Sources of input data for ESLAB Municipal GHG budget calculations by class (natural ecosystem components, anthropogenic emissions)

Class	Data collected/ Period represented	Data	Source	Link	Resolution
Forest biomass	1992-2000	Growing stock volumes by tree species and forestry centre	LUKE Metinfo Finnish Statistical Yearbook of Forestry	http://www.metla.fi/metinfo/tilasto/julkaisut/vsk/taulukot/2001/luku01/01_0121.htm	Forestry center
Forest biomass	1992-2000	Tree species dominance and pure and mixed stands on forest land	LUKE Metinfo Finnish Statistical Yearbook of Forestry	http://www.metla.fi/metinfo/tilasto/julkaisut/vsk/taulukot/2014/index.html	Forestry center
Forest biomass	1991-2013	Total roundwood removals	LUKE Statistics database Forest statistics	http://statdb.luke.fi/PXWeb/pxweb/en/	Forestry center
Forest biomass	1991-2013	Total drain	LUKE Statistics database Forest statistics	http://statdb.luke.fi/PXWeb/pxweb/en/	Forestry center
Forest biomass	2009-2013	Mean volume of growing stock on mineral soils on forest land and forest and poorly productive forest land by forestry centres	LUKE Metinfo Multisource National Forest Inventory MS-NFI11-2013 Table 2b	http://www.metla.fi/ohjelma/vmi/vmi-moni.htm.	Municipality, Forestry center
Forest biomass	2009-2013	Dominant tree species on forest land by forestry centres	LUKE Metinfo Multisource National Forest Inventory MS-NFI11-2013 Table 3a	http://www.metla.fi/ohjelma/vmi/vmi-moni.htm.	Municipality, Forestry center
Forest biomass	2009-2013	The growing stock volume by tree species on forest land and poorly productive forest land by forestry centres	LUKE Metinfo Multisource National Forest Inventory MS-NFI11-2013 Table 6b	http://www.metla.fi/ohjelma/vmi/vmi-moni.htm.	Municipality, Forestry center
Forest biomass	2011-2020	Stem volume 1000 m3	LUKE Metinfo MELA Report generator NFI11	http://mela2.metla.fi/mela/tupa/index-en.php	Forestry center
Forest biomass	2011-2020	Biomass of living trees 1000 t by compartment (Total, Stem, Branches and foliage, Stump and root)	LUKE Metinfo MELA Report generator NFI11	http://mela2.metla.fi/mela/tupa/index-en.php	Forestry center
Forest biomass	2011-2020	Increment 1000 m3/yr	LUKE Metinfo MELA Report generator NFI11	http://mela2.metla.fi/mela/tupa/index-en.php	Forestry center
Forest biomass	2011-2020	Stem volume of total drain 1000 m3/yr	LUKE Metinfo MELA Report generator NFI11	http://mela2.metla.fi/mela/tupa/index-en.php	Forestry center
Forest biomass	2011-2020	Stem volume of roundwood removal 1000 m3/yr	LUKE Metinfo MELA Report generator NFI11	http://mela2.metla.fi/mela/tupa/index-en.php	Forestry center
Forest biomass	2011-2020	Stem biomass of roundwood removal 1000 t/yr	LUKE Metinfo MELA Report generator NFI11	http://mela2.metla.fi/mela/tupa/index-en.php	Forestry center
Forest biomass	2011-2020	Biomass of total drain 1000 t/yr	LUKE Metinfo MELA Report generator NFI11	http://mela2.metla.fi/mela/tupa/index-en.php	Forestry center
Forest biomass	2011-2020	Stem biomass of total drain 1000 t/yr	LUKE Metinfo MELA Report generator NFI11	http://mela2.metla.fi/mela/tupa/index-en.php	Forestry center
Forest biomass	2011-2020	Branch and foliage biomass of total drain 1000 t/yr	LUKE Metinfo MELA Report generator NFI11	http://mela2.metla.fi/mela/tupa/index-en.php	Forestry center
Forest biomass	2011-2020	Stump and root biomass of total drain 1000 t/yr	LUKE Metinfo MELA Report generator NFI11	http://mela2.metla.fi/mela/tupa/index-en.php	Forestry center
Forest biomass	2011-2020	Total biomass of cutting drain 1000 t/yr	LUKE Metinfo MELA Report generator NFI11	http://mela2.metla.fi/mela/tupa/index-en.php	Forestry center
Forest biomass	2011-2020	Stem biomass of cutting drain 1000 t/yr	LUKE Metinfo MELA Report generator NFI11	http://mela2.metla.fi/mela/tupa/index-en.php	Forestry center
Forest biomass	2011-2020	Branch and foliage biomass of cutting drain 1000 t/yr	LUKE Metinfo MELA Report generator NFI11	http://mela2.metla.fi/mela/tupa/index-en.php	Forestry center
Forest biomass	2011-2020	Stump and root biomass of cutting drain 1000 t/yr	LUKE Metinfo MELA Report generator NFI11	http://mela2.metla.fi/mela/tupa/index-en.php	Forestry center
