Activity data derived using transport models

[TREMOVE](http://www.tremove.org/model/index.htm): road type and pollutant specific split factors

[TRANS-TOOLS](http://energy.jrc.ec.europa.eu/transtools/): road network and traffic density data

Road network

[Eurostat, GISCO](http://epp.eurostat.ec.europa.eu/portal/page/portal/gisco/geodata/reference): Road network from EuroRegional Map v31: Transport (TRANS)

Population data

[JRC Population density disaggregated with Corine land cover 2000 and 2006:](http://www.eea.europa.eu/data-and-maps/data/population-density-disaggregated-with-corine-land-cover-2000-2)  European Population Density Map 2000 and 2006

[EUROSTAT GISCO](http://epp.eurostat.ec.europa.eu/portal/page/portal/gisco/) - Statistical information on population data per commune (LAU2 level) for Switzerland (publicly not available).

[EUROSTAT GISCO](http://epp.eurostat.ec.europa.eu/portal/page/portal/gisco/popups/references/Population%20Distribution%20-%20Demography) - Degree of Urbanization

Map\_13 Zinc emissions from road transport (kg/ha )

1. **General information**

The map shows the zinc emissions to surface water from road transport per RBDSU for the year 2005, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of zinc are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Emissions of zinc to surface water from road transport were spatially allocated to the RBDSU level according to the data modelled by [TREMOVE](http://www.tremove.org/model/index.htm), due to the road network derived from the TRANS-TOOLS model and GISCO data set. The traffic density information was derived also from the TRANS-TOOLS model runs. The split into highway, rural and urban activities have been derived from the [TREMOVE](http://www.tremove.org/model/index.htm) model. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The emissions are calculated separately for various vehicle categories (light and heavy) and road types (urban, rural and highways). Pollutants emitted on urban roads are not incorporated in the calculated emissions to surface water, see the section ‘Activity rates’ for an explanation. Emissions are calculated by multiplying an activity rate (AR), in the case of road traffic the mileages on roads in European Union (EU27) member states, by an emission factor (EF), expressed in emission per AR unit. The calculation method is shown in the formula below:

Es AR \* EF \* pathway

Where:

Es = Emission of substance (pollutant) s to compartments (soil, surface water and sewers)

AR = Activity Rate, in this case the traffic performance (distance covered on the EU road network in 106 km)

EF= Emission Factor (kg/106 km)

Pathway = Percentage of the emission allocated to compartment x

The emission calculated in this way is referred to as the total emission. A specific proportion of this total emission ends up in surface water: This is defined as the net emission to the surface water.

1. **Source data**

The emissions are calculated separately for various vehicle categories (light and heavy) and road types (urban, rural and highways). Pollutants emitted on urban roads are not incorporated. Zinc emission loads to surface water from road transport data are national totals calculated for the NFR09 sources 1 A 3 b i Passenger cars, 1 A 3 b ii Light duty vehicles, 1 A 3 b iii Heavy duty vehicles, 1 A 3 b iv Mopeds & Motorcycles for the year 2005. The calculated national emission data are based on [TREMOVE](http://www.tremove.org/model/index.htm) activity rates and emission factor data extracted from the [2008 PRTR Netherlands](http://www.emissieregistratie.nl/erpubliek/bumper.nl.aspx). Since the transport sector emissions are not included in the E-PRTR regulation reporting requirements, all emissions released are assumed to be from diffuse sources.

The methodology applied and data used is described in detail in the sector specific factsheet.

Activity data derived using transport models

[TREMOVE](http://www.tremove.org/model/index.htm): road type and pollutant specific split factors

[TRANS-TOOLS](http://energy.jrc.ec.europa.eu/transtools/): road network and traffic density data

Road network

[Eurostat, GISCO](http://epp.eurostat.ec.europa.eu/portal/page/portal/gisco/geodata/reference): Road network from EuroRegional Map v31: Transport (TRANS)

Population data

[JRC Population density disaggregated with Corine land cover 2000 and 2006:](http://www.eea.europa.eu/data-and-maps/data/population-density-disaggregated-with-corine-land-cover-2000-2)  European Population Density Map 2000 and 2006

[EUROSTAT GISCO](http://epp.eurostat.ec.europa.eu/portal/page/portal/gisco/) - Statistical information on population data per commune (LAU2 level) for Switzerland (publicly not available).

[EUROSTAT GISCO](http://epp.eurostat.ec.europa.eu/portal/page/portal/gisco/popups/references/Population%20Distribution%20-%20Demography) - Degree of Urbanization

1. **UWWTPs not E-PRTR (kg/ha )**

Map\_14 TOC emissions from UWWTPs not in E-PRTR (kg/ha )

1. **General information**

The map shows TOC emissions to surface water from UWWTPs per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of TOC are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

The effluents of the UWWTPs are calculated separately for the individual UWWTP. Emission are calculated by multiplying an activity rate (AR), in this case the load entering a UWWTP

(p.e.), by an emission factor (EF), expressed in the load per substance per UWWTP.

Es = (ARa \* EF)

Where:

Es = Load of substance to surface water per UWWTP sum(ARa) = Activity rate, the load entering a UWWTP (p.e.)

EF = Emission factor (kilogram per substance/p.e.)

Per River Basin District the effluents of the UWWTPs in the district will be summarized per substance. Loads reported to E-PRTR are not calculated again. Only the not reported loads will be calculated.

Diffuse emissions of TOC to surface water from UWWTP were spatially allocated to the RBDSU level according to the [Waterbase – UWWTD: Urban Waste Water Treatment Directive](http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive), and to the E-PRTR, using the geographical location of the emission sources, population statistics, and land use information. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

1. **Source data**

Emissions data

TOC emissions to surface water from UWWTPs for the year 2010 are based on data sets officially reported to the EU for the UWWTD. To select the UWWTPs which are used to calculate the loads to surface water, a few steps are taken, which are described in detail in the in a source sector specific fact sheet.

Population data

Population statistics from [EUROSTAT](http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/) for the year 2008.

Facility data

[Waterbase – UWWTD: Urban Waste Water Treatment Directive](http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive) data base for the reporting year 2010.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) ([CLC2006](../00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/51eb60177a093293c7751a0006117203), [CLC2000](../00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/4d6428fbdb7f3041963b1fb365a5fbdb) and [CLCCH1990 for Switzerland](http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung/corine_land_cover.parsys.0003.downloadList.34866.DownloadFile.tmp/clcbn85.zip)) are merged in order to cover all EU27 and EFTA4 countries and to calculate the surface water areas by RBDSU.

Map\_15 Nutrient-P emissions from UWWTPs not in E-PRTR (kg/ha )

1. **General information**

The map shows Nutrient-P emissions to surface water from UWWTPs per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of Nutrient-P are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Diffuse emissions of Nutrient-P to surface water from UWWTP were spatially allocated to the RBDSU level according to the [Waterbase – UWWTD: Urban Waste Water Treatment Directive](http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive), and to the E-PRTR, using the geographical location of the emission sources, population statistics, and land use information. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The effluents of the UWWTPs are calculated separately for the individual UWWTP. Emission are calculated by multiplying an activity rate (AR), in this case the load entering a UWWTP

(p.e.), by an emission factor (EF), expressed in the load per substance per UWWTP.

Es = (ARa \* EF)

Where:

Es = Load of substance to surface water per UWWTP sum(ARa) = Activity rate, the load entering a UWWTP (p.e.)

EF = Emission factor (kilogram per substance/p.e.)

Per River Basin District the effluents of the UWWTPs in the district will be summarized per substance. Loads reported to E-PRTR are not calculated again. Only the not reported loads will be calculated.

1. **Source data**

Nutrient-P emissions to surface water from UWWTPs for the year 2010 are based on data sets officially reported to the EU for the UWWTD. To select the UWWTPs which are used to calculate the loads to surface water, a few steps are taken, which are described in detail in the in a source sector specific fact sheet.

Population data

Population statistics from [EUROSTAT](http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/) for the year 2008.

Facility data

[Waterbase – UWWTD: Urban Waste Water Treatment Directive](http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive) data base for the reporting year 2010.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) ([CLC2006](../00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/51eb60177a093293c7751a0006117203), [CLC2000](../00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/4d6428fbdb7f3041963b1fb365a5fbdb) and [CLCCH1990 for Switzerland](http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung/corine_land_cover.parsys.0003.downloadList.34866.DownloadFile.tmp/clcbn85.zip)) are merged in order to cover all EU27 and EFTA4 countries and to calculate the surface water areas by RBDSU.

A technical overview of the data used and the spatial allocation performed is available in the sector specific factsheet.