Forest biomass	2011-2020	Total volume of energy wood removal 1000 m3/yr	LUKE Metinfo MELA Report generator NFI11	http://mela2.metla.fi/mela/tupa/index-en.php	Forestry center
Forest biomass	2011-2020	Total biomass of energy wood removal 1000 t/yr	LUKE Metinfo MELA Report generator NFI11	http://mela2.metla.fi/mela/tupa/index-en.php	Forestry center
Forest biomass	2011-2020	Stem biomass of energy wood removal 1000 t/yr	LUKE Metinfo MELA Report generator NFI11	http://mela2.metla.fi/mela/tupa/index-en.php	Forestry center
Forest biomass	2011-2020	Branch and foliage biomass of energy wood removal 1000 t/yr	LUKE Metinfo MELA Report generator NFI11	http://mela2.metla.fi/mela/tupa/index-en.php	Forestry center
Forest biomass	2011-2020	Stump and root biomass of energy wood removal 1000 t/yr	LUKE Metinfo MELA Report generator NFI11	http://mela2.metla.fi/mela/tupa/index-en.php	Forestry center
Forest biomass	2011-2020	Roundwood sized energy wood removal 1000 m3/v	LUKE Metinfo MELA Report generator NFI11	http://mela2.metla.fi/mela/tupa/index-en.php	Forestry center
Forest mineral soil	1981-2010	Mean air temperature Deg C	Calculated from Finnish climate data in 10x10 km resolution		Municipality
Forest mineral soil	1981-2010	Mean annual precipitation mm	Calculated from Finnish climate data in 10x10 km resolution		Municipality
Forest organic soils	2009-2011	Emission factor of forest organic soil by vegetation type. Herb-rich vegetation (Rhtkg)	FIN NIR (Kansallisen kasvihuonekaasuinventaarion raportti,Tilastokeskus), appendix 7g, table 1	http://www.stat.fi/tup/khkinv/fin_nir_2012_2014_04_15.pdf **Kaikki NIRit:** http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/8108.php	By geographic area South/North
Forest organic soils	2009-2011	Emission factor of forest organic soil by vegetation type. Vaccinium myrtillus (Mtkg)	"	"	"
Forest organic soils	2009-2011	Emission factor of forest organic soil by vegetation type. Vaccinium vitis-idae (Ptkg)	"	"	"
Forest organic soils	2009-2011	Emission factor of forest organic soil by vegetation type. Dwarf shrub (Vatkg)	"	"	"
Forest organic soils	2009-2011	Emission factor of forest organic soil by vegetation type. Cladina (Jätkg)	"	"	"
Forest organic soils	2009-2011	Herb-rich vegetation (Rhtkg): Area of each vegetation type as share of total area of drained organic forest soil	FIN NIR, Tilastokeskus, table 7.2-1	http://www.stat.fi/tup/khkinv/fin_nir_2012_2014_04_15.pdf **Kaikki NIRit:** http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/8108.php	National
Forest organic soils	2009-2011	Vaccinium myrtillus (Mtkg) : - " -	"	"	
Forest organic soils	2009-2011	Vaccinium vitis-idae (Ptkg): - "-	"	"	
Forest organic soils	2009-2011	Dwarf shrub (Vatkg): -"-	"	"	
Forest organic soils	2009-2011	Cladina (Jätkg) : "	"	"	
Forest fertilization	2009-2011	Area of forest fertilization	Yearbook of forest statistics	http://www.metla.fi/metinfo/tilasto/julkaisut/vsk/2010/vsk10_01.pdf	Forestry center
Forest fertilization	2009-2011	Forest area	Yearbook of forest statistics	http://www.metla.fi/metinfo/tilasto/julkaisut/vsk/2010/vsk10_01.pdf	Forestry center
Forest fertilization	2009-2011	Fertilization amount, calculated from mean values of fertilization application and fertilization period	Guidelines for forest fertilization by Yara, amount estimated from general recommendation	http://www.yara.fi/images/YARAMetsalannoitusopas2012LoRes_tcm431-119664.pdf	National

Forest fertilization	2009-2012	Emission factor of forest fertilization (kg N2O-N/kg N)	FIN NIR, CRF5(I)	http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/8108.php -> CRF	National
Agricultural areas	Mean value for period 1990-2010	Biomass carbon stock change, 20 yr average	LUKE		National
Agricultural areas	"	Soil organic carbon stock change, coarse mineral soils (kg ha-1 yr-1)	Heikkinen et al 2013, Data in Figs. 5 and 7	http://onlinelibrary.wiley.com/doi/10.1111/gcb.12137/full	Pohjois-, Etelä-, Itä- ja Länsi-Suomi
Agricultural areas	"	Soil organic carbon stock change, clay soils (kg ha-1 yr-1)	"		"
Agricultural areas		Emission factors CO2 for organic soils by crop type:	FIN NIR, Table 7.3-5, s. 299	http://www.stat.fi/tup/khkinv/fin_nir_2012_2014_04_15.pdf	National