Map\_16 Nutrient-N emissions from UWWTPs not in E-PRTR (kg/ha )

1. **General information**

The map shows Nutrient-N emissions to surface water from UWWTPs per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of Nutrient-N are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Diffuse emissions of Nutrient-N to surface water from UWWTP were spatially allocated to the RBDSU level according to the [Waterbase – UWWTD: Urban Waste Water Treatment Directive](http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive), and to the E-PRTR, using the geographical location of the emission sources, population statistics, and land use information. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The effluents of the UWWTPs are calculated separately for the individual UWWTP. Emission are calculated by multiplying an activity rate (AR), in this case the load entering a UWWTP

(p.e.), by an emission factor (EF), expressed in the load per substance per UWWTP.

Es = (ARa \* EF)

Where:

Es = Load of substance to surface water per UWWTP sum(ARa) = Activity rate, the load entering a UWWTP (p.e.)

EF = Emission factor (kilogram per substance/p.e.)

Per River Basin District the effluents of the UWWTPs in the district will be summarized per substance. Loads reported to E-PRTR are not calculated again. Only the not reported loads will be calculated.

Diffuse emissions of TOC to surface water from UWWTP were spatially allocated to the RBDSU level according to the [Waterbase – UWWTD: Urban Waste Water Treatment Directive](http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive), and to the E-PRTR, using the geographical location of the emission sources, population statistics, and land use information. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

1. **Source data**

Nutrient-N emissions to surface water from UWWTPs for the year 2010 are based on data sets officially reported to the EU for the UWWTD. To select the UWWTPs which are used to calculate the loads to surface water, a few steps are taken, which are described in detail in the in a source sector specific fact sheet.

Population data

Population statistics from [EUROSTAT](http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/) for the year 2008.

Facility data

[Waterbase – UWWTD: Urban Waste Water Treatment Directive](http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive) data base for the reporting year 2010.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) ([CLC2006](../00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/51eb60177a093293c7751a0006117203), [CLC2000](../00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/4d6428fbdb7f3041963b1fb365a5fbdb) and [CLCCH1990 for Switzerland](http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung/corine_land_cover.parsys.0003.downloadList.34866.DownloadFile.tmp/clcbn85.zip)) are merged in order to cover all EU27 and EFTA4 countries and to calculate the surface water areas by RBDSU.

A technical overview of the data used and the spatial allocation performed is available in the sector specific factsheet.

Map\_17 Cadmium emissions from UWWTPs not in E-PRTR (kg/ha )

1. **General information**

The map shows cadmium emissions to surface water from UWWTPs per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of cadmium are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Diffuse emissions of cadmium to surface water from UWWTP were spatially allocated to the RBDSU level according to the [Waterbase – UWWTD: Urban Waste Water Treatment Directive](http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive), and to the E-PRTR, using the geographical location of the emission sources, population statistics, and land use information. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The effluents of the UWWTPs are calculated separately for the individual UWWTP. Emission are calculated by multiplying an activity rate (AR), in this case the load entering a UWWTP (p.e.), by an emission factor (EF), expressed in the load per substance per UWWTP.

Es = (ARa \* EF)

Where:

Es = Load of substance to surface water per UWWTP sum(ARa) = Activity rate, the load entering a UWWTP (p.e.)

EF = Emission factor (kilogram per substance/p.e.)

Per River Basin District the effluents of the UWWTPs in the district will be summarized per substance. Loads reported to E-PRTR are not calculated again. Only the not reported loads will be calculated.

1. **Source data**

Cadmium emissions to surface water from UWWTPs for the year 2010 are based on data sets officially reported to the EU for the UWWTD. To select the UWWTPs which are used to calculate the loads to surface water, a few steps are taken, which are described in detail in the in a source sector specific fact sheet.

Population data

Population statistics from [EUROSTAT](http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/) for the year 2008.

Facility data

[Waterbase – UWWTD: Urban Waste Water Treatment Directive](http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive) data base for the reporting year 2010.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) ([CLC2006](../00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/51eb60177a093293c7751a0006117203), [CLC2000](../00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/4d6428fbdb7f3041963b1fb365a5fbdb) and [CLCCH1990 for Switzerland](http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung/corine_land_cover.parsys.0003.downloadList.34866.DownloadFile.tmp/clcbn85.zip)) are merged in order to cover all EU27 and EFTA4 countries and to calculate the surface water areas by RBDSU.

A technical overview of the data used and the spatial allocation performed is available in the sector specific factsheet.

Map\_18 Lead emissions from UWWTPs not in E-PRTR (kg/ha )

1. **General information**

The map shows lead emissions to surface water from UWWTPs per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of lead are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Diffuse emissions of lead to surface water from UWWTP were spatially allocated to the RBDSU level according to the [Waterbase – UWWTD: Urban Waste Water Treatment Directive](http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive), and to the E-PRTR, using the geographical location of the emission sources, population statistics, and land use information. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The effluents of the UWWTPs are calculated separately for the individual UWWTP. Emission are calculated by multiplying an activity rate (AR), in this case the load entering a UWWTP (p.e.), by an emission factor (EF), expressed in the load per substance per UWWTP.

Es = (ARa \* EF)

Where:

Es = Load of substance to surface water per UWWTP sum(ARa) = Activity rate, the load entering a UWWTP (p.e.)

EF = Emission factor (kilogram per substance/p.e.)

Per River Basin District the effluents of the UWWTPs in the district will be summarized per substance. Loads reported to E-PRTR are not calculated again. Only the not reported loads will be calculated.

1. **Data source**

Lead emissions to surface water from UWWTPs for the year 2010 are based on data sets officially reported to the EU for the UWWTD. To select the UWWTPs which are used to calculate the loads to surface water, a few steps are taken, which are described in detail in the in a source sector specific fact sheet.

Population data

Population statistics from [EUROSTAT](http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/) for the year 2008.

Facility data

[Waterbase – UWWTD: Urban Waste Water Treatment Directive](http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive) data base for the reporting year 2010.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) ([CLC2006](../00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/51eb60177a093293c7751a0006117203), [CLC2000](../00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/4d6428fbdb7f3041963b1fb365a5fbdb) and [CLCCH1990 for Switzerland](http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung/corine_land_cover.parsys.0003.downloadList.34866.DownloadFile.tmp/clcbn85.zip)) are merged in order to cover all EU27 and EFTA4 countries and to calculate the surface water areas by RBDSU.

A technical overview of the data used and the spatial allocation performed is available in the sector specific factsheet.

Map\_19 Mercury emissions from UWWTPs not in E-PRTR (kg/ha )

1. **General information**

The map shows mercury emissions to surface water from UWWTPs per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of mercury are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Diffuse emissions of mercury to surface water from UWWTP were spatially allocated to the RBDSU level according to the [Waterbase – UWWTD: Urban Waste Water Treatment Directive](http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive), and to the E-PRTR, using the geographical location of the emission sources, population statistics, and land use information. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The effluents of the UWWTPs are calculated separately for the individual UWWTP. Emission are calculated by multiplying an activity rate (AR), in this case the load entering a UWWTP (p.e.), by an emission factor (EF), expressed in the load per substance per UWWTP.

Es = (ARa \* EF)

Where:

Es = Load of substance to surface water per UWWTP sum(ARa) = Activity rate, the load entering a UWWTP (p.e.)

EF = Emission factor (kilogram per substance/p.e.)

Per River Basin District the effluents of the UWWTPs in the district will be summarized per substance. Loads reported to E-PRTR are not calculated again. Only the not reported loads will be calculated.

1. **Source data**

Mercury emissions to surface water from UWWTPs for the year 2010 are based on data sets officially reported to the EU for the UWWTD. To select the UWWTPs which are used to calculate the loads to surface water, a few steps are taken, which are described in detail in the in a source sector specific fact sheet.

Population data

Population statistics from [EUROSTAT](http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/) for the year 2008.

Facility data

[Waterbase – UWWTD: Urban Waste Water Treatment Directive](http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive) data base for the reporting year 2010.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) ([CLC2006](../00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/51eb60177a093293c7751a0006117203), [CLC2000](../00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/4d6428fbdb7f3041963b1fb365a5fbdb) and [CLCCH1990 for Switzerland](http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung/corine_land_cover.parsys.0003.downloadList.34866.DownloadFile.tmp/clcbn85.zip)) are merged in order to cover all EU27 and EFTA4 countries and to calculate the surface water areas by RBDSU.

A technical overview of the data used and the spatial allocation performed is available in the sector specific factsheet.

Map\_20 Nickel emissions from UWWTPs not in E-PRTR (kg/ha )

1. **General information**

The map shows nickel emissions to surface water from UWWTPs per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of nickel are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Diffuse emissions of nickel to surface water from UWWTP were spatially allocated to the RBDSU level according to the [Waterbase – UWWTD: Urban Waste Water Treatment Directive](http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive), and to the E-PRTR, using the geographical location of the emission sources, population statistics, and land use information. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The effluents of the UWWTPs are calculated separately for the individual UWWTP. Emission are calculated by multiplying an activity rate (AR), in this case the load entering a UWWTP (p.e.), by an emission factor (EF), expressed in the load per substance per UWWTP.

Es = (ARa \* EF)

Where:

Es = Load of substance to surface water per UWWTP sum(ARa) = Activity rate, the load entering a UWWTP (p.e.)

EF = Emission factor (kilogram per substance/p.e.)

Per River Basin District the effluents of the UWWTPs in the district will be summarized per substance. Loads reported to E-PRTR are not calculated again. Only the not reported loads will be calculated.

1. **Source data**

Nickel emissions to surface water from UWWTPs for the year 2010 are based on data sets officially reported to the EU for the UWWTD. To select the UWWTPs which are used to calculate the loads to surface water, a few steps are taken, which are described in detail in the in a source sector specific fact sheet.

Population data

Population statistics from [EUROSTAT](http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/) for the year 2008.

Facility data

[Waterbase – UWWTD: Urban Waste Water Treatment Directive](http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive) data base for the reporting year 2010.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) ([CLC2006](../00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/51eb60177a093293c7751a0006117203), [CLC2000](../00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/4d6428fbdb7f3041963b1fb365a5fbdb) and [CLCCH1990 for Switzerland](http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung/corine_land_cover.parsys.0003.downloadList.34866.DownloadFile.tmp/clcbn85.zip)) are merged in order to cover all EU27 and EFTA4 countries and to calculate the surface water areas by RBDSU.

A technical overview of the data used and the spatial allocation performed is available in the sector specific factsheet.

Map\_21 Anthracene emissions from UWWTPs not in E-PRTR (kg/ha )

1. **General information**

The map shows anthracene emissions to surface water from UWWTPs countries per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of anthracene are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Diffuse emissions of anthracene to surface water from UWWTP were spatially allocated to the RBDSU level according to the [Waterbase – UWWTD: Urban Waste Water Treatment Directive](http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive), and to the E-PRTR, using the geographical location of the emission sources, population statistics, and land use information. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The effluents of the UWWTPs are calculated separately for the individual UWWTP. Emission are calculated by multiplying an activity rate (AR), in this case the load entering a UWWTP (p.e.), by an emission factor (EF), expressed in the load per substance per UWWTP.

Es = (ARa \* EF)

Where:

Es = Load of substance to surface water per UWWTP sum (ARa) = Activity rate, the load entering a UWWTP (p.e.)

EF = Emission factor (kilogram per substance/p.e.)

Per River Basin District the effluents of the UWWTPs in the district will be summarized per substance. Loads reported to E-PRTR are not calculated again. Only the not reported loads will be calculated.

1. **Source data**

Anthracene emissions to surface water from UWWTPs for the year 2010 are based on data sets officially reported to the EU for the UWWTD. To select the UWWTPs which are used to calculate the loads to surface water, a few steps are taken, which are described in detail in the in a source sector specific fact sheet.

Population data

Population statistics from [EUROSTAT](http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/) for the year 2008.

Facility data

[Waterbase – UWWTD: Urban Waste Water Treatment Directive](http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive) data base for the reporting year 2010.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) ([CLC2006](../00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/51eb60177a093293c7751a0006117203), [CLC2000](../00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/4d6428fbdb7f3041963b1fb365a5fbdb) and [CLCCH1990 for Switzerland](http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung/corine_land_cover.parsys.0003.downloadList.34866.DownloadFile.tmp/clcbn85.zip)) are merged in order to cover all EU27 and EFTA4 countries and to calculate the surface water areas by RBDSU.

A technical overview of the data used and the spatial allocation performed is available in the sector specific factsheet.

Map\_22 Fluoranthene emissions from UWWTPs not in E-PRTR (kg/ha )

1. **General information**

The map shows fluoranthene emissions to surface water from UWWTPs countries per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of fluoranthene are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Diffuse emissions of fluoranthene to surface water from UWWTP were spatially allocated to the RBDSU level according to the [Waterbase – UWWTD: Urban Waste Water Treatment Directive](http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive), and to the E-PRTR, using the geographical location of the emission sources, population statistics, and land use information. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The effluents of the UWWTPs are calculated separately for the individual UWWTP. Emission are calculated by multiplying an activity rate (AR), in this case the load entering a UWWTP (p.e.), by an emission factor (EF), expressed in the load per substance per UWWTP.

Es = (ARa \* EF)

Where:

Es = Load of substance to surface water per UWWTP sum(ARa) = Activity rate, the load entering a UWWTP (p.e.)

EF = Emission factor (kilogram per substance/p.e.)

Per River Basin District the effluents of the UWWTPs in the district will be summarized per substance. Loads reported to E-PRTR are not calculated again. Only the not reported loads will be calculated.

1. **Source data**

Fluoranthene emissions to surface water from UWWTPs for the year 2010 are based on data sets officially reported to the EU for the UWWTD. To select the UWWTPs which are used to calculate the loads to surface water, a few steps are taken, which are described in detail in the in a source sector specific fact sheet.

Population data

Population statistics from [EUROSTAT](http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/) for the year 2008.

Facility data

[Waterbase – UWWTD: Urban Waste Water Treatment Directive](http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive) data base for the reporting year 2010.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) ([CLC2006](../00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/51eb60177a093293c7751a0006117203), [CLC2000](../00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/4d6428fbdb7f3041963b1fb365a5fbdb) and [CLCCH1990 for Switzerland](http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung/corine_land_cover.parsys.0003.downloadList.34866.DownloadFile.tmp/clcbn85.zip)) are merged in order to cover all EU27 and EFTA4 countries and to calculate the surface water areas by RBDSU.

A technical overview of the data used and the spatial allocation performed is available in the sector specific factsheet.

Map\_23 Copper emissions from UWWTPs not in E-PRTR (kg/ha )

1. **General information**

The map shows copper emissions to surface water from UWWTPs per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of copper are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

The map shows copper emissions to surface water from UWWTPs per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of copper are expressed in load to surface water (kg/ha) per RBDSU.

The effluents of the UWWTPs are calculated separately for the individual UWWTP. Emission are calculated by multiplying an activity rate (AR), in this case the load entering a UWWTP (p.e.), by an emission factor (EF), expressed in the load per substance per UWWTP.

Es = (ARa \* EF)

Where:

Es = Load of substance to surface water per UWWTP sum(ARa) = Activity rate, the load entering a UWWTP (p.e.)

EF = Emission factor (kilogram per substance/p.e.)

Per River Basin District the effluents of the UWWTPs in the district will be summarized per substance. Loads reported to E-PRTR are not calculated again. Only the not reported loads will be calculated.

1. **Source data**

Copper emissions to surface water from UWWTPs for the year 2010 are based on data sets officially reported to the EU for the UWWTD. To select the UWWTPs which are used to calculate the loads to surface water, a few steps are taken, which are described in detail in the in a source sector specific fact sheet.

Population data

Population statistics from [EUROSTAT](http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/) for the year 2008.

Facility data

[Waterbase – UWWTD: Urban Waste Water Treatment Directive](http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive) data base for the reporting year 2010.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) ([CLC2006](../00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/51eb60177a093293c7751a0006117203), [CLC2000](../00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/4d6428fbdb7f3041963b1fb365a5fbdb) and [CLCCH1990 for Switzerland](http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung/corine_land_cover.parsys.0003.downloadList.34866.DownloadFile.tmp/clcbn85.zip)) are merged in order to cover all EU27 and EFTA4 countries and to calculate the surface water areas by RBDSU.

A technical overview of the data used and the spatial allocation performed is available in the sector specific factsheet.

Map\_24 Zinc emissions from UWWTPs not in E-PRTR (kg/ha )

1. **General information**

The map shows zinc emissions to surface water from UWWTPs per River Basin District Subunit (RBDSU) level for the reference year 2010, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of zinc are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Diffuse emissions of zinc to surface water from UWWTP were spatially allocated to the RBDSU level according to the [Waterbase – UWWTD: Urban Waste Water Treatment Directive](http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive), and to the E-PRTR, using the geographical location of the emission sources, population statistics, and land use information. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The effluents of the UWWTPs are calculated separately for the individual UWWTP. Emission are calculated by multiplying an activity rate (AR), in this case the load entering a UWWTP (p.e.), by an emission factor (EF), expressed in the load per substance per UWWTP.