Agricultural areas		Grassland (perennial crops)			
Agricultural areas		Other (Annual crops)			
Agricultural areas		Emission factor of liming (mean value for liming agents consisting of Ca and CaMg)	FIN NIR, CRF5(IV)	http://www.stat.fi/tup/khkinv/khkaasut_raportointi.html -> CRF taulut	National
Agricultural areas		Mean liming dose per field area	Liming guidelines of Nordkalk liming association	http://www.nordkalk.fi/default.asp?viewID=2104	
Agricultural areas	2009-2012	Agricultural area, annual crops	Luke/Tike statistics	http://www.maataloustilastot.fi/tietopalvelu_fi	Municipality
Agricultural areas	"	Agricultural area, perennial crops	"	"	Municipality
Agricultural areas		Biomass: field area of orchards (apple, currant)	"	"	Municipality
Agricultural areas	2006-2010	Proportion of coarse mineral soils	Viljavuuspalvelu Oy, statistics	http://www.tuloslaari.fi/index.php?id=41	Municipality
Agricultural areas		Proportion of clay soils	"	"	Municipality
Agricultural areas		Proportion of organic soils	"	"	Municipality
Lakes		CO2 evasion (for lakes of 5 size classes)	Kortelainen et al. 2006.		National
Lakes		CO2 sequestration (for lakes of 5 size classes)	"		
Lakes		CH4 diffusion,(for lakes of 5 size classes)	Kortelainen ym. (2006) and Juutinen et al. (2009). CH4 diffusion was calculated (Juutinen, unpublished data), in accordance with methods for CO2 diffusion (Juutinen et al. 2009)		National
Lakes		CH4 ebullition, (for lakes of 5 size classes)	Bastviken ym. 2004		National
Lakes		Lake area by size class (5 classes)	Syken Ranta10 aineisto / Hallinnolliset alueet (2013 alk.) aineisto		Municipality
Lake littoral areas		Littoral areas, vegetation coverage (5kpl, kokoluokat)	Bergström ym. (2007)		National
Lake littoral areas		Vegetation cover species: Phragmites australis	"		National
Lake littoral areas		Vegetation cover species: Equisetum fluviatile	"		National
Lake littoral areas		CO2 evasion from emergent vegetation: Phragmites australis	Juutinen et al. 2003		National
Lake littoral areas		CO2 evasion from emergent vegetation: Equisetum fluviatile	"		National
Rivers		CO2 evasion (4 classes of river width)	Humborg et al. 2010, Data in Figs. 1 and 7		National
Rivers		River area by size class (4 classes of river width)	Syken Ranta10 aineisto / Hallinnolliset alueet (2013 alk.) aineisto		Municipality
Marine littoral areas		CH4 evasion from vegetation, P.australis			National
Marine littoral areas		Area of marine littoral vegetated areas. Sea reed bed area (ha) was derived by using the CORINE land cover class Salt marshes (CLC class 4212), while the methane flux estimates were based on the data derived from lake littorals.	CORINE land cover 2012	http://www.syke.fi/openinformation	National
Undditched peatlands		CO2 flux, ombrotrophic mires	Saarnio et al 2007		National
Undditched peatlands		CO2 flux, minerotrophic mires	"		
Undditched peatlands		CH4 flux, ombrotrophic mires	"		National
Undditched peatlands		CH4 flux, minerotrophic mires	"		
Undditched peatlands	2008	Area of ombrotrophic mires	Syken soiden ojitustilanneaineisto + kuntarajat (Hallinnolliset alueet -aineisto)		Municipality
Undditched peatlands	"	Area of minertrophic mires	"		Municipality
Peat production areas		Peat production areas, kg CO2 eq./ha/a:	FIN NIR, table 7.5-3	http://www.stat.fi/tup/khkinv/fin_nir_2012_2014_04_15.pdf	
Peat production areas		CO2 emission factor	FIN NIR, table 7.5-3	http://www.stat.fi/tup/khkinv/fin_nir_2012_2014_04_15.pdf	National /Southern, Northern area
Peat production areas		CH4 emission factor	"	"	National /Southern, Northern area
Peat production areas		N2O emission factor	"	"	National /Southern, Northern area
Peat production areas	2006 (CORINE)	Area of peat production areas	Syken soiden ojitustilanneaineisto + kuntarajat (Hallinnolliset alueet -aineisto)		Municipality
Anthropogenic emissions, non-emission trading, non-LULUCF	2013	Total emission by municipality, excluding emission trading and LULUCF-sectors, 1000 tCO2/yr	Tilastokeskus, Kasvihuonekaasujen inventaario	http://pxnet2.stat.fi/PXWeb/pxweb/fi/StatFin/StatFin__ymp__khki/?tablelist=true	Municipality

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