Es = (ARa \* EF)

Where:

Es = Load of substance to surface water per UWWTP sum(ARa) = Activity rate, the load entering a UWWTP (p.e.)

EF = Emission factor (kilogram per substance/p.e.)

Per River Basin District the effluents of the UWWTPs in the district will be summarized per substance. Loads reported to E-PRTR are not calculated again. Only the not reported loads will be calculated.

1. **Source data**

Zinc emissions to surface water from UWWTPs for the year 2010 are based on data sets officially reported to the EU for the UWWTD. To select the UWWTPs which are used to calculate the loads to surface water, a few steps are taken, which are described in detail in the in a source sector specific fact sheet.

Population data

Population statistics from [EUROSTAT](http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/) for the year 2008.

Facility data

[Waterbase – UWWTD: Urban Waste Water Treatment Directive](http://www.eea.europa.eu/data-and-maps/data/waterbase-uwwtd-urban-waste-water-treatment-directive) data base for the reporting year 2010.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) ([CLC2006](../00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/51eb60177a093293c7751a0006117203), [CLC2000](../00_Example_Map_Description_EPRTR_AIR_Diffuse/shipping/4d6428fbdb7f3041963b1fb365a5fbdb) and [CLCCH1990 for Switzerland](http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung/corine_land_cover.parsys.0003.downloadList.34866.DownloadFile.tmp/clcbn85.zip)) are merged in order to cover all EU27 and EFTA4 countries and to calculate the surface water areas by RBDSU.

A technical overview of the data used and the spatial allocation performed is available in the sector specific factsheet.

1. **Un-connected households**

Map\_25 TOC emissions from un-connected households (kg/ha )

1. **General information**

The map shows TOC emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of TOC are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

The sewer system and Urban Waste Water Treatment Plants collect and treat polluted water, meeting requirements prior to discharge into surface water. Not all the pollution is removed (varying according to the substance in question and the kind of treatment), meaning that discharges from the system contribute to surface water pollution. Not all the polluted water from households will reach the sewer system. A part of the households is not connected to a sewer system.

The emissions of the un-connected households are calculated by using the next formula:

Un-connected households: Emission = AR x EF x % WT x PWw

Where:

AR = Number of inhabitants in the NUTS areas in 2008

EF = Emission factor per substance per inhabitant (kg) %

WT = % of the generated load per agglomeration without treatment in 2010

PWw = the pathway to surface water (in %)

The generated loads of wastewater are reported per agglomeration by Member States. For this factsheet, they have been aggregated or disaggregated to the finest NUTS region possible, NUTS3, because Member States have reported in three different NUTS levels.

The total emission per NUTS area is regionalised to the River Basin Districts and their subunits.

TOC emissions to surface water from un-connected households have been spatially allocated due to the information of number of employees on NUTS3 level from EUROSTAT, statistical population data on LAU2 level from EUROSTAT GISCO and raster population data from JRC, in combination with land use data from CORINE. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

1. **Source data**

**Emissions data**

TOC emission loads to surface water from un-connected households for the year 2008 are based on national emission loads calculated based on emission factors from international studies about emissions from dwellings and activity rates (number of inhabitants per administrative unit) from Eurostat.

**Employees**

Number of employees from [EUROSTAT](http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/) is used on administrative level (NUTS3) for all relevant EU27 and EFTA4 countries.

**Population data**

Statistical population data from EUROSTAT GISCO on LAU2 level and Raster Population Data with a spatial resolution 100 by 100 m from JRC are publicly not available.

[Gridded Population of the World](http://sedac.ciesin.columbia.edu/gpw/index.jsp) (GPW, version 3) and [Global Rural-Urban Mapping Project](http://sedac.ciesin.columbia.edu/gpw/index.jsp) (GRUMP) provides the related split data in urban and rural population, which is useful for the allocation of certain fuel types used in un-connected households.

**Land use data**

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) (CLC2000, CLC2006 and CLCCH1990 for Switzerland) are merged in order to cover all EU27 and EFTA4 countries.

A technical overview of the data used and the spatial allocation performed is available in the sector specific factsheet.

Map\_26 Nutrient-P emissions from un-connected households (kg/ha )

1. **General information**

The map shows nutrient-P emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of nutrient-P are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Nutrient-P emissions to surface water from un-connected households have been spatially allocated due to the information of number of employees on NUTS3 level from EUROSTAT, statistical population data on LAU2 from EUROSTAT GISCO and raster population data from JRC, in combination with land use data from CORINE. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The sewer system and Urban Waste Water Treatment Plants collect and treat polluted water, meeting requirements prior to discharge into surface water. Not all the pollution is removed (varying according to the substance in question and the kind of treatment), meaning that discharges from the system contribute to surface water pollution. Not all the polluted water from households will reach the sewer system. A part of the households is not connected to a sewer system.

The emissions of the un-connected households are calculated by using the next formula:

Un-connected households: Emission = AR x EF x % WT x PWw

Where:

AR = Number of inhabitants in the NUTS areas in 2008

EF = Emission factor per substance per inhabitant (kg) %

WT = % of the generated load per agglomeration without treatment in 2010

PWw = the pathway to surface water (in %)

The generated loads of wastewater are reported per agglomeration by Member States. For this factsheet, they have been aggregated or disaggregated to the finest NUTS region possible, NUTS3, because Member States have reported in three different NUTS levels.

The total emission per NUTS area is regionalised to the River Basin Districts and their subunits.

1. **Source data**

Emissions data

Nutrient-P emission loads to surface water from un-connected households for the year 2008 are based on national emission loads calculated based on emission factors from international studies about emissions from dwellings and activity rates (number of inhabitants per administrative unit) from Eurostat.

Employees

Number of employees from [EUROSTAT](http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/) is used on administrative level (NUTS3) for all EU27 and EFTA4 countries.

Population data

Statistical population data from EUROSTAT GISCO on LAU2 level and Raster Population Data with a spatial resolution 100 by 100 m from JRC are publicly not available.

[Gridded Population of the World](http://sedac.ciesin.columbia.edu/gpw/index.jsp) (GPW, version 3) and [Global Rural-Urban Mapping Project](http://sedac.ciesin.columbia.edu/gpw/index.jsp) (GRUMP) provides the related split data in urban and rural population, which is useful for the allocation of certain fuel types used in un-connected households.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) (CLC2000, CLC2006 and CLCCH1990 for Switzerland) are merged in order to cover all EU27 and EFTA4 countries.

Map\_27 Nutrient-N emissions from un-connected households (kg/ha )

1. **General information**

The map shows nutrient-N emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of nutrient-N are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Nutrient-N emissions to surface water from un-connected households have been spatially allocated due to the information of number of employees on NUTS3 level from EUROSTAT, statistical population data on LAU2 from EUROSTAT GISCO and raster population data from JRC, in combination with land use data from CORINE. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The sewer system and Urban Waste Water Treatment Plants collect and treat polluted water, meeting requirements prior to discharge into surface water. Not all the pollution is removed (varying according to the substance in question and the kind of treatment), meaning that discharges from the system contribute to surface water pollution. Not all the polluted water from households will reach the sewer system. A part of the households is not connected to a sewer system.

The emissions of the un-connected households are calculated by using the next formula:

Un-connected households: Emission = AR x EF x % WT x PWw

Where:

AR = Number of inhabitants in the NUTS areas in 2008

EF = Emission factor per substance per inhabitant (kg) %

WT = % of the generated load per agglomeration without treatment in 2010

PWw = the pathway to surface water (in %)

The generated loads of wastewater are reported per agglomeration by Member States. For this factsheet, they have been aggregated or disaggregated to the finest NUTS region possible, NUTS3, because Member States have reported in three different NUTS levels.

The total emission per NUTS area is regionalised to the River Basin Districts and their subunits.

**3. Source data**

Emissions data

Nutrient-N emission loads to surface water from un-connected households for the year 2008 are based on national emission loads calculated based on emission factors from international studies about emissions from dwellings and activity rates (number of inhabitants per administrative unit) from Eurostat.

Employees

Number of employees from [EUROSTAT](http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/) is used on administrative level (NUTS3) for all EU27 and EFTA4 countries.

Population data

Statistical population data from EUROSTAT GISCO on LAU2 level and Raster Population Data with a spatial resolution 100 by 100 m from JRC are publicly not available.

[Gridded Population of the World](http://sedac.ciesin.columbia.edu/gpw/index.jsp) (GPW, version 3) and [Global Rural-Urban Mapping Project](http://sedac.ciesin.columbia.edu/gpw/index.jsp) (GRUMP) provides the related split data in urban and rural population, which is useful for the allocation of certain fuel types used in un-connected households.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) (CLC2000, CLC2006 and CLCCH1990 for Switzerland) are merged in order to cover all EU27 and EFTA4 countries.

A technical overview of the data used and the spatial allocation performed is available in the sector specific factsheet.

Map\_28 Cadmium emissions from un-connected households (kg/ha )

1. **General information**

The map shows cadmium emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of cadmium are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Cadmium emissions to surface water from un-connected households have been spatially allocated due to the information of number of employees on NUTS3 level from EUROSTAT, statistical population data on LAU2 from EUROSTAT GISCO and raster population data from JRC, in combination with land use data from CORINE. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The sewer system and Urban Waste Water Treatment Plants collect and treat polluted water, meeting requirements prior to discharge into surface water. Not all the pollution is removed (varying according to the substance in question and the kind of treatment), meaning that discharges from the system contribute to surface water pollution. Not all the polluted water from households will reach the sewer system. A part of the households is not connected to a sewer system.

The emissions of the un-connected households are calculated by using the next formula:

Un-connected households: Emission = AR x EF x % WT x PWw

Where:

AR = Number of inhabitants in the NUTS areas in 2008

EF = Emission factor per substance per inhabitant (kg) %

WT = % of the generated load per agglomeration without treatment in 2010

PWw = the pathway to surface water (in %)

The generated loads of wastewater are reported per agglomeration by Member States. For this factsheet, they have been aggregated or disaggregated to the finest NUTS region possible, NUTS3, because Member States have reported in three different NUTS levels.

The total emission per NUTS area is regionalised to the River Basin Districts and their subunits.

1. **Source data**

Emissions data

Cadmium emission loads to surface water from un-connected households for the year 2008 are based on national emission loads calculated based on emission factors from international studies about emissions from dwellings and activity rates (number of inhabitants per administrative unit) from Eurostat.

Employees

Number of employees from [EUROSTAT](http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/) is used on administrative level (NUTS3) for all EU27 and EFTA4 countries.

Population data

Statistical population data from EUROSTAT GISCO on LAU2 level and Raster Population Data with a spatial resolution 100 by 100 m from JRC are publicly not available.

[Gridded Population of the World](http://sedac.ciesin.columbia.edu/gpw/index.jsp) (GPW, version 3) and [Global Rural-Urban Mapping Project](http://sedac.ciesin.columbia.edu/gpw/index.jsp) (GRUMP) provides the related split data in urban and rural population, which is useful for the allocation of certain fuel types used in un-connected households.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) (CLC2000, CLC2006 and CLCCH1990 for Switzerland) are merged in order to cover all EU27 and EFTA4 countries.

A technical overview of the data used and the spatial allocation performed is available in the sector specific factsheet.

Map\_29 Lead emissions from un-connected households (kg/ha )

1. **General information**

The map shows lead emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of lead are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

The map shows lead emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of lead are expressed in load to surface water (kg/ha) per RBDSU.

The sewer system and Urban Waste Water Treatment Plants collect and treat polluted water, meeting requirements prior to discharge into surface water. Not all the pollution is removed (varying according to the substance in question and the kind of treatment), meaning that discharges from the system contribute to surface water pollution. Not all the polluted water from households will reach the sewer system. A part of the households is not connected to a sewer system.

The emissions of the un-connected households are calculated by using the next formula:

Un-connected households: Emission = AR x EF x % WT x PWw

Where:

AR = Number of inhabitants in the NUTS areas in 2008

EF = Emission factor per substance per inhabitant (kg) %

WT = % of the generated load per agglomeration without treatment in 2010

PWw = the pathway to surface water (in %)

The generated loads of wastewater are reported per agglomeration by Member States. For this factsheet, they have been aggregated or disaggregated to the finest NUTS region possible, NUTS3, because Member States have reported in three different NUTS levels.

The total emission per NUTS area is regionalised to the River Basin Districts and their subunits.

1. **Source data**

Lead emission loads to surface water from un-connected households for the year 2008 are based on national emission loads calculated based on emission factors from international studies about emissions from dwellings and activity rates (number of inhabitants per administrative unit) from Eurostat.

Employees

Number of employees from [EUROSTAT](http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/) is used on administrative level (NUTS3) for all EU27 and EFTA4 countries.

Population data

Statistical population data from EUROSTAT GISCO on LAU2 level and Raster Population Data with a spatial resolution 100 by 100 m from JRC are publicly not available.

[Gridded Population of the World](http://sedac.ciesin.columbia.edu/gpw/index.jsp) (GPW, version 3) and [Global Rural-Urban Mapping Project](http://sedac.ciesin.columbia.edu/gpw/index.jsp) (GRUMP) provides the related split data in urban and rural population, which is useful for the allocation of certain fuel types used in un-connected households.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) (CLC2000, CLC2006 and CLCCH1990 for Switzerland) are merged in order to cover all EU27 and EFTA4 countries.

A technical overview of the data used and the spatial allocation performed is available in the sector specific factsheet.

Map\_30 Mercury emissions from un-connected households (kg/ha )

1. **General information**

The map shows mercury emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of mercury are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Mercury emissions to surface water from un-connected households have been spatially allocated due to the information of number of employees on NUTS3 level from EUROSTAT, statistical population data on LAU2 from EUROSTAT GISCO and raster population data from JRC, in combination with land use data from CORINE. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The sewer system and Urban Waste Water Treatment Plants collect and treat polluted water, meeting requirements prior to discharge into surface water. Not all the pollution is removed (varying according to the substance in question and the kind of treatment), meaning that discharges from the system contribute to surface water pollution. Not all the polluted water from households will reach the sewer system. A part of the households is not connected to a sewer system.

The emissions of the un-connected households are calculated by using the next formula:

Un-connected households: Emission = AR x EF x % WT x PWw

Where:

AR = Number of inhabitants in the NUTS areas in 2008

EF = Emission factor per substance per inhabitant (kg) %

WT = % of the generated load per agglomeration without treatment in 2010

PWw = the pathway to surface water (in %)

The generated loads of wastewater are reported per agglomeration by Member States. For this factsheet, they have been aggregated or disaggregated to the finest NUTS region possible, NUTS3, because Member States have reported in three different NUTS levels.

The total emission per NUTS area is regionalised to the River Basin Districts and their subunits.

1. **Source data**

Mercury emission loads to surface water from un-connected households for the year 2008 are based on national emission loads calculated based on emission factors from international studies about emissions from dwellings and activity rates (number of inhabitants per administrative unit) from Eurostat.

Employees

Number of employees from [EUROSTAT](http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/) is used on administrative level (NUTS3) for all EU27 and EFTA4 countries.

Population data

Statistical population data from EUROSTAT GISCO on LAU2 level and Raster Population Data with a spatial resolution 100 by 100 m from JRC are publicly not available.

[Gridded Population of the World](http://sedac.ciesin.columbia.edu/gpw/index.jsp) (GPW, version 3) and [Global Rural-Urban Mapping Project](http://sedac.ciesin.columbia.edu/gpw/index.jsp) (GRUMP) provides the related split data in urban and rural population, which is useful for the allocation of certain fuel types used in un-connected households.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) (CLC2000, CLC2006 and CLCCH1990 for Switzerland) are merged in order to cover all EU27 and EFTA4 countries.

A technical overview of the data used and the spatial allocation performed is available in the sector specific factsheet.

Map\_31 Nickel emissions from un-connected households (kg/ha )

1. **General information**

The map shows nickel emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of nickel are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Nickel emissions to surface water from un-connected households have been spatially allocated due to the information of number of employees on NUTS3 level from EUROSTAT, statistical population data on LAU2 from EUROSTAT GISCO and raster population data from JRC, in combination with land use data from CORINE. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The sewer system and Urban Waste Water Treatment Plants collect and treat polluted water, meeting requirements prior to discharge into surface water. Not all the pollution is removed (varying according to the substance in question and the kind of treatment), meaning that discharges from the system contribute to surface water pollution. Not all the polluted water from households will reach the sewer system. A part of the households is not connected to a sewer system.

The emissions of the un-connected households are calculated by using the next formula:

Un-connected households: Emission = AR x EF x % WT x PWw

Where:

AR = Number of inhabitants in the NUTS areas in 2008

EF = Emission factor per substance per inhabitant (kg) %

WT = % of the generated load per agglomeration without treatment in 2010

PWw = the pathway to surface water (in %)

The generated loads of wastewater are reported per agglomeration by Member States. For this factsheet, they have been aggregated or disaggregated to the finest NUTS region possible, NUTS3, because Member States have reported in three different NUTS levels.

The total emission per NUTS area is regionalised to the River Basin Districts and their subunits.

1. **Source data**

Nickel emission loads to surface water from un-connected households for the year 2008 are based on national emission loads calculated based on emission factors from international studies about emissions from dwellings and activity rates (number of inhabitants per administrative unit) from Eurostat.

Employees

Number of employees from [EUROSTAT](http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/) is used on administrative level (NUTS3) for all EU27 and EFTA4 countries.

Population data

Statistical population data from EUROSTAT GISCO on LAU2 level and Raster Population Data with a spatial resolution 100 by 100 m from JRC are publicly not available.

[Gridded Population of the World](http://sedac.ciesin.columbia.edu/gpw/index.jsp) (GPW, version 3) and [Global Rural-Urban Mapping Project](http://sedac.ciesin.columbia.edu/gpw/index.jsp) (GRUMP) provides the related split data in urban and rural population, which is useful for the allocation of certain fuel types used in un-connected households.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) (CLC2000, CLC2006 and CLCCH1990 for Switzerland) are merged in order to cover all EU27 and EFTA4 countries.

A technical overview of the data used and the spatial allocation performed is available in the sector specific factsheet.

Map\_32 Anthracene emissions from un-connected households (kg/ha )

1. **General information**

The map shows anthracene emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of anthracene are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Anthracene emissions to surface water from un-connected households have been spatially allocated due to the information of number of employees on NUTS3 level from EUROSTAT, statistical population data on LAU2 from EUROSTAT GISCO and raster population data from JRC, in combination with land use data from CORINE. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The sewer system and Urban Waste Water Treatment Plants collect and treat polluted water, meeting requirements prior to discharge into surface water. Not all the pollution is removed (varying according to the substance in question and the kind of treatment), meaning that discharges from the system contribute to surface water pollution. Not all the polluted water from households will reach the sewer system. A part of the households is not connected to a sewer system.

The emissions of the un-connected households are calculated by using the next formula:

Un-connected households: Emission = AR x EF x % WT x PWw

Where:

AR = Number of inhabitants in the NUTS areas in 2008

EF = Emission factor per substance per inhabitant (kg) %

WT = % of the generated load per agglomeration without treatment in 2010

PWw = the pathway to surface water (in %)

The generated loads of wastewater are reported per agglomeration by Member States. For this factsheet, they have been aggregated or disaggregated to the finest NUTS region possible, NUTS3, because Member States have reported in three different NUTS levels.

The total emission per NUTS area is regionalised to the River Basin Districts and their subunits.

1. **Source data**

Anthracene emission loads to surface water from un-connected households for the year 2008 are based on national emission loads calculated based on emission factors from international studies about emissions from dwellings and activity rates (number of inhabitants per administrative unit) from Eurostat.

Employees

Number of employees from [EUROSTAT](http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/) is used on administrative level (NUTS3) for all EU27 and EFTA4 countries.

Population data

Statistical population data from EUROSTAT GISCO on LAU2 level and Raster Population Data with a spatial resolution 100 by 100 m from JRC are publicly not available.

[Gridded Population of the World](http://sedac.ciesin.columbia.edu/gpw/index.jsp) (GPW, version 3) and [Global Rural-Urban Mapping Project](http://sedac.ciesin.columbia.edu/gpw/index.jsp) (GRUMP) provides the related split data in urban and rural population, which is useful for the allocation of certain fuel types used in un-connected households.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) (CLC2000, CLC2006 and CLCCH1990 for Switzerland) are merged in order to cover all EU27 and EFTA4 countries.

A technical overview of the data used and the spatial allocation performed is available in the sector specific factsheet.

Map\_33 Fluoranthene emissions from un-connected households (kg/ha )

1. **General information**

The map shows fluoranthene emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of fluoranthene are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Fluoranthene emissions to surface water from un-connected households have been spatially allocated due to the information of number of employees on NUTS3 level from EUROSTAT, statistical population data on LAU2 from EUROSTAT GISCO and raster population data from JRC, in combination with land use data from CORINE. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The sewer system and Urban Waste Water Treatment Plants collect and treat polluted water, meeting requirements prior to discharge into surface water. Not all the pollution is removed (varying according to the substance in question and the kind of treatment), meaning that discharges from the system contribute to surface water pollution. Not all the polluted water from households will reach the sewer system. A part of the households is not connected to a sewer system.

The emissions of the un-connected households are calculated by using the next formula:

Un-connected households: Emission = AR x EF x % WT x PWw

Where:

AR = Number of inhabitants in the NUTS areas in 2008

EF = Emission factor per substance per inhabitant (kg) %

WT = % of the generated load per agglomeration without treatment in 2010

PWw = the pathway to surface water (in %)

The generated loads of wastewater are reported per agglomeration by Member States. For this factsheet, they have been aggregated or disaggregated to the finest NUTS region possible, NUTS3, because Member States have reported in three different NUTS levels.

The total emission per NUTS area is regionalised to the River Basin Districts and their subunits.

1. **Source data**

Fluoranthene emission loads to surface water from un-connected households for the year 2008 are based on national emission loads calculated based on emission factors from international studies about emissions from dwellings and activity rates (number of inhabitants per administrative unit) from Eurostat.

Employees

Number of employees from [EUROSTAT](http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/) is used on administrative level (NUTS3) for all EU27 and EFTA4 countries.

Population data

Statistical population data from EUROSTAT GISCO on LAU2 level and Raster Population Data with a spatial resolution 100 by 100 m from JRC are publicly not available.

[Gridded Population of the World](http://sedac.ciesin.columbia.edu/gpw/index.jsp) (GPW, version 3) and [Global Rural-Urban Mapping Project](http://sedac.ciesin.columbia.edu/gpw/index.jsp) (GRUMP) provides the related split data in urban and rural population, which is useful for the allocation of certain fuel types used in un-connected households.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) (CLC2000, CLC2006 and CLCCH1990 for Switzerland) are merged in order to cover all EU27 and EFTA4 countries.

A technical overview of the data used and the spatial allocation performed is available in the sector specific factsheet.

Map\_34 Copper emissions from un-connected households (kg/ha )

1. **General information**

The map shows copper emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of copper are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Copper emissions to surface water from un-connected households have been spatially allocated due to the information of number of employees on NUTS3 level from EUROSTAT, statistical population data on LAU2 from EUROSTAT GISCO and raster population data from JRC, in combination with land use data from CORINE. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The sewer system and Urban Waste Water Treatment Plants collect and treat polluted water, meeting requirements prior to discharge into surface water. Not all the pollution is removed (varying according to the substance in question and the kind of treatment), meaning that discharges from the system contribute to surface water pollution. Not all the polluted water from households will reach the sewer system. A part of the households is not connected to a sewer system.

The emissions of the un-connected households are calculated by using the next formula:

Un-connected households: Emission = AR x EF x % WT x PWw

Where:

AR = Number of inhabitants in the NUTS areas in 2008

EF = Emission factor per substance per inhabitant (kg) %

WT = % of the generated load per agglomeration without treatment in 2010

PWw = the pathway to surface water (in %)

The generated loads of wastewater are reported per agglomeration by Member States. For this factsheet, they have been aggregated or disaggregated to the finest NUTS region possible, NUTS3, because Member States have reported in three different NUTS levels.

The total emission per NUTS area is regionalised to the River Basin Districts and their subunits.

1. **Source data**

Copper emission loads to surface water from un-connected households for the year 2008 are based on national emission loads calculated based on emission factors from international studies about emissions from dwellings and activity rates (number of inhabitants per administrative unit) from Eurostat.

Employees

Number of employees from [EUROSTAT](http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/) is used on administrative level (NUTS3) for all EU27 and EFTA4 countries.

Population data

Statistical population data from EUROSTAT GISCO on LAU2 level and Raster Population Data with a spatial resolution 100 by 100 m from JRC are publicly not available.

[Gridded Population of the World](http://sedac.ciesin.columbia.edu/gpw/index.jsp) (GPW, version 3) and [Global Rural-Urban Mapping Project](http://sedac.ciesin.columbia.edu/gpw/index.jsp) (GRUMP) provides the related split data in urban and rural population, which is useful for the allocation of certain fuel types used in un-connected households.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) (CLC2000, CLC2006 and CLCCH1990 for Switzerland) are merged in order to cover all EU27 and EFTA4 countries.

A technical overview of the data used and the spatial allocation performed is available in the sector specific factsheet.

Map\_35 Zinc emissions from un-connected households (kg/ha )

1. **General information**

The map shows zinc emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of zinc are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Zinc emissions to surface water from un-connected households have been spatially allocated due to the information of number of employees on NUTS3 level from EUROSTAT, statistical population data on LAU2 from EUROSTAT GISCO and raster population data from JRC, in combination with land use data from CORINE. The emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The sewer system and Urban Waste Water Treatment Plants collect and treat polluted water, meeting requirements prior to discharge into surface water. Not all the pollution is removed (varying according to the substance in question and the kind of treatment), meaning that discharges from the system contribute to surface water pollution. Not all the polluted water from households will reach the sewer system. A part of the households is not connected to a sewer system.

The emissions of the un-connected households are calculated by using the next formula:

Un-connected households: Emission = AR x EF x % WT x PWw

Where:

AR = Number of inhabitants in the NUTS areas in 2008

EF = Emission factor per substance per inhabitant (kg) %

WT = % of the generated load per agglomeration without treatment in 2010

PWw = the pathway to surface water (in %)

The generated loads of wastewater are reported per agglomeration by Member States. For this factsheet, they have been aggregated or disaggregated to the finest NUTS region possible, NUTS3, because Member States have reported in three different NUTS levels.

The total emission per NUTS area is regionalised to the River Basin Districts and their subunits.

1. **Source data**

Zinc emission loads to surface water from un-connected households for the year 2008 are based on national emission loads calculated based on emission factors from international studies about emissions from dwellings and activity rates (number of inhabitants per administrative unit) from Eurostat.

Employees

Number of employees from [EUROSTAT](http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/) is used on administrative level (NUTS3) for all EU27 and EFTA4 countries.

Population data

Statistical population data from EUROSTAT GISCO on LAU2 level and Raster Population Data with a spatial resolution 100 by 100 m from JRC are publicly not available.

[Gridded Population of the World](http://sedac.ciesin.columbia.edu/gpw/index.jsp) (GPW, version 3) and [Global Rural-Urban Mapping Project](http://sedac.ciesin.columbia.edu/gpw/index.jsp) (GRUMP) provides the related split data in urban and rural population, which is useful for the allocation of certain fuel types used in un-connected households.

Land use data

[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) (CLC2000, CLC2006 and CLCCH1990 for Switzerland) are merged in order to cover all EU27 and EFTA4 countries.

A technical overview of the data used and the spatial allocation performed is available in the sector specific factsheet.

1. **Inland navigation**

Map\_36 TOC emissions from inland navigation (kg/ha )

1. **General information**

The map shows TOC emissions to surface water from inland navigation per River Basin District Subunit (RBDSU) level for the reference year 2011, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of TOC are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Diffuse emissions of TOC to surface water from inland navigation were spatially allocated according to the spatial pattern of navigable inland waterways using georeferenced water course and shipping activity data. The national emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The emissions are calculated for inland vessels. Emissions are calculated by multiplying an activity rate (AR), in the case of inland navigation the number of ton-kilometres (tkm; a

ton-kilometre is one ton of cargo transported one km across the water) traversed by all professional vessels on inland waters within European Union (EU27 + EFTA countries), by an emission factor (EF), expressed in emission per AR unit. The calculation method is shown in the formula below:

Es = AR x EF

Where:

Es = Emission of substance (pollutants) to surface waters

AR = Activity rate, in this case the traffic performance (distance covered on the EU inland surface waters in surface 106 tkm)

EF = Emission factor (kg/106 tkm)

The emission calculated in this way is referred to as the total emission. Because all emissions are released directly into surface waters, the total emission equals the net emission to surface waters.

1. **Source data**

Emission data used are calculated national totals for inland navigation (shipping) providing TOC emission loads to surface water for the year 2011. These data are based on national activity rates form Eurostat and emission factor data extracted from the [2008 PRTR Netherlands](http://www.emissieregistratie.nl/erpubliek/bumper.nl.aspx). The methodology applied and data used is described in detail in the sector specific factsheet.

Administrative boundaries data

[EUROSTAT GISCOAdministrative units and Statistical units](http://epp.eurostat.ec.europa.eu/portal/page/portal/gisco/popups/references/administrative_units_statistical_units_1)

Activity data of inland navigation

[TRANS-TOOLS](http://energy.jrc.ec.europa.eu/transtools/) river network traffic volume data

[Voies Navigables d'Europe (VNE)](http://www.vne-waterways.eu/) information on accessibility of inland waterways

Water course information

[EUROSTAT, GISCO](http://epp.EUROSTAT.ec.europa.eu/portal/page/portal/gisco/geodata/reference): Water-courses from EuroRegional Map v30: Hydrography (HYDR)  
[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) ([CLC2006](file:///\\Iertfu01\d\00_EPRTR_Water_Diffuse_050313\03_Maps_Water_Diffuse_140313\05_National_Inland_Navigation\00_Map%20descriptions\51eb60177a093293c7751a0006117203), [CLC2000](file:///\\Iertfu01\d\00_EPRTR_Water_Diffuse_050313\03_Maps_Water_Diffuse_140313\05_National_Inland_Navigation\00_Map%20descriptions\4d6428fbdb7f3041963b1fb365a5fbdb) and [CLCCH1990 for Switzerland](http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung/corine_land_cover.parsys.0003.downloadList.34866.DownloadFile.tmp/clcbn85.zip)) are merged in order to cover all EU27 and EFTA4 countries.

Map\_37 Nutrient-P emissions from inland navigation (kg/ha )

1. **General information**

The map shows copper emission loads to surface water from un-connected households per River Basin District Subunit (RBDSU) level for the reference year 2008, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of copper are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Diffuse emissions of nutrient-P to surface water from inland navigation were spatially allocated according to the spatial pattern of navigable inland waterways using georeferenced water course and shipping activity data. The national emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The emissions are calculated for inland vessels. Emissions are calculated by multiplying an activity rate (AR), in the case of inland navigation the number of ton-kilometres (tkm; a

ton-kilometre is one ton of cargo transported one km across the water) traversed by all professional vessels on inland waters within European Union (EU27 + EFTA countries), by an emission factor (EF), expressed in emission per AR unit. The calculation method is shown in the formula below:

Es = AR x EF

Where:

Es = Emission of substance (pollutants) to surface waters

AR = Activity rate, in this case the traffic performance (distance covered on the EU inland surface waters in surface 106 tkm)

EF = Emission factor (kg/106 tkm)

The emission calculated in this way is referred to as the total emission. Because all emissions are released directly into surface waters, the total emission equals the net emission to surface waters.

1. **Source data**

Emission data used are calculated national totals for inland navigation (shipping) providing nutrient-P emission loads to surface water for the year 2011. These data are based on national activity rates form Eurostat and emission factor data extracted from the [2008 PRTR Netherlands](http://www.emissieregistratie.nl/erpubliek/bumper.nl.aspx). The methodology applied and data used is described in detail in the sector specific factsheet.

Administrative boundaries data

[EUROSTAT GISCOAdministrative units and Statistical units](http://epp.eurostat.ec.europa.eu/portal/page/portal/gisco/popups/references/administrative_units_statistical_units_1)

Activity data of inland navigation

[TRANS-TOOLS](http://energy.jrc.ec.europa.eu/transtools/) river network traffic volume data

[Voies Navigables d'Europe (VNE)](http://www.vne-waterways.eu/) information on accessibility of inland waterways

Water course information

[EUROSTAT, GISCO](http://epp.EUROSTAT.ec.europa.eu/portal/page/portal/gisco/geodata/reference): Water-courses from EuroRegional Map v30: Hydrography (HYDR)  
[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) ([CLC2006](file:///\\Iertfu01\d\00_EPRTR_Water_Diffuse_050313\03_Maps_Water_Diffuse_140313\05_National_Inland_Navigation\00_Map%20descriptions\51eb60177a093293c7751a0006117203), [CLC2000](file:///\\Iertfu01\d\00_EPRTR_Water_Diffuse_050313\03_Maps_Water_Diffuse_140313\05_National_Inland_Navigation\00_Map%20descriptions\4d6428fbdb7f3041963b1fb365a5fbdb) and [CLCCH1990 for Switzerland](http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung/corine_land_cover.parsys.0003.downloadList.34866.DownloadFile.tmp/clcbn85.zip)) are merged in order to cover all EU27 and EFTA4 countries.

Map\_38 Nutrient-N emissions from inland navigation (kg/ha )

1. **General information**

The map shows nutrient-N emissions to surface water from inland navigation per River Basin District Subunit (RBDSU) level for the reference year 2011, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of nutrient-N are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Diffuse emissions of nutrient-N to surface water from inland navigation were spatially allocated according to the spatial pattern of navigable inland waterways using georeferenced water course and shipping activity data. The national emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The emissions are calculated for inland vessels. Emissions are calculated by multiplying an activity rate (AR), in the case of inland navigation the number of ton-kilometres (tkm; a

ton-kilometre is one ton of cargo transported one km across the water) traversed by all professional vessels on inland waters within European Union (EU27 + EFTA countries), by an emission factor (EF), expressed in emission per AR unit. The calculation method is shown in the formula below:

Es = AR x EF

Where:

Es = Emission of substance (pollutants) to surface waters

AR = Activity rate, in this case the traffic performance (distance covered on the EU inland surface waters in surface 106 tkm)

EF = Emission factor (kg/106 tkm)

The emission calculated in this way is referred to as the total emission. Because all emissions are released directly into surface waters, the total emission equals the net emission to surface waters.

1. **Source data**

Emission data used are calculated national totals for inland navigation (shipping) providing nutrient-N emission loads to surface water for the year 2011. These data are based on national activity rates form Eurostat and emission factor data extracted from the [2008 PRTR Netherlands](http://www.emissieregistratie.nl/erpubliek/bumper.nl.aspx). The methodology applied and data used is described in detail in the sector specific factsheet.

Administrative boundaries data

[EUROSTAT GISCOAdministrative units and Statistical units](http://epp.eurostat.ec.europa.eu/portal/page/portal/gisco/popups/references/administrative_units_statistical_units_1)

Activity data of inland navigation

[TRANS-TOOLS](http://energy.jrc.ec.europa.eu/transtools/) river network traffic volume data

[Voies Navigables d'Europe (VNE)](http://www.vne-waterways.eu/) information on accessibility of inland waterways

Water course information

[EUROSTAT, GISCO](http://epp.EUROSTAT.ec.europa.eu/portal/page/portal/gisco/geodata/reference): Water-courses from EuroRegional Map v30: Hydrography (HYDR)  
[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) ([CLC2006](file:///\\Iertfu01\d\00_EPRTR_Water_Diffuse_050313\03_Maps_Water_Diffuse_140313\05_National_Inland_Navigation\00_Map%20descriptions\51eb60177a093293c7751a0006117203), [CLC2000](file:///\\Iertfu01\d\00_EPRTR_Water_Diffuse_050313\03_Maps_Water_Diffuse_140313\05_National_Inland_Navigation\00_Map%20descriptions\4d6428fbdb7f3041963b1fb365a5fbdb) and [CLCCH1990 for Switzerland](http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung/corine_land_cover.parsys.0003.downloadList.34866.DownloadFile.tmp/clcbn85.zip)) are merged in order to cover all EU27 and EFTA4 countries.

Map\_39 \_Anthracene emissions from inland navigation (kg/ha )

1. **General information**

The map shows anthracene emissions to surface water from inland navigation per River Basin District Subunit (RBDSU) level for the reference year 2011, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of anthracene are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Diffuse emissions of anthracene to surface water from inland navigation were spatially allocated according to the spatial pattern of navigable inland waterways using georeferenced water course and shipping activity data. The national emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The emissions are calculated for inland vessels. Emissions are calculated by multiplying an activity rate (AR), in the case of inland navigation the number of ton-kilometres (tkm; a

ton-kilometre is one ton of cargo transported one km across the water) traversed by all professional vessels on inland waters within European Union (EU27 + EFTA countries), by an emission factor (EF), expressed in emission per AR unit. The calculation method is shown in the formula below:

Es = AR x EF

Where:

Es = Emission of substance (pollutants) to surface waters

AR = Activity rate, in this case the traffic performance (distance covered on the EU inland surface waters in surface 106 tkm)

EF = Emission factor (kg/106 tkm)

The emission calculated in this way is referred to as the total emission. Because all emissions are released directly into surface waters, the total emission equals the net emission to surface waters.

1. **Source data**

Emission data used are calculated national totals for inland navigation (shipping) providing anthracene emission loads to surface water for the year 2011. These data are based on national activity rates form Eurostat and emission factor data extracted from the [2008 PRTR Netherlands](http://www.emissieregistratie.nl/erpubliek/bumper.nl.aspx). The methodology applied and data used is described in detail in the sector specific factsheet.

Administrative boundaries data

[EUROSTAT GISCOAdministrative units and Statistical units](http://epp.eurostat.ec.europa.eu/portal/page/portal/gisco/popups/references/administrative_units_statistical_units_1)

Activity data of inland navigation

[TRANS-TOOLS](http://energy.jrc.ec.europa.eu/transtools/) river network traffic volume data

[Voies Navigables d'Europe (VNE)](http://www.vne-waterways.eu/) information on accessibility of inland waterways

Water course information

[EUROSTAT, GISCO](http://epp.EUROSTAT.ec.europa.eu/portal/page/portal/gisco/geodata/reference): Water-courses from EuroRegional Map v30: Hydrography (HYDR)  
[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) ([CLC2006](file:///\\Iertfu01\d\00_EPRTR_Water_Diffuse_050313\03_Maps_Water_Diffuse_140313\05_National_Inland_Navigation\00_Map%20descriptions\51eb60177a093293c7751a0006117203), [CLC2000](file:///\\Iertfu01\d\00_EPRTR_Water_Diffuse_050313\03_Maps_Water_Diffuse_140313\05_National_Inland_Navigation\00_Map%20descriptions\4d6428fbdb7f3041963b1fb365a5fbdb) and [CLCCH1990 for Switzerland](http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung/corine_land_cover.parsys.0003.downloadList.34866.DownloadFile.tmp/clcbn85.zip)) are merged in order to cover all EU27 and EFTA4 countries.

Map\_40 Fluoranthene emissions from inland navigation (kg/ha )

1. **General information**

The map shows fluoranthene emissions to surface water from inland navigation per River Basin District Subunit (RBDSU) level for the reference year 2011, for EU27 and EFTA countries with available data in 2013. Diffuse emissions of fluoranthene are expressed in load to surface water (kg/ha) per RBDSU.

1. **Methodology**

Diffuse emissions of fluoranthene to surface water from inland navigation were spatially allocated according to the spatial pattern of navigable inland waterways using georeferenced water course and shipping activity data. The national emissions were allocated to the RBDSU spatial level using GIS visualization techniques.

The emissions are calculated for inland vessels. Emissions are calculated by multiplying an activity rate (AR), in the case of inland navigation the number of ton-kilometres (tkm; a

ton-kilometre is one ton of cargo transported one km across the water) traversed by all professional vessels on inland waters within European Union (EU27 + EFTA countries), by an emission factor (EF), expressed in emission per AR unit. The calculation method is shown in the formula below:

Es = AR x EF

Where:

Es = Emission of substance (pollutants) to surface waters

AR = Activity rate, in this case the traffic performance (distance covered on the EU inland surface waters in surface 106 tkm)

EF = Emission factor (kg/106 tkm)

The emission calculated in this way is referred to as the total emission. Because all emissions are released directly into surface waters, the total emission equals the net emission to surface waters.

1. **Source data**

Emission data used are calculated national totals for inland navigation (shipping) providing fluoranthene emission loads to surface water for the year 2011. These data are based on national activity rates form Eurostat and emission factor data extracted from the [2008 PRTR Netherlands](http://www.emissieregistratie.nl/erpubliek/bumper.nl.aspx). The methodology applied and data used is described in detail in the sector specific factsheet.

Administrative boundaries data

[EUROSTAT GISCOAdministrative units and Statistical units](http://epp.eurostat.ec.europa.eu/portal/page/portal/gisco/popups/references/administrative_units_statistical_units_1)

Activity data of inland navigation

[TRANS-TOOLS](http://energy.jrc.ec.europa.eu/transtools/) river network traffic volume data

[Voies Navigables d'Europe (VNE)](http://www.vne-waterways.eu/) information on accessibility of inland waterways

Water course information

[EUROSTAT, GISCO](http://epp.EUROSTAT.ec.europa.eu/portal/page/portal/gisco/geodata/reference): Water-courses from EuroRegional Map v30: Hydrography (HYDR)  
[CORINE Land Cover data](http://www.eea.europa.eu/data-and-maps/data) ([CLC2006](file:///\\Iertfu01\d\00_EPRTR_Water_Diffuse_050313\03_Maps_Water_Diffuse_140313\05_National_Inland_Navigation\00_Map%20descriptions\51eb60177a093293c7751a0006117203), [CLC2000](file:///\\Iertfu01\d\00_EPRTR_Water_Diffuse_050313\03_Maps_Water_Diffuse_140313\05_National_Inland_Navigation\00_Map%20descriptions\4d6428fbdb7f3041963b1fb365a5fbdb) and [CLCCH1990 for Switzerland](http://www.bfs.admin.ch/bfs/portal/de/index/dienstleistungen/geostat/datenbeschreibung/corine_land_cover.parsys.0003.downloadList.34866.DownloadFile.tmp/clcbn85.zip)) are merged in order to cover all EU27 and EFTA4 countries